



United States Department of the Interior
BUREAU OF LAND MANAGEMENT

Carson City District
Sierra Front Field Office
5665 Morgan Mill Road
Carson City, Nevada 89701

September 22, 2010

Dear Reader/Interested Party:

I am pleased to announce the availability of the United Comstock Merger Mill at American Flat Environmental Assessment (EA) and draft Finding of No Significant Impact (FONSI). The EA analyzes alternative plans to abate safety hazards to human health at the United Comstock Merger Mill at American Flat (AFM). Members of the public have assisted the Bureau of Land Management (BLM) in developing alternatives to reduce serious safety hazards while documenting and mitigating possible impacts to cultural and historical resources.

The EA analyzes four alternatives: (1) No Action - under which current management of the AFM site would continue, with no changes, including the existing Emergency Closure Order; (2) Demolition - all eight AFM site buildings would be demolished and all building footprints and other disturbed areas would be reclaimed; (3) Institutional Controls - Public safety would be achieved by complete control of site access. No building demolition would occur under this alternative; and (4) Selected Building Retention - three selected buildings would be retained for their important historic value and would be available for passive viewing from outside of secured areas. All other onsite buildings and structures would be demolished and disturbed sites reclaimed.

The EA and draft FONSI have been prepared in accordance with the Federal Land Policy and Management Act and the National Environmental Policy Act. The document is available to members of the public as hard copies at the Carson City District Office (Morgan Mill Road, Carson City, NV 89701) or via the project webpage at: http://www.blm.gov/nv/st/en/fo/carson_city_field/blm_information/nepa/comstock_merger_mill.html.

This EA and draft FONSI will be circulated for a 30-day public comment period. Written comments will be accepted through October 21, 2010 and should be addressed to: Dan Jacquet, BLM- Carson City District Office, 5665 Morgan Mill Road, Carson City NV 89701, or emailed to AmericanFlat_EA@blm.gov. All substantive issues raised during the comment period will be considered and modifications based on these comments may be made to the document for inclusion in the EA.

We are pleased to notify you of the availability of the United Comstock Merger Mill at American Flat EA and draft FONSI for your review and comment. We appreciate your cooperation and assistance during this process.

Sincerely,

Linda J. Kelly
Field Manager
Sierra Front Field Office

United Comstock Merger Mill at American Flat

DRAFT

Finding of No Significant Impact

DOI-BLM-NV-C020-2010-0017-EA

U.S. Department of the Interior
Bureau of Land Management
Carson City District
Sierra Front Field Office
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September 2010



DRAFT
FINDING OF NO SIGNIFICANT IMPACT
for the
United Comstock Merger Mill at American Flat
Environmental Assessment
(DOI-BLM-NV-C020-2010-0017-EA)

Finding of No Significant Impact

On the basis of the information contained in the United Comstock Merger Mill at American Flat Environmental Assessment (EA) ((DOI-BLM-NV-C020-2010-0017-EA) and all other information available to me, it is my preliminary determination that: 1) implementation of any of the considered alternatives will not have significant environmental impacts; and 2) none of the considered alternatives constitute a major federal action having a significant effect on the human environment. Therefore, an Environmental Impact Statement (EIS) is not necessary and will not be prepared.

This finding is based on my consideration of the Council on Environmental Quality's (CEQ) criteria for significance (40 CFR 1508.27), both with regard to the *context* and *intensity* of the impacts described in the EA.

Context

The United Comstock Merger Mill at American Flat (referred to as the American Flat Mill [AFM]) is the last remnant of the United Comstock and the Comstock Merger milling operations. As such, it contributes to the eligibility of the Virginia City National Register District. It also lies within the Virginia City National Historic Landmark, one of 27 in Nevada and 2,442 in the United States. These federal designations indicate the general importance of the region to the interpretation and appreciation of the nation's history. However, the AFM site alone is a single component within both designated areas and does not, in isolation, affect either of the federal designations.

While the AFM has retained some of its features, such as integrity of location, and, to a lesser degree, its design, workmanship, material, and association, the previous removal of equipment and tanks has diminished these elements. The elements of setting and feeling have been compromised by development of two heap leach milling operations very close to the site. Graffiti distracts from the historical nature, as do the impacts from trespass recreational users (vehicles and pedestrians and the debris and trash left behind). On the regional and local level, the degradation of the site has resulted in appreciation of the area more for the recreational opportunities it provides than as a fully-representative historic resource.

Intensity

1) Impacts that may be both beneficial and adverse.

All considered alternatives included actions that would result in both beneficial and adverse impacts to different resources at the AFM site. All considered alternatives would result in beneficial impacts related to hazardous and solid materials because the small amount of hazardous material found at the site would be removed under a separate removal action. All action alternatives would support the Purpose and Need for the action by providing beneficial impacts to human health and safety by mitigating risk and hazards. In consideration of the historic resources on the site, all considered alternatives would have adverse impacts, mitigated to a large degree by actions stipulated in a proposed Memorandum of Agreement (MOA) between BLM and the State Historic Preservation Officer (SHPO). In general, alternatives that include demolition of AFM buildings would result in beneficial impacts to biological resources by returning all or portions of the site to a more natural habitat condition. There are no actions taken in any of the considered alternatives would result in a major adverse impact.

2) The degree to which the proposed action affects public health or safety.

In compliance with the Purpose and Need for the action, all considered action alternatives would have a beneficial impact to public health and safety by mitigating hazards and risks currently represented on the AFM site. The no-action alternative would result in continuing risks to public health and safety.

3) Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

All of the considered alternatives directly address the unique aspects of the AFM site in terms of the historic resources present.

No wetlands, park lands, prime or unique farm lands, wild and scenic rivers, or ecological critical areas are present on, or in the vicinity of, the AFM site and therefore will not be impacted by implementation of any of the considered alternatives.

4) The degree to which the effects on the quality of the human environment are likely to be highly controversial.

Some concern has been expressed by the public and the Comstock Historic Commission regarding considered alternatives that may result in some or all of the AFM site buildings being permanently removed from the historic context of the region and unavailable to view. Many of these expressions of concern also, however, acknowledge the human health and safety risks the site presents, as well as the general ruined condition of the buildings. Implementation of any of the considered alternatives is therefore not deemed highly controversial.

Fewer individuals have expressed concern that all of the considered alternatives will prevent access to the AFM site buildings for recreation purposes. However, as these activities are

unauthorized and are conducted in trespass, this consideration is not taken-up as a potential source of controversy in the context of the EA.

5) The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.

The AFM site itself has been thoroughly characterized for risks to the human environment. The impacts of any of the considered alternatives to resources and issues are well-understood and thoroughly analyzed. There is little to no uncertainty regarding the estimated effects of the considered alternatives; nor is there unique or unknown risks presented by the implementation of any of the considered alternatives.

6) The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.

None of the considered alternatives necessarily sets a precedent for future actions. All of the considered alternatives were developed specifically to meet the Purpose and Need for this action. Any of the considered alternatives are compatible with future consideration of similar situations. Likewise all mitigation actions included in all of the considered alternatives to limit impacts could be conceptually refined for specific application to similar actions. Potential future actions in similar situations would still be subject to assessment and disclosure of impacts through the appropriate NEPA process and documentation.

7) Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.

None of the considered alternatives relate to other actions with individually insignificant but cumulatively significant impacts.

8) The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the NRHP or may cause loss or destruction of significant scientific, cultural, or historical resources.

All of the considered alternatives would be expected to have some adverse impacts to the historic resources at the AFM site. However, as the AFM site has lost most of its integrity, these impacts are not determined to be significant. These impacts would diminish the integrity of the mill site to the extent that it would no longer retain significance as a contributing element to the Virginia City National Register District. However, these impacts would not compromise the overall significance of the District as a whole. Adverse impacts under all of the action alternatives considered would be mitigated to a large degree by actions stipulated in a proposed MOA between BLM and the SHPO.

9) The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the ESA of 1973.

No federally listed species under the ESA, or critical habitat for such species, are present on, or in the vicinity of, the AFM site and therefore will not be impacted by implementation of any of the considered alternatives.

10) Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.

All of the considered alternatives comply with the Carson City Consolidated Resource Management Plan (CRMP). Implementation of any of the considered alternatives will not violate or threaten to violate any federal, State, or local law or requirement imposed for the protection of the environment.

Linda J. Kelly
Field Manager
Sierra Front Field Office

Date

ENVIRONMENTAL ASSESSMENT

United Comstock Merger Mill at American Flat Environmental Assessment

DOI-BLM-NV-C020-2010-0017-EA

U.S. Department of the Interior
Bureau of Land Management
Carson City District
Sierra Front Field Office
5665 Morgan Mill Road
Carson City, NV 89701
775-885-6000

September 2010



It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

DOI-BLM-NV-C020-2010-0017-EA

**United Comstock Merger Mill at American Flat
Environmental Assessment**

**Sierra Front Field Office, Nevada
Bureau of Land Management
U.S. Department of the Interior**

September 2010

United Comstock Merger Mill at American Flat Environmental Assessment

Proposed Action Location:

United Comstock Merger Mill at American Flat
U.S. Department of the Interior
Bureau of Land Management
Storey County, Nevada

Lead Agency:

U.S. Department of the Interior
Bureau of Land Management
Sierra Front Field Office
5665 Morgan Mill Road
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Appendices

Appendix A	Environmental Analysis Assumptions and Calculations
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Acronyms

AFM	American Flat Mill
AHPA	American Historic Preservation Act
AR	Administrative Record
ARPA	Archaeological Resources Protection Act
ATV	all terrain vehicle
AUMs	animal unit months
BAQP	Bureau of Air Quality Planning
BLM	Bureau of Land Management
BMPs	best management practices
CAA	Clean Air Act of 1977
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CLCFPD	Central Lyon County Fire Protection District
CO	carbon monoxide
CRMP	Carson City Consolidated Resource Management Plan
CWA	Clean Water Act of 1977
DOI	U.S. Department of the Interior
EA	Environmental Assessment
E & E	Ecology and Environment, Inc.
EMS	Emergency Medical Service
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
ESD	Ecological Site Description
FLPMA	Federal Land Policy and Management Act of 1976
FO	Field Office
GBBDCs	Game Birds Below Desired Condition
HABS	Historic American Buildings Survey
HAER	Historic American Engineering Record
HMTA	Hazardous Materials Transportation Act
IM	Instruction Memorandum
lb	pound
LC OEM	Lyon County Office of Emergency Management
µg/m ³	micrograms per cubic meter
MBTA	Migratory Bird Treaty Act
MOA	Memorandum of Agreement
NAAQS	National Ambient Air Quality Standards
NDEP	Nevada Department of Environmental Protection
NGO	non-governmental organization
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act

NO ₂	nitrogen dioxide
NO _x	oxides of nitrogen
OHV	off highway vehicle
PL	Public Law
PM	particulate matter
PM _{2.5}	PM with diameter less than or equal to 2.5 micrometers
PM ₁₀	PM with diameter less than or equal to 10 micrometers
RMP	Resource Management Plan
ROW	right of way
SCFD	Storey County Fire Department
SFFO	Sierra Front Field Office
SHPO	State Historic Preservation Officer
SI	Sampling Investigation
SO ₂	sulfur dioxide
U.S.C.	United States Code
USACE	U.S. Army Corp of Engineers
USFWS	U.S. Fish and Wildlife Service
V&T	Virginia and Truckee
VOC	volatile organic compound
VRM	Visual Resource Management
WAP	Wildlife Action Plan

1 PURPOSE AND NEED FOR ACTION

The U.S. Department of the Interior (DOI), Bureau of Land Management's (BLM's) Sierra Front Field Office (SFFO), has prepared an Environmental Assessment (EA) to evaluate the impacts to the natural and human environment from alternatives considered to mitigate hazards to human health from the United Comstock Merger Mill at American Flat (AFM), while addressing historic resources.

1.1 Introduction and Background

This EA presents BLM management options for the AFM site, located in Storey County, southwestern Nevada (Figure 1-1). The site is within the northeast quarter of Section 7, Township 16 North, Range 21 East of the Mt. Diablo Meridian, and is approximately 1.25 miles northwest of Silver City, Nevada, and 12 road miles northeast of Carson City, Nevada. The site is on approximately 27 acres of publicly owned lands managed by BLM and contains eight buildings and associated materials (U.S. Army Corp of Engineers [USACE] 2010).

The AFM (originally named the United Comstock Merger Mill) was built in 1922 to process local gold and silver ore using cyanide solution and the Merrill-Crowe process (a separation technique for removing gold from a cyanide solution). The mill operated from 1922 to about 1926 and produced \$7.5 million worth of silver and gold. Over its short life, the mill was owned by two different corporate entities, the United Comstock Mines and the Comstock Merger Mines. At the time it operated, AFM was considered the largest, most modern and sophisticated mill of its type in the U.S. The mill was shut down due to metallurgical problems and the dropping price of silver. When the site was closed, all equipment, metal, and wood materials were scrapped and salvaged. During the salvaging process, little care was taken in the removal of equipment and other materials and concrete structural components were cut and broken as required to facilitate the removal process. The salvage process resulted in a great deal of damage, including large holes and voids left in the concrete, cut reinforcing steel, and broken concrete structural members. Years of decay and vandalism have also affected the structures (USACE 2010).

Today the existing structures at the site consist of badly decaying concrete, exposed reinforcing steel, broken structural members, and large holes in the concrete floors; only the deteriorated concrete skeletons of the structures remain. Beginning in 1998, BLM has repeatedly fenced, gated, and signed the mill site, and scarified access roads for public safety reasons. In response to a fatality at the site, the BLM officially closed the buildings to public entry in February 1997. Even with the closure, the site receives an estimated sixty visitors a week, mainly juveniles who climb on the structures to post graffiti and hold parties. According to the Storey County Sheriff's Department, police officers and emergency vehicles respond to issues associated with the site several times a month (USACE 2010).

1.2 Purpose and Need

The AFM was shut down and abandoned in 1926. The site now attracts members of the local and regional public who use it on an informal basis to party, post graffiti, play paintball, take

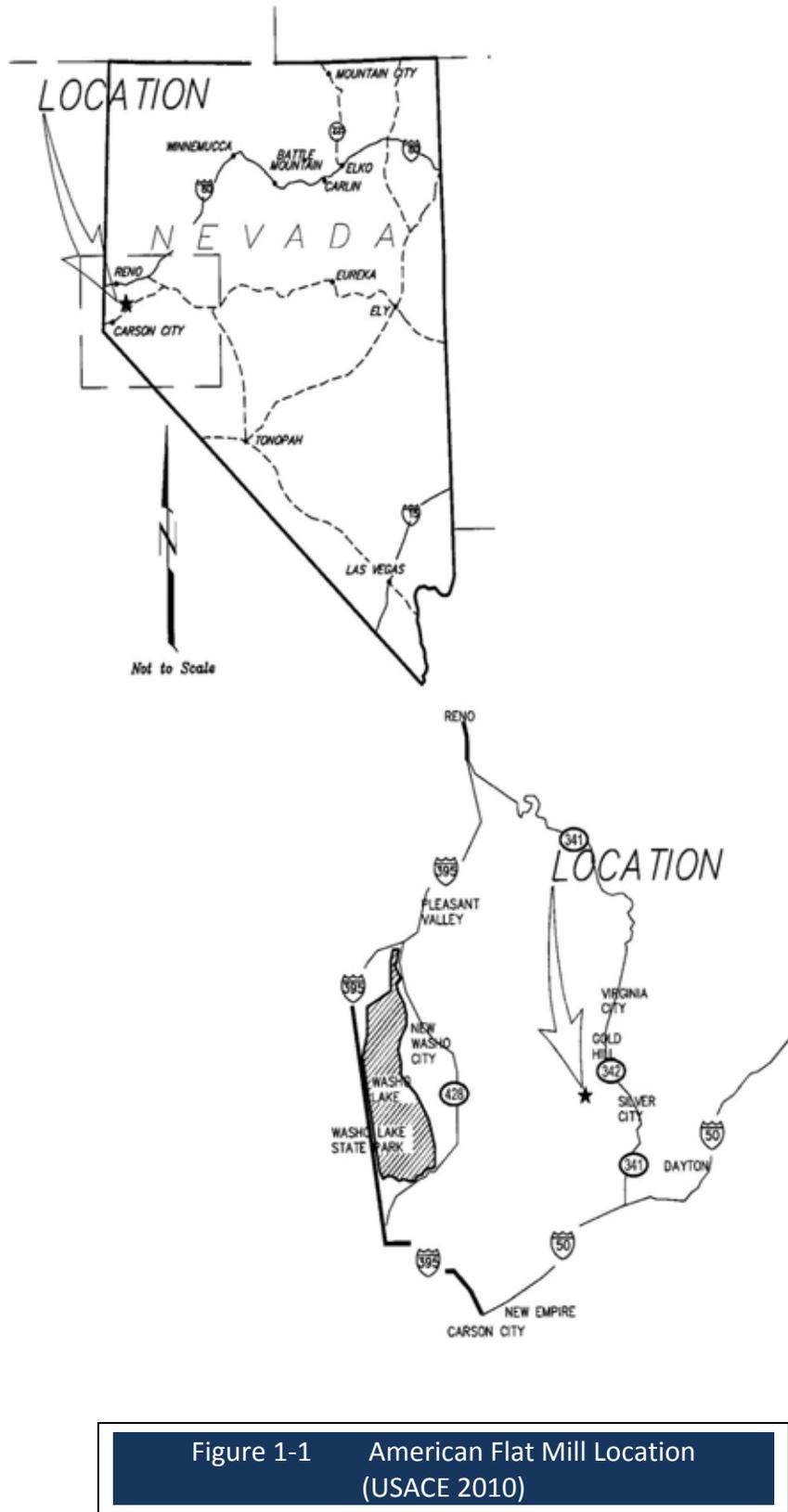


Figure 1-1 American Flat Mill Location (USACE 2010)

photographs, and pursue other recreational activities. While inside or near the unstable concrete mill buildings, these members of the public are exposed to a number of physical hazards, including falling or collapsing concrete structures, underground mill sumps filled with water, unmarked voids and tunnels, and holes in the concrete flooring. Accidents at the site have resulted in several serious injuries over the years and one fatality in 1996. Local law enforcement and emergency vehicles respond to issues associated with the site several times a month.

A 2008 audit of the site by the DOI Office of the Inspector General found the property to be a high-risk liability to the U.S. Government.

The purpose of the action is to promote public health and safety on public land and to comply with the direction of the Office of the Inspector General that BLM “identify and resolve trespassing on abandoned mine sites and assess and mitigate hazards associated with these sites” (DOI 2008). The need of the action is to mitigate or abate the physical human safety hazards present on the AFM site, while addressing historic values.

1.3 Organization

This EA has been organized and formatted consistently with applicable National Environmental Policy Act (NEPA) and Council on Environmental Quality (CEQ) guidelines and the BLM NEPA Handbook (H-1790-1). The goal of this EA is to provide the reader with a clear understanding of the alternatives, environmental resources that may be affected, potential environmental consequences, and the environmental review and evaluation process. Chapter titles and brief content descriptions are:

- Chapter 1 – Purpose and Need: Provides the history and background of the AFM and describes the purpose and need for the action, the scoping process and issues, related plans, relevant policy, and the overall vision of the EA.
- Chapter 2 – Alternatives: Describes potential alternatives and discusses the alternative development process. It describes four alternatives that are evaluated in detail in this EA, including the No Action Alternative and three action alternatives that provide a range of actions.
- Chapter 3 – Affected Environment: Describes the current physical, biological, human, and land use environments of the AFM. The description provides a baseline against which the impacts of the alternatives may be compared. The baseline described in this chapter represents environmental and social conditions and trends in the AFM at the time this document was being prepared.
- Chapter 4 – Environmental Consequences: Describes how, and to what extent, baseline conditions would be altered by the alternatives. These changes are measured in terms of adverse and beneficial impacts, and direct, indirect, and cumulative impacts.
- Chapter 5 – Consultation and Coordination: Describes how BLM interacted with cooperators and stakeholders.
- Chapter 6 – References: Provides full citation information for all references, published and unpublished, cited in this document, as well as personal contacts used in developing this EA.

