

# **MINING AND PROSPECTING THE ALPHA CORSAIR AND OTHER VEINS**

**Selective Cultural Resource Inventory of Historic Mine Sites**

**Creede Mining District**

**Mineral County, Colorado**

Prepared Under Contract Between

Willow Creek Reclamation Committee

and

Mountain States Historical  
3750 Darley Ave.  
Boulder, CO 80303  
(303)499-4334

Eric Roy Twitty  
Principal Investigator

May, 2003

## TABLE OF CONTENTS

ABSTRACT.....	iv
CHAPTER 1 INTRODUCTION.....	1
CHAPTER 2 EFFECTIVE ENVIRONMENT.....	4
CHAPTER 3 ECONOMIC GEOLOGY.....	5
CHAPTER 4 THE HISTORY OF THE CREEDE MINING DISTRICT.....	8
Silver is Discovered.....	8
The Mines.....	14
Mining at Creede Collapses.....	18
Engineers Come to the Rescue.....	19
Decline.....	26
Paradox: Boom During the Great Depression.....	27
The Last Boom-Bust at Creede.....	31
Previous Cultural Resource Work.....	32
CHAPTER 5 OBJECTIVES AND RESEARCH DESIGN.....	33
Objectives.....	33
Research Design.....	34
Research Domain: Mining and Milling Operations.....	36
Research Domain: Residential Occupation.....	46
Project Specific Research Questions.....	51
CHAPTER 6 RESEARCH METHODS.....	54
CHAPTER 7 SITE SUMMARIES AND ANALYSES.....	55
Alpha-Corsair Ore System.....	55
Ace Mine: Site 5ML299.....	55
Alpha Mine: Site 5ML371.....	58
Corsair Mine: Site 5ML375.....	60
Kreutzer Mine: Site 5ML374.....	66
Monon Mine: Sites 5ML319, 5ML369, 5ML370, 5ML373, and 5ML390.....	68
Sunnyside Mine: Site 5ML376.....	74
Prospect Adit, Name Unknown: Site 5ML372.....	78
Prospect Adit, Name Unknown: Site 5ML368.....	80
Ore Systems West of the Amethyst Vein.....	82
Prospect Complex, Name Unknown: Site 5ML379.....	83
Prospect Shaft, Name Unknown: Site 5ML378.....	88
Exchequer Tunnel: Site 5ML377.....	90
Prospect Shaft, Name Unknown: Site 5ML380.....	94

Ore Systems Between the Amethyst and Holy Moses Veins.....	99
Monte Carlo Mine: Site 5ML381.....	99
Midwest Mine: Site 5ML300.....	106
Prospect Adit, Name Unknown: Site 5ML382.....	109
Prospect Adit, Name Unknown: Site 5ML383.....	114
Prospect Adit, Name Unknown: Site 5ML384.....	117
Prospect Shaft, Name Unknown: Site 5ML385.....	119
Dolgooth Shaft No.2: Site 5ML386.....	122
Captive Inca Mine: Site 5ML387.....	126
Equity Ore System.....	133
Prospect Adit, Name Unknown: Site 5ML388.....	135
Equity Mine: Site 5ML389.....	136
CHAPTER 8 EVALUATIONS AND RECOMMENDATIONS.....	139
CHAPTER 9 PROJECT SUMMARIES AND CONCLUSION.....	155
BIBLIOGRAPHY.....	195
APPENDIX I FEATURE DESCRIPTIONS AND ARTIFACT INVENTORIES BY SITE.....	202

## LIST OF FIGURES

Geographic Location of the Creede Mining District.....	v
Map of the Principal Ore Veins and Mines.....	vi
Master Legend for Site Plan Views.....	vii
Figure 7.1: Plan View of the Ace Mine Site.....	57
Figure 7.2: Plan View of the Corsair Mine Site.....	63
Figure 7.3: Map of the Monon Mine Workings.....	71
Figure 7.4: Plan View of the Sunnyside Mine Site.....	76
Figure 7.5: Plan View of Site 5ML372.....	79
Figure 7.6: Plan View of Site 5ML368.....	81
Figure 7.7: Plan View of Site 5ML379.....	84
Figure 7.8: Plan View of Site 5ML378.....	87
Figure 7.9: Plan View of the Exchequer Tunnel Site.....	91
Figure 7.10: Plan View of Site 5ML380.....	95
Figure 7.11: Plan View of the Monte Carlo Mine Site.....	100
Figure 7.12: Plan View of the Midwest Mine Site.....	107
Figure 7.13: Plan View of Site 5ML382.....	110
Figure 7.14: Plan View of Site 5ML383.....	115
Figure 7.15: Plan View of Site 5ML384.....	118
Figure 7.16: Plan View of Site 5ML385.....	120
Figure 7.17: Plan View of the Dolgooth Shaft No.2 Site.....	124

Figure 7.18: Plan View of the Captive Inca Mine Site.....	129
Figure 7.19: Plan View of Site 5ML388.....	134
Topographic Maps and Archaeological Site Locations.....	Back

## LIST OF TABLES

### Chapter 4: The History of the Creede Mining District

Table 4.1: Summary of Mining on the Amethyst Vein.....	28
Table 4.2: Summary of Mining on the Holy Moses Vein.....	28
Table 4.3: Summary of Mining on Upper West Willow Creek.....	29
Table 4.4: Summary of Mining on the Alpha-Corsair Vein.....	29
Table 4.5: Population of the Creede Mining District, 1890-1960.....	30

### Chapter 5: Objectives and Research Design

Table 5.1: Dateable Structural Artifacts.....	38
Table 5.2: Dateable Industrial Artifacts.....	38

### Chapter 9: Project Summaries and Conclusion

Table 9.1: Shop Facilities on the Alpha-Corsair and Other Ore Systems.....	166
Table 9.2: Dates of Operations, Properties on the Alpha-Corsair Ore System...	167
Table 9.3: Dates of Operations, Properties on Ore Systems West of the Amethyst Vein.....	167
Table 9.4: Dates of Operations, Properties on Ore Systems Between the Amethyst and Holy Moses Veins.....	168
Table 9.5: Dates of Operations, Properties on the Equity Ore System.....	168
Table 9.6: Site Identification and Eligibility Summary: Alpha-Corsair Ore System.....	193
Table 9.7: Site Identification and Eligibility Summary: Ore Systems West of the Amethyst Vein.....	193
Table 9.8: Site Identification and Eligibility Summary: Ore Systems Between the Amethyst and Holy Moses Veins.....	194
Table 9.9: Site Identification and Eligibility Summary: Equity Ore System.....	194

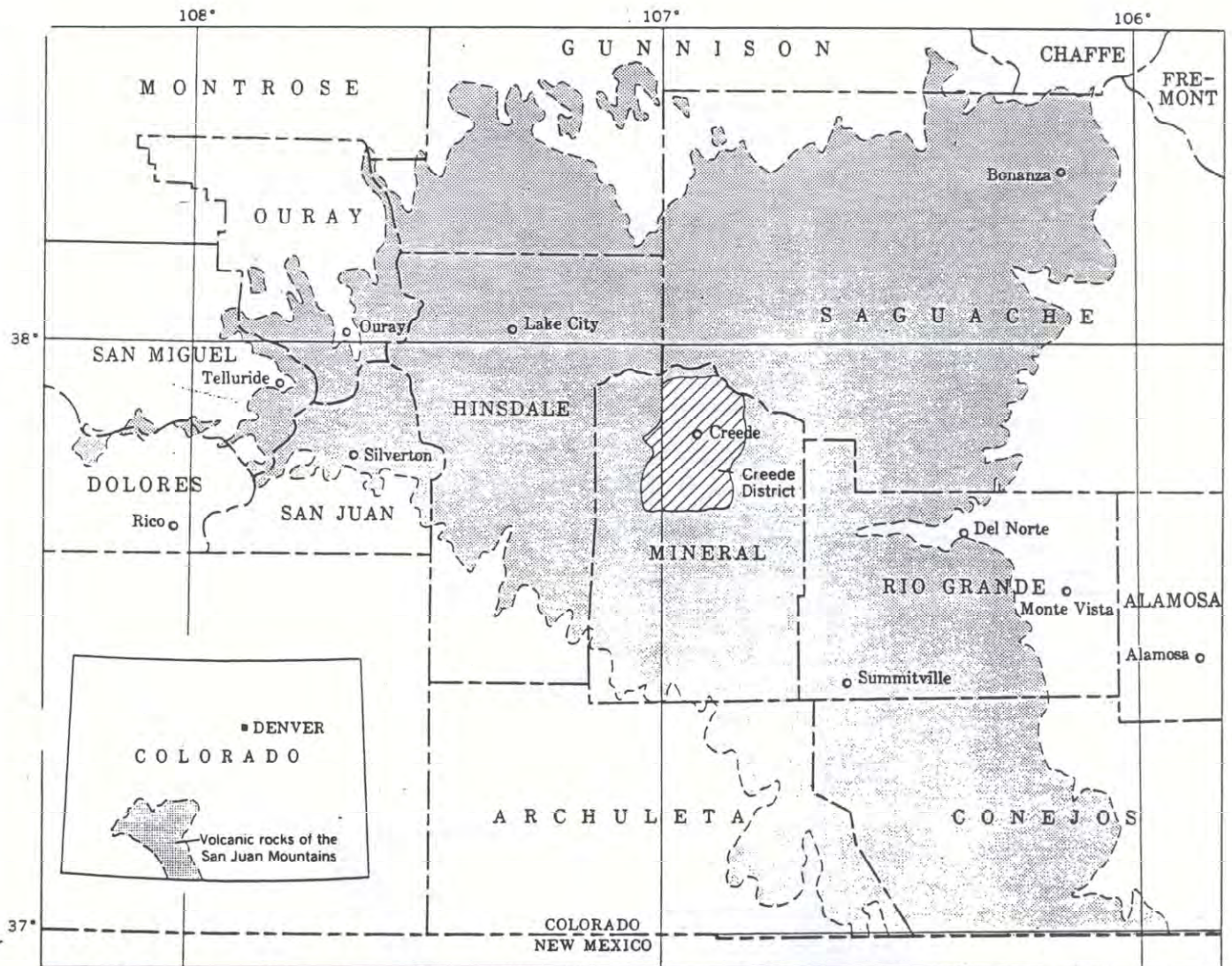
## ABSTRACT

During the summer of 2001, Mountain States Historical inventoried the principal historic mine sites and select prospect sites in four areas featuring minor ore systems in the Creede Mining District, Mineral County, Colorado. Two previous inventories studied mine and prospect sites on the Amethyst and Holy Moses veins, which were the district's two principal ore systems. The four minor systems included the Alpha-Corsair, located around Miners Creek, the area west of the Amethyst Vein, the area between the Amethyst and Holy Moses veins, and the Equity, situated on upper West Willow Creek. The inventory recorded a total of 7 mine complexes and 15 prospect complexes in a manner surpassing Class III standards.

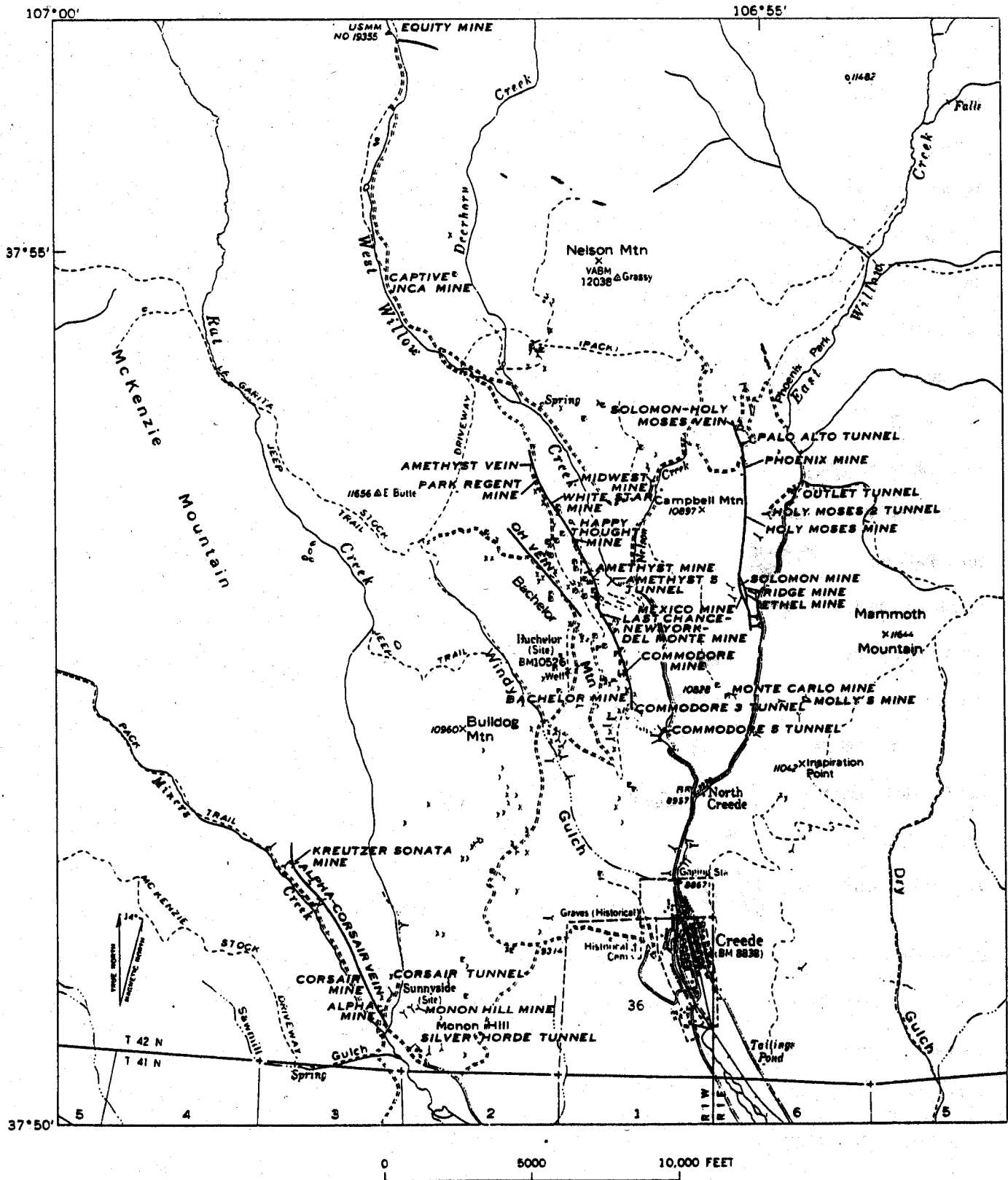
Most of the sites included the remains of mine surface plants and some included associated residential features. The material remnants lent themselves to an understanding of mining and associated residential occupation on the district's ore systems outside of the Amethyst and Holy Moses veins.

While most sites are recommended as ineligible for listing on either the State or National Registers of Historic Places, most sites can contribute to the historic visual landscape of the Creede district. The sites recommended for listing on the State or National Registers retain high degrees of historical integrity and possess the ambiance characteristic of Western mining. Only several sites encompass standing structures and one features intact machinery, while several others possibly possess buried archaeological deposits. Management recommendations for the eligible sites include stabilizing standing structures, testing buried deposits, and limiting potential disturbance caused by possible environmental remediation efforts to portions of the sites that have already been disturbed.

Geographic location of the Creede Mining District.

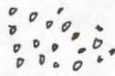




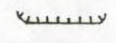















Map of the principal ore veins, mines, and prospects in the Creede Mining District, Mineral County, Colorado. Steven & Ratte, 1965.


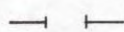
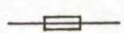



# Master Legend for Site Plan Views

## Plan View Symbols

-  = Scree
-  = Timber
-  = Bedrock
-  = Drainage
-  = Fill Bank
-  = Cut Bank
-  = Hewn Log
-  = Log Post
-  = Timber Post
-  = Brick Debris
-  = Mine Rail Line
-  = Timbers/Boards
-  = Rock Foundation
-  = Brick Foundation
-  = Concrete Foundation
-  = Shaft Compartment
-  = Boiler Clinker Dump
-  = Direction Downslope
-  = Waste Rock Dump Slope

## Architectural Symbols

-  = Door
-  = Doorway
-  = Window
-  = Timber



## CHAPTER 1 INTRODUCTION

### Project Overview

In 1999 the Willow Creek Reclamation Committee discussed with Mountain States Historical the need to conduct a voluntary cultural resource inventory of the principal historic mine sites within the Creede Mining District.

The Willow Creek Reclamation Committee formed in response to the Environmental Protection Agency's (EPA) concern over potential metals contamination entering into local waterways from the Creede district. The Committee consists of representatives from local government, private landholders, the Department of Fish and Game, the U.S. Forest Service, the EPA, and the Colorado Department of Public Health and the Environment. In an attempt to avoid EPA action, the Committee elected to address the potential environmental problems on its own. The Committee and Mountain States Historical assumed that the Creede district's principal historic mine sites are probable contributors of metals and may therefore be involved in future environmental remediation.

In the worst case, environmental remediation could involve the wholesale removal of waste rock and tailings associated with the historic mine sites, with the cleanup at Leadville, Colorado serving as an example. Such action would destroy the historic integrity of the mine sites and the appearance of the natural environment, and when considered in sum, this would damage the historic integrity of the Creede Mining District. The Creede district encompasses one of the West's most intact sets of historic mine and settlement sites, and the loss of historic integrity would be a permanent detriment to the public and to the local economy, which relies on tourists drawn by the historic sites. In the best case, water diversion systems may be installed at the mines that contribute metals to control run-on/ run-off. Such systems would minimize the impact of remediation to the sites' historic integrities.

The Willow Creek Committee acted in a proactive fashion and contracted with Mountain States Historical to begin conducting an inventory and significance evaluation of the Creede Mining District's principal historic mine sites. The findings have the potential to influence possible remediation plans. The project has been divided into a three year span of time during which the mines on the district's three principal ore bodies were inventoried. During the summer of 1999 the mines and selected prospects on the Amethyst Vein were inventoried and in 2000 the mines and prospects on the Holy Moses Vein were inventoried. In 2001 the mines and prospects on the Alpha-Corsair Vein and other, minor ore bodies were inventoried. The inventory is a voluntary action and was initiated with an interest toward preservation, and on favorable but objective evaluation of the target mine sites.

The Willow Creek Committee contracted with Mountain States Historical because the consultant specializes in recording, evaluating, and interpreting historic mine sites. Eric Twitty, principal investigator, conducted all fieldwork, analysis of data, and preparation of the report and historical context.

In association with the inventory, Mountain States Historical developed a historical context for the district which includes the principal factors that influenced mining. The context document serves as historical framework for this and future cultural resource work in the district.

### **Alpha-Corsair Vein Inventory and Report**

In 2001 the principal mine and prospect sites on the Alpha-Corsair Vein and other, minor ore bodies in the mining district were inventoried as archaeological and architectural resources. The project area included six separate areas where prospectors, active during the district's boom-era, suspected ore bodies to exist. The first area encompassed the eastern portion of McKenzie Mountain between Miners and Rat creeks, where the Alpha-Corsair Vein was known to lie. The second area encompassed the east spur of Bachelor Mountain, between Windy Gulch and West Willow Creek, where prospectors sought ore bodies adjacent to and west of the famed Amethyst Vein. The third area included land on the northeast flank of Bachelor Mountain where prospectors sought ore bodies adjacent to and west of the Amethyst Vein. The fourth area lay between West and East Willow creeks where prospectors sought ore bodies between the Amethyst and Holy Moses veins. The fifth area was on the southwest flank of Nelson Mountain, and the last area lay on the east side of upper West Willow Creek. To make the numerous sites meaningful, the six project areas were organized into four basic ore systems, which are discussed Chapter 7. The first project area was historically recognized as the Alpha-Corsair ore system. The second and third areas can be categorized as Ore Systems West of the Amethyst Vein. The fourth and fifth areas were categorized as Ore Systems Between the Amethyst and Holy Moses Veins. The last project area was historically recognized as the Equity Ore System.

The inventory accounted for seven principle historic mines and three selected prospects on the Alpha-Corsair Ore System. Four prospects were selected on the Ore Systems West of the Amethyst Vein, and the area featured no principal mine sites. The inventory accounted for three principal mine sites and five selected prospects on the Ore Systems Between the Amethyst and Holy Moses Veins. Last, the only principal mine and one selected prospect were recorded on the Equity Ore System. Mountain States Historical selected the prospect sites, with the approval of the Willow Creek Reclamation Committee, based on historical maps, archival research, and on-site inspection.

Mountain States Historical defined each *mine* as a set of underground workings attributed to a *single mining operation*, and all directly associated *surface plants*. For example, two of the selected mines, the Monte Carlo and the Monon, featured at least two openings each that provided access to a maze of underground workings. The individual openings were equipped with independently functioning surface plants. Each surface plant remnant was inventoried and analyzed separately, and in terms of belonging to the greater mining operation. A surface plant historically consisted of the collection of facilities that supported work underground at a particular mine opening. For a detailed definition of the function of a surface plant, see Chapter 4 of the historical context.<sup>1</sup> The sites encountered

---

<sup>1</sup> Twitty, 1999b.

on the four ore systems consisted primarily of archaeological features and associated artifacts, and only several sites included standing structures. The cultural resources not directly associated with the selected mines' surface plants were not included in this study.

The findings of the Alpha-Corsair inventory are presented as this report, and as Office of Archaeology and Historic Preservation (OAHP) site and structure forms. The report seeks to go beyond merely describing the nature of the sites and the inventory project, and attempts to address several goals. First, the report was prepared for a diverse readership not necessarily trained in the academics of cultural resource work and historic preservation. As part of this effort, the descriptions for each site were presented as interpretations based on the combination of historic research and material evidence. For a detailed description of only the sites' physical compositions and artifact inventories, the reader should visit Appendix I. Between the site interpretations presented in Chapter 7, the evaluation recommendations presented in Chapter 8, and Appendix I, the reader can determine the physical characteristics of each site. The site interpretations discuss the use of material evidence to date periods of activity. Appendix I includes tables of dateable artifacts and pertinent references.

Second, in light of possible threats to the historic sites on the four ore systems, the report presents evaluation recommendations in terms of the National and State Registers of Historic Places. The National and State Registers are lists of important historic sites sanctioned by the National Park Service and the Colorado Office of Archaeology and Historic Preservation. Projects involving public lands or public money, such as environmental remediation, must consider their impacts to sites deemed eligible, and seek guidance from the OAHP. Sites recommended as eligible met one or more of the Criteria defined by the National Register of Historic Places, and the findings are discussed in Chapter 8.

Third, the report attempts to address a series of research questions organized into several themes under the topics of the district's mining and milling industries, and residential occupation. The material in Chapter 9 discusses the findings.

Fourth, the findings of the Alpha-Corsair inventory will serve as an important component of an overarching research strategy intended to gather information for a popular publication on the history of the Creede district. Books discussing Creede's history, from discovery to the end of mining in the 1970s, have not been widely available to the public. The archival and archaeological findings of the Alpha-Corsair inventory will be combined with determinations wrought from the Creede district's other two extant inventories (the Amethyst Vein, and the Holy Moses Vein), as well as a fourth inventory of historic settlement sites.

Fifth, the body of work from the cumulative sum of inventories will be used in an effort to nominate portions of the Creede district and its mines as one or more historical districts.

## CHAPTER 2 EFFECTIVE ENVIRONMENT

The Creede Mining District covers an area of approximately 47 square miles in Mineral County near the upper Rio Grande River in the eastern San Juan Mountains. The district encompasses much of the Willow Creek drainage system, Miners Creek, and land along the Rio Grande River's north side. The region's topography is predominantly mountainous. Extremely rugged terrain rises along the north side of the Rio Grande River Valley and culminates in a series of 12,000 to 13,000 foot-high peaks, which form the Continental Divide. Both the Divide and the Rio Grande valley extend east-west in the vicinity of the mining district. East and West Willow creeks, their tributaries, and Rat and Miners creeks dissect the mountainous area within the district. East and West Willow creeks join to form Willow Creek, Rat Creek drains into Miners Creek, and they flow south into the Rio Grande.

The terrain within the district is typical of that resultant from volcanic activity. Gently sloped terraces and the summits of table top mountains lie between approximately 10,000 and 11,000 feet, and the topography below is steep and rocky. Further, volcanic rock formations manifest as cliffs and pinnacles in the lower, eroded portions of the East and West Willow creek valleys.

Because the Creede Mining District is located in the eastern San Juan Mountains it lies within rain shadow, and as a result, the ecological communities adapted to dry conditions. The Rio Grande River Valley features stands of juniper-pinon trees and areas of grassland, while the mountain slopes bounding the valley support subalpine fir and spruce forests. Lodgepole pines and fir trees predominate the dry lower slopes, and spruce trees replace the pines with increase in elevation. In addition, stands of aspen trees thrive on flat areas above 8,500 feet. Some of the groves are natural while many others grew in logged clear-cuts. Because the soil within the district, ranging from silty to sandy loam, is well-drained, ground-cover in the forests is limited to woody, drought-tolerant species such as mountain juniper, holly, and kinnikinnick. Subalpine meadows thrive in open areas between forests, and arctic willows line most of the area's stream channels.

