National Park Service
U.S. Department of the Interior

Death Valley National Park
California / Nevada

ENVIRONMENTAL ASSESSMENT

Abandoned Mine Lands Safety Installations

Multiple Mine Openings

Death Valley National Park, California / Nevada

February 2010

PUBLIC COMMENT

If you wish to comment on the environmental assessment, you may mail comments to the name and address below or post comments online at http://parkplanning.nps.gov/deva. This environmental assessment will be on public review for 30 days. Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment - including your personal identifying information - may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we would be able to do so. We would make all submissions from organizations, businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses available for public inspections in their entirety.

Please address written comments to:

Sarah Craighead, Superintendent

ATTN: AML EA Comments
Death Valley National Park
P.O. Box 579
Death Valley, California 92328

ENVIRONMENTAL ASSESSMENT

Abandoned Mine Lands Safety Installations
Multiple Mine Openings

Death Valley National Park, California / Nevada

SUMMARY

The National Park Service proposes implementing mine safety installation options at abandoned mine lands in Death Valley National Park. The purpose of this project is to mitigate human and physical safety hazards present in the portion of the park located in California. The Park will develop a separate NEPA document, consult with Nevada State Historic Preservation Office, other Federal and State agencies, Tribal representatives and other interested parties for similar projects undertaken in the Nevada portion of Death Valley.

The need for the proposed mine safety installations is related to hazards posed by a large number of old and deteriorated abandoned open mine features. These types of hazards were recently documented in a report by the Office of the Inspector General. To assure abandoned mine land sites are secured for visitor safety, each National Park Service region has been directed to identify and implement quick response measures for high-risk abandoned mine land features.

Two alternatives were analyzed for meeting these objectives:

- Alternative A: No Action. The no action alternative would consist of the continuation of existing management practices for abandoned mine land sites in Death Valley National Park. New safety installations would be implemented as funding becomes available; the timing and number of openings to be closed during a specific period would vary according to funding amounts and details and existing closed mine openings would be retained. These installations would be accomplished under a continuation of current management and would not be part of the proposed action. Unsafe conditions would continue to exist at sites with unclosed mine openings.

- Alternative B: Abandoned Mine Lands Safety Installations. Alternative B is the preferred alternative and consists of closing multiple abandoned mine openings at Death Valley. There are a variety of closure techniques that would be implemented, either individually or in combination under alternative B.

The effects on park resources would be negligible to minor and none of the alternatives analyzed in this environmental assessment would result in major or unacceptable environmental impacts or impairment of park resources or values.

This page is intentionally left blank

CONTENTS

Purpose and Need for Action

Purpose and Need 1
- Proposed Action and Objectives 1
- Need for Proposed Action 5

Purpose and Significance of the Park 6
- Description of the Park 6
- Park Purpose 6
- Significance 7

List of Issues and Impact Topics 9

Impact Topics Dismissed from Detailed Analysis 10
- Cultural Resources 10
- Floodplains 12
- Geologic Resources 12
- Prime and Unique Farmlands 12
- natural Soundscape 12
- Indian Trust Resources 12
- Air Quality 12
- Climate Change 13
- Soils 13
- Water Resources 13
- Wetlands 13
- Vegetation – Native Plant Communities 13
- Socioeconomics 13
- Natural Lightscape (Night Sky) 14
- Energy Conservation 14
- Environmental Justice 14
- Park Operations 14

Alternatives

Description of Alternatives 15

Alternative A: No Action 15

Alternative B: Abandoned Mine Lands Safety Installations 15
- Concept and Features 16
- Proposed Mitigation Measures 17

Environmentally Preferred Alternative 20

Alternatives Considered but Dismissed 21

Affected Environment/Environmental Consequences

Methods 30
- Cumulative Impact Analysis Method 31
- Resource Impairment 32
- Unacceptable Impacts 32

Public Health and Safety 33
- Affected Environment 33
- Environmental Consequences 34

Visitor Use and Experience 36

Affected Environment 36
Environmental Consequences 37

Special-Status Species 41
Affected Environment 41
Environmental Consequences 44

Wildlife 49
Affected Environment 49
Environmental Consequences 49

Wilderness 53
Affected Environment 53
Environmental Consequences 55

Conclusions 59

Consultation And Coordination

List of Persons, Organizations and Agencies Contacted 60

Summary of Public Scoping 61

List of Preparers 66

References

Bibliography 68

Appendix A Mine Opening Closure Techniques

Appendix B Consultation and Coordination

Appendix C Draft Minimum Requirements Decision Guide

FIGURES

Figure 1: Park Map Death Valley National Park 3
Figure 2: Typical Types of Mine Openings and Features 4
Figure 3: Designated Wilderness in Death Valley National Park 55

TABLES

1: Impact Topics Retained for Further Evaluation and Relevant Laws, Regulations, and Policies 9
2: Procedures for Mitigating Physical Hazards at Abandoned Mine Land Sites 22
3: Typical Mine Opening Features with Factors Involved in Determining Mine Safety Installation Techniques 26
4: Abandoned Mine Lands Safety Installation Techniques and Impact Intensities for Each Impact Topic 27
5: Comparison of the Alternatives 28
6: Special-Status Species (and Non-Listed Bat Species) with Potential to Be Affected at Abandoned Mine Land Sites in Death Valley National Park 42

PURPOSE AND NEED FOR ACTION

PURPOSE AND NEED

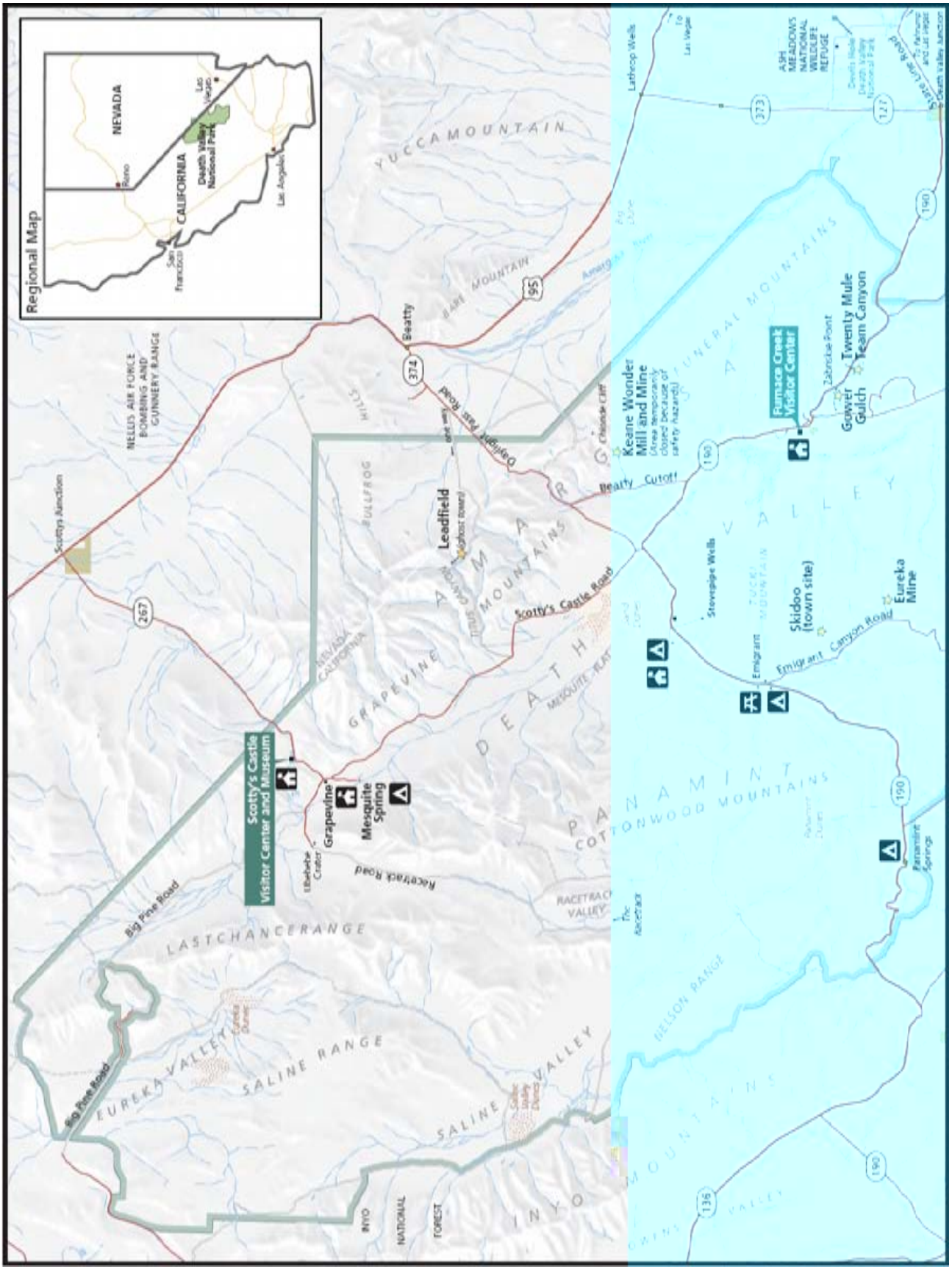
This environmental assessment has been prepared to assess mine safety options and environmental impacts to mitigate human and physical safety hazards at abandoned mine land sites in Death Valley National Park (Death Valley or park) (figure 1). Abandoned mine lands are typically defined as any physical feature previously used for the extraction of minerals for which no responsible party can presently be identified (National Park Service 2001). Abandoned mine land features in Death Valley National Park include adits, drifts, glory holes, inclines, outcrops, portals, raises, shafts, stopes, sumps, tunnels, veins, winzes, prospect pits, cuts, and trenches. Figure 2 provides a glossary of these terms.

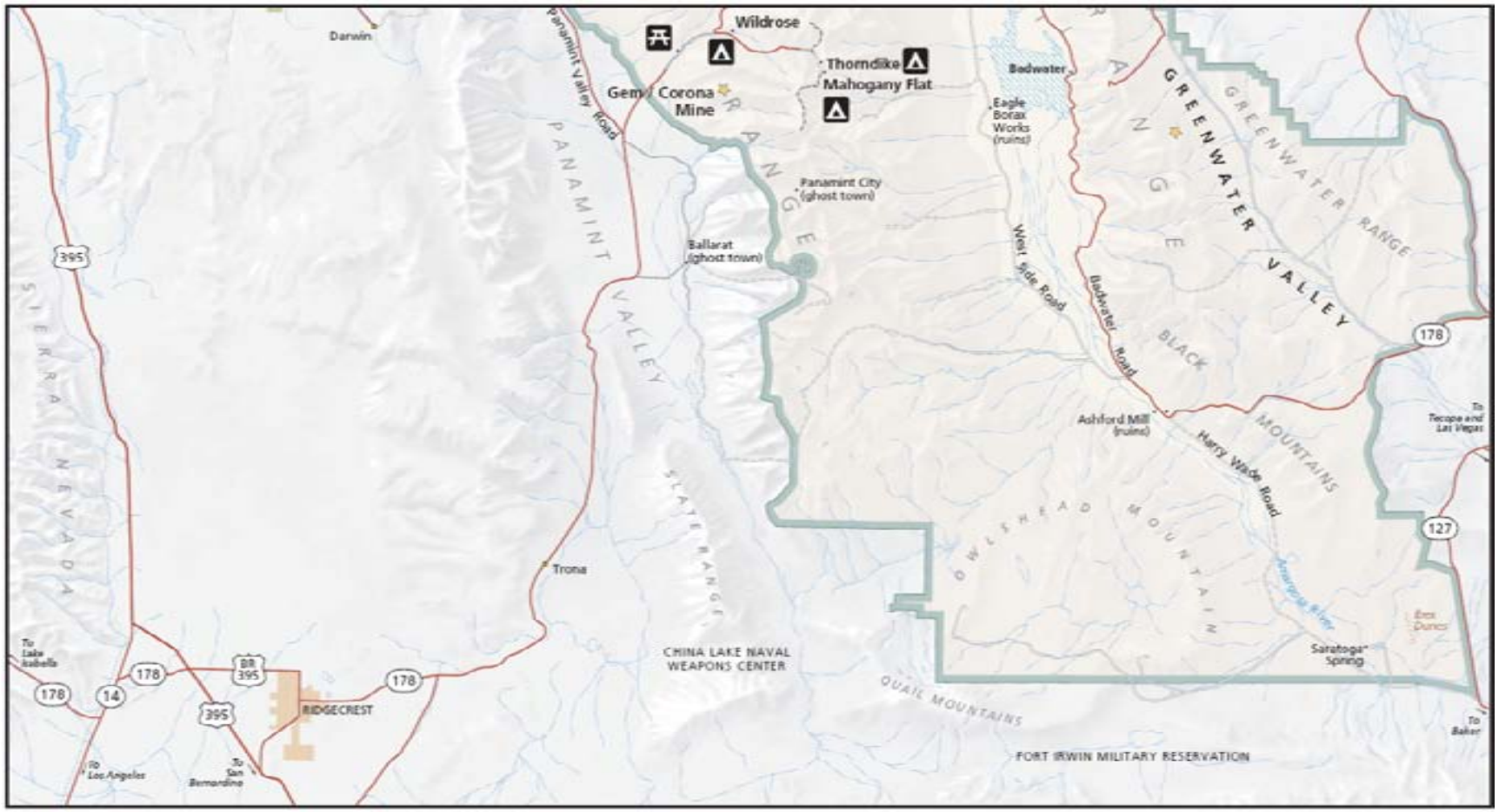
This document has been prepared according to the guidance for "short-form" environmental assessments issued by the National Park Service Environmental Quality Division for projects funded under the American Recovery and Reinvestment Act of 2009 (National Park Service 2009b). The environmental assessment also meets the requirements of the National Environmental Policy Act of 1969 and implementing regulations, 40 *Code of Federal Regulations* Parts 1500-1508, and *Director's Order #12 and Handbook, Conservation Planning, Environmental Impact Analysis and Decision Making* (National Park Service 2001).

PROPOSED ACTION AND OBJECTIVES

The purpose of the proposed project is to improve visitor and staff safety in Death Valley National Park while accommodating the use of abandoned mine lands sites by wildlife (principally by bats), minimize impacts on historic fabric and the visual character of extant cultural landscapes, and minimize and offset potential adverse effects on natural resources using mitigation measures. The objective is, simply, to minimize opportunity for human exposure to risk of hazardous mine conditions while providing for protection of natural and cultural resources, and minimizing potentially adverse effects on visitor experience. The proposed project applies to abandoned mine lands sites located in the portion of the park located in California. The Park will develop a separate NEPA document, consult with Nevada State Historic Preservation Office, other Federal and State agencies, Tribal representatives and other interested parties for abandoned mine lands sites located in the Nevada portion of Death Valley National Park.

Preventing human access to mines may involve permanent closure of mine features, including non-reversible methods such as earthen backfill, constructing rock and mortar walls into mine features, and re-contouring the landscape. The National Park Service, in consideration of wildlife and/or historic resources, can also employ less permanent measures, including reversible methods such as bat gates, cupolas, grates, nets, polyurethane foam plugs with a surface layer of earthen backfill, or fencing (chain-link or barbed). Installation methods that consider the needs of wildlife have been extensively researched (Vories and Throgmorton 2002; Sherwin *et al*. 2009) and the National Park Service would rely on installation techniques that have been developed to allow wildlife use for those mine openings where such methods are required.


Regional Map
NEVADA
CALIFORNIA
Reno
San Francisco
Death Valley National Park
Las Vegas
Los Angeles
YUCCA MOUNTAIN
BARE MOUNTAIN
NELLIS AIR FORCE BOMBING AND GUNNERY RANGE
Scotty's Junction
Beatty
374
95
267
Oasis Valley Road
Leadfield
(ghost town)
Scotty's Castle Road
Visitor Center and Museum
Grapevine
Mesquite Spring
Ubehebe Crater
Racetrack Road
Big Pine Road
LAST CHANCE RANGE
EUREKA VALLEY
SALINE RANGE
SALINE VALLEY
INYO NATIONAL FOREST
GRAPEVINE MOUNTAINS
DEATH VALLEY
PANAMINT MOUNTAINS
COTTONWOOD MOUNTAINS
RACETRACK VALLEY
The Racetrack
Lathrop Wells
To Las Vegas
ASH MEADOWS NATIONAL WILDLIFE REFUGE
Devils Hole
Death Valley National Park
To Pahrump and Las Vegas
Death Valley Junction
Amargosa River
Big Dune
Chloride Cliff
Keane Wonder Mill and Mine
(Area temporarily closed because of safety hazards)
Beatty Cutoff
FUNERAL MOUNTAINS
Furnace Creek Visitor Center
Zabriskie Point
Twenty Mule Team Canyon
Gower Gulch
Stovepipe Wells
Emigrant
Emigrant Canyon Road
Skidoo (town site)
Eureka Mine
NELSON RANGE
Panamint Springs
136
190
373
127



North

0 1 10 Kilometers

0 1 10 Miles

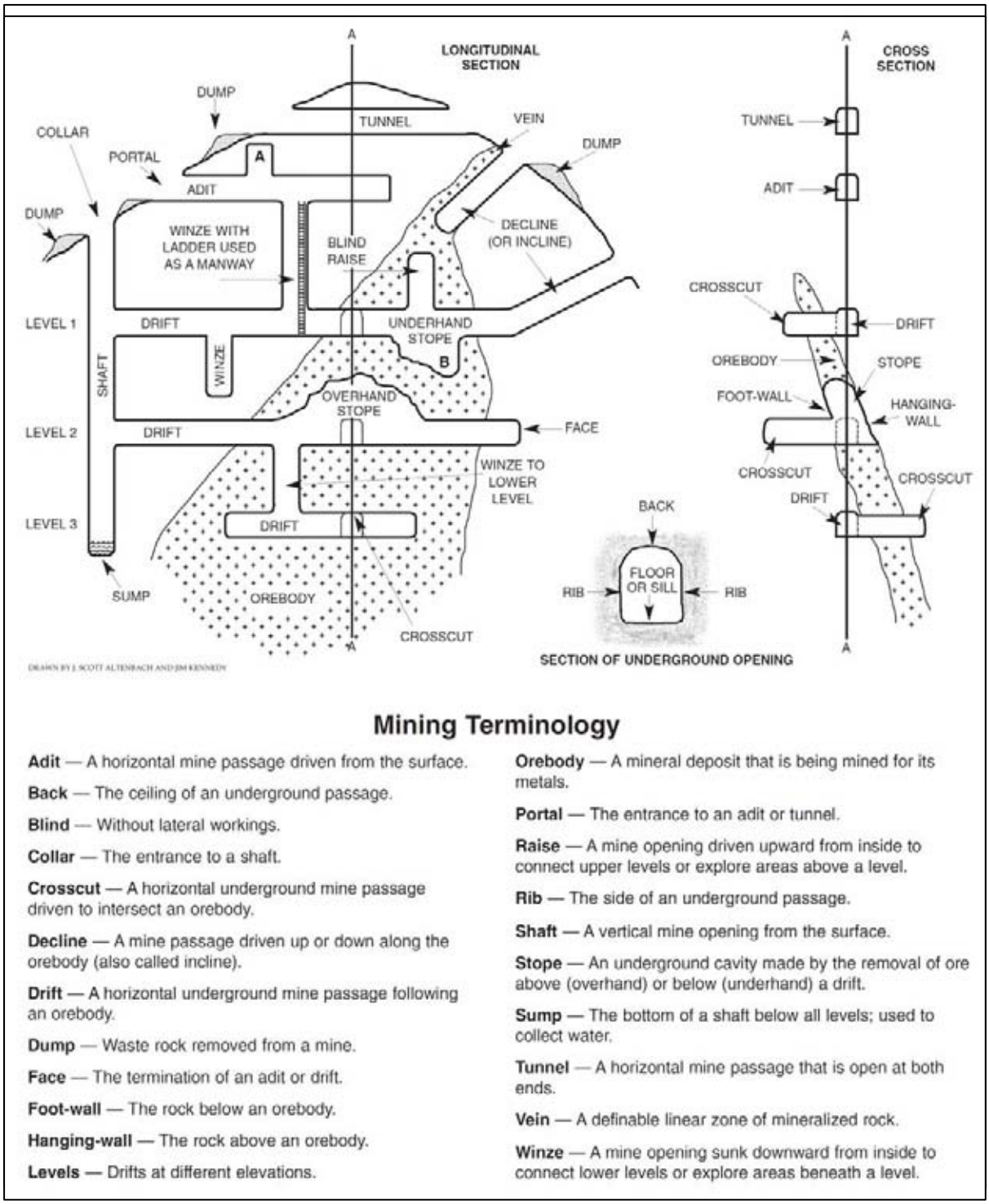
Paved road
Unpaved road
High clearance recommended
Four-wheel-drive road
Salt flat
Hiking trail
Area below sea level
Authorized park boundary
Ranger station
Campground
Picnic area
Mine area

Figure 1. Park Map

Death Valley National Park

United States Department of the Interior / National Park Service

December 2009



Mining Terminology

Adit — A horizontal mine passage driven from the surface.

Back — The ceiling of an underground passage.

Blind — Without lateral workings.

Collar — The entrance to a shaft.

Crosscut — A horizontal underground mine passage driven to intersect an orebody.

Decline — A mine passage driven up or down along the orebody (also called incline).

Drift — A horizontal underground mine passage following an orebody.

Dump — Waste rock removed from a mine.

Face — The termination of an adit or drift.

Foot-wall — The rock below an orebody.

Hanging-wall — The rock above an orebody.

Levels — Drifts at different elevations.

Orebody — A mineral deposit that is being mined for its metals.

Portal — The entrance to an adit or tunnel.

Raise — A mine opening driven upward from inside to connect upper levels or explore areas above a level.

Rib — The side of an underground passage.

Shaft — A vertical mine opening from the surface.

Stope — An underground cavity made by the removal of ore above (overhand) or below (underhand) a drift.

Sump — The bottom of a shaft below all levels; used to collect water.

Tunnel — A horizontal mine passage that is open at both ends.

Vein — A definable linear zone of mineralized rock.

Winze — A mine opening sunk downward from inside to connect lower levels or explore areas beneath a level.

Figure 2. Typical Types of Mine Openings and Features

Used with permission from Bat Conservation International - http://www.batcon.org/ (Tuttle and Taylor 1998).

The objectives of the proposed multiple mine safety installations are as follows:

- **Protect visitors and park staff from abandoned mine safety hazards and minimize potentially adverse effects on visitor experience:** Properly designed safety structures protect visitors from unsafe conditions at abandoned mine land sites.

- **Protect wilderness visitors by mitigating pre**-existing intrusions in wilderness.

- **Protect natural resources from construction and operation of abandoned mine lands safety structures:** Wildlife, including federally and state-listed species, uses mine openings as shelter and for nesting and denning.

- **Protect cultural resources from construction and operation of abandoned mine lands safety structures**: Abandoned mine land sites in the park represent a remnant of the region's rich history and are popular destinations for visitors.

- **Maintain a good working relationship between the National Park Service and stakeholders and partners associated with Death Valley National Park**: A wide variety of stakeholders and partners are involved with abandoned mine lands at Death Valley. In addressing abandoned mine lands safety issues, the objective of the National Park Service is to achieve good working relationships with stakeholders and partners and implement a balanced approach for resolving issues.

NEED FOR PROPOSED ACTION

The need for the proposed mine safety installations is related to safety hazards created by a large number of old and deteriorated abandoned open mine shafts, declines, stopes, and horizontal openings such as adits and tunnels that exist in the park. These types of hazards were recently documented in five national parks and selected Bureau of Land Management areas in a report by the Office of the Inspector General (2008). The report concluded that because abandoned mine land sites in the western United States represent a remnant of the region's rich history, they are popular destinations for park visitors, and an associated safety risk is created.

To assure abandoned mine land sites are secured for visitor safety, each NPS region has been directed to identify and implement quick-response measures for high-risk abandoned mine land features. Parks were directed to identify those abandoned mine land features that pose a high risk for visitor safety and to develop initial cost estimates for mitigation or safeguarding of those features. Parks were also directed to fulfill needed compliance responsibilities and implement plans for quick response measures (for example, fences and warning signs) on a prioritized basis (National Park Service 2009c).

At Death Valley, there is an immediate need for closure of high priority sites, to be followed in the future by a large number of additional sites. Because of the safety hazards posed by abandoned mine land sites, there is, therefore, a long-term need for closure of these features to protect visitors.

PURPOSE AND SIGNIFICANCE OF THE PARK

The purpose and significance of Death Valley National Park are important components of the basis for management decisions and planning. Decisions about the management of resources are generally measured against these factors to determine activities that may be acceptable in a unit.

DESCRIPTION OF THE PARK

Death Valley National Monument was established by presidential proclamation under the Antiquities Act of 1906 on February 11, 1933. The monument was subsequently enlarged and changed to Death Valley National Park by Congressional action on October 31, 1994, with the passage of the California Desert Protection Act. Over 1.3 million acres of new lands were added, bringing the total acreage to 3,396,192. Nearly 91% of the park is designated wilderness and is the largest national park unit in the lower 48 states. Death Valley National Park contains the lowest point in North America and is one of the hottest places in the world. The diversity of Death Valley's seven plant communities is reflected in three biotic life zones: the lower Sonoran, the Canadian, and the Arctic/Alpine in portions of the Panamint Range. Three vegetation types are represented: scrub, desert woodland, and coniferous forest.

Located in southeast California and Nevada (figure 1), the park contains a landscape of contrasts, from scorching valleys to sand dunes, and snow-covered peaks. Death Valley National Park includes all of Death Valley, a 156-mile-long north/south-trending trough that formed between two major block-faulted mountain ranges: the Amargosa Range on the east and the Panamint Range on the west. Telescope Peak, the highest peak in the park, rises 11,049 feet above sea level only 15 miles from the lowest point in North America in the Badwater Basin salt pan, 282 feet below sea level. The California Desert Protection Act added most of Saline, Eureka, northern Panamint, and Greenwater valleys to the park.