Appendix A provides supporting information for the chapters described above.

1.4 Scoping and Issues

As required by NEPA, the BLM SFFO completed a process to determine the relevant issues that would guide the scope of the environmental analysis and alternatives to be analyzed in this EA. This process, called scoping, is conducted in the early phases of the planning process for EAs, and is used to determine important issues, identify possible alternatives, and gather public comments on BLM's action. The SFFO used comments received during the scoping period to determine:

- Important issues to be addressed;
- Possible data needs and sources;
- Alternatives to be assessed; and
- Potential environmental and socioeconomic effects of the various alternatives.

The formal scoping period began on April 27, 2010. Two public scoping meetings were held. The first was held on April 27, 2010 in Carson City and the second on April 28, 2010 in Virginia City. Approximately 13 people attended the meeting in Carson City and eight people in Virginia City. These estimates are approximate because not all participants who attended the meetings signed-in.

Written comments on the proposal for the EA were accepted through May 26, 2010. BLM received 23 unique comment letters during the scoping period. The majority of the letters were in support of retaining the AFM site structures for recreational and historic reasons. Several comments supported removing the structures for public safety reasons. The Scoping Report (BLM 2010) describes the comments and the BLM responses and is available on Carson City District website.

This EA identifies and analyzes the potential environmental effects of the alternatives. Environmental resources potentially affected by the alternatives considered and evaluated in this EA include:

- Air Quality
- Water Quality
- Soils
- Vegetation
- Wildlife and Fisheries
- Cultural and Historic Resources
- Visual Resources
- Recreation and Visitor Services
- Land Use Authorizations/Access
- Hazardous and Solid Materials
- Public Health and Safety
- Interpretation and Environmental Education
- Socioeconomics

Geology, wild horses and burros, wildland fire ecology and management, paleontological resources, environmental justice, and special designation areas are not analyzed because no alternatives would affect these resources.

1.5 Consultation

BLM SFFO sent a formal consultation letter informing the Yerington Paiute Tribe and the Washoe Tribe of Nevada and California of the results of the Section 110 inventory (Zeier et al. 2009). This letter informed the tribes that one prehistoric site is present near the American Flat Mill site and invited comments and concerns. No response to this correspondence has been received.

The BLM SFFO sent a formal consultation letter to the Washoe Tribe, the Reno-Sparks Indian Colony, and the Yerington Paiute Tribe informing them of the EA and briefly describing the four alternatives; informing them of the presence of one prehistoric site in the vicinity of American Flat; and inviting comments, concerns, and offering a site tour. Staff met with the Washoe Tribe, and they stated that a site visit is not necessary at this time. No other tribal concerns have been voiced.

1.6 Supplemental Authorities and Relationship to BLM Policies, Plans, and Programs

In addition to NEPA, a number of supplemental authorities contain procedural requirements that pertain to treatment of elements present on the AFM site. These are listed in Table 1-1. A number of BLM plans, policies, and regulations are applicable to the AFM EA and are incorporated into this EA by reference. All the plans, policies, and regulations will be included in the Administrative Record (AR) for this project and made available upon request.

Table 1-1	Applicable BLM Policies, Plans, and Programs and Supplemental Authorities
	BLM Plans, Policies, and Regulations
	BLM Planning Regulations, 40 CFR 1600
	BLM National Environmental Policy Act (NEPA) Handbook H-1790-1
	BLM Rangeland Health Standards, BLM Manual 4180
	Special Status Species Management, BLM Manual 6840
	Cultural Resource Management, BLM Manual 8100
	Native American Religious Concerns (NARC), BLM Handbook 8120
	General Procedural Guidance for Native American Tribal Consultation, BLM Manual 8120
	Identifying and Evaluating Cultural Resources, BLM Manual 8110
	Planning for Uses of Cultural Resources, BLM Manual 8130
	Protecting Cultural Resources, BLM Manual Section 8140
	Native American Consultation, BLM Manual 8160
	Visual Resource Inventory (BLM 1986), BLM Handbook 8410-1
	Roads, BM Manual 9113
	Culverts and Bridges, BLM Manual 9112

Table 1-1 Applicable BLM Policies, Plans, and Programs and Supplemental Authorities
Visual Resource Management, BLM Information Bulletins (IM) 98-135, 98-164, and 2000-096
Supplemental Authorities
Federal Land Policy and Management Act of 1976 (FLPMA; 43 USC 1701 et seq.)
Clean Air Act of 1977 (CAA; 33 USC 1251 et seq.)
Clean Water Act of 1977 (CWA; 33 USC 1251 et seq.), as amended
Taylor Grazing Act of 1934 (43 United States Code [U.S.C.] 315)
Healthy Forests Restoration Act of 2003 (Public Law [PL] 108-148)
Federal Noxious Weed Act of 1974 (Public Law [PL] 93-629)
Endangered Species Act of 1983 (ESA; 16 USC 1531), as amended
National Historic Preservation Act (16 USC 470), as amended
Archaeological Resources Protection Act (16 USC 470), as amended
Native American Graves Protection and Repatriation Act (PL 101-601)
The Archaeological Resources Protection Act of 1979 (ARPA)
Archeological and Historic Preservation Act of 1974 (AHPA)
36 CFR 65 National Historic Landmark Program
36 CFR 68 Secretary of the Interior’s Standards for the Treatment of Historic Properties
Instructional Memorandum 2004-052 - Assessing Tribal and Cultural Considerations
Executive Order (EO) 13175 and 1300840 - Consultation and Coordination with Indian Tribal Governments
EO 13007 - Indian Sacred Sites
Migratory Bird Treaty Act of 1918 (16 USC 703), as amended
Transportation Safety Act of 1974
Hazardous Materials Transportation Act (HMTA), as amended
Executive Order 13112: Control of Invasive Species
Final EIS: Vegetation Treatment on BLM Lands in the 13 Western States
40 CFR 2740, 2912, 2911, and 2920, Land Use Authorizations

2 ALTERNATIVES

2.1 Introduction

For an alternative to be considered reasonable under the National Environmental Policy Act (NEPA), it should meet the purpose and need statement (as outlined in Chapter 1). For this Environmental Assessment (EA), three action alternatives were identified in addition to the No Action Alternative. Given the purpose and need of the EA, all three of the action alternatives would change the Bureau of Land Management's (BLM's) management of the American Flat Mill (AFM) site.

In the context of an EA, a range of alternatives explores alternative means of meeting the purpose and need for the action. The range of alternatives must be reasonable, feasible, and realistic. This analysis considered four alternative approaches to address the need to mitigate or abate the physical human safety hazards present on the AFM site, while addressing historic values. A No Action Alternative and three action alternatives are evaluated in this analysis.

Two actions would be common to all alternatives:

- All contaminated materials would be removed from the site under a separate removal action before implementation of any alternative.
- All other historic features on the AFM mill site (a rock quarry pit and crusher, a cement tank, several refuse dumps, an internal railroad spur, and a V&T Railroad spur), except some roads and possibly terraces will be avoided and not impacted by actions under any alternative.

Two actions are common to all of the action alternatives:

- All alternatives would be implemented in accordance with state and local requirements, as required by law, including permits from Nevada Department of Environmental Protection (NDEP) for onsite disposal of any associated demolition debris.
- A Memorandum of Agreement (MOA) would be developed between BLM and the State Historic Preservation Officer (SHPO) to address adverse effects to cultural resources, pursuant to the State Protocol Agreement (2009) between the two agencies that implements the National Historic Preservation Act (NHPA).

All other actions are described in Section 2.3. Because the alternatives include reference to the AFM buildings, brief descriptions of the buildings are included below.

2.2 Building Descriptions

The following buildings are present onsite, and their locations are shown in Figure 2-1. These buildings have essentially the same level of integrity as when they were considered for inclusion on the National Register. They lost most of their integrity at the time they were abandoned due to salvage operations by the owners. Brief descriptions of the buildings from the U.S. Army Corp of Engineers (USACE) report (USACE 2010) follow.

Building 1 – Ore Bin

Building 1 – The Ore Bin is a 3,785-square-foot building with 14 concrete supports for the steel rotating tibble. The building and supports are concrete and are largely intact (the tibble has been removed). In addition to the walls and deck, large concrete buttresses project from both sides of the structure (built to bear the weight of the ore trains and offset the rotary action of the tibble). Figure 2-2 shows the current appearance of the Ore Bin.



Figure 2-2 Building 1 – Ore Bin

Building 2 – Coarse Crushing Plant

Building 2 – The Coarse Crushing Plant, shown in Figure 2-3, was constructed entirely of reinforced concrete. The building is 8,473 square feet, and at the time it was built, it was 80 feet tall. Two other mill components were a structural part of the Coarse Crushing Plant: a machine shop, which was approximately 50 by 80 feet and 32 feet tall, and a blacksmith shop, which was approximately 32 by 48 feet in plan view. The upper walls of the Coarse Crushing Plant had a reinforced concrete skeleton filled with Fenestra steel sash windows and corrugated galvanized steel (the steel was salvaged in 1927 and is no longer present). There are two basement levels and 10,000 linear feet of tunnels. Little is known about the underground mill sumps and concrete-lined tunnels that underlie the site. The tunnels carried process materials to the next processing stage, mostly on conveyers and through pipes.



Figure 2-3 Building 2 – Coarse Crushing Plant

Run-of-Mine ore was delivered to this facility via a 10,000-foot-long underground tunnel. Electric railcars dumped ore here to be crushed. A heavily reinforced concrete receiving ore bin occupies the northeastern side of the building. Crushed ore from this facility was sent to the Fine Grinding and Concentration Plant. Today, the building consists of five levels, including two basement levels (now flooded). The upper levels are now only bare skeletons of concrete with protruding rebar.

Building 3 – Fine Grinding and Concentration Plant

Building 3 – The Fine Grinding and Concentration Plant (with basement levels; Figure 2-4) is a reinforced concrete building that is 16,998 square feet and stands 83 feet tall. The building is roughly rectangular in shape, with a rectangular extension on the eastern side and the remains of a conveyor belt support structure on the west. The structure was built on the side of a hill and has multiple levels of varying heights, including two levels below surrounding ground on the northern side and one subgrade level on the southern side. This building contained ball mills and classifiers that crushed and washed the ore. Material from this plant was sent to the Cyanide Plant.

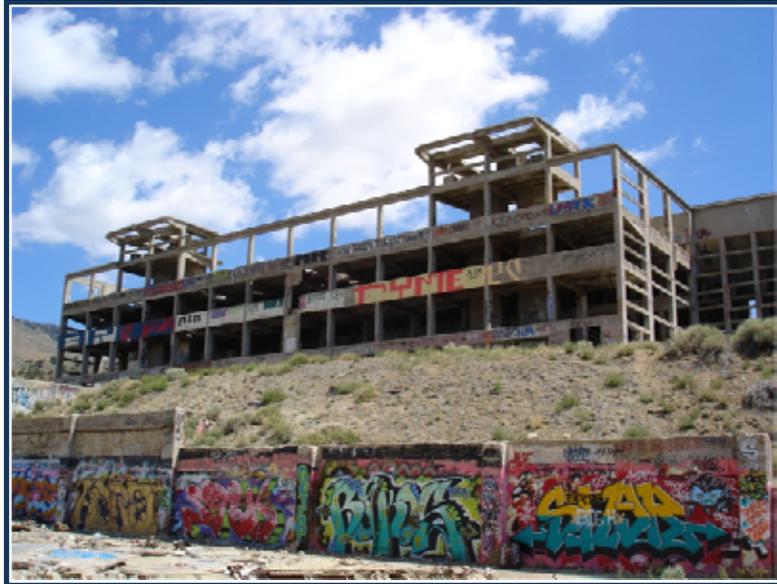


Figure 2-4 Building 3 – Fine Grinding and Concentration Plant

Building 4 – Cyanide Plant

Building 4 – The Cyanide Plant, shown in Figure 2-5, is 89,650 square feet and covers about 2.5 acres. Most of the Cyanide Plant has reinforced concrete floors,



Figure 2-5 Building 4 – Cyanide Plant

retaining walls, tunnels, equipment mountings, and cast sills, which supported an array of 40 redwood mixing and leaching tanks. Roof support columns were placed so as not to interfere with the leaching and mixing tanks. The tanks rested on concrete sills placed directly on the concrete floor. The building is set onto cut-and-fill terraces that facilitated gravity flow of the process solutions. Output from the cyanide process was sent to the filter or tank house located at the northwestern corner of the Cyanide Plant. Product from the tank house was delivered to the precipitation and refinery building. The basement at the lowest level of the concrete skeleton of this building is now flooded and has several concrete posts protruding from it.

Building 5 – Warehouse

Building 5 – The Warehouse (Figure 2-6) was built of solid concrete. It is approximately 5,666 square feet and 13 feet tall. A railroad spur was once adjacent to it. The warehouse was surrounded by a concrete platform eight feet wide and four feet above ground level. Most of the interior of this building is now open.



Figure 2-6 Building 5 – Warehouse

Building 6 – Precipitation and Refinery Building

Building 6 – The Precipitation and Refinery Building was constructed of reinforced concrete and is 3,938 square feet (Figure 2-7). Gold and silver were extracted from pregnant cyanide solutions in this building. The building held two rectangular tanks and housed four Merrill-Crowe presses. The remainder of the building held the refinery and included a vault for bullion storage. The windows in this building were covered with heavy metal



Figure 2-7 Building 6 – Precipitation and Refinery Building

grates, which have been removed.

Building 7 – Assay Office and Testing Plant

Building 7 – The Assay Office and Testing Plant is an approximately 3,005-square-foot two-story rectangular building. The first story was constructed of reinforced concrete and contained equipment for testing and sample grinding equipment. The second story consisted of a metal frame covered with metal lath and cement plaster inside and out. The building contained a furnace room, laboratory, and mill superintendent’s office. The building has a concrete daylight basement with a small porch made of cast concrete. The remaining parts of Building 7 are shown in Figure 2-8.



Figure 2-8 Building 7 – Assay Office and Testing Plant

Building 8 – Substation

Building 8 – The Substation was the small (approximately 2,022-square-foot) building located behind the Coarse Crushing and Fine Crushing buildings. All that is left of this building, as shown in Figure 2-9, is a rectangular slab foundation with remnants of concrete stem walls surrounded by an array of concrete pillars.



Figure 2-9 Building 8 – Substation slab with Building 3 in the Background

2.3 Description of Alternatives

Detailed alternatives and actions are discussed in this section and incorporate the actions that are common to all alternatives or common to all action alternatives, as discussed in Section 2.2.

To meet the purpose and need, some action alternatives include an assessment of historic resources and/or additional site recordation and documentation. These are described below.

An *Architectural assessment* is conducted to document a historic building in its present state and to assess the stability of the structure. A qualified professional gathers information about the building such as existing architecture, present condition, and factors affecting stability and structural integrity. This approach would be used to assess any retained buildings and would be undertaken in accordance with the MOA between BLM and SHPO.

Site recordation and documentation is conducted to mitigate adverse effects to cultural resources by collecting and preserving information that would otherwise be lost through demolition. A qualified professional would prepare Level I Historic American Building Survey/Historic American Engineering Record (HABS/HAER) documentation of the buildings to create detailed, high-quality records that allow the public, researchers, and future generations to learn about the architecture and history of the AFM. This approach would be used prior to the demolition of buildings and would be undertaken in accordance with the MOA between BLM and SHPO.

2.3.1 Alternative 1 – No Action

Alternative 1 represents the No Action Alternative required under NEPA and the Council on Environmental Quality (CEQ) regulations. Under this alternative, current management of the AFM site would continue, with no changes.

Under Alternative 1, the BLM would continue all current management actions at the site:

- Maintaining the existing Emergency Closure Order;
- Replacing and/or improving fences around clusters of buildings and allowing access to the areas between buildings;
- Replacing and/or improving signs;
- Implementing other institutional controls; and
- Continuing current BLM law enforcement and Storey County sheriff patrols.

2.3.2 Alternative 2 – Demolition

Under Alternative 2, all eight AFM site buildings would be demolished and all building footprints and other disturbed areas would be reclaimed. Demolition debris would be buried onsite. A final design for the alternative actions would be completed prior to implementation. The design would include a complete delineation of structures, voids, and tunnels. It would also delineate onsite landfill area perimeters and subgrade characteristics, and identify native borrow material sources for use in filling voids and as a soil cover for onsite landfill areas. This action design would include construction of vegetated soil cover over the onsite landfills and other disturbed areas; final grading contours; and a site-specific stormwater management plan, revegetation plan, and weed control plan, as well as demolition and revegetation best

management practices (BMPs). This design would be completely integrated into implementation of this alternative.

Water would be removed from basements in Buildings 2, 3, and 4 prior to demolition actions and filling of tunnels and voids. This water would be stored onsite for dust control or other uses. Additional water for dust suppression would be from the nearest municipal source and transported by truck to the site. No onsite reservoir would be constructed for the retention of this water.

Demolition techniques for buildings and structures could include, but are not limited to:

- Excavator with a demolition grapple
- Concrete saw
- Concrete water-jet
- Removal of walls by crane
- Removal of walls by backhoe
- Wrecking ball

Following building demolition, ground-level slabs and foundations would be fractured and left in place. Fracture options could include, but are not limited to:

- Excavator with a demolition grapple
- Backhoe with a breaker attachment
- Jackhammer
- Pneumatic and hydraulic breakers
- Expansive grout

Tasks associated with demolition implemented under this alternative would be essentially the same regardless of the selected technique. Typical BMPs for demolition and landfill activities could include, but are not limited to:

- Temporary safety fencing around the site perimeter
- Silt fencing to control run-on and run-off
- Sediment logs to control contamination of the stream adjacent to the site
- A gravel tracking pad for washing equipment prior to demobilization/departure from the site
- Dust controls, such as water spraying along haul routes during demolition and grading activities

Demolition debris and/or native borrow material would be used to fill building voids. Building 4 is set onto cut-and-fill terraces and it is assumed that the Building 4 footprint and substructure would serve as a landfill with volume sufficient to accommodate all remaining demolition debris after voids and tunnels were filled. Each demolished building footprint would be covered with a minimum of three feet of native soil.

The American Flat Road to the AFM site would not be blocked, nor would rerouting of traffic be necessary.

The site would be graded to blend with existing contours and revegetated to achieve a natural appearance and meet the area's Visual Resource Management (VRM) classification. A

vegetated soil cover (minimum 36-inch) would be constructed over all building footprints (i.e., ground-level slabs and foundations, including the primary landfill in Building 4). The soil cover would comprise native material excavated from an onsite borrow area. All disturbed surfaces would be covered in accordance with an engineered design. A seed mix comprising native grass and shrub species common in the vicinity would be used to seed all disturbed and soil cover areas. Revegetation BMPs would be implemented to protect the seeded surface and facilitate establishment of the desired vegetation cover. AFM site roads would be reclaimed along with the rest of the site. Access and perimeter roads would not be reclaimed.