The climate in the district is typical of that in the drier, deep Rocky Mountains. The summers tend to be warm, however the temperatures during the day rarely exceed 85 degrees Fahrenheit and the nights cool down to the 40s and 50s. The months of June and September are often dry, while thunderstorms punctuate the afternoons July through August. The fall also tends to be dry, yet the weather has an element of unpredictability. At the least the temperatures during both day and night are cooler than those of the summer. Cold snaps, snow, and prolonged warm weather are possible during September through November. Winter usually commences during November and lasts until late April. During wet years, periodic storms can deposit up to several feet of snow at a time and send temperatures plummeting below zero degrees. The San Juans occasionally experience dry years in which little snow accumulates and temperatures rise into the 30s and 40s. Because cold air tends to sink, during the winter the mountain canyons channel streams of frigid air while the areas on the slopes above tend to be much warmer. The prevailing winds in the area blow from the west and may carry in storm systems. In all, the climate in the Creede Mining District is hospitable for much of the year, however winter storms and wet summers presented the early settlers with a formidable challenge.

## CHAPTER 3 ECONOMIC GEOLOGY

To gain a full comprehension and appreciation of mining in Creede, a brief account of the district's geological history and rich ore bodies is important. Two periods of powerful uplift created the central Rocky Mountains that exist today. Over the course of protracted time during Precambrian times, around one billion years ago, a series of enormous magma bodies, known as batholiths, associated with tectonic activity intruded the Earth's crust. The associated forces caused the overlying rock to first arch upward, then fracture into blocks which exposed the inner material, manifesting as a long, lofty series of ranges known as the Ancestral Rocky Mountains. During the uplift, the magma cooled into granite, and the heat and pressure exacted by the magma metamorphosed the overlying rock formations into granular gneisses and schists. Currently, remnants of the Precambrian granite batholith lie exposed in the Front Range, in the Gunnison Gorge, and between the towns of Gunnison and Lake City.

Over time, the Ancestral Rockies were eroded to their granite basement and became inundated by a shallow sea. As the Precambrian era progressed into the Paleozoic era, the material eroding off the Ancestral Rockies settled out and lithified into sedimentary layers of sandstones and shales. Through the Paleozoic era, between 570 and 230 million years ago, the process of deposition and lithification in the calm sea environment continued until sea level began fluctuating during the Mesozoic era. As the region lay exposed for periods of millions of years, some of the upper sedimentary layers were eroded off and when sea level returned to its former elevation, fresh sediments formed over the older beds.

While the slow, calm sequence of exposure, submersion, and formation of sedimentary layers continued through the late Cretaceous Period, deep below the surface events were unfolding which would completely change the region. Magma bodies once again began forcing their way upward as part of tectonic activity, arching, then breaking, the overlying sedimentary layers in what is known as the Laramide Revolution. Like the Ancestral Rockies, the batholiths heaved metamorphosed rock formations upward, and in some areas, such as the Elk Mountains, blocks of sedimentary ground remained intact amid peaks of new rock.

Southwest of the rising series of ranges, intense volcanic activity associated with the Laramide Revolution began, which created the San Juan Mountains that exist today. The first eruptive period deposited thousands of feet of andesitic and conglomerate rock strata that geologists currently recognize as the San Juan Formation. When the volcanic activity abated, natural forces made significant headway eroding the strata. Two more violent eruptive periods subsequently occurred which formed the Silverton Volcanic Group, followed by the Potosi Volcanic Group. Andesite tuff comprised the Silverton Group and rhyolite comprised the Potosi Group. After the explosive volcanic activity ended, the San Juan region subsided, creating expansive fault systems. In addition, subsidence of the many cauldrons associated with the volcanic activity resulted in localized radial faulting. The Creede Mining District was subjected to both types of faulting, laying

the groundwork for the formation of the ore bodies mined during the nineteenth and twentieth centuries.<sup>1</sup>

Even though the volcanic activity largely ceased, the San Juan region was by no means geologically quiet. The area experienced periodic upheavals followed by settling, and superheated fluids began infiltrating the fault systems. In many areas the fluids deposited veins of silicic rocks such as gabbro, diorite, quartz, monzonite, and pegmatite in the fractures. In the Creede area, the fluids deposited silver, lead, zinc, and minor amounts of other metals in a second phase of infiltration. Over thousands of years, great fluctuations in the region's groundwater redeposited the metalliferous materials, enriching the zones near the water table. This factor was the primary reason that Creede's ores were located relatively close to ground surface.<sup>2</sup>

The Creede district became host to four principal vein systems resulting from the millions of years of geological processes. The veins were oriented primarily north-south and dipped steeply eastward. The eastern-most vein system, termed the Mammoth Vein, lay under Mammoth Mountain on the east side of East Willow Creek. Unfortunately for some of Creede's prospectors and mining companies, the Mammoth Vein proved to contain only a paucity of economic ore. The Soloman-Holy Moses Vein, the second principal system, lay underneath Campbell Mountain on the west side of and parallel to East Willow Creek. The Soloman-Holy Moses proved to be one of the district's richest ore bodies, and its discovery by Nicholas Creede and associates in 1889 stimulated the exploration for Creede's mineral wealth. The Last Chance-Amethyst Vein, the district's third important vein system, proved to be an unequalled bonanza for mining companies in the district. The system consisted of one main vein flanked by minor stringers, and it extended uninterrupted for over two miles along the west side of West Willow Creek. The district's last significant ore system, the Alpha-Corsair Vein, lay along the east side of Miners Creek. The Alpha-Corsair Vein was the first to be discovered in the district and it ranked third in importance.<sup>3</sup>

Miners found the ores in these veins to be quite favorable for extraction and milling. Most of the ores consisted of zinc compounds, galena, pyrites, argentite, native silver, and gold in a matrix of plain and amethyst quartz, chlorite, barite, fluorite, and additional sulphates. This mineral blend filled the voids created by faulting in the hard volcanic country rock. Alteration to the country rock abutting the veins was minimal and as a result the ore broke away easily and cleanly. In addition, the ores tended to be soft, making drilling and blasting easy, and in some places it was so soft that miners extracted it with pick and shovel. For the most part, the country rock maintained integrity, resulting in sound hanging walls and footwalls, which were the boundaries of country rock overlying and underneath the pitching veins. Several mines on the Amethyst Vein experienced catastrophic cave-ins, which were probably a result of poor engineering and oversight, rather than inherently unstable geology.<sup>4</sup>

---

<sup>1</sup> Burbank and Luedke, 1969:7; Cross, Howe, and Ransome, 1905; Emmons and Larsen, 1923:12; Ratte and Steven, 1965; Ransome, 1901:13.

<sup>2</sup> Burbank, Eckel, and Varnes, 1947:402; Cross, Howe, and Ransome, 1905:2; Emmons and Larsen, 1923:126.

<sup>3</sup> Emmons and Larsen, 1923:98.

<sup>4</sup> Emmons and Larsen, 1923:98; Kemp, 1896:243.

The shallow natures of Creede's vein systems lent themselves well to initial exploration through adits. However, as mining companies developed the ore at depth, they realized that shafts were necessary to profitably extract the payrock. Hence the mine workings in the district tended to include both adits and shafts, and the principal workings on each vein system were often interconnected. Engineers joined mine workings for three main reasons. First, it allowed thorough exploration of consolidated mineral claims. Second, interconnected workings provided access and escape routes in the event of danger. However, the most important factor proved to be ventilation. Like other mining districts in volcanic geology, Creede's miners encountered gases such as nitrous and carbon compounds at depth. The gases displaced breathable air, which impeded the extraction of ore. As a result, mining companies were forced to link workings to stimulate the movement of natural air currents where possible, and to employ ventilation fans where necessary.<sup>5</sup>

The ore systems at Creede presented a curious variety of opportunities and obstacles for mining companies. The Soloman-Holy Moses and the Amethyst veins contained huge quantities of silver-rich compounds valued at up to \$80 to \$100 per ton, which is approximately \$1,500 and \$2,000 today.<sup>6</sup> Once mining companies exhausted the shallow ores in the principal veins by the end of the 1910s, mining engineers and geologists pooled their knowledge and searched for additional veins, which they periodically encountered from the 1920s to the 1960s during underground exploration. In addition to new discoveries, mining companies found that Creede's seemingly exhausted principle veins offered low-grade ores left by early operations as unprofitable. By working new and old veins, mining companies in Creede and their workers profited from 1891 until the early 1980s.

---

<sup>5</sup> Emmons and Larsen, 1923:134.

<sup>6</sup> The dollar conversion was derived from the website [WWW.eh.net](http://WWW.eh.net).

## CHAPTER 4 THE HISTORY OF THE CREEDE MINING DISTRICT

### *Silver is Discovered*

For centuries the San Juan Mountains were the exclusive domain of the Ute Indians. Rugged, remote, and inhospitable, Spanish, then American explorers examined the piedmont areas surrounding the mighty range, but few ventured deep into the mountains. Rumors circulated that the Spanish mined silver in the mountains as early as the late 1700s, and if so, their impact was limited. Then, in 1865, the Utes saw their isolation and peace begin to erode. A party of prospectors led by Charles Baker penetrated deep into the Animas River drainage in search of placer gold. The party encountered minor amounts of the metal near present-day Silverton, and while they did not locate economic quantities of gold, the prospectors' impact was great. The Baker party reported that the San Juan Mountains held great promise for mining, and they proved that the area could be accessed. During the next 10 years other prospecting parties imitated Baker, and in addition to placer gold, they sought hardrock gold and silver, which the San Juans offered in abundance. Their success in finding riches stimulated mining, which led to the growth of settlements such as Silverton, Ouray, Telluride, Lake City, and Rico. Due to the remoteness of the San Juans, and because of the threat posed by angry Ute Indians, mining developed slowly.

The Utes were not hostile at first. They understood that Whites were interested in minerals and not in extensive settlement, and they permitted prospectors to search the high country unmolested. However, as more Whites arrived in the early 1870s, conflict seemed eminent. When faced with the disaster of another Indian war, the federal government employed the typical strategy in which it coaxed the Indians into signing a treaty. In 1873, Felix Brunot, President of the Board of Indian Commissioners, held negotiations with Chief Ouray and hammered out the Brunot Treaty. According to the agreement, the U.S. Government paid the Utes \$25,000 for 4,000,000 acres of mineral-bearing land, and the Utes retained the right to hunt on the ceded territory. With the treaty in effect and the threat of hostile Indians mitigated, isolation became the main impediment to mining in the San Juans. To facilitate the region's development, Colorado road-builder Otto Mears, freight companies, and mining interests all contributed to the development of a network of roads, some barely passable even after completion, between the many settlements in the mountains.<sup>1</sup>

Ironically, the area that became Creede lay just several miles north of one of the most heavily traveled routes into the deep San Juans. Prospectors, freighters, and other travelers followed the Rio Grande River on their way to Lake City and the Silverton area, unaware of the riches that lay near Wagon Wheel Gap, which served as a way stop. Further, the Denver & Rio Grande Railroad graded a line through South Fork, 20 miles south, increasing traffic along the Rio Grande.

After the Brunot Treaty had been negotiated, parties of prospectors felt less inhibited and they fanned out, searching remote and inaccessible areas of the mountains for ores. In 1876, one group including John C. McKenzie and H.M. Bennett examined the

---

<sup>1</sup> Abbott, Leonard, and McComb, 1994:123; Ransome, 1901:19; Smith, 1982:12.



area that became Creede, which was unsettled at the time. After considerable prospecting they discovered silver ore west of where the city of Creede would stand and staked the Alpha claim. The party failed to rouse interest in their find, and still holding optimism for the area, returned on subsequent prospecting forays. In 1878 McKenzie discovered another ore body and staked the Bachelor claim, named after his marital state. Little did McKenzie suspect, as he erected his claim posts, that he was standing on one of Colorado's richest and longest continuous ore veins. After prolonged failure to stimulate interest and arouse investors, Creede's first successful prospectors sold the Alpha in 1885 to brothers Richard and J.N.H. Irwin. McKenzie optimistically retained title to the Bachelor. After attempting to work the ores in arrastras, and after further futile searches, the various parties gave up.<sup>2</sup>

In 1889, 13 years after McKenzie and Bennett first drew attention to the area, another party of prospectors encountered bonanza ore. In May, Nicholas C. Creede, E.R. Taylor, and G.L. Smith located the Holy Moses claim on Campbell Mountain, which they named after their exclamation of astonishment and surprise at the strike's richness. Nicholas Creede, for whom the district is named, was no ordinary prospector. Creede was born William Harvey in Fort Wayne, Indiana in 1842. He fell in love with a young woman, and during their courtship she left Harvey for his brother. Harvey may have even married his beloved. Horrified, Harvey left home and changed his name to Nicholas C. Creede. The young Creede arrived in Colorado in 1870, lured by the sirens of mineral wealth. Creede successfully prospected in the Collegiate Mountains and had better luck than other hopefuls in the range's Silver Creek area. There, he sold an ore-bearing claim for a little money, and within a short time the purchasing company began turning a handsome profit. Creede felt that he had been taken and vowed never to sell low again.<sup>3</sup>

Creede's demise was tragic. After locating the Holy Moses claim, the party of prospectors interested an investment syndicate including mining and railroad magnate David H. Moffat, U.S. Army Captain L.E. Campbell, and Denver & Rio Grande Railroad general manager Sylvester T. Smith. The business trio not only supplied capital to develop the property, but also hired Creede to serve as their professional prospector. Their decision to retain Creede proved wise, because he subsequently staked the Ethel claim and in 1891 located the fabulous Amethyst Mine. Creede sold a share of each of his finds to his employers, but remembering his lesson learned in the Collegiates, he kept a substantial portion for himself. Creede had accomplished what other prospectors only dreamed of. He encountered mineral wealth several times and profited handsomely from each. Within a short time Creede retired in Pueblo, then moved to Los Angeles in 1893 to enjoy the mild, dry, sea-level climate. A storm was brewing for Creede in the East, however. By 1897 Creede's estranged wife, of whom little is known, had learned of her spouse's good fortune and made it known that she was planning on coming out West to live with Creede. When Creede learned of his wife's intent, he panicked and in his despair took an overdose of morphine.<sup>4</sup>

The word of Creede's find began spreading through Colorado and prospectors traveled to the King Solomon district, as the area was then known, in 1890 to examine the

---

<sup>2</sup> Henderson, 1926:5; Emmons and Larsen, 1923:3; Mumey, 1949:6.

<sup>3</sup> Emmons and Larsen, 1923:3; Greever, 1990:204; Henderson, 1926:56; Mumey, 1949:19-22; Smith, 1982:9; Wolle, 1991:320.

<sup>4</sup> Brown, 1993:85; Emmons and Larsen, 1923:4; Francis, 1892:7; Henderson, 1926:56; Mumey, 1949:21.

potential. Several newcomers and seasoned prospectors made further discoveries, lending to the growing curiosity. Veteran prospectors Richard Irwin and Nick Crude, who served as one of Kit Carson's scouts, encountered silver and lead ore near the old Alpha claim. In 1891 a party of prospectors including Theodor Renniger, Ralph Granger, Julius Haas, and Eric Von Buddenbock, subsisting on a \$25 grubstake, set up camp and began their search for wealth. The party encountered samples of float along the banks of West Willow Creek and followed the lead upslope. Unsure of what they had found, the prospectors asked Creede to examine their strike and pass judgement. Creede immediately recognized the richness of the ore and urged the prospectors to stake claims, which they did under the name Last Chance. Inspired by the party's find, Creede calculated the orientation of the ore body, traveled a short distance north, and staked the Amethyst claim. The Last Chance and Amethyst mines became the district's wealthiest operations.<sup>5</sup>

Creede and his party of prospectors interested the Moffat syndicate in the Holy Moses in 1891. The district was largely unknown to the mining world at that time, and Moffat probably surmised that he and his associates were presented with a mining investors' dream. Moffat's syndicate had the opportunity to buy a cluster of fabulous mines at low prices before attention from the mining world drove prices up. The Moffat syndicate's interest in Creede's claims lent legitimacy to the area and served as a crack in the dike retaining the waters of further investment.

Shortly after Creede and Moffat's deal for the Holy Moses, Renniger and his party acquired investors for the Last Chance. Julius Haas sold his share in the claim to the other three prospectors for \$10,000. Renniger and Von Buddenbock sold their shares to investors Jacob Sanders and S.Z. Dixon for \$50,000 each. Like Creede, the last of the Renniger party, Ralph Granger, refused to completely sell out, even when offered \$100,000. Granger, Dixon, and Sanders interested Willard Ward and silver magnate Henry O. Wolcott in the property, and the men formed the Last Chance Mining Company. The activity in the district had finally drawn the attention of the mining industry. The conservative mining periodical *Engineering & Mining Journal* described the finds as "immense", lending fuel for a rush.<sup>6</sup>

Reports of the Creede district's wealth began rippling first through Colorado, then through the West, and finally to other parts of the nation in 1891. Mining industry workers, professional miners, roustabouts, and hopefuls ventured to the new area, causing the area's population to soar. Most of the newcomers stopped over in one of several camps near the Rio Grande River and many continued several miles up to the high country to stake claims. By 1891 prospectors determined that the best ore was concentrated in three vein systems, the Amethyst, Holy Moses, and the Alpha, discussed in the geology section above.

East and West Willow creeks served as the principal gateways to the Holy Moses and Amethyst veins, respectively, and camps naturally sprung up at the creeks' confluence. Prospectors established the camp of Creede on East Willow Creek as early as 1890, a camp named Jimtown grew along the main trunk of Willow Creek approximately one mile downstream, and South Creede sprang up downstream from Jimtown. Crude's Camp, also known as Sunnyside, rose to the west near the Alpha ore system. Each town became

---

<sup>5</sup> *EMJ* 8/2/90 p133; Francis, 1892:7; Mumey, 1949:20, 38; MacMechen, 1892:301.

<sup>6</sup> *EMJ* 9/19/91 p340; *Lallie's* 1892; Mumey, 1949:38.

a commercial center, attracting merchants, the offices of new mining companies, and local government. Tides of miners and prospectors coming from and going to the workings ebbed and flowed through the settlements.<sup>7</sup>

The Creede district's four main camps were typical of the West's boomtowns spawned by mining rushes. The inhabitants focused on making money, and as a result the development of social and physical infrastructures became a secondary priority. Architecture was also a secondary consideration. At first, the camps consisted of a mix of wall tents, log cabins, and rough frame buildings, all with limited floor space. Yet, businesses such as saloons, hotels, and mercantiles abounded. Like other Western mining settlements, Creede's camps grew in topographically inappropriate places. Except for Sunnyside, the other camps were located in the deep and constricted canyon of Willow Creek, which presented traffic problems and the threat of flooding. During 1891 the population of the camps along Willow Creek soared from several groups of prospectors to approximately 1,000 inhabitants.<sup>8</sup>

The prospecting and mining activity on the Amethyst and Holy Moses veins was as frenetic as that in the burgeoning settlements below. Prospect operations, in varying stages of development, extended for over two miles along both veins. Prospectors blanketed the ground with claims, which restricted the available surface space for each operation. As a result, prospectors and miners explored their claims at depth predominantly through vertical and inclined shafts instead of adits. Parties of prospectors using primitive hand windlasses worked in the shadows of advanced, heavily equipped steam operations. All sought bonanza ore.

Great distances and a terrain that can be described as treacherous separated the settlements along Willow Creek from the workings on the veins above. Miners and prospectors found it most convenient to live at or near their operations instead of making the twice-daily trek. Not only would a commute by foot or horseback have consumed too much time and energy, but also such travel bordered on impossible in adverse weather, especially during the winter. As a result, several small camps formed. When the search for ore gave way to extraction, mining companies erected boarding houses at their mines for the same reasons.<sup>9</sup>

Creede's first boom peaked in 1892 and 1893. The Denver & Rio Grande Railroad graded a line up the Rio Grande River from its main track at South Fork to the settlement known as South Creede. The D&RG RR later extended the rail line to North Creede. During the boom, trains were bringing up to 300 immigrants per day to the district, and the population of the Willow Creek settlements swelled to 8,000. During this time Jimtown and South Creede merged to form the town of Creede, and the original Creede, located on East Willow Creek, became North Creede.<sup>10</sup>

The dramatic increase in population and economic activity fostered a need for a formal local government. The problem with representation lay in the fact that the Creede district overlay the intersection of Saguache, Hinsdale, and Rio Grande counties. In 1893

---

<sup>7</sup> Bennett and Spring, 1966:12; Dallas, 1984:51; *EMJ* 8/2/90 p133; Francis, 1892:11; Mumey, 1949:37; Wolle, 1991:321.

<sup>8</sup> Mumey, 1949:59.

<sup>9</sup> Nearly all of the principal historic mine sites exhibit evidence of associated residences, and additional isolated residential sites may be encountered in the vicinity of prospect operations.

<sup>10</sup> Greever, 1990:204; Henderson, 1926:11; Mumey, 1949:59; Smith, 1982:91.

Mineral County was carved out of the three counties. Ironically, the town of Creede was not the original county seat. The honor went to the townsite of Wason, located on the Wason Ranch south of Creede. The residents of Creede were outraged and thought Martin Van Buren Wason, a powerful local rancher and transportation mogul, pirated the county seat, and after a considerable fight, they moved it to Creede.

Not only did the Creede boom offer possibilities to those seeking mineral wealth and jobs at the mines, but the lawlessness and abundant money presented opportunities for gamblers and criminals. People of mythic proportion, both honest and crooked, called early Creede home. Prize fighter Jack Dempsey started his boxing career while a boy in Creede. Bob Ford and Bat Masterson both operated saloons and gambling houses in town, and Poker Alice practiced her questionable card games in Creede. Gambling operator Bob Fitzsimmons had a statue of a man cast in concrete and buried it in the mud of Farmers Creek. One of his underlings “discovered” the seemingly petrified man, and Fitzsimmons used it for publicity. But Jefferson Randolph “Soapy” Smith was the most notorious criminal to live in Creede. Smith earned his nickname in Denver by playing a con game in which he inserted a \$20 bill under the wrapper of a bar of soap and mixed it in with a bushel of ordinary bars. For a small sum of money, he permitted individuals to select one bar from the bushel in an effort to retrieve the salted bar that Smith had buried. Curiously, few people ever won playing Smith’s game. By the early 1890s, Smith became a well-known and clever gambler, and commanded respect in the underworld. Seeing Creede as an opportunity, Smith established himself there and became involved in local politics which he tied into his ring of organized crime. He reigned for several years, trying to walk a fine line between Creede’s honest citizens and his shady syndicate. Smith appeased both sides by permitting gambling, some of which was crooked, as well as prostitution, while squashing petty crime and overt lawlessness. Smith left Creede in 1893 following the death of his friend, Joe Simmons, and in the face of the economic depression caused by the Silver Crash.<sup>11</sup>

Silver ore poured out of the district’s principal mines by 1892, and the towns along Willow Creek began to exhibit signs of mature industrial communities. In the town centers, the ramshackle architecture of the earliest inhabitants gave way to large, stately frame buildings. Six sawmills, operated by the Creede Lumber Company in surrounding forests, supplied lumber. In 1892 Lute Johnson founded the *Creede Candle* and the famous Cy Warman established the *Creede Chronicle*. The *Candle* published newspapers until 1930. Creede hosted the district’s first school, and the town of Creede was officially incorporated. New comers and some of the district’s original prospectors, such as C.F. Nelson, sat on local governmental panels. Destruction visited Creede in 1892 when a significant portion of the town burned, and the area near Willow Creek succumbed to flood waters. Activity in the towns continued unabated, however, until the fateful year of 1893.<sup>12</sup>

To many residents, the experience of life in early Creede was nothing less than exciting. Above the noise, traffic, bustle, talk of mineral riches, and money stood optimism and the romance of Western mining. This environment spurred Cy Warman to write the famous poem capturing the essence of early Creede:

---

<sup>11</sup> Bennett and Spring, 1966:29; Feitz, 1963:21; Greever, 1990:206; Mumey, 1949:125; Smith, 1982:113; Wolle, 1991:325.

<sup>12</sup> Bennett and Spring, 1966:32, 60; Dallas, 1984:54; Feitz, 1963:16, 26; Greever, 1990:206; Mumey, 1949:12, 75; Wolle, 1991:326.

## CREEDE

Here's a land where all are equal –  
of high and lowly birth –  
A land where men make millions,  
dug from the dreary earth.  
Here the meek and mild eyed burro  
on mineral mountains feed –  
It's day all day, in the day-time  
And there is no night in Creede.

The cliffs are solid silver  
with wond'rous wealth untold;  
And the beds of running rivers  
are lined with glittering gold.  
While the world is filled with sorrows  
and hearts must break and bleed,  
It's day all day, in the day-time  
And there is no night in Creede.<sup>13</sup>

During the early 1890s the mines on the Amethyst Vein also began showing signs of maturation. The large operations drew a growing workforce which required an infrastructure for fuel, water, and transportation. The town of Bachelor, named for the Bachelor Mine, sprang up on a grassy area at the vein's south end, and the town of Weaver grew deep in West Willow Creek's canyon near the vein's mid-point. Mine workers and merchants serving the area's mines established Bachelor in 1891 and platted the townsite in 1892. By 1893 the town hosted 8 stores, 10 saloons, assay offices, boarding houses, and several hotels and restaurants. The town center was small, but the residences and boardinghouses associated with the numerous mines, up to several miles away on the Amethyst Vein, were included, peaking the population at a questionable 6,000. Because the town kept a fire engine on hand, Bachelor's most significant fire claimed only several business buildings.<sup>14</sup>

The town of Weaver never attained the size or degree of formality that Bachelor experienced. At its peak, the town consisted of a collection of rough frame and log cabins, and a few wall tents located at the confluence of two deep canyons. Miners and workers of the Amethyst and Last Chance companies, and teamsters constituted the bulk of Weaver's population. The town hosted a school, which reflects the strong presence of an industrial working population. Bachelor and Weaver both thrived until the disastrous year of 1893.