Many historic properties and landscapes exist in the park, and a multitude either qualify to be or are listed on the National Register of Historic Places. Death Valley is unique in its display of a continuum of mining activities from at least the 1860s to the present day. Many historic mining resources are of particular interest either because similar resources are not found elsewhere in the National Park System, or because they are in a better state of preservation than examples found elsewhere.

PARK PURPOSE

The park purpose includes the reasons why Congress set the area aside for protection as a unit of the national park system. As a unit of the national park system, Death Valley must be managed in accordance with the National Park Service preservation mission as provided in the Organic Act of 1916; 16 USC 1, which provides that the primary purpose of park units is:

> ... to conserve the scenery and the natural and historic objects and the wildlife therein, and to provide for the enjoyment of the same in such a manner and by such means as will leave them unimpaired for the enjoyment of future generations.

In 1978, Congress amended the General Authorities Act in the Redwood National Park Act to further clarify the importance of park resources systemwide:

Congress provides more specific direction for the new and/or expanded California desert parks and wilderness areas in section 2 (b)(1) of the California Desert Protection Act:

- Preserve unrivaled scenic, geologic, and wildlife values associated with these unique natural landscapes;

- Perpetuate in their natural state significant and diverse ecosystems of the California desert;

- Protect and preserve the historical and cultural values of the California desert associated with ancient Indian cultures, patterns of western exploration and settlement, and sites exemplifying the mining, ranching, and railroading history of the Old West;

- Provide opportunities for compatible public outdoor recreation; protect and interpret ecological and geological features and historic, paleontological, and archeological sites; maintain wilderness resource values; and promote public understanding and appreciation of the California desert; and

- Retain and enhance opportunities for scientific research in undisturbed ecosystems.

The specific purposes for Death Valley National Park, as derived from the Organic Act and the California Desert Protection Act, can be summarized as follows:

- Preserve the unrivaled scenic, geologic, and natural resources of these unique natural landscapes, while perpetuating significant and diverse ecosystems of the California desert in their natural state. Ensure the maximum protection of wilderness values provided by law.

- Preserve the cultural resources of the California desert associated with prehistoric, historic, and contemporary American Indian culture, patterns of western exploration, settlement, and mining endeavors.

- Provide opportunities for compatible public outdoor recreation and promote the public's understanding and appreciation of the California desert by interpreting the natural and cultural resources.

- Retain and enhance opportunities for scientific research in undisturbed ecosystems.

SIGNIFICANCE

Park significance statements tell why the park is special and deserves to be a part of the national park system. Statements of significance clearly define the importance of the park's resources as they relate to the park purpose. These statements help set resource protection priorities, identify primary interpretive themes, and develop desirable visitor experiences.

Significance in this context is the importance of a feature or an outstanding value. It may be locally, regionally, nationally, or globally significant or important to our national and cultural heritage. It may be a feature that is unique or extraordinary.

Significance is not used here in a legal sense, such as with the National Environmental Policy Act or the National Historic Preservation Act. The following significance statements were developed for Death Valley National Park and serve as the basis for management actions:

- Death Valley National Park contains the lowest point in North America at 282 feet below sea level. The valley floor receives the least precipitation in the United States (average 1.9

inches per year) and is the site of the nation's highest and the world's second highest recorded temperature (134 degrees Fahrenheit or 57 degrees Celsius).

- Death Valley National Park is world renowned for its exposed, complex, and diverse geology and tectonics, and for its unusual geologic features, providing a natural geologic museum that represents a substantial portion of the earth's history.

- The extremely colorful, complex, and highly visible geology and steep, rugged mountains and canyons provide some of the most dramatic visual landscapes in the United States.

- Death Valley National Park contains one of the nation's most diverse and significant fossil records and most continuous volcanic histories.

- Death Valley National Park contains five major sand dune systems representing all types of dune structures, making it one of the only places on earth where this variety of dune types occurs in such close proximity. It also contains the highest dunes in California – Eureka Sand Dunes.

- Death Valley National Park is one of the largest expanses of protected warm desert in the world. Ninety-five percent of the park is designated wilderness, providing unique opportunities for quiet, solitude, and primitive adventure in an extreme desert ecosystem.

- Contrary to the first impressions of many visitors, Death Valley National Park's natural resources are extremely diverse, containing a large variety of plant species and community types. The area preserves large expanses of creosote bush valleys and other vegetation typical of the Mojave Desert. Extreme conditions and isolation provide habitat for an unusually high number of plant and animal species (as epitomized by the Devils Hole pupfish) that are highly adaptable to these conditions.

- Death Valley has been the continuous home of American Indians, from prehistoric cultures to the present day Timbisha Shoshone Tribe.

- Death Valley National Park contains an unusually high number of well-preserved archeological sites, including rock art and alignments.

- Scotty's Castle, with its architectural style, quality, and priceless collection of antiques and art objects, built in a remote, isolated desert location in the early 1900s, is an icon with immense public appeal.

- Death Valley National Park has an extensive and well-preserved mining history representing over 100 years of mining technology.

- Since the 1930s there has been a continuous presence of the U.S. military in the region for a host of test and training activities involving aircraft. Historic crash sites are reminders of the commitment and sacrifices military personnel have made in the defense of this country.

LIST OF ISSUES AND IMPACT TOPICS

Internal and external scoping comments were considered in the choice of impact topics and were used in the development and evaluation of alternatives discussed in this environmental assessment. Table 1 presents the impact topics, the reasons for retaining the topic, and the relevant laws, regulations, and policies. The section located near the end of this document entitled Consultation and Coordination provides information on the organizations and agencies contacted during scoping, a summary of the public scoping efforts that helped identify relevant issues and impact topics' or something similar and more relevant to this section.

Table 1
Impact Topics Retained for Further Evaluation and Relevant Laws, Regulations, and Policies

Impact Topic	Reasons for Retaining Impact Topic	Relevant Laws, Regulations, and Policies
Public Health and Safety	Existing mine openings pose a substantial safety hazard for visitors. Closing mine openings would result in long-term beneficial improvements in safety. However, this could adversely affect the experience of visitors who place a high value on entering mines. Therefore, this topic will be further analyzed in the environmental assessment.	National Park Service Management Policy 8.2.5, 2006
Visitor Experience	Mine safety installations would potentially have beneficial and adverse effects on visitor use and experience, depending on the point of view and values of the visitor. Therefore, this topic will be further analyzed in the environmental assessment.	National Park Service Organic Act; National Park Service Management Policy 8.2, 2006
Special-Status Species	Mine safety installations could affect species of special concern and bats regardless of status and the federally listed desert tortoise by preventing access to mines that are currently used as habitat. Therefore, this topic will be further analyzed in the environmental assessment.	Endangered Species Act of 1973; National Park Service Management Policy 4.4.2.3, 2006; 40 Code of Federal Regulations 1500 (regulations for implementing the National Environmental Policy Act)
Wildlife	Mine safety installations could affect wildlife by preventing access to mines that are currently used as habitat. Therefore, this topic will be further analyzed in the environmental assessment.	National Park Service Management Policies 2006: 4.4.2, 2006; Migratory Bird Treaty Act
Wilderness	Mine safety installations could affect wilderness areas where backcountry roads are surrounded by or adjacent to wilderness or where wilderness areas are located adjacent to sites slated for closure. Therefore, this topic will be further analyzed in the environmental assessment.	36 Code of Federal Regulations 62 (criteria for national natural landmarks); National Park Service Management Policy 2.3.1.9, 2006; Wilderness Act of 1964, National Park Service Management Policy 4.3.3, 2006; National Park Service Management Policy 6.0, 2006

IMPACT TOPICS DISMISSED FROM DETAILED ANALYSIS

Impact topics considered, but not evaluated further, are discussed below.

CULTURAL RESOURCES

A "Programmatic Agreement between the National Park Service (U.S. Department of the Interior) and the California State Historic Preservation Officer Regarding Mitigation of Physical Safety Hazards at Historic Abandoned Mineral Lands within the National Parks in California" was developed in anticipation of funding under the American Recovery and Reinvestment Act of 2009. It was signed by both parties on August 18, 2009 (appendix B). The purpose of this programmatic agreement is to establish a program for compliance with Section 106 of the National Historic Preservation Act and set forth a streamlined consultation process when agreed-on criteria are met and procedures are followed in the installation of physical safety mitigation treatments at abandoned mine lands sites. As part of the development of the programmatic agreement, the National Park Service has established guidelines, standards, and technical information applicable to the treatment of these physical hazards in ways that would, to the extent possible, minimize the impacts of such treatments on the historic fabric and historic character of abandoned mine lands features at these sites.

The park would adhere to the programmatic agreement during implementation of this project and would treat all the mine structures as potentially eligible for listing on the National Register of Historic Places. The National Park Service would install only reversible safety installation treatments unless the unsafe condition of the feature is of such severity that a reversible option is not viable. The standard treatments described in attachment A to the programmatic agreement, because of their non-permanent and reversible nature, are deemed to produce "No Adverse Effect" for purposes of the programmatic agreement. As soon as park staff determines that a required alternative safety treatment would have an unavoidable and irreversible adverse effect on one or more historic properties, that portion of the project would be suspended and the park would immediately enter into consultation with the State Historic Preservation Officer to identify other installation types that avoid, minimize, or mitigate the adverse effect. As a result of following the programmatic agreement and the mine safety installation types it proposes, the impact to cultural resources in Death Valley National Park would be negligible to minor; they are discussed in detail below.

Archeological Resources

Prior to undertaking safety installations at any mine site, the park would determine the Area of Potential Effects for the project and would consult its Archeological Site Management Inventory System database to determine whether previously recorded sites are present in each area of potential effects. Previously recorded sites in the area of potential effects would be protected in place during construction through the use of exclusionary fencing or other measures. In areas of potential cultural sensitivity, archeological survey and site identification would take place prior to installations, and the protection measures outlined above would be implemented if archeological resources were located. The same procedure would be followed in cases of inadvertent discoveries of archeological resources – protection in place. As a result, impacts to archeological resources would be none to negligible. Because no impacts would be greater than minor, archeological resources were dismissed from further analysis.

Cultural Landscapes

Historic structures and associated mining resources together make up a cultural landscape that is an important component of most mining properties within the park. The abandoned mine

lands safety techniques would impact these landscapes in some cases by introducing new visible elements, such as fences or structures over shafts, or conversely, by burying some openings so they are no longer visible to visitors. Several mining landscapes have been identified in the park. The mine safety installations would impact mine sites in some cases by introducing new visible elements to the landscape, such as fences, or structures over shafts, or conversely, by burying some openings so they are no longer visible to visitors. The impact would be minimized by the use of materials that would blend into the mining landscape, such as non reflective metal and recessing safety installations into the shaft or adit where possible. Virtually all mine safety installation options would be reversible. All mine openings to be closed would be photo documented before and after the work is completed. The photographs would sufficiently illustrate the historic construction/engineering features and techniques of the treated portions of each site as well as provide an overview depicting its setting in the general landscape. Where permanent mine safety installation techniques are called for, representative mines would be closed by reversible means to convey the sense of the greater mining landscape. The project would result in minor impacts to cultural landscapes that would be mitigated by documentation and the installation techniques described above. Because greater than minor impacts would not occur, this topic is dismissed from analysis.

Ethnographic Resources

Native American groups traditionally associated with the park were consulted regarding this project and agreed that the project would not affect traditional sites or resources and that the protections outlined in the programmatic agreement developed for this project are adequate. Because the project would not impact ethnographic resources, this topic is dismissed from further analysis.

Historic Structures

A wide variety of historic structures are present at mine sites within the park, including cabins, dugouts, aerial tramways, etc. Many of these structures have been found to be contributing elements to National Register eligibility, and work to these structures would involve substantial involvement with the State Historic Preservation Officer prior to any project activities. Any work done under this environmental assessment would be associated solely with historic structures located at the mine openings, such as entrance ways, doors, and wooden supports and collars and would not touch free-standing structures. Mine safety installation techniques would be designed to avoid impacts to the historic fabric of the historic structures associated with the mine sites to the greatest extent possible and visual impacts to the historic character of the mine openings, such as entrance ways, doors, and wooden supports and collars would be minimized by recessing safety installations. In some cases, structural elements would be dismantled and then reconstructed after installations are complete. Where recessing is not possible, mine safety installations would be worked into and around historic structures so their visual presence is minimized to the extent possible. As a result, impacts would be negligible to minor depending on the installation technique chosen. Because there would be no impacts greater than minor, this topic is dismissed from further analysis.

Museum Objects

Objects related to mining operations can be found at most mine sites. These objects consist of equipment used in mining or personal objects used by the miners. The programmatic agreement developed with the California State Historic Preservation Officer requires the project to leave all potential museum objects in place where they are located and take care not to disturb them during safety installations at mine openings. Because potential museum objects would not be impacted or added to the park collections at this time, there would be no impact to museum objects or collections. As a result, this topic is dismissed from further analysis.

FLOODPLAINS

Abandoned mine lands safety installations would not be conducted in floodplains or wetlands and would not affect the functions and values of floodplains and wetlands. This impact topic is, therefore, not included in the environmental assessment.

GEOLOGIC RESOURCES

Impacts to geologic resources would be limited to anchoring of safety installations and minor shaping of bedrock limited primarily to the dimensions of each mine opening. The small geological area affected would result in negligible adverse effects on geological resources. This impact topic is, therefore, dismissed from further analysis.

PRIME AND UNIQUE FARMLANDS

No prime and unique farmlands are located in areas affected by the proposed mine safety installations, and the proposed project would not affect prime and unique farmlands. This impact topic is, therefore, dismissed from further analysis.

NATURAL SOUNDSCAPE

In accordance with National Park Service Management Policies and Director's Order – 47: Soundscape Preservation and Noise Management, an important part of the National Park Service mission is preservation of natural soundscapes associated with national park units. Natural soundscapes exist in the absence of human sound. The proposed project would have negligible to minor short-term adverse impacts on soundscapes from construction equipment and vehicle noise, including the potential use of helicopters, to transport equipment. These short-term activities would also affect visitor experience, special-status species, wildlife, and wilderness. Potential impacts are described and evaluated under the visitor experience, special-status species, wildlife, and wilderness impact topics, which have been retained for further analysis. Because short-term construction impacts on soundscapes do not exceed a minor threshold, and the short-term construction noise impacts to wilderness, wildlife and visitor use and experience are described and evaluated under other impact topics; soundscapes was dismissed from further analysis as a separate impact topic.

INDIAN TRUST RESOURCES

Sacred sites are managed according to requirements of Executive Order 13007 and National Park Service Management Policy 5.3.5.3.2 (National Park Service 2006). The proposed project would not affect any sacred sites or Indian Trust Lands. This impact topic is, therefore, dismissed from further analysis.

AIR QUALITY

Emissions of particulates that could affect air quality, including visibility in the general vicinity of the park, would temporarily increase during construction from the use of vehicles on and unpaved roads, and from exhaust from gasoline- or diesel-powered vehicles and equipment. This equipment would also temporarily emit air pollutants. However, a typical mine safety installation would take two to three days to complete. Mitigation measures described in more detail under alternative B would be employed to assure that potential associated effects on air quality are avoided and minimized. Because of the short-term, localized nature of the operation, mine

safety installation activities would not affect the attainment status of the airshed that encompasses Death Valley National Park and would not affect the airshed designation (Class II designation under the Prevention of Significan

NATURAL LIGHTSCAPE (NIGHT SKY)

The project would be constructed during daytime hours and would have no adverse effects on natural lightscape quality. Similarly, the proposed mine safety installation structures would have no effects on natural lightscape (night sky). This impact topic is, therefore, dismissed from further analysis.

ENERGY CONSERVATION

The project would require a negligible amount of oil, gas, and electrical energy to construct the mine safety installations and new structural features. This impact topic is, therefore, dismissed from further analysis.

ENVIRONMENTAL JUSTICE

Impacts associated with safety installations would not disproportionately affect any minority or low-income population or community. This impact topic is, therefore, dismissed from further analysis.

PARK OPERATIONS

The project would have a short-term, negligible effect on park operations during construction of the mine safety installation structures. The project would have a minor, long-term, beneficial effect on park operations by avoiding the need to respond to safety issues associated with mine opening incidents. This impact topic is, therefore, dismissed from further analysis.

ALTERNATIVES

DESCRIPTION OF ALTERNATIVES

The National Park Service identified and evaluated two alternatives for mine safety installations at abandoned mine land sites at Death Valley National Park, Alternative A: No Action and Alternative B: Abandoned Mine Lands Safety Installations.

Abandoned mine lands safety installation techniques are described in table 2. The information in table 2 is modified from *A Plan to Minimize the Impacts of Physical Safety Hazard Mitigation Treatments at Abandoned Historic Mines* (National Park Service no date). This and all other tables in this chapter are included at the end of this chapter.

Table 3 presents examples of typical mine openings and some of the factors that would be considered when determining what safety installation technique would be most appropriate. The table identifies many, but not all, possible combination safety installation techniques.

Table 4 presents a summary of the impacts associated with each of the impact topics for typical mine safety installation techniques proposed under alternative B. Details of the analyses are presented in the Environmental Consequences section. Only adverse impacts are assigned intensity threshold.

Table 5 presents a comparison of the environmental effects of Alternative A: No Action, and Alternative B: Abandoned Mine Lands Safety Installations, for each impact topic. The impact assessments summarized in table 5 are based on the detailed analyses that follow in the "Affected Environment / Environmental Consequences" section. A determination of whether the alternative meets the purpose and need of the proposed action is also included in the last row of the table. Only adverse effects are assigned an impact intensity threshold. In cases where the effects of alternative B vary because of the different impacts associated with different safety installation techniques, the range of effects is presented.

ALTERNATIVE A: NO ACTION

The no action alternative would continue existing management practices for abandoned mine land sites at Death Valley. New safety installations would be implemented as funding becomes available; the timing and number of openings to be closed during a specific period would vary according to funding amounts and details and existing closed mine openings would be retained. These closures would be accomplished under a continuation of current management and would not be part of the proposed action. Unsafe conditions would continue to exist at sites with unclosed mine openings. Mines already closed would remain closed, and would continue to provide long-term safety improvements for visitors at those locations. Should the no action alternative be selected, the National Park Service would respond to future needs and conditions associated with abandoned mine land sites without making major actions or changes in the current management approach.

ALTERNATIVE B: ABANDONED MINE LANDS SAFETY INSTALLATIONS

Alternative B is the National Park Service preferred alternative because it offers the highest degree of resource protection for wildlife, special-status species, cultural resources, and wilderness, while improving public health and safety, which is the primary purpose of the project. Ad-

ditionally, a safer environment would enhance National Park Service operations because the need for incident response at abandoned mine openings would be reduced.

CONCEPT AND FEATURES

Alternative B consists of closing multiple abandoned mine openings in the park using one or more installation techniques that are described in subsequent sections. In addition, openings already closed would continue to exist in their present state, similar to the no action alternative.

Appendix A provides photographs of the types of installation techniques that would be used and the types of mine openings that would be treated.

The mine safety installation techniques can be grouped based on their similar effects. These groups of installation techniques include:

- Temporary and permanent fencing;
- Bat gates, screens, grates, and cupolas;
- Polyurethane foam closures covered with backfill;
- Backfill alone; and
- Combined applications of above methods to treat complex situations.

The number and types of installation techniques vary according to site circumstances. For a simple abandoned mine lands open feature situation, only one technique might be needed. For a complex site closure, several installation techniques may need to be combined. For example, a bat gate would be installed at a site consisting of an adit and known to be used by bats, whereas a simple metal grate would be used at a similar site not used by bats, and so forth. Selection of safety installation techniques for specific openings would be based on a number of factors, including physical features and conditions of the opening, types of structures present, safety hazards, presence or absence of bats, use of the mine by other wildlife such as the desert tortoise, owls, or bighorn sheep, and the presence and condition of historic features.

Alternative B would be limited to mine openings deemed to be unsafe and potentially dangerous by the National Park Service. Prior to implementation of a safety installation, each mine would be evaluated to determine the stability and condition of the opening and, where possible, left intact to facilitate potential future visitor understanding of the features and historical conditions. At selected sites, the structural integrity of historic structures would be preserved to enhance potential future visitor understanding and appreciation of mine operations and working conditions. Interpretation would be also planned.

The preferred alternative would provide a mechanism for closing abandoned mine openings in the park over the long term, using proven, accepted techniques. Safety installations at abandoned mine openings would mitigate basic safety hazards at mine sites while simultaneously protecting special-status species and other forms of wildlife that utilize the mines, as well as historic cultural resources.

Some of the mine safety installations would occur in designated wilderness in the park. Each mine safety installation located in a wilderness area would need to be evaluated by a minimum tool analysis procedure following the minimum requirements decision guide (see the wilderness section) An example of a minimum requirements decision guide is provided in appendix C, but

each mine safety installation in wilderness would be completed with a greater level of detail, based on site-specific conditions. Examples of tools that would be evaluated for use in these installations include, but are not limited to, motorized vehicles such as trucks and helicopters, power saws and drills, welding equipment, and generators. Prior to conducting activities in the wilderness area, the park staff would post a public notice on the NPS' online planning, environment, and public comment project management database announcing the intent to close openings in the wilderness and describing the tools that would be used.

PROPOSED MITIGATION MEASURES

During construction activities, mitigation measures would be included as part of the mine safety installation process to ensure that adverse environmental effects would be either avoided or minimized. The most appropriate mitigation measures to be employed at a given site would be determined by an evaluation of site-specific factors. Measures would be selected based on judgments of what measures would be most effective in avoiding or minimizing impacts. In the arid or semi-arid settings of most of the installation sites, mitigation measures would focus on preventing and controlling soil erosion and vegetation loss or damage. These actions would protect water quality and any associated aquatic communities in situations where a surface water body occurs next to activities involving disturbance of soil and plant communities.

The following mitigation measures would be employed as appropriate to control soil erosion and vegetation loss and to configure the land surface to discourage soil erosion after installation activities were finished. Based on the small size of treatment sites and typical installation activities, the following measures would be effective.

General Measures

- Construction limits would be delineated by the park prior to any construction activity. Workers would be instructed to avoid conducting activities and disturbing areas beyond the construction limits.

- All tools, equipment, barricades, signs, surplus materials, demolition debris and rubbish would be removed from the project work limits on project completion.

- Contractors would be required to properly maintain construction equipment and generators (for example, the mufflers) to minimize air emissions and noise from use of the equipment.

- All equipment on the project would be maintained in a clean and well-functioning state to avoid or minimize contamination from automotive fluids. All equipment would be checked daily.

- Materials would be stored, used, and disposed of in a proper manner.

- A hazardous spill plan would be approved by the park prior to construction. This plan would state what actions would be taken in the case of a spill, notification measures, and preventive measures to be implemented, such as the placement of vehicles and generators.

- Vehicles and equipment would be cleaned and pressure washed prior to entry into the park to prevent the introduction of non-native vegetation.

- Contain and remove all food waster and garbage immediately to prevent attraction by wildlife to the area and to the food waste.

Soil Erosion and Vegetation Loss

- Wait until just before beginning construction to clear vegetation and to disturb the soil.
- Minimize the area of bare soil in the approved work zone as much as possible.
- Maintain a buffer of natural vegetation around the work area to slow runoff and trap sediments.
- Consider phasing construction to minimize the extent of disturbed soils.
- Use existing roads and trails to access closure locations to maximum extent practicable.
- Park vehicles and equipment and temporarily store materials on locations that are already devoid of vegetation and/or compacted from previous mine activities.
- If vegetation disturbance cannot be avoided and conditions warrant, reseed the disturbed area with a mixture of native, self-sustaining native plant species in accordance with known, successful local techniques.
- Ensure the final land form is stable, minimizes soil erosion, and is hydrologically compatible with the surrounding area.
- Provide slope and land form stability by reducing slope angles.

Water Quality and Aquatic Community Protection

These measures would be implemented only in rare circumstances because of the arid and semi-arid conditions in the park:

- Maintain a buffer zone between the construction activities and the edge of the water feature, a minimum separation distance of 100 feet is typically preferred.
- If rain is anticipated, install temporary silt fence between the construction activity and the water feature and remove the fence after the work is completed.
- In situations where a silt fence may not be adequate, create a temporary diversion or containment berm between the construction activity and the water feature to intercept and manage storm water runoff.
- Remove and reshape temporary containment berms once installation activities are completed.
- Restore any drainage channels that may have been altered by installation activities to pre-disturbance shape, size, capacity, stability, and contours.

Visitor Experience

- Provide interpretative information to illustrate the facilities and techniques relied on to mine mineral resources and to provide a sense of the conditions encountered by miners.
- Minimize adverse visual experiences by using fences and other safety installation structures that are colored to resemble desert soils and vegetation, allowing gates and installa-

tion structures to weather to resemble of old mine structural features, and keeping installation structures hidden from view, low profile, and inconspicuous.

Wildlife and Special-Status Species

- Time installations or construction activities to avoid or take place outside reproductive or sensitive portions of species' life cycles.
- Use designs in gates, fences and other installation techniques that allow bat, owl, and desert tortoise access to mines that are occupied by these groups.
- Conduct bat and other wildlife surveys of openings to be closed before the installation is implemented to ensure that access is maintained and that the installation techniques produce minimal adverse effect.
- Exclude wildlife prior to installation of closure that would prevent passage by wildlife.

Wilderness

- Use the installation techniques identified as most appropriate by the minimum requirements decision guide to install safety features at mine openings.
- Keep construction equipment and crews' vehicles on existing roads and trails to the maximum extent possible to limit vegetation and soil disturbance.
- Minimize wilderness access and vehicle trips into and out of the site to the maximum extent possible.
- Restrict activities to a defined area around an abandoned mine opening site.
- Reduce the visibility of permanent fences using measures that would include, but not be limited to, keeping the fenced area as small as possible; keeping the fence height as low as practicable to effectively discourage visitor access; and using colored or weathered fence materials to reduce fence visibility.
- Perform site restoration activities following safety installations to remove evidence of human activities and restore the natural conditions at the site to the extent possible. Use mitigation measures provided above under "Soil Erosion and Vegetation Loss."