Following revegetation actions and demobilization, site clean-up activities would include deconstruction and removal of all temporary structures and features, including a tracking pad and temporary site security fencing.

HABS/HAER Level I documentation of the demolished buildings would be completed, recorded in accordance with the MOA, and archived with the Library of Congress. Offsite interpretation of the historic mill site features would be developed and made available to the public.

No long-term site security activities would be required under this alternative. BLM would remove the Emergency Closure Order and open the site to public access.

2.3.3 Alternative 3 – Institutional Controls

Alternative 3 would include minimal physical actions taken to reduce public safety hazards. No building demolition would occur under this alternative. Public safety would be achieved by complete control of site access. Voids and tunnels in the buildings would be filled with native soil fill. Loose rebar and concrete would be removed from the site. Site buildings would be allowed to subside and collapse over time. An architectural assessment would be undertaken relative to the minimal physical actions taken, such as filling of voids and removal of loose hanging material, in accordance with the MOA.

The entire site perimeter would be fenced with an eight-foot-tall security fence and the area would be posted with warning signs. Daily onsite security patrols would be conducted along with periodic inspections and maintenance of the fencing and signs. Full-time site security would be implemented should fencing and daily patrols be deemed ineffective.

BLM would implement a long-term closure order and an administrative withdrawal to manage public access, protect the site from incompatible land uses, and ensure retention of the site in public ownership.

2.3.4 Alternative 4 – Selected Building Retention

In Alternative 4, three selected buildings would be retained (the use of the word “retained” in this context does not refer to retention of Federal Lands) for their important historic value and would be available for passive viewing from outside of the building fence, for viewing from the Virginia and Truckee (V&T) Railroad, and for onsite interpretation; all other onsite buildings and structures would be demolished and disturbed sites reclaimed. Building 3 would be retained because it is the largest and most dominant structure and has greatest visual appeal. Buildings 5 and 6 would also be retained. There would be no public access to the inside of the retained buildings.

For the retained buildings, loose, hanging concrete and exposed rebar would be removed, access to upper floors would be demolished, and all voids would be filled. The first floors of Buildings 3, 5, and 6 would be secured against access by installing bars, metal plates, or other materials over doors, windows, and other openings, and each building would be enclosed in an eight-foot-high security fence.

An architectural assessment would be completed for the retained buildings. This assessment would be integrated into the final action design to minimize impacts to historic resources from demolition actions on other buildings, filling of voids, removal of loose hanging material, other human hazard abatement actions, and building security. HABS/HAER Level I documentation would be completed on all buildings to be demolished in accordance with the MOA.

A final design for the alternative actions would be completed prior to implementation and would comprise the same components described for Alternative 2. Demolition of Buildings 1, 2, 4, 7, and 8; installation of soil cover; and reclamation would proceed as described under Alternative 2.

The BLM would implement a long-term closure order and an administrative withdrawal to manage public access, protect the site from incompatible land uses, and ensure retention of the site in public ownership.

2.3.5 Cost Estimates

Cost estimates for implementing each alternative were calculated from the quantity breakdown and order of magnitude estimates provided in the USACE report (USACE 2010), augmented with some additional information. These costs are summarized in Table 2-1. Assumptions for costs are included in Appendix A.

Table 2-1 Summary of Estimated Costs to Implement Alternatives				
	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Implementation	\$20,000 (per year for BLM patrols)	\$3,246,800	\$240,900 (per year for security costs)	\$2,004,232
O&M¹	\$20,000 ²	\$50,000	\$157,000 ¹	\$50,000
Total Year-One Cost	\$40,000 ³	\$3,296,800	\$397,900 ²	\$2,054,232
Ongoing Costs (20 years)	\$800,000	\$0	\$4,818,000	\$400,000

Notes:

All estimates include a 20% contingency for miscellaneous and unforeseen costs

¹ Operations and Maintenance; for example, on-going repair to fences or vegetation cover

² One-time estimate to completely replace fences and signage for AFM site, specific to alternative

³ Year one includes one-time cost for fencing/signage plus per annum estimates

2.3.6 Alternatives Considered but Not Analyzed in Detail

Four other alternatives were explored by BLM or raised during the scoping process. These were not carried forward for further analysis because they did not meet the purpose and need for the action, were not feasible due to cost, were speculative in nature, and/or would otherwise not comply with BLM guidance and policy. These are briefly discussed below.

Foundation Stabilization

This alternative would demolish all buildings on the AFM site to a height of 10 feet and/or fill vertical drops of greater than 10 feet with a maximum slope of 3:1, leaving only the vertical structures and outline of the buildings. This alternative did not meet the purpose and need for the action. Additionally, it is not feasible because of cost (\$10 million; USACE 2010).

Selected Building Stabilization with Controlled Management

Under this alternative, three selected buildings would be stabilized to the degree necessary to safely accommodate human entry and use. Current unauthorized recreational activities, including graffiti and paintball games, would be permitted. The remaining buildings would be demolished and disposed of in onsite landfills.

This alternative is not feasible because of the prohibitive cost of stabilizing the buildings for human entry and use for recreation activities. This degree of stabilization also far exceeds the purpose and need for the action. In addition, this alternative would not comply with BLM policy to discourage use; this policy exists because BLM cannot authorize discretionary activities that degrade historic resources.

Disposal and Transfer

Under this alternative, the entire site would be transferred as part of special legislation to local or state government. This concept has been discussed for years but no formal proposals have been put forward by any state, local agency or government, or non-governmental organization (NGO) to take over jurisdiction of the site. Therefore, this option was deemed speculative and not appropriate for carrying forward through the analysis.

Site Stabilization/Preservation Alternative

This alternative would stabilize all buildings to preserve them in their current state. All graffiti would be removed. The buildings would be fenced to prevent entry by the public and onsite security would be implemented. This degree of stabilization and historic preservation far exceeds the purpose and need of the action. This alternative also is not feasible due to the prohibitive cost of stabilization.

3 AFFECTED ENVIRONMENT

3.1 Introduction

This section describes the existing environmental resources at the American Flat Mill (AFM) site and in the immediately surrounding area—air, water, soil, vegetation, and cultural resources, as well as the visual setting—that could be affected by the considered alternatives, including the No Action Alternative. The description of resources provides baseline information that can be used to compare and evaluate potential impacts on the human environment that may result from implementation of the alternatives.

The AFM site is located along the eastern edge of American Flat, a large bowl-shaped area, south of Gold Hill, Nevada, and west of Silver City, Nevada. American Flat is bounded on the west by Harford Hill and on the north and west by the Virginia Range. A ridge from McClelland Peak to Beacon Hill, Basalt Hill, and Grizzly Hill forms the southern boundary of American Flat. Topography at the site ranges from moderate to gently sloping and elevations range from 5,320 to 5,480 feet above sea level (Zeier et al. 2009).

3.1.1 Resources Considered for Analysis

The BLM is required to address specific elements of the environment that are subject to requirements in statute or regulation or by executive order (BLM 2008d). Table 3-1 lists the elements that must be addressed in all environmental analysis and indicates whether the considered alternatives affect those elements. Other resources of the human environment that have been considered for analysis are listed in Table 3-2.

Table 3-1 Elements Considered for Analysis				
Element*	Not Present**	Present/Not Affected**	Present/May Be Affected***	Rationale
Air Quality			X	Carried through the EA
Areas of Critical Environmental Concern	X			Resource not present
Cultural Resources			X	Carried through the EA
Environmental Justice	X			Resource not present
Farm Lands (prime or unique)	X			Resource not present
Forests and Rangelands (HFRA Projects Only)	X			N/A
Human Health and Safety (Herbicide Projects)	X			N/A

Table 3-1 Elements Considered for Analysis				
Element*	Not Present**	Present/Not Affected**	Present/May Be Affected***	Rationale
Floodplains	X			Resource not present
Invasive, Nonnative and Noxious Species			X	Carried through the EA
Migratory Birds			X	Carried through the EA
Native American Religious Concerns			X	Carried through the EA
Threatened and/or Endangered Species	X			There are no federally-listed species on the AFM site based on review of the USFWS website (See Sections 3.5 and 3.6) and consultation with the BLM Wildlife Biologist and Botanist
Wastes, Hazardous or Solid			X	Carried through the EA
Water Quality (Surface/Ground)			X	Carried through the EA
Wetlands/Riparian Zones		X		Resource not affected
Wild and Scenic Rivers	X			Resource not present
Wilderness	X			Resource not present
<p>*Per BLM Handbook H-1790-1(BLM 2008d) Appendix 1 <u>Supplemental Authorities to be Considered</u>.</p> <p>**Supplemental Authorities determined to be Not Present or Present/Not Affected need not be carried forward or discussed further in the document.</p> <p>***Supplemental Authorities determined to be Present/May Be Affected <u>must</u> be carried forward in the document.</p>				

Table 3-2 Other Resources Considered for Analysis			
Resource or Issue	Present/Not Affected*	Present/May Be Affected**	Rationale
BLM Sensitive Species		X	Carried through the EA.
General Wildlife and Fisheries		X	Carried through the EA.
Land Use Authorization/Access		X	Carried through the EA.

Table 3-2 Other Resources Considered for Analysis			
Resource or Issue	Present/Not Affected*	Present/May Be Affected**	Rationale
Public Health and Safety		X	Carried through the EA.
Recreation		X	Carried through the EA.
Socioeconomics		X	Carried through the EA.
Soil Resources		X	Carried through the EA.
Vegetation Resources		X	Carried through the EA.
Visual Resources		X	Carried through the EA.

*Resources or uses determined to be Present/Not Affected need not be carried forward or discussed further in the document.

**Resources or uses determined to be Present/May Be Affected must be carried forward in the document.

3.2 Air Quality

Federal and state governments have established ambient air quality standards for criteria air pollutants, including carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), particulate matter (PM) with diameters less than or equal to 10 micrometers (PM₁₀), PM with diameters less than or equal to 2.5 micrometers (PM_{2.5}), ozone, and lead. Ozone is typically not emitted directly from emission sources, but at ground level it is created by a chemical reaction between ozone precursors, including oxides of nitrogen (NO_x) and volatile organic compounds (VOCs). Therefore, the U.S. Environmental Protection Agency (EPA) regulates emissions of VOCs.

With respect to National Ambient Air Quality Standards (NAAQS), the EPA classifies all locations in the United States as either “attainment” (including “unclassified”), “non-attainment”, or “maintenance” areas. These classifications are determined by comparing actual monitored air pollutant concentrations with their applicable Federal standards. Storey County is an attainment area for all criteria air pollutants (EPA 2010). The closest air monitoring station is in Carson City and is maintained by the Nevada Bureau of Air Quality Planning (BAQP). Ozone, CO₂, and PM_{2.5} are measured with this station. The most recent data (from 2003) indicates concentrations for most pollutants were within standards. There was an exceedance of the 65 micrograms per cubic meter (µg/m³) standard for PM_{2.5} in 2001 (NDEP, BAQP 2010).

The sensitive visual resource in the area is the viewshed from the Virginia and Truckee (V&T) Railroad. There is an industrial facility less than 0.5 miles northwest of the site.

3.3 Water Resources

The AFM site is within the Carson River Basin – Dayton Valley Hydrographic Area. The Carson River, approximately six miles south of the site, is the major perennial drainage in the vicinity.

The American Ravine holds a perennial creek that flows along the southern side of the project site. Surface flow is generally toward the southeast (Schaefer and Whitney 1992).

The AFM site is within a structural block fault basin. The basins are bounded by Tertiary and Quaternary volcanic rocks, Jurassic to Tertiary granodiorites and quartz monzonites, Triassic and Jurassic metasedimentary and metavolcanic rocks, and Tertiary sedimentary rocks. Tertiary and Quaternary basin fill deposits composed of unconsolidated clay, silt, sand, and gravel within the fault basin are the primary aquifer in the area (Schaefer and Whitney 1992).

Aquifers in this area are generally unconfined and groundwater flow is generally west to east. Depth to groundwater varies from more than 200 feet (close to the mountain fronts) to near surface (close to the Carson River). Average depth to water is approximately 60 feet (Schaefer and Whitney 1992). The Bureau of Land Management (BLM) drilled two groundwater wells at the AFM site to determine depth to groundwater. Both wells were drilled to 60 feet and neither encountered groundwater. Groundwater quality generally meets all Nevada State drinking water standards (Thomas and Lawrence 1994).

American Creek, which flows through American Ravine, the primary drainage in the area, is approximately 145 feet south of the AFM site. This perennial stream is fed by springs located along the western edge of American Flat. Other drainages are ephemeral, transporting water during spring snow melt and during major rain events (Zeier et al. 2009). American Ravine empties into Gold Creek at Silver City.

3.4 Soil Resources

Soils in the AFM site area generally consist of a thin veneer of colluvium and alluvium over shallow bedrock. Alluvium and colluvium are thickest on the flatter portions of American Flat and are thinnest or nonexistent on steeper slopes (Zeier et al. 2009). The Ecological Site Description (ESD) that correlates with this area is CLAYPAN 10-12 P.Z.

Soils at the AFM site consist of the Springmeyer-Reno association and the Devada-Rock outcrop complex. The Springmeyer-Reno association soils are typically well drained, gravelly loams, gravelly sand clay loam, and loamy sands. The surface area is covered with cobbles, stones, or boulders. Water capacity is low, about 4.6 inches (USDA 2010). The Devada-Rock outcrop complex soils are typically well drained, very cobbly loam grading to gravelly clay. Unweathered bedrock is present at 18 to 22 inches in depth. The surface area is covered with cobbles, stones, or boulders. Water capacity is very low, about 2.4 inches (USDA 2010).

3.5 Vegetation Resources

Vegetation in the vicinity of the AFM site consists of a pinyon-juniper-sagebrush community. Pinyon (*Pinus monophylla*) and juniper (*Juniperus osteosperma*) are found in the upper elevations. At lower elevations, a native shrub overstory includes sagebrush (*Artemisia tridentata*), bitterbrush (*Purshia tridentata*), desert peach (*Prunus andersonii*), green ephedra (*Ephedra viridis*), and rabbitbrush (*Ericameria viscidiflorus*). An herbaceous understory of native graminoids and forbs is dominated by Thurber's needlegrass (*Achnatherum thurberianum*), Indian ricegrass (*Achnatherum hymenoides*), basin wildrye (*Leymus cinereus*), bottlebrush squirreltail (*Elymus elymoides*), Douglas sedge (*Carex douglasii*), narrow-leaved milkweed

(*Asclepias fascicularis*), horsemint (*Agastache urticifolia*), poverty weed (*Iva axillaris*), and blazing star (*Mentzelia laevicaulis*). The disturbed nature of the site is reflected in the presence of a number of non-native herbaceous understory species such as cheatgrass (*Bromus tectorum*), curly dock (*Rumex crispus*), tansy mustard (*Descurainia sophia*), stork's bill (*Erodium cicutarium*), yellow sweet clover (*Melilotus officinalis*), tumble mustard (*Sisymbrium altissimum*), and tall whitetop (*Lepidium latifolium*), which is a noxious weed.

Riparian vegetation is found along the adjacent stream in American Ravine and is characterized by Fremont cottonwood (*Populus fremontii*), gray willow (*Salix exigua*), horsetail (*Equisetum* sp.), and rushes (*Juncus* spp.).

The AFM site comprises approximately 0.1 percent of the 23,175-acre Carson Plains/Gold Hill grazing allotment. This allotment is authorized from April 1 to May 31 each year for approximately 535 animal unit months (AUMs).

3.5.1 Special Status Plant Species

No special status plant species are known to occur on the project site. The term “special status” includes those listed by the BLM as sensitive species and those listed by the U.S. Fish and Wildlife Service (USFWS) as candidate, threatened, or endangered.

3.6 Wildlife and Fishery Resources

The Nevada Department of Wildlife's Wildlife Action Plan (WAP) characterized Nevada's vegetation cover into eight broad ecological system groups and linked those with key habitat types, which are further refined into ecological systems characterized by plant communities or associations that support various wildlife species (Nevada Wildlife Action Plan Team 2006).

As described in Section 3.4, Vegetation Resources and Section 3.3, Water Resources, wildlife habitat in the vicinity of the AFM site consists of a pinyon-juniper-sagebrush community, with a small ribbon of riparian vegetation following the adjacent American Creek. Some habitat functions of this vegetation type in the site area are likely reduced by the amount of non-native vegetation on the site as well as focused human activities that include numerous day- and night-time visitors, vehicle traffic, and noise disturbance from parties and activities such as paintball and graffiti.

Black-tailed jackrabbits (*Lepus townsendii*), tolerant of human disturbance, are likely present on or near the project area. Golden mantled ground squirrels (*Spermophilus lateralis*) may occur, although this is the lower edge of their altitudinal tolerance, and Townsend's ground squirrels (*Spermophilus townsendii*) are likely present. Deer mice (*Peromyscus maniculatus*) and northern grasshopper mice (*Onychomys leucogaster*) forage among shrubs for seeds, grasshoppers, and other insects. Desert woodrats (*Neotoma lepida*) seek cover in their middens. Coyotes (*Canis latrans*) and bobcats (*Lynx rufus*) pass through the project area during foraging rounds as they search for small mammal prey. Occasional mule deer (*Odocoileus hemionus*) may move through the site.

Bats are common in arid shrubland areas where water is available. The little brown myotis (*Myotis lucifugus*) is very likely present; the big brown bat (*Eptesicus fuscus*) may also be

present (both are also BLM sensitive species). Both could use the AFM buildings for summer roosts or maternity colonies.

The Nevada Department of Wildlife stocks rainbow trout in the American Creek in the spring time each year. This is a “put and take” fishery and is not a sustaining population. No information is available regarding populations of other fish species in this creek. The list of species of concern that may occur in the site area are shown in Table 3-3.

Table 3-3 Potential Special Status Wildlife Species at the AFM Site				
Common Name	Scientific Name	Nevada BLM Sensitive Species	Western BLM Bird Species of Conservation Concern	Game Birds Below Desired Condition
Mammals				
Big brown bat	<i>Eptesicus fuscus</i>	√		
Little brown myotis	<i>Myotis lucifugus</i>	√		
Birds				
Mountain quail	<i>Oreortyx pictus</i>	√		
Lewis's woodpecker	<i>Melanerpes lewis</i>	√	√	
Loggerhead shrike	<i>Lanius ludovicianus</i>	√	√	
Pinyon jay	<i>Gymnorhinus cyanocephalus</i>	√	√	
Yellow-breasted chat	<i>Icteria virens</i>	√		
Vesper sparrow	<i>Pooecetes gramineus</i>	√		
Black-throated gray warbler	<i>Dendroica nigrescens</i>		√	
Virginia's warbler	<i>Oerotherlypis virginiae</i>		√	
Brewer's sparrow	<i>Spizella breweri</i>		√	
Sage sparrow	<i>Amphispiza belli</i>		√	
Band-tailed pigeon	<i>Patagioenas fasciata</i>			√
Reptiles				
Short-horned lizard	<i>Phrynosoma douglassi</i> (<i>P. hernandesi</i>)	√		

Sources: Keppie and Braun 2000, NatureServe 2009, Sauer et al. 1996

3.6.1 Migratory Birds

In 2001, President Clinton signed Executive Order (EO) 13186 placing emphasis on the conservation and management of migratory birds. Migratory birds are protected under the Migratory Bird Treaty Act (MBTA) of 1918 and EO 13186 addresses the responsibilities of federal agencies to protect migratory birds by taking actions to implement the MBTA. BLM management for migratory bird species on BLM-administered lands is based on Instruction Memorandum (IM) No. 2008-050 (BLM 2008a). Based on this IM, migratory bird species of conservation concern include “species of conservation concern” and “game birds below desired conditions” (GBBDCs).