---

<sup>13</sup> Mumey, 1949:2.

<sup>14</sup> Mumey, 1949:156-157; Wolle, 1991:331.

### *The Mines*

The towns of Creede, North Creede, Bachelor, and Weaver would have remained primitive camps were it not for the rich mines on the Amethyst and Holy Moses veins. Between 1891 and 1893 the Creede district's principal mines included the Bachelor, the Last Chance, the New York, and the Amethyst, all of which penetrated the Amethyst Vein. The Holy Moses, the Soloman, and the Ridge mines, also wealthy, lay along the Holy Moses Vein. Of these, the Holy Moses, Amethyst and Last Chance mines stood out as the top producers.

The Moffat syndicate owned the rich Holy Moses and Amethyst mines. When the Moffat syndicate purchased the Holy Moses, it formed a mining company with L.E. Campbell as general manager and secured the services of a competent mining engineer who equipped and developed the property. Thirty workers and miners erected a surface plant and drove exploratory drifts and crosscuts to block out ore. To the Moffat syndicate's delight, they encountered 18 inches of native silver and galena ore which assayed at \$1,000 per ton. Production began and miners brought 30 tons of ore to the surface per day. By 1893 the value of the ore had dropped to \$100 per ton, which was still a handsome return.<sup>15</sup>

Senator Thomas Bowen, a San Juan mining magnate, purchased the King Soloman Mine and the Ridge Mine from C.F. Nelson, he organized a mining company, and put these properties into production. Like the Holy Moses Mine, miners began developing the King Soloman and in 1892 struck phenomenally rich ore.

On the Amethyst Vein, the Moffat syndicate formed the Amethyst Mining Company to work Nicholas Creede's spectacular find. During the mine's early operating period, Senator Thomas Bowen and L.D. Roudebush bought into the company. The syndicate hired a capable mining engineer who followed standard convention when he developed the property. The engineer equipped the mine with a sinking plant, which he upgraded once miners blocked out sufficient ore. In 1892 the engineer had mine workers erect a large shaft house enclosing a new steam hoist and an 80 horsepower boiler. By this time miners were producing 35 tons of ore per day, and to accommodate this and the greater volumes anticipated, the mining company financed the construction of an innovative and efficient ore handling system. Miners input raw ore from the mine into an ore sorting house on the surface. There, workers separated waste and deposited the concentrated ore into several holding bins. An aerial tramway transported the ore from the ore sorting house across 2 miles of the most hostile terrain down to another set of holding bins serviced by the D&RG RR at North Creede. This ore handling system permitted the mine to produce ore in economies of scale.<sup>16</sup>

The Wolcott syndicate owned the fabulous Last Chance Mine. Henry O. Wolcott was a lawyer, eventually a senator, a promoter of Colorado business, and a member of Denver's elite. The Wolcott family made its fortune in Colorado silver through rich mines in the central portion of the Rockies, and through Colorado business and finance. Henry's brother, Senator Edward O. Wolcott, heavily influenced Colorado business and politics. The Last Chance Mining & Milling Company secured the services of a competent mining

---

<sup>15</sup> *EMJ* 11/92 p470; Mumey, 1949:33; Schwarz, 1892:55.

<sup>16</sup> *EMJ* 2/12/92 p212; *EMJ* 7/23/92 p86; *EMJ* 9/10/92 p252; *EMJ* 10/29/92 p421; Smith, 1982:91.

engineer like the Amethyst operation. The engineer probably installed a sinking plant to facilitate mine development and once this was complete, he had mine workers painstakingly erect the most extravagant production-class surface plant in the district. To achieve ore production in economies of scale, the engineer equipped the mine with a massive direct-drive double-drum steam hoist, which raised and lowered two hoisting vehicles in a three-compartment shaft. The surface plant also included an air compressor, several return tube boilers, a spacious shop, and a massive ore sorting house. Freight wagons hauled the ore to the rail line in North Creede.<sup>17</sup>

The Moffat syndicate, which included Senator Thomas Bowen by 1893, purchased the Bachelor Mine from J.C. McKenzie for \$20,000 in late 1891 or early 1892. The Bachelor Mine, which lay south of the Last Chance operation, did not experience production until 1892. Miners began developing the property through a tunnel, which prospectors had driven 350 feet during the previous year or two. Miners expanded the underground workings and erected a relatively simple surface plant. The mine would become a substantial producer at a later time.<sup>18</sup>

In 1892 A.E. Reynolds purchased the Commodor Mine from McKenzie and acquired the New York Mine. A.E. Reynolds was not as well-known as other Colorado mining moguls, however, he invested heavily in San Juan mines and his capital made many operations in the region possible. The New York Mine occupied ground upslope from and west of the Last Chance property, and the New York claim overlapped a portion of the Last Chance claim, which led to litigation between Reynolds and the Wolcott syndicate. The mine's owner hired an engineer who erected a modest surface plant to facilitate exploration during 1891, and in March of 1892 miners struck rich ore. Unlike many mining Western mining companies, Reynolds was reluctant to see his profits go to lawyers instead of his own coffers. As a result, he formed a cooperative merger with the Last Chance Mining & Milling Company, and they consolidated their holdings.<sup>19</sup>

Colorado's silver barons were handsomely rewarded for their investments in Creede's mines. Within a year the mines produced \$4,200,000 in silver, 50% of which came out of the Amethyst and 30% from the Last Chance. And to their delight, production increased during 1893.<sup>20</sup>

In marked contrast to the Creede district's principal mines, the other operations on the Amethyst and Holy Moses veins remained in a primitive state between 1891 and 1893. Nearly all of the additional operations consisted of deep prospects equipped with conventional temporary or sinking-class surface plants. Most of the mining companies on the Amethyst Vein were either searching for or had just encountered ore in 1892, but had not proven the vein's extent. Most operations of similar magnitude on the Holy Moses Vein would prove to be worthless. Because the topographical relief on the south portion of the Amethyst Vein varied, prospecting outfits were able to explore their claims through adits, which required less capital. The topography overlying the vein's north portion,

---

<sup>17</sup> Leonard and Noel, 1990:150; Smith, 1992:159.

The Author characterized the Last Chance surface plant during an archaeological field analysis.

<sup>18</sup> Emmons and Larsen, 1923:142; MacMechen, 1892:301; Mumey, 1949:47; Smith, 1982:92.

<sup>19</sup> *EMJ* 3/26/92 p358; MacMechen, 1892:301; Smith, 1977:75.

<sup>20</sup> *EMJ* 1/20/94 p61; Emmons and Larsen, 1923:4; Henderson, 1926:56.

however, was relatively flat, necessitating that prospect outfits sink shafts to search for ore.

During the early 1890s the prospects at Sunnyside, in the western portion of the district, appeared to hold great promise. The strikes made by John C. McKenzie and H.M. Bennett at the Alpha in 1876 led to a close inspection of the area by prospectors during Creede's early boom, and several claims with showings of ore were developed in 1892. The Kreutzer-Sonata Mine, the Monon Mine, and the Sunnyside were the most significant operations. However, bonanza ore failed to materialize, and the excitement on the Amethyst and Holy Moses veins eclipsed the activity at Sunnyside. Further, the Silver Crash of 1893 snuffed out what little interest existed in the marginal properties. Sunnyside would attract attention again at a later time.

Progressive mining engineering and technology came early to Creede. In 1892 John W. Flintham, manager of the Denver Consolidated Electric Light Company, realized the potential electric market that Creede presented. He organized the Creede Electric Light and Power Company and ordered a construction crew to build a small electrical generating plant along the D&RG RR right-of-way in Creede. The plant consisted of a dynamo turned by a steam engine, which was powered by a return tube boiler, all enclosed in a 24 by 95 foot frame building. Creede's plant was modest and capable of generating only enough power to energize electric light circuits and run some simple mine machinery. Despite its modesty, Creede's plant was important to the mining industry because it was one of the first generating plants erected in the West. More than 20 years would have to pass before the mines in Creede would see electrification to any great extent.<sup>21</sup>

The surface plants erected by prospecting outfits to support work in adits typically consisted of a simple blacksmith shop, a mine rail line, a timber dressing area, and often an associated residence. The surface plants associated with shafts included a hoisting system, which ranged from the hand windlasses erected over shallow shafts, to horse whims, to steam donkey hoists, to stationary sinking-class steam hoists and portable boilers. Most of the district's prospect operations never progressed beyond their sinking-class surface plants for economic and for technological reasons, discussed below.<sup>22</sup>

During the Creede district's first boom, the mines and the needs of the work force fostered a heavy demand for food, dynamite, tools, and machinery. By 1892, the district's principal mines began producing ore in economical volumes, which had to be delivered to the D&RG RR railhead in North Creede. Pack trains were far too costly and inefficient to manage the district's freight. The need to move the materials of mining required the establishment of a transportation infrastructure throughout the district capable of accommodating wagons. By the mid-1890s all of the principal mines, most of the substantial prospect operations, and the townsites were accessed via roads. The network was probably created by a combined effort. Workers employed by individual mining companies completed feeder roads, and construction contractors funded by subscriptions contributed by the district's businesses and mining companies graded main thoroughfares.

The roads between the towns on Willow Creek and the mines up on the Amethyst Vein handled a high volume of traffic. The grades in West Willow Creek's canyon proved especially treacherous, both during construction and while in use. An old-time resident of

---

<sup>21</sup> Mumej, 1949:15; Twitty, 1998.

<sup>22</sup> The Author conducted an examination of mine sites along the Amethyst Vein.



Weaver recalled how a construction crew was blasting a road above the town, probably to the Amethyst Mine. During one particular incident, a blast sent a boulder rolling downslope, and it bounded toward town. Just as a sick man rose out of bed for a drink of water in a cabin below, the boulder crashed through the roof and crushed the bed in which he had just been laying. While run-away wagons and other accidents were not uncommon on the steep grades to the mines, the worst road in the district was the "Black Pitch", between Weaver and North Creede. Despite precautions such as wheel locks and strong harnesses, wagons broke loose and plunged into the ravine, occasionally killing teamster and team.<sup>23</sup>

The teamsters who plied Creede's roads were described as being rough and rowdy. Most lived in either Creede or Weaver and made approximately two round trips per day between the ore holding bins at North Creede and the mines. Teamsters served all of the mines on both veins, except for the Amethyst and Holy Moses, which relied chiefly on their aerial tramways to carry ore.

All of the supplies hauled up to and the ore that flowed down from the mines had to pass through the town of Creede, which local cattle baron Martin Van Buren Wason acknowledged. Forecasting the need for a central artery to Creede, he graded a toll road to the promising camp in 1891 in expectation of realizing profits. The road to Creede was not Wason's first experience with toll roads. Wason was born in New Hampshire and became a sailor at an early age. He weathered the Cape Horn during several sailing voyages, and he spent much time in Central and South America. While in these remote lands Wason served as a captain on a pearl boat, he became a rancher in Argentina, and mined gold in Central America. Wason returned to the United States via California in 1870 and there acquired a small herd of fine horses. In 1871 he drove his herd, accompanied by Vaqueros, through parts of the West until he arrived in Colorado. On his way from Poncha Springs to the San Luis Valley, Wason arrived at Otto Mears' toll gate on Poncha Pass. Having insufficient money to pay the necessary toll, he was forced to retreat and sneak around the gate by traveling a wide arc through the surrounding mountains. This included making numerous trips to transport supplies and disassembled wagons. When Wason established a ranch on the Rio Grande, he remembered his dependence on toll roads and graded his own, in hopes of profiting like Mears. Wason's road, used by immigrants and freighters bound for mines in the deep San Juans, extended from Wagon Wheel Gap at the south, past his ranch, and terminated north. He linked the road to Creede with this original trunk line.<sup>24</sup>

Wason's greed led to protracted problems with the mining community. He had workers erect a toll gate on his road and charged wagons 75 cents to pass, which was considered an exorbitant fee. The citizens, and especially the mining companies, were outraged as they considered the road to North Creede to be a public thoroughfare. Their outrage reached uncontrollable proportions in 1892 and hung a dummy of Wason in effigy. Wason, fearful, hired Jesse H. Stringley as a guardian. Stringley carried a six-gun and a badge, but the gunfighter was arrested on the grounds of impersonating a law officer and defrocked. Sentiment against Wason continued to be strong, and he was unprepared when the powerful mining interests brought their political and economic might against

---

<sup>23</sup> Bennett and Spring, 1966:15, 18.

<sup>24</sup> Mumey, 1949:81, 82.

him. As the mining interests went, so went Creede. F.M. Osgood, M.J. Connolly, Mike Regan, and L.C. Lowe appealed to the Hinsdale County Commissioners to force Wason to turn the road over to public domain. The commissioners, upon investigation, discovered that Wason's underlings had levied tolls against all wagons and not merely those laden with ore, as his contract with the county had specified. Wason's toll officers were arrested and in their absence, under the cover of night, some of Creede's men, probably teamsters, dismantled and removed the toll gate. Creede's war against Wason was won but not entirely over. When Creede attempted to remove the new Mineral County Seat from Wason's under-populated townsite, Wason retaliated by threatening to resurrect the toll gates. The officers of the big mines took political and economic aim at Wason and he backed down. The war ended when Colorado's governor purchased the road in 1899 for \$10,000.<sup>25</sup>

### *Mining at Creede Collapses*

The excitement, the search for wealth, and the conversion of the wilderness into an industrial landscape was just beginning to reach a crescendo when the Silver Panic of 1893 struck. Ever since hardrock mining began in the West, the price of silver fluctuated in response to natural market forces and the implementations and revocations of federal price supports. Western senators, such as Creede's Henry and Edward Wolcott, and Thomas Bowen, were instrumental in instituting price support programs. The Bland-Allison Act of 1878 mandated that the Federal Government purchase silver at a guaranteed price, which caused the value of the semi-precious metal to rise to \$1.15 per ounce. In direct result, mining in the San Juans intensified. A decrease in the price of silver in 1886 severely hurt mining. In 1890 the Western senators again pushed for price supports and passed the Sherman Silver Purchase Act, which boosted the price of the white metal to \$1.05 per ounce. The artificially high price affected Creede because silver barons such as David H. Moffat, Senator Thomas Bowen, the Wolcotts, and A.E. Reynolds began campaigns to acquire and develop the mines.<sup>26</sup>

The silver tide ebbed in the West in 1893 when reformists repealed the Sherman Silver Purchase Act. The price of silver plummeted from around \$1.00 to 60 cents, causing mining in Colorado, New Mexico, Nevada, and Idaho to collapse. The ripple effect began with a financial panic that overcame at first the West and spread to other parts of the nation, resulting in an economic depression. Western mining towns, including Creede, were devastated, and Colorado's silver miners faced the challenge of having to seek alternative modes of employment. Fortunately for some, Cripple Creek, which was a gold-producing district, was under development and in need of skilled miners. The silver barons lost fortunes while less affluent mining investors became destitute.<sup>27</sup>

Depression overcame the Creede Mining District. By the end of 1893 a significant portion of the district's population migrated elsewhere, and only the Amethyst, Last Chance, and Ridge mines continued to operate, albeit at low levels. All of the district's

---

<sup>25</sup> Mumey, 1949:81, 82.

<sup>26</sup> *EMJ* 2/14/86 p119; Smith, 1982:92; Smith, 1992:157; Voynick, 1992:62.

<sup>27</sup> Smith, 1982:92; Smith, 1992:157; Voynick, 1992:62.

other mines and prospects were either totally abandoned or idle. The towns of Bachelor and Weaver, directly dependent on the Amethyst Vein's mines, lost nearly all of their residents and businesses. Creede and North Creede also lost much of their residents, and the D&RG RR dramatically curtailed rail service. However, Creede possessed two factors unique to other silver mining districts in economic duress. First, the Amethyst and Holy Moses veins contained ore rich enough to provide income even at silver's abysmally low prices. Second, the mines' owners were adamant about profiting from their investments. A key to success, they determined, was to produce ore in unprecedented volumes. They employed technology and engineering to achieve production in economies of scale, drastically reducing the cost of mining per ton of ore extracted.

By March of 1894 the Creede Mining District began a slight recovery. Several mines in addition to the Amethyst and Last Chance properties resumed operations, employing a total of 500 mine workers. During 1894 and 1895 optimistic investors resumed exploration and development of several properties on the Amethyst Vein, which would ultimately net them profits. The Del Monte Mining Company began to deepen its shaft and explore its claim, which lay southeast from the Last Chance Mine. David Moffat, W.B. Felker, Byron E. Shear, and W.H. Byrant used the difficult times experienced by investors to purchase the Happy Thought Mine, north of the Amethyst Mine, and in 1894 financed a resumption of shaft sinking on the property. Last, O.H. Poole funded the installation of a sinking class plant and the erection of a 10 stamp mill at the Park Regent Mine, located at the north end of the Amethyst Vein. Most of the miners working at these operations lived in boarding and bunkhouses on-site.<sup>28</sup>

As the national and state economies recovered in the several years following the Silver Crash, mining in Creede resumed. All of the principal mines reactivated and work resumed at some of the developed prospect operations. The principal producing mines on the Amethyst Vein at this time included, from south to north, the Bachelor, the Commodor, the Del Monte, the New York, the Last Chance, the Amethyst, the Happy Thought, the White Star, and the Park Regent. The principal active mines on the Holy Moses Vein included the Soloman, the Ridge, the Outlet, and the Phoenix. In all, the number of principal mines active after the Silver Crash increased.

### ***Engineers Come to the Rescue***

Mining engineering played a key role in the resumption of profitable mining at Creede in the late 1890s. On an individual scale, the district's mining companies improved their surface plants to facilitate the production of greater volumes of ore at a lower cost per ton. The Amethyst Mining Company installed a larger hoist and set of boilers, which permitted rapid hoisting speeds from greater depths. The Bachelor Mining Company hired a crew of miners to develop its vein through a series of tunnels, permitting the extraction of ore simultaneously through several levels. To efficiently move the great tonnages of pay rock to the railhead at North Creede, Bachelor engineers erected an aerial tramway similar to those that operated at the Holy Moses and Amethyst mines. The Happy Thought Mine installed a bigger hoist like the Amethyst. Many of the large mines which

---

<sup>28</sup> *EMJ* 3/10/94 p230; *EMJ* 1/6/94 p14; *EMJ* 2/17/94 p158; Emmons and Larsen, 1923:168.

did not have air compressors to power mechanical rockdrills installed the machines to expedite the drilling and blasting process underground.<sup>29</sup>

Another engineering tactic that some of Creede's large mining companies exercised involved milling the ore locally. In the late 1890s and early 1900s the Soloman, the Ridge, the Happy Thought, and the Amethyst mining operations erected small ore concentration mills near their mines. The idea was not to produce refined silver bullion, but instead to concentrate the metals content and ship the concentrates to a smelter. Prior to the erection of these mills, Creede's mining companies exported its raw ore to smelters at Pueblo and Denver, Colorado, to Joplin, Missouri, and probably to Omaha, Nebraska. The smelters crushed and concentrated the raw ore, then extracted and separated the metals. To turn a profit, the smelting companies levied a per-ton charge for processing. By concentrating the ores on-site, Creede's mining companies not only saved a portion of the smelters' processing fee, but also saved shipping costs because the heavy, worthless waste rock was removed.<sup>30</sup>

O.H. Poole erected the first concentration facility at Creede when he installed a 10 stamp mill at the Park Regent Mine in 1895. Poole's mill, however, was a failure because the machinery was inappropriate for Creede's silver and lead ores. Poole relied on two batteries of stamps to pulverize the ore and another mechanical process to concentrate the resultant slurry. The mining engineers working for the district's large mining companies had theoretical and practical experience with milling silver ores and they designed effective facilities. The standard treatment for Creede's ores began with reduction by a primary jaw crusher. Cornish rolls, which were pairs of heavy iron drums, and ball mills, pulverized the rock fragments. The rock may have passed through up to three sets of rolls or ball mills, each designed to further reduce the crushed rock. The fines produced by the rolls were sent to concentration tables, which used gravity to separate waste from metal-bearing materials. The tables consisted of iron frames bolted onto the mill floor and table-tops designed to vibrate. The table-tops lay at a slight pitch and featured riffles, and as they rapidly vibrated the light waste floated upward and the heavy metal-bearing fines worked their way downward. Creede's mills may have included a series of such tables to further refine the concentrates produced by previous tables in the circuit. The mills' end product consisted of shipping-quality concentrates.

The mills erected by Creede's big producers followed the technological convention of the day, and their sizes and assemblages of equipment were relative to the mining company's volume of production and capital. The Amethyst Mill included several circuits for processing ore, while the Happy Thought Mill consisted of one circuit. Modern electric motors powered the Happy Thought Mill, and electric motors backed up by a steam engine powered the Amethyst Mill. The mills' engineers used common means to transfer power from the motors to the mill machinery. The motors and steam engines turned overhead drive shafts mounted in the buildings' rafters via canvas belts. Additional belts extended from the drive shafts to the mill machinery. The engineers also followed convention when they designed the mills to rely on gravity to transfer the materials from

---

<sup>29</sup> *EMJ* 7/9/98 p316; Bennett and Spring, 1966:210.

Improvements to the Happy Thought Mine and Bachelor Mine were determined through field examination.

<sup>30</sup> Emmons and Larsen, 1923:6; *EMJ* 9/21/01 p368.

one step of the concentrating process to the next. To achieve this desired gravity flow, the mills were built on terraced hillsides.<sup>31</sup>

In 1901 the Moffat interests added the Humphreys Mill to Creede's roster of concentration facilities. The Humphreys Mill was by far the district's largest and it represented another attempt to save money by concentrating ore locally. Engineers applied state-of-the-art technology when they designed the mill and selected the appliances. Like traditional mills, the Humphreys facility used gravity to move the rock between stages of reduction, and it included several independent circuits for concentrating ore. The mill, located on the west bank of West Willow Creek at North Creede, began operating in 1902 and it treated ore hauled out of the Nelson Tunnel. While construction workers were completing the mill, D&RG RR track gangs graded a spur line to the mill's base so that finished concentrates could be shipped by train. Engineers erected a hydroelectric plant by the mill to supply power for drive motors. However, they miscalculated the degree to which West Willow Creek's flow fluctuated and to their chagrin, the creek slowed to a trickle in the winter of 1903. In response, the engineers installed a backup steam plant to see the mill through future winters. The Humphreys Mill operated for more than 10 years, returning the initial investment plus profits to the mill's financiers.<sup>32</sup>

In addition to improvements made to individual mines and the installation of ore reduction mills, the mining interests of Creede applied engineering on a broad scale to boost the volume of production and lower the costs of mining. The mines on the Amethyst Vein faced the problems of a high water table, poor ventilation, and an increase in operating costs with depth. In 1892, when the district was enjoying its first boom, Charles F. Nelson, who discovered the Soloman Mine, organized the Nelson Tunnel Company with the intent of remediating these problems for at least some of the mines. Nelson served as the company's director, A.W. Brounell acted as president, and J.S. Wallace was treasurer. Nelson held visions of using the tunnel as a prospect bore to search for deep ore, to serve as both a drain and enormous ventilation duct for the mines, and as a haulage way for ore trains. Nelson also promoted the minor benefits of his proposed tunnel, such as serving as an escape route in instances of fire, and acting as a platform from which mining companies could develop deep ore. Nelson proposed establishing a portal and surface plant on West Willow Creek below the Bachelor Mine and driving the tunnel along the Amethyst Vein. David Moffat's and Henry Wolcott's mines were at once interested. The cost of the project would, of course, be enormous. Nelson expected to cover the costs by charging subscription fees and levying a toll per ton of ore hauled out through the tunnel.<sup>33</sup>

The Bachelor Mine possessed the first workings that the Nelson Tunnel would encounter, and so Moffat's Bachelor Mining Company naturally was the first operation to subscribe. Nelson had mine workers erect a surface plant consisting of a well-equipped shop, an air compressor that powered mechanical rockdrills, and a generator driven by a Pelton water wheel, on waste rock 400 feet east of the tunnel portal. Miners managed to drill and blast 1,500 feet before the Silver Crash of 1893 brought the project to a halt.

---

<sup>31</sup> The Author characterized the Amethyst and Happy Thought ore reduction mills from field examination.

<sup>32</sup> *EMJ* 12/7/01 p766; *EMJ* 3/22/02 p425; *EMJ* 3/7/03 p384.

<sup>33</sup> Emmons and Larsen, 1923:5; *EMJ* 4/9/92 p407.

This distance brought the tunnel within the Bachelor ground, where tunnel workers encountered ore. Work on the tunnel resumed after the economic depression, and when the tunnel reached 2,100 feet in length, Nelson's contract was fulfilled.

The rate of progress and the discovery of ore were crucial to the success of Nelson's tunnel concept. The Last Chance, New York, and Amethyst mines offered subscriptions when the Wooster Tunnel Company formed around 1897. The Wooster company leased a right of way through the Nelson Tunnel, and contracted to drive a drift from the extant tunnel north to the Last Chance, New York, and the Amethyst properties. Using four heavy piston drills, miners advanced the tunnel six feet per shift, and in 1899 they first reached the Last Chance workings, then the Amethyst workings.