ENVIRONMENTALLY PREFERRED ALTERNATIVE

In accordance with the criteria in the National Environmental Policy Act, the alternative that best meets the following criteria must be identified as the environmentally preferred alternative:

- Criterion 1: Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
- Criterion 2: Ensure for all Americans, safe, healthful, productive, and aesthetically and culturally pleasing surroundings;
- Criterion 3: Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
- Criterion 4: Preserve important historic, cultural, and natural aspects of national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice;
- Criterion 5: Achieve a balance between population and resource use that would permit high standards of living and wide sharing of life's amenities; and
- Criterion 6: Enhance the quality of renewable resources and approach the maximum attainable recycling of resources.

Alternative A does not protect visitors and park staff from abandoned mine safety hazards or minimize potentially adverse effects on visitor experience, so it does not meet criteria 2, 3, and 5. Alternative A does not protect wildlife and special-status species from becoming trapped in open shafts, so it fails to fully meet criteria 1 and 4. It partially meets criterion 4 by preserving important historic and cultural aspects of national heritage, and maintaining an environment that supports a variety of individual choice. Regarding criterion 6, the disturbance and general lack of vegetation around most mine openings limits the ability of alternative A to enhance the quality of renewable resources or approach the maximum attainable recycling of resources.

Alternative B protects visitors and park staff from abandoned mine safety hazards and minimizes potentially adverse effects on visitor experience, so it better meets criteria 2, 3, and 5. It also better meets criteria 1 and 4 by protecting wildlife and special-status species from being trapped in open shafts. While it preserves important historic, cultural, and natural aspects of national heritage and maintains an environment that supports diversity, it does not allow the same variety of individual choice provided in alternative A. Because there would be no change to the amount of disturbance or increase of vegetation around most mine openings, alternative B would not enhance the quality of renewable resources or approach the maximum attainable recycling of resources (criterion 6) any better than alternative A. Because alternative B would ensure for all Americans safe surroundings, provide a greater opportunity for achieving a wide range of beneficial uses of the environment without risk of health or safety, and achieve a balance between population and resource use that would permit high standards of living and wide sharing of life's amenities, alternative B is the environmentally alternative.

The environmentally preferred alternative would provide a mechanism for closing abandoned mine openings in the park over the long term, using proven, accepted techniques. Mine safety installations would mitigate safety hazards at mine sites while simultaneously protecting special-status species and other wildlife that use the mines, as well as historic cultural resources.

ALTERNATIVES CONSIDERED BUT DISMISSED

The installation of bat gates at all mine openings was considered as one alternative to improve public health and safety at mine openings. However, the universal application of bat gates was determined not to be a good allocation of resources for a number of reasons. The reasons include that in some cases an inordinately large gate would be required and could be infeasible and/or costly; a bat gate may not be suitable because of site configuration constraints; and, some mines do not contain bats and the use of bat gates would be an unnecessary and excessive use of materials and funds. As a result of the inefficient use of resources that would occur with the installation of bat gates to close all openings, this alternative was dismissed from further consideration.

Additionally, the components of alternative B, consisting of a variety of mine safety installation techniques, would be considered in relation to a specific mine opening in deciding the best method to be used. When the variables are evaluated, including bat and wildlife use, the presence of historic cultural resources, and the physical nature of the mine opening, some techniques would be dismissed because they do not provide adequate public safety and resource protection.

Table 2 Procedures for Mitigating Physical Hazards at Abandoned Mine Land Sites.		
Safety Installation Technique	**Description**	**Typical Safety Installation Techniques**
Metal grates	Rigid metal frame exclosures typically used when bats are not present include horizontal and vertical grates with relatively small openings. However, in some cases, grates may be constructed so that bars are properly spaced to allow bat passage; installation flush or nearly flush with the ground over shafts would be acceptable for bats. Grates may be combined with bat cupolas (see Bat Gates and Cupolas in this table). Horizontal and vertical grates can replace nets when systematic vandalism is probable or evident. Each device is individually tailored to fit the intended site. The devices can be constructed of several types of metal products including square or rectangular steel tubing or round rod material. They would most often be constructed of angle iron and infrequently combined with extruded expanded mesh construction as in the tops of bat cupolas. In tortoise habitat, tortoise barriers would be included at those features where tortoises could be trapped, such as shafts and inclines/declines. A grate over a shaft not used by bats is shown in the photograph.	
Fencing (permanent or temporary)	Fencing has been commonly employed as an exclosure method in abandoned mine land management programs. Barbed wire, smooth wire, or chain-link fencing have been used to establish barriers to human entry, generally to mine shafts. However, fences are highly subject to vandalism, are difficult to maintain, and constitute less effective deterrents than rigid barriers. Fences can also draw unwanted attention and visitation to a site by increasing its visibility. Fences do prevent unintentional entry and constitute a physical barrier that must be purposely evaded by an intruder. Generally, fencing would be employed only in specific circumstances, such as adaptations for barn owls or where other techniques are unsuitable. In tortoise habitat, tortoise barriers would be included at those features where tortoises could be trapped, such as shafts and inclines/declines.	

Table 2 **Procedures for Mitigating Physical Hazards at Abandoned Mine Land Sites (continued).**		
Safety Installation Technique	**Description**	**Typical Safety Installation Techniques**
Bat gates and cupolas	Bat gates and cupolas are specially designed metal structures that allow bats access to a mine through slots of a specific width, typically between 5.75 and 6 inches. They are typically constructed of heavy-duty angle iron constituting an adaptation of the American Cave Conservation Association/Bat Conservation International, Inc. bat gate design (Vories and Throgmorton 2002). Strong recommendations from biologists, low materials cost, and relative ease of construction have contributed to the selection and current incorporation of this design. One advantage of these installations is that bat gates and cupolas fitted with locking access panels guarantee future access to the mine features by biologists, geologists, and archeologists. Bat gates and cupolas are often designed to include access openings for other species of animals such as barn owls and desert tortoises, if these species are known or suspected to inhabit a particular mine. In tortoise habitat, tortoise barriers would be included at those features where tortoises could be trapped, such as shafts and inclines/declines. In some cases, gates could be installed in culverts that would be placed in mine openings to enhance the physical integrity of mine openings that may be degrading.	
Cable mesh nets	Installation of safety cable nets was one of the earliest methods developed to close mine openings to visitors. The design concept allowed visitor appreciation of the feature, provided for air passage in the opening, and allowed small wildlife passage. Safety nets of various designs can be compatible with historic structures because they can be readily recessed or inset in the mine opening to allow more suitable rock drilling conditions and render the installation less visible. They are no longer widely used where wildlife need continued access to the mine openings and are no longer preferable for installations where bats are present as bats can have difficulty	

Table 2 Procedures for Mitigating Physical Hazards at Abandoned Mine Land Sites (continued).		
Safety Installation Technique	**Description**	**Typical Safety Installation Techniques**
	navigating through them. Cable mesh can also pull on structural elements that are loose or in bad condition and possibly hasten their deterioration. In tortoise habitat, tortoise barriers would be included at those features where tortoises could be trapped, such as shafts and inclines/declines.	
Polyurethane foam plugs covered with backfill	Polyurethane foam plugs have closed mine sites in remote areas, sites with access restrictions, and sites that do not have sufficient backfill material. The plugs are typically installed a few feet below the collar of the shaft and a few feet are backfilled with soil or waste rock available near the site because the plug is subject to ultraviolet light degradation and vandalism, thus, it needs to be protected (Burghardt 1994). Polyurethane foam plugs have a considerable weight-bearing capacity and are partially reversible installations because when necessary they can be burned, cut, and/or dug out for future access, however it is almost impossible to completely remove the foam, which adheres directly to the surrounding rock. If removal is attempted some evidence of its use would always remain at the site. The photograph shows a shaft filled with foam and backfilled with local material.	

Table 2 **Procedures for Mitigating Physical Hazards at Abandoned Mine Land Sites (continued).**		
Safety Installation Technique	**Description**	**Typical Safety Installation Techniques**
Back-filling alone	Back-filling may utilize either mechanical or manual earth-moving methods depending on the size of the mine or prospect and require that sufficient back-fill materials are present at the site (it is unlikely any material would be imported). A need for future maintenance of historic mining features may preclude back-filling as an appropriate installation method. If mechanized equipment is required, ingress, egress, and operation of earth moving equipment may result in unacceptable environmental impacts. In front-country situations well above the water table, back-filling may be an appropriate installation technique for trenches and prospects. The photograph shows an adit that was permanently closed using backfill.	
Combination applications of above methods to treat complex situations	Complex mine openings, including stopes, glory holes, and especially large openings, may require combinations of installation techniques to adequately protect visitors, allow wildlife access and support safe conditions at mine openings. Photograph shows a combination of bat cupola, grate, and concrete base (in desert tortoise habitat, the base would serve as a tortoise barrier to prevent trapping).	

Table 3
Typical Mine Opening Features with Factors Involved in Determining Mine Safety Installation Techniques.

Typical Site Feature	Wildlife Use	Other Considerations	Safety Installation Technique (see appendix A and table 2 for photographs of these techniques)
Shaft opening with sloping and unstable slopes	Bats	None	Bat gate or culvert with bat gate
Unstable timbers in opening, adit	No	Historical features	Vertical gate
Ladder leading into shaft, collapsing edges	No	Historical features	Horizontal gate
Shaft	Bat and barn owl use	None	Fence with owl perches
Adit	Desert tortoise and bat use	None	Bat gate with tortoise entrance
Adit (20 feet) with portal	Bats	Historic features with collapsing portal timbers	Repair/stabilize timbers & portal. May use culvert gate held in place with foam.
Adit (200 feet) stable portal	Bat maternity colony & bighorn sheep use	Historic feature. Known public use.	Install bat gate 10 feet in from the portal.
Shaft 50 feet, deep collapsing	None	No timbers. Eroded to 20 feet wide.	Foam plug and backfill.
Open stope 80 feet by 10 feet, depth unknown.	Many bats	Near road	Install bat compatible grate over steel framework
Decline (with timbers)	Unknown	Historic, considerable public use	Stabilize timbers and install bat gate inside
Open trench with decline 30 feet down.	No	Historic, near road	Install expanded metal mesh on steel frame in the trench and over deep area.
Deep shaft with drifts at various levels.	Unknown	Historic water at 350 feet, opening in waste pile	Bat cupola on concrete footing
Decline 75 feet deep	Bobcat and pack rats, no bats	Historic, stable portal	Exclude bobcat and pack rats, install steel grate

Note: This table represents some, but not all possible combinations for closing a mine opening

Table 4
Abandoned Mine Lands Safety Installation Techniques and Impact Intensities for Each Impact Topic.

Safety Installation Technique [1]	Public Health and Safety	Visitor Experience [2]	Special - Status Species	Wildlife	Wilderness
Fencing	Long-term, Beneficial	Long-term, minor and adverse	Long-term negligible [3] adverse to long-term and beneficial	Long-term negligible to minor and adverse	Short- and long-term, minor and adverse
Bat gates, grates, cupolas, and nets	Long-term, Beneficial	Long-term, minor and adverse	Long-term negligible [3] to minor and adverse as well as long-term beneficial	Short- and long-term negligible to minor and adverse	Short- and long-term, minor and adverse
Polyurethane foam with backfill [1]	Long-term, Beneficial	Long-term, minor and adverse	Long-term negligible [3] to minor and adverse	Long-term negligible and adverse	Short- and long-term, minor and adverse
Backfill	Long-term, Beneficial	Long-term, minor and adverse	Short-term negligible [3] adverse	Short-term, negligible and adverse	Short- and long-term, minor and adverse
Combined methods	Long-term, Beneficial	Long-term, minor and adverse	Varies by opening	Varies by opening	Short- and long-term, minor and adverse

Note: Additional details are provided in the respective environmental consequences sections.
(1) Only used at locations where bat, owl, or other wildlife uses of mine openings do not occur.
(2) Adverse effect on visitors who place a high value on visiting mine sites. Beneficial effect associated with improved safety at closed mine sites. Intensity (negligible, minor, moderate, major) is not applied to beneficial effects.
(3) Equivalent to "may affect, but not likely to adversely affect" under Endangered Species Act Section 7 terms.

Table 5
Comparison of the Alternatives.

Impact Topic	Alternative A: No Action	Alternative B: Abandoned Mine Lands Safety Installations
Public health and safety	Long-term, moderate, adverse effects would remain because many mine openings would continue to pose risks to visitors and park staff. Effects would be negligible for visitors engaging in activities other than visiting abandoned mines. Cumulative effects would be long-term, minor, and adverse	The abandoned mine lands safety installations would reduce risk and provide long-term benefits to health and safety. Cumulative effects would be long-term and beneficial
Visitor experience	The effects of this alternative would be negligible. Cumulative effects would be long-term and beneficial.	Effects would be negligible for visitors who engage in other activities away from mine sites. Limits on the ability to access some features at mine sites could have long-term, minor, adverse impacts for visitors who value this access. Beneficial impacts would result from expanded interpretation. Cumulative effects would be long-term and beneficial.
Special status species	Effects to bat species would be negligible. Tortoises would benefit from ongoing access to habitat created by mines, but mortality from falling into shafts would continue, which would be a long-term, minor, adverse impact at the population level. This would result in a "may affect, but not likely to adversely affect" determination under the Endangered Species Act section 7. Cumulative effects would be long-term and beneficial.	Both beneficial and adverse long-term impacts would occur on bats and tortoises, but all impact intensities would be negligible to minor. This would result in a "may affect, but not likely to adversely affect" determination under the Endangered Species Act section 7 for the desert tortoise. Cumulative effects would be long-term and beneficial.
Wildlife	Wildlife would continue to have access to mines they currently use and effects on wildlife species would be negligible. Long-term cumulative impacts predominantly would be beneficial.	Effects on wildlife would be beneficial or adverse, depending on site characteristics, the wildlife species, and the safety installation techniques employed. The intensity of adverse impacts would be negligible or minor. Long-term cumulative impacts predominantly would be beneficial.
Wilderness	Long-term, beneficial effects on wilderness would occur because wilderness resources, values, and characteristics would prevail. Hazards related to mine openings in wilderness have the potential to have long-term, minor adverse effects on wilderness visitors. These hazards are described in detail in Health and Safety. Cumulative effects would be long-term and beneficial.	Adverse effects on wilderness would be short-term and minor because disturbance associated with vehicles and equipment used in constructing safety installations would end quickly and would be mitigated. Long-term adverse impacts would also be minor because of the installations would be a permanent fixture in wilderness. Cumulative effects would be long-term and beneficial.
Meets purpose and need	No, alternative A would not meet the purpose and need because the public and staff would continue to face safety risks at mine openings.	Yes, alternative B would meet the purpose and need because the closure of mine openings would eliminate the safety risks to visitors and staff at mine openings.

Note: Additional details are provided in the respective environmental consequences sections.

AFFECTED ENVIRONMENT / ENVIRONMENTAL CONSEQUENCES

This section describes the characteristics of the affected environment that could be impacted by the proposed mine safety installations, and the estimated environmental effects of the installations. This analysis is presented for each of the impact topics listed in Table 1.

The affected environment discussion is followed by Environmental Consequences, or the impact assessment. The assessment is limited to key aspects of existing conditions that relate to potential adverse effects or conditions that are of potential concern. In addition, only those aspects of the existing conditions that relate directly to the impact conclusion or form the basis for the impact conclusion are described.

A variety of different types of mine safety installation techniques would be applied to abandoned mine land sites in Death Valley, depending on individual mine features. Because there are thousands of sites in the park, this environmental assessment provides a programmatic assessment of potential environmental effects based on typical safety installation techniques that would be applied to sites with different combinations of features (for example, adits with and without bats, vertical shafts with and without bats, and so forth, presented in Table 3).

METHODS

The methods used to assess impacts of the mine safety installation techniques include:

- Impact intensity thresholds for each impact topic were defined and include negligible, minor, moderate, and major adverse impact definitions as well as a beneficial impact definition and terms of duration. Impact threshold definitions are provided for each of the five impact topics at the start of their respective Environmental Consequences section.

- Each alternative was evaluated for each impact topic using the threshold definitions to determine the intensity of effect. In the case of the multiple mine safety installation techniques associated with alternative B, the individual installation techniques were evaluated. As a result, the determinations of effect for alternative B sometimes resulted in a range of effects for the same impact topic, as the impacts of one technique may differ from another. Only adverse impacts were assigned an intensity modifier; beneficial effects are characterized only as resulting in a positive impact.

- Table 4 presented a summary of the range of impact intensities associated with each safety installation technique for each impact topic. Detailed analyses are presented in the Environmental Consequences section for each impact topic. Table 5 summarized and compared the impacts of the alternatives, as well as noting how well each alternative met the project purpose and need.

- Impact analyses are programmatic in that they assess the impacts associated with “scenarios” that illustrate the range of safety installation approaches that would typically be used.

- When a combination of safety installation techniques are used that produce a range of impact intensities (for example, negligible to minor impact), the most severe (or highest) impact intensity is used for descriptive and evaluation purposes. This ensures a conservative evaluation.

CUMULATIVE IMPACT ANALYSIS METHOD

The environmental assessment also includes an assessment of cumulative impacts. The Council on Environmental Quality (1978) regulations for implementing the National Environmental Policy Act requires assessment of cumulative effects in the decision-making process for federal projects. Cumulative effects are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 *Code of Federal Regulations* 1508.7). Cumulative effects are considered for both the no action and the preferred action alternatives, and are presented at the end of each impact topic discussion analysis.

Cumulative effects were determined by qualitatively estimating the effects of the alternatives with other past, present, and reasonably foreseeable future actions relevant to mine safety installations in Death Valley National Park. The following is a summary of past, present, and reasonably foreseeable actions taking place in Death Valley National Park that would have a relationship to the proposed mine safety installations. The cumulative impact analyses in the environmental consequences section refer to the plans and projects described below as contributors to cumulative effects.

Wilderness and Backcountry Management Plan

Death Valley National Park is in the early stages of developing a Wilderness and Backcountry Management Plan. The plan will address all wilderness and backcountry lands in the park except for the Saline Valley hot springs area. The plan will not address any developed areas or visitor attractions than can be reached directly from paved roads or short, graded gravel roads (such as Mosaic Canyon). Some of the many topics that the plan will address include: camping, campfires, backcountry and unpaved road use, backcountry cabins, and removal of installations in wilderness. It will likely be several years before this plan is complete.

Over 91% of Death Valley National Park (approximately 3.1 million acres) is designated wilderness. The National Park Service manages wilderness areas with the maximum statutory protection allowed – to preserve their wilderness character, and to gather information on their use and enjoyment as wilderness. Because of the general prohibition of mechanized or motorized equipment in wilderness, a minimum requirements decision guide analysis would be required for alternatives requiring such equipment or transport. Some of the proposed mine safety installations could occur in or adjacent to wilderness areas. Backcountry roads provide access to mines in wilderness areas. Equipment needed to close mine openings would be brought to the site on these roads, adding to the effects of existing visitors in wilderness areas, or in areas bordering wilderness areas. In addition, helicopters would be used occasionally to close sites in roadless areas with difficult access.

Other Abandoned Mine Lands Safety Installations

Safety installation have already been installed or are in the process of being installed at several mine openings in Death Valley National Park, including mine openings in the following areas: Skidoo Mine District, Eureka Mine, Titus Canyon and Leadfield, Gower Gulch/20 Mule Team, the Gem Mine, Greenwater Valley, and the Keane Wonder Mine complex. Installations include bat gates, cupolas, mesh nets, and fencing exclosures.

RESOURCE IMPAIRMENT

In addition to determining the environmental consequences of the no action and preferred alternatives, *Management Policies 2006* (National Park Service 2006) and Director's Order #12 and Handbook (National Park Service 2001) require analysis of potential effects to determine if actions would impair resources in the park.

An impact to any park resource or value may, but does not necessarily, constitute impairment. An impact would more likely constitute impairment where it affects a resource or value whose conservation is:

- Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park, or
- Key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or
- Identified as a goal in the park's general management plan or other relevant National Park Service planning documents as being of significance.

An impact would be less likely to constitute an impairment if it is an unavoidable result of an action necessary to preserve or restore the integrity of park resources or values and it cannot be further mitigated (National Park Service 2006).

The potential for impairment was estimated by qualitatively applying the three criteria listed above as required by National Park Service guidelines and policies (National Park Service 2001; National Park Service 2006). Professional judgment and available information on the baseline conditions and features of the alternatives were relied on to determine whether there would be resource impairment to the parks cultural or natural resources. Public health and safety and visitor experience are not considered park resources and are therefore not analyzed for impairment.

UNACCEPTABLE IMPACTS

The impact threshold at which impairment occurs is not always readily apparent. Therefore, the National Park Service applies a standard that offers greater assurance that impairment would not occur. The National Park Service does this by avoiding impacts that it determines to be unacceptable. These are impacts that fall short of impairment, but are still not acceptable in a particular park's environment. Unlike impairment analysis, unacceptable impact determinations are made for all impact topics. For the purposes of these policies, unacceptable impacts are impacts that, individually or cumulatively, would:

- Be inconsistent with a park's purposes or values; or
- Impede the attainment of a park's desired future conditions for natural and cultural resources as identified through the park's planning process; or
- Create an unsafe or unhealthful environment for visitors or employees; or
- Diminish opportunities for current or future generations to enjoy, learn about, or be inspired by park resources or values; or
- Unreasonably interfere with park programs or activities; or

- An appropriate use; or

- The atmosphere of peace and tranquility, or the natural soundscape maintained in wilderness and natural, historic, or commemorative locations in the park; or

- National Park Service concessioner or contractor operations or services.

PUBLIC HEALTH AND SAFETY

AFFECTED ENVIRONMENT

Death Valley National Park is responsible for maintaining safe conditions that protect the health and safety of employees and the public in the park. Statutory and regulatory provisions applicable to units of the National Park Service require the park to not only provide safe facilities, utilities, and grounds in the park but also promote safety in park programs and project operations (National Park Service Management Policies Section 8.2.5). Under the establishment of the National Park Service Geologic Resources Division Abandoned Mine Land program in 1984, the National Park Service is conducting a comprehensive inventory of all Abandoned Mine Land sites in the park to serve as the basis for future planning and reclamation program implementation. The program goals include elimination of physical safety hazards and hazardous materials; mitigation of adverse environmental impacts to park resources; protection of important wildlife habitat such as bat habitat; and preservation of historic and cultural resources. Additionally, the Office of Inspector General Audit Report on Abandoned Mine Lands in the Department of Interior (2008) identified the need to address abandoned mine openings and associated risks to visitors in the National Park Service.

Mine hazards identified by the National Park Service (National Park Service 2007) and present at mine openings in the park include the following:

- **Vertical Mine Openings** – The mines of the Death Valley Multi-mine complex have a multitude of open vertical mine openings. Falling down vertical openings is the most common cause of death and injury in abandoned mines. Loose debris, hidden edges, and false floors can hide vertical openings.

- **Deadly Gases and Oxygen Deficiency** - Lethal concentrations of methane, carbon monoxide, carbon dioxide, and hydrogen sulfide can accumulate in underground passages. Pockets of still air with little or no oxygen can be encountered. Some mines in Death Valley also used mercury, which may persist in tailings at the mine.

- **Cave-Ins** - Mines can cave in at any time. The effects of blasting and weathering destabilize once-competent bedrock through time.

- **Unsafe Structures** - Support timbers, ladders, cabins, pump jacks, tanks, and other related structures may seem safe but can easily crumble under a person's weight.

- **Unstable Explosives** - Unused or misfired explosives are deadly. Because old explosives become unstable, minimal vibrations from a touch or footfall can trigger an explosion.

- **Water Hazards** - Many abandoned mines become flooded. Shallow water can conceal sharp objects, drop-offs, and other hazards.

- **Designed for the Short-Term** - Mines were constructed and maintained to be safe only while they were in operation. When the miners departed, they left vertical openings unco-

vered and removed the water pumping and ventilation systems. Support structures, timbers, and ore pillars were removed or left to rot.

- **Rescues** - Mine rescues are extremely hazardous. Mine rescue teams, despite their extensive training, are at risk every time they enter an abandoned mine. The tragic and unfortunate reality is that most mine rescues turn into body recoveries.

There are six mine districts in Death Valley that are addressed in this document: Skidoo Mine District, Eureka Mine, Titus Canyon and Leadfield, Gower Gulch/20 Mule Team, the Gem Mine, and Greenwater Valley. All these districts are currently open to the public and the above health and safety issues are present in each district. Additionally, at the Skidoo Mine District, the large processing mill used cyanide, which may have resulted in remnant contamination at the site; however, cyanide degrades rapidly in the environment and it is unlikely there are any remnant cyanide concentrations at Skidoo. Mine openings outside these districts may also require safety installations to protect public safety.

ENVIRONMENTAL CONSEQUENCES

Impact Criteria and Thresholds

The following definitions of impact intensity are used in the analysis of effects on public health and safety:

Negligible: Public health and safety would not be affected or the effects would be at low levels of detection and would not have an appreciable effect on public health or safety.

Minor: The effect would be detectable, but would not have an appreciable effect on public health and safety. If mitigation were needed, it would be relatively simple and likely successful.

Moderate: The effect would be readily apparent and would result in substantial, noticeable effects on public health and safety in the park on a local scale for typical visitor activities (including the ability to participate in auto-touring, sightseeing, nature study, hiking, driving on unpaved roads, camping, and visiting ruins and historic sites). Changes in rates of accidents or injuries could be measured. Mitigation measures would probably be necessary and would likely be successful.

Major: The effects would be readily apparent and would result in substantial, noticeable effects on public health and safety in the park and in the county around the park. Effects could lead to changes in the rate of mortality. Extensive mitigation measures would be needed, and their success would not be assured.

Beneficial Effects: Beneficial effects would reduce the potential for accidents and limit hazard exposure.

Short-Term: Occurs only during project implementation.

Long-Term: Persists beyond the period of the project implementation.