A number of migratory bird species are likely to occur on the AFM project site or make use of particular habitat features at certain times of year. Warblers such as yellow-rumped warbler (*Dendroica coronate*) and yellow warbler (*D. petechia*) likely stop over along the riparian corridor during spring and fall migration, and yellow warblers may stay and nest. Additional migrants in the riparian corridor include orange-crowned warbler (*Vermivora celata*), Virginia’s warbler (*V. viginiae*), and Wilson’s warbler (*Wilsonia pusilla*). In the sagebrush, loggerhead shrikes (*Lanius ludovicianus*), sage sparrows (*Amphispiza belli*), and sage thrashers (*Oreoscoptes montanus*) may forage and nest. Bullock’s orioles (*Icterus bullockii*), warbling vireos (*Vireo gilvus*), and house wrens (*Troglodytes aedon*) may also nest in the riparian corridor. Turkey vultures (*Cathartes aura*) and red-tailed hawks (*Buteo jamaicensis*) likely soar overhead searching for prey.

3.6.2 Special Status Wildlife Species

BLM Manual 6840 (Special Status Species Management) provides policy and guidance for the conservation of BLM special status species and the ecosystems upon which they depend on BLM-administered lands (BLM 2008b). BLM special status species are: (1) species listed or proposed for listing under the Endangered Species Act (ESA), and (2) species requiring special management considerations to promote their conservation and reduce the likelihood and need for future listing under the ESA, which are designated as BLM sensitive by the State Director(s).

Threatened and Endangered Species

Threatened and endangered species are protected by the ESA. After consulting the SFFO wildlife biologist and reviewing the USFWS website for Nevada’s Protected Species at (http://www.fws.gov/nevada/protected_species/species_by_county.html), it was determined that there are no federally-listed species within the AFM project area.

BLM Sensitive Species

BLM Manual 6840 establishes policy for the management of BLM sensitive species and their habitat (BLM 2008b). All federally designated candidate species, proposed species, and delisted species in the five years following delisting will be conserved as BLM sensitive species. Species designated as BLM sensitive must be native species found on BLM-administered lands for which the BLM has the capability to significantly affect the conservation status of the species through management, and either: (1) there is information that a species has recently undergone, is

undergoing, or is predicted to undergo a downward trend such that the viability of the species or a distinct population segment of the species is at risk across all or a significant portion of the species range, or (2) the species depends on ecological refugia or specialized or unique habitats on BLM-administered lands, and there is evidence that such areas are threatened with alteration such that the continued viability of the species in that area would be at risk. The BLM sensitive species that may occur within the AFM project area are shown in Table 3-3.

3.7 Cultural and Historic Resources

3.7.1 Regulatory Framework

Section 106 of the National Historic Preservation Act (NHPA) requires Federal agencies to take into account the effects that Federal undertakings may have on historic properties. The implementing regulations of Section 106, found at 36 CFR 800, outline the process Federal agencies must follow in order to comply with the law. BLM signed a National Programmatic Agreement in 1997 with the National Council of State Historic Preservation Officers (NCSHPO) and the Advisory Council, which streamlined the consultation process between those agencies. As allowed by the National Programmatic Agreement, the Nevada BLM and the Nevada State Historic Preservation Officer (SHPO) entered into a Protocol Agreement, which further streamlined the consultation process in 2009 (BLM and Nevada SHPO 2009).

In complying with the requirements of Section 106 of the NHPA, the agency essentially complies with its NEPA requirements relating to cultural resources. According to the Protocol Agreement, prior to approving any Federal undertaking, BLM is required to make determinations of eligibility and effect on historic properties in consultation with the Nevada SHPO and other consulting parties (such as Native American tribes, landowners, applicants, etc.). Inventories of the area of proposed effect are required in order to locate historic properties. BLM policy is to avoid historic properties as a first choice (BLM 2004). If avoidance is not feasible, mitigation may become necessary. Mitigation most often consists of data recovery through excavation, but may also occur as project redesign, extensive historic research and documentation, or other methods. If a historic property is inadvertently discovered and impacted during the construction phase, mitigation is typically required. Sites that are not eligible for listing on the National Register of Historic Places (NRHP) do not need to be avoided or mitigated and may be destroyed by a project.

3.7.2 Site History

The history and cultural resources of the AFM are tied to mining of the Comstock Lode. This history is described by Zeier et al (2009). The following descriptions of the history of the AFM and the cultural resources have been summarized from that report.

In the mid 1850s, prospectors heading toward California explored areas in Nevada and found gold in the area that is now Dayton. By 1859, silver had also been discovered, and by 1860 a silver rush was centered around Virginia City. Many mines were quickly played out, but the discovery of the Big Bonanza resulted in continued mining. By the early 1890s production had dropped off significantly in the Comstock Mining District. There was resurgence in Comstock mining in the 1920s, coinciding with the operation of the AFM. The closure of gold mines during World War II was the end of active mining in the Comstock and most mines did not open after the war.

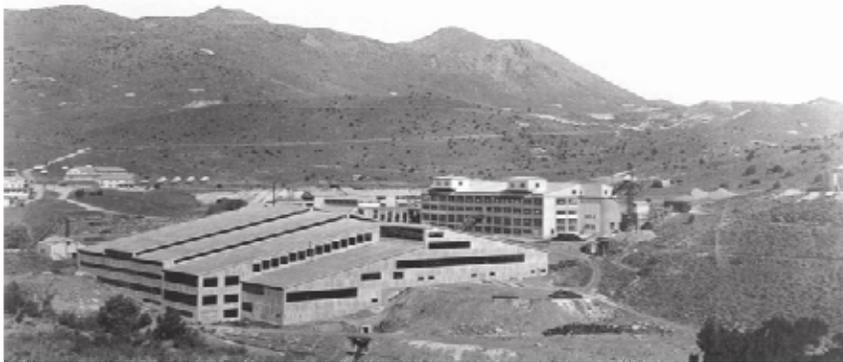


Figure 3-1 American Flat Mill circa 1922-1926
(Nevada Historical Society photo ST397)

The AFM, shown in Figure 3-1, began processing ore in September, 1922. A 10,000-foot-long electrified tunnel that connected all of the American Flat mines transported low-grade ores to the mill. Ore was hauled through the tunnel using an electric locomotive. The tunnel adit where the ore was unloaded is north of the AFM and is currently covered by mill tailings.

The AFM was closed by the end of 1926. Problems that resulted in the AFM closure included milling of low-grade ore, the lack of ore reserves, and the dropping price of silver. When the AFM was closed, all equipment was removed and sold so that all that remained were the building structures. The AFM buildings are described in Chapter 2, Alternatives.

During the life of the AFM, the town of Comstock existed nearby. The town comprised a number of small houses, a boarding house, an office building, a school, a general store, and an amusement hall. A spur to the V&T Railroad connected the mill to the railroad. After the mill closed, the Comstock houses were moved to other towns in the area.

3.7.3 Graffiti

The AFM site had few visitors until tourism became an important part of the Comstock economy. By the early 1960s the AFM was used by local teenagers as a place to congregate. Graffiti currently covers many AFM building surfaces. Most of the graffiti at AFM is simple and amateurish, but there are scattered examples of remarkable art work. Artists from outside the local area gathered at AFM in earlier years to appreciate and express graffiti art. Graffiti is not a static art form. Graffiti at AFM has been repeatedly painted over, but traces of earlier work can be seen. None of the currently existing graffiti appears to be more than 50 years old, and BLM has determined that it is not eligible for the NRHP under any criteria.

3.7.4 Other Historic Features

Other historic features [referred to as *landscape features* in Zeier et al (2009)] associated with AFM include roads, a rock quarry pit and crusher, a series of terraces, a cement tank, several refuse dumps, an internal railroad spur, and a V&T Railroad spur. The railroad spurs are contributing elements to the V&T Railroad under criteria A, C, and D. The quarry, crusher, and cement tank are contributing elements to the Virginia City National Register District under Criterion A. In addition, the quarry and cement tank are locally eligible under criterion B and the crusher is locally eligible under criteria B and D. The terraces, roads, refuse dumps and cyanide drum dumps are not eligible under any criteria. The roads and terraces may already have been impacted by visitor use and will be further discussed in Chapter 4. The remaining associated historic resources will be not impacted by any considered action and will not be discussed further.

3.7.5 National Register Eligibility

The AFM is the last remnant of the United Comstock and the Comstock Merger mining and milling operations and as such contributes to the eligibility of the Virginia City National Register District under Criteria A and C. The AFM is also locally eligible under Criterion B.

In terms of architecture, the AFM represents the International Style of architecture, which embraced the “form follows function” concept, rejected ornament, and used modern building materials, including concrete, structural steel, and large window panels. The remaining skeletal structures are also in keeping with the International Style, because they emphasize the structural system. Repetition of identical elements throughout the site, especially in the crusher and cyanide buildings, is also characteristic of this style. The 1920s construction was about a decade earlier than most other buildings of this style in the US. The location of these buildings in the American West and not in a big city is also unique.

While the AFM has retained its integrity of location, and, to a lesser degree, its design, workmanship, material, and association, the previous removal of the equipment and tanks has diminished these elements. The elements of setting and feeling have been compromised by development of two heap leach milling operations very close to the site. Graffiti distracts from the historical nature, as does the impact of vehicles and pedestrians and the debris and trash left behind.

3.7.6 Archaeological Resources

BLM SFFO sent a formal consultation letter informing the Yerington Paiute Tribe and the Washoe Tribe of Nevada and California of the results of the Section 110 inventory (Zeier et al. 2009). This letter informed the tribes that one prehistoric site is present near the American Flat Mill site and invited comments and concerns. No response to this correspondence has been received. The BLM SFFO sent a formal consultation letter to the Washoe Tribe, the Reno-Sparks Indian Colony, and the Yerington Paiute Tribe informing them of the EA; briefly describing the four alternatives; informing them of the presence of one prehistoric site in the vicinity of American Flat; and inviting comments, concerns, and offering a site tour.

BLM SFFO staff met with the Washoe Tribe, and they stated that a site visit is not necessary at this time. No other concerns have been voiced.

One archaeological rock art site is present in the vicinity of the AFM site. This site will not be impacted by any alternative and will not be discussed further.

3.8 Visual Resources

The AFM site is currently classified as VRM Class IV. The VRM Class IV objective is to provide for management activities that require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic element (BLM 1986).

The AFM site has architectural and historic significance that has visual appeal to the public (see Section 3.7). While current site conditions detract from the visual appeal because of debris, poor condition of the buildings, and graffiti, the historic and architectural significance is not lost. Additionally, some visitors consider the graffiti a visually important component of the site. The AFM site can be seen from the historic V&T Railroad, which is a historic trail (BLM 2001). The view of the AFM site from the V&T Railroad is shown in Figure 3-2.



Figure 3-2 View of the AFM Site from the V&T Railroad

Other historic resources associated with the AFM site include a series of terraces, roads, a rock quarry, and the V&T Railroad spur. Two heap leach operations are visible to the north of the site. The Houston Oil and Minerals site is abandoned and the Plum Mining site is operational.

3.9 Recreation and Visitor Services

Current management for the AFM site does not include recreation or visitor services. BLM issued an Emergency Closure Notice in 1997, after a fatality occurred on the site. As the areas around the AFM (Carson City and Virginia City) grew, people began to visit the AFM site for recreational purposes. Visitors engaged in off highway vehicle (OHV) driving, partying, graffiti painting, paintball games, photography, and other recreational activities. The BLM has repeatedly fenced, gated, and signed the site and scarified roads to restrict access. Currently, the site receives an estimated 60 visitors per week (DOI 2008, USACE 2010).

3.10 Land Use Authorization/Access

There are no rights-of-way (ROWs) at the AFM site, but there are seven active mining claims. All of the mining claims belong to the Plum Mining Company, LLC.

There is one ROW authorization northwest of the AFM site. The Sierra Pacific Power Company holds a ROW (NVN 0006229) for an overhead electric distribution line associated with the Plum Mining operations.

3.10.1 Access

Access to the AFM site is from Carson City via U.S. Highway 50 to State Highway 341 to American Flats Road or from Virginia City via 342 to American Flats Road. After passing the AFM site, American Flats Road continues north to an active mining operation and mine dump.

A number of dirt roads off of the American Flats Road go into and around the AFM site. Approximately 750 feet of roads lead from American Flats Road to the AFM site, and approximately 2,867 feet of road lie in and around the site. Roads vary in width from approximately nine to 20 feet. An additional 3,190 feet of road exist outside of the site. Some of these perimeter roads connect to other roads, but some appear to terminate. All roads at the AFM site are dirt. The area is open to OHV use; however, there are no designated routes.

3.11 Hazardous and Solid Materials

The BLM conducted a preliminary investigation at the AFM site in 2008. The objective of that investigation was to characterize the potential risk to human health and the environment resulting from past metals processing operations at the AFM site. A total of six samples comprising soil, concrete, waste rock, mill sump water, groundwater, and surface water were collected from the AFM site. Samples were analyzed for the presence of metals and cyanide. Of the samples collected, only one sample was reported to contain very small amounts of cyanide (BLM 2008c).

In 2010, the BLM tasked Ecology and Environment, Inc. (E & E) to conduct an expanded Sampling Investigation (SI) of the AFM site. The objective of the SI was to provide sufficient data to confirm the results of previous sampling and to determine if other activities associated with recent human intrusion at the site may have contaminated concrete, sediment, soil, and/or water in the vicinity. In addition to analyzing samples for cyanide and metals the SI was expanded to test for dioxins and petroleum hydrocarbons related to burned waste, and volatile organic compounds (VOCs) related to aerosol paint cans evident at the AFM site.

The SI identified that contaminated materials are present at the site and include localized areas of surface soil, sediment, and debris containing metals and/or VOCs (E & E 2010a). One of these areas was burned and also contains very small amounts of dioxins. Concrete was analyzed using the EPA TCLP method to determine whether hazardous constituents would leach from the concrete into the surrounding environment. The results of this analysis indicated that hazardous constituents would not leach in concentrations large enough to impact the surrounding environment (BLM 2010a).

3.12 Public Health and Safety

Most structures at the AFM site have few remaining outside walls. Steel has been cut, there are large holes in building floors, and concrete structural members are broken as a result of the historic salvage of the mill compounded by years of decay from weathering and vandalism. In addition to the aboveground structures, the site contains numerous voids and tunnels. Public safety hazards associated with the former mill structures were evaluated by the U.S. Army Corps of Engineers (USACE) on behalf of the BLM. Potential safety hazards assessed by the USACE include falls from heights greater than 10, 20, and 30 feet; drowning hazards; confined space; unexpected drop-offs; exposed sharp edges; and limited vertical clearances. The U.S. Department of the Interior (DOI), Office of Inspector General has reported that “the site presents serious and unacceptable risks to the public health and safety” (DOI 2008).

In 1996, a fatality at the site prompted the BLM to close the buildings to public entry. Despite the closure, the site is a popular gathering location for teens and is estimated to receive 60 visitors weekly (DOI 2008, USACE 2010). Local media have reported the site is a popular teen party place as well as a place to post graffiti and play paintball games (E & E 2010). The site also attracts photojournalists (E & E 2010).

Injuries, accidents, and other emergency response actions by the Storey County Sheriff’s Department, Storey County Fire Department, Storey County Office of Emergency Management, Lyon County Sheriff’s Office, Lyon County Office of Emergency Management (LC OEM), and Central Lyon County Fire Protection District (CLCFPD) are often hard to identify because non-address incidents are difficult to locate within their records systems. The Storey County Sheriff’s Office indicated there is one generic emergency response address for the site and the surrounding area (including an approximate five-mile radius around the site). Multiple responses to this generic site address have occurred that are not attributed to the AFM. Incidents reported by the Storey County Sheriff’s Department and the Storey County Fire Department for the years 2004 through 2009 at the AFM are shown in Table 3-4.

Year	Storey County Sheriff’s Department	Storey County Fire Department
2009	1 graffiti, 8 trespassing	1 fire-related incident <ul style="list-style-type: none"> • 09-0718231 wildland fire (wildland fire at the old mill site)
2008	0	1 EMS incident <ul style="list-style-type: none"> • 08-1119147 EMS incident (transport by Storey County Fire Department ambulance)
2007	3 graffiti, 5 trespassing	1 fire-related incident and 1 EMS incident <ul style="list-style-type: none"> • 07-0713140 unauthorized burning (illegal camp fire at the old mill site)

Year	Storey County Sheriff's Department	Storey County Fire Department
		<ul style="list-style-type: none"> • 07-1018223 EMS incident (patient transported by Care Flight)
2006	0	<p>1 fire-related incident</p> <ul style="list-style-type: none"> • 06-0606118 wildland fire (illegal camp fire at the old mill) • 06-1102206 false alarm smoke sighting (smoke sighting at the old mill site) • 06-1102106 false alarm smoke sighting (smoke sighting at the old mill site)
2005	1 graffiti	<p>4 fire-related incidents</p> <ul style="list-style-type: none"> • 05-0721124 wildland fire (wildland fire at the old mill site) • 05-0906215 building fire (structure fire in the old Houston Oil and Mineral building) • 05-0905117 false alarm smoke sighting (smoke sighting at the old mill site) • 05-1001115 wildland fire (wildland fire next to the old mill) • 05-1023110 dumpster fire (illegal camp fire at the old mill)
2004	0	2004 not included in data provided.

Source: E & E 2010b

Key: EMS = emergency medical service

Several local agency officials recalled from memory injuries/accidents for which no records have been identified. Additional injuries/accidents that were identified by emergency response and county officials (including Joe Curtis, Storey County Emergency Management Director) but not reflected in emergency response records include:

- An additional fatality (unconfirmed)
- Additional injuries/incidents related to falling, stabbings, burns, and shootings
- Vehicle accidents
- Reports of stolen vehicles (stripped, abandoned, abandoned and lit on fire)
- Unauthorized bonfires, and wildland fires originating from in- and around- structures at the site
- Vehicle rollovers on roads at or near the site

3.12.1 Interpretation and Environmental Education

There are currently no interpretive facilities at the AFM site. However, public scoping comments indicated that the AFM site is regularly visited to observe the historical buildings. Additionally, non-BLM staff conduct recreational train rides for tourists on the restored V&T Railroad. These tours constitute an active interpretive resource by describing AFM and other historical points along the route.

3.13 Socioeconomics

Storey County

The AFM site is located in Storey County, the second smallest county in Nevada. According to the U.S. Census, the population in 2000 was 3,399, with 1,462 households. According to the Nevada State Demographer's Office, the population is estimated to have increased to 4,317 in 2009, which is 0.16 percent of Nevada's total 2009 population (Nevada State Demographer's Office 2010). According to the U.S. Census Bureau as of 2000, 94 percent of the population was rural. The county seat is Virginia City, which has a population of 1,011 (Nevada State Demographer's Office 2010). The city is a popular tourist destination for people interested in the mining history of the West. The tourism industry, largely due to the county's mining heritage, continues to attract over 1.6 million people a year to the county (Storey County 2010). The closest city to the AFM is Silver City, which is approximately 1.25 miles southeast of the AFM. The population of Silver City was approximately 170 as of the 2000 census.