Even though the Wooster Tunnel reached the vicinity of the Amethyst and Last Chance properties, the company required time to make the final connections. Because water was very costly to pump from deep workings, the Amethyst and Last Chance mines allowed their lower passages to flood. This presented the Wooster engineers with a problem. To avoid a life-taking inundation in the tunnel upon breakthrough, the water in the deep workings had to be drained. An engineer had the bright idea of using diamond drills, which were in the developmental stage in the late 1890s, to bore long-holes into the sumps of the Last Chance and the Amethyst shafts. In 1900 trained drillers from the Sullivan Drill Company arrived and began boring holes toward the Last Chance Shaft. In the process, they struck a subterranean body of water pressurized to such a degree that a jet of water forced the drill away from the tunnel face. Much to the disappointment of the engineer in charge, Mr. Rowley, the hole penetrating the Last Chance Shaft failed to yield the volume of water that he anticipated. After inquiry at the Last Chance Mine, he discovered that a great quantity of silt and mud had accumulated in the shaft's sump, forming a barrier. To free the mass, Rowley packed an iron tube with 50 pounds of dynamite and used drill-steels to push it through the long-hole into the Last Chance Shaft. After the charge detonated, a tremendous volume of water jetted through the hole. Once the Last Chance shaft was drained, the process was repeated for the Amethyst Shaft.<sup>34</sup>

Impressed with the success of the Nelson and Wooster tunnels, the mines farther north along the Amethyst Vein subscribed to an extension of the tunnel designed to undercut their workings. In 1900 the Humphreys Tunnel commenced from the end of the Wooster Tunnel. The financing and logistical arrangements for the Humphreys Tunnel were similar to those of the Wooster company. Miners drilled and blasted the passage around the clock for two years, and by 1902 the Humphreys Tunnel reached the Park Regent Mine, which was the northern-most operation on the Amethyst Vein. The aggregate length of the three tunnels totaled 11,000 feet, and all major operations except for the Commodore Mine enjoyed decreased pumping and transportation costs, improved ventilation, and the discovery of new ore. Mining companies found that the savings achieved through the tunnel system offset the cost of the subscription and the \$1.00 per ton of ore passing out the mouth of the tunnel.<sup>35</sup>

When construction workers erected the Humphreys Mill, they graded a mine rail line to the Nelson Tunnel's surface plant and built a flume alongside the track which supplied part of the mill's water needs. The tunnel served as part of a large system in

---

<sup>34</sup> Colorado Historical Society Records, MSS Box 640, v24:7.

<sup>35</sup> *EMJ* 2/15/02.

which ore was mined and sent directly to be milled at North Creede, on the banks of West Willow Creek.

The owners of the Commodor Mine thought that the Nelson Tunnel Company's subscription rates and toll per ton of ore were too costly, and they elected to drive their own haulageway in the late 1890s. The Commodor Mining Company hired an engineer who selected the site for a tunnel portal and surface plant on the Manhattan claim, only several hundred feet up West Willow Creek from the Nelson Tunnel. However, the Bachelor Mine lay between the proposed tunnel site and the Commodor claim, presenting the problem of trespass. Other locations for the proposed tunnel proved impossible due to restricted nature of West Willow Creek's canyon. The Commodor Mining Company negotiated with the Bachelor's owners and secured the right to drive the tunnel through their ground, probably for a royalty.

The Commodor interests hired a mining engineer who put a crew to work erecting a surface plant and a crew of miners to work drilling and blasting the tunnel. The surface plant consisted of a shop, an air compressor, and a return tube boiler. By 1900 miners had driven the Manhattan Tunnel, later known as the Commodor No.5, 4,000 feet to the Commodor claim, where they blocked out ore with raises and drifts. After the tunnel was complete, it served as the Commodor's principal haulageway, and the mine's upper tunnel was abandoned, except as an entry to the upper workings.<sup>36</sup>

The Bachelor and Commodor companies were on friendly terms, which facilitated the Commodor's right of access through the Bachelor's ground. In 1900 the two companies became even closer when the Moffat Syndicate purchased a controlling interest in the Commodor. The mining industry subsequently recognized the two mines as being one entity, and miners linked the underground workings with numerous passages. As a result, the upper-most tunnel on the Commodor claim became known as Tunnel No.1, the Manhattan Tunnel became known as Tunnel No.5, the Nelson Tunnel was unofficially termed No.4, and Tunnels No.2 and No.3 pierced the ground upslope. In the combined effort to extract ore efficiently, the mine's engineer installed a Pelton wheel at the Commodor No.5, which turned a generator and an air compressor, and the top two tunnels were abandoned.<sup>37</sup>

The Creede district experienced steady production until 1907, when an economic recession forced most of the mines to temporarily close. After the economy recovered, mining continued. During this time, the application of engineering and technology had a significant impact on the population of the district. Because mining was intense between around 1896 and 1910, the towns of North Creede and Creede thrived. The need for workers at the Amethyst Mill and on the Amethyst tramway ensured that Weaver maintained a small population. However, the completion of the series of Nelson, Wooster, and Humphreys tunnel segments rendered the surface plants at the mines on the Amethyst Vein obsolete. The Nelson Tunnel became the principal access to the mines, and the population of miners and teamsters shifted from the town of Bachelor, which included the disbursed bunk and boardinghouses at the mines, down to Creede. Only a few residences up high were maintained. In 1900 approximately 1,150 people lived in

---

<sup>36</sup> *EMJ* 7/9/98 p46; *EMJ* 6/16/00 p718; Lallie's 1892.

<sup>37</sup> Colorado Historical Society Records, MSS Box 640, v24:34; *EMJ* 6/16/00 p718.

Creede and North Creede, 343 people lived in and around Bachelor, and 84 lived in Weaver.<sup>38</sup>

Between 1896 and 1910 most of the mining companies focused their efforts on developing and extracting the known ore deposits. By around 1910 these bodies began to show signs of exhaustion, and within several years many of the marginal mines closed. Not only did the district suffer from depleted ore bodies, but also silver-lead mining districts such as Joplin, Missouri; Leadville, Colorado; and some of those in Idaho were presenting significant competition, which kept metals prices low. As Creede's mines closed, people left the district. The populations of Creede, North Creede, and Bachelor decreased dramatically between 1905 and 1915. By 1910 Weaver became almost totally deserted.

Contrary to the trend of the implosion of mining on the Amethyst and Holy Moses veins during Creede's second boom, activity spread to several outlying areas on the fringes of the district. As the economy improved during the late 1890s and early 1900s, investors became interested once again in the prospects at Sunnyside. An unknown mining company developed the old Corsair property, and they began shipping silver ore during 1902 and 1903. Captain Free Thoman, who owned the Sunnyside Tunnel, interested investors Albert Damm, Jeff McAnelly, Perry Learnard, and M.H. Akin of Fort Collins in his operation. They supplied capital, which Thoman used to drive a tunnel 750 feet where miners encountered a small ore vein. The Kruetzer-Sonata and Monon properties saw further exploration, and they eventually produced ore.

Two more promising prospects far up West Willow Creek also attracted attention around the turn-of-the-century. Miners began sinking a shaft on a promising lead on the Captive Inca property in 1903, and another company drove a tunnel on the Equity claim. The Captive Inca proved to be worthless and it was abandoned by 1912, however the Equity Mine produced ore for several years beginning in 1912.<sup>39</sup>

The outbreak of World War I benefited Creede's faltering mining industry. The war fostered a heavy demand for industrial metals and silver, creating a profitable economic environment for Creede's mining companies. While the high metals prices resuscitated mining, the renewed activity was not on the scale of years past. The need to handle greater tonnages of ore than before while cutting production costs convinced the mining operations to spend capital on advanced technology. Electrification was one of the most cost-effective improvements that the mining companies implemented. While Creede boasted of being served by one of the West's earliest power plants, until the 1910s electric technology was not advanced enough to significantly benefit mining. However, when Creede experienced its World War I revival, the technology was sufficiently advanced.

In 1917 a new power plant was built in Creede, possibly by the Creede Tribune Mining Company, which leased the Amethyst Mine. The plant was a state-of-the-art affair and consisted of four Heine water tube boilers which powered a massive 500 horsepower steam engine and 225 kilowatt dynamo. A second engine and dynamo were kept on stand-by. The mining operations on the Amethyst Vein used the electricity underground to power small hoists and ventilation fans, and to light stations. The Amethyst Mine proved to be the greatest beneficiary of electricity. In 1918 the Creede Exploration

---

<sup>38</sup> Schulze, 1976.

<sup>39</sup> *EMJ* 3/7/03 p384; Emmons and Larsen, 1923:169; Henderson, 1926:15.



Company leased the mine and installed an electric hoist and motor-driven compressor at the shaft to facilitate work above the Nelson Tunnel level.<sup>40</sup>

The American Smelting and Refining Company (ASARCo), part of the Guggenheims' industrial metals mining and milling empire, organized the Creede Exploration Company in 1918 to lease properties along the Amethyst Vein and extract what little ore remained, and to search below the Nelson Tunnel level for more deposits. During previous years the Moffat syndicate's engineer had miners drive a central shaft within the Commodor workings, and it penetrated ground below the Nelson Tunnel level, which Creede Exploration used for deep exploration. In 1918 miners unwatered the shaft and equipped it with a double drum electric hoist which worked two skips. After several futile years of searching, ASARCo gave up on deep ore. Uneconomical quantities had been found, but they were too poor in content. Faced with potentially worthless properties, ASARCo sold its holdings to individual mining companies.<sup>41</sup>

During the 1890s, when rich ore lay in the ground, mining companies purchased claims, hired crews of miners, and extracted ore under the umbrella of their corporate structures. The depletion of rich ore, the inefficiencies of large company structures, and high operating costs discouraged such an operating strategy after around 1900. The growing trend in Creede, as well as other Western mining districts, was for the mining companies to cease operations and lease either the entire mine to a second-party company, or lease portions of an ore body to individual miners. The payment schedule included either a royalty per ton of ore, or a flat fee. This scheme shifted the burden of operating costs from a mine owner to the lessee. Under this system, lessees had every incentive to minimize the capital invested in an operation since they had no allegiance to the mine, and they extracted the maximum ore in minimal time. While lessees were able to make a profit where large, cumbersome mining companies could not, their tactics proved problematic for the long term state of a mine. Lessees rarely conducted exploration for new ore bodies because it was considered profitless dead-work. They also avoided investing in maintenance and the long term well-being of a mine's infrastructure. It was under this environment that mining in Creede continued during the 1910s.

During World War I mining and leasing companies were producing ore from various mines on the Amethyst Vein. The Mineral County Mining & Milling Company extracted ore from the Happy Thought property, which they concentrated in the Humphreys Mill. A succession of lessees profitably worked the Last Chance ground, and more lessees mined the Park Regent and the Del Monte properties. In 1915 Norman Corson organized a company that did well working the Bachelor ground. During the 1890s and 1900s the Moffat and Bowen interests gutted their mines on the Holy Moses Vein, and interest in these properties lagged. The only mine on the Holy Moses Vein that possessed profitable ore during World War I proved to be the King Solomon, which the leasing outfit William Wright & Co. extracted and milled at the Solomon Mill until 1918.<sup>42</sup>

The demand for industrial metals was high enough and milling technology sufficiently advanced to make the ores at Sunnyside and at the Equity Mine, high up West

---

<sup>40</sup> Colorado State Archives, Mine Inspectors' Reports: Creede Exploration Co.; Emmons and Larsen, 1923:159.

<sup>41</sup> Colorado State Archives, Mine Inspectors' Reports: Creede Exploration Co.

<sup>42</sup> Colorado State Archives, Mine Inspectors' Reports: Bachelor Mine, Happy Thought Mine, Last Chance Mine, Solomon Mine; *EMJ* 6/3/16 p1006.

Willow Creek, economically viable. After successful exploration, lessees A.B. Collins and H.R. Wheeler brought the Monon Mine into production in 1916. In 1918 the Manitoba Leasing Company took over operations at the Monon and profitably extracted ore until 1921. The Creede Equity Mining Company began drilling and blasting ore in the Equity Mine in 1918 and quit in 1919.<sup>43</sup>

### *Decline*

The declaration of armistice in 1918 halted war-related industrial production, which caused metal prices to tumble. Mining at Creede once again became unprofitable and the district fell on hard times. The end of the war proved to be a death knell for the marginal properties and a virtual end of surface prospecting along the Amethyst and Holy Moses veins. By 1920 all mines but the Bachelor became quiet, many never to be worked again. With the subsidence of activity, irreversible decay set in. The surface plants of nearly all mines fell into disrepair and shafts and tunnels became unstable, except for the Nelson, Commodor, and Bachelor operations.

The few miners that remained in Creede glimpsed a ray of hope in 1922. Western senators passed the Pittman Act, which mandated that the federal government purchase silver at \$1.00 per ounce, in hopes of bolstering a failing Western mining industry. The principal mining operations in Creede geared up for production, and activity at the Bachelor, Commodor, Del Monte, Happy Thought, Last Chance, and New York properties resumed with vigor. All work was conducted through the Nelson and Commodor No.5 tunnels. The Ethel Leasing Company reopened the Soloman on the Holy Moses Vein. The high price for silver stimulated some prospecting, and knowledgeable district residents searched for new deposits. A find was made near Windy Gulch northwest from Creede, and local interests concluded that it was a lead-silver-zinc vein missed by the prospectors of years past. The Pittman Act expired in 1923, and Creede entered another dark period. Some mining activity continued, however. The Commodor Mine continued to produce, and lessees spent a short time in 1925 exploring the Bachelor ground. In 1925 E.J. Lieske, Dr. Thomas Howell, and C.N. Blanchett formed the Bulldog Leasing, Mining, and Milling Company to explore and develop the new vein discovered above Creede. The property already featured a tunnel 1,050 feet long, which they drove further. The operation collapsed in 1926.<sup>44</sup>

The last significant mining endeavor of the 1920s occurred at the Amethyst Mine. The company's leading engineer determined that economic ore still lay in the upper levels of the Amethyst and surrounding properties. Hauling the ore out, however, would have constituted a great cost. After years of neglect, the Nelson Tunnel and the raises and chutes necessary for transferring the ore needed expensive improvement. In addition, the surface plants and shafts of the Amethyst, Last Chance, New York, and Happy Thought mines were in a poor state. The engineer elected to drive a new haulage tunnel from the company's property at Weaver on West Willow Creek, instead of effecting the required

---

<sup>43</sup> Colorado State Archives, Mine Inspectors' Reports: Equity Mine, Monon Mine; Larsen, 1929.

<sup>44</sup> Colorado State Archives, Mine Inspectors' Reports: Bachelor Mine, Bulldog Mine, Commodor Mine, Happy Thought Mine, Last Chance Mine, Soloman Mine; Henderson, 1926: 17; Larsen, 1929.

improvements. In 1928 miners began work on what then they named the Sloane Tunnel, later known as the Amethyst Tunnel. The passage provided easy access to the Amethyst and surrounding properties, and it permitted mining of low-grade ore shunned by earlier operations as being uneconomical. The tunnel saw only two years of service before mining at Creede once again ceased.<sup>45</sup>

### ***Paradox: Boom During the Great Depression***

Ironically, under the presidency of one of the World's greatest mining engineers, Herbert C. Hoover, the Crash of 1929 brought the nation economic disaster. The subsequent Great Depression destroyed what little was left of mining in Creede. The victory of Franklin Delano Roosevelt over Hoover in 1932 for U.S. President set in motion a chain of events that spelled a revival of mining in the West, including Creede, on a scale not seen since the close of the Gilded Age. In an effort to devalue the U.S. dollar, in October of 1933 Roosevelt enacted a plan in which the Federal Government bought gold at relatively high prices. When price declines began to interfere with this scheme, Roosevelt and Congress passed the Gold Reserve Act early in 1934, which set the minimum price for gold at \$35.00 per ounce. In 1934 Roosevelt signed the Silver Purchase Act into law, which monetized silver and set the price for the metal artificially high. Creede experienced a boom unlike anything seen since the Gilded Age. Most of the principal mines on the Amethyst Vein, the Soloman Mine on the Holy Moses Vein, and the few producers at Sunnyside underwent further exploration and production.<sup>46</sup>

Lessees began exploring the Bachelor, Commodor, and Amethyst mines, and they initiated production shortly afterward. Miners accessed these three properties through the Bachelor tunnels, through the Commodor No.5, and the new Amethyst Tunnel. The Nelson Tunnel, which was long-neglected, was no longer used. Miners began drilling and blasting pockets and small stringers of ore in the gutted Amethyst Vein's hanging wall. Because capital remained scarce during the Depression, miners working deep underground revived the old practice of hand-drilling, while miners working for the large operations, such as at the Commodor and Amethyst mines, had the luxury of using mechanical rockdrills. Miners completed nearly all other work underground with hand-labor. In addition to work underground, small companies leased the rights to sort through the waste rock dumps associated with the large mines for low-grade ore cast off by earlier operations as uneconomical.

When miners had proven that ore still existed in these mines, investors began a campaign to acquire the principal mines on the Amethyst Vein. In 1935 the Emperius Mining Company purchased the Commodor and Bachelor mines and the Nelson Tunnel. In 1937 Emperius leased the Last Chance and New York properties, and in 1939 it furthered its strategy when it purchased the Amethyst Mine. Ore extracted from the upper levels of the New York and Last Chance were hauled through the Last Chance

---

<sup>45</sup> Colorado State Archives, Mine Inspectors' Reports: Amethyst Mine.

<sup>46</sup> McElvaine, 1993:164.

No.2 Tunnel, located near the abandoned Amethyst Shaft. Miners brought ore extracted from the lower levels of the above two properties through the Amethyst Tunnel.<sup>47</sup>

**Table 4.1: Summary of Mining on the Amethyst Vein**

Mine Name	Relative Size	Location on Vein	Operating Years of Surface Plant	Operating Years of Property
Amethyst	Very Large	Central	1891-1920	1891-1920; 1928-1929; 1934-1950s.
Annie Rooney	Small	Central-South	1891-1892	1891-1892
Bachelor	Very Large	South	1878; 1885; 1891-1893; 1895-1923; 1925-1929; 1934-1940; 1944	1878; 1885; 1891-1893; 1895-1923; 1925-1929; 1934-1940; 1944
Commodor	Very Large	South	1891-1893; 1895-1910s; 1916-1920; 1923-1929; 1934-1940; 1944-1983	1891-1893; 1895-1910s; 1916-1920; 1923-1929; 1934-1940; 1944-1983
Del Monte	Medium	South-Central	1891-1893; 1890s	1891-1893; 1895-1900s; 1916-1923
Happy Thought	Large	Central	1891-1893; 1894-1907	1891-1893; 1894-1917; 1922-1923; 1928
Last Chance	Very Large	Central	1891-1893; 1895-1896; 1898-1910s	1891-1893; 1895-1896; 1898-1920; 1923; 1937
Nelson Tunnel	Very Large	South	1892-1893; 1896-1929; 1935	1892-1893; 1896-1929; 1935; 1945-1950s.
New York	Medium	South-Central	1891-1893; 1895-1902	1891-1893; 1895-1900s-1915; 1923; 1934-1940
Park Regent	Medium	North	1892-1893; 1895; 1898-1912	1892-1893; 1895; 1898-1912; 1916-1917
Sunnyside	Small	South-Central	1892-1893	1892-1893
White Star	Small	North	1892-1893; 1890s	1892-1893; 1890s-1917

**Table 4.2: Summary of Mining on the Holy Moses Vein**

Mine Name	Relative Size	Location on Vein	Operating Years of Surface Plant	Operating Years of Property
Holy Moses	Very Large	Central	1891-1893; 1895-1910; 1934; 1953-1958	1891-1893; 1895-1910; 1934; 1953-1958
King Soloman (Soloman)	Large	South	1891-1893; 1895-1918; 1922-1923; 1934; 1945; 1950-1952	1891-1893; 1895-1918; 1922-1923; 1934; 1945; 1950-1952
Outlet Tunnel	Medium	North	1890s; 1956-1958	1890s; 1956-1958
Phoenix	Small	North	1891-1893; 1900; 1951-1960s	1891-1893; 1900; 1951-1960s
Ridge	Medium	South	1891-1893; 1890s-1900s; 1943-1949	1891-1893; 1890s-1900s; 1943-1949

<sup>47</sup> Colorado State Archives, Mine Inspectors' Reports: Amethyst Mine, Commodor Mine, Last Chance Mine

**Table 4.3: Summary of Mining on Upper West Willow Creek**

Mine Name	Relative Size	Location on Vein	Operating Years of Surface Plant	Operating Years of Property
Captive Inca	Medium	South	1902-1905	1902-1905
Equity	Medium	North	1900s; 1912; 1918-1919; 1927-1929; 1953	1900s; 1912; 1918-1919; 1927-1929; 1953

**Table 4.4: Summary of Mining on the Alpha-Corsair Ore System**

Mine Name	Relative Size	Location on Vein	Operating Years of Surface Plant	Operating Years of Property
Corsair	Medium	South	1883; 1901-1904; 1922; 1925; 1933-1934; 1939	1883; 1901-1904; 1922; 1925; 1933-1934; 1939
Kreutzer-Sonata	Medium	North	1892-1893; 1926	1892-1893; 1926
Monon	Medium	South	1890s; 1916-1921; 1925; 1938-1940; 1953	1890s; 1916-1921; 1925; 1938-1940; 1953
Sunnyside Tunnel	Medium	Central	1892-1893; 1901	1892-1893; 1901

Within a year Emperius invested capital to locate additional ore veins, which the company's engineers were sure lay to either side of the Amethyst Vein. During the following years miners in fact encountered new ore, which ensured the company's continued profitability. Then, in 1938 Emperius miners discovered the OH Vein, which was the most significant find since the initial discoveries of ore in the district. Previous mining companies on the Amethyst Vein focused time and effort on gutting the known ore bodies and neglecting exploration, leaving the discovery of the OH ore body to miners drilling and blasting four decades later.<sup>48</sup>

Because Creede's ores possessed a lower value than times past, Emperius continued to emphasize production in economies of scale. The company ensured that the surface plants at the Commodor and the Amethyst mines were fully equipped. Miners working underground used rockdrills when driving exploratory workings in hardrock, and they drilled by hand when working in softer ores. Miners used other pieces of power equipment such as electric and compressed air hoists at winzes and to scrape blasted ore out of stopes with drag-lines. Mules, which were inexpensive to maintain, pulled trains of ore out of the Commodor and Amethyst tunnels. The surface plants of both of these operations, and the Last Chance No.2 Tunnel, included large ore sorting houses where mine workers manually concentrated the ore and separated out waste.

Like times past, mining interests in Creede sought to mill the ores locally in hopes of saving the shipping and processing fees associated with exporting payrock to distant smelters. In 1937 T.P. Campbell, W.B. Jacobson, and a man named Mr. Weber organized Creede Mills, Incorporated, which erected a flotation mill south of the town of Creede.

<sup>48</sup> Ratte and Steven, 1965:10.

While the flotation process was not new to mining in 1937, Creede's past mills had not applied the concept. The process reduced the ore to a slurry, as other mills had done, and it relied on oils and foaming agents in tanks to "float" the pulverized metalliferous fines away from the waste. The mill proved successful, and Emperius added it to its Creede empire in 1940.<sup>49</sup>

The resurgence of mining stimulated by Roosevelt's programs reversed the trend of the exodus from the dying Creede district. In 1930 the town's population dropped to around 334, and during the following decade it increased to 587. The proliferation of the automobile and truck permitted miners in the 1930s to live in Creede and commute to the centers of activity at the Commodor and Amethyst tunnels. Except for a few isolated residences, the townsites of Bachelor and Weaver had been long-abandoned. The Creede business district experienced another fire in 1936, which may have precipitated the town's final abandonment were it not for the profitable mining.<sup>50</sup>

Unlike World War I, the outbreak of World War II curiously did not foster a district-wide resurgence of mining in the Creede district, despite the need for war-related industrial metals, but interest increased, none-the-less. On the Amethyst Vein, Emperius miners continued drill and blast ore deep within the Commodor, Bachelor, and Amethyst properties, and they may have continued to work the lower levels of the Last Chance ground through the Amethyst Tunnel. In response to anticipated production, in 1943 Emperius invested much capital reconditioning unsound portions of the Commodor No.5 Tunnel, and in 1945 the company did the same to the Nelson Tunnel, which had been neglected for decades. In 1945 the New Ridge Mining Company reopened the old King Soloman, after 11 years of inactivity, and another group of lessees reopened the Ridge Mine in 1943. Reopening both properties on the Holy Moses Vein required considerable capital, because the King Soloman had been idle since 1934, and Ridge was abandoned in the 1910s. The mines that were active at Sunnyside during the Great Depression closed in the 1930s, probably due to the exhaustion of economic ore. In 1940 the partnership of Larson & Soward leased the mine, conducted some exploration, extracted a little ore, and shut their operation down.<sup>51</sup>

**Table 4.5: Population of the Creede Mining District, 1890-1960**

Population Center	1890	1892	1900	1910	1920	1930	1940	1950	1960
Mineral County	Not Extant	Not Extant	1,913	1,239	779	640	975	693	424
Creede	1,000	8,000	938	711	500	334	587	433	424
North Creede	Part of Creede	Part of Creede	235	122	Part of Creede	Part of Creede	Part of Creede	Part of Creede	Part of Creede
Bachelor	0	0	343	179	0	0	0	0	0
Weaver	0	0	84	0	0	0	0	0	0

(Data collected from: Schulze, 1976 and from Nolie, 1947:59)

<sup>49</sup> Colorado State Archives, Mine Inspectors' Reports: Emperius.