Impacts of Alternative A: No Action

Under the no action alternative, unclosed mine openings would continue to create dangerous safety hazards because visitors would continue to have the opportunity to enter the mines. Visitors to these mines would continue to encounter open vertical shafts, crumbling adits and por-

tals, and similar highly dangerous conditions. Mines with already closed openings would reduce the potential for accidents. Safety hazards for visitors to the park would continue because the remaining mines would not have openings closed. Safety conditions for visitors engaging in activities other than visiting abandoned mines would also likely continue to be similar to existing conditions. Although the likelihood of a mine opening-related accident may be relatively low and is restricted primarily to those visitors who enter mine openings, the consequences of such accidents pose a high risk from a health and safety perspective because of the magnitude of danger at mine openings, the remote location of most mine openings, and the risks associated with rescue. As a result, the no action alternative would have a long-term, moderate adverse effect on visitor health and safety.

Cumulative Effects. The past, present, and reasonably foreseeable future actions, including the Wilderness and Backcountry Management Plan and other mine safety installations at other abandoned mine lands as identified in the section titled "Cumulative Impact Analysis Methods," would generally have beneficial effects on public health and safety.

The Wilderness and Backcountry Management Plan would benefit public health and safety as a result of better coordination with and awareness of wilderness users. Ranger staff would be better able to respond to safety issues under the completed plan. The other mine safety installation activities implemented in the past and expected to continue under the no action alternative would have beneficial effects on health and safety because risks throughout the park would be reduced. The incremental impacts of the no action alternative, which would be long-term, moderate, and adverse, would combine with the beneficial effects of other plans and projects to result in a minor, adverse, long-term, cumulative effect.

Conclusions. Safety conditions for visitors engaging in activities other than visiting abandoned mines would continue to be similar to existing conditions. Because the number of people visiting abandoned mines is expected to rise, however, the no action alternative would have a long-term, moderate, adverse effect on visitor safety because many mine openings would continue to pose risks to the public and park staff. When the beneficial impacts of the other plans and actions are combined with the long-term, moderate, adverse impacts under this alternative, there would be long-term, minor, adverse cumulative impacts, and the no action alternative would contribute a slight adverse increment to cumulative impacts on public health and safety.

Impacts of Alternative B: Abandoned Mine Land Safety Installations

Under alternative B, mine openings in the park would be closed using a variety of techniques tailored to each mine site, based on the previously described considerations.

Details of the individual techniques are presented in the alternatives section. The following is a summary of the estimated effects of each of the treatments on public health and safety.

Fencing. Temporary fencing could be employed at mine openings scheduled to be closed by one of the other available safety installation techniques. Temporary fencing would protect visitors from entering dangerous openings such as shafts or adits. The fences would be removed once the final safety installation technique is applied. Temporary fencing would represent a short-term, beneficial effect because safety risks would be reduced.

Permanent fences would result in permanent closure of mine openings, which would reduce risks to human health and safety over the long term by preventing visitors from entering dangerous openings; this represents a beneficial effect. To reduce the visibility of permanent fences in designated wilderness areas, mitigation measures would be employed at the site. These measures would include, but not be limited to, keeping the fenced area as small as possible; con-

structing the fence so its height is as low as practicable to effectively discourage visitor access; and using colored or weathered fence materials to reduce fence visibility.

Other Safety Installation Techniques. Other mine safety installation techniques would include bat gates, nets, screens, grates, and cupolas, polyurethane foam closures covered with backfill, backfill alone, and combination applications of the above methods to treat complex situations. All these measures would have similar beneficial effects on public health and safety in that they would result in permanent closure of mine openings and would reduce risks to human health and safety. Because all the other techniques accomplish the same basic objective they would all have similar effects on public health and safety. Safety installations would result in:

- Holes filled or barricaded that visitors might otherwise stumble into;
- Decayed timbers that are barricaded or replaced that might otherwise lead to visitor accidents if the timbers failed while visitors climbed on them; and
- Openings that are barricaded to prevent visitors from entering tunnels that might contain toxic gases or other hazards.

Alternative B would have a long-term, beneficial effect on public health and safety by reducing risks to human health and safety caused by the continued existence of openings in abandoned mines.

Cumulative Effects. Details about the other plans and projects contributing to cumulative effects were presented in the section titled "Cumulative Impact Analysis Method." In particular, previous mine safety installations would directly reduce the safety risks at mine openings. Under this alternative, the mine safety installations would benefit public health and safety because risks posed at mine openings would be decreased. The additional improvements to public health and safety associated with alternative B would add to safety in the park and would grow over time as more mine openings were closed. The effects of alternative B, combined with the effects of other plans and actions, would have a beneficial cumulative effect because the actions collectively would either directly or indirectly enhance public health and safety.

Conclusions. Alternative B would have a long-term, beneficial effect on public health and safety by reducing risks to public health and safety caused by the continued existence of open abandoned mine openings. The effects of this alternative, combined with the effects of other plans and actions, would have a beneficial cumulative effect because all of the actions would either directly or indirectly enhance public health and safety. Alternative B would add a measureable, beneficial increment to cumulative impacts.

VISITOR USE AND EXPERIENCE

AFFECTED ENVIRONMENT

Death Valley National Park is a landscape of extremes. Home to the country's lowest elevation and highest recorded temperature, the park's diverse history and extreme conditions have drawn people from all over the world. Additionally, its proximity to major population centers such as Los Angeles and Las Vegas and access from major interstate highways, gives residents the opportunity for relatively easy access to many parts of the desert. Early miners and ranchers developed a network of roads that today offer experienced visitors a chance to drive into many remote locations where informal camping has traditionally occurred. The many roadless areas offer hikers the experience to explore the vast desert solitude. The park contains numerous cultural sites, including abandoned mining districts and historical ruins that many people come to

visit. Most visitors, however, come to the desert simply to see the outstanding scenery of this diverse landscape (National Park Service 2002).

The many historic mining districts and ghost towns in the park display a variety of mining techniques and structures for visitors to see. Most of these sites are day-use areas, open to the public, and accessible on high-clearance and four-wheel drive backcountry roads throughout the park, though some are only accessible by foot.

The Skidoo Mine District, Eureka Mine, Titus Canyon and Leadfield, Gower Gulch/20 Mule Team area, Gem Mine, and Greenwater Valley are all open to the public. Many of these abandoned mine sites have interpretive signs for visitors. The signs are intended to provide the basis for communicating the purpose and significance of the park and provide the elements the park believes each visitor should develop an understanding of during their visit (National Park Service 2002).

ENVIRONMENTAL CONSEQUENCES

Impact Criteria and Thresholds

The following definitions of impact intensity are used in the analysis of effects on visitor use and experience:

Negligible: Changes in visitor use and the quality or nature of the visitor experience would not occur as a result of mine safety installations. There would be no noticeable changes in visitor experience or in defined indicators of visitor satisfaction or behavior, which include the ability to participate in sightseeing, nature study, hiking, and visiting historic sites.

Minor: Changes in visitor experience as a result of mine safety installations would be small but detectable. Visitors could be aware of the effects, but the changes would not appreciably alter important characteristics of the visitor experience or visitor satisfaction.

Moderate: Some changes in important characteristics (including the ability to participate sightseeing, nature study, hiking, and visiting historic sites) of the experience in the area as a result of mine safety installations would be readily apparent or the number of visitors engaging in an activity or in the use of areas would be substantially altered in comparison to historical trends. Most visitors would be aware of changes, and many would be able to express an opinion regarding the difference. Visitor satisfaction would change as a result of the mine safety installations.

Major: Changes in multiple important characteristics (including the ability to view and explore abandoned mine sites, the ability to participate sightseeing, nature study, hiking, and visiting historic sites) of the desired experience as a result of mine safety installations would be readily apparent. Most visitors would be aware of the effects and would likely express a strong opinion about the changes. Participation in desired experiences or in visitation would be considerably altered and would result in substantial changes in the defined indicators of visitor satisfaction or behavior.

Beneficial Effects: Mine safety installations would have demonstrable beneficial effects on visitor experience, including, but not limited to a better understanding of the historical conditions and demands associated with mining, the ability to view and explore abandoned mine sites, to view and experience scenery and wildlife, and to experience solitude or quiet.

Short-Term: Effects of mine safety installations on visitor enjoyment and recreational or educational opportunities would be associated with the construction period of the safety installation. The effect would end concurrent with or shortly after the end of the construction period.

Long-Term: Effects of mine safety installations on visitor enjoyment and recreational or educational opportunities would be evident for a period exceeding five years.

Impacts of Alternative A: No Action

Under the no action alternative, visitors would continue to visit and explore both open and closed abandoned mine land sites at Death Valley and would have the ability to continue to participate in the most common types of visitor activities, including auto-touring/sightseeing, nature study/hiking, vehicle use on unpaved roads, camping, and visiting ruins/historic sites. New mine safety installations would be implemented as funding became available, but the timing and number of openings to be closed during a specific period would vary according to funding amounts and details and existing mine safety installations would be retained. Additional safety installations would occur as part of other safety installation programs as funding became available. The number of visitors interested in seeing open mine sites would also increase as interest in these park features increases (Office of the Inspector General 2008).

Effects from allowing continued access to open abandoned mine sites would depend on the individual values and perceptions visitors place on visiting open mine sites versus other types of experience available in the park. Under the no action alternative, mine openings already closed could continue to be viewed negatively by visitors who place a high value on entering and investigating unclosed mines without supervision. Visitors who participate in activities such as auto-touring, sightseeing, nature study, hiking, vehicle use on unpaved roads, camping, and visiting non-mining related ruins or historic sites would not be affected by the no action alternative. Other visitors who are concerned with safety may choose not to go near the abandoned mines because of the safety risk. Therefore, visitor satisfaction would not change over the long term, resulting in a negligible effect on visitor experience.

Cumulative Effects. Details about the other plans and projects contributing to cumulative effects were presented in the section titled "Cumulative Impact Analysis Method." The effects of past, present, and reasonably foreseeable actions would benefit visitor experience. Despite the component of the visitor community that would continue to experience a long-term, minor, adverse impact from past safety installations, the previous mine safety installations would have beneficial effects on visitor experience by allowing access to most of the mines in the park with improved safety at particularly dangerous mines. Simultaneously, visitors would continue to have the opportunity to learn about the historical and natural resources present at those sites with interpretive features. Visitors who do not wish to enter mines would experience no cumulative effects; however, this alternative would result in beneficial effects for visitors who want to enter mines because they would continue to enjoy the sense of unrestricted mine access and exploration. The effects of the no action alternative would contribute little to the impacts of other plans and actions such that the cumulative effect on visitor experience would be beneficial.

Conclusions. The visitor experience would continue to be similar to existing conditions, and the impact of this alternative would be negligible. The combined effects of past, present, and reasonably foreseeable actions with the incremental contribution of the no action alternative would result in a cumulative benefit to visitor experience.

Impacts of Alternative B: Abandoned Mine Lands Safety Installations

Closing abandoned mine openings using the safety installation techniques described in the alternatives section would have a variety of effects on prospective future visitor use and experience, depending on the preferences and interests of the specific visitors. Under alternative B, most of mine and mining camp features would be left in place for prospective future visitors to enjoy and experience. There would be little or no change in the ability of potential future visitors to participate in these experiences or in auto-touring/sightseeing, nature study/hiking, vehicle use on unpaved roads, camping, and visiting non-mining related ruins/historic sites.

All safety installation techniques would effectively prevent potential future visitors from entering dangerous mine openings in different ways. Each type of safety installation technique would have the following additional types of effects on potential future visitor experience:

Fencing. The physical appearance of a mine site would be changed by the presence of permanent or temporary fences, as compared with the original mine openings. Potential future visitors could still view mine openings from a relatively close distance and would be able to view into the depths of a mine opening, but would not be able to physically enter the feature. This would allow visitors to safely view and appreciate the historical values of the mines and surrounding mine camp or other historical features from a reasonably close distance. To minimize adverse visual effects on potential future visitor experience caused by fencing, naturally colored fences and fence supports would be used that match the desert soil and vegetation, based on the location of the fence in relation to individual site features. Temporary and permanent fencing would have long-term, minor, adverse effects on visitor experience in the case of visitors who desire to enter a mine because access to a mine would be prevented.

Bat gates, cupolas, and nets. These structures would change the visitor experience by partially blocking or limiting the view into the opening. In situations where external frames or other mine structures are still intact, and where other features make it suitable, sunken bat gates would be employed. Visitors would still be able to view into the interior areas of the mine features by looking through the 5.75- to 6-inch openings in the bat gates, nets, or cupolas, however. These mine features are highly visible to the public. Even with safety installation structures in place, the visitor could still see and appreciate the miners' construction activities and techniques for mining minerals in the desert environment. In addition to these types of effects, interpretive exhibits associated with the bat gates, nets, and cupolas would allow visitors to learn about bat conservation, bat ecology, and management of bats. If a bat gate or cupola featured access openings for owls or desert tortoises, visitors would be provided with an opportunity to learn about and appreciate other protected species and wildlife that utilize mine openings and caves.

Bat gates, nets, and cupolas would have long-term, minor, adverse effects on visitor experience because these treatments would prevent visitors from having full access to the sites.

Polyurethane foam with backfill. Foam plugs would typically be used in areas where there is a high safety risk. Application of this safety installation technique would result in complete filling of a mine opening with foam and adding several feet of dirt / rock fill. This would permanently eliminate the visitor's view into the affected mine opening. However, the visitor would still be able to appreciate the nature and character of the camp or mine site conditions. Polyurethane foam/backfill would have long-term, minor, adverse effects on visitor experience because these treatments would prevent some visitors from having full access to the sites.

Backfill. The effect of backfill of a mine safety installation on visitor experience would be similar to those resulting from foam plugs. Backfill would have long-term, minor, adverse effects on visitor experience because these treatments would prevent some visitors from having full access to the sites. Visitors may not be aware of the effects of the backfill treatments, and the changes

would not appreciably alter important characteristics of the visitor experience or visitor satisfaction. Backfill would have long-term, minor, adverse effects on visitor experience because these treatments would prevent some visitors from having full access to the sites.

Horizontal and vertical grates. Grates and screens have a smaller mesh diameter than bat gates or cupolas and would further restrict the visitor's view into a mine opening. The effects on visitor experience would otherwise be similar to those resulting from bat gates. Horizontal and vertical grates would have long-term, minor, adverse effects on visitor experience because these treatments would prevent some visitors from having full access to the sites.

Combined safety installation methods. These types of treatments would include using two or more methods to close a mine opening. Combined techniques could include, for example, using a horizontal gate with a bat cupola to close an open mine shaft while allowing bat use of the mine opening. Similar to bat gates and cupolas, combined safety installation structures are highly visible to the public and obviously modern changes that affect the physical appearance of the mining site. However, because historical structures would be retained rather than removed or hidden, the visitor would still experience the nature and character of the mine camp or mine site conditions. Similar to bat gates and cupolas, the visitor would still see and appreciate the miner's construction activities and techniques, even though some mine site features would be affected by safety installation activities. Combined methods to treat complex situations would have long-term, minor, adverse effects on visitor experience because the combined treatments would prevent some visitors from having full access to the sites. Benefits to visitor experience would accrue because interpretive exhibits associated with alternative B would enhance a visitor's experience.

Cumulative Effects. Details about the other plans and projects contributing to cumulative effects were presented in the section titled "Cumulative Impact Analysis Method." Mine-oriented park visitors would experience minor, long-term, adverse effects as a result of other abandoned mine land safety installations because mine access opportunities could be lost, similar to lost opportunities on other federal lands such as those managed by the Bureau of Land Management.

Implementing additional mine opening safety installations under alternative B would result in a long-term, beneficial effect on visitor experience for visitors who want additional mines to be closed for increased safety and to experience enhanced interpretive exhibits around mines. Increased mine safety installations could result in a long-term, minor adverse effect on visitor experience for visitors who do not want additional mines closed. The proposed interpretive actions that would accompany closures would mitigate these adverse effects to some degree, although the long-term adverse effect would remain minor, especially for visitors used to having uncontrolled access to mines. The minor, long-term, adverse to beneficial range of impacts on visitor experience under alternative B would incrementally contribute to the effects of other plans and projects so that the cumulative impact would be long-term and beneficial because of the improved safety and interpretation at the park's abandoned mine lands sites.

Conclusions. Alternative B would restrict visitors from entering dangerous mine openings, but would provide most visitors with a continued opportunity to enjoy other existing types of park activities. Because most of the existing historical features at mine sites and camps would remain unchanged, the impact of mine safety installation activities would result in a long-term, minor, adverse impact on visitor experience. Potential adverse effects would be mitigated by the National Park Service by implementation of interpretive programs at sites that are safe and that have a wide variety of historical mine features and different types of mine safety installation techniques. The public would, therefore, have an opportunity to learn more about the history of these sites as well as the benefits provided by the safety installation treatments to special-status species and other forms of wildlife. In addition, some mine safety installations would also be

designed to minimize the visual effects of safety installation structures by using techniques such as sunken bat gates or grates. Some beneficial effects would occur as a result of increased interpretive exhibits at closed mine sites.

The minor adverse to beneficial range of impacts on visitor experience under alternative B would incrementally contribute to the effects of other plans and projects so that the cumulative impact would be long-term and beneficial because of increased visitor safety and interpretation opportunities.

SPECIAL-STATUS SPECIES

AFFECTED ENVIRONMENT

Six species occurring in the main portion of Death Valley National Park are listed as endangered, threatened, or a candidate for listing by the U. S. Fish and Wildlife Service: the desert tortoise (*Gopherus agassizii*); the southwestern willow flycatcher (*Empidonax traillii extimus*); the least Bell's vireo (*Vireo bellii pusillus*); two plant species, Eureka Dunes evening primrose (*Oenothera californica ssp. eurekensis*) and Eureka Valley dunegrass (*Swallenia alexandrae*); and one invertebrate, the Nevares Spring naucorid bug (*Ambrysus funebris*) (National Park Service 2008). Only the desert tortoise would be potentially affected by the proposed action.

Least Bell's vireo had historical habitat in Death Valley National Park, and although there was speculation it was extirpated from the park (U.S. Fish and Wildlife Service 1998), vireos have been sighted in the park that could not be identified to subspecies. Thus, the National Park Service considers all historical least Bell's vireo habitat to be currently viable when evaluating effects to special-status species. However, because least Bell's vireo preferred habitat is primarily riparian with dense shrub cover, and the mine safety installation activities would not adversely affect riparian habitats or any individual birds, least Bell's vireo would not be affected by the proposed action and is not considered further in this assessment. The southwestern willow flycatcher is present in densely vegetated riparian habitats in Death Valley National Park. However, the proposed mine safety installation actions would not affect any such riparian habitats; thus, the flycatcher would not be affected by the proposed action and is not considered further in this assessment. Neither of the plant species or the invertebrate would be likely to be found in areas where closing abandoned mine openings would affect them because conditions at the mine openings do not represent suitable habitats for the species. There is no designated critical habitat for any species in Death Valley National Park; thus, the proposed action would not result in adverse modification of any designated critical habitat.

The threatened desert tortoise inhabits a variety of habitats from sandy flats to rocky foothills, including alluvial fans, washes, and canyons where suitable soil for den construction might be found (U.S. Fish and Wildlife Service 2008) and is known to occur in the southern and eastern portions of the park. The desert tortoise may use horizontal mine openings such as adits, tunnels, less-steep declines, and inclines, as refuges as they spend a large portion of the year underground to avoid extreme temperatures and, for younger tortoises, to avoid a variety of predators, such as coyotes, foxes, raptors, and ravens (Bureau of Land Management 1996). The range of the desert tortoise includes the Mojave and Sonoran deserts in southern California, Arizona, southern Nevada, the southwestern tip of Utah, and Sonora and northern Sinaloa, Mexico (U.S. Fish and Wildlife Service 1994). Tortoises generally are active during spring, early summer, and autumn when annual plants are most common and daily temperatures are tolerable. Additional activity occasionally occurs during warm weather in winter months and after summer rainstorms (Bureau of Land Management 1996).

To avoid repetition between the Special-Status Species and Wildlife sections of this document, the discussion of bats is included in this section and includes both state-listed (three species) and non-listed species (nine species) (table 6). No federally listed species of bats occur in the park. All bats with mine habitats in the park utilize similar habitats and would be affected similarly by any proposed mine safety installations. A recent survey indicates that seven of these bat species are present at sites throughout the park. The remaining five species may potentially occur in abandoned underground mines, although there are currently no known occurrences. Of these 12 bat species, seven are listed as Species of Special Concern by the California Department of Fish and Game.

Mines are important to bats because their natural roosting habitats have been greatly reduced in the past 100 years because of loss of traditional roost trees, "human disturbance of caves, cave commercialization, deforestation, and urban and agricultural developments (Tuttle and Taylor 1998). Bats have also lost traditional roosts in old tree hollows because of logging activities (Tuttle and Taylor 1998). Once a mine has been used by bats, they may also be so "instinctually committed to certain sites that they cannot change roosts in the time permitted by current rates of mine closure" (Tuttle and Taylor 1998).

It was recently shown that an increasing number of bat populations demonstrated a preference for using abandoned mine workings as roosting sites (National Park Service no date). Abandoned mines in the park and elsewhere provide habitat less likely to be disturbed by light, noise, and predators and as such, provide usable roosting areas for bat populations otherwise displaced from their natural sites. Mines are also used for social encounters and eating of prey. Although some sites tend to be used as either hibernacula or maternity roosts, bats can use some mines, especially more complex mines, as both. Bats also use mines for hibernation, and loss of any single one of these types of sites can affect a multi-state region, eliminating many summer colonies of bats over thousands of square miles (Tuttle and Taylor 1998).

Five additional species are listed as threatened or endangered by the State of California Department of Fish and Game and could potentially occur at abandoned mine sites. These species include Swainson's hawk (*Buteo swainsoni*), the peregrine falcon (*Falco peregrinus*), the bank swallow (*Riparia riparia*), the western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), and the Mojave ground squirrel (*Spermophilus mohavensis*). There are two confirmed sightings of the Mojave ground squirrel in the park, and these occurred in the northern portion of Panamint Valley and at Lee Flat at the western edge of the park. Although these species may forage near the abandoned mine openings, none have habitat in the mines or mine openings and, therefore, would not be affected by the proposed mine safety installations and will not be evaluated in the impact analyses evaluating special-status species.

Table 6 identified the special-status and bat species with the potential to be affected at abandoned mine land sites in Death Valley National Park.

Table 6
Special-Status Species (and Non-Listed Bat Species) with Potential to Be Affected at Abandoned Mine Land Sites in Death Valley National Park.

Common Name	Scientific Name	Status[1]	Designated Critical Habitat
Reptiles			
Desert tortoise	*Gopherus agassizii*	FT, ST	None in Death Valley National Park

Table 6
Special-Status Species (and Non-Listed Bat Species) with Potential to Be Affected at Abandoned Mine Land Sites in Death Valley National Park.

Common Name	Scientific Name	Status[1]	Designated Critical Habitat
Mammals			
California leaf-nosed bat	*Macrotus californicus*	SSC	None in Death Valley National Park
Yuma myotis	*Myotis yumanensi*	None	None in Death Valley National Park
Long-eared myotis	*Myotis evotis*	None	None in Death Valley National Park
Fringed myotis	*Myotis thysanodes*	None	None in Death Valley National Park

Table 6
Special-Status Species (and Non-Listed Bat Species) with Potential to be Affected at Abandoned Mine Land Sites in Death Valley National Park (continued).

Common Name	Scientific Name	Status[1]	Designated Critical Habitat
Long-legged myotis	*Myotis volans*	None	None in Death Valley National Park
California myotis	*Myotis californicus*	None	None in Death Valley National Park
Small-footed myotis	*Myotis ciliolabrum*	None	None in Death Valley National Park
Western parastrelle (canyon bat)	*Parastrellus hesperus*	None	None in Death Valley National Park
Big brown bat	*Eptesicus fuscus*	None	None in Death Valley National Park
Townsend's big-eared bat	*Corynorhinus townsendii*	SSC	None in Death Valley National Park
Pallid bat	*Antrozous pallidus*	SSC	None in Death Valley National Park
Mexican free-tailed bat	*Tadarida brasiliensis*	None	None in Death Valley National Park

Key to status: FE = federally endangered, FT = federally threatened, SE = state (California) endangered, ST = state (California) threatened, SSC = California Species of Special Concern.

(1)California Department of Fish and Game. 2009. Special Animals List. Available on the Internet at http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/spanimals.pdf. July.

ENVIRONMENTAL CONSEQUENCES

Impact Criteria and Thresholds

The following definitions of impact intensity are used in the analysis of effects on special-status species:

Negligible: State- and federally listed species and their habitats would not be affected or the effects to an individual of a listed species or its designated critical habitat would be at or below the level of detection. Effects would not be measurable or of perceptible consequence to the protected individual or its population. Negligible effect would equate with a "no effect" determination in Endangered Species Act Section 7 terms.

Minor: The action would result in detectable effects to an individual (or individuals) of a state- or federally listed species or its critical habitat, but the effects would not result in population-level changes with measurable long-term effects on species, habitats, or natural processes sustaining them. Minor effects would equate with a "may affect/not likely to adversely affect" determination in Endangered Species Act Section 7 terms.

Moderate: An action would result in detectable effects on individuals or population of a state- or federally listed species, its critical habitat, or the natural processes sustaining them. Key ecosystem processes may experience disruptions that may result in population or habitat condition fluctuations that would be outside the range of natural variation. Moderate level adverse effects would equate with a "may affect / likely to adversely affect / adversely modify critical habitat" determination in Endangered Species Act Section 7 terms.

Major: Individuals or the population of a state- or federally listed species, its critical habitat, or the natural processes sustaining them would be measurably affected. Key ecosystem processes might be permanently altered resulting in long-term changes in population numbers and permanently modifying critical habitat. Major adverse effects would equate with a "is likely to jeopardize the continued existence of a listed species / adversely modify critical habitat" determination in Endangered Species Act Section 7 terms.

Beneficial Effects: Beneficial effects are likely to protect or restore the abundance and distribution of special-status species. This could occur through increased survival, reproduction, or availability of habitat or required resources.

Duration: Not applicable to federally listed species (desert tortoise) because of definitions in accordance with Endangered Species Act section 7 terminology.