As of April 2010, due to the economic downturn, the unemployment rate in Nevada was 13.7 percent, 3.8 percent higher than the national average. Storey County had slightly higher than state average unemployment at 15.2 percent (Nevada Workforce Informer 2010). The two largest private employers in Storey County as of the 4th quarter 2009 were Wal-Mart and PetSmart (Nevada Workforce Informer 2010). The average annual per capita income for Storey County in 2008 was \$36,188, which was less than the state average of \$40,936.

4 ENVIRONMENTAL CONSEQUENCES

4.1 Introduction

This chapter describes and compares the environmental consequences predicted to result from implementing the four alternatives presented in Chapter 2. The purpose of this chapter is to present the impact analyses of the alternatives and to disclose the potential impacts of the actions on affected resources at the American Flat Mill (AFM) site and surrounding area.

The potential consequences or impacts of each alternative are addressed in the same order of resource topics as in Chapter 3. This parallel organization will allow readers to compare existing resource conditions (Chapter 3) with potential impacts (Chapter 4) for the same resource(s).

Potential impacts for a particular resource or resource use are discussed primarily in terms of the direct physical change and the indirect consequences of change resulting from the specific management of that resource or resource use under a particular alternative.

4.1.1 Analytical Assumptions

The alternative analysis describes how each alternative could affect baseline conditions of individual resources at the AFM site. Impacts are typically described by topic, such as surface disturbance, and impact on other resources or resource uses. If no impacts are expected or the anticipated impact is considered extremely small or highly unlikely to occur, the impacts to the resource are not discussed.

The amount of disturbance from potential actions is used to quantify impacts where possible. For the AFM Environmental Assessment (EA), disturbance from roads, buildings, and a potential borrow area was calculated for each alternative. The results of these calculations are shown in Table 4-1.

Area	Alternative 1 (sq ft)	Alternative 2 (sq ft)	Alternative 3 (sq ft)	Alternative 4 (sq ft)
Roads	0	108,510	0	108,510
Buildings	0	175,314	0	133,907
Borrow Pit	0	142,393	0	23,500
Total Disturbance	0	426,217	0	265,917
% of total site	0	36.24	0.00	22.61

Assuming total site is 27 acres

The size of the site is an estimate based on the size of the fence (red line) for Alternative 3 and a circle encompassing the fence (green line) as shown on Figure 4-1.

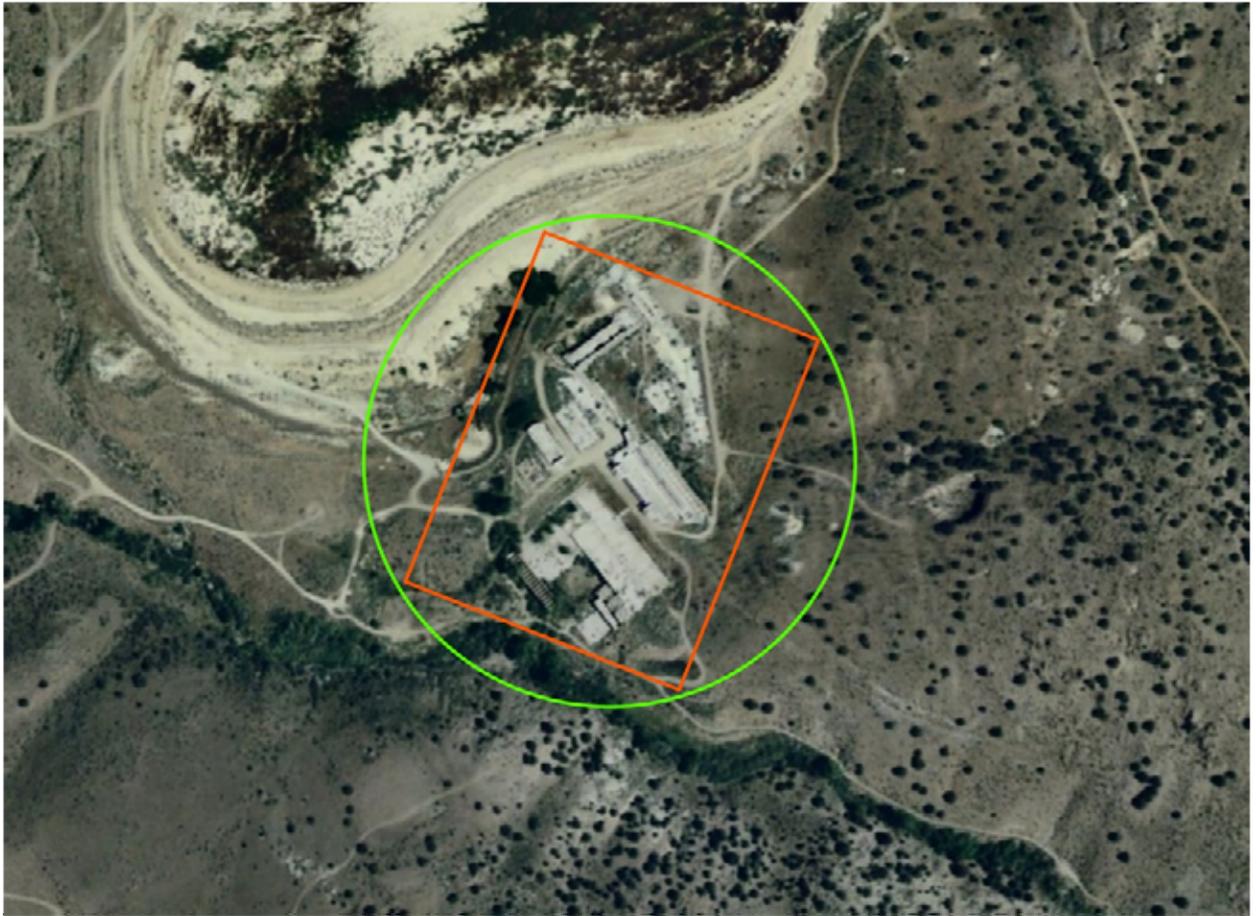


Figure 4-1 AFM Site Configuration

Because the AFM is a historical site and has visual resource qualities, the views of the site may also be used to determine impacts for some resources. Figures 4-2 through 4-5 show the AFM site for each alternative, respectively.

4.1.2 Types of Effects

When applicable, definitions of the following types of impacts are included in the evaluation of reasonably expected environmental consequences (speculative impacts are not addressed).

Impact Thresholds: The general nature of estimated or predicted impacts is categorized by impact thresholds. Thresholds are expressed as beneficial impact, no impact, adverse impact, or major adverse impact. *Beneficial impacts* would result from actions that cause a positive or beneficial impact to a particular resource. The *no impact* situation arises when an action has no detectable effect to a specific resource. *Adverse impacts* occur when an action results in a detrimental or negative impact to a particular resource. A *major adverse impact* results in significant negative effects to a resource or the environment.

Direct/Indirect Impacts: In general, *direct impacts* result from activities authorized by the Bureau of Land Management (BLM) and generally occur at the same time and place as the activity or action causing the impact. For example, for the action of building a road, a direct adverse impact is surface disturbance. Surface disturbance is the impact (the effect) of heavy equipment removing existing vegetation (the cause) as it grades the proposed road location. Indirect impacts often occur at some distance or time from the action. In the example just given, an *indirect impact* could occur days after the surface is disturbed, as well as some distance from the disturbance. Heavy precipitation following the removal of vegetation and/or disturbance of the ground surface could erode soil and transport sediment into streams. The impact on stream water quality is considered an indirect adverse impact.

Onsite/Offsite Impacts: *Onsite impacts* are those that would occur within the AFM site. *Offsite impacts* are those that would occur outside of the AFM site, but result from an action taken at the AFM site. The degree to which actions and changes under the alternatives would affect other areas depends on the absolute and relative amount of onsite changes, the causal linkage between onsite changes and offsite consequences, and the relationship between changes resulting from the alternative and those that would occur without the alternative.

Short- or Long-Term Impacts: When applicable, the short-term or long-term aspects of impacts are described. *Short-term impacts* occur during or after the activity or action. *Long-term impacts* would last longer, generally beyond the first two years.

Cumulative Impacts: *Cumulative impacts* would result from the interaction of impacts of the alternative along with impacts resulting independently from unrelated Federal or non-Federal actions and activities. Cumulative impacts may include private lands within and adjacent to the AFM site, as well as both private and public lands outside the AFM site. Additionally, cumulative impacts are not necessarily limited to the types of actions and activities affecting BLM lands.



Figure 4-2 The AFM Site as Seen from the V&T Railroad – Alternative 1



Figure 4-3 The AFM Site as Seen from the V&T Railroad – Alternative 2



Figure 4-4 The AFM Site as Seen from the V&T Railroad – Alternative 3



Figure 4-5 The AFM Site as Seen from the V&T Railroad – Alternative 4

Cumulative Impacts

The Council on Environmental Quality (CEQ) regulations state that the cumulative impact analysis should include the anticipated impacts to the environment resulting from “the incremental impacts 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. Cumulative impacts can result from individually minor but collectively significant actions taking place over time” (40 Code of Federal Regulations [CFR] 1508.7).

Impacts of the proposed alternatives presented in this EA are assessed for cumulative impacts with other actions conducted in the region. Unless otherwise specified, the region of influence for each resource in the cumulative analysis is the same as the area defined in Chapter 3. This analysis considers the effects of the actions considered under each of the alternatives when combined with the effects of other past, present, and future actions in the affected region.

Cumulative actions include other proposed land actions and use of those lands, and other reasonably foreseeable future actions. These activities include recreation, mining, and grazing.

Quantification of cumulative impacts is difficult for the resources, land uses, and management actions because of:

- Uncertainties regarding the location, scale, and/or rate of changes on BLM lands in and around the AFM site resulting from the alternatives; and
- Uncertainties about the location, scale, and rate of changes on private lands in, adjacent to, or near the AFM site that would occur irrespective of the alternative.

All the impacts associated with implementation of any of the alternatives would be in addition to ongoing existing impacts occurring on Federal lands at and near the AFM site and both public and private lands adjacent to, or near, the AFM site. Therefore, the descriptions of cumulative impacts for the individual resources are necessarily qualitative.

The boundaries used to define impact sources and levels may differ considerably among resources and the boundaries may be either natural or artificial.

4.1.3 Methods and Assumptions

Analysis of alternatives is both qualitative and quantitative and is based on a series of assumptions. The methods and assumptions listed below, and for each resource in the following sections, are presented to provide a basis for the conclusions reached. Assumptions unique to specific resources and resource uses are listed under the appropriate resource section. Assumptions common to all alternatives and all resources are:

- All alternatives are implemented in compliance with standard practices, best management practices (BMPs), guidelines for surface-disturbing activities, and applicable laws, standards, policies, and implementation plans, as well as with all BLM policies and regulations.
- Comparison of impacts among resources is intended to provide an impartial assessment to inform the decision-maker and the public. The impact analysis does not imply or assign a

value or numerical ranking to impacts. Actions resulting in adverse impacts to one resource may impart a beneficial impact to other resources.

- In general, adverse impacts described in this chapter are considered important if they result from, or relate to:
 - Context and/or intensity of impacts suggesting potential impacts to public health and safety;
 - A potential for violating legal standards, laws, and/or protective status of resources; and/or
 - Potential impacts to unique resources.
- The comparison of individual alternatives is qualitative, relative to Alternative I (the No Action Alternative), and based on professional judgment and consideration of the context and intensity of allowable uses and management actions anticipated to impact resources and resource uses.
- Analysis of environmental consequences focuses on the anticipated incremental and meaningful impact of actions proposed for each alternative. The impact of past and present actions is encompassed within the description of existing conditions in Chapter 3, Affected Environment.

4.1.4 General Levels of Impacts

To reduce the complex impact analysis process to readily understandable terms, the following subsections use a qualitative approach for summarizing impacts to specific resources. For some resources the impacts are defined more quantitatively, while others remain as general levels of impact. In terms of duration, impacts may be short term and related to the construction phase of the project (generally less than two years) or long term (greater than two years).

4.2 Air Quality Impacts

The proposed alternatives for the AFM will result in air quality impacts because of the following sources and operations:

- Emissions because of fugitive road dust due to wind erosion and land disturbance activities and tailpipe emissions from motorized vehicles required for demolition.

Potential emissions are shown in Table 4-2.

Table 4-2 Air Emissions for Alternatives 2 and 4					
Pollutant	Emission¹ Factor (lbs/hr)	Alternative 2		Alternative 4	
		Miles Traveled	Estimated Emissions (lbs)	Miles Traveled	Estimated Emissions (lbs)
CO	0.0067	19,700	131.59	16,620	111.02
NO_x	0.031	19,700	610.7	16,620	515.22
SO₂	0.002	19,700	40.39	16,620	34.07

Table 4-2 Air Emissions for Alternatives 2 and 4					
VOC	0.0025	19,700	48.66	16,620	41.05
PM₁₀	0.002	19,700	43.34	16,620	36.56

Source for calculations: AP-42 (EPA 2004)

Assumptions: Haul truck weight range is 28,000 to 80,000 pounds (lb). Average weight of 54,000 lbs was used for calculations. Controlled Emissions based on use of water and 50% efficiency.

Key:

CO = carbon monoxide; NO_x = oxides of nitrogen; SO₂ = sulfur dioxide; VOC = volatile organic compound; PM₁₀ = particulate matter with diameter of 10 micrometers or less

Alternative 1 – No Action Alternative

The No Action Alternative, Alternative 1, would continue current BLM actions including replacing and/or improving fences and signs, continuing BLM law enforcement and Storey County sheriff patrols, and maintaining the Emergency Closure Order. These actions would have adverse impacts to air quality because the AFM site would still be subject to off-highway vehicle (OHV) riding and other vehicles entering the site, which would continue to result in fugitive dust.

Alternative 2 – Demolition

Under Alternative 2, all buildings at the site would be demolished. This alternative would result in adverse impacts to air quality, although these impacts would be temporary (only for the duration of the construction activities). Approximately four heavy and light trucks would use AFM site roads on a daily basis for approximately 12 months, and other heavy equipment (dozers, graders, scrapers) would be used for about two months. Truck traffic would result in an increase in fugitive dust, although BMPs (in this case, water spraying) would be used to control dust. Building demolition would also result in fugitive dust from concrete and other building materials. Again, water spraying would be used to control dust during demolition. Demolition activities would also result in an increase in hydrocarbon emissions from trucks and temporary generators.

Heavy truck operation would result in the emission of air pollutants, including carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), particulate matter less than or equal to 10 microns in size (PM₁₀), and PM less than or equal to 2.5 microns in size (PM_{2.5}). These emissions would result in short-term impacts to air quality, but are not expected to exceed state or Federal air quality standards.

Alternative 3 – Institutional Controls

Under Alternative 3, the entire site would be enclosed in an eight-foot-high security fence and signs would be posted. Daily onsite security patrols would be conducted along with periodic inspections and maintenance of the fencing and signs. Full-time site security would be implemented (a caretaker would be employed) if fencing and daily patrols were ineffective. These actions would result in negligible increases in short-term emissions from installing fencing that could temporarily increase dust and emissions from worker vehicles. Long-term

increase in emissions would result from caretaking and ranger patrols with increased vehicle emissions. These impacts would be offset by reduced visitation as persons wanting to participate in unapproved recreational use of the area would eventually go somewhere else for those activities. Overall, there would be beneficial impacts to air quality because OHVs and other vehicles would not have access to the site and fugitive dust would thus be reduced.

Alternative 4 – Selected Building Retention

Under Alternative 4, five buildings at the site would be demolished and three would be retained. This alternative would result in adverse impacts to air quality, although these impacts would be temporary (only for the duration of the construction activities). Approximately four heavy and light trucks would use AFM site roads on a daily basis for approximately six months and other heavy equipment (i.e., bulldozers, graders, scrapers) would be used for about one month. Truck traffic would increase fugitive dust, although BMPs (water spraying) would be used to control dust. Building demolition would also result in fugitive dust from concrete and other building materials. Again, water spraying would be used to control dust during demolition. Demolition activities would also result in an increase in hydrocarbon emissions from trucks and temporary generators.

Heavy truck operation would result in the emission of air pollutants, including CO, NO₂, SO₂, PM₁₀, and PM_{2.5}. These emissions would result in short-term impacts to air quality, but are not expected to exceed state of federal air quality standards.

Cumulative Impacts

There is currently a heap leach facility northwest of the AFM site that could impact air quality in the area. There would be temporary impacts to cumulative air quality in the area during demolition of buildings under Alternatives 2 and 4. There would be no cumulative impacts from Alternatives 1 and 3.

4.3 Water Resources

Water management objectives including maintaining or enhancing water quality and availability on public lands in the field office area of jurisdiction would include maintaining current Nevada Department of Environmental Protection (NDEP) water standards during implementation of any of the alternatives. Effects to water resources associated with AFM alternatives include increased sedimentation from new or expanded roads and demolition activities.

Alternative 1 – No Action Alternative

There would be no impacts from Alternative 1 actions.

Alternative 2 – Demolition

Under Alternative 2, there would be an increased potential for erosion into American Creek, which is approximately 145 feet from the southern access road. This alternative would result in temporary negative construction impacts to American Creek; however, these impacts would be mitigated by BMPs to control erosion during construction. Long-term impacts would be beneficial.

Alternative 3 – Institutional Controls

There would be no impacts on water resources from Alternative 3 actions.

Alternative 4 – Selected Building Retention

Under Alternative 4, there would be an increased potential for erosion into American Creek. This alternative would result in temporary negative construction impacts to American Creek; however, these impacts would be mitigated by BMPs to control erosion during construction.

Cumulative Impacts

There are no industrial facilities or other operations in the vicinity of American Ravine and there would be no cumulative impacts from any of the alternatives.

4.4 Soil Resources

The goal for soil resources management at the AFM site is to maintain, improve, or restore soil health and productivity, and to prevent or minimize soil erosion and compaction (BLM 2001). Management actions related to this goal that are common to all alternatives include:

- Management actions on BLM lands would be consistent with achieving or maintaining the standards for healthy rangelands (BLM 2009).
- BLM would use county soil survey information to predict soil behavior, limitations, or suitability for a given activity or action.
- Surface-disturbing activities would be subject to BMPs, mitigation, and reclamation as necessary.

Effects to soil resources are primarily associated with the new and expanded roads and building demolition. Soil impacts would result from clearing vegetation through excavation, stockpiling, compaction, and redistribution of soils during construction and reclamation operations, and from vehicle traffic rutting and creation of road dust. These impacts, singly or in combination, would increase the potential for valuable soil loss due to increased water and wind erosion, invasive plant establishment, and increased sedimentation and salt loads to the watershed system.

Alternative 1 – No Action Alternative

Impacts to soil resources under Alternative 1 would be associated with current actions and trespass at the site. There would continue to be approximately 60 visits to the site per week that would impact approximately 2,647 feet of onsite roads and 1,063 feet of access roads. While erosion and compaction would continue to occur, the amount of roads that would be affected would be small in comparison to the area of the site. There would be impacts from OHV use around the site, but because the amount of OHV use is not known, these impacts cannot be quantified. Overall, there would be an adverse impact to soil resources under Alternative 1.