<sup>50</sup> Feitz, 1963:16; Schulze, 1976.

<sup>51</sup> Colorado State Archives, Mine Inspectors' Reports: Emperius, Holy Moses Mine, Last Chance Mine, Ridge Mine, Soloman Mine.

### *The Last Boom-Bust at Creede*

Mining at Creede experienced a boom-bust cycle yet again following the end of World War II. War-related production slowed and the price for industrial metals sagged. The ore bodies in the old mines were becoming truly exhausted and exploration conducted by both Emperius and by partnerships failed to discover new ore. The end of mining at Creede seemed to be in sight. However, the economic boom of the 1950s created a strong market for industrial metals once again, and improved milling technology made ores of even lower grades economical. Not only did this prolong the lives of Creede's active mines, a wave of partnerships and lessees closely examined many lifeless but formerly productive properties.

During the late 1940s the Emperius Mining Company was the only significant operation active at Creede. In times past Emperius extracted ore from various levels in the Commodor, Bachelor, Amethyst, and Last Chance properties. Following the post-war slump in metals prices, the company curtailed its operations and used only the Commodor, Nelson, and Amethyst tunnels. The company abandoned all other surface facilities.

The wave of interest in Creede's mines began rising in 1950. The long-idle mines on the Holy Moses Vein attracted the most attention. In 1950 the Mexico Mining Company leased the King Soloman property and conducted underground exploration. The TOC Development Corporation assumed the lease and produced \$20,000 of ore by 1952. In 1951 the Outlet Mining Company reopened the Phoenix Mine, conducted exploration, and by 1956 had extracted an impressive \$500,000 in lead and silver. In 1953 the Sublet Mining Company leased the Holy Moses Mine and began shipping ore in 1954. Sublet then leased the Outlet Tunnel in 1956 where the outfit conducted underground exploration. In light of the success miners were experiencing with some of the district's long-abandoned properties, lessees and investors became interested in the prospects at Sunnyside and those on upper West Willow Creek. Lessees reopened the Equity Mine in 1953, which lay abandoned since 1929. They proved unsuccessful and the mine closed again. Another group of hopefuls reopened the Monon Mine also in 1953. They encountered small veins which were rich enough to pique their interest, but not sufficient enough to be profitable. The lessees followed the ore stringers for the next five years before they finally gave up.<sup>52</sup>

Mining in Creede experienced one last contraction in the late 1950s. All of the operations that were active during the 1950s shut down permanently, except for the Outlet Mining Company which continued underground exploration at the Phoenix Mine, and the Emperius Mining Company which continued to profit from the seemingly endless bodies of ore under the Commodor and the Amethyst properties.

During the 1960s the culture of the Creede Mining District entered a dichotomous state. The people, the economy, and the physical landscape retained characteristics derived from 70 continuous years of underground mining based on traditional Gilded Age methods, while the modern world was beginning to exert a substantial influence. The Emperius Mining Company continued to work the Commodor and the Amethyst

---

<sup>52</sup> Colorado State Archives, Mine Inspectors' Reports: Emperius, EquityMine, Holy Moses Mine, Monon Mine, Phoenix Mine, Ridge Mine, Soloman Mine.

properties, and the Bulldog Mine, long idle, began production. Improved technology permitted a greater tonnage of ore produced per miner, but both mining companies continued to drill and blast using traditional methods. Both mining companies also began to use heavy equipment, such as bulldozers and front-end loaders instead of hand-labor on the surface. At the same time, Creede's economy began to enjoy a higher income from tourists that in times past and the culture began changing to accommodate the passers-through. During the 1960s a movement began in which tourists ventured from urban and suburban centers to historic mining towns to commune with the material culture of the American West. Creede, with its dozens of intact historic mine sites and ghost towns, was well prepared to satisfy the waves of tourists. The transition from mining to tourism accelerated during the 1970s.

The end to mining in Creede finally came in the 1980s. After almost a century of mining, the few remaining operations shut down. Exhaustion of ore was partly the reason, the skyrocketing costs of underground operations also came into play, and competition from mining operations in other countries and the associated low metals prices contributed heavily. Mining constituted a significant portion of Creede's cultural fabric, and the closing of the mines required a difficult transition. However, Creede survived because tourism continued to grow, and the town served as the region's commercial and economic hub. Despite Creede's transition from one of America's greatest silver mining districts to a historical destination that draws tourists from across the West, the cultural fabric created by almost 100 years of mining remains. The heritage that is Creede's, as well as that of a special time and place in American history, lives on through the people, the town of Creede, and the surrounding historic mine sites.<sup>53</sup>

### ***Previous Cultural Resource Work***

In the early 1990s, the Colorado Department of Minerals and Geology inventoried sites in the Creede district as part of mine closure activities. None of the mines and prospects on the four ore systems were recorded as part of this, or any other, efforts. However, in 1999 Vince Spero, Regional Archaeologist with the U.S. Forest Service, inventoried five historic mines and prospects on Forest Service land within the Creede district. Of these, the Ace Mine (5ML299), the Midwest Mine (5ML300), and the Big Six (Silver Horde) Tunnel (5ML319) lay within the Alpha-Corsair project area. Spero completed a cultural resource report in 1999 entitled *Willow Creek Project: Class III Cultural Resource Inventory Report, Mineral County, Colorado*. In terms of the sites' eligibilities, Spero suggested evaluation after completion of the Alpha-Corsair inventory, which would lend historical context. Because these three sites are included in the Alpha-Corsair inventory, their eligibility recommendations can be found in Chapter 8.

---

<sup>53</sup> Colorado State Archives, Mine Inspectors' Reports: Bulldog Mine, Commodor Mine, Emperius.



## CHAPTER 5 OBJECTIVES AND RESEARCH DESIGN

### Objectives

The inventory of historic mine and prospect sites on the Alpha-Corsair and other ore systems attempted to meet two sets of objectives. First, the environmental issues discussed in the introduction posed the very real possibility that the sites face physical threats that could compromise their integrities and preservation. In this light, the first category of objectives involved directing sufficient time, resources, and effort to give the sites due process. Past inventories within other historic mining districts, usually driven by compliance with cultural resource laws, demonstrated that sites are not always thoroughly and objectively researched, recorded, evaluated, nor interpreted. Insufficient time and haste, political pressures applied by involved parties, and the unfamiliarity of cultural resource specialists with the nuances of mine sites contributed to inadequate work. The primary objectives related to the above issues include:

- To thoroughly research and record each principal, privately owned mine site on the Alpha-Corsair and other ore systems. For a description of research and recordation efforts used for the inventory, see Chapter 6. The surface archaeological and architectural remnants of the sites were recorded thoroughly, however buried deposits, such as privy pits and refuse dumps, remain unaddressed.
- To determine the eligibility recommendations of the sites to the National and State Registers of Historic Places based on physical integrity and the application of the relevant Criteria. A truly objective application of the Criteria necessitated an interdisciplinary approach wedding history and archaeology. First, the sites were examined for their physical integrity. Second, archival information was reviewed to ascertain the sites' associations with significant persons, events, and trends in history. Third, the sites were analyzed to determine whether they possessed unique characteristics or were sound examples of a site type. Fourth, the sites were considered for their potential to yield important data. Last, all sites, whether they met the Criteria or were ineligible, were noted for their potential to serve as components of the visual landscape of a historic district. For the evaluation recommendations, see Chapter 8.
- To consider the possible impacts to each site by future environmental remediation efforts. The impacts could take two forms: treating or stopping drainage effluent, and preventing metals from mobilizing out of waste rock dumps.

The second set of objectives related to historic preservation and public history. Few mining districts have been subjected in entirety to a systematic inventory of mine, prospect, mill, and settlement sites. The Alpha-Corsair inventory is the third part of what is currently a three phase project to inventory all of the principal mine sites, selected prospect sites, and associated settlements on the Creede district's three main ore systems. The inventory is also part of a greater project seeking to inventory the above with the addition of the principal townsites and settlements to characterize most of the district's principal resources. Therefore, the information gathered during the Alpha-Corsair

inventory serves as a crucial component of the two projects. The inventory of the principal mine, prospect, and mill sites is driven in part by threats posed by possible environmental remediation. The inventory that includes the townsites and settlements is driven by an effort to gather data for a book on the district's history, to nominate the collection of sites as a historic district, and to aid the community in planning for growth and development. Specifically, the objectives of the Alpha-Corsair inventory include:

- To determine the history of each principal historic mining, prospect, and milling operation on the Alpha-Corsair, and other, minor, ore systems in the district.
- To determine trends illuminated by a study of the cumulative group of the above sites between the time of their initial discovery and the end of mining. The histories and trends will be assembled by weaving together archival and material information gathered during recordation.
- To characterize the nature of residential occupation at each site. Archival information pertaining to residential occupation at specific sites is scant, leaving site recordation and analysis as the principal source of data.
- To make meaningful the information gathered from the archival research and recordation of the sites by discussing their interpretations, and overall trends and themes in a report. Individual site interpretations are in Chapter 7, and Chapter 9 discusses the trends and themes, as well as addressing the research questions posed below.
- To view the histories of the sites, and the overall trends and themes of the inventoried sites in the contexts of the district's history, Gilded Age culture, economics, politics, and the mining industry.
- To identify, but not record, residential sites for the future inventory of townsites and settlements within the mining district.
- To gather qualitative information for a book to be published on the history of the Creede Mining District. The book will detail the district's mining and milling industries, and social development from initial discovery to the end of mining in the 1970s. The book will rely on the combination of archival research and site analysis. The sites on the Alpha-Corsair and other ore systems form an important body of data for such work.
- To gather qualitative and quantitative data to help determine the area, and specific sites and resources therein, worthy of nomination as a historical district. The inventory of sites on the Alpha-Corsair and minor ore systems is the third part of the four-phase effort aimed at achieving this goal.

## Research Design

During the past several decades, scholars and popular writers alike produced numerous books and publications exploring facets of mining in the West.<sup>1</sup> Most of this work is of a general nature and the authors relied on archival research as the primary source of information. Aspects of Western mining that pertain to industrial,

---

<sup>1</sup> Francaviglia, 1991; King, 1977; Spence, 1993; Smith, 1974; Smith, 1977; Wallace, 1976; Watkins, 1971; Wyman, 1989; Young, 1987.

technological, and social issues received little documentation in the past, and because of this they remain under-studied due to a lack of traditional archival information. Such topics provide fertile ground for research through the study of material culture found amid historic mine and associated settlement sites. The remnants of structures, machinery, infrastructures, domestic and industrial refuse, and buried features and deposits serve as a rich source of information capable of conveying that which archival data currently can not. The sites inventoried on the Alpha-Corsair and minor ore systems possess such archaeological characteristics capable of answering many questions regarding the area's mining industry and associated social issues. The trends revealed by the Alpha-Corsair inventory parallel other portions of the Creede district, and may be extrapolated to metals mining elsewhere in Colorado and probably the mountainous West.

A research design was constructed to meet the objectives of researching, recording, evaluating, and interpreting sites on the Alpha-Corsair and minor ore bodies. The research design combines methods from the academic disciplines of history and archaeology. In terms of a region's mining industry and associated settlement, both disciplines have the potential to compliment each other to provide a holistic perspective. Historical documentation tends to be incomplete and generally provides qualitative data considered important at the time it was recorded. Archaeological evidence, both surfacial and subsurface, is likewise incomplete, lacking facts such as the names of companies and individuals, but it can offer both qualitative and quantitative information not recorded in historical documentation.

A strategy for gathering information forms the research design's first portion. In keeping with the interdisciplinary approach, the strategy first required exhaustive archival research followed by thorough site recordation. Archival research can reveal documented facts pertaining to the Creede Mining District, the sites to be inventoried, and economic and social trends within and outside the district. Some of this information formed the basis for a historical context produced in 1999.<sup>2</sup> Mine-specific information provides chronologies of events, persons, institutions, and property developments. Overall, the information provides a framework that compliments, and helps identify, the material evidence recorded at the sites.

Fieldwork, the second stage of the overall research strategy, followed the archival investigations. The sites were intensively recorded and the archival information assisted in identifying some features and artifacts. Recordation involves delineating site boundaries, mapping all features, describing the features individually, and inventorying artifacts associated with each feature. The artifacts were categorized as being structural, industrial, or domestic in nature, and features were noted for their functions and dates of construction. The associated artifacts proved crucial for defining feature function and dates of construction and use. The date ranges of age-sensitive artifacts were determined by consulting references and are tabulated by site in Appendix 1. The artifacts were also noted for attributes reflecting function, gender, ethnicity, health, and socio-economic status. When the fieldwork came to conclusion, the bodies of historical and archaeological information were combined and discussed in the form of the site interpretations in Chapter 7.

---

<sup>2</sup> Twitty, 1999.

The information collected through the interdisciplinary approach facilitated the evaluation of the sites according to the National and State Registers of Historic Places. The archival research proved crucial for the sites' evaluation under Criteria A and B because it revealed associated persons, events, and broad historic trends. Site recordation and analysis proved crucial for evaluation under Criteria C and D. The material evidence determined whether a site was a unique example or a type and whether it had the potential to offer additional information of importance.

A series of hypotheses, research questions, and sources of information capable of making the inventoried sites meaningful forms the research design's second portion. Again, an interdisciplinary approach, relying on historical and archaeological data, is important for accurate interpretation of the sites in terms of the questions.

The research questions fall into two general domains. The first pertains to mining operations, which is a subject many cultural resource inventories in mining districts tend to address in a cursory fashion. Little is currently known about how mines and prospects were actually operated, how engineering was applied, and the influences of economic, political, and environmental factors. Few publications currently exist that focus on the application of technology, the operations of mines, prospects, and mills of various sizes, and material evidence remaining today.<sup>3</sup> In this context, a body of research questions organized under the domain of mining operations provides an opportunity to explore this interesting topic.

The second category of research questions falls under the topic of residential occupation, settlement patterns, and social and cultural issues. Archaeological work in mining districts traditionally focused on the analysis of residential occupation, and as a result a quality body of data, mostly in the form of reports, exists. Some of the research questions below are modeled after or are variations of those posed by other researchers in their archaeological reports. Because residential occupation and associated cultural and social issues were poorly documented in historical records, material evidence serves as a prime source of information for these important aspects of mining history. As a result, findings determined from additional archaeological studies, such as the Alpha-Corsair inventory, are always welcome contributions.

### ***Research Domain: Mining and Milling Operations***

Mining, milling, and prospecting relied on engineering, technology, and methods that left distinct archaeological evidence visible today. Nearly every mining and prospecting operation erected a *surface plant*, which was the collection of facilities that supported activity on the property. Surface plants consisted of a group of *components* that included structures, activity areas, machinery, and topographical alterations. Most of the materials and equipment of value were usually removed following a site's abandonment, leaving specific types of material evidence that can clearly represent a site's makeup. Structures left structural material, foundations, and building platforms. Machinery often was anchored to foundations, and by analyzing a foundation's size, footprint, and construction material, the exact type of machine can be ascertained.

---

<sup>3</sup> For a sample of such works: Francaviglia, 1991; Meyerriecks, 2001; Twitty, 2002.

Activity areas are represented by and can be determined from artifacts, topographical alterations, and spatial location amid a mine's surface plant. For example, an area where miners prepared timbers for use underground can be identified by stacks of raw logs, cut log scraps, wood chips, flat ground on which to work, and a location near the mine opening.

Because materials, equipment, machinery, and other items of value were often removed almost immediately following a mine's abandonment, few mine sites existing today remain truly complete and intact. The evidence, archaeological in nature, left by a surface plant's components can clearly represent the makeup of a historic mining or prospect operation. Based on building footprints, machine foundations, topographical alterations, spatial arrangements, and artifacts, the site can be accurately reconstructed in a virtual sense, and changes over time charted. In this light, a site retaining archaeological integrity can clearly represent a site type, and whether it possesses unique characteristics. As such, sites lacking structures, machinery, and equipment represent engineering and can be recommended as eligible for the National and State Registers under Criterion C, provided the material remnants permit an accurate reconstruction of the site.

While archaeological remnants represent most surface plant components, the material evidence is primarily surficial. The environment of and activities amid surface plants were not conducive to the buildup of buried deposits; however, a few exceptions exist. Occasionally, mining companies erected privies for the surface crew's personal use, and the pits remaining today, if substantial, may contain meaningful artifact assemblages different from those lying in domestic privies. The artifact assemblages in industrial privies could include work-related items miners accidentally dropped, as well as industrial refuse, and items purposefully thrown in under secrecy.<sup>4</sup> As another exception, mines that relied on steam power often feature dumps of boiler clinker, which is a residue created by burning fuel coal. The dumps can possess subsurface depth and include industrial artifacts. A mine's surface crew often threw refuse into depressions in waste rock dumps that became buried by rock over time.

While evidence of structures, activity areas, and machine foundations are important for the virtual reconstruction of a mine's surface plant, artifacts associated with specific features are crucial for determining a feature's function, the intensity of activity, when the feature was built, and when it was used. By far, most artifacts associated with surface plant remnants fall into structural and industrial categories. Mine sites often include only a paucity of the domestic artifacts that archaeologists traditionally use to determine occupation dates. While little work has been done to develop such assemblages into a meaningful body, they are capable of a significant contribution to the understanding of a site's history. In terms of function, artifacts can convey the application or existence of certain surface plant components and technologies. For example, the presence of blacksmith-related artifacts, such as forge clinker, forge-cut iron scraps, and cut pipe scraps can define an otherwise generic building platform as having supported a mine shop. In other cases, certain artifacts reflect the presence of portable, free-standing pieces of equipment that are otherwise not represented by physical features. For example, boiler clinker, water-level sight tube fragments, and pipe fittings can reflect

---

<sup>4</sup> In 1994 Western Cultural Resource Management excavated a privy pit at the Joe Dandy Mine in the Cripple Creek District, recovering personal items that miners carried at work. The information is available the company files.

the application of a portable, steam-powered donkey hoist at a shaft mine lacking any structural evidence of a mechanical hoist.<sup>5</sup>

Specific types of artifacts, and the overall artifact assemblages at sites, can reflect trends regarding engineering, capital investment, sophistication, and duration of occupation. Artifacts such as rockdrill parts, drill-steels, air hoses, electrical hardware, drive pulleys, and other heavy machine parts indicate a high degree of engineering and mechanization. When viewed in the context of conventional engineering and equipment, such items can reflect an advanced operation. A high density of industrial items, usually designed for long-term use, represents an operation of lengthy duration.

Like many types of domestic artifacts, specific types of structural and industrial artifacts were manufactured for defined periods of time and can therefore reflect periods of industrial operations at mine sites. Some common dateable structural and industrial artifacts encountered at mine sites are tabulated below.<sup>6</sup>

**Table 5.1 Dateable Structural Artifacts**

<b>Artifact</b>	<b>Description</b>	<b>Date Range</b>
Cement, Natural	Pale yellow, or white to pinkish, crumbly. White precipitate on surface.	1850s-1920
Cement, Portland	Grey to white, firm.	1910s-Present
Cinderblock	Rectangular, hollow, concrete block.	1930s-Present
Corrugated Sheet Steel Siding	Sheet steel featuring broad corrugations.	1890s-present
Nail, Cut	Tapered, square-shanked nail.	1850s-early 1890s
Nail, Wire	Common round nail.	1890-Present
Window Glass, Amethyst	Light amethyst tint.	Pre-1920
Window Glass, Aqua	Light aqua tint.	Pre-1920
Window Glass, Lime	Light lime-green tint.	Late 1910s-1950s
Window Glass, Selenium	Light golden-yellow tint.	Late 1910s-1950s

**Table 5.2: Dateable Industrial Artifacts**

<b>Artifact</b>	<b>Description</b>	<b>Date Range</b>
Air Hose: Rubber-Fiber Compound	Black, red, or grey, 1 to 2 inches diameter, rubber with built-in fibers.	1930s-Present
Air Hose: Rubberized Canvas	Black or red, 1 to 2 inches in diameter.	1920s-1950s
Air Hose: Steel-Spiral Wrapped	Rubberized canvas hose wrapped with steel wire.	1870s-1910s
Battery Core: Dry Cell	Carbon rod, 3/4 inches in diameter.	1890s-1930s
Battery Core: Wet Cell	Ribbed carbon rod, 3/4 inches in diameter	1880s-1910s
Blasting Powder Keg	Corrugated body, small-mouth internal thread opening with zinc bung. Approx. 10 in. diam, 12 in. high.	1860s-1890s
Blasting Powder Keg	Corrugated body, small-mouth opening with push-in bung. Approx. 10 in. diam, 12 in. high.	1890s-1910s
Boiler Water Level Site Tube	Heavy glass tube 1/2 inches diameter	1870s-1920

<sup>5</sup> A discussion of material evidence remaining from specific surface plant components can be found in Twitty, 2002.

<sup>6</sup> Adapted from Twitty, 2002:323-325.

Table 5.2, cont.

Carbide Drum: 25 pound	Corrugated body, wide-mouth internal thread opening. Approx. 8 in. diam, 12 in. high.	1910s-1950s
Carbide Drum: 100 pound	Corrugated body, wide-mouth internal thread opening. Approx. 12 in. diam, 20 in. high.	1910s-1950s
Drill-Steel: Hand	Hexagonal rod less than 1¼ inches diam, single blade.	1850s-1910s, 1930s
Drill-Steel: Piston Drill	Hexagonal rod 1¼-2 inches diam, star bit, round butt.	1870s-1910s
Drill-Steel: Hammer Drill, Heavy	Round rod 1¼-1½ inches diam, star bit, round butt with lugs, hollow.	1910s-1960s
Drill-Steel: Hammer Drill, Light	Square rod 1¼-1½ inches diam, star bit, square butt, hollow.	1910s-1960s
Drill-Steel: Sinker Drill	Hexagonal rod less than 1¼ inches diam, hexagonal butt with collar, hollow.	1910s-Present
Drill-Steel: Stoper Drill	Cruciform rod less than 1¼ diam, star bit, cruciform butt.	1890s-1920s
Dynamite Box	Assembled with cut nails, 18 inches long	1870s-1890
Dynamite Box	Assembled with wire nails, 18 inches long	1890-1905
Dynamite Box	Assembled with lock-corner tabs, 18 inches long, panels 3/8 inches thick.	1895-1905
Dynamite Box	Assembled with lock-corner tabs, 18 inches long, panels ½ inches thick.	1905-1960
Electrical Insulator: Porcelain	Types: Cleat, Knob, Tube, Pony	1890s-1950s
Electrical Insulator: Glass Pony	Bell-shaped, threaded socket.	1880s-1960s
Lamp: Carbide	Brass water tank, steel reflector	1910s-1950s
Lamp: Miner's Candlestick	Candle thimble, spike, hook	1870s-1910s

In a cumulative sense, the sites on the Alpha-Corsair and other ore systems are an archaeological representation of a significant portion of the Creede district's mining industry. The industry was tied to and dependent on a complex web of economic, political, industrial, technological, and commercial systems. The arenas of politics, commerce and the economy influenced each other, and they impacted Creede's mining industry. The mine sites on the Alpha-Corsair and other ore systems have the potential to provide information capable of revealing the influences of the above arenas, as well as productivity, investor confidence, the influence of geology, geographic location, and the actual application of technology and methods. Here, archival research and analysis of the sites' material evidence combine to offer a holistic perspective on the research questions posed below.

### Technology and Mining Methods

1. Hardrock mining technology apparently relied on machinery, equipment, and facilities uniformly applied throughout the West. Rapid communication, widespread marketing by mine suppliers, and mobility of mine industry workers, probably caused changes and evolution of technologies on an industry-wide basis, rather than regionally. Did the inventoried operations follow technological convention during the different times they operated? To address this question, the surface plants of the

sites and periods of operation must be reconstructed based on archival information and site analysis. The operations at each site can then be compared to then-current technologies and methods.

2. A mine can be described as being like an iceberg, in which the underground workings formed the bulk of the operation, and the surface plant served as the visible cap. A surface plant, therefore, should be proportional to the complexity of the underground workings. Large, well-equipped surface plants should have served mines with extensive underground workings, and prospects should have been equipped with small, simple surface plants. Are the surface plants associated with the inventoried prospect and mine sites proportional to the underground workings? Addressing the question requires several steps. First, the surface plants for the inventoried sites must be reconstructed from site analyses and archival information. The surface plants must then be compared to the underground workings as determined from several sources. Archival data may include site descriptions, underground maps, and production figures. Second, material evidence in the form of waste rock dumps can reflect the extent of underground workings, with large dumps representing extensive workings. Third, the presence of ore storage facilities or transportation systems intended to handle high volumes of payrock can reflect extensive workings. Last, the presence of multiple mine openings are typical of mines with significant workings.
3. Prospect outfits tended to install surface plants consisting of what engineers knew as *temporary-class* facilities, which were simple, portable, inexpensive, and labor-intensive. Prospect operations did so to minimize capital expenditures until they proved the existence of ore. On the other hand, mining companies with proven ore reserves erected what engineers knew as *production-class* surface plants to facilitate ore production in high volumes while minimizing operating costs. Large mines erected advanced production-class plants capable of handling great tonnages of ore. Mining engineers defined the duty classification of many surface plant components, which are discussed in the historical context. Do the inventoried sites follow the trends of temporary-class and production-class surface plants for mines and prospects? If not, why? To address the question, surface plant components must be determined based on material evidence, and the surface plants reconstructed. The natures of the surface plants can then be compared to the type of operation.
4. Profitable, heavily capitalized mining companies usually relied on technology to permit workers to maximize ore production. The complexities of applying advanced technology exceeded the capacity of most mine workers, and as a result these companies required the services of mining engineers. Marginally productive mines employed engineers with limited education and experience, while large, profitable companies employed well-trained engineers. What does the spectrum of inventoried sites reflect about the expertise of engineers? Archival information may feature passages for engineering or engineers. Otherwise, the surface plants of the inventoried sites must be analyzed to determine trends regarding engineering. Generally, trained engineers were apt and able to apply advanced, complex technologies, which manifest as certain surface plant components. Engineers with limited experience tended to follow convention, and were able to contrive relatively simple surface plant facilities.