Short-term (State Species and bats regardless of status): Effects last less than one year

Long-term (State Species and bats regardless of status): Effects last longer than one year

Impacts of Alternative A: No Action

There are few undisturbed natural resources that support special-status species or their habitats at the existing mine openings. There is little or no existing vegetation at the openings and soil at the mine opening sites has been disturbed, denuded of vegetation, and compacted by decades of use and visitation. Surface water is typically absent, or if present, usually only intermittent immediately following rains.

As a result of the conditions, the use of mine openings by special-status species is limited primarily to the desert tortoise and several bat species. The desert tortoise may use abandoned underground mines as refuges or dens and the mines provide bats with valuable habitat.

Under the no action alternative, desert tortoises would continue to have access to adits and tunnels that are not closed permanently, which would have a beneficial effect. However, mortality would continue from tortoises falling into shafts or other vertical depressions, and some would experience periodic disturbances from human intrusions. These would result in long-term, minor, adverse impacts. This equates to a "may affect, but not likely to adversely affect" determination in Endangered Species Act section 7 terms.

The impact of this alternative on bat populations would be negligible but adverse, because of the potential for human presence and associated disturbance in open mines that are used by bats for roosting, hibernation, or as maternity colonies. Although human presence could occur during sensitive portions of the life cycle, the density and frequency of human use in the park would continue to be low, in comparison to the large number of bat colony locations.

Cumulative Effects. Details about the other plans and projects contributing to cumulative effects were presented in the section titled "Cumulative Impact Analysis Method." Other plans and actions would continue to affect tortoises and bats, as management actions could potentially, although infrequently, disturb special-status species. Such disturbances would have short-term, negligible adverse effects because activities would be limited in area affected, occur infrequently, and measures to protect the species would be used to avoid or minimize adverse effects. These effects would be characterized as "may affect, not likely to adversely affect" determinations for the desert tortoise in Endangered Species Act Section 7 terms.

Effects of the no action alternative on the federally listed desert tortoise and state species of special concern bat species would be long-term and range from negligible adverse impacts to beneficial. The beneficial effect would be the result of installations accomplished under other programs that would protect habitat from human intrusion. New mine safety installations would be implemented as funding became available, and the timing and number of openings to be closed during a specific period would vary according to funding. These closures would be accomplished under a continuation of current management and would not be part of the proposed action. The incremental contribution of the no action alternative to cumulative effects would be the negligible, short-term adverse effects associated with infrequent human disturbance in open mines that serve as habitat for special-status species. Cumulatively, the no action alternative and the other plans and projects would have a few long-term, negligible and adverse effects, with most cumulative effects resulting in long-term benefits.

Conclusions. Under the no action alternative, bats would continue to have access to mines they currently inhabit, and effects to bat species would be negligible. Tortoises would benefit from ongoing access to habitat created by mines, but mortality from falling into shafts would continue, which would be a long-term, minor, adverse impact. This equates to a "may affect, but not likely to adversely affect" determination in Endangered Species Act section 7 terms.

Impacts of Alternative B: Abandoned Mine Lands Safety Installations

Additional mine safety installations would be implemented under alternative B. Details of the individual safety installation techniques are presented in the "Alternatives" section.

Mitigation measures have been developed to minimize and offset mine safety installation impacts to the tortoise and bats and are included in the evaluations of each of the treatment categories below.

Fencing. Fencing, whether temporary or permanent, is not so much a closure as it is a barrier to easy access to mine openings for future park visitors and staff. As such, constraints on access for special-status species associated with fencing, particularly for bats and birds, are not as rigorous as safety installation methods that physically block or close an opening. Generally, fencing would be installed to restrict future human access to potentially dangerous vertical mine shafts, particularly those with steeply sloped entries that can act as funnels to draw unsuspecting visitors over the brink or to make visitors aware that a potentially dangerous situation is present. Fences would have a negligible effect on bat or bird access to openings.

Temporary fencing is usually barbed wire, and would still allow tortoise access to a shaft where they may become trapped. Permanent fencing (or in some cases narrow mesh temporary fencing) does not allow tortoises to pass through because it is constructed with a finer mesh that extends from the ground surface to a height of approximately 3 to 8 feet. This would prevent tortoises from falling into a shaft. In contrast, permanent fencing of other mine features such as adits or tunnels would prevent tortoises from accessing and utilizing these features. Surveys would be conducted by the National Park Service prior to fence installation to assure that tortoises are not utilizing these features.

In some cases, fence installation would have beneficial effects on the desert tortoise by preventing entrapment in vertical shafts, for example. However, in contrast, some fences would prevent the tortoise from accessing habitat in the mine. The effects of all these actions on the desert tortoise would range from negligible to beneficial. This would equate with a "may affect/not likely to adversely affect" determination according to Endangered Species Act Section 7 terms.

Bat gates, grates, cupolas, and nets. Bat gates, grates, cupolas, and cable mesh nets can all be used to close mine openings where bat use is documented or suspected. Potential adverse impacts would be related to the safety installation technique selected, the number of bats using a particular opening, and whether the mine use is for roosting, hibernating, or maternity purposes. The type of structure selected would also determine the effects on bats. For example, grates and screens are fine mesh structures that do not allow passage of bats. The decision to install a grate or screen is based on numerous factors, including use of the mine by bats. Before these types of structures were installed, the National Park Service would do a bat survey to determine if they use a particular mine. Grates and screens could be combined with other safety installation techniques (for example, a grate atop a cupola) that allow bat access in mines where bat use is substantial. This would minimize the possibility that the structures would adversely affect bats. Each mine opening to be closed would be evaluated using the bat inventory data collected by the National Park Service, and the most appropriate safety installation method would be selected to ensure this use is sustained with minimal adverse effects. A similar evaluation would be completed to evaluate desert tortoise use at a mine.

As a result of selecting a safety installation method that would least affect bat and desert tortoise access, the impact to bats from the installation of bat gates, nets, grates, and cupolas would be negligible to minor and long-term. Cable mesh net designs were found to potentially interrupt or restrict bat flight in and out of the mine opening. Safety installation techniques developed more recently incorporate knowledge gained from monitoring the use of nets and have reduced these issues (Burghardt 2000).

There could be short-term impacts (likely measured in terms of a few weeks at most) associated with construction of the safety installation. Impacts associated with construction of the safety installation would be offset by timing the actions to take place outside reproductive or sensitive portions of species' life cycles. The exclusion of any future human presence in the mines following mine safety installations would have a beneficial effect as disturbance to roosting or hibernating bats would be eliminated. Other special-status species, if present or suspect would also be considered when deciding which installation method to use. However, where data indicate po-

tential presence of a particular species, the safety installation method selected could incorporate mitigation measures to accommodate the species and adverse impacts would be long-term, negligible to minor. This would equate with a "may affect/not likely to adversely affect" determination according to Endangered Species Act Section 7 terms.

Polyurethane foam. The use of polyurethane foam to close mine openings would be selected for locations where no wildlife use—bat, tortoise, or other—was documented or expected. The use of foam would completely close the opening and typically would be accompanied by earthen backfill to protect the foam from ultraviolet degradation and disguise its unnatural appearance, thus blocking access to a mine opening completely. The foam is entirely confined to the opening and installation is usually completed in one day.

The decision to use foam would generally be based on the absence of special-status species. At these sites, impacts to these species, although long-term, would be negligible to minor, because no regular use by these species would be affected.

In some cases, foam may be used where a limited number of special-status species are present because of overriding safety or engineering factors. Complete closure of some mine openings (that is, without continued special-status species access) would occur only after the species were evacuated. The foam would be installed as soon as possible after bats and/or tortoises were flushed from the mine to eliminate their potential to return and be trapped. The application of a foam plug closure would be determined by the availability of a nearby mine opening where displaced species could relocate. Similarly, all openings to be sealed with foam would be surveyed for any other wildlife and any species found would be removed prior to closing the opening. Installations would be implemented outside the breeding seasons of special-status species with potential to use the mine opening as another measure to ensure that no reproducing individuals were harmed. Early fall installations would best ensure a window for bats to find alternate hibernacula and give females a full spring season to locate alternate maternity sites (Sherwin *et al.* 2009). As a result, the adverse, long-term effects of foam plugging on bats and other species would range from negligible to minor. This would equate with a "may affect/not likely to adversely affect" determination according to Endangered Species Act section 7 terms.

Backfill. Backfilling mine openings would be primarily used to treat shallow prospects or mine openings, and to restore pre-construction contours around structures that have been stabilized. Such mine features and openings offer little suitable habitat for bats, though shallow prospects may provide suitable habitat for desert tortoise to construct dens. In the event of uncertainty of desert tortoise use of a mine opening, the use of backfilling that would completely eliminate access would only be implemented following steps to ensure the absence of tortoises at the time of construction. As illustrated in photographs in appendix A, post-construction backfilled areas are indistinguishable from the surrounding terrain and pre-construction conditions. Backfill would only be used on openings where there are no known tortoises; therefore, it would have negligible effects on the present tortoise population in the park. This would equate with a "may affect/not likely to adversely affect" determination according to Endangered Species Act Section 7 terms. There could be some negligible and temporary disturbance associated with the presence of safety installation crews and equipment. Backfilling sites with no known bat presence would have a negligible effect on bats.

Combined safety installation methods. Complex mine openings, including stopes, glory holes, and especially large openings, may require that combinations of safety installation techniques be employed to adequately restrict future human access, close mine openings, and protect safety. Combined treatments can be evaluated by assessing the effects of each of the individual treatments and assigning an intensity of effect based on the method that has the greatest impact. This ensures a conservative evaluation.

For example, if horizontal netting, in combination with a vertical bat gate, were installed over an extensive, angled, open stope, the adverse effect of the combined treatment methods on bats would be forecast as minor because of the combined impacts from the gate and netting. The highest level intensity to special-status species from any of the impacts of the previously described techniques would be minor adverse. Tortoise barriers to prevent mine access would be included at those features where tortoises could be trapped, such as shafts and inclines/declines. This would equate with a "may affect/not likely to adversely affect" determination according to Endangered Species Act section 7 terms.

Cumulative Effects. Details about the other plans and projects contributing to cumulative effects were presented in the section titled "Cumulative Impact Analysis Method." The effects of the other plans and actions on special-status species would primarily be associated with infrequent human presence and disturbance associated with management actions. These potential adverse effects would be negligible and short-term.

Alternative B would incrementally add both negligible adverse and beneficial effects to these other actions. The negligible short-term adverse effects would be similar to the disturbance effects of the other plans and actions. However, the incremental beneficial contribution of alternative B from protecting roosting, hibernating, and maternity sites from disturbance and keeping humans out would outweigh the adverse impacts because mine safety installations with accommodations to allow continued access for special-status species would eliminate human disturbance from mine habitats. These cumulative effects on the desert tortoise would be characterized as "may affect, not likely to adversely affect" determinations under section 7 of the Endangered Species Act. Cumulative effects of alternative B on the desert tortoise and state-listed bat species would range from long-term, negligible, and adverse, to beneficial, with most cumulative effects long-term and beneficial.

Conclusions. The effects to special-status species from using the proposed safety installation techniques can vary depending on the opening characteristics, the species using the opening, and the method(s) selected to close or restrict visitor access to the opening. The effects of additional mine safety installations on desert tortoises and bats would range from long-term, negligible to minor and adverse to long-term and beneficial. In Endangered Species Act Section 7 terms, the project may affect, but is not likely to adversely affect, the desert tortoise. A high priority would be given to determining the appropriate installation method in respect to special-status species, along with the primary goal of protecting public health and safety. These priorities and the evaluation process for deciding the best technique to employ at a site are described in the alternatives section of the environmental assessment. The mitigation measures incorporated in the mine safety installations for the desert tortoise and bats would ensure that these species would continue to have access to those mines.

While other plans and projects may affect the desert tortoise to various degrees, the mine safety installations would contribute negligible adverse cumulative effects on desert tortoises and bats. Regardless of the potential impacts to desert tortoises from other plans and projects, the cumulative impacts on the desert tortoise and state species of special concern bat species would not be greater than negligible and adverse, and there is a likely potential that the cumulative impact would be beneficial because in the long-term, mine habitats used by wildlife would no longer be subject to human intrusion.

Because of the potential impacts to federally listed species described above, the National Park Service has also prepared a biological assessment for consultation with the U.S. Fish and Wildlife Service under Section 7 of the Endangered Species Act separate from this environmental assessment.

WILDLIFE

AFFECTED ENVIRONMENT

Death Valley National Park has a surprising variety of wildlife species, but densities or total numbers may be low because of limited resources and habitat. The types of wildlife found in Death Valley vary with elevation and with plant communities. Large browsing mammals are found in mid to upper elevations where vegetation is more abundant (bighorn sheep, deer, elk), while the lower sparsely vegetated elevations support reptiles, small mammals and coyotes. Comprehensive and complete inventories for the fauna of Death Valley National Park have not been completed. At the present time, there are nine species of fish, four species of amphibians, 36 species of reptiles, and 57 species of mammals known to occur in the park (National Park Service 2008). Seven species of spring snails, all of them endemic to the region or park, are also present (Hershler 1989). Several groups of these species, particularly fish, birds, and amphibians, are limited in distribution to areas with permanent or ephemeral water, while other taxa, such as bighorn sheep and some bat species, depend on water sources on an intermittent but routine basis.

Death Valley and other valleys in the park lie on long north-south axes east of the Sierra Nevada range and migratory birds are often channeled through the park. Three hundred ninety-nine species of birds are known to occur in the park. Because the results of impact analyses for all bat species, with or without special-status, would be identical, all bat species are evaluated under the special-status species impact topic.

There are few undisturbed natural resources that support wildlife or wildlife habitat at the abandoned mine openings in Death Valley National Park. There is little or no existing vegetation at the openings and soil at the mine opening sites has been disturbed, denuded of vegetation, and compacted by decades of use and visitation. Surface water is typically absent, although water is sometimes found in abandoned mine shafts where the water table is high or intermittent immediately following rains. Typical habitat conditions are illustrated in the photographs in appendix A. As a result of these relatively sparse resource conditions typical near mines, the use of mine openings by wildlife is limited primarily to a small number of individual birds, owls, small mammals and reptiles, bighorn sheep, and ring-tailed cats (Brown 2009). The open mines provide these wildlife species with shelter from the extreme desert conditions present at the park.

ENVIRONMENTAL CONSEQUENCES

Impact Criteria and Thresholds

The following definitions of impact intensity are used in the analysis of effects on wildlife:

Negligible: Mine safety installations would have no perceptible or measurable impacts on wildlife species, including their habitats, the natural processes sustaining them, or the assemblage of species comprising their community.

Minor: Mine safety installations would have perceptible or measurable impacts to wildlife species, including their habitats, the natural processes sustaining them, or the assemblage of species comprising their community. However, the effects on wildlife, would not have any substantial change on populations, communities, or ecosystems and would be in the range of natural variation.

Moderate: Mine safety installations would have a perceptible or measurable impact to wildlife species, including their habitats, the natural processes sustaining them, or the assemblage of species comprising their community. The effects could result in changes in survival rates of individuals, changes in quality or quantity of habitat, and/or relocation of individuals from or to other habitats. Although there could be a temporary effect on populations, communities, or ecosystems, the changes would be in the range of natural variation.

Major: Mine safety installations would have a substantial permanent impact on wildlife species, including their habitats, the natural processes sustaining them, or the assemblage of species comprising their community. The effects could threaten the continued existence of a species' population. Changes in quality or quantity of habitat and/or relocation of individuals from or to other habitats could be irreversible. There could be a substantial effect on populations, communities, or ecosystems and the changes would be outside the range of natural variation.

Beneficial Effects: Mine safety installations would have positive effects on wildlife and wildlife habitat, including, but not limited to, metrics such as survival, reproduction rates, recruitment rates, or improvements in habitat or community conditions.

Short-Term: The changes would have effects lasting less than one year or one breeding cycle.

Long-Term: The changes would have effects lasting longer than one year or one breeding cycle.

Impacts of Alternative A: No Action

New mine safety installations would be implemented as funding becomes available and existing closed mines would remain closed. These closures would be accomplished under a continuation of current management and would not be part of the proposed action. Wildlife would continue to have access to those mines they currently use, thus, the adverse effects to wildlife species would be negligible. Previously implemented mine opening safety installations in the park provide limited habitat for any wildlife species and the negligible adverse effects associated with these previous installations would continue in the long term.

Cumulative Effects. Details about the other plans and projects contributing to cumulative effects were presented in the section titled "Cumulative Impact Analysis Method." The Wilderness and Backcountry Management Plan would contribute to beneficial effects by improving habitat and NPS management capabilities. There would be infrequent disturbance of wildlife associated with some of the other plans and actions, resulting in negligible, short-term, adverse impacts, but overall, the effects of other plans and actions would have a beneficial effect because the actions would either directly or indirectly enhance resources and habitat for wildlife. There would be negligible, long-term, adverse impacts on wildlife associated with alternative A, and as a result, there would be a small incremental contribution to cumulative effects under alternative A. The cumulative impacts on wildlife of other plans and actions combined with the effects of alternative A would range from short-term, negligible, and adverse to beneficial, with the effects predominantly beneficial.

Conclusions. Wildlife would continue to have access to those mines they currently use and effects on wildlife species would be negligible. The cumulative impacts on wildlife from other plans and actions combined with the effects of the no action alternative would range from short-term, negligible and adverse to beneficial, with the cumulative effects predominantly beneficial.

Impacts of Alternative B: Abandoned Mine Lands Safety Installations

Details of the individual mine safety installation techniques are presented in the "Alternatives" section. The effects of these techniques on wildlife and their habitats are summarized in Table 3.

For those wildlife species that use the adits, shafts, tunnels, and other mine features, safety installations can potentially restrict access to this habitat element. The species affected include owls, mammals such as coyote, ring-tailed cat, bobcat, and mice, and reptiles (primarily snakes and lizards). Mitigation measures have been developed to minimize and offset mine closure impacts to wildlife and are included in the evaluations of each of the treatment categories below. Wildlife would be excluded from mines prior to closures.

Fencing. Fencing, whether temporary or permanent, is not so much a closure as it is a barrier to easy access to mine openings by humans. As such, the constraints on wildlife access associated with fencing, particularly for birds, are not as rigorous as safety installation methods that physically block or close an opening. Generally, fencing would be installed to restrict future human and wildlife access to potentially dangerous vertical mine openings.

However, owls prefer to enter mine openings from a low approach angle (National Park Service no date) and barriers such as an 8-foot-high chain-link fence present obstacles to owl access. This can be addressed by installing horizontal perches at the highest fence level as well as lower perches near the shaft opening. This allows the owl to maintain a low approach angle to the shaft, land on the high perch, and move to the lower perch prior to entering the shaft.

Other fencing, permanent or temporary, could have variable lower heights (that is, not extend to the ground, but be low enough to restrict human entry) or it could involve simple wire strands, which would allow wildlife to go under or through the fence. Based on fence design mitigation measures that accommodate wildlife access and the small areas typically involved, the impacts of fencing mine openings on wildlife would be negligible to minor.

Gates, grates, cupolas, and nets. Gates, grates, cupolas, and cable mesh nets can all be used to close mine openings where bat use is documented or suspected. The potential adverse impact would be related to the safety installation technique selected and the wildlife species using a particular opening. The impacts of mine safety installation methods on wildlife have been researched extensively (Vories and Throgmorton 2002; Sherwin *et al*. 2009) and the installation methods selected would rely on the findings of this research to minimize the effects of mine safety installations on wildlife. Each mine opening to be closed would be evaluated using the inventory data collected by the National Park Service and the most appropriate installation method would be selected to ensure that existing wildlife use would be sustained with minimal adverse effects.

There could be short-term impacts (likely measured in terms of a few weeks at most) associated with construction of the safety installations. Impacts associated with construction of the installation would be offset by timing the actions to take place outside reproductive or sensitive portions of species' life cycles. The exclusion of any future human presence in the mines following closure of openings would have beneficial effect on wildlife by eliminating human disturbance in and around the mine opening, while still allowing wildlife access. Where data indicate potential presence of a particular species, the safety installation method selected could incorporate mitigation measures to accommodate the species and adverse impacts would be long-term, and negligible to minor.

Polyurethane foam. The use of polyurethane foam to close mine openings would be selected for locations where no wildlife use was documented or expected. The use of foam would completely close the opening and typically would be accompanied by earthen backfill to protect the

foam from ultraviolet degradation and disguise its unnatural appearance, thus blocking access to a mine opening completely. The foam would be confined to the opening and installation is usually completed in one day.

The decision to use foam would generally be based on the absence of wildlife; thus, the impacts on wildlife, although long-term, would be negligible, because no regular species' use would be affected. The only potential impact would be the loss of the mine opening as a future potential habitat. In the event of uncertainty of wildlife use of a mine opening, the use of any safety installation technique that would completely eliminate access would only be implemented following steps to ensure the absence of wildlife at the time of construction. Safety installation actions would be taken following exclusion actions to evacuate any wildlife (Sherwin *et al*. 2009). Installations would be implemented outside the breeding seasons of wildlife with potential to use the mine opening as another measure to ensure that no reproducing individuals were harmed. Implementing these approaches would result in long-term negligible effects on wildlife.

Backfill. Backfilling mine openings would be primarily used to treat shallow prospects or mine openings, and to restore pre-construction contours around structures that have been stabilized. Such mine features and openings offer little suitable habitat for wildlife. Post-construction backfilled areas are indistinguishable from the surrounding terrain and pre-construction conditions. As a result, backfilling would have negligible short-term adverse effects on wildlife. There could also be some negligible and temporary disturbance associated with the presence of safety installation crews and equipment.

Combined safety installation methods. Complex mine openings, including stopes, glory holes, and especially large openings, may require that combinations of safety installation techniques be employed to adequately restrict future human access, close mine openings, and improve visitor safety (see appendix A). Combined treatments can be evaluated by assessing the effects of each of the individual treatments and assigning an intensity of effect based on the method that has the greatest impact. This would ensure a conservative evaluation.

Cumulative Effects. The cumulative effects of alternative B would be similar to those described for the no action alternative, but the combined effects of other plans and projects and alternative B would be incrementally greater both for the negligible to minor, short-term, adverse impacts and for the long-term, beneficial effects. The difference would be the result of the increased contribution of alternative B to the range of impacts (that is, negligible to minor adverse to beneficial). The intensity of effects would not be so substantially different that any threshold definitions would be exceeded because the mitigation measures to accommodate wildlife use of mine openings would offset disturbances associated with management activities. The cumulative effect of alternative B on wildlife would range from short-term, negligible to minor, and adverse, to predominantly long-term and beneficial.

Conclusions. The effects to wildlife of using the proposed safety installation techniques can be either beneficial or adverse depending on the opening characteristics, the wildlife species using the opening, and the method(s) selected to close the opening. Considerations for protecting exiting and potential future wildlife uses of an opening are given one of the highest priorities in deciding the most appropriate installation approach, thus resulting in minimal adverse effects. The long-term cumulative effect of alternative B on wildlife would predominantly be beneficial.

WILDERNESS

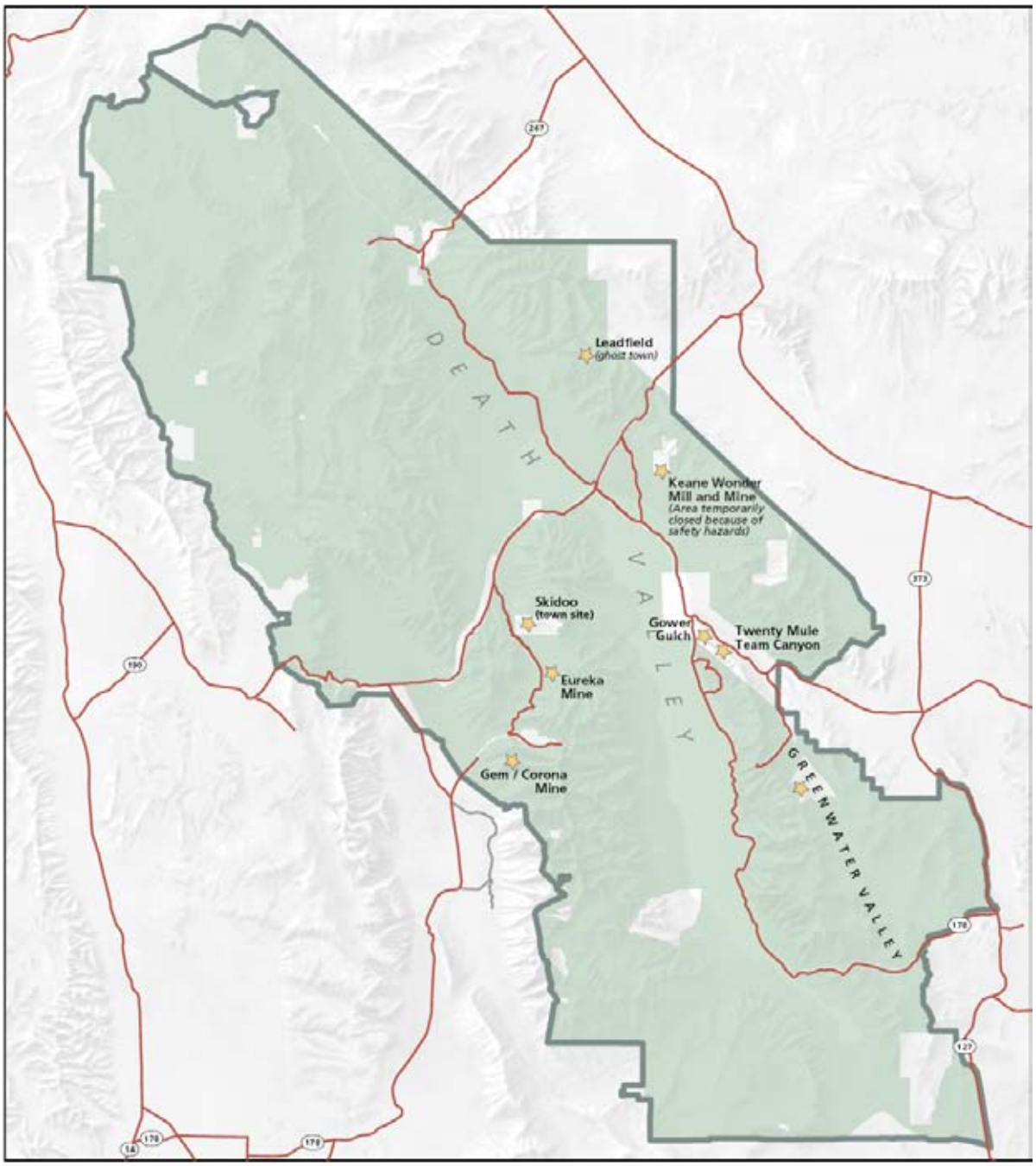
AFFECTED ENVIRONMENT

Wilderness character is described as the unique combination of a) natural environments that are relatively free from modern human manipulation and impacts; b) opportunities for personal experiences in environments that are relatively free from the encumbrances and signs of modern society; and c) symbolic meanings of humility, restraint, and interdependence in how individuals and society view their relationship to nature (Landres *et al.* 2008). Using the Definition of Wilderness, Section 2(c) from the Wilderness Act of 1964, four qualities of wilderness make the idealized description of wilderness character relevant, tangible, and practical to the management and stewardship of all wildernesses—regardless of size, location, or other unique place-specific attributes (Landres *et al.* 2008). These four qualities include:

- **Untrammeled:** Wilderness is essentially unhindered and free from modern human control or manipulation.
- **Natural:** Wilderness ecological systems are substantially free from the effects of modern civilization.
- **Undeveloped:** Wilderness retains its primeval character and influence, and is essentially without permanent improvement or modern human occupation.
- **Solitude or Primitive and Unconfined Recreation:** Wilderness provides outstanding opportunities for solitude or primitive and unconfined recreation (Landres *et al.* 2008).