Alternative 2 – Demolition

Impacts to soils from Alternative 2 activities would occur from road widening to accommodate construction vehicles, new roads for construction vehicles, and increased traffic on perimeter and access roads. There are approximately 3,617 feet of access and site roads. Because most of

these roads are between 10 and 20 feet wide, most will need to be expanded to 30 feet to allow access by construction vehicles.

There would be truck and vehicle activity trips on site roads for about one year for demolition activities. These activities would result in additional erosion from approximately 110,400 square feet of road. Soil would be removed, and underlying soils would be mixed and compacted, which would change the nature of the soil. Soil would be removed from the borrow area and placed over building footprints around the site. This would result in mixing of soil, removal of topsoil in the borrow area, and an increase in erosion potential in the borrow area because vegetation would be removed along with the soil. Alternative 2 actions would result in long-term stabilization of soil at the site. Overall, there would be approximately 108,510 square feet of soil disturbance (9 percent of the site), resulting in an adverse impact to soil resources under Alternative 2.

Alternative 3 – Institutional Controls

Impacts to soil resources under Alternative 3 would be beneficial. Under this alternative, the entire site perimeter would be fenced with an eight-foot-tall security fence enclosing approximately 16 acres of the site. The area would be posted with warning signs. Daily onsite security patrols would be conducted along with periodic inspections and maintenance of the fencing and signs. Full-time site security using a caretaker would be implemented if fencing and daily patrols were ineffective. No visitors would be allowed at the site.

Actions under this alternative would eliminate trespass and the associated OHV use the site currently experiences. Overall, there would be a beneficial impact to soil resources because erosion potential would be eliminated.

Alternative 4 – Selected Building Retention

Impacts to soils from Alternative 4 activities would occur from road widening to accommodate construction vehicles, new roads for construction vehicles, and increased traffic on perimeter and access roads. There are approximately 2,647 feet of onsite roads and 1,063 feet of access roads. Because most of these roads are between 10 and 20 feet wide, they will need to be expanded to 30 feet to allow access of construction vehicles.

There would be truck and vehicle activity trips on site roads for approximately 200 days for demolition activities. These activities would result in additional erosion from approximately 110,400 square feet of road. Soil would be removed, and underlying soils would be mixed and compacted, which would change the nature of the soil. Soil would be removed from the borrow area and placed over building footprints around the site. This would result in mixing of soil, removal of topsoil in the borrow area, and an increase in erosion potential in the borrow area because vegetation would be removed along with the soil. Overall, there would be approximately 108,510 square feet of soil disturbance (9 percent of the site). However, the buildings slated for demolition under this alternative are scattered around the site, and while the square footage of building disturbance would be less than under Alternative 2, road disturbance would be the same. This would be an adverse impact to soil resources under Alternative 4.

Cumulative Impacts

There is currently a heap leach facility northwest of the AFM site that impacts soil in the area from erosion and compaction. Under all Alternatives there would continue to be impacts to soil from erosion and compaction. Long-term, erosion and compaction would be mitigated by soil stabilization under Alternatives 2 and 4.

4.5 Vegetation Resources

Direct adverse impacts to vegetation would include disruption or removal of rooted vegetation, which would result in a reduction in areas of native vegetation, reduction of total numbers of plant species (species richness) within the area, and/or reduction or loss of total area, diversity, structure, or function of wildlife habitat. Direct beneficial impacts would result if areas not currently supporting vegetation would be revegetated, increasing the area of native vegetation. Direct impacts to vegetation are discussed in terms of the estimated extent of ground-disturbance of each alternative, as summarized in Table 4-1.

A number of indirect impacts to vegetation resources include disruption or reduction of pollinator populations, loss of habitat suitable for colonization due to surface disturbance, introduction of noxious weeds by various vectors or conditions that enhance the spread of weeds, and general loss of habitat due to surface compaction or trampling. Most indirect impacts are assumed to result from direct impacts in proportion to the relative amount of surface disturbance.

Impacts to vegetation resulting from implementing each alternative are estimated and discussed below. This analysis integrates the following assumptions:

- Areas of ground disturbance calculated for each alternative include existing building footprints, which are not currently vegetated. Some portion of these areas would be revegetated under most of the action alternatives, resulting in an increase in upland vegetation on the AFM site.
- Under any alternative that includes ground-disturbing activities, project actions would be planned to meet overall resource management objectives for upland and riparian vegetation, including RAC Standards & Guidelines for Rangeland Health (BLM 2007). This would include application of all appropriate BMPs for erosion control, prevention and control of noxious weeds, and revegetation with species native to the local region.
- Under any alternative that includes ground-disturbing activities, natural revegetation would occur over time, increasing the diversity of any revegetated area.
- Because of integration of the BMPs listed above, no direct or indirect impacts would occur to riparian or wetland vegetation under any alternative.
- Because of integration of the BMPs listed above, no noxious weeds would be introduced to the AFM project site, nor would these plant species be spread throughout the site.
- Because the AFM site comprises such a minor component of the Carson Plains/Gold Hill grazing allotment (approximately 0.1 percent of the 23,175-acre allotment), none of the alternatives would impact the allotment or authorized grazing on the allotment.

Alternative 1 – No Action Alternative

Continuation of current management at the AFM site under the No Action Alternative would result in a continuation of trends observed in upland and riparian vegetation on and near the site. This would be expected to be an adverse impact, as vegetation is currently disturbed by foot and vehicle traffic throughout the site. Undesirable plant species such as cheatgrass and noxious weeds such as whitetop that already occur in the area would be expected to be spread under this alternative.

Alternative 2 – Demolition

The largest amount of surface disturbance (426,217 square feet) would occur under Alternative 2. This is approximately 36 percent of the site surface, although it includes the building footprints that are not currently vegetated. All of this disturbed area would eventually be reclaimed and revegetated with native plant species. This would result in a beneficial impact to upland vegetation on the site, as the total area of native upland vegetation would increase and noxious weeds and other undesirable plant species would be controlled.

Alternative 3 – Institutional Controls

Because almost no surface disturbance would occur under Alternative 3, almost no vegetation would be directly impacted. However, small beneficial indirect impacts would be expected in time, as the vegetation inside the perimeter fence would recover from the current physical disturbance from foot traffic and vehicles. Because the area inside the fence would no longer experience this disturbance, it is expected that natural recruitment of additional native upland species would occur, eventually resulting in increased vegetation cover and diversity.

Alternative 4 – Selected Building Retention

Approximately 265,917 square feet (almost 23 percent of the AFM site) of surface disturbance would be expected to occur under Alternative 4. This would include the building footprints of five structures that are not currently vegetated. All of this disturbed area would eventually be reclaimed and revegetated with native plant species. This would result in a positive impact to upland vegetation on the site, as the total area of native upland vegetation would increase and noxious weeds and other undesirable plant species would be controlled.

Cumulative Impacts

Existing or planned projects in the project vicinity that cause impacts to vegetation resources include the Plum Mining mill, a heap-leach gold extraction facility. On-going impacts to regional vegetation include vegetation removal and potential for influx and expansion of noxious weeds. Under all Alternatives there would continue to be impacts to vegetation resources from the vegetation removal and an increase in weeds. Long-term, these cumulative impacts would be mitigated by reclamation and revegetation under Alternatives 2 and 4.

4.6 Wildlife and Fishery Resources

Direct adverse impacts to wildlife would include any potential injury or death of individual animals and habitat loss (i.e., destruction of burrows, nests, vegetation, buildings that provide roost and/or nest sites) that result from activities associated with implementing an alternative.

Smaller, less visible and less mobile wildlife species, such as reptiles, would be more likely to be inadvertently harmed by vehicles or demolition equipment.

Indirect impacts to wildlife could include disruption to nest or roosting sites from noise or other physical disturbance and degradation to habitat through introduction of noxious weeds, surface compaction, or trampling. Most indirect impacts are assumed to result from direct impacts in proportion to the relative amount of surface disturbance.

Animals would be expected to receive indirect impacts from noise and disturbance from demolition activities and exhibit short-term behavioral avoidance of the area. Some animals may relocate permanently in surrounding habitat. Most individuals would not be expected to move far and would occupy similar habitat nearby. The vegetation communities present on the project site are common throughout the area. The amount of wildlife habitat this represents that would be impacted by any alternative is a very small component of the habitat available in the area. Most impacts to habitat would be expected to be short-term because all disturbed ground would be reclaimed (Section 4.5, Vegetation Resources). No riparian habitat would be impacted under any alternative (Section 4.5 Vegetation Resources). Adverse indirect impacts to wildlife could occur from the introduction or expansion of noxious weeds. The potential for this would be mitigated by a weed control plan (Section 4.5 Vegetation Resources).

Any impacts to wildlife would be minimal, would involve individual animals at the local level, and would not affect regional wildlife species populations. Impacts to wildlife as a result of implementing each alternative are estimated and discussed below. This analysis integrates the following assumptions regarding relevant mitigation actions and BMPs into the implementation of alternatives:

- Migratory birds – To protect migratory birds during the nesting season, if surface disturbance activities such as building demolition or fence construction occur after March 1 (generally considered the beginning of nesting season for migratory birds), a survey for nesting birds would be conducted in all AFM structures and within a 0.25-mile buffer of the 27-acre project site by a qualified biologist. If nests are located, or other evidence of nesting is observed (i.e., mated pairs, territorial defense, carrying nesting material), activities would not be initiated until fledging occurs, generally after July 15 or in consultation with the SFFO biologist.
- Bats – The AFM structures may provide summer roosting and/or maternity colony habitat for bats, including the big and little brown bats, both BLM sensitive species. Therefore, for alternatives which include building demolition, if buildings are scheduled for demolition during summer months (May 1 through October 15), surveys for these bats would be conducted by a qualified biologist in all buildings slated to be removed. If bats were found, no demolition actions would be undertaken until after October 15, when the bats will have departed for their hibernation sites or in consultation with the SFFO biologist.

Alternative 1 – No Action Alternative

Continuation of current management at the AFM site under the No Action Alternative would result in continuation of current trends in wildlife habitat quality on and near the site. Because vegetation is currently disturbed by foot and vehicle traffic throughout the site and undesirable

plant species and noxious weeds would be expected to be spread under this alternative, adverse impacts to habitat for wildlife that currently occupy or use the AFM site would be anticipated under this alternative.

Alternative 2 – Demolition

Under Alternative 2, demolition of all buildings would result in direct adverse impacts to any animals occupying the buildings at the time of demolition, most likely species such as desert wood rats and other rodents. Other direct impacts would include the permanent loss of these buildings as habitat, although most of these species would be expected to successfully relocate in the natural vegetation in the vicinity. For bats, this potential habitat loss would be mitigated by installing one or more bat houses in the area prior to the beginning of the next summer after demolition actions to replace lost roosting and/or maternity colony habitat in the area.

Approximately 36 percent of the site surface would be disturbed, and some portion of this would be existing vegetation. These would be short-term impacts as all of this disturbed area would eventually be reclaimed and revegetated with native plant species. This would result in beneficial long-term impacts to wildlife, as it would eventually result in an increase in the amount of native upland vegetation habitat on the site.

Alternative 3 – Institutional Controls

Few actions under Alternative 3 would result in adverse impacts to wildlife. Some individuals may find movement restricted by the perimeter fencing. Some beneficial indirect impacts would be expected in time, because the vegetation inside the perimeter fence would recover from the current physical disturbance from foot traffic and vehicles, and natural revegetation would be expected to occur, eventually resulting in increased natural habitat quality. Wildlife species that use the buildings for habitat would experience indirect beneficial impacts, as the noise and physical disturbance to such habitat from human entry and activities inside the buildings would be curtailed.

Alternative 4 – Selected Building Retention

Direct adverse impacts to wildlife under Alternative 4 would be the same as under Alternative 2, reduced by approximately 38 percent, as five buildings would be demolished instead of all eight. Wildlife species that use the structures as habitat would be expected to be able to use, to some degree, the structures that were retained. These same wildlife species would also experience the same indirect beneficial impacts as under Alternative 2, although reduced in amount because only for three buildings would be retained.

Cumulative Impacts

Existing or planned projects in the project vicinity that cause impacts to wildlife and fishery resources include the Plum Mining mill, a heap-leach gold extraction facility. Ongoing impacts to wildlife and fishery resources include habitat disturbance from vegetation removal, fencing, and surface disturbance. Under all Alternatives there would continue to be impacts to wildlife resources from surface disturbance and fencing. Long-term, these cumulative impacts would be mitigated by habitat reclamation under Alternative 2.

4.7 Cultural and Historic Resources

A Memorandum of Agreement (MOA) with the Nevada SHPO is an ancillary document to this assessment that is negotiated to ensure that all parties to the selected action are in compliance with Section 106 of the NHPA. As such it will be finalized upon designation of a designated action by BLM. Potential stipulations of the proposed MOA could include, but are not limited to, appropriate levels of HABS/HAER documentation of any AFM structures identified for further documentation in the designated action. It could also include stipulations for public interpretation at an appropriate location (onsite, off-site, or both) and appropriate levels of monitoring to assess the efficacy of any mitigation measures implemented by the BLM decision.

Alternative 1 – No Action Alternative

Alternative 1 (the No Action Alternative) would continue current management actions at the AFM site. The AFM site was a ruin at the time the Virginia City National Register District was designated a National Historic Landmark. In the years since that designation, some further deterioration has occurred, but not to the degree that its integrity as a ruin is compromised. Because of the slow, continued deterioration of the structures under Alternative 1 the AFM site would lose integrity to the point that it would be treated as a ruin. However, as the AFM had lost most of its integrity by the time it was considered for inclusion on the National Register as a contributing element to the Virginia City National Register District, its continued deterioration would not compromise the District (Figure 4-2). There would be no impacts from this alternative and therefore no need for an MOA to convey mitigation actions.

Alternative 2 – Demolition

Impacts from Alternative 2 actions would adversely affect the Virginia City National Register District. Demolition of these buildings would result in the total loss of integrity of the AFM site as a contributing element of the Virginia City National Register District (Figure 4-3). Loss of the AFM site would diminish the overall integrity of the Historic District. However, when considering the Seven Aspects of Integrity that can affect the historic district (location, design, setting, materials, workmanship, feeling, and association), loss of the mill site would not diminish the district's integrity to the point of compromising the Virginia City National Register District. Loss of the mill site would result in adverse impacts to the District but the impact would not be significant.

Some associated historic resources, including some roads and terraces, might be adversely affected by direct impacts to their structure from demolition activities under this alternative. The remaining associated historic resources, including the V&T Railroad spur, a National Register eligible property, would be avoided and therefore not impacted.

In accordance with the proposed MOA with the Nevada SHPO, HABS/HAER documentation of the demolished buildings could provide a minimum mitigation for loss of this historic fabric, to be completed prior to demolition actions and archived in the Library of Congress. Furthermore, offsite interpretation of the historic AFM site features could be developed and made available to the public as stipulated in the MOA.

Alternative 3 – Institutional Controls

Alternative 3 would result in adverse impacts to the Virginia City National Register District. Introduction of fencing and signage into the area would change the mill site as a contributing element to the Virginia City National Register District. However, the change would not introduce a visual barrier (Figure 4-4). When considering the Seven Aspects of Integrity that can affect a building, structure, or historic district (location, design, setting materials, workmanship, feeling, and association), integrity would not be diminished to the point of compromising significance. Accordingly, mitigation could be limited to an architectural assessment, undertaken relative to the minimal physical actions, such as filling of voids and removal of loose hanging material, in accordance with the MOA.

Alternative 4 – Selected Building Retention

Impacts from Alternative 4 actions would adversely affect the Virginia City National Register District. Demolition of five of the eight buildings would diminish the integrity of the mill site to the extent that it would no longer retain significance as a contributing element to the Historic District (Figure 4-5). However, when considering the Seven Aspects of Integrity that can affect Virginia City National Register District (location, design, setting materials, workmanship, feeling, and association), loss of those five buildings would not diminish the District's integrity to the point of compromising its overall significance. Loss of the mill site would result in adverse impacts to the Virginia City National Register District but the impact would not be significant.

Some associated historic resources, including some roads and terraces, may be adversely affected by direct impacts to their structure from demolitions activities under this alternative. The remaining associated historic resources, including the V&T Railroad spur, a National Register eligible property, would be avoided and therefore not impacted.

To mitigate for the loss of five of the eight mill site buildings, HABS/HAER documentation of the demolished buildings would be completed prior to demolition and archived in the Library of Congress, in accordance with the MOA with the Nevada SHPO. Furthermore, offsite interpretation of the historic AFM site features could be developed and made available to the public as stipulated in the proposed MOA.

Cumulative Impacts

No substantial deferred maintenance or plans to alter or destroy other elements contributing to the Virginia City National Register District are known at this time. Therefore, the actions implemented under any of the alternatives would not contribute cumulative impacts to other actions affecting cultural and historic resources.

4.8 Visual Resources

The AFM site is classified as Visual Resource Management (VRM) Class IV. The Class IV objective is to provide for management activities that require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic element (BLM 1986).

The Carson City Consolidated Resource Management Plan (CRMP)(BLM 2001) does not indicate specific VRM management actions for the AFM site. However, the historic significance of the site adds to its visual appeal.

All alternatives discussed below would result in acceptable levels of visual impact under the current VRM classification.

Alternative 1 – No Action Alternative

Under Alternative 1, the No Action Alternative, current BLM management would be retained. The BLM would continue its policy of maintaining the Emergency Closure Order. The BLM would replace fencing and signs and continue current BLM law enforcement actions and Storey County sheriff patrols. Recreational activities that involve entering into the buildings at the AFM site would be prevented by replacement of fencing. The site would still attract visitors seeking to view the site for its historical story, but from a greater distance. No visitor services would be installed. Figure 4-2 shows what the AFM site would look like under the No Action Alternative. This view of the AFM site is approximately 0.7 miles from the Virginia and Truckee (V&T) Railroad. There would be no impacts to visual resources because the visual impact of the site would remain the same.

Alternative 2 – Demolition

Alternative 2 includes complete demolition and reclamation of the AFM site. The AFM site is visible from the access road and from the V&T Railroad. The V&T Railroad points out the AFM site as part of its tour. The AFM site, as seen from the V&T Railroad approximately 0.7 miles away, is shown in Figure 4-2. Figure 4-3 indicates what the view from the V&T Railroad would like after demolition of all buildings.

There would be an adverse impact on visual resources because the site buildings would no longer be available for viewing from the middle ground distance zone or the V&T Railroad. However, the view would be consistent with the surrounding landscape. The removal of the structures, which contrast with the natural landscape elements, would result in a beneficial impact to the visual resource because the visual impact would be reduced. Overall, the impact would be adverse, but the level of impact would be acceptable under the current VRM classification.

Alternative 3 – Institutional Controls

Under the Institutional Controls alternative, Alternative 3, the buildings would be retained and an eight-foot high security fence would be installed around the entire site. There would be daily onsite security patrols along with periodic inspections and maintenance of the fencing and signs. Full-time site security (a caretaker) would be implemented if fencing and daily patrols were ineffective. Recreational activities which involve entering into the buildings at the AFM site would be prevented by replacement of fencing etc. The site would still attract visitors seeking to view the site for its historical story, but from a greater distance. No visitor services would be installed. Figure 4-4 shows what the AFM site would look like after the implementation of Alternative 3. There would be no impacts to visual resources because the visual impact of the site would remain almost the same even though a security fence would be installed.