5. Mining in the West featured a workforce consisting of different ethnicities. Did any ethnicities influence the way surface plant facilities were constructed, equipped, and organized among the inventoried sites? For example, Italians and Cornish were known to use rock as construction materials, rather than wood. The Cornish favored the use of Cornish pumps to de-water mine workings, which were installed adjacent to shafts. American, Cornish, British, and German engineers were known for systematic development of properties, while Mexican miners tended to follow ore bodies and extract payrock as they encountered it. Discerning the above characteristics, as well as other surface plant components that deviated from convention can suggest the influence of ethnicities.
6. Popular mining history suggests that electricity had a significant impact on the West's mining industry, especially in the Rocky Mountains, by the 1890s. To what degree did electricity impact mining? How extensively was electricity applied, and what was the power source used for? When did electricity actually become popular? To chart trends regarding the impact of electricity, first its application must be determined for each site. Archival records may document the use of the power source, which must be confirmed by material evidence. Artifacts such as electrical insulators, electrical wire, light fixtures, and motor parts represent the use of electricity. Determining exactly how electricity was used requires the analysis of machine foundations and mechanical artifacts. Motors and motor-driven machinery required foundations with specific footprints, and they also left telltale machine parts such as drive pulleys and canvas belt remnants. The presence of large switch panels that accommodated complex fuse and switch assemblies also represents the use of electricity to power machinery. Last, the presence of large machines, represented by foundations, in combination with the absence of evidence of steam-power, can reflect the use of electricity.
7. Popular mining history indicates that the hardrock mining industry celebrated the rockdrill, which miners used to bore blast-holes. Further, many historians indicate that the rockdrill was widely embraced and universally accepted during the 1880s because it increased production. To what degree were rockdrills actually employed on the Alpha-Corsair and other ore systems, and what types of operations used the machines? Analysis of industrial artifact assemblages and machine foundations can determine which mining operations relied on rockdrills. Foundations specific to compressors, compressed air pipes extending underground, and items such as drill-steels and air hoses reflect the use of rockdrills. Archival information may include passages to the use of such machinery.
8. Shops were critical surface plant components where blacksmiths, machinists, and carpenters maintained and manufactured tools, and manufactured hardware and woodwork. Small mines and prospects had simple needs, while large, profitable mines required shops capable of handling a high volume of work and specialized tasks. Did the inventoried mines and prospects feature shops concurrent with the needs of the operation? How were the shops equipped? Archival information rarely discusses the nature of a specific mine's shop facilities, leaving a site's material evidence as the prime body of data. Shop size can be determined from standing structures or from building platforms in cases where structures no longer exist. Ascertaining how a shop was equipped can be accomplished by examining the

features and artifacts associated with the shop building or the shop platform. Some shop appliances, such as drill-steel sharpening machines and lathes, left specific foundations. Forges left distinct mounds of fine gravel impregnated with anthracite coal. Machine parts such as drive pulleys and canvas drive belt remnants, and insulators, reflect the use of power appliances. Forge-cut iron scraps and cut pipe scraps can exhibit characteristics of machining or hand-work. The nature of the shop can then be contrasted against the overall mining operation.

### Economics, Finance, and Ore Production

- 9 Mining in the Creede district was a function of the price of silver. Due to political decisions and overproduction, the price of silver plummeted in 1893, precipitating the great Silver Crash and subsequent economic depression. Silver attained an all-time low price, forcing mines throughout the West to close and bringing a halt to prospecting for new ore bodies. The price of silver increased briefly in 1922 with the signing of the Pittman Act, and in 1934 with the establishment of the Silver Purchase Act. How did these trends manifest among the mines and prospects on the Alpha-Corsair and other ore systems? The operating timeframes of the inventoried sites must be determined through archival research and the analysis of material evidence, then compared to the district's cycles of boom and bust. The most important material evidence capable of determining when a mine operated consists of dateable structural, industrial, and domestic refuse. In some cases, identifying the presence of specific machines, represented by foundations, can also denote periods of operation.
10. In addition to silver, Creede's mines were rich with industrial metal ores that included lead and zinc. The markets for these metals followed slightly different trends than that of silver. The demand for lead and zinc increased around 1900 and soared during World War I. The demand slowed during the early 1920s, increased, and collapsed during the Great Depression. Lead and zinc became strategic metals during World War II, and the heavy need stimulated an interest in these ores. The market slowed after the war, and increased again during the 1950s. Do the inventoried sites reflect these market trends? To address the question, not only do the operating timeframes of the mines need to be determined, but also the type of ore mined should be identified. Dateable artifacts and archival research can identify when the inventoried mines operated, and archival research and examination of mineral specimens can suggest the type of ore miners sought.
11. Capitalists were usually interested in acquiring properties that offered a significant potential for ore at least, and proven ore reserves at best. Did a strong alliance exist between the profitable mines and powerful capitalists? Were mines equipped with advanced surface plants associated economically and in terms of ownership with wealthy capitalists? Were the inventoried prospects allied with investors of limited means? The first step to identifying such trends requires determining which mines were productive, and the degree of productivity. In general, mines with well-developed surface plants were usually productive. To confirm production, the surface plant remnants existing today must feature evidence of ore storage facilities. Second,

archival materials often chronicle production for many large and small operations, and they may note associated investors.

12. Since equipping and developing a mine was a function of capital, were the inventoried mine sites poorly equipped during the capital-scarce times of the Great Depression? Productive mines were often worked sporadically over the course of decades, leaving a spectrum of material evidence. Surface plant features and artifacts must first be attributed to a site's various operators, and changes to the surface plant determined. Surface plant components and artifacts isolated to the Depression-era can then be interpreted in terms of capital investment and investor confidence.
13. Many capitalists that owned mines with proven ore reserves were interested in realizing maximum profits in minimal time, and with minimal costs. Following the advice of engineers, capitalists tended to equip proven mines with production-class surface plants that achieved production in economies of scale while minimizing operating costs, usually in the forms of energy consumption and labor. Were the surface plants of the productive operations on the Alpha-Corsair and other ore systems equipped to produce ore in economies of scale? To what degree were the mines mechanized? The constitution of the sites' surface plants must first be reconstructed based on material evidence and archival research. In general, large surface plants and mines with multiple openings were intended to facilitate the flow of high volumes of ore, and certain surface plant components represent ore production in economies of scale.
14. Archival research revealed that many of the Creede district's mines were leased by companies from property owners. When did this practice begin and why? How does the leasing system manifest in terms of material evidence? Lessees tended to invest little in a given property for a few important reasons. First, lessees often suffered from limited capital reserves, which they prioritized toward meeting immediate needs and not toward long-term goals, such as property improvements. Second, lessees focused their time on profitable work rather than on erecting and maintaining facilities. Last, since leases were for a finite period of time, lessees were beholden to themselves and not to the mine they worked. As a result, to minimize financial investment and time, they used salvaged and substandard materials and equipment, which should manifest in the remnants of the inventoried mines' surface plants.
15. In most cases, mines that produced ore required ore storage facilities amid their surface plants. Further, highly productive mines usually included a facility to separate waste from metalliferous material, either manually or mechanically. The lack of an ore storage facility can define an underground operation as a *deep prospect*. Do the mines and prospects on the Alpha-Corsair and other ore systems exhibit these characteristics? Material evidence, such as structure remnants, can be used to reconstruct the surface plants of the inventoried sites, and illustrate whether they featured ore storage facilities. Mines determined, by material evidence, to be productive can then be compared to findings based on archival research.

## Geology

16. Geology directly impacted how a property was developed. According to conventional engineering, steep slopes, high topographical relief, and horizontally oriented ore bodies favored development through tunnels and adits, while relatively flat terrain and vertically oriented ore bodies favored development through shafts. Do the inventoried sites follow this trend? Site examination can determine which operations relied on shafts as points of entry underground and which relied on adits. The assemblage of sites can then be viewed in the contexts of the region's topography and the geology of ore bodies.

## Geographic Location

17. The geographic location of a property may have influenced to what degree it was equipped and developed. In this context, properties close to improved transportation arteries should have required less capital and were more profitable because importing materials and exporting ore cost less. Not only did a remote location prove to be an economic impediment, but also rough terrain probably governed the types and sizes of materials and equipment hauled to the site. Were the easily accessed mines and prospects on the Alpha-Corsair and other ore systems better-equipped and more developed than those in inaccessible, remote locations? The answer to this question can be derived from the analysis of material evidence. Sites close to improved transportation systems should exhibit characteristics of well-equipped surface plants, and a wastefulness of materials. Distant sites should be equipped to a lesser degree, and possess fewer artifacts, as materials were re-used. Two exceptions may manifest, however. Distant sites with a high potential for productivity may feature specialized transportation systems specifically equipped to maximize production, such as aerial tramways. They also may have employed electricity, which was a power source easily wired over hostile terrain.
18. Building materials and machinery cost more to transport to remote locations than to easily accessed properties. Did the remote operations on the Alpha-Corsair and other ore systems rely heavily on local materials to minimize costs? Trends regarding the use of building materials can be ascertained by the analysis of structures and structural remnants. The use of materials must be viewed in the context of the expansion of transportation networks.
19. Properties close to commercial and economic centers, such as settlements, often received greater publicity and were easier to promote than those in remote locations. Therefore, proximal properties were likely to hold the interest of capitalists. Are the inventoried sites closest to the towns of Creede and North Creede allied with prominent capitalists, while the farthest sites allied with capitalists of modest means? Archival research can determine which mines were allied with wealthy capitalists, and investors of modest means. The assemblage of sites can then be examined in terms of their geographic location.

### Physical Climate

20. The physical climate had the potential for a significant impact on the composition and arrangement of surface plants, and when a property was operated. Investors expected productive mines to operate throughout the year. Therefore, in harsh climates such as in the Creede district, critical surface plant components had to be sheltered in heated buildings and the components arranged closely together. Prospect outfits, on the other hand, may have worked their properties on a seasonal basis. Because of this, and a lack of capital, the critical plant components were not buttressed against adverse weather. How did mining and prospect companies adapt their operations to the climate? Based on material evidence in the forms of structures, building platforms, machine foundations, and activity areas, the spatial arrangement of the sites' surface plants can be ascertained.
21. Large, productive mines were usually active throughout the year to maintain profitability, and so had to be accessed at all times to permit the input of supplies and output of ore. How did profitable companies facilitate the input of supplies and the output of ore? How did prospect operations respond? The transportation systems used by mining companies manifest as pack trails, roads, railroads, and aerial tramways. The viability of each system depended on the topography, distance, and quality of construction.
22. Inclement weather, especially snow and extreme cold, governed whether workers could commute to a mine or prospect from a distant residence. Given the above, how did mining companies and prospect operations ensure the availability of a workforce? This question provides a transition from the topic of mining technology to that of residential occupation. Examining sites for evidence of residential occupation should reflect whether workers lived on- or off-site. Evidence manifests as building platforms featuring assemblages of domestic artifacts.

### Ore Concentration

23. Some large mines erected mills on-site to treat ores that miners brought to daylight. Converting silver ore into refined metal required first physical crushing, concentration where metalliferous material was separated from waste known as *gangue*, followed by smelting. In some cases, roasting was required prior to concentration. Did the large mines erect mills capable of refining ore into silver bullion? If not, what was the nature of the mills? The answer can be derived from the combination of archival research and examination of the material evidence on-site. Archival materials may indicate what type of facility a mill was, and the processes employed. The analysis of the material evidence can accomplish the same, confirming or denying archival information. Of note, facilities that converted ore into refined bullion should feature evidence of smelting in the forms of slag, furnace remnants, and fuel residue dumps of significant volume.
24. During the 1870s and 1880s geologists, assayers, and millmen experimented with a variety of concentration processes for silver ores found in the San Juan Mountains. By the 1890s the mining industry found that a few processes proved effective, with regional variations adapted to the ores of specific mining districts. What were the

processes used to concentrate the ores? Were these processes effective for ores from elsewhere in the Creede district? In many cases, the adaptation of ore concentration processes was noteworthy enough to warrant documentation. Therefore, archival research can play heavily into answering these questions. However, the details of how specific mills were engineered and equipped may not have been documented, leaving site analyses as the other key source of information to determine trends regarding milling.

25. The concentration of silver ores required different processes than those of gold ores. Since the Creede district's mines extracted silver ores, any mills present should have employed processes known for their success with such material. Did the mills associated with the sites on the Alpha-Corsair and other ore systems in fact employ processes and engineering specific to silver ores? First, archival information and site analysis can determine which mines extracted silver ore, and which ones featured mills. The same sources can then be used to determine the processes employed by each mill.
26. Some large, profitable mining companies employed a vertical integration strategy in which ore was not only extracted, but processed in-house to prevent profits from going to independent mills. Did the profitable mines employ such vertical integration? To address the question, archival research is necessary to first identify the most profitable mines. Archival research can then be used to determine whether these operations also featured ore concentration mills. Last, site analysis must be employed to confirm whether the operations in fact featured concentration mills.
27. The 1890s saw a shift in the nature of the silver ore mining companies produced. Improvements in engineering and technology, and a greater affordability of machinery, permitted companies to extract ores of previously uneconomical grades. How does this trend manifest in milling features on the Alpha-Corsair and other ore systems?

### ***Research Domain: Residential Occupation***

The second category of research questions pertains to residential occupation associated with the mine and prospect sites on the Alpha-Corsair and other ore systems. Many of the sites featured associated residential complexes where miners and prospectors lived. When intact, complexes usually consisted of one or more residential buildings, associated privies, refuse dumps, and activity areas. As with the surface plants that supported activity at the mines, the residential materials and items of value were quickly removed following a property's abandonment. However, much currently remains capable of conveying information regarding social issues and the nature of residential occupation. Structural materials, foundations, and graded platforms clearly represent the types, sizes, and arrangements of buildings. The consumption of goods and food, and disposal of unwanted items, generated assemblages of artifacts that reflect trends regarding the nature of the sites' residents.

The artifacts associated with residential complexes are a direct reflection of the natures of the populations, and when the complexes were occupied. Important aspects poorly documented in archival material pertaining to a site's residents, such as gender, ethnicity, socio-economic status, household, diet, and health are often represented by the

refuse and other items left after a site was abandoned. Artifacts can be viewed as occurring in three principal types of deposits. First are items associated with structural features and activity areas. Second are refuse dumps, and third are privy pits, which represent primitive organized disposal practices. At many residential complexes associated with mines, refuse dumps often possess little subsurface depth and are, therefore, usually surficial. Privy pits, however, often possess depth and can contain sets of artifacts not represented on ground-surface, as privy users may have intentionally discarded items under secrecy. The testing, subsequent excavation, and analysis of privy pits can reveal important information not represented by the refuse on ground-surface. Residential features inhabited for a long time may also feature buried deposits, and those inhabited for a short time often do not. However, the only sure way to ascertain the presence of subsurface deposits lies with planned testing.

Analysis of the residential occupation of historic mine sites is more conventional than the study of mining operations. The research questions posed below are geared toward contributing to the growing body of data regarding residential occupation and social issues specific to the Creede district. The trends may be extrapolated to other metal mining districts in the mountainous West. The research questions fall into four topics, including the makeup of the populations at the sites, housing, socio-economic divisions, and diet and health.

### Population Makeup

1. Large mines were operated by capitalized companies that employed crews of workers, while small mines and prospects were operated by only a few workers. Can the numbers of workers at the large mines be determined by the material evidence? If so, did all workers live on-site? Identifying the number of workers at a site can be calculated by the total floor space represented by standing structures and residential building platforms. Most workers required a minimum of 60 square feet each for bedding and possessions, and additional space for cooking and other domestic activities. Families usually required more floor space than individual workers.<sup>7</sup> The residential buildings' total square footage can be compared to the numbers of workers documented in archival materials.
2. Popular history suggests that single men dominated the mining industry, and few if any women except for prostitutes were present. Historical and archaeological studies of populations mining districts reveal that women were in fact present, and they served as hostlers, cooks, and maids, which were jobs Victorian society deemed acceptable for women. Did women live at the mines on the Alpha-Corsair and other ore systems, and if so, did they hold a greater presence at the large operations where jobs accepted by society were available? Were families present?<sup>8</sup> The identification of women can be determined primarily from the analysis of domestic artifact assemblages. Some types of items, such as decorative tableware, cut-glass fragments, and other decorative artifacts, suggest the presence of women, while other items, such

<sup>7</sup> Carrillo, 2001:6; Hardesty, 1988:13. Mehls, et al, 1995, and Carrillo, 2001 present similar research hypotheses and sources of data. In Ross, 2001:23, Bureau of Land Management archaeologist Julie Coleman Fike presents a similar question.

<sup>8</sup> Mehls, et al:1995, Ross, 2001, and Carrillo, 2001 present similar research hypotheses and sources of data. Ringhoff, 2002 discusses the presence of families amid Hinsdale County's mines.

as women's boot remnants and corset parts, directly represent their presence.<sup>9</sup> In addition, archival information may feature documentation of women at certain properties.

3. Little is currently known about the ethnic makeup of Creede's workforce. Popular literature indicates that the workforce across the mountainous West was highly mobile and comprised of European ethnicities including Slavs, Italians, Irish, British, Canadians, Germans, and Swedes, among others.<sup>10</sup> Other ethnicities were also present in the mining industry, but to a lesser degree due to segregation. Such ethnicities include Hispanics, Chinese, and Native Americans. Do the inventoried mine and prospect sites reflect the presence of ethnicities, and if so, what occupations did they hold?<sup>11</sup> Determining the presence of ethnicities is a difficult proposition, and can be accomplished through the analysis of structural remnants, artifact analysis, and archival research. Ethnic groups different from the Euro-American culture that dominated hardrock mining, such as Chinese, Hispanics, and Native Americans, had the potential to leave distinct artifacts and material use patterns. However, European and American ethnic groups shared similar cultural aspects in terms of household, diet, consumer goods, and dress. In this light, the material evidence left by European ethnic groups appears similar to that left by American groups, however, some differences can be ciphered out of artifact assemblages. European ethnic groups may have preferred familiar European consumer goods and foods, which may be represented by bottled goods, types of meat, tablewares, and other items. In addition, some groups may also have employed traditional construction practices, such as the propensity of Italians to erect rockwork foundations, walls, and structures.

### Housing

4. In many cases, well-capitalized mining companies provided housing for work crews. Studies of historic mine sites in Colorado revealed that companies distant from independent settlements erected boardinghouses for crews, while mines near settlements did not offer housing because the workers preferred to live in independent settlements. Do the mines and prospects on the Alpha-Corsair and other ore systems follow this trend? If so, why? The inventoried sites can be analyzed to ascertain whether they included residential complexes, and how many workers lived on-site. The assemblage of sites with and without associated residences can be viewed in terms of their geographic location relative to independent settlements.
5. To ensure the presence of a workforce, capitalized mining companies attempted to strike a balance between providing a tolerable living environment while investing minimal capital on housing. Do the residential buildings among the inventoried sites reflect this trend? Did the capitalized companies provide housing superior to that at small mines? Did the housing of the above differ from the accommodations at prospect operations? Based on material evidence, the natures of residential buildings can be reconstructed, in the event sites lack standing architecture. The structural

<sup>9</sup> Carrillo, 2001:6; Hardesty, 1988:77.

<sup>10</sup> Discussed in Wyman, 1989, and other works on the histories of specific regions.

<sup>11</sup> Carrillo, 2001 discusses a possible link between ethnicity and socio-economic status, and how both manifest in the archaeological record. In Ross, 2001:23, Bureau of Land Management archaeologist Julie Coleman Fike presents similar questions, and Ringhoff, 2002 discusses identifying cultural identity through material evidence.



remnants and associated artifacts can be analyzed to determine whether housing featured amenities such as electric lighting, plumbing, abundant space, and adequate heat.

6. The Creede district's mining industry was subjected to boom and bust cycles. Large and productive mines experienced periodic activity, while unprofitable prospects generally closed after failure. Do the settlements follow the trends of boom and bust of their associated mines? Do the settlements mirror the periods of activity of their associated mines? First, the date ranges of occupation must be determined through dateable domestic artifacts. Second, the dates of occupation can then be compared to when the associated mine operated, as determined from analysis of industrial and structural artifacts, and archival information.
7. The popularization of the automobile in the 1930s offered workers the potential to commute from distant residences. During this time and afterward, did workers on the Alpha-Corsair and other ore systems in fact rely on automobiles to commute from distant residences? To answer this question, the residential complexes associated with the inventoried sites must be analyzed to establish their dates of occupation. The dates of occupation can then be compared to when the mine operated, as determined through the examination of structural and industrial artifacts and features, and archival information.

### Socio-Economic Status

8. Popular literature indicates that large mines, like factories, were staffed by a socially stratified workforce.<sup>12</sup> Does the material evidence at the mines on the Alpha-Corsair and other ore systems reflect a difference between the socio-economic status of laborers and management? Did management live separately from the workers? Does a correlation between ethnicities and socio-economic status exist?<sup>13</sup> Addressing such questions requires several steps. First, the artifact assemblages associated with each feature representing a residence at a given mine must be analyzed in terms of socio-economic indicators. Artifact assemblages attributed to a relatively high status could include high quantities of decorative items, butchered bones left over from costly cuts of meat, evidence of expensive, fine goods, and items consumed as benchmarks of status. The reverse would be true of artifact assemblages attributed to a low status. The artifact assemblages attributed to workers should include refuse in the forms of heavy boots, lunchpails, candlesticks, miners' felt hats, and other durable articles. The artifact assemblages of each feature representing a residence can then be compared. In the event a site offers standing architecture, the residences of management may feature amenities, greater space, and a location away from the mine surface plant. Last, the artifact assemblages can be analyzed to ascertain ethnic groups.
9. Little is known about the socio-economic status of the crews that worked prospect operations. Does the material culture reflect the status of workers at unproductive prospect operations? The artifact assemblages and structural features of the

---

<sup>12</sup> Discussed in Wyman, 1989, among other sources.

<sup>13</sup> Curtiss, 1998, and Mehls, 1995 present similar research hypotheses and sources of data.

residential complexes at the prospect sites can be analyzed in terms of socio-economic status.

### Diet and Health

10. The improvement of transportation systems in the Creede district potentially increased the variety of available goods while lowering costs. Were the diets of residents different during the district's initial boom period from those of workers in the wake of improved transportation?<sup>14</sup> First, the dates of a site's residential occupation must be established based on dateable artifacts. Afterward, diet can then be determined by artifact analysis. Items suggestive of diet include types and quantities of food cans, butchered bones, fruit pits, nut shells, kitchen utensils, and bottle fragments.
11. Popular history suggests that miners ate a poor diet based on canned food. Does this assumption hold true for prospect operations? Does it hold true for the crews of productive mines? If not, why? What did the typical diet at each type of operation consist of? Diet can be determined by artifact analysis. Items suggestive of diet include types and quantities of food cans, butchered bones, fruit pits, nut shells, kitchen utensils, and bottle fragments.
12. Many European-based ethnicities were employed in the mining West, and they retained some cultural traditions, including a preference for certain foods and consumer goods. Does the material evidence at the inventoried prospect operations and mines reflect the presence of ethnicities identified by certain foods? Some ethnic foods involved imported bottled goods and types of meat, which may be represented in the artifact assemblages associated with residential complexes.
13. Popular history portrays mine workers as living in the clutches of vices such as a heavy consumption of alcoholic beverages and tobacco. Does the material evidence support this assumption?<sup>15</sup> Did workers at prospect operations consume more or less liquor than those employed by organized mining companies? What factors possibly account for the trend? The analysis of the artifact assemblages associated with residential complexes has the capacity to reflect the degree of consumption of substances of pleasure. Liquor and beer bottle fragments, and earthenware jug fragments, represent the consumption of alcoholic beverages. Tobacco tins and cans indicate the use of tobacco, and medicine bottles and vials may suggest the recreational use of drugs. The quantity of vessels compared with the number of individuals, represented by residential building floor space, and compared with the density of other domestic items such as food cans, suggests the degree of consumption of substances of pleasure.
14. How does the material evidence reflect the health of workers? What diseases were present?<sup>16</sup> Water-borne pathogens were poorly understood, and food preservation was difficult and also poorly understood, fostering an environment for gastro-intestinal

---

<sup>14</sup> Mehls, et al:1995 and Ross, 2001:23 present similar research hypotheses and sources of data.

<sup>15</sup> Mehls, et al:1995 discusses the "mythic portrayal" of mine workers and heavy alcohol and tobacco consumption, and the use of material evidence to represent actual trends.