Over 91% of Death Valley National Park (approximately 3.1 million acres) is designated wilderness (figure 3). In remote wilderness areas, onsite information/interpretive services are minimal to non-existent and are restricted to threshold access points with few exceptions (National Park Service 2002). The wilderness in Death Valley is broken up by roads into 35 smaller wilderness sections, but taken as a whole it is the largest named wilderness area in the lower 48 states. Most the wilderness lands in Death Valley are in California, although some are located in Nevada (National Park Service 2009a).

The Wilderness Act (section 4(c)) specifically prohibits the following activities in wilderness: commercial enterprises, permanent roads, temporary roads, use of motor vehicles, use of motorized equipment, use of motorboats, landing of aircraft, mechanical transportation, and structures or installations. Wilderness designation does not mean that existing structures in those areas have to be removed. If consideration is given to removing them, that action is covered by the same policies, regulations, and guidelines, and is subject to the same review and compliance procedures as are historical structures in non-wilderness areas (National Park Service 2002). Closing of abandoned mines would fall under the exemption to the special provision entitled "To meet the minimum requirements for the administration or area, including emergencies involving health/safety of persons. Because of the general prohibition of mechanized or motorized equipment in wilderness, a minimum requirements decision guide, commonly referred to as a "minimum tool analysis" would, however, be required for alternatives requiring such equipment or transport (National Park Service 2000). Appendix C includes a sample minimum requirements decision guide with analyses that would be employed for the proposed safety installations at abandoned mine openings in Death Valley. An actual minimum requirements decision guide would be prepared for mine safety installations proposed in a designated wilderness. The minimum requirement decision guides may be completed for individual mine opening or a suite of actions and locations.



North

Paved road

Authorized park boundary

Designated wilderness

Mine area

0 5 10 20 30 40

Miles

Figure 3. Designated Wilderness Map

Death Valley National Park

United States Department of the Interior / National Park Service

January 2010

Some proposed mine safety installations may fall in wilderness boundaries and others may be associated with backcountry roads and surrounded by or adjacent to wilderness. Mine openings that occur in wilderness in Death Valley include, but are not limited to the following mine sites: portions of the Eureka Mine, most of the Titus Canyon/Leadfield site, and on designated wilderness lands in Greenwater Valley.

ENVIRONMENTAL CONSEQUENCES

Impact Criteria and Thresholds

The following definitions of impact intensity are used in the analysis of effects on wilderness:

Negligible: Impacts of the action would have no discernible effect on wilderness character. Wilderness would remain untrammeled and free from modern human control or manipulation, natural conditions would prevail, wilderness would remain undeveloped and retain its primeval character and influence, and wilderness would provide outstanding opportunities for solitude or primitive conditions. The forces of nature would primarily affect the wilderness zone.

Minor: Mine safety installations would have perceptible or measurable impacts resulting in small changes to existing natural conditions. There would be a small effect on the untrammeled and undeveloped qualities of wilderness character, including a small presence of modern human activity and manipulation in limited areas of the wilderness zone. The wilderness area would generally appear to have been affected primarily by the forces of nature. Opportunities for solitude and primitive conditions would change slightly, but most of the zone would continue to provide opportunities for solitude or primitive conditions.

Moderate: Mine safety installations would have perceptible or measurable impacts resulting in intermediate changes to existing natural conditions. There would be an intermediate effect on the untrammeled and undeveloped qualities of wilderness character, including an intermediate presence of modern human activity and manipulation in limited areas of the wilderness zone. It would be apparent that natural conditions in the zone are affected by the action. Opportunities for solitude and primitive conditions would change substantially, but over a relatively small area and most of the zone would continue to provide opportunities for solitude or primitive conditions most of the time.

Major: Mine safety installations would have substantial permanent impacts resulting in large changes to existing natural conditions. There would be a large effect on the untrammeled and undeveloped qualities of wilderness character, including a large presence of modern human activity and manipulation throughout a large portion of the wilderness zone. It would be apparent that natural conditions are substantially affected by the action. Opportunities for solitude and primitive conditions would change by a large amount, affecting the ability of a large portion of the zone to have a wilderness character for much of the time.

Beneficial Effects: Actions taken would enhance opportunities for solitude and primitive recreational activities and experiences. Evidence of human activities or remnants of past mining developments may be removed, returning the wilderness zone to a more natural condition.

Short-Term: The changes would have effects lasting less than one year.

Long-Term: The changes would have effects lasting longer than one year.

Impact of Alternative A: No Action

Under the no action alternative, new mine safety installations would only be implemented as part of other safety installation programs as funding becomes available. Existing closed mines would remain closed. The park would continue to manage wilderness according to National Park Service Management Policies (National Park Service 2006), the requirements of the California Desert Protection Act of 1994, and the Wilderness Act of 1964.

Visitors would continue to be allowed access to abandoned mines in and adjacent to wilderness areas.

Under the no action alternative, wilderness would continue to be protected according to current laws, regulations, and management policies described previously. Alternative A would have long-term beneficial effects on wilderness in the park because natural conditions would predominate, minimal human-made noise would occur, the primeval character and influence of wilderness would be only slightly affected, and outstanding opportunities for solitude or a primitive and unconfined type of recreation would prevail.

Risk to human health and safety would be minor because of potential serious injury or death associated with an accident at a mine opening. If a visitor were injured at an abandoned mine feature in or adjacent to wilderness, wilderness character would be adversely affected by the use of mechanized or motorized equipment necessary for the emergency rescue operations. The potential for such an incident would be low. The impact from temporary access to the rescue location would be short-term, minor, and adverse. Emergency rescue activities would still follow minimum impact practices while in the wilderness, such as minimizing the number of vehicles allowed in the wilderness, staying on existing trails or remnant road tracks, minimizing vehicle trips into and out of the site; restricting activities to defined areas around the rescue site, and minimizing vegetation and soil disturbances. Site restoration activities would be completed after the activities were completed.

Cumulative Effects. Details about the other plans and projects contributing to cumulative effects were presented in the section titled "Cumulative Impact Analysis Method." The primary contributor of effects to wilderness would be the Wilderness and Backcountry Management Plan. This plan would result in beneficial effects on wilderness because when successfully implemented, it would support the values and resources that are the basis for wilderness. The long-term, beneficial effects of this alternative on wilderness would incrementally contribute to the beneficial effects of the Wilderness and Backcountry Management Plan, resulting in long-term, beneficial cumulative effects.

Conclusions. The no action alternative would have long-term, beneficial effects on wilderness because wilderness resources, values, and characteristics would prevail. The cumulative impacts, when combined with the effects of the no action alternative on wilderness, would result in long-term, beneficial impacts on wilderness.

Impacts of Alternative B: Abandoned Mine Lands Safety Installations

Under alternative B, mine openings in the park would be closed using a techniques tailored to each mine site, based on the previously described considerations. Based on existing information, the park has estimated there are 6,000 to 10,000 abandoned mine openings present in the park, of which only 3% to 5% have been inventoried. Alternative B would install safety features at an estimated 70 openings located in designated wilderness. As the inventory of mine openings in the park grows, it is expected that the number of safety installations to be implemented in wilderness also would increase.

Existing backcountry roads would provide the primary access to mine opening sites in designated wilderness areas. Some safety installations would be associated with backcountry roads surrounded by or adjacent to wilderness. In some cases, abandoned mine sites would be in the wilderness boundary but may be located close to backcountry roads. In these instances, it may be possible for motorized vehicles to get very close to those sites without actually entering designated wilderness. Limited use of helicopters may occur for sites that are difficult to access and not near backcountry roads. For safety installations at mine opening sites inside wilderness, vehicle and helicopter use would be minimized to the maximum extent feasible and would be guided by the analytical results of completing the minimum requirements decision guide procedure employed by the National Park Service. This procedure is intended to identify the minimum mechanical tools required to accomplish activities in wilderness. Assessment of several alternative approaches are required. Appendix C provides a sample that illustrates the scope and nature of the minimum tool analysis. In practice, the park would complete the analysis before conducting mechanical activities in the wilderness for specific locations. The analysis would be made available to the public on the park's Planning, Environment, and Public Comment website or through other means of distribution.

When their use was necessary and appropriate, vehicle and helicopter activities would follow minimum impact practices in the wilderness, such as minimizing the number of vehicles employed, staying on existing trails or remnant road tracks, minimizing vehicle trips in the site; restricting activities to defined areas around the site; minimizing vegetation and soil disturbances; and using helicopter access as appropriate. Sites would be restored after the activities were completed to remove evidence of human activities as much as practical.

Because of the relatively small size of the areas potentially affected by vehicle and helicopter use; the short time typically spent at the mine opening to install safety features (typically 1 to 5 days); and use of the mitigation measures described above, the adverse impacts on wilderness would be short-term and minor. Should the need arise for an emergency rescue associated with construction of mine safety installations in wilderness areas, there would be short-term, minor adverse effects because of emergency vehicle and rescue crews needed to execute a rescue.

Depending on the site-specific situation, wilderness may or may not be affected by mine safety installation actions. Details of the individual techniques are presented in the alternatives section. The following discussion describes the potential effects of each treatment on wilderness.

Fencing. Temporary fencing could be installed to protect visitors from entering dangerous openings such as shafts or adits. The fences would be removed once the final safety installation techniques were applied. The installation activities and visual presence of temporary fencing would be short-term, minor, adverse effects on the wilderness character at sites.

Permanent fencing would introduce an intrusive visual impact to wilderness sites and would only be used as a last resort in cases where other safety installation techniques would not be effective. Mitigation measures would be used to reduce the visibility of permanent fences. These measures would include, but not be limited to, keeping the fenced area as small as possible, keeping the fence height as low as practicable to effectively discourage visitor access; and using colored or weathered fence materials to reduce visibility. Because of the large size of the Death Valley wilderness and the limited use of permanent fencing, this safety installation structure would have a long-term, minor, adverse effect on the wilderness character of the park.

Other Safety Installation Techniques. Other mine safety installation techniques would include bat gates, nets, screens, grates, and cupolas, polyurethane foam closures covered with backfill, backfill alone, or a combination of these techniques to treat complex situations. All of these measures would permanently close mine openings.

The impacts of other safety installations would not vary substantially between the methods used. They would include localized, short-term, minor, adverse impacts on wilderness character from the use of mechanical tools deemed appropriate by the minimum tool analysis procedures. Mine safety installations in wilderness would avoid the use of mechanical equipment to the maximum extent practicable; minimize or avoid adverse effects to site soils, vegetation, wildlife, and terrain; and minimize or avoid the visual intrusion of safety features into the wilderness landscape. The safety installations at wilderness sites would have long-term, minor, adverse impacts to wilderness character by intruding on the undeveloped quality of the wilderness.

Under this alternative, the potential adverse impacts on wilderness areas would also be managed using the minimum requirements decision guide process illustrated in appendix C. The National Park Service would, therefore, continue to manage wilderness areas with the maximum statutory protection allowed – to preserve their wilderness character and to gather information on their use and enjoyment as wilderness, which includes the general prohibition of mechanized or motorized equipment in wilderness. Because of these actions, the adverse effect of alternative B on wilderness would be short- and long-term, minor and adverse.

Cumulative Impacts. Details about the other plans and projects contributing to cumulative effects were presented in the section titled "Cumulative Impact Analysis Method." The primary plan to have effects on wilderness would be the Wilderness and Backcountry Management Plan, and it effects would be long-term and beneficial. The occasional intrusive effects associated with other plans and actions, including other safety installations on abandoned mine lands, would potentially have short-term, negligible, adverse effects, but in the long-term, wilderness values and resources would benefit from these plans and actions. The effects of alternative B on wilderness, namely short-term, minor and adverse, would have a relatively small incremental effect in combination with the long-term beneficial effects of other plans and actions, resulting in beneficial cumulative effects. As a result, the long-term cumulative effects of alternative B and other plans and actions would be beneficial.

Conclusions. Under alternative B, mine openings would be closed in the park, and some of these would be in or adjacent to wilderness areas. The potential adverse impacts on wilderness would be managed according to the minimum tool analysis procedure employed by Death Valley National Park in these situations. Numerous impact reduction or avoidance techniques would be used in wilderness to avoid and minimize evidence of human activity and presence. Short-term adverse effects on wilderness would be minor because disturbance associated with vehicles (and/or helicopters) and equipment used in construction of the safety installations would be strictly managed. The cumulative effects of alternative B combined with the impacts of the Wilderness and Backcountry Management Plan would be beneficial because the incremental short-term minor effect of alternative B would be negligible compared to the long-term benefits on wilderness from the Wilderness and Backcountry Management Plan. The long-term cumulative effects of alternative B and other plans and actions would be beneficial.

CONCLUSIONS

The impact analysis identifies less than major impacts for all cultural or natural resources and values analyzed in this environmental assessment for both Alternative A: No Action and Alternative B: Abandoned Mine Lands Safety Installations. For the reasons described in the impact analysis, neither alternative would result in impairment of park resources or values.

Because the previously described impacts (1) are consistent with Death Valley's purpose and values, (2) do not prevent the attainment of desired future conditions for natural and cultural resources, (3) do not create an unsafe environment, (4) do not diminish opportunities for future enjoyment of the park, and (5) do not unreasonably interfere with park programs or activities, an appropriate use, or concessioner or contractor operations, there would be no unacceptable impacts on natural or cultural resources and values under either Alternative A: No Action or Alternative B: Abandoned Mine Lands Safety Installations.

CONSULTATION AND COORDINATION

LIST OF PERSONS, ORGANIZATIONS AND AGENCIES CONTACTED

Scoping includes early input from any interested agency or any agency with jurisdiction by law or expertise. The National Park Service consulted with federal and state agencies responsible to protect and manage our natural and cultural resources. Initial responses are summarized below. National Park Service consultation letters and agency responses are included as appendix B of this document. The following agencies and organizations were notified of the proposed project.

Federal Agencies

Department of Agriculture
- U.S. Forest Service, Inyo National Forest
- U.S. Forest Service, San Bernardino National Forest

Department of the Interior
- Bureau of Land Management, California State Office
- Bureau of Land Management, Battle Mountain District
- Bureau of Land Management, Bishop Resource Area
- Bureau of Land Management, Tonopah Resource Area
- Bureau of Land Management, California Desert District
- Bureau of Land Management, Stateline Resources Area
- National Park Service, Mojave National Preserve
- National Park Service, Denver Service Center
- National Park Service, Pacific West Region
- U.S. Fish and Wildlife Service, Ash Meadows National Wildlife Refuge
- U.S. Fish and Wildlife Service, Field Office, Barstow
- U.S. Fish and Wildlife Service, Field Office, Ventura

Federal Interagency Communications Center

Federal Advisory Groups

Death Valley National Park Advisory Commission

State Agencies

California Department of Fish and Game

Native American Tribes

Pahrump Paiute Tribe
Timbisha Shoshone Tribe

Federal Agency Consultation

U.S. Fish and Wildlife Service. In accordance with Section 7 of the Endangered Species Act (16 *United States Code* 1531, et seq.), the National Park Service contacted the U.S. Fish and

Wildlife Service by letter on October 13, 2009 to initiate consultation and request verification of the list of threatened and endangered species in the project area. The consultation letter and the U.S. Fish and Wildlife Service November 23, 2009 response are included in Appendix B.

The National Park Service submitted a biological assessment to the U.S. Fish and Wildlife Service for their review on January 12, 2010 requesting concurrence on the determination of *may affect, not likely to adversely affect* regarding potential impacts to federally listed species that may occur in the impact area of the proposed action. The National Park Service also requested concurrence on the determination that the proposed action would not result in adverse modification of any designated critical habitat, since there is no designated critical habitat for any species within the park. The transmittal letter for the biological assessment is included in Appendix B.

State Agency Consultation

California State Historic Preservation Division. A programmatic agreement with the California State Historic Preservation Division was established defining a program for compliance with Section 106 of the National Historic Places Act and setting forth a streamlined process where agreed-on criteria would be met and procedures would be followed in the installation of physical safety mitigation treatments at abandoned mine land sites. The National Park Service established guidelines, standards, and technical information applicable to the treatment of these physical hazards in ways that would, to the extent possible, minimize the impacts of such treatments on the historic fabric and historic character of non-archeological historic properties at these sites. See Appendix B for a copy of this programmatic agreement.

Tribal Consultation

In accordance with National Historic Preservation Act of 1966, as amended, regarding the programmatic agreement with the California State Historic Preservation Division, the NPS contacted the Timbisha Shoshone and Pahrump Paiute Tribes by letter on June 12, 2009, to initiate consultation and comment on the programmatic agreement and work plan. The consultation letters are included in Appendix B.

SUMMARY OF PUBLIC SCOPING

Staff of the park and resource professionals of the National Park Service Denver Service Center team initiated internal scoping in a project review meeting in September 2009. On October 6-7, 2009, park and Denver Service Center team staff conducted an onsite survey and discussed issues and options.

A scoping notice was sent in late October 2009 in which the National Park Service proposed to complete an environmental assessment to analyze the effects of implementing mine safety installation methods to mitigate visitor and staff safety hazards in Death Valley National Park. The notice was sent to approximately 30 tribal, federal, and state departments and districts including the agencies and organization listed above. The notice also was posted to the park's Planning, Environment, and Public Comment project management database website for public review and comment. The park received one public comment through this database. The commenter requested that the park not close any more roads because they allow visitors to experience the park in an enjoyable and uninhibited manner.

LIST OF RECIPIENTS OF THE DRAFT ENVIRONMENTAL ASSESSMENT

The EA was sent to the following agencies, organizations, and businesses as well as to other entities and individuals that requested a copy.

United States Senators

Barbara Boxer CA

Diane Feinstein CA

Harry Reed NV

John Ensign NV

United States Congressional Representatives

Howard McKeon CA

Dean Heller NV

Federal Departments and Agencies

Department of Agriculture

U.S. Forest Service, Inyo National Forest

U.S. Forest Service, San Bernardino National Forest

Department of the Interior

Bureau of Land Management, California State Office

Bureau of Land Management, Battle Mountain District

Bureau of Land Management, Bishop Resource Area

Bureau of Land Management, Tonopah Resource Area

Bureau of Land Management, California Desert District

Bureau of Land Management, Stateline Resources Area

National Park Service, Mojave National Preserve

National Park Service, Denver Service Center

National Park Service, Pacific West Region

U.S. Fish and Wildlife Service, Ash Meadows National Wildlife Refuge

U.S. Fish and Wildlife Service, Field Office, Barstow

U.S. Fish and Wildlife Service, Field Office, Ventura

Federal Interagency Communications Center

Federal Advisory Groups

Death Valley National Park Advisory Commission

State Agencies

California Department of Fish and Game

California State Clearinghouse

California SHPO

Native American Tribes

Pahrump Paiute Tribe

Timbisha Shoshone Tribe

Organizations/Libraries/Others

Amargosa Valley Library

Pahrump Community Library

Amargosa Conservancy

American Institute of Professional Geologists

Bio-Integral Resource Center

Bishop Branch Library

Bureau of Indian Affairs

California Mining Association

California Native Plant Society

Countdown Engineering

Day Tripping

Death Valley 49ers, INC

Directorate of Public Works

Enviro-Sports

Furnace Creek Inn & Ranch Resort

Gear Grinders Four Wheel Drive Club

High Desert Multiple Use Coalition

Indian Dispute Resolution Services

Inyo County Board of Supervisors

Inyo County Planning Department

Lone Pine Branch Library

Lone Pine Chamber of Commerce

Mountain Light Photography

National Association of Mining Districts

National Biological Survey

Outdoor Link

Outdoor Sportsmans Coalition of California

Rainbow Packers

REI Adventures

Ridgecrest Branch Library

SCHOOL OF LOST BORDERS

SEA & SUMMIT EXPEDITIONS

Sierra Club

SIERRA CLUB OUTINGS

SIERRA INSTITUTE

SUMMIT ADVENTURES

Tahoe Trips and Trails

Tom Gamache Photography

Tour World Inc.

Trust for Public Land

US Army Corps of Engineers

Wilderness Reflections

Wildlands Conservancy

This page is intentionally left blank

LIST OF PREPARERS

National Park Service

Name	Title	Location
Linda Manning	Wildlife Biologist	Death Valley National Park
Ginger Molitor	Project Manager, Environmental Compliance Specialist	Denver Service Center
Margo Muhl Davis	Environmental Compliance/Cultural Resource Specialist	Denver Service Center
Victoria Wilkins	Environmental Compliance Specialist	Death Valley National Park

Parsons

Name	Title	Education	Experience
Don Kellett	Project Scientist	B.S., Wildlife Biology; LEED AP. Task manager.	20 years
Alexa Miles	Senior Scientist	B.A., Environmental Studies and M.S., Landscape Architecture; LEED AP. Responsible for graphics, document preparation, and coordination.	5 years
Aaron Sidder	Environmental Scientist	B.S. Environmental Science. Responsible for document preparation.	2 years
Bruce Snyder	Project Manager	B.S., Biology, and M.S., Wildlife Biology. Responsible for overall project management and technical support in regulatory compliance and site restoration.	40 years

This page is intentionally left blank

REFERENCES

BIBLIOGRAPHY

Brown, Patricia

2009 Email communication between Patricia Brown, Brown-Berry Biological Consulting and Ginger Molitor, National Park Service, Denver Service Center on November 18, 2009 regarding findings from the bat survey completed at Death Valley National Park.

Bureau of Land Management

1996 A*rmy's Land Acquisition Project for the National Training Center (Fort Irwin Expansion) Draft Environmental Impact Statement*. Riverside, CA: Bureau of Land Management.

Burghardt, John E.

1994 Polyurethane foam applications in the closure of abandoned mine openings. National Park Service.

2000 *Bat Compatible Closures of Abandoned Underground Mines in National Park System Units*. Denver, CO: Geological Resources Division, National Park Service. Available on the internet at: http://www.nature.nps.gov/Geology/aml/amlreports/batgate9102003_screen.pdf

California Department of Fish and Game

2009 Special Animals List. Available on the internet at: http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/spanimals.pdf. July.

Council on Environmental Quality, Executive Office of the President

1978 "Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act." *Code of Federal Regulations*, Title 40, Parts 1500-1508.

Executive Office of the President

1996 *Executive Order No. 13007 of May 24, 1996: Indian Sacred Sites*. Available on the internet at: http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=1996_register&docid=fr29my96-149.pdf.

Hershler, R.

1989 "Spring snails (Gastropoda: Hydrobiidae) of Owens and Amargosa River (exclusive of Ash Meadows) drainages, Death Valley System, California-Nevada. *Proc. BioI. Soc. Wash*. 102 (1): 176-248.

Landres, P. M.M.B. Hennessy, K. Schlenker, D.N. Cole, and S. Boutcher

2008 *Applying the Concept of Wilderness Character to National Forest Planning, Monitoring, and Management*. Fort Collins, CO: General Technical Report RMRS-GTR-217WWW. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.

National Park Service

No date *A Plan to Minimize the Impacts of Physical Safety Hazard Mitigation Treatments at Abandoned Historic Mines*. 23 pp.

2000 *Director's Order 47, Soundscape Preservation and Noise Management*. Available on the internet at: http://www.nps.gov/policy/DOrders/DOrder47.html

2001 *Director's Order #12 and Handbook, Conservation Planning, Environmental Impact Analysis, and Decision Making*. Available on the internet at: http://www.nps.gov/policy/DOrders/DOrder12.html.

2002 *Death Valley General Management Plan*. Department of the Interior, National Park Service. April 2002.

2006 *Management Policies 2006*. [Washington, D.C.].

2007 *Explore Geology - Abandoned Mineral Lands*. Available on the Internet at: http://www.nature.nps.gov/geology/aml/index.cfm

2008 *Environmental Assessment for the 2008 Fire Management Plan for Death Valley National Park*. Death Valley CA.

2009a *Death Valley National Park Wilderness Fact Sheet*. Available on the internet: http://www.nps.gov/deva/parknews/upload/Death%20Valley%20National%20Park%20Wilderness%20Fact%20Sheet%20v031509.pdf.

2009b *National Environmental Policy Act Guidance for Projects Funded Under the American Recovery and Reinvestment Act of 2009*. Prepared by the National Park Service Environmental Quality Division, Associate Director, Natural Resource Stewardship and Science, April 28, 2009.

2009c Memorandum A54 (2301) by Mary A. Bomar, October 2, 2009, to Regional Directors, entitled Mitigating High-Risk Abandoned Mine Land Features.

Office of the Inspector General

2008 *Audit Report Abandoned Mine Lands in the Department of the Interior*. C-IN-MOA-0004-2007, July 2008.