Alternative 4 – Selected Building Retention

Under Alternative 4, three buildings at the AFM site would be retained and the rest demolished and disturbed areas would be reclaimed. The three remaining buildings (3, 5, and 6) would be fenced, but would be available for passive viewing from the outside, viewing from the V&T Railroad, and onsite interpretation. BLM would implement a long-term closure order and an administrative withdrawal to manage public access of the remaining buildings. Figure 4-5 shows the predicted view from the V&T Railroad, with the retention of Buildings 3, 5, and 6. This alternative would result in an adverse impact to visual resources because the view would change in the middle ground distance zone although impacts would be less than those under Alternative 2. Removal of some of the structures would reduce the amount of visual contrast from the elements of the surrounding landscape yet leave some of the more visually interesting structures to represent historic values. The level of impact would be acceptable under the current VRM classification.

Cumulative Impacts

The Comstock region has many abandoned mine locations that provide visual reminders of the Comstock mining history. The V&T Railroad trip provides visitors with open vistas and views of mine sites. Although Alternatives 2 and 4 would reduce the visual impact of the Comstock region, the cumulative impact would be small because many other mining sites are available to viewers.

4.9 Recreation and Visitor Services

The overall BLM goal for recreation resources (BLM 2001) is to ensure continued availability of public lands and related waters for a diversity of resource-dependent outdoor recreation opportunities, while maintaining BLM's commitment to managing the public lands as a national resource in harmony with the principle of balanced multiple use. BLM will focus its efforts on two distinct management roles: (1) managing the majority of the public lands for traditional dispersed recreation use and (2) intensively managing certain areas of the public lands where outdoor recreation is a high priority.

Alternative 1 – No Action Alternative

Under Alternative 1, the No Action Alternative, BLM would continue its policy of maintaining the Emergency Closure Order. BLM will replace fencing and signs and continue current BLM law enforcement actions and Storey County sheriff patrols. Recreational activities which involve entering into the buildings at the AFM site would be prevented by replacement of fencing etc. The site would still attract visitors seeking to view the site for its historical story, but from a greater distance. No visitor services would be installed. There would be no impacts to recreation and visitor services because the buildings are already closed to visitation and recreation but the site receives about 60 visitors per week anyway.

Alternative 2 – Demolition

Alternative 2 includes complete demolition and reclamation of the AFM site. While recreation at the AFM site is not part of current BLM management, the site receives approximately 60 visitors per week, many as trespass. Visitors use the site for picnicking, paintball games, OHV

riding, partying, and graffiti spraying. There are no visitor services at the AFM site. Demolition of the AFM site would eliminate most of the current recreational activities that are enjoyed at the site.

Once demolition and reclamation are complete, most current recreation activities would be eliminated, but dispersed recreation would be allowed at the AFM site. Offsite interpretive facilities would be developed. Overall, impacts to recreation and visitor services would be beneficial because recreation would meet BLM objectives and offsite interpretive facilities would be developed.

Alternative 3 – Institutional Controls

Under Alternative 3, the BLM would implement a permanent closure order for the AFM site. Loose rebar would be removed and voids and tunnels would be filled. The entire site perimeter would be fenced with an eight-foot-tall security fence and the area would be posted with warning signs. Daily onsite security patrols would be conducted, along with periodic inspections and maintenance of the fencing and signs. Full-time site security (a caretaker) would be implemented if fencing and daily patrols were ineffective.

These actions would have an adverse impact on recreation and visitor services because access to recreation would be permanently curtailed.

Alternative 4 – Selected Building Retention

Under Alternative 4, three buildings at the AFM site would be retained. The rest would be demolished and disturbed areas would be reclaimed. The three remaining buildings would be fenced but available for passive viewing from the outside, for viewing from the V&T Railroad, and for onsite interpretation. BLM would implement a long-term closure order and an administrative withdrawal to manage public access of the remaining buildings.

These actions would have an adverse impact on recreation and visitor services because access to the site for recreation would be permanently curtailed. Dispersed recreation would be allowed on the reclaimed portions of the site.

Cumulative Impacts

Activities in the area that could contribute to cumulative impacts include the V&T Railroad and the Plum Mining heap leach mill. The V&T Railroad tour would continue to provide visual, historic, interpretive, and recreational benefits along with the retention of buildings under Alternatives 1, 3, and 4. The heap leach mill, to the north of the AFM site, reduces recreational opportunities within the footprint of the facility.

4.10 Land Use Authorization/Access

The public lands in this area are identified for disposal in the CRMP (BLM 2001) and may be considered for transfer out of federal ownership when such disposal would serve important public objectives and would not result in damage or loss of important resources.

Alternative 1 – No Action Alternative

Under Alternative 1, the AFM site would be retained by the BLM, and no changes would be made to current management. This action would have a beneficial impact on the land with

cultural resources until the lands are disposed of, but an adverse impact on managing lands for recreation resources.

Alternative 2 – Demolition

Alternative 2 includes complete demolition and reclamation of the AFM site. All buildings would be demolished, rubble would be buried, and the surface would be re-contoured and seeded to achieve a natural look. The site would be retained by BLM, but the cultural and historic nature of the site would not be retained.

This alternative would have both adverse and beneficial impacts on land use authorizations and access because even though the historic aspects of the site would be removed, the site would be retained by the BLM and could be used for dispersed recreation until disposed of.

Alternative 3 – Institutional Controls

Under Alternative 3, the BLM would retain the AFM site. An eight-foot high security fence would be constructed around the entire site. Daily onsite security patrols would be conducted, along with periodic inspections and maintenance of the fencing and signs. Full-time site security (a caretaker) would be implemented if fencing and daily patrols were ineffective. This action would have a beneficial impact because the site, along with its cultural and historic character, would be retained by BLM until disposed of.

Alternative 4 – Selected Building Retention

Under Alternative 4, three buildings at the AFM site would be retained. The rest would be demolished, and disturbed areas would be reclaimed. The three remaining buildings would be fenced, but would be available for passive viewing from the outside, for viewing from the V&T Railroad, and for onsite interpretation. The BLM would implement a long-term closure order and an administrative withdrawal to manage public access of the remaining buildings.

Alternative 4 would have a beneficial impact on land use authorizations and access because even though the some of the historic aspects of the site would be removed, the site would be retained by the BLM until disposed of.

Cumulative Impacts

There are no cumulative impacts to land use authorization/access.

4.11 Hazardous and Solid Materials

The BLM will manage hazardous materials to maintain compliance with federal and state hazardous waste laws and regulations, minimize waste, and prevent pollution generated or released on public lands, and will give priority to releases or threatened releases based on hazard and risk.

Alternative 1 – No Action Alternative

The BLM would continue its policy of maintaining the Emergency Closure Order. The BLM would replace fencing and signs and continue current BLM law enforcement actions and Storey County sheriff patrols. All contaminated materials would be removed from the AFM site under a separate removal action. These actions would result in beneficial impacts related to

hazardous and solid materials because the small amount of hazardous material found at the site would be removed.

Alternative 2 – Demolition

Under Alternative 2, the BLM would demolish and reclaim the AFM site. Prior to demolition, all contaminated materials would be removed from the AFM site under a separate removal action. These actions would result in beneficial impacts related to hazardous and solid materials because the small amount of hazardous material found at the site would be removed.

Demolition wastes will be placed in an onsite landfill. BLM has applied to the NDEP for a Class III landfill waiver for this landfill.

Alternative 3 – Institutional Controls

Under Alternative 3, the BLM would implement a permanent closure order for the AFM site. Loose rebar would be removed and voids and tunnels would be filled. The entire site perimeter would be fenced with an eight-foot-tall security fence and the area would be posted with warning signs. Daily onsite security patrols would be conducted, along with periodic inspections and maintenance of the fencing and signs. Full-time site security (a caretaker) would be implemented if fencing and daily patrols were ineffective.

The BLM would remove all contaminated materials from the AFM site under a separate removal action before additional institutional control actions were taken. These actions would result in beneficial impacts related to hazardous and solid materials because the small amount of hazardous material found at the site would be removed.

Alternative 4 – Selected Building Retention

Under Alternative 4, three buildings at the AFM site would be retained. The rest would be demolished, and disturbed areas would be reclaimed. The three remaining buildings would be fenced, but would be available for passive viewing from the outside, for viewing from the V&T Railroad, and for onsite interpretation. The BLM would implement a long-term closure order and an administrative withdrawal to manage public access of the remaining buildings.

The BLM would remove all contaminated materials from the AFM site under a separate removal action before additional institutional control actions were taken. These actions would result in beneficial impacts related to hazardous and solid materials because the small amount of hazardous material found at the site would be removed.

Demolition wastes will be placed in an onsite landfill. BLM has applied to the NDEP for a Class III landfill waiver for this landfill.

Cumulative Impacts

The heap leach facility to the north of the AFM site could contribute hazardous materials to the area. While hazardous waste removal is not part of the proposed alternatives, it will be conducted under a separate BLM action and result in long-term beneficial cumulative impacts.

4.12 Public Health and Safety

The USACE report (USACE 2010) characterized and described potential risks to human safety associated with each of the structures on the AFM site. These are summarized in Table 4-3, below. The degree to which each alternative mitigates or removes these risks is analyzed in this section. The analysis assumes that actions taken to mitigate or reduce human safety risk will be effective, as described.

Table 4-3 American Flat Mill Building Risks								
Risk Description	Building							
	1	2	3	4	5	6	7	8
Historical Risk								
Death			X					
Serious Injury		X	X	X				
Potential Risk								
Falling from heights greater than 10 ft	X	X	X	X	X	X	X	
Falling from heights greater than 20 ft		X	X	X				
Falling from heights greater than 30 ft			X					
Drowning		X						
Confined space or entrapment	X	X	X	X				
Unexpected surface level openings or drop-offs		X	X	X			X	
Impaling/exposed reinforcing steel or sharp edges		X						
Limited vertical clearances		X						
General Risk								
Accessibility	X	X	X	X	X	X	X	X
Visitation attractant	X	X	X	X		X		
Number of Risks	4	10	9	7	2	3	3	1

Alternative 1 – No Action Alternative

Under the No Action Alternative, current management of the AFM site would continue, with no changes. This would include maintaining the existing Emergency Closure Order, replacing and/or improving fencing and signs, and continuing BLM law enforcement and Storey County sheriff patrols. The BLM would remove any hazardous waste under a separate removal action.

As discussed in Section 3.11, under current management there have been a number of documented accidents and one death associated with the AFM site. The USACE report (2010) characterized the risk associated with each of the buildings at the AFM site. This analysis noted

that all of the buildings on the site pose some potential risk of physical hazard to public users. These risks are summarized in Table 4-3.

Actions associated with Alternative 1 would be unlikely to reduce risks presented by the existing structures on the AFM site. All building structures would remain in place, with all the noted hazards to human safety from collapsing concrete structures, stairs, exposed reinforcing steel, and voids and tunnels. While fences and signs would be replaced and/or improved, these actions have not reduced trespassing at the site in the past and there is no aspect of current management that would be expected to change this trend. There might be some temporary mitigation of risk to public health and safety expected after the site fences are fixed; however, based on the site history, it is likely that the fences would quickly be compromised again.

It is expected that the No Action Alternative would result in ongoing health and safety risks to human visitors to the AFM site. No additional actions would be incorporated to remove or mitigate the risk to public safety from the current and ongoing conditions. Therefore, these risks are expected to be greatest under Alternative 1 compared with any of the action alternatives.

Alternative 2 – Demolition

Alternative 2 would result in the demolition and removal of all buildings and reclamation of the site. Some building material (broken concrete, rebar, and other debris) would be left in place within the building footprints. However, these materials would be covered by a minimum of three feet of soil and the surfaces would be revegetated. All the potential human safety hazards presented by the physical structures would be completely removed from the site. This alternative would therefore result in the greatest beneficial impact to public health and safety because all hazards associated with the existing structures would be permanently removed.

Alternative 3 – Institutional Controls

Under Alternative 3, risks to public safety would be reduced by complete control of site access. Actions associated with Alternative 3 would reduce the risks to public health and safety, although the risks presented by the existing building structures would remain at the site. With the increased fencing and security, trespassing would be reduced along with the potential for injury to unauthorized users. It is expected that Alternative 3 would result in some beneficial impacts to public health and safety. However, even if public access to the site were controlled, the risks at the site would not be removed or mitigated. Like Alternative 2, this alternative would result in a beneficial impact to public health and safety because most hazards would be mitigated by preventing public access to the source of the public health and safety risks.

Alternative 4 – Selected Building Retention

Under Alternative 4, the safety risks posed by five of the eight structures on the AFM site would be completely removed by demolition and removal of the buildings. The risks posed by the three retained buildings (3, 5, and 6) would be reduced by site mitigation activities including removing loose, hanging concrete and exposed rebar and filling all tunnels and voids associated with the three buildings. Public access to the three buildings would be limited by securing the first floors of the buildings against access. In addition, each building would be completely fenced off, further reducing the likelihood of public access to the three retained buildings.

Like Alternative 3, this alternative would result in a beneficial impact to public health and safety because most of the hazards would be either permanently removed or mitigated by preventing public access to the remaining structures, thereby reducing the public safety risks.

Cumulative Impacts

The Comstock region has numerous abandoned mine locations with various public health and safety concerns including tailings piles, open adits, pits, mine equipment, and debris. Cumulative impacts to public health and safety result from this project combined with surrounding mine locations. Cumulative impacts include a reduction in overall public health as well as safety concerns, because under Alternatives 2, 3, and 4, public health and safety risks would be reduced, resulting in a safer environment in the Comstock region.

4.12.1 Interpretation and Environmental Education

There are currently no interpretation or environmental education facilities at the AFM site. Current BLM actions and goals are to provide for historic interpretation including the V&T Railroad.

Alternative 1 – No Action Alternative

Under Alternative 1, the BLM would continue its policy of maintaining the Emergency Closure Order. The BLM would replace fencing and signs and continue current BLM law enforcement actions and Storey County sheriff patrols. BLM does not have interpretive activities or facilities at the AFM site. There would be no impacts from this alternative.

Alternative 2 – Demolition

Alternative 2 calls for complete demolition and reclamation of the AFM site. All buildings would be demolished, rubble would be buried, and the surface would be recontoured and seeded to achieve a natural look. The site would be retained by the BLM, but the cultural and historic nature of the site would not be retained. Offsite interpretation of the historic mill site features would be developed and made available to the public.

This alternative would have adverse and beneficial impacts to interpretation and environmental education because even though the site would no longer be seen from the V&T Railroad, offsite interpretation materials would be developed.

Alternative 3 – Institutional Controls

Under Alternative 3, the BLM would implement a permanent closure order for the AFM site. The entire site perimeter would be fenced with an eight-foot-tall security fence and the area would be posted with warning signs. Daily onsite security patrols would be conducted, along with periodic inspections and maintenance of the fencing and signs. There would be no impact to interpretation and environmental education from this alternative because the interpretive nature of the buildings would be retained.

Alternative 4 – Selected Building Retention

Alternative 4 includes retaining three buildings at the AFM site. The rest would be demolished and disturbed areas would be reclaimed. The three remaining buildings would be fenced, but would be available for passive viewing from the outside, for viewing from the V&T Railroad, and

for onsite interpretation. The BLM would implement a long-term closure order and an administrative withdrawal to manage public access of the remaining buildings.

Alternative 4 would have adverse impacts to interpretation and environmental education because while some of the structures would no longer be present, three would be left for viewing from the V&T Railroad and for other interpretive efforts.

Cumulative Impacts

Other activities in the area that affect education and interpretation include the recreational train rides for tourists on the restored V&T Railroad. This interpretive resource points out historical points along the V&T Railroad route and provides beneficial cumulative impacts to interpretation and environmental education.

4.13 Socioeconomics

Alternative 1 – No Action Alternative

The socioeconomic impacts of the No Action alternative could prove costly for the BLM and the local area. Future accidents such as the all terrain vehicle (ATV) incident could lead to additional injuries and fatalities. In addition, it is expected that the current minimum of six serious injuries on the property per year will continue. This has obvious social costs and an adverse impact on the local community, particularly the local teenagers who frequent this site. The long-term economic costs can be measured in terms of the direct medical costs to members of the community in addition to the lost productivity resulting from injury and death. If no action is taken, it is also expected that the site will remain a popular teenage gathering place, which may benefit the youth population by providing a site for entertainment; however, given the proven potential for physical injury and death, this may not be an appropriate venue for them.

A benefit of leaving the site unchanged is the continuing presence of the historic and cultural resources and the portion of economic value this site may contribute to tourism in the general area. The economic benefits of the tourism industry are limited by the fact that the AFM site is only one stop on the historic tours of the area.

Alternative 2 – Demolition

The demolition of the complete structure would impose short-term costs and provide both social and economic benefits to the community in the long term. The short-term costs of demolition would include an estimated \$3,246,800 of direct costs for tearing down the buildings and covering the site. This would include an estimated 1,032 days and 28,907 hours of labor and material costs that would be covered by the BLM. Demolition labor is expected to provide short-term jobs to the local community. In addition to the short-term costs and benefits, in the long run the removal of the dangerous site would provide economic benefits to the community in terms of medical savings.

A social benefit of removing the dangerous structure might be providing relief from worry for local parents. The teenage community would lose a popular hangout spot, so the community might want to consider potential alternatives for them. In addition, the local tourism industry would lose a stop on its historic tours. The impact is adverse, but there are many other mining attractions in the area. Overall, the impacts of demolition are beneficial.

Alternative 3 – Institutional Controls

Additional institutional controls including fencing and security would impose short-term and long-term costs for the BLM. Construction of the fencing and security would provide short-term and long-term jobs in the area; however, only one security guard would be needed per shift annually at an estimated total cost of \$240,900, which is not a substantial contribution to the job market in the long term. The total short-term costs for constructing fencing are estimated to be \$157, 000. The potential economic liabilities of allowing a hazardous site to exist could far outweigh any small job benefits provided to the community. In addition, additional security may lead to additional conflicts with the local community as enforcement of a no trespass notice would surely not be welcomed by the local teenagers. These conflicts could also prove both economically and socially costly for the relationship between the BLM and the local community. Overall the impacts of institutional controls are adverse.

Alternative 4 – Selected Building Retention

Selected building retention would impose many of the short-term costs from the demolition of the site and in addition would not mitigate completely the risk posed by the deteriorating concrete structure. The total costs of selected building demolition are estimated to be \$2,054,232, and the long-term costs could include additional security or continued potential for liability due to the continued existence of the structure. The benefits include continuing to provide a stop on the historic tour and a place for the teenage community to congregate. The benefit of the setting as a place for teenagers to congregate may be reduced because of the risks at the site, however. Overall, selected building retention results in short-term beneficial but long-term adverse impacts to socioeconomics.

Cumulative Impacts

Because impacts to socioeconomics are all within the context of the region and not the site, these impacts are included in the Alternative impact discussions.

4.13.1 Impact Summary

A summary of all estimated impacts by alternatives is shown in Table 4-4.