<sup>16</sup> In Ross, 2001, Bureau of Land Management archaeologist Julie Coleman Fike presents a similar question.

diseases. Are these represented by the material evidence? Was there a high degree of mining industry-specific illnesses, such as silicosis and injury? The use of mechanical rockdrills were attributed to the rapid development of silicosis. Does the material evidence reflect a high rate of silicosis among the crews of mines that employed rockdrills? The artifact assemblages associated with residential complexes can offer evidence suggestive of treatments for illnesses. Often, medicine bottles were embossed with product or manufacturer names, which reflect a general category of ailment. Pill, salve, and bandage tins also reflect the treatment of ailments and physical injuries. Some medicines were intended for respiratory problems, and a few were marketed specifically for what was known as *miner's consumption*, the dreaded silicosis. Mines known to have employed rockdrills may feature evidence of the use of respiratory medicines.

### ***Project-Specific Research Questions***

The mine, prospect, and associated settlement sites on the Alpha-Corsair and other ore systems offer an excellent opportunity to study a significant portion of the Creede district's mining industry. While the sites feature a wealth of archival and material evidence, they may not be capable of addressing the entire list of research questions posed above. Therefore, some of the most pertinent questions are selected from the research domains of mining and milling operations, and residential occupation. The questions, hypotheses, and sources of data, presented in abbreviated form below, are the same as those listed above. Addressing the research questions requires analyzing each inventoried site separately, as well as cumulatively.

#### Research Domain: Mining and Milling Operations

1. Did the inventoried operations follow technological convention during the different times they operated?
2. Are the surface plants associated with the inventoried prospect and mine sites proportional to the underground workings?
3. Do the inventoried sites follow the trends of temporary-class and production-class surface plants for mines and prospects? If not, why?
4. What does the spectrum of inventoried sites reflect about the expertise of engineers?
6. To what degree did electricity impact mining on the Alpha-Corsair and other ore systems? How extensively was electricity applied, and what was the power source used for? When did electricity actually become popular?
7. To what degree were rockdrills actually employed on the Alpha-Corsair and other ore systems, and what types of operations used the machines?
8. Did the inventoried mines and prospects feature shops concurrent with the needs of the operation? How were the shops equipped?
9. Did the mines and prospects on the Alpha-Corsair and other ore systems follow trends regarding fluctuations in the price of silver?

10. Do the inventoried sites reflect the market trends for industrial metals mineralogically associated with the silver ores of the Alpha-Corsair and other ore systems?
11. Did a strong alliance exist between the profitable mines and powerful capitalists? Were mines equipped with advanced surface plants associated economically and in terms of ownership with wealthy capitalists? Were the inventoried prospects allied with investors of limited means?
14. Archival research revealed that many of the Creede district's mines were leased by companies from property owners. When did this practice begin and why? How does the leasing system manifest in terms of material evidence?
18. Did the remote operations on the Alpha-Corsair and other ore systems rely heavily on local materials to minimize costs?
21. How did profitable companies facilitate the input of supplies and the output of ore? How did prospect operations respond?

#### Research Domain: Residential Occupation

1. Can the numbers of workers living at the inventoried sites be determined by the material evidence? If so, did all workers live on-site?
2. Did women live at the inventoried prospects and mines, and if so, did they hold a greater presence at the large operations where jobs accepted by society were available? Were families present?
3. Do the inventoried mine and prospect sites reflect the presence of ethnicities, and if so, what occupations did they hold?
4. In many cases, mining companies provided housing for work crews. Studies of historic mine sites revealed that companies distant from independent settlements erected boardinghouses for crews, while mines near settlements did not offer housing because the workers preferred to live in independent settlements. Do the inventoried mines and prospects follow this trend? If so, why?
5. To ensure the presence of a workforce, capitalized mining companies attempted to strike a balance between providing a tolerable living environment while investing minimal capital on housing. Do the residential buildings among the inventoried sites reflect this trend? Did the capitalized companies provide housing superior to that at small mines? Did the housing of the above differ from the accommodations at prospect operations?
8. Does the material evidence at the inventoried sites reflect a difference between the socio-economic status of laborers and management? Did management live separately from the workers?
11. Popular history suggests that miners ate a poor diet based on canned food. Does this assumption hold true for prospect operations? Does it hold true for the crews of productive mines? If not, why? What did the typical diet at each type of operation consist of?
12. Does the material evidence at the inventoried prospect operations and mines reflect the presence of ethnicities identified by certain foods?

13. Popular history portrays mine workers as living in the clutches of vices such as a heavy consumption of alcoholic beverages and tobacco. Does the material evidence support this assumption?<sup>17</sup> Did workers at prospect operations consume more or less liquor than those employed by organized mining companies? What factors possibly account for the trend?
14. How does the material evidence reflect the health of workers? What diseases were present? Water-borne pathogens were poorly understood, and food preservation was difficult and also poorly understood, fostering an environment for gastro-intestinal diseases. Are these represented by the material evidence?

---

<sup>17</sup> Mehls, et al:1995 discusses the “mythic portrayal” of mine workers and heavy alcohol and tobacco consumption, and the use of material evidence to represent actual trends.

## CHAPTER 6 RESEARCH METHODS

### Archival Research

Prior to the initiation of fieldwork, Mountain States Historical conducted extensive archival research to obtain information pertaining to the operators, the owners, the miners, and the physical makeup of the historic mines. A researcher examined archives and publications at the Colorado School of Mines, the U.S. Geological Survey, the Archives at Norlin Library on the CU Boulder campus, the Colorado Historical Society's Stephen S. Hart Library, Colorado State Archives Mine Inspectors' Reports, Denver Public Library, and Boulder Public Library. Only a paucity of information was found on the Creede district in general, and less was located on the specific mine sites. The most informative reference sources included geological reports, general histories of the Creede district, Sanborn insurance maps, and district summaries in the *Engineering & Mining Journal* and *Mining & Scientific Press*.

### Field Methods

Each mine complex was defined as the archaeological features, standing structures, and artifacts directly associated with a particular shaft, tunnel, or adit. Historically, these collections of facilities supported work underground, and the mining industry recognized them as a *surface plant*. Some of the sites also included directly associated residential complexes where mine crews resided.

The surface plants and residential complexes associated with the principal historic mine sites on the Alpha-Corsair and other ore systems were recorded in a manner surpassing the *Class III* procedures defined by the U.S. Department of the Interior and by the Colorado Office of Archaeology and Historic Preservation. Mountain States Historical *recorded* each site with the intent of gathering sufficient information to reconstruct and interpret the histories of the mining operations and their residents. First, the surface plants and associated residential complexes were identified. The remains, documented individually as *features*, ranged from physical evidence suggesting the former existence of a plant facility or activity area to standing structures. The mine sites and their constituent features were mapped using a pocket transit. Each feature was assigned a number then described with text. The artifacts associated with each feature were tabulated with the descriptions. Artifacts were noted for ethnic, gender, and socio-economic attributes, as well as dateable characteristics. Standing structures were subjected to additional documentation including scaled floor plans, Historic Architecture and Building Survey forms, and photography of the exteriors, and when possible, the interiors. Overview photographs were taken of each site for context. Where possible, archival data was consulted to help guide examination and interpretation of the remains encountered at the mine sites.

## CHAPTER 7 SITE SUMMARIES AND ANALYSES

Chapter 7 consists of summaries of the principal historic mines and selected prospects organized according to the four ore systems defined in Chapter 1. Archival information and field data have been interwoven to produce complete histories of each operation, and each summary is concluded with an analysis and interpretation. The timeframes of activities and occupations were developed from both archival research and the analysis of dateable artifacts. Archival references are footnoted, while the dateable artifacts are merely noted in the chapter's text. Appendix I includes tables of specific dateable artifacts for each site and their references. Each site features a plan view illustrating the associated features as they appear today. The plan views show the scale in feet and the reader should refer to the Master Legend included in the first pages of the report for an interpretation of the symbols used on the maps.

### Alpha-Corsair Ore System

In 1876 a small party of prospectors wandered away from the nearby Rio Grande route that led to mining districts deep in the San Juan Mountains and began examining the area that would become Creede. They worked their way up Miners Creek and near its confluence with Rat Creek, struck silver ore. H.M. Bennett and John C. McKenzie staked the Alpha and Corsair claims, which were the first two located in the Creede area. When activity in the district began in earnest in the early 1890s, prospectors discovered additional deposits in the Alpha-Corsair area, although most of these properties were not heavily developed until later. The mines and prospects were located on both sides of a long, northwest-southeast trending ridge that was a southern extension of McKenzie Mountain. Miners Creek extended along the ridge's west side and Rat Creek extended along the ridge's east side. More mines and prospects lay on Monon Hill, which was a grassy, sparsely wooded landform, adjacent and southeast. Prospectors engaged in much exploration on the east side of Rat Creek, as well. The town of Sunnyside, the area's principal settlement, lay at the confluence of Rat and Miners creeks near Monon Hill. Geologists studying the area in the 1920s and 1960s recognized the richest and most extensive vein as the Alpha-Corsair, named after two prominent mines, and they noted the existence of additional, small ore bodies. The inventoried sites discussed below were located on the ore systems and lay in what was originally known as the Sunnyside Mining District.

#### *Ace Mine* *Site 5ML299*

The Ace Mine was a small prospect operation located at the southwest base of McKenzie Mountain's south spur, on the east side of Miners Creek. In terms of historical attributes, the site currently consists of an adit, the associated waste rock dump, and a standing building. The adit penetrates a moderately steep slope forested with stands of ponderosa pines and firs interspersed by meadow. The flat floor of the Miners Creek

drainage lies immediately below the mine, and features patches of lush grass and stands of firs and spruce trees. Willows line the banks of Miners Creek. A maintained gravel road passes by the site and was probably the historic road up the drainage. Vince Spero, an archaeologist with the U.S. Forest Service, recorded the Ace, which lies on Forest Service land, in 1999 under site number 5ML299.

### Mining Operations

The Ace Mine passed into history largely unknown. Prior to 1912 someone suspected ore to lie underneath the hillslope northeast of the site and drove an adit to examine the geology at depth. The property lay abandoned for years until J.B. McClough claimed the workings in 1919. McClough probably conducted minor underground exploration, and after failing, let the claim lapse. The Ace remained unclaimed for some time until Paulena Slater assumed title, then sold the property to Arthur Davis in 1956. Davis kept the Ace for decades and sold it to the Minerals Engineering Corporation in 1980. Like the parties before, Minerals did little with the Ace and let the claim revert to public ownership.<sup>1</sup>

The Ace Mine currently features characteristics typical of unproductive prospect operations. The site includes an adit portal, the associated waste rock dump, a standing building, a building foundation, and a road (Features 1-5). Prospectors drove the adit from the end of a trench 6 feet wide and 18 feet long. The adit currently drains water and the Division of Minerals and Geology grouted the opening closed. The associated waste rock dump manifests as a pad extending in both directions along the surrounding hillslope. The dump is small and the southeast portion features a distinct lobe indicating that an ore car was used to deposit the rock. Within the last 50 years, someone removed the dump's center portion.

One of the property's operators cut a platform out of the hillslope adjacent to and north of the adit for a shop building. They erected a frame building on a timber foundation, which is represented today by two 10x10s embedded in the ground. The original shop was removed long ago.

During the 1950s or later, the property's operators instituted several changes to the site. First, they bulldozed a road from the north up to the waste rock dump's top-surface. Second, the operators erected a 10 by 15 foot frame shop building over the area where the first structure stood. The shop, which still stands, is a front-gabled frame building constructed with a variety of salvaged lumber, plywood, and finished 2x4s. The structure is in dilapidated condition, and recent refuse lies in and around the building. Anthracite coal, forge clinker, and forge-cut iron scraps reflect blacksmithing. Because the building is recent, further discussion is omitted.

---

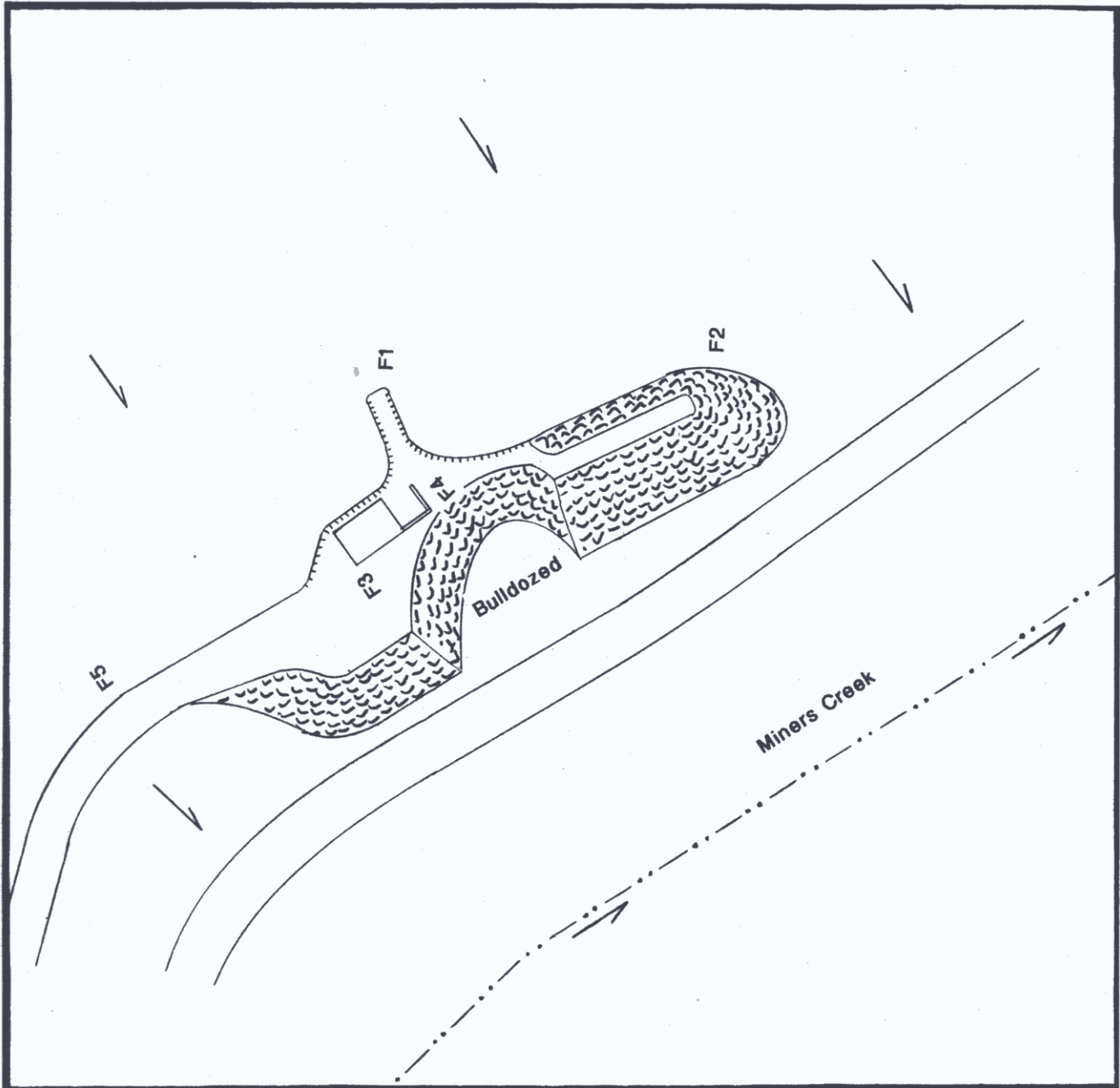
<sup>1</sup> Spero, 1999.



**ACE MINE**  
**Site 5ML299**  
Creede Mining District, Mineral County, Colorado



Scale: 15 ft. =



### Residential Occupation

No evidence of residence could be identified on-site or in the immediate area. The site's original operators may have lived on the valley floor nearby, or they could have commuted from the settlement of Sunnyside a mile south. The site's later operators probably commuted via an automobile or truck from a distant residence.

### Ace Mine Site Interpretation

The Ace Mine was an unproductive prospect probably driven to tap the Alpha-Corsair Vein. The small waste rock dump reflects shallow underground workings, and the lack of a developed surface plant and paucity of artifacts indicate that all operations lacked capital. The absence of evidence of an ore storage facility indicates that all operations failed to produce ore in economic volumes. The small waste rock dump, lack of a developed surface plant, and small quantity of artifacts represent brief occupation. Last, no evidence exists to indicate exactly when the property was worked.

### ***Alpha Mine Site 5ML371***

The Alpha Mine holds great historical importance because it was the first underground operation on the first mining claim in the Creede district. In terms of historical attributes, the site currently consists of two adits driven to tap the Alpha-Corsair Vein. The site is located at the south tip of MacKenzie Mountain's southeast-trending ridge, and is adjacent to the confluence of Miners and Rat creeks. The ridge slope features bedrock outcrops, and the spaces between are vegetated with meadow spotted with stands of Ponderosa pines and fir trees. The townsite of Sunnyside lies a short distance east on the drainage floor.

### Mining Operations

The Alpha Mine played a curious role in the development of the Creede Mining District. As alluded to earlier, H.M. Bennett and John C. McKenzie staked the Alpha claim in 1876 upon discovery of silver ore, and they also staked the Corsair claim a short distance northeast. The men undoubtedly excavated prospect pits and possibly an adit to examine the geology at depth. Assays demonstrated that the ore contained silver, but it was a compound not easily treated. The Alpha tantalized McKenzie, and he continued to prospect the area for several years afterward hoping to locate better ore, which he did with the Bachelor claim in 1878. The Bachelor would become one of the Creede district's greatest producers twenty years later. Bennett and McKenzie failed to interest wealthy capitalists in the Alpha, and frustrated, sold the claim to Richard and J.N.H. Irwin.<sup>2</sup>

The Irwins held optimism for the ore revealed by the Alpha workings. Up to 1890 they engaged in sporadic exploration and development of the vein, and even

---

<sup>2</sup> Emmons and Larsen, 1923:3; Henderson, 1926:5; Mumey, 1949:6.

attempted to mill ore they removed in an arrastra they constructed. An arrastra was a circular, rock-lined pit in which a draft animal, tethered to a harness beam, dragged rocks around the floor. The rocks pulverized small quantities of ore into a slurry only over a protracted length of time. The slurry could then be treated and the silver extracted. After failure to recover silver or interest capitalists, the Irwins ceased work.

Around the time the Irwins gave up on the Alpha, Nicholas Creede discovered the fabulous Holy Moses Vein, and the rush to what was then known as the King Solomon Mining District, later renamed the Creede district, began. Within a short time prospectors, including Nicholas Creede, discovered the Amethyst Vein. The excitement quickly eclipsed activity on the Alpha Vein, although prospectors were certainly busy in the vicinity. It seems likely that, during this time of peak speculation in the region, the Alpha claim may have been explored further, although historical documentation is absent.

The lack of historical information pertaining to the Alpha claim prior to the Silver Crash of 1893, which caused most of Creede's mines to temporarily close, suggests that the property lay quiet and experienced no significant development. This changed when the economy recovered in the late 1890s and mining in the district resumed on a grand scale. In 1902 the Wheeler and Stump partnership reopened the Alpha and managed to produce minor quantities of ore. The partnership worked the Alpha for an unknown period of time and by 1912 the mine fell idle after yielding less than \$200,000 in ore.<sup>3</sup>

The Alpha remained closed through the 1920s after the Wheeler and Stump partnership, and possibly other interests, demonstrated that the mine featured little ore profitably treated by then-current milling technology. When President Franklin Delano Roosevelt signed the Silver Purchase Act into law in 1934, which boosted the price for silver, mining resumed in the Creede district. Many former silver producers, including the Alpha, were swept up in the wave of exploration and mining. In 1934 an unknown party assumed control of the Alpha and engaged in exploration, if not ore extraction. Historical records make no mention of the operation's result.<sup>4</sup>

The remainder of the history of activity on the Alpha claim remains unknown. The site suffered heavy disturbance within the last 50 years, which erased all historical features, rendering interpretation based on material evidence impossible. The site currently consists of two adits, one of which lies at the base of the ridge dividing Rat and Miners creeks, and the second penetrates the hillside several hundred feet upslope. The disturbance manifests in several forms. First, someone used a bulldozer to grade a road to the upper adit and they scraped down the associated waste rock dump. Second, a road was graded to the lower adit, and the associated waste rock dump and surrounding area were bulldozed. Third, a modern house and garage were built adjacent to the lower adit. Last, the area between the two adits suffered bulldozing. Due to the proximity of the house, the adits were not closely inspected to maintain the residents' privacy, and the site was not recorded in detail.

---

<sup>3</sup> Colorado Historical Society Records, MSS Box 640, V24; Emmons and Larsen, 1923:188.

<sup>4</sup> Steven and Ratte, 1965:9.

### Residential Occupation

The site features no evidence of residential occupation. The parties that worked the property almost certainly lived in the adjacent townsite of Sunnyside, which lay a short distance east.

### Alpha Mine Site Interpretation

The Alpha Mine was small, poorly developed, and sporadically worked for brief periods of time. The waste rock dumps associated with both adits are small, indicating that the underground workings were limited. If the mine was extensively developed and equipped with a substantial surface plant, then some evidence would remain despite the bulldozer disturbance. Little historical evidence is currently visible.

### ***Corsair Mine*** ***Site 5ML375***

The Corsair Mine is historically important because it lay on one of the first mining claims in the Creede district. In terms of historical attributes, the site currently consists of a tunnel driven to tap the Alpha-Corsair Vein, and the associated surface plant remnant. The site is located at the south base of MacKenzie Mountain's southeast-trending ridge, and is adjacent to the confluence of Miners and Rat creeks. The mine lies at the base of a steep southeast-facing ridge slope vegetated with open meadow punctuated by stands of ponderosa pines and fir trees. The townsite of Sunnyside lies on flat ground a short distance south.

### Mining Operations

The Corsair Mine shares its history of establishment with the Alpha Mine, adjacent and southwest. In 1876, H.M. Bennett and John C. McKenzie discovered silver ore and first staked the Alpha claim, traveled a short distance northeast, and staked the Corsair claim. When Bennett and McKenzie failed to interest capitalists in the Alpha, they sold both claims to Richard and J.N.H. Irwin during the 1880s. The Irwins conducted limited exploration and development sporadically until 1890.

Like the Alpha Mine, the history of the Corsair property up to the Creede district's second boom in the late 1890s remains unknown. By around 1900, in the context of an improved economy and better milling technology, the ores within the Corsair Mine became attractive and an unknown mining operation took an interest in the property. Between 1902 and 1903 the mining outfit produced ore from the Corsair, and possibly from the Alpha as well. With the viable ore exhausted, the Corsair Mine fell idle for many years, although in 1912 a company of lessees sorted the waste rock dump for ore cast off by previous operations as uneconomical.<sup>5</sup>

In 1922, the federal government passed the Pittman Act, which mandated that the federal government purchase silver at over \$1 per ounce. The increase in value

---

<sup>5</sup> Colorado Historical Society Records, MSS Box 640, V24; *EMJ* 3/7/03, p384.

stimulated the examination, as well as mining on a limited basis, of some previous producers in the Creede district. In this context, in 1922 partners Arthur Comstock and Clem Welle began a close examination of the Corsair's workings. The partners were successful and mined \$6,500 worth of ore. By 1923 the Pittman Act expired and silver's value fell again, which may have caused the lessees to abandon the mine. In the same year, James D. Pilcher assumed the lease and he mined \$6,000 worth of ore. In 1925 lessees Frank Robinson and Howard Barber found ore missed by the previous lessees and over the course of the year extracted a small but profitable quantity of payrock. When the costs of production exceeded profits, Robinson and Barber ceased work. Up to this time, various companies and lessees realized \$600,000 from the mine.<sup>6</sup>

The Corsair Mine's workings remained quiet and dark through the remainder of the 1920s and into the 1930s. In 1933 President Franklin Delano Roosevelt's administration began to devalue the inflated U.S. Dollar by boosting the price of at first gold, followed by silver. In 1934, Roosevelt signed into law the Gold Reserve and Silver Purchase acts, which sanctioned minimum prices for the metals. With the value of silver at around \$.70 per ounce, Big Ben Mines, Incorporated leased the Corsair and investigated the workings for ore left by previous operations. The company rehabilitated some of the workings and began a campaign of deep sampling with diamond drills. At that time, the Corsair featured a tunnel 4½ by 6 feet in-the-clear and 800 feet long.<sup>7</sup>

The sampling demonstrated the existence of ore, and Big Ben Mines geared up for development and production. The company reorganized under the name of Ben A. Birdsey, who was manager. To support activity underground, the company had workers rehabilitate an inexpensive but highly mechanized surface plant consisting of second-hand machinery. The heart of the plant consisted of an air compressor that powered a variety of machinery in the underground workings. The compressor was a steam-driven unit capable of producing up to 1,000 cubic feet of air per minute, and two 150 horsepower return-tube boilers supplied the compressor with steam. The compressor and boilers were located at the nearby Monon Mine and installed in 1918. The air was piped underground where it powered a used steam hoist, a Cameron de-watering pump, and two rockdrills. In general, steam power was the principal power source employed up to the 1910s, after which electricity became popular. Given this, the use of steam during the Great Depression was an unusual practice.<sup>8</sup>

The Birdsey operation produced ore up to 1937, when it suspended operations for unknown reasons. In 1939 mining resumed with several changes made to the surface plant, the most significant of which was the installation of a salvaged automobile engine to power the compressor instead of the steam boilers. Up to this point, the company realized \$12,000 worth of ore per year. In 1940 Birdsey relinquished his lease, probably due to the exhaustion of ore, and an outfit named the Helmick, Wright Lease began where Birdsey left off. The new outfit, which consisted of O.B. and N.J. Helmick, and W.W. Wright, extracted only a paucity of ore before abandoning the Corsair.<sup>9</sup>

The outbreak of World War II created a high demand for industrial metals and some mines in the Creede district were re-opened to supply the necessary ores. The

---

<sup>6</sup> Colorado Mine Inspectors' Reports: Box 104053, Corsair Mine.