Sherwin, R.E., J.S. Altenbach, and D.L. Waldien

2009 *Managing Abandoned Mines for Bats*. Bat Conservation International. Available on the internet at: http://www.batcon.org/pdfs/batsmines/BatsandMinesHdbook.pdf

Tuttle, M. and D. Taylor

1998 *Bats and Mines*. Bat Conservation International, Inc. Resource Publication No. 3.

U.S. Congress

1906 American Antiquities Act of 1906. Public Law 59-209.16 *United States Code* 431-433 and 43. Available on the internet at: http://www.nps.gov/history/local-law/anti1906.htm

1916 Organic Act of 1916. Public Law 88-577. 16 *United States Code* l 2 3, and 4). Available on the internet at: http://planning.nps.gov/document/organic_act.pdf.

1919 Migratory Bird Treaty Act of 1918. Public Law 186.16 *United States Code* 703-712. Available on the internet at: http://www.pacificwildlife.org/info/Online%20Docs/mbta.pdf.

1964 Wilderness Act of 1964. Public Law 88-577. 16 *United States Code* 1131-1136. 88th Congress, Second Session. September 3, 1964. Available on the internet at: http://wilderness.nps.gov/document/wildernessAct.pdf.

1966 National Historic Preservation Act of 1966. Public Law 89-665; 16 *United States Code* 470. As amended through 2006. Available on the internet at http://www.achp.gov/docs/nhpa%202008-final.pdf

1970 National Environmental Policy Act of 1969. Public Law 91-190. 42 *United States Code* 4321-4347 Available on the internet at: http://www.access.gpo.gov/nara/cfr/waisidx_04/40cfrv30_04.html#1500

1973 Endangered Species Act of 1973. Public Law 93-205. 16 *United States Code* 1531-1544. Available on the internet at: http://www.fws.gov/Endangered/pdfs/esaall.pdf.

1994 California Desert Protection Act of 1994. 16 *United States Code* 410. Available on the internet at: http://wildlifelaw.unm.edu/fedbook/cadesert.html

U.S. Fish and Wildlife Service

1994 *Desert Tortoise (Mojave Population) Recovery Plan*. Portland, OR.

1998 *Draft Recovery Plan for the Least Bell's Vireo*. USFWS Environmental Conservation Online System (ECOS); accessed November 18, 2009. Available on the internet at: http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B067

2008 Desert Tortoise Recovery Office, Desert Tortoise Habitat and Life History webpage. Last updated, October 30, 2008, accessed November 5, 2009. Available on the internet at: http://www.fws.gov/Nevada/desert_tortoise/dt_life.html

Vories K. C. and D. Throgmorton (editors).

2002 *Proceedings of Bat Gate Design: a Technical Interactive Forum, March 4-6, 2002, Austin, TX*. Published by U.S. Department of Interior, Office of Surface Mining, Alton, Illinois and Coal Research Center, Southern Illinois University, Carbondale, Illinois. Available on the internet at www.mcrcc.osmre.gov/bats

This page is intentionally left blank

Appendix A

Mine Opening Closure Techniques

Photographs of Typical Abandoned Mine Openings and Mine Opening Closure Techniques	
Photo 1. Bat cupola over a vertical shaft.	Photo 2. Barn owl opening and perch on bat cupola.
Photo 3. Bat grate.	Photo 4. Temporary fencing at vertical shaft.

Photo 9. Bat gate over vertical shaft.	Photo 10. Grate over vertical shaft
Photo 11. Completed polyurethane foam plug.	Photo 12. Grate.

Photo 13. Adit closed with a bat gate, concrete culvert and foam protection outside the culvert. Note minimal disturbance to surrounding area.	Photo 14. Recessed bat gate in a decline. Note minimal disturbance in area surrounding the opening, and preservation of features.

Photo 17. Net closure recessed in mine shaft.	Photo 18. Cable net mine closure on a mine shaft.
Photo 19. Adit closed with a bate gate.	Photo 20. Unclosed adit.

Photo 21. Unclosed vertical shaft conditions.	Photo 22. Closed vertical shaft with bat gate.
Photo 23. Unclosed vertical shaft.	Photo 24. Grate over a vertical shaft.

Photo 25. Combination bat gate and grate over a vertical shaft.	Photo 26. Unclosed vertical shaft with head frame.
Photo 27. Trench mines with shafts closed with a permanent fence.	Photo 28. Stope with chain covering.

This page is intentionally left blank

Appendix B

Consultation and Coordination

United States Department of the Interior

NATIONAL PARK SERVICE

Death Valley National Park
P.O. Box 579
Death Valley, California 92328
Tel: 760 786-3200
Fax: 760 786-3283

Scoping Notice – Mitigation of Safety Hazards at Abandoned Mine Lands Environmental Assessment, Death Valley National Park

The National Park Service (NPS) will be preparing an environmental assessment (EA) which will analyze the environmental effects of implementing mine closure methods to mitigate visitor and staff safety hazards at Abandoned Mine Land (AML) sites in Death Valley National Park.

AMLs are typically defined as any physical feature previously used for the extraction of minerals for which no responsible party can presently be identified. An inventory of mine sites within Death Valley National Park is currently in progress.

AML sites often pose severe human safety hazards, environmental contamination, and usually have disturbances to land, vegetation, and related ecosystems. Despite the existence of physical and environmental hazards, AMLs in the West represent a remnant of this region's rich history and, in consequence, have long been popular destinations for tourists. Due to their relative age, the physical condition of most historic mining structures has significantly deteriorated. Open mines and associated historic structures provide unusual attractions for increasing numbers of park visitors, despite the varying levels of physical safety hazards, ranging from minimal to life-threatening, presented by these features.

AML sites often also provide habitat for protected and/or sensitive wildlife species, such as bats and desert tortoise. Surveys are already being completed for these mine sites to determine the presence/absence of bats and other sensitive wildlife. The information gathered from these surveys will contribute to the NEPA process that will determine the appropriate safety treatments with consideration for resources protection.

The NPS's primary goal is to permanently close mine openings. Closing mine features from human access can involve permanent closure of mine features (non-reversible methods including earthen backfill, blasting to collapse mine features, constructing rock and mortar walls into mine features, and site restoration through re-contouring the landscape and planting vegetation). Because of wildlife and/or historic preservation considerations, the NPS sometimes secures openings with less permanent measures, such as long-term closure (reversible methods including "bat gate" installation and plugging mine openings with polyurethane foam with a surface layer of earthen backfill) or temporary closure (3-strand barbed wire fencing). Long-term closures require periodic monitoring and maintenance to ensure their efficacy. Temporary closures require frequent monitoring to ensure that they remain secure and effective, because they are subject to vandalism and do not always prevent deliberate intrusion.

As part of the scoping process for the EA, we are sending this notice to solicit comments on the proposed action. The scoping process will define the purpose, need, and objectives of the proposed action as well as identify the issues associated with the project.

We look forward to public participation in this process and believe that it will help ensure that all resources are adequately considered and evaluated in the EA. The EA will be available for public review and comment when completed in late 2009.

Scoping comments can be sent to:

Superintendent
ATTN: AML EA Comments
Death Valley National Park
P.O. Box 579
Death Valley, California 92328

Sincerely,

Sarah Craighead

Sarah Craighead
Superintendent

PROGRAMMATIC AGREEMENT
BETWEEN
THE NATIONAL PARK SERVICE
(U.S. DEPARTMENT OF THE INTERIOR) AND
THE CALIFORNIA STATE HISTORIC PRESERVATION OFFICER
REGARDING
MITIGATION OF PHYSICAL SAFETY HAZARDS AT
HISTORIC ABANDONED MINERAL LANDS
WITHIN THE NATIONAL PARKS IN CALIFORNIA

WHEREAS, the National Park Service (NPS) proposes to complete 85 mine safety mitigation projects (the Undertaking) at park units within the State of California (including Mojave National Preserve, Death Valley National Park, Joshua Tree National Park, Point Reyes National Seashore, and Whiskeytown National Recreation Area) that may be funded under the American Recovery and Revitalization Act of 2009 with the intent of creating jobs for the American people; and

WHEREAS, the NPS has consulted with the California State Historic Preservation Officer (SHPO) pursuant to the 2008 Programmatic Agreement among the National Park Service (U.S. Department of the Interior), the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers for Compliance with Section 106 of the National Historic Preservation Act; and,

WHEREAS, the operation, management, and administration of the National Park System entails undertakings that may affect historic properties (as defined in 36 CFR Part 800), which are therefore subject to review under Sections 106, 110(f), and 111(a) of the National Historic Preservation Act as amended (NHPA; 16 USC 470 *et seq*.) and the regulations of the Advisory Council on Historic Preservation (36 CFR Part 800); and,

WHEREAS, the signature and implementation of the 2008 Programmatic Agreement (PA) does not preclude park-, Region-, or project-specific memoranda of agreement (MOA) or programmatic agreements negotiated for Section 106 purposes between the NPS and the California State Historic Preservation Officer (SHPO); and

WHEREAS, the Department of the Interior's Office of Inspector General issued a Final Audit Report: Abandoned Mine Lands in the Department of the Interior dated July 24, 2008 that identified numerous physical safety hazards at Abandoned Mineral Land (AML) sites in National Park Service units that pose a threat to the public and Park staff; and,

WHEREAS, the NPS has a qualified staff of cultural resource specialists who meet, or are under the direct supervision of a person or persons who meet, at a minimum, the appropriate qualifications set forth in the Secretary of the Interior's *Professional Qualifications Standards* (48 FR 44738-39) to carry out programs for cultural resource management; and

WHEREAS, the purpose of this Programmatic Agreement (PA) is to establish a program for compliance with Section 106 of the NHPA and set forth a streamlined process when agreed upon criteria are met and procedures are followed in the installation of physical safety mitigation treatments at AML sites; and

WHEREAS, the National Park Service has established guidelines, standards, and technical information applicable to the treatment of these physical hazards in ways that will, to the extent possible, minimize the impacts of such treatments on the historic fabric and historic character of non-archaeological historic properties at these sites (see Attachment A); and,

WHEREAS, each of the National Park units listed above contain historic properties of religious or cultural significance to a specific set of federally designated American Indian tribes; and

WHEREAS, each of the National Park units listed above may contain historic properties of religious or cultural significance to a specific set of non-designated American Indian tribes or organizations; and

WHEREAS, each of the National Park units listed above and those others interested in following the procedures defined in this agreement therefore have consulted with the specific sets of federally designated tribes and non-designated tribes and organizations affiliated with those parks regarding this agreement in accordance with 36 C.F.R. subsection 800.14(f) and have invited them to concur in this agreement; and

WHEREAS, the NPS has consulted with the SHPO on ways to ensure that individual actions of the Undertaking provide for management of California National Parks' historic properties according to the intent of The Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation (48 FR 44716), NPS Policies and Guidelines, and Section 106 of the NHPA;

.

NOW, THEREFORE, the National Park Service and the California State Historic Preservation Officer agree that should the NPS proceed with the Undertaking, the NPS will ensure that the following stipulations are implemented to satisfy the NPS's Section 106 responsibilities for all individual actions related to the Undertaking:

STIPULATIONS

The NPS shall ensure that the following measures are carried out:

1. **Phasing of the Undertaking**

The NPS expects to pursue the Undertaking in phases, wherein safety treatments may be installed at one to several mines at the same or multiple park units. The NPS will have met its obligations under this agreement if it fulfills the requirements listed herein for

each individual phase, independently of future phases. Prior to the initiation of each phase of the undertaking, the NPS shall determine the area of potential effects (APE) for that phase. The APE shall include all areas directly affected by construction, including but not limited to staging and borrow areas and access roads for each. Unless otherwise stated, references to the APE mean the specific APE for a given phase of the Undertaking. The APE for each phase of the Undertaking will be confined to previously disturbed areas to the fullest extent possible.

2. Public Involvement

Upon advance planning and development of a new phase of the Undertaking, the NPS shall seek input from the public pursuant to 36 CFR § 800.2(d)(3) through use of the NPS Planning, Environment, and Public Comment (PEPC) system. Both the public and each park's affiliated tribes have access to this system. The PEPC record for each phase of the undertaking will identify the nature and extent of the proposed project, its location, and the results of inventory survey, if any. Any sensitive information provided by affiliated tribes to NPS units regarding the Undertaking will be held in strict confidence.

3. Identification and Evaluation of Historic Properties

a. Historic Properties (non-archaeological)

Although many of the non-archaeological historic properties that are found at AML sites at NPS units in California have not been evaluated for their National Register of Historic Places (NRHP) eligibility, for purposes of this agreement, the NPS will not undertake full NRHP evaluations of these sites but shall treat all such properties as potentially eligible.

b. Archaeological Sites

Prior to initiation of each phase of the Undertaking, the NPS shall review its Archaeological Site Management Inventory System records for the presence of archaeological sites within the APE for that phase. Previously recorded sites within the APE will be protected in situ during construction through the use of exclusionary fencing or other measures. It is expected that few, if any, intact archaeological sites will be found within the APE of each phase of the Undertaking. If, however, the qualified cultural resources staff of any park determine that prior survey was inadequate to identify archaeological sites that may be present within the APE, the park will undertake that survey prior to initiation of construction and will protect any newly discovered sites in situ through exclusionary fencing or other suitable means.

c. Inadvertent Discoveries

If during construction an archaeological site is inadvertently discovered, construction shall be halted until a qualified NPS archaeologist has visited the site and determined how to best protect the cultural resources in situ. Where avoidance is not feasible,

treatment will be carried out in accordance with the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation.

4. Assessment of Effects

a. The NPS shall at all times seek to avoid adverse effects on historic properties through project designs that minimize impacts on historic fabric and on the visual character of the cultural landscape to the extent possible while mitigating physical hazards to the public.

b. The standard mitigation treatments described in Attachment A to this agreement, due to their non-permanent and reversible nature, will be deemed to produce "No Adverse Effect" for purposes of this agreement.

5. Treatment of Adverse Effects

a. As soon as the NPS determines that a required alternative safety treatment will have an unavoidable and irreversible adverse effect on one or more historic properties that phase of the Undertaking shall be suspended and the NPS shall immediately notify the SHPO of the precise nature of the adverse effect and why it could not be avoided. The SHPO shall be afforded a period of 15 days to respond to the park point of contact and enter into consultation on the issue. If the SHPO does not respond within that time period, the project will resume on the assumption that the SHPO has no interest in further consultation.

b. Should any Native American burial sites, human remains, funerary objects, sacred objects, and/or objects of cultural patrimony be encountered, the NPS shall ensure they are treated with appropriate respect and according to federal law, including but not limited to the Native American Graves Protection and Repatriation Act (PL 101-601; hereinafter NAGPRA).

6. Installation and Documentation of Safety Mitigation Treatments

a. Installation of Safety Mitigation Treatments to Minimize Impacts

It is the expressed intent of this PA that the NPS will manage both evaluated and unevaluated historic mining structures as potentially eligible for listing on the National Register of Historic Places (except in cases where the mines are unquestionably less than 50 years of age). As such, the NPS will make every effort to minimize impacts to historic fabric and visual intrusions into historic mining landscapes when safety mitigation measures are undertaken. The methodology of choice for providing for the safety of visitors and staff at abandoned mines over 50 years of age is the installation of reversible safety features that will produce the least noticeable change or modification to the site. Whenever mine closure devices are installed at mine openings, steps will be taken to minimize impacts to any historic fabric that may still be in place, including the

comments provided by the Council within 30 days after its receipt of all relevant documentation will be taken into account by the NPS in reaching a final decision regarding the objection. The NPS will notify the SHPO, and the Council in writing of its final decision within 14 days after it is rendered. The NPS shall have the authority to make the final decision resolving the objection.

c. The NPS's responsibility to carry out all other actions under this PA that are not the subject of the objection will remain unchanged. The NPS may implement that portion of the Undertaking subject to objection under this stipulation after complying with subsection b. of this stipulation.

d. At any time during implementation of the terms of this PA, should an objection pertaining to the PA be raised by a member of the public, the NPS shall immediately notify the SHPO about the objection and take the objection into account. The SHPO and the Council may comment on the objection to the NPS. The NPS shall consult with the objecting party for no more than 30 days. Within 14 days following closure of consultation, the NPS will render a decision regarding the objection and notify all parties of its decision in writing. In reaching its final decision, the NPS will take into account all comments from the parties regarding the objection. The NPS shall have the authority to make the final decision resolving the objection. Any dispute pertaining to the NRHP eligibility of historic properties or cultural resources covered by this PA will be addressed by the NPS per 36 CFR §800.4(c)(2).

9. Scope of Agreement

This Programmatic Agreement is limited in scope to those activities associated with the Undertaking and is entered into solely for that purpose. Nothing in this agreement shall limit an individual park from carrying out additional consultation with its affiliated tribes if the park or those tribes consider it necessary and choose to do so.

10. Amendments

Any party to this agreement may request that it be amended. The process of amending the agreement shall be the same as that exercised in creating the original agreement.

11. Failure to Carry Out the Agreement

In the event the NPS does not carry out the terms of this agreement, the NPS will comply with 36 CFR § 800.4 through 800.6 with regard to individual Undertakings covered by this agreement.

12. Review of the Agreement

a. On or before December 31 of each year until the NPS has completed its responsibilities under this programmatic agreement, the each NPS unit will prepare and provide to the SHPO an annual report describing how it is carrying out its

responsibilities. The park shall ensure that its annual report is made available for public and tribal inspection, that potentially interested members of the public and the park's affiliated tribes are made aware of its availability, and that interested members of the public are invited to provide comments to the SHPO as well as to the NPS. The SHPO may review the annual report and may provide comments to the individual parks and/or to Pacific West Regional Cultural Resources staff.

b. At the request of any party to this agreement, a meeting or meetings will be held to facilitate review and comment or to resolve questions.

c. The SHPO may monitor activities carried out pursuant to this agreement, and the ACHP will review such activities if so requested. The NPS shall cooperate with the SHPO in carrying out their monitoring and review responsibilities.

13. Termination

Any party to this agreement may terminate it by providing a 30 calendar day notice, excluding state and federal holidays, to the other parties provided that the parties will consult during the period prior to the termination to seek agreement on amendments or other actions that would avoid termination. In the event of termination, the NPS will comply with 36 CFR § 800.4 through 800.6 for individual undertakings covered by this programmatic agreement.

14. Expiration

This Programmatic Agreement will be null and void on September 30, 2015, unless extended by the written agreement of the parties hereto.

SIGNATORY PARTIES

Execution and implementation of this Programmatic Agreement evidences that the NPS has satisfied its Section 106 responsibilities for all individual Undertakings covered by this agreement.

NATIONAL PARK SERVICE:

Jonathan B. Jarvis
Regional Director, Pacific West Region
National Park Service
Department of the Interior

Date: 8/11/09

CALIFORNIA STATE HISTORIC PRESERVATION OFFICER:

M. Wayne Donaldson, FAIA
California State Historic Preservation Officer

Date: 18 AUG 2009

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

TAKE PRIDE IN AMERICA

IN REPLY REFER TO
81440-2010-SL-0041

November 23, 2009

Memorandum

To: Superintendent, Death Valley National Park, National Park Service, Death Valley, California (ATTN: AML EA Comments)

From: Senior Biologist, Ventura Fish and Wildlife Office, Ventura, California

Subject: Species List for Death Valley National Park, California

We are responding to your request, dated October 13, 2009, and received in our office on October 22, 2009, for information on endangered and threatened species that may occur within Death Valley National Park (Park). The National Park Service (NPS) is preparing an environmental assessment to evaluate environmental effects of implementing mine closure methods to mitigate visitor and staff safety hazards at Abandoned Mine Land sites. Your request was made pursuant under section 7 of the Endangered Species Act of 1973, as amended (Act).

This letter fulfills our requirements under section 7(c) of the Act. The NPS, as the lead Federal agency for the project, has the responsibility to review its proposed activities and determine whether any listed species may be affected. If the project is a construction project that may require an environmental impact statement[1], the NPS has the responsibility to prepare a biological assessment to make a determination of the effects of the action on the listed species or critical habitat. If the NPS determines that a listed species or critical habitat is likely to be adversely affected, it should request, in writing through our office, formal consultation pursuant to section 7 of the Act. Informal consultation may be used to exchange information and resolve conflicts with respect to threatened or endangered species or their critical habitat prior to a written request for formal consultation. During this review process, the NPS may engage in planning efforts but may not make any irreversible commitment of resources. Such a commitment could constitute a violation of section 7(d) of the Act.

We also recommend that you review information in the California Department of Fish and Game's Natural Diversity Data Base. You can contact the California Department of Fish and

[1]"Construction project" means any major Federal action which significantly affects the quality of the human environment designed primarily to result in the building of structures such as dams, buildings, roads, pipelines, and channels. This includes Federal actions such as permits, grants, licenses, or other forms of Federal authorizations or approval which may result in construction.

Game at (916) 324-3812 for information on other sensitive species that may occur in this area. To find out information for the remainder of the Park in Nevada, you may visit Heritage's website at www.heritage.nv.gov or 901 South Stewart Street, Suite 5002, Carson City, Nevada 89701, (775) 684-2900. You may also visit the website http://www.leg.state.nv.us/NAC/NAC-503.html for certain species of fish and wildlife that are classified as protected by the State of Nevada.

Should you have any questions regarding this matter, please contact Danielle Dillard in the Ventura Fish and Wildlife Office at (805) 644-1766, extension 315.

LISTED AND CANDIDATE SPECIES
WHICH MAY OCCUR IN DEATH VALLEY NATIONAL PARK

Reptile		
Desert tortoise	*Gopherus agassizii*	T
Bird		
Least Bell's vireo	*Vireo bellii pusillus*	E
Fish		
Devils Hole pupfish	Cyprinodon diabolis	E
Invertebrate		
Nevares Spring naucorid bug	*Ambrysus funebris*	C
Plants		
Eureka Valley evening-primrose	*Oenothera californica*	E
Eureka Valley dune grass	*Swallenia alexandrae*	E

E - Endangered
T - Threatened
C - Candidate species for which the Fish and Wildlife Service has on file sufficient information on the biological vulnerability and threats to support proposals to list as endangered or threatened

Ray Bransfield/VFWO/R1/FWS/DOI@FWS

12/03/2009 04:14 PM

To Linda Manning/DEVA/NPS@NPS

cc

bcc

Subject Abandoned Mining Lands - Species List - 2010-SL-0041

Linda,
Thank you for your telephone call. Yes, we omitted the federally endangered southwestern willow flycatcher (*Empidonax traillii extimus*) from the recent species list that we sent you; we have not designated critical habitat for this species in Death Valley National Park. We would appreciate it if you could add this message to your file on our response.

I appreciate your efforts to keep me on my toes.
Ray

United States Department of the Interior

NATIONAL PARK SERVICE
Death Valley National Park
PO Box 579
Death Valley, California 92328

IN REPLY REFER TO
H4217

June 12, 2009

Barbara Durham
Tribal Historic Preservation Officer
Timbisha Shoshone Tribe
P.O. Box 206
Death Valley, CA 92328

Dear Ms. Durham:

The purpose of this letter is to initiate consultation with the Timbisha Shoshone in accordance with the National Historic Preservation Act of 1966, as amended (NHPA), regarding the enclosed draft "Programmatic Agreement between the National Park Service (US Department of the Interior) and the California State Historic Preservation Officer Regarding Mitigation of Physical Safety Hazards at Historic Abandoned Mineral Lands within The National Parks In California" and the proposed undertaking to install safety treatments at eight abandoned mine sites within Death Valley National Park. The purpose of the Programmatic Agreement (PA) is to establish a streamlined process for the National Park Service (NPS) to meet its NHPA Section 106 requirements for abandoned mine land (AML) safety projects funded through the American Recovery and Reinvestment Act.

The PA has been developed in consultation with the California State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation (ACHP). The undertaking includes installation of gates, cable mesh, and other devices to reduce safety hazards to the public that exist at historic abandoned mines. The attached document, "A Plan to Minimize the Impacts of Physical Safety Hazard Mitigation Treatments at Abandoned Historic Mines" (Work Plan), provides descriptions of the types of mine hazards that need to be treated and the types of closures that may be installed to improve public safety. The work plan also discusses how mine closures can be designed to provide for continued use of the openings by wildlife (principally bats) and minimize impacts to these historic sites and the cultural resources that may be found near them. A list of the specific mines that are included in the project and brief descriptions of what we plan to do to improve public safety at the dangerous features found at each site are also provided for your review and comment.

We at Death Valley National Park would greatly appreciate your Tribe's review and comment on the draft PA and the Work Plan. Each National Park within California with proposed mine safety treatment projects is consulting with American Indian tribes culturally affiliated with their park lands concerning the PA and the Work Plan, simultaneous with this consultation. Tribal comments received by each park will be compiled and submitted for consideration and integrated into the final PA and Work Plan as appropriate. In the event of conflicting comments, consultation will continue to reach resolution. A final copy of the executed PA along with a copy of the Work Plan will be sent to the Timbisha Shoshone for your information and use.

To keep the project on schedule, we respectfully request your review and comment on the PA and the proposed Work Plan within 30 days of receipt. I realize that Death Valley and the Timbisha Shoshone have a consultation agreement in place allowing 45 days for the comment period, but in the interest of coordinating this project with others statewide, we would appreciate a shortened review period on this project. We are available to meet with the Tribe to discuss the PA and proposed undertaking at a time and location convenient to your Tribe. Should you have questions or comments concerning the PA or the proposed undertakings described in the Work Plan, or would like to schedule a meeting, please contact Leah Bonstead, Park Archeologist, at (760) 786-3232. We look forward to working with you on this important health and life safety project.