Table 4-4 Impact Summary				
Resource	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Air	No impact	Short-term, localized adverse impact from demolition	No impact	Short-term, localized adverse impact from demolition
Water	No impact	No impact	No impact	No impact
Soil	Adverse impact	Long-term, adverse impact from compaction and soil removal	No impact	Long-term, adverse impact from compaction and soil removal
Vegetation	Long-term adverse impacts	Long-term beneficial impacts because vegetation will be re-established	Long-term beneficial impacts because vegetation will be allowed to naturally reclaim the site	Long-term beneficial impacts because some vegetation will be re-established
Wildlife and Fisheries	Long-term adverse impacts	Long-term beneficial impacts because natural habitats would be restored	Long-term beneficial impacts	Long-term beneficial impacts because some natural habitats would be restored
Cultural and Historic	No impact	Adverse impacts to the Virginia City National Register District from the loss of the AFM site	Adverse impacts to the Virginia City National Register District	Adverse impacts to the Virginia City National Register District from loss of parts of the site
Visual	No impact	Adverse impacts because the site will not be seen from the V&T Railroad	No impact	Adverse impacts but some of the visual quality remains

Recreation and Visitor Services	No impact	Beneficial impacts because the site could be opened for dispersed recreation	Adverse impacts because increased security would limit trespass recreation and the site would not be available for dispersed recreation	Adverse impacts because increased fencing would limit trespass recreation and the site would not be available for dispersed recreation
Land Use Authorization/Access	No impact	Adverse and beneficial impacts	Beneficial impacts	Beneficial impacts
Hazardous and Solid Materials	Beneficial impacts	Beneficial impacts	Beneficial impacts	Beneficial impacts
Public Health and Safety	Adverse impacts	Beneficial impacts because all public hazards would be removed	Beneficial impacts because increased security would reduce decrease risks to the public	Beneficial impacts because actions would decrease risks to the public
Education and Interpretation	No impact	Adverse and beneficial impacts because onsite interpretation would be lost, but offsite interpretive facilities would be implemented	No impact	Adverse impacts because part of the interpretive value of the site would be lost
Socioeconomics	Adverse impacts	Short- and long-term beneficial impacts from increased temporary employment and removal of a potentially dangerous site would reduce medical costs to the community	Short-term beneficial impacts from some temporary employment, and long-term adverse impacts from a potentially dangerous site and increased public and BLM conflict	Short- term beneficial impacts from increased temporary employment and long-term adverse impacts because a potentially dangerous site still exists

5 CONSULTATION AND COORDINATION

This document was prepared in consultation and coordination with interested public individuals and organizations, Federal and State of Nevada agencies, and local municipal and county governments. Involvement and input from all these entities is a vital component of the Environmental Assessment (EA) process.

Public involvement for the American Flat Mill (AFM) EA was conducted in two phases:

- Public scoping, which included two public meetings; and
- Public review and comment on the EA.

A summary of the public scoping process is available in Chapter 1 and is not reproduced here. This chapter summarizes and responds to public comments submitted on the EA as well as information on the extended Cooperating Agency consultation process.

BLM SFFO sent a formal consultation letter informing the Yerington Paiute Tribe and the Washoe Tribe of Nevada and California of the results of the Section 110 inventory. This letter informed the tribes that one prehistoric site is present near the AFM and invited comments and concerns. No response to this correspondence has been received.

The BLM SFFO s sent a formal consultation letter to the Washoe Tribe, the Reno-Sparks Indian Colony, and the Yerington Paiute Tribe informing them of the EA: briefly describing the four alternatives; informing them of the presence of one prehistoric site in the vicinity of American Flat; and inviting comments, concerns, and offering a site tour.

BLM staff met with the Washoe Tribe, and they stated that a site visit is not necessary at this time. No other concerns have been voiced.

This EA will be available for public comment. Hard copies of the EA will be available at the Carson City District Office. The EA will also be available on the AFM website at http://www.blm.gov/nv/st/en/fo/carson_city_field/blm_information/nepa/comstock_merger_mill.html. The public comment period will last for 30 days.

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**United Comstock Merger Mill at American Flat
Environmental Assessment**

**Appendix A
Environmental Analysis Assumptions and Calculations**

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1 Introduction

The United Comstock Merger Mill at American Flat Environmental Assessment (EA) was conducted to evaluate the impacts to the natural and human environment from a proposed action to mitigate hazards to human health from the United Comstock Merger Mill at American Flat (AFM). In developing the EA, various assumptions and calculations were made to qualify and quantify the natural and human environmental conditions that would be affected by the various alternatives addressed.

Costs for each alternative were developed based on proposed actions as follows:

- Alternative 1 – the No Action Alternative: costs were derived from current BLM AFM costs.
- Alternative 2 – Demolition: volume estimates were derived from the U.S. Army Corp of Engineers (USACE) report (USACE 2010), costs for demolition were based on the alternative actions (Sections 2, 3, 4, and 5 below) and the RS Means Heavy Construction Cost Data Manual (Means 2010) was referenced to determine crew types, equipment types and quantities, labor hours, and construction timelines.
- Alternative 3 – Institutional Controls: costs for security fencing and full time security were based on Means (2010) and other fencing assumptions in Section 7.
- Alternative 4 – Select Building Retention, volume estimates were derived from the USACE report (USACE 2010), costs for demolition were based on the alternative actions (Sections 2, 3, 4, and 5 below) and the Means (2010) was referenced to determine crew types, equipment types and quantities, labor hours, and construction timelines. Security fencing was based on Means (2010) and other fencing assumptions in Section 7.

2 Demolition Assumptions

This section describes the assumptions made regarding building demolition for Alternative 2 (Demolition) and Alternative 4 (Selected Building Retention). Demolition techniques for buildings and structures were assumed to include, but were not limited to, the following:

- Excavator with a demolition grapple
- Concrete saw
- Concrete water-jet
- Removal of walls by crane
- Removal of walls by backhoe
- Wrecking ball

It was assumed that ground-level slabs and foundations would be fractured and left in place following building demolition. Fracture options include, but are not limited to, the following:

- Excavator with a demolition grapple
- Backhoe with a breaker attachment
- Jackhammer
- Pneumatic and hydraulic breakers
- Expansive grout

Because building demolition was not assumed to be selective (i.e., no particular walls, floors, or parts of any building were to be salvaged and other parts demolished), the most straight-

forward demolition estimate provided by Means (2010) was for total building demolition, based on the total volume of the building. Building volumes were roughly estimated based on the drawings and aerial imagery included in the United States Army Corps of Engineers (USACE) *Final Findings Report for the Assessment of Physical Hazards of Buildings and Facilities, Aerial Survey and Topographic Mapping at American Flat Mill Site, Storey County Nevada* (USACE 2010). Building footprints were multiplied by the approximate height of the building to be demolished. Basement areas not scheduled for demolition were not included in the building volume calculation (e.g., the pit area underlying the rail spur of Building 1, the Ore Bin). For Building 8, only a foundation slab remains. The slab thickness was assumed to be 0.5 feet based on information provided in the USACE report (2010). Building footprints and estimated building volumes are provided in Table A-1.

Building	Footprint (Square Feet)	Building Volume (Cubic Yards)	Crew Days for Demolition	Labor Hours for Demolition
1 – Ore Bin	3,785	1,542	3	167
2 – Coarse Crushing Plant	8,473	14,122	25	1,526
3 – Fine Grinding & Concentration	16,998	96,324	170	10,403
4 – Cyanide Plant	89,650	92,970	165	10,041
5 – Warehouse	5,666	2,938	6	318
6 – Precipitation & Refining	3,938	4,229	8	457
7 – Assay Office	3,005	1,447	3	157
8 – Substation	2,022	75	1	9

All buildings were assumed to be concrete structures. A type B-8 crew, including the following personnel and equipment, was considered for concrete structure demolition:

- 1 labor foreman
- 2 laborers
- 2 medium equipment operators
- 1 equipment operator oiler
- 2 heavy truck drivers
- 1 25-ton hydraulic crane
- 1 3-cubic yard crawler loader
- 2 12-cubic-yard, 400-horsepower dump trucks

The estimated daily output for the demolition crew was 567 cubic feet of total building volume. This value was used to estimate the number of crew days and labor hours needed to complete demolition of each building, as shown in Table A-1. The crew days and labor hours required for mobilization, demobilization, and implementation of temporary construction best management practices (BMPs), with the exception of dust control, were not incorporated into this EA.

3 Landfilling Assumptions

It was assumed that, concurrent with building demolition, demolition debris would be used to fill building voids. The USACE report (2010) estimated the volumes of demolition debris and the volumes of voids available for landfilling demolition debris at each building location. After filling the voids, all remaining demolition debris would be backfilled into the Building 4 footprint and substructure. The demolition debris, void space, and Building 4 landfill volumes are summarized in Table A-2.

Building	Volume of Demolition Debris (Cubic Yards)	Building Void Volume (Cubic Yards)	Volume of Demolition Debris for Building 4 Landfill (Cubic Yards)	Crew Days for Backfilling	Labor Hours for Backfilling
1 – Ore Bin	395	50	345	1	2
2 – Coarse Crushing Plant	1,832	1,200	632	1	3
3 – Fine Grinding & Concentration	3,761	2,000	1,761	1	8
4 – Cyanide Plant	609	609	0	0	0
5 – Warehouse	57	0	57	1	1
6 – Precipitation & Refining	469	0	469	1	2
7 – Assay Office	146	0	146	1	1
8 – Substation	83	83	0	1	1

A type B-10M crew, including the following personnel and equipment, was considered for landfilling activities:

- 2 medium equipment operators
- 0.5 laborer
- 1 300-horsepower dozer

The estimated daily output for the demolition debris landfilling crew was 3,170 cubic yards of debris. This value was used to estimate the number of crew days and labor hours needed to backfill demolition debris into the Building 4 landfill, as shown in Table A-2. The crew days and labor hours required for mobilization, demobilization, and implementation of temporary construction BMPs, with the exception of dust control, were not incorporated into this EA.

It was assumed that all void space (in situ) landfilling activities would be conducted by the demolition crew concurrently with demolition activities. Only the cubic yardage of demolition debris landfilled into the Building 4 substructure was considered for calculating crew days and labor hours. Filling the Building 4 substructure and voids with demolition debris from Building 4 itself was considered to be in situ landfilling conducted by the demolition crew rather than the landfilling crew.

Buildings 5 through 7 do not have basements or other voids in which to dispose of demolition debris; therefore, all demolition debris from those buildings was included in the demolition debris calculations for the Building 4 landfill.

For Building 8, only a foundation slab remains. Although the USACE report (2010) included the Building 8 demolition debris in the Building 4 landfill volume, Alternative 2 of this EA assumed that all ground-level slabs and foundations would be fractured and left in place. The volume of Building 8 demolition debris was therefore not included in the Building 4 landfill volume and associated landfilling crew day and labor calculations.

4 Soil Cover Assumptions

The EA assumed that a vegetated soil cover would be constructed over all disturbed areas following demolition and backfilling activities. To determine the total area of soil cover to be constructed, it was assumed that a 10-foot-wide area of disturbance would surround the footprint of each demolished building. This disturbed area would be covered with soil at least 36 inches deep and comprised of native material excavated from an on-site borrow area. The calculated areas of disturbance and corresponding volumes of soil required to establish 36 inches of coverage are provided in Table -3.

Table A-3 Estimated Areas of Disturbance and Soil Cover Volumes				
Building	Area of Disturbance (Square Yards)	Soil Cover Volume (Cubic Yards)	Crew Days for Soil Cover	Labor Hours for Soil Cover
1 – Ore Bin	853	3,456	8	89
2 – Coarse Crushing Plant	1,528	6,186	12	157
3 – Fine Grinding & Concentration	2,754	11,154	19	282
4 – Cyanide Plant	11,371	46,053	78	1,157
5 – Warehouse	1,036	4,196	9	107
6 – Precipitation & Refining	811	3,283	8	84
7 – Assay Office	648	2,625	6	67
8 – Substation	478	1,937	5	51

Several tasks were incorporated into the soil cover construction assumptions; including the excavation and hauling of native fill material from an on-site borrow location, grading the soil cover subgrade, and placing and finish grading the soil cover.

A type B-33E crew, including the following personnel and equipment, was considered for excavating, hauling, and placing fill material:

- 1 medium equipment operator
- 0.5 laborer
- 0.25 medium equipment operator
- 1 self-propelled, 21-cubic yard scraper

- ¼ push 300-horsepower dozer

The estimated daily output for the excavation/placement crew was 1,030 cubic yards of fill material (Means 2010).

A type B-11L crew, including the following personnel and equipment, was considered for subgrade and finish grading the soil cover:

- 1 medium equipment operator
- 1 laborer
- 1 30,000-pound grader

The estimated daily output to grade the soil cover subgrade was 3,500 square yards. The estimated daily output for finish grading was 400 square yards. These daily outputs were used to estimate the number of crew days and labor hours needed to construct the soil cover, as shown in Table -3. The crew days and labor hours required for mobilization, demobilization, and implementation of temporary construction BMPs, with the exception of dust control, were not incorporated into the EA.

The USACE report (2010) estimated that 3,859 cubic yards of demolition debris could be used to fill on-site voids. The report also estimated that the Building 4 substructure could store 1,600 cubic yards of landfilled demolition debris. Based on these estimates, including the estimated 609 cubic yards of Building 4 demolition debris (USACE 2010) but excluding the 83 cubic yards of Building 8 demolition debris (USACE 2010), excess demolition debris would have to be landfilled on top of the Building 4 substructure. Under Alternative 2, this would include an estimated 2,519 cubic yards of demolition debris. Under Alternative 4, this would include an estimated 132 cubic yards of demolition debris. Various design constraints could affect the final Building 4 soil cover surface area and volume. Therefore, for the purposes of this EA, the Building 4 soil cover surface area and volume were based solely on the Building 4 footprint and assumed area of disturbance. No design assumptions were made regarding the height, slope, or placement of excess demolition debris in the Building 4 landfill.

5 Revegetation Assumptions

The soil cover described in the EA would be seeded with a mix of native grass and shrub species common in the vicinity of the AFM. It was assumed that revegetation would consist of hydro- or air-seeding the constructed soil covers with mulch and fertilizer. The revegetation areas were assumed to be the areas of disturbance provided in Table above. A type B-81 crew, including the following personnel and equipment, was considered for revegetation activities:

- 1 laborer
- 1 medium equipment operator
- 1 heavy truck driver
- 1 track-mounted hydro-mulcher
- 1 3-cubic yard crawler loader
- 1 220-horsepower truck tractor

The estimated daily output for the revegetation crew was approximately 9 square yards of revegetation area. This value was used to estimate the number of crew days and labor hours

needed to complete demolition of each building, as shown in Table -4. The crew days and labor hours required for mobilization, demobilization, and implementation of temporary construction BMPs, with the exception of dust control, were not incorporated into the EA.

Table A-4 Estimated Revegetation Crew Days and Labor Hours		
Building	Crew Days for Revegetation	Labor Hours for Revegetation
1 – Ore Bin	1	3
2 – Coarse Crushing Plant	1	5
3 – Fine Grinding & Concentration	1	8
4 – Cyanide Plant	2	31
5 – Warehouse	1	3
6 – Precipitation & Refining	1	3
7 – Assay Office	1	2
8 – Substation	1	2

6 Dust Control Assumptions

Under Alternatives 2 and 4, construction BMPs would be implemented to control impacts such as dust, stormwater run-off, and off-site tracking of soils. Although implementation of most temporary construction BMPs was not incorporated into the crew day and labor hour calculations for the EA, dust control was considered a BMP that would significantly impact the natural and human environmental impact analyses. It was assumed that light dust control, such as water spraying, would be conducted for the duration of construction activities. The number of dust control crew days were estimated as the total number of crew days necessary to complete demolition, landfilling, soil cover construction, and revegetation activities.

Table -5 summarizes the dust control crew days and associated labor hours for Alternatives 1 and 2.

Table A-5 Estimated Dust Control Crew Days and Labor Hours		
Alternative	Crew Days for Dust Control	Labor Hours for Dust Control
2 – Demolition	541	4,328
4 – Selected Building Retention	315	2,520

A type B-59 crew, including the following personnel and equipment, was considered for dust control activities:

- 1 heavy truck driver
- 1 220-horsepower truck tractor
- 1 5,000-gallon water tank trailer

For the purposes of this EA, it was assumed that surface water currently present on site would be characterized as suitable for use in dust control. Therefore, no estimates, assumptions, or calculations were made to account for hauling water to the AFM site, and no estimates, assumptions, or calculations were made regarding the quantities of water necessary for dust control.

7 Security Fencing Assumptions

Under Alternative 3, it was assumed that a security fence would be installed around the entire site perimeter. Security fencing was also included under Alternative 4, with the enclosure of retained Buildings 3, 5, and 6. All fencing was assumed to be 8-foot-tall, Schedule 40 chain link industrial fencing with three strands of wire across the top. All fence posts were assumed to be galvanized steel spaced 10 feet apart and set in concrete. It was assumed that gates would be installed along the perimeter fence across five of the known access roads to the AFM. For the building enclosures, it was assumed that one gate would be installed along the fence for each of the three retained buildings. All gates were assumed to be 8-foot-tall double-swing gates with 12-foot openings.

A type B-80C crew, including the following personnel and equipment, was considered for fence installation activities:

- 2 laborers
- 1 light truck driver
- 1 1.5-ton, gas-powered flatbed truck
- 1 gas-powered manual fence post auger

A type B-80 crew, including the following personnel and equipment, was considered for gate installation activities:

- 1 labor foreman
- 1 laborer
- 1 light truck driver
- 1 light equipment operator
- 1 3-ton, gas-powered flatbed truck
- 1 truck-mounted earth auger

The estimated daily output for the fencing crew was 180 linear feet of fencing. Approximately two openings could be gated daily by the gate installation crew. These values were used to estimate the number of crew days and labor hours needed to install fencing and gates under Alternatives 2 and 4. A summary of the total linear feet of fencing, number of gates, crew days, and labor hours required for site security is provided in Table -6.

Table A-6 Estimated Site Security Crew Days and Labor Hours				
Alternative	Fencing (Linear Feet)	Number of Gates	Crew Days for Fencing & Gates	Labor Hours for Fencing & Gates
3 – Institutional Controls	3,354	5	21	522

Table A-6 Estimated Site Security Crew Days and Labor Hours				
Alternative	Fencing (Linear Feet)	Number of Gates	Crew Days for Fencing & Gates	Labor Hours for Fencing & Gates
4 – Selected Building Retention	1,598	3	12	259

8 Operation and Maintenance Assumptions

Operations and Maintenance (O&M) assumptions include the cost of BLM security patrol under Alternative 1 and full time security under Alternative 3, fence and sign replacement under Alternatives 1, 3, and 4. For all alternatives, sizes of buildings, acreage, etc., are consistent with the USACE report (USACE 2010).

The hourly cost for security patrol was taken from Means (2010) and includes salary. For Alternative 1, it was assumed that the security patrol would patrol the site for approximately 60 hours per month. For Alternative 2, it was assumed that the security patrol would be at the site for 24 hours per day, seven days per week.

Fence assumptions (Means 2010) included repair of an industrial Schedule 40 chain link fence, 8 feet high with 3 strands of 6 gauge wire for Alternatives 3 and 4 and for Alternative 1, an industrial chain link fence, 6 feet high. For all alternatives it was assumed that approximately 20 percent of the fencing would require repairs. All labor, equipment, and supply costs are from Means (2010).

For Alternatives 1 and 3 it was assumed that 25 signs would need to be replaced each year. These signs were assumed to be 24 x24 inches and reflective. It was assumed that only 16 signs would need replacing for Alternative 4. All labor, equipment, and supply costs are from Means (2010).

Vegetative cover repair assumptions for Alternatives 2 and 4 include that 5 percent of the cover will need to be repaired. All labor, equipment, and supply costs are from Means (2010).