Sincerely yours,

Sarah Craighead
Superintendent

Enclosures: 4

- A Plan to Minimize the Impacts of Physical Safety Hazard Mitigation Treatments at Abandoned Historic Mines (23 pages)

- American Recovery and Reinvestment Act Abandoned Mine Lands projects at Death Valley National Park 2009-2010 (2 pages)

- American Recovery and Reinvestment Act Abandoned Mine Lands Projects map (1 page)

- Draft: Programmatic Agreement Between the National Park Service and the California State Historic Preservation Officer Regarding Mitigation of Physical Safety Hazards at Historic Abandoned Mineral Lands Within the Nation

LBONSTEAD:mko\H4217_AML PA_Timbisha Tribe-Durham Letter 6.12.09

Sent via Certified Return Receipt Mail
Enclosures included with File Copy of Correspondence to Barbara Durham/Timbisha Tribe

bc: files
SO Corres files
RM: Bonstead, Archeologist
RM: Manning, Wildlife Biologist

United States Department of the Interior

NATIONAL PARK SERVICE
Death Valley National Park
PO Box 579
Death Valley, California 92328

IN REPLY REFER TO
H4217

June 12, 2009

Richard Arnold
Tribal Chair
Pahrump Paiute Tribe
P.O. Box 3411
Pahrump, NV 89041

Dear Mr. Arnold:

The purpose of this letter is to initiate consultation with your Tribe in accordance with the National Historic Preservation Act of 1966, as amended (NHPA), regarding the enclosed draft "Programmatic Agreement between the National Park Service (US Department of the Interior) and the California State Historic Preservation Officer [illegible]

To keep the project on schedule, we respectfully request your Tribe's review and comment on the PA and the proposed Work Plan within 30 days of receipt. We are available to meet with the Tribe to discuss the PA and proposed undertaking at a time and location convenient to your Tribe. Should you have questions or comments concerning the PA or the proposed undertakings described in the Work Plan, or would like to schedule a meeting, please contact Leah Bonstead, Park Archeologist, at (760) 786-3232. We look forward to working with you on this important health and life safety project.

Sincerely yours,

Sarah Craighead
Superintendent

Enclosures: 4

- A Plan to Minimize the Impacts of Physical Safety Hazard Mitigation Treatments at Abandoned Historic Mines (23 pages)

- American Recovery and Reinvestment Act Abandoned Mine Lands projects at Death Valley National Park 2009-2010 (2 pages)

- American Recovery and Reinvestment Act Abandoned Mine Lands Projects - map (1 page)

- Draft: Programmatic Agreement Between the National Park Service and the California State Historic Preservation Officer Regarding Mitigation of Physical Safety Hazards at Historic Abandoned Mineral Lands Within the National Parks in California (7 pages)

L.BONSTEAD:mko\H4217_AML PA_Paiute Tribe-Arnold Letter 6.12.09

Sent via Certified Return Receipt Mail
Enclosures included with File Copy of Correspondence to Barbara Durham/Timbisha Tribe

bc: files
SO Corres files
RM: Bonstead, Archeologist
RM: Manning, Wildlife Biologist

United States Department of the Interior

NATIONAL PARK SERVICE
Death Valley National Park
PO Box 579
Death Valley, California 92328

IN REPLY REFER TO
H4217

June 12, 2009

Joe Kennedy
Tribal Chair
Timbisha Shoshone Tribe
P.O. Box 206
Death Valley, CA 92328

Dear Mr. Kennedy:

The purpose of this letter is to initiate consultation with the Timbisha Shoshone in accordance with the National Historic Preservation Act of 1966, as amended (NHPA), regarding the enclosed draft "Programmatic Agreement between the National Park Service (US Department of the Interior) and the California State Historic Preservation Officer Regarding Mitigation of Physical Safety Hazards at Historic Abandoned Mineral Lands within The National Parks In California" and the proposed undertaking to install safety treatments at eight abandoned mine sites within Death Valley National Park. The purpose of the Programmatic Agreement (PA) is to establish a streamlined process for the National Park Service (NPS) to meet its NHPA Section 106 requirements for abandoned mine land (AML) safety projects funded through the American Recovery and Reinvestment Act.

The PA has been developed in consultation with the California State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation (ACHP). The undertaking includes installation of gates, cable mesh, and other devices to reduce safety hazards to the public that exist at historic abandoned mines. The attached document, "A Plan to Minimize the Impacts of Physical Safety Hazard Mitigation Treatments at Abandoned Historic Mines" (Work Plan), provides descriptions of the types of mine hazards that need to be treated and the types of closures that may be installed to improve public safety. The work plan also discusses how mine closures can be designed to provide for continued use of the openings by wildlife (principally bats) and minimize impacts to these historic sites and the cultural resources that may be found near them. A list of the specific mines that are included in the project and brief descriptions of what we plan to do to improve public safety at the dangerous features found at each site are also provided for your review and comment.

We at Death Valley National Park would greatly appreciate your Tribe's review and comment on the draft PA and the Work Plan. Each National Park within California with proposed mine safety treatment projects is consulting with American Indian tribes culturally affiliated with their park lands concerning the PA and the Work Plan, simultaneous with this consultation. Tribal comments received by each park will be compiled and submitted for consideration and integrated into the final PA and Work Plan as appropriate. In the event of conflicting comments, consultation will continue to reach resolution. A final copy of the executed PA along with a copy of the Work Plan will be sent to the Timbisha Shoshone for your information and use.

To keep the project on schedule, we respectfully request your review and comment on the PA and the proposed Work Plan within 30 days of receipt. I realize that Death Valley and the Timbisha Shoshone have a consultation agreement in place allowing 45 days for the comment period, but in the interest of coordinating this project with others statewide, we would appreciate a shortened review period on this project. We are available to meet with the Tribe to discuss the PA and proposed undertaking at a time and location convenient to your Tribe. Should you have questions or comments concerning the PA or the proposed undertakings described in the Work Plan, or would like to schedule a meeting, please contact Leah Bonstead, Park Archeologist, at (760) 786-3232. We look forward to working with you on this important health and life safety project.

Sincerely yours,

Sarah Craighead
Superintendent

Enclosures: 4

- A Plan to Minimize the Impacts of Physical Safety Hazard Mitigation Treatments at Abandoned Historic Mines (23 pages)

- American Recovery and Reinvestment Act Abandoned Mine Lands projects at Death Valley National Park 2009-2010 (2 pages)

- American Recovery and Reinvestment Act Abandoned Mine Lands Projects – map (1 page)

- Draft: Programmatic Agreement Between the National Park Service and the California State Historic Preservation Officer Regarding Mitigation of Physical Safety Hazards at Historic Abandoned Mineral Lands Within the National Parks in California (7 pages)

LBONSTEAD:mko H4217_AML PA_Timbisha Tribe-Kennedy Letter 6.12.09

Sent via Certified Return Receipt Mail
Enclosures included with File Copy of Correspondence to Barbara Durham/Timbisha Tribe

bc: files
SO Corres files
RM: Bonstead, Archeologist
RM: Manning, Wildlife Biologist

Appendix C

Draft Minimum Requirements Decision Guide

ARTHUR CARHART NATIONAL WILDERNESS TRAINING CENTER

MINIMUM REQUIREMENTS DECISION GUIDE[1]

WORKSHEETS

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

– the Wilderness Act, 1964

Step 1: Determine if any administrative action is necessary.

Description: Briefly describe the situation that may prompt action.

Pursuant to the needs of public safety, the National Park Service (Death Valley National Park) proposes to install safety closures on mining features (shafts, declines, stopes, adits and trenches) throughout Death Valley National Park. These mine features pre-date the establishment of the Park and are scattered throughout as a legacy of the area's mining history. Some of these mining features are located within designated wilderness.

Installing safe closures on deep and dangerous mine features would minimize a substantial safety hazard. The threat of injury or death to the public and staff due to unmonitored abandoned mine features is high. These features are up to 140 years old and were not constructed to last for this length of time. Once abandoned, they were no longer maintained. If not closed according to public safety standards, these features would continue to deteriorate and present even greater risks to human health and safety.

Some features are open to groundwater in Death Valley National Park and are susceptible to contamination from a variety of sources including vandalism, illegal dumping of hazardous waste and acts of terrorism. In particular, once the groundwater is contaminated, it has been compromised and can never be completely decontaminated.

This project would involve the movement of supplies, power tools, and mechanized equipment to various abandoned mine features that are in wilderness to place concrete footings and then install steel safety closures. Movement of equipment would be by vehicle or helicopter. Movement of workers (typically 4 to 6 at a time) would be by vehicle as necessary. One or more trailers may be needed to carry heavy steel beams, concrete for footings, wood forms, power tools, and mesh as well as tow-behind concrete mixers. Two to three vehicles may be needed. Other mechanized equipment includes a generator. The generator would be kept on an absorbent pad to prevent soil contamination from any potential spills of petroleum products.

---

[1] This is a sample Minimum Requirement s Decision Guide (MRDG) that is intended to provide a better understanding of the decision making process that would occur for mine closures in wilderness. A real MRDG would contain site specific information and assessment.

SAMPLE

A. Describe Options Outside of Wilderness

Is action necessary within wilderness?

Yes: ☒ **No:** ☐

Explain: There are several mine features within wilderness which require action to eliminate safety hazards. The features are in wilderness and therefore cannot be mitigated outside of wilderness. Safety closures are site specific in their design and installation.

B. Describe Valid Existing Rights or Special Provisions of Wilderness Legislation

Is action necessary to satisfy valid existing rights or a special provision in wilderness legislation (the Wilderness Act of 1964 or subsequent wilderness laws) that allows consideration of the Section 4(c) prohibited uses? Cite law and section.

Yes: ☒ **No:** ☐ **Not Applicable:** ☐

Explain: All abandoned mine sites covered by this project pre-date the establishment of Death Valley National Park and the designation of wilderness through approximately 95% of the Park.

As provided for in the Wilderness Act of 1964, wilderness areas shall be devoted to the public purposes of recreational, scenic, scientific, educational, conservation, and historical use (PL 88-577 § 4(b)). Public use of Death Valley wilderness is currently compromised by the dangers presented by abandoned mines. These hazards were created by human action, but may be mitigated by the installation of safety closures that still allow the public to access and enjoy these wilderness areas.

C. Describe Requirements of Other Legislation

Is action necessary to meet the requirements of other laws?

Yes: ☒ **No:** ☐ **Not Applicable:** ☐

Explain: While recognizing that competing concerns often restrict the National Park Service's ability to eliminate hazards, the Service would strive to protect human life and provide for an injury-free visit within the constraints of the 1916 Organic Act and available resources. The Act requires the National Park Service to provide for the public enjoyment of the parks while conserving the scenery and natural and historic objects and wildlife therein "in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (16 U.S.C. 1). Unimpaired in this case translates to stabilization of the historic structures. For the "enjoyment" of the public, the features need to be safe.

The Department of Interior Office of Inspector General report entitled, *Audit Report: Abandoned Mine Lands in the Department of the Interior* (2008) and the National Park Service's Directive on AMLs (2008) gives Death Valley National Park and other units of the national park system a mandate to identify high-risk AML features and to mitigate or safeguard those features with quick response measures and longer-term solutions, as available funding and personnel allow.

SAMPLE

D. Describe Other Guidance

Is action necessary to conform to direction contained in agency policy, unit and wilderness management plans, species recovery plans, or agreements with tribal, state and local governments or other federal agencies?

Yes: ☒ **No:** ☐ **Not Applicable:** ☐

Explain: National Park Service Management Policies Section 8.2.5.1 provides policies and principles to guide the National Park Service's public risk management program. According to those policies, the saving of human life takes precedence over all other management actions. The California Desert Protection Act requires the plan to place emphasis on the protection and preservation of historical and cultural sites. A park-specific program goal for abandoned mine lands includes eliminating physical safety hazards and hazardous materials; mitigation of adverse environmental impacts to park resources, including restoration of landscapes, soils and vegetation; protection of important wildlife habitat such as bat habitat; and preservation of historic and cultural resources which may include stabilization of structures.

E. Wilderness Character

Is action necessary to preserve one or more of the qualities of wilderness character including: untrammeled, undeveloped, natural, outstanding opportunities for solitude or a primitive and unconfined type of recreation, or unique components that reflect the character of this wilderness area?

Untrammeled: **Yes:** ☐ **No:** ☐ **Not Applicable:** ☒

Explain: This project would not contribute to the untrammeled quality of wilderness.

Undeveloped: **Yes:** ☐ **No:** ☐ **Not Applicable:** ☒

Explain: This project would occur in already developed sites that pre-date wilderness.

Natural: **Yes:** ☐ **No:** ☐ **Not Applicable:** ☒

Explain: This project would not contribute to the natural quality of wilderness.

Outstanding opportunities for solitude or a primitive and unconfined type of recreation:

Yes: ☐ **No:** ☒ **Not Applicable:** ☐

Explain: This project is not necessary to preserve opportunities for solitude.

Other unique components that reflect the character of this wilderness:

Yes: ☒ **No:** ☐ **Not Applicable:** ☐

Explain: This project is necessary to preserve mine features that are cultural resources and contribute to the unique quality of Death Valley wilderness.

SAMPLE

F. Describe Effects to the Public Purposes of Wilderness

Is action necessary to support one or more of the public purposes for wilderness (as stated in Section 4(b) of the Wilderness Act) of recreation, scenic, scientific, education, conservation, and historical use?

Recreation: **Yes:** ☒ **No:** ☐ **Not Applicable:** ☐

Explain: Improvements to human safety support recreational experiences. While these experiences may be temporarily impacted by the use of roads adjacent to wilderness or the sounds of motorized and mechanized equipment, many park visitors come to Death Valley National Park to visit abandoned mine sites.

Scenic: **Yes:** ☐ **No:** ☐ **Not Applicable:** ☒

Explain: Scenic qualities would not be impacted by the project.

Scientific: **Yes:** ☒ **No:** ☐ **Not Applicable:** ☐

Explain: Scientific values may be improved by limiting human interference in bat habitat.

Education: **Yes:** ☐ **No:** ☐ **Not Applicable:** ☒

Explain: Educational uses would not be impacted by the project.

Conservation: **Yes:** ☐ **No:** ☐ **Not Applicable:** ☒

Explain: Conservation uses would not be impacted by the project.

Historical use: **Yes:** ☐ **No:** ☐ **Not Applicable:** ☒

Explain: Improved public safety may or may not increase visitation to abandoned mine sites. Contributions to historical uses of these sites are inconclusive.

Step 1 Decision: Is any administrative action necessary in wilderness?

Yes: ☒ **No:** ☐ **More information needed:** ☐

Explain: Administrative action is necessary to protect the park visitor and natural and historic resources. It is not necessary to take action in wilderness to comply with law, preserve wilderness character, support the public purposes of wilderness, or comply with existing valid rights. However, in this situation, taking no action would ignore a threat which could possibly affect human life and regional resources such as bat populations and species distributions both inside and outside of wilderness.

SAMPLE

Step 2: Determine the minimum activity.

Description of Alternatives

For each alternative, describe what methods and techniques will be used, when the activity will take place, where the activity will take place, what mitigation measures are necessary, and the general effects to the wilderness resource and character.

Alternative One

Description: *Allow motorized and mechanized equipment to facilitate the closure of abandoned mine features.* Issue authorization for vehicles (including helicopters) and construction equipment to access and address dangerous open features at abandoned mine sites in wilderness. Helicopter use would allow a contractor to get equipment and supplies to a site while limiting the need for transporting heavy loads by vehicles. The limiting of heavy loads helps to minimize road impacts, and also allows power equipment/tools such as generators, torches, concrete mixers, cutters, grinders, exhaust fans, etc. on site.

Effects:

Wilderness Character – Negative impacts from the operation of motorized and mechanized equipment. No beneficial impacts to wilderness character.

Untrammeled – not applicable.
Undeveloped – not applicable.
Natural – not applicable.
Outstanding opportunities for solitude or a primitive and unconfined type of recreation – not applicable.

Heritage and Cultural Resources – No negative effects identified. Historic resources would be stabilized.

Maintaining Traditional Skills –This alternative would not include use of primitive or traditional skills, non-motorized tools or non-mechanical travel methods.

Special Provisions - Motor vehicles and motorized equipment are allowed only if they are the minimum necessary for administration of the area as wilderness (The Wilderness Act Section 4(c)) and if they meet the test of *practical necessity and reasonableness.* Securing human safety at abandoned mine sites is an administrative action necessary for both park staff and visitors to Death Valley National Park.

Safety of Visitors, Personnel, and Contractors – The use of motor vehicles (including helicopters) and construction equipment in rugged terrain has an inherent risk to the operators. This alternative would have long-term benefits to the safety of visitors and park personnel alike.

Economic and Time Constraints – The use of motor vehicles including helicopters, power tools, and construction equipment may be more efficient for operators who are not skilled in the use of alternate means. Their use increases workers safety over other means of supply transport or construction and cuts the time that activity would occur.

Additional Wilderness-Specific Comparison Criteria – None identified.

SAMPLE

Alternative Two

Description: Do not allow use of mechanized or motorized equipment to complete safety installations at abandoned mine features in wilderness. Rather, pack animals, hand tools, and other manual means would be used to complete the projects. For example, all drill holes would be made using hand drills and sledge hammers. Steel would be drilled with a brace and bit or be pre-drilled outside of wilderness. Supplies would be transported by people and pack animals. Under this alternative, the time needed to complete safety installation would be increased by an order of magnitude.

Effects:

Wilderness Character – would be maintained by not allowing use of mechanized or motorized equipment in wilderness.

Untrammeled – maintained by the avoidance of motorized vehicles to access abandoned mine sites.

Undeveloped – maintained by the avoidance of mechanized and motorized equipment. Installation of safety features would not contribute to or detract from the undeveloped character of the Death Valley wilderness.

Natural – not applicable.

Outstanding opportunities for solitude or a primitive and unconfined type of recreation – no impacts, as all work would be carried out by hand.

Heritage and Cultural Resources – No negative effects identified. Historic resources would be stabilized.

Maintaining Traditional Skills – Positive impacts from this alternative. The work to install safety features can only be carried out using traditional, manual skills. It avoids mechanized and motorized tools and methods altogether.

Special Provisions – None specified.

Safety of Visitors, Personnel, and Contractors – The use of non-mechanized equipment in wilderness has an increase risk to workers as most workers are not familiar with using non-mechanized tools which would increase the time required to complete the work. For example, skills associated with two-man drilling teams using sledge hammers and drill bits in confined spaces are not readily available today. Contractors would need to be trained in manual skills required to complete the work. Another consideration is that mixing bags of concrete by hand causes cold joints which, in turn, limit the strength of the concrete.

Economic and Time Constraints – The use of pack animals or non-mechanized equipment would be less efficient for operators, and would contribute to an increase in contractor time on-site and cost to the National Park Service to facilitate this project. This alternative is cost prohibitive; therefore, safety hazards and resource protection issues remain unaddressed.

Additional Wilderness-specific Comparison Criteria – None identified.

SAMPLE

Alternative Three

Description: Allow the use of mechanized equipment to complete safety installations at abandoned mine features in wilderness. Do not allow use of motorized vehicles to access abandoned mine sites. Mechanical tools and equipment would be transported by non-motorized means to abandoned mine sites. This might be carried out by use of pack animals or the contractors carrying equipment in by hand. Mechanical tools include power tools, exhaust fans, concrete mixers, welding and cutting equipment and power tools, and supplies such as steel and concrete to the features would be by vehicle or helicopter. Workers would access each site by foot. Large or heavy equipment includes heavy steel beams, concrete for footings, wood forms, power tools to work the steel, and mesh as well as tow-behind concrete mixers. Pack animals would likely be the most effective way to transport these items. A generator could also be transported by pack animal. The generator would be kept on an absorbent pad to prevent soil contamination from any potential spills of petroleum products.

Effects:

Wilderness Character – negative impacts from the operation of mechanized equipment. Lack of motorized vehicles would avoid disturbances to old roads, crushing and compaction of vegetation, and disturbances to solitude. Operation of mechanized equipment would offset some of these avoidances.

Untrammeled – maintained by the avoidance of motorized vehicles to access abandoned mine sites.

Undeveloped – revegetation of abandoned roads would continue without significant negative impacts. Installation of safety features would not contribute to or detract from the undeveloped character of the Death Valley wilderness.

Natural – not applicable.

Outstanding opportunities for solitude or a primitive and unconfined type of recreation – use of mechanized equipment would have negative impacts to the solitude and primitive character of wilderness.

Heritage and Cultural Resources – No negative effects identified. Historic resources would be stabilized.

Maintaining Traditional Skills – This alternative would have negative effects because it does not include use of primitive or traditional skills, or non-motorized tools. Some positive effects from non-mechanical travel methods offset the negative impacts of mechanized tools.

Special Provisions – Mechanized equipment is allowed only if it is the minimum necessary for administration of the area as wilderness (The Wilderness Act Section 4(c)) and if they meet the test of *practical necessity and reasonableness.* Securing human safety at abandoned mine sites is an administrative action necessary for both park staff and visitors to Death Valley National Park. Use of mechanized tools is the most practical, reasonable, and cost-effective approach for installing safety features at abandoned mines.

Safety of Visitors, Personnel, and Contractors – Mechanized equipment would need to be delivered to and adjacent to abandoned mine sites in wilderness. The use of mechanized equipment has an inherent risk to operators. Alternative C would have long-term benefits to the safety of visitors and park personnel alike.

SAMPLE

Economic and Time Constraints – This alternative may have greater economic constraints than Alternative B, due to the monetary and temporal expense of delivering mechanical equipment to abandoned mine sites without the use of motorized vehicles.

Additional Wilderness-specific Comparison Criteria – None identified

No Action Alternative

Description: *Do not install safety installations at abandoned mine sites and features in Death Valley National Park.* Leave abandoned mine sites in their present condition, with mine openings unsecured and hazardous to human safety. Four sites identified for safety installations in 2010 have 20 individual features (including 12 vertical shafts) that would continue to threat human health and safety under the No Action.

Effects:

Wilderness Character (untrammeled, undeveloped, natural, outstanding opportunities for solitude or a primitive and unconfined type of recreation) – Wilderness character would remain unaffected by the No Action. Recreational opportunities continue to risk being compromised by the dangers to human safety presented by abandoned mine lands.

Heritage and Cultural Resources – Historic resources would not be stabilized as planned under Alternatives A, B, and C.

Maintaining Traditional Skills – Not applicable. Under No Action, no safety installations would be carried out at abandoned mine sites in wilderness.

Special Provisions – None specified.

Safety of Visitors, Personnel, and Contractors – Open features at abandoned mine sites would continue to pose risks to human health and safety, as described in the Department of Interior Office of Inspector General report entitled, *Audit Report: Abandoned Mine Lands in the Department of the Interior* (2008) and the National Park Service's Directive on AMLs (2008).

Economic and Time Constraints – Not applicable

Additional Wilderness-specific Comparison Criteria – None identified.

SAMPLE

Comparison of Alternatives

It may be useful to compare each alternative's positive and negative effects to each of the criteria in tabular form, keeping in mind the law's mandate to "preserve wilderness character."

	Alternative A (mechanized and motorized equipment)	Alternative B (no mechanized or motorized equipment)	Alternative C (no motorized equipment)	No Action
Untrammeled	-	+	n/a	n/a
Undeveloped	-	n/a	n/a	n/a
Natural	-	n/a	n/a	n/a
Solitude or Primitive Recreation	-	+	-	n/a
Unique components	n/a	n/a	n/a	n/a
WILDERNESS CHARACTER	-	+	-	-

	Alternative A (mechanized and motorized equipment)	Alternative B (no mechanized or motorized equipment)	Alternative C (no motorized equipment)	No Action
Heritage & Cultural Resources	+	+	+	n/a
Maintaining Traditional Skills	-	+	+/-	n/a
Special Provisions	-	+	-	+
Safety of Visitors, Personnel and Contractors	+	+	+	-
Economics & Time	+	-	+	n/a
Additional Wilderness Criteria	n/a	n/a	n/a	n/a
OTHER CRITERIA SUMMARY	+	+	+	+/-

	Alternative A (mechanized and motorized equipment)	Alternative B (no mechanized or motorized equipment)	Alternative C (no motorized equipment)	No Action
SAFETY	+	+	+	-

Safety Criterion

If safety issues override impacts to wilderness character or other criteria, provide documentation that the use of motorized equipment or other prohibited uses is necessary because to do otherwise would cause increased risks to workers or visitors that cannot be satisfactorily mitigated through training, use of personal protective equipment (PPE), or other requirements to alleviate the safety risk. (This documentation can take the form of agency accident-rate data tracking occurrences and severity; a project-specific job hazard analysis; research literature; or other specific agency guidelines.)

Documentation:

Multiple sources of data are available that show the dangerous situations associated with mine openings at abandoned mine sites. The Department of Interior Office of Inspector General report entitled, *Audit Report: Abandoned Mine Lands in the Department of the Interior* (2008) describes safety hazards at abandoned mine sites on lands in California, Arizona, and Nevada.

The dangers presented by AMLs are consistent across lands managed by the National Park Service, the Bureau of Land Management, or any other public agency.

"Many abandoned mine sites present an immediate danger of physical injury or death due to open vertical shafts and horizontal adits (entrances to a mine) and mill sites with deteriorating buildings and equipment. Dangers include deadly gases and asphyxiation, collapsing mine walls, explosive and toxic chemicals, and rotting structures… Some sites also present long-term dangers to people from exposure to piles of waste rock or mine tailings (mine waste) containing hazardous materials such as arsenic, lead, and mercury" (2008 Audit Report, p. 7)

Step 2 Decision: What is the Minimum Activity?

The decision would be made based upon site specific information provided in the actual MRDG and would then be signed by the Park Superintendent.

Selected alternative:

Rationale for selecting this alternative (including documentation of safety criterion, if appropriate):

Monitoring and reporting requirements:

Check any Wilderness Act Section 4(c) uses approved in this alternative:

- ☐ mechanical transport
- ☐ motorized equipment
- ☐ motor vehicles
- ☐ motorboats
- ☐ landing of aircraft
- ☐ temporary road
- ☐ structure or installation

Record and report any authorizations of Wilderness Act Section 4(c) uses according to agency procedures.

Approvals	Signature	Name	Position	Date
Prepared by:				
Recommended:				
Recommended:				
Approved:				

SAMPLE

This page is intentionally left blank

As the nation's principal conservation agency, the Department of the Interior has the responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historic places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. Administration.

National Park Service 143/100854

February 2010

United States Department of the Interior ✧ National Park Service