<sup>7</sup> Ibid.

<sup>8</sup> Ibid.

<sup>9</sup> Ibid.

demand faltered with the war's end and increased again during the 1950s. Despite this, the Corsair remained quiet, which may have been a testament to exhausted ore bodies. Not until 1974 did anyone take an interest in the property. By this time, Gary McCracken acquired the mine and leased the property to the B-N-B Exploration Company, which thought it had the potential to yield profitable ore. Within the year B-N-B rehabilitated portions of the underground workings and began strategic core sampling. According to mine inspectors' reports, the surface plant at the Corsair consisted only of a 12 by 20 foot shed, suggesting that all other structures and equipment were removed.<sup>10</sup>

B-N-B failed to find hidden ore bodies and abandoned the mine. In 1979 the Minerals Engineering Company attempted to do what B-N-B could not, which was to locate ore. Minerals Engineering leased the property from Eugene Wardell, who purchased the mine during the 1970s, and effected improvements in preparation for sampling. Minerals Engineering equipped the mine with a portable compressor, a ventilation blower, and an electric locomotive that ran on an improved mine rail line. For three years Minerals Engineering conducted exploration and minor development with little success. In 1981 Jack Nelson acquired the property and within a short time Minerals Engineering declared an end to its efforts, and the mine was permanently abandoned.<sup>11</sup>

The Corsair Mine site currently features two standing structures, various structural remnants, several rail lines and associated trestle remnants, and artifacts. Most of these surface plant remnants were constructed by the mine's last operators in the 1970s. The new surface plant components and associated bulldozing erased most features left from the mine's historical operations. Still, evidence of a few historical surface plant components currently remain, and these include the mine tunnel, two waste rock dumps, a concrete foundation, a clinker dump, and a privy pit (Features 1, 2, 3, 4, 6, and 7).

The tunnel portal is open and is 4½ by 6 feet in-the-clear. Miners employed by one of the 1970s operations installed 10x10 cap-and-post timber-sets lagged with planks for a length of approximately 40 feet to support the tunnel. An out-cast air current flows out of the tunnel, indicating that the workings are linked with another opening, probably the Alpha Mine, located upslope and southwest.

When miners drove the tunnel and conducted underground exploration early in the mine's life, they trammed waste rock out of the workings and dumped it at the tunnel portal's mouth. Over time this resulted in a waste rock dump (Feature 2) that manifested as a broad pad. Subsequent underground development by all operations generated additional waste rock, which miners deposited in several lobes radiating outward from the portal. The dump's northeast toe currently features numerous, small piles of rock created by the unknown party of lessees who sorted the material for low-grade ore in 1912.

---

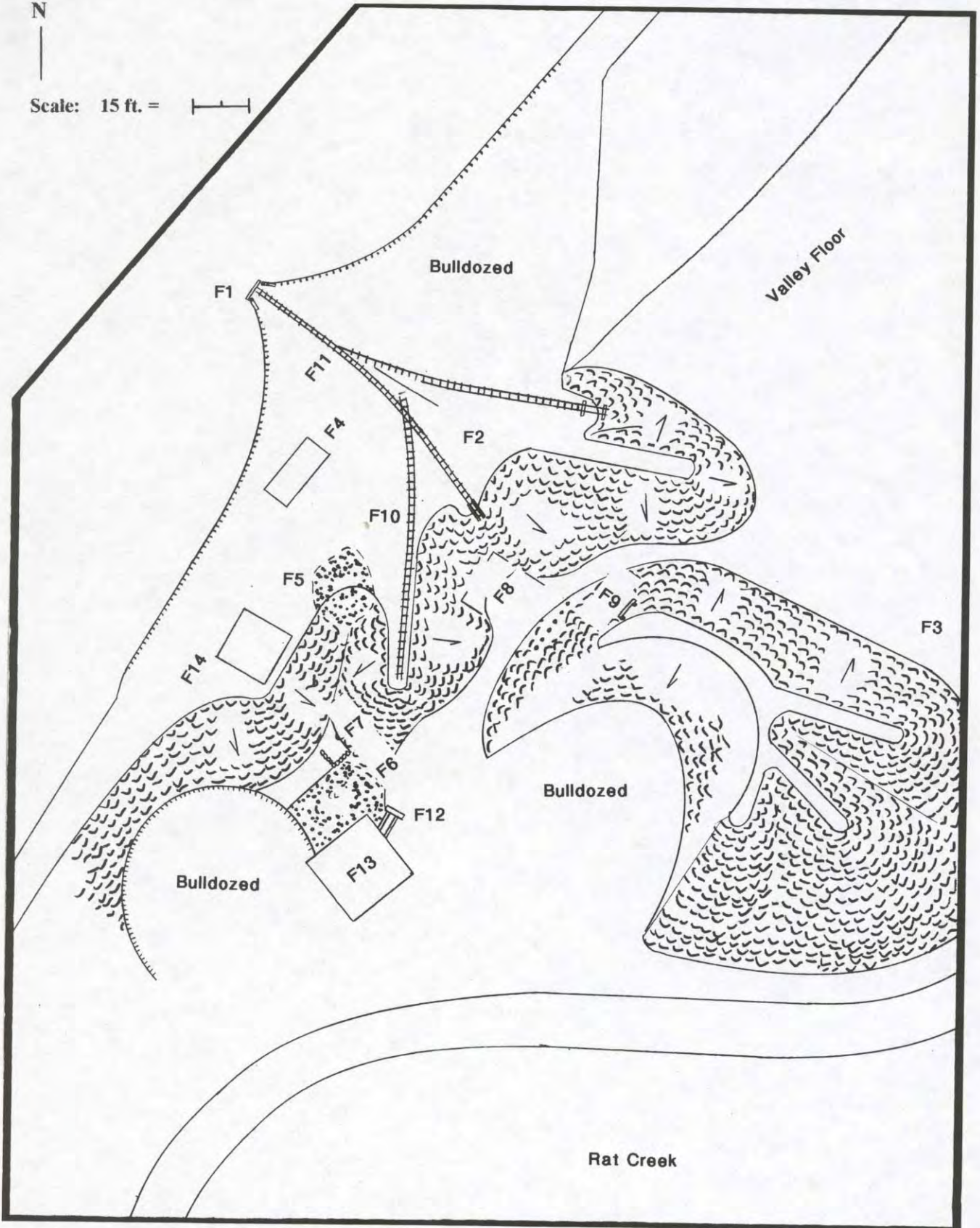
<sup>10</sup> Colorado Mine Inspectors' Reports: Box 104053, Corsair Mine.

<sup>11</sup> Ibid.

**CORSAIR MINE**  
**Site 5ML375**  
Creede Mining District, Mineral County, Colorado



Scale: 15 ft. =



One of the mine's early operations erected an ore bin at the dump's toe and input ore from a trestle that crossed over the structure. The ore bin was dismantled and is currently represented by a foundation 16 by 25 feet in area. A row of hewn log pilings defines the foundation's east side, and the west and north sides are defined by the remnants of plank walls buried by waste rock. The bin probably stood 12 feet high and its floor was elevated so wagons or trucks could back in from the south and stop underneath to receive loads of ore.

As continued underground development generated ever more quantities of waste rock, additional storage space became necessary. One of the mine's operators extended the trestle from the ore bin southeast over adjacent flat ground. There, miners ejected waste rock, resulting in a separate, second dump (Feature 3), which attained the voluminous size of 110 by 150 feet in area. The dump originally featured multiple lobes radiating outward from the trestle, and within recent decades the south portion was removed with heavy equipment.

The Corsair Mine site features the remnants of several other historical surface plant components. A concrete slab foundation lies embedded in the waste rock dump a short distance south of the tunnel portal. The slab is 8 by 18 feet in area and consists of portland concrete, indicating it was poured after around 1920 when portland concrete replaced natural lime concrete for general construction.<sup>12</sup> The foundation's function remains unknown, although it was probably poured in 1934 by the Birdsey operation for a building. The remnants of a clinker dump lies on the flank of the waste rock dump to the south. The dump, currently 18 by 18 feet in area, was larger, but it suffered significant disturbance when the mine's last operators dumped waste rock over the dump's western edge, and the south portion was destroyed when the underlying waste rock dump was removed. The last historic feature is a privy pit located on the north edge of the clinker dump. The pit manifests as a depression 6 feet in diameter and 1 foot deep in a waste rock bench west of the recent ore bin. A 9 by 9 foot rock alignment, which probably supported the privy building, encircles the depression. Waste rock buried portions of the alignment, and the pit is unlikely to yield significant buried deposits.

The remainder of the mine's surface plant components appear to date to the property's last operators. Several components, however, remain questionable as to their dates of construction. The first is a standing ore bin (Feature 13), which is the most prominent feature on-site. The bin is a sloped-floor, V-bottom structure 20 by 27 feet in area standing on a series of heavy posts buttressed by diagonal bracing. The heavy framework stands on timber footers embedded in waste rock. Miners used salvaged materials and assembled the structure with heavy nails. At the nadir of the V, the structure stands 8 feet off the ground, and is 22 feet high overall. Dump trucks parked underneath the bin and a mine worker threw a lever which opened up clam-shell gates, permitting ore to pour out. The structure's footprint is asymmetrical; the nadir of the V is located 9 feet from the east side. Miners input ore by pushing ore cars across a trestle (Feature 12) that terminated over the structure. Mine inspectors' reports failed to note the existence of the structure, and because documented production at the Corsair ended in 1940, it seems likely that the Birdsey operation erected the bin. The heavy use of

---

<sup>12</sup> Twitty, 2002:97.



salvaged materials suggests construction during or after the 1930s, when such practices were common.

The second questionable surface plant component is the rail line remnant (Feature 10) that extended out of the tunnel portal. Outside the portal the line forked. One branch, used to dump waste rock, veered east and terminated over a trestle that consisted of four log pilings. The other branch veered southeast, crossed a trestle, and terminated over the ore bin. Miners initially constructed the line by spiking 20 pound rails 18 inches apart to ties spaced every 3 feet. One of the mine's late operators dismantled a portion of the line and laid a second track (Feature 11) over the intact portion. The superimposition indicates that that the dismantled line was in place when the second track was laid. Further, the dismantled line served the ore bin, indicating that both were built at the same time.

The impact that the 1970s exploration operations effected to the Corsair site was significant. The top-surface of waste rock dump was scraped by a bulldozer, roads were incised into the adjacent hillslopes, portions of both dumps were removed, the area around the dumps' bases were scraped, and several new surface plant components were erected. One of the site's other prominent features is a 15 by 15 foot shed (Feature 14) erected during the 1970s. The shed served as a shop and storage facility. Shop clinker and other refuse was deposited nearby, resulting in a dump (Feature 5). One of the 1970s operations also installed the mine rail line (Feature 11) that currently overlays the earlier track. While the Corsair Mine retains little historical integrity, the sum of both new and historic surface plant components exemplify the continued series of occupations typical of many Western metals mines.

### Residential Occupation

The Corsair Mine site features no evidence of residence. The workers that operated the mine prior to the 1930s probably lived in the adjacent townsite of Sunnyside, and afterward workers probably commuted from elsewhere in automobiles or trucks.

### Corsair Mine Site Interpretation

The Corsair Mine, one of the Creede district's earliest claims, saw development over a protracted period of time. From the Creede district's earliest years until the property was abandoned in 1981, many mining outfits encountered ore in tantalizing quantities and attempted to make the mine pay. Only a few were successful. The two most successful operations included an unknown outfit that worked the property for a number of years during the 1900s, and the Birdsey operation that profited through much of the 1930s. During the 1970s several companies leased the property, and although they found little ore, they had the greatest impacts to the site.

Because the Birdsey operation and the 1970s companies affected the greatest changes to the site, little evidence remains to suggest how the early operators equipped and operated the mine. The 1930s Birdsey operation is poorly represented by the

material remains; however mine inspectors' reports documented the nature of Birdsey's facilities. Birdsey employed a significant degree of mechanization which consisted of an ingenious combination of archaic steam-powered technology and the innovative use of compressed air. Two boilers powered an antiquated steam-driven air compressor, which was a motive source made obsolete by the widespread application of electricity during the 1910s. The compressed air, in turn, was plumbed underground where it powered rockdrills, a de-watering pump, and a hoist formerly powered by steam. Such a use of compressed air required advanced and progressive engineering. In its attempts at minimizing expenditures during the capital-scarce Great Depression, the Birdsey operation rehabilitated the steam and compressor plant erected 16 years prior by the Monon Mining Company and relied on second-hand machinery, which permitted mechanization at little cost.

The companies that engaged in underground exploration during the 1970s adapted modern materials and machinery to traditional hardrock mining methods. They used portable gasoline and motor-powered machinery and deep-boring rockdrills. However, the companies continued to install timbering like miners in decades past, and they continued to rely on ore cars on mine rail lines for transportation underground.

The presence of the ore bin foundation and the standing ore bin indicate that the Corsair's early operations in fact realized ore. The lack of indisputably modern bins confirms that the companies that conducted exploration during the 1970s invested more capital into the property than they took out.

### ***Kreutzer Mine Site 5ML374***

Miners developed the Kreutzer Mine at the west base of McKenzie Mountain's south spur, where several minor drainages feed into Miners Creek. In terms of historical attributes, the site currently consists of two adits driven to tap the north end of the Alpha-Corsair Vein. Within recent decades, bulldozing and home construction compromised the site's historical integrity. The adits were driven into a steep southwest-facing slope vegetated with ponderosa pine and fir forest, while the floor of the Miners Creek drainage, immediately west, features patches of meadow between stands of pines and arctic willows. A heavily used Forest Service road and trailhead parking lot traverse the valley floor adjacent to the site.

### **Mining Operations**

H.M. Bennett and John C. McKenzie encountered silver ore near the mouth of Miners Creek in 1876, rousing some interest in the Sunnyside area. Thirteen years later, Nicholas C. Creede's prospecting party discovered the Holy Moses Vein, which touched off the general rush to the Creede district between 1890 and 1891. Despite the earliest activity around Sunnyside and the later district-wide rush, few prospectors closely examined the upper stretches of Miners Creek for additional ore bodies. As late as 1892

prospectors encountered samples of ore a mile up the drainage from Bennett and McKenzie's first strike.<sup>13</sup>

Who discovered the ore and the length of time they took to drive exploratory underground workings remain unknown. While historical information is scant, prospectors drove three adits into the hillside to locate the ore's source, probably during the early 1890s. The adits were driven at different altitudes, and the upper was 200 feet long while the lower two attained lengths of 400 feet each. The adits struck a mineral body that would be recognized later as the north end of the Alpha-Corsair Ore System. The vein lacked rich ore, but the ground was promising.<sup>14</sup>

The vein did not immediately yield rich ore and the excitement in the Creede district drew attention to the properties on the proven Amethyst and Holy Moses veins. As a result, interest in the Kreutzer property remained speculative. By the late 1890s John Ewing and a man known as Dr. Weiss acquired ownership and engaged in minor subsurface exploration, with desultory results.<sup>15</sup>

During the 1900s, the partners realized less than \$10,000 for their investment, and willing to risk no more capital, they let the property fall idle. By 1926 the Miami Mining & Milling Company, consisting of four workers, assumed ownership in hopes of discovering ore in the mineralized vein. They focused their efforts at the middle adit, while the lower adit collapsed in years past. At that time, the adit was 4½ by 6 feet in-the-clear and 800 feet long, and the surface plant consisted of a frame shop building and a frame boardinghouse near Miners Creek. After some underground exploration, the Miami outfit failed, like the operations before it, and permanently abandoned the mine.<sup>16</sup>

Today, the Kreutzer Mine's lower two tunnels, which are closed, and their associated waste rock dumps, are visible. One tunnel lies on near the floor of Miners Creek drainage, and the other lies a short distance upslope. The site, however, lost all historical integrity due to two factors. First, the areas encompassing the tunnels were bulldozed, and roads were graded through the site. Second, a house was built adjacent to the lower tunnel. To maintain the current residents' privacy, the tunnels were not closely examined and the site was not recorded in detail.

### Residential Occupation

No residential features or directly attributable artifacts were noted on-site. Archival information indicates that one of the prospecting operations erected a boardinghouse on the valley floor below the site, although the structure's location remains unknown.<sup>17</sup> Both operations worked the property briefly, which would have resulted in a limited impact and little evidence.

---

<sup>13</sup> Emmons and Larsen, 1923:187.

<sup>14</sup> Ibid.

<sup>15</sup> Colorado Historical Society Records, MSS Box 640, V24.

<sup>16</sup> Colorado Historical Society Records, MSS Box 640, V24; Emmons and Larsen, 1923:187.

<sup>17</sup> Emmons & Larsen, 1923; Van Horn, 2000: "Women Had Tough Jobs Running Boarding Houses in Old Mining Days".

### Kreutzer Mine Site Interpretation

Because the site experienced heavy disturbance, little evidence currently remains from the historic mining operations. The waste rock dumps associated with the two principal adits are small, reflecting limited underground workings, and the lack of evidence of an ore storage facility confirms that the mine produced little payrock. The absence of machine foundations, structural remnants, and artifacts, some of which would have survived the disturbance, indicates that the two operations were brief and relied on hand-labor.

### ***Monon Mine***

#### ***Sites 5ML319, 5ML369, 5ML370, 5ML373, and 5ML390***

The Monon Mine consists of a complex of five tunnels driven into the northwest and southwest flanks of Monon Hill. Miners drove the Monon Tunnel, the northern-most entry, into Monon Hill's northwest base. The Quintet Mining Company drove the Silver Horde Tunnel into the hill's southeast base, and the Magnusson and Manitoba tunnels lay between. The Eads Tunnel, the property's discovery adit, lies above all. Currently, the five tunnels are visible, but bulldozing and mining within the last 50 years destroyed their integrities. The Monon Mine tapped a complex group of ore bodies proximal to the Alpha-Corsair Ore System. The U.S. Geological Survey *Creede* topographic map mislabeled Monon Hill as lying east of the real Monon Hill, which is accurately depicted on geological report maps. Monon Hill features moderately steep slopes, lies east of the confluence of Miners and Rat creeks, and is vegetated with open meadow spotted with stands of fir trees and ponderosa pines. In 1999 U.S. Forest Service archaeologist Vince Spero recorded the Silver Horde Tunnel under the alternate name of the Big Six Mine and assigned site number 5ML319. Spero found the site ineligible for the National Register of Historic Places.

### Mining Operations

Little did H.M. Bennett and John C. McKenzie suspect, as they staked the first claims in the region on the impoverished Alpha-Corsair Vein, that directly across Rat Creek lay one of the Sunnyside area's richest ore deposits. Who first found ore on Monon Hill and when the property was developed remains unknown. The Monon Mine may have been initially developed during the Creede district's first boom in the early 1890s, although it saw significant activity during the second boom beginning in the late 1890s. During the second boom, a mining operation extracted enough ore to fill several railroad cars, but then suspended operations by 1912.<sup>18</sup>

The excitement over the Creede district's richest mines in the drainages to the east eclipsed interest in the Sunnyside area's properties, but as production in the big mines began to wane during the 1910s, Monon Hill came to the fore. Samuel Magnusson leased the Monon Mine in the mid-1910s, and in 1916 he struck a silver ore body larger and richer than anything previously found on the property. Meanwhile, lessees A.B. Collins

---

<sup>18</sup> Emmons and Larsen, 1923:193.

and Horace R. Wheeler were also engaged in exploration on an adjacent property owned by the Quintet Mining Company, on the south side of the hill. The lessees labored for a considerable period of time, and just as they contemplated giving up, they struck the richest ore body yet under Monon Hill.<sup>19</sup>

Either the leases of the two interests expired or they quit work in the mine, but their discovery lent fuel to the strong suspicion that more silver lay underground, waiting for discovery. In 1918 the Quintet Mining Company and the Monon's property's owners, M.J. LeFevre and M.J. Moses, apparently consolidated their holdings into the Monon Mining Company. George Manley acted as president, and T.H. Thomas, formerly president of Quintet, served as secretary.

The property's owners leased a portion of the group of claims to the Manitoba Leasing Company, and through the year four miners conducted underground exploration and struck another rich ore body they named the Quintet. At the same time, the Monon Mining Company hired a crew of 25 workers to extract the known ore. Profits ran high as up to 1,000 tons of payrock were brought to daylight per month and shipped to smelters at Pueblo.<sup>20</sup>

To facilitate the intense work underground, the Monon Mining Company financed the erection of a handsome surface plant. They installed a Franklin duplex steam-driven compressor powered by an 80 horsepower return-tube boiler in a compressor house, a shop where tools and hardware were fabricated and maintained, and an ore bin to hold payrock. Around this time, a change house and a boardinghouse were also built. The mine workings at this point consisted of several levels of horizontal drifts and crosscuts, a winze, and stopes. The Monon Tunnel, where the surface plant probably lay, accessed the lower workings, the Magnesson Tunnel, possibly driven by Samuel Magnesson, accessed the upper workings from a point south of the Monon. The Manitoba Tunnel, south of the Magnesson, accessed the intermediate workings. Much to the consternation of the regional mine inspector, the company installed a gasoline hoist underground to raise material out of the winze. Under direction of the inspector, the hoist's exhaust was routed out of one of the tunnels.<sup>21</sup>

Production continued into 1920, despite the fall in metals prices following the end of World War I. Profits ran so high that in 1920 the company upgraded the surface plant by replacing the single boiler with two powerful 150 horsepower return-tube units, and installed an Ingersoll-Rand Imperial Type 10 duplex steam compressor. At this time 17 miners were at work using Ingersoll-Rand and Denver Rock Drill drills to extract payrock. These surface facilities would be resurrected in the 1930s by Ben Birdsey who used them to power machinery at the nearby Corsair Mine.<sup>22</sup>

At the end of the year, ore still lay underground, but in 1921 the Monon company elected to lease the property to the Wabash Mines and Power Company. Monon probably did so because it extracted most of the ore, and with an end in sight, the directors may have felt that a lessee could still provide the company with income while absorbing the operating costs. Ten miners employed by Wabash continued to bring ore

---

<sup>19</sup> Larsen, 1929; Colorado Mine Inspectors' Reports: Box 104054, Monon Mine, Quintet Mine.

<sup>20</sup> Colorado Mine Inspectors' Reports: Box 104054, Monon Mine, Quintet Mine.

<sup>21</sup> Ibid.

<sup>22</sup> Ibid.

to daylight through the year. By 1922, the miners exhausted the ore and the complex Monon Mine became quiet.<sup>23</sup>

Like several of the Sunnyside area's mines, a small group of lessees took an interest in the Monon's formerly rich workings during the mid-1920s. In 1925 Norman Alspaugh leased the property, probably from the original owners, hoping at least to glean ore left by previous operations and to strike new ore bodies at best. The Alspaugh lessees experienced success in both arenas. For three years miners recovered ores and conducted limited exploration and in 1928 discovered a small ore chute that paid well for a brief time. The onset of the Great Depression in 1929 wrecked the economy and brought most mining in the region to a halt. With little demand for metals, the Alspaugh lessees quit work.<sup>24</sup>

In 1934 President Franklin Delano Roosevelt signed the Silver Purchase Act into law, hoping to both revive a failed mining industry and devalue the dollar. The jump in silver prices stimulated the re-opening of many formerly productive properties throughout the Rocky Mountains, and to a lesser degree in the Creede district. Curiously, despite the high value for silver and the Monon's record of production, no one took an interest in the mine for years. In 1937 the partnership Weaver and Oates signed a lease and picked up work where Alspaugh left off. They had to erect their own simple surface plant, which included one frame building and a portable Ingersoll-Rand compressor, because everything else was removed. Weaver and Oates mined \$50,000 worth of low-grade ore until 1940, when they may have been forced to quit because the Monon company sold the property to the Peso de Plata Mining Company. Peso apparently acquired an exhausted mine, because it leased the property to the partnership of Larson and Soward who profited for only one year before abandoning operations.<sup>25</sup>

The Monon Mine lay quiet through the 1940s, and during this time Wallace Wright, who worked the Corsair Mine across the valley, and J.J. Williams purchased the property from Peso with the intent of working it themselves. During the year they extracted small batches of ore which they apparently used to test a new concentration mill they were building. Either the mine failed to yield further ore or the mill did not function according to expectations. For these or other reasons, Wright and Williams let the property stand idle until 1953 when they began a part-time exploration campaign. For seven years the two men labored many weekends and evenings after work. During this time the mine's surface plant consisted of the frame building erected during the 1930s and a portable Worthington compressor, both located at one of the tunnels. By 1960, with no ore forthcoming, the partners quit their efforts, although they retained title to the property. In 1963 Philips Petroleum took an option on the Monon and began limited exploration in hopes of finding ore bodies missed by all of the previous outfits. Philips' failure served as the final statement that the property was in fact exhausted and the mine fell permanently quiet.<sup>26</sup>

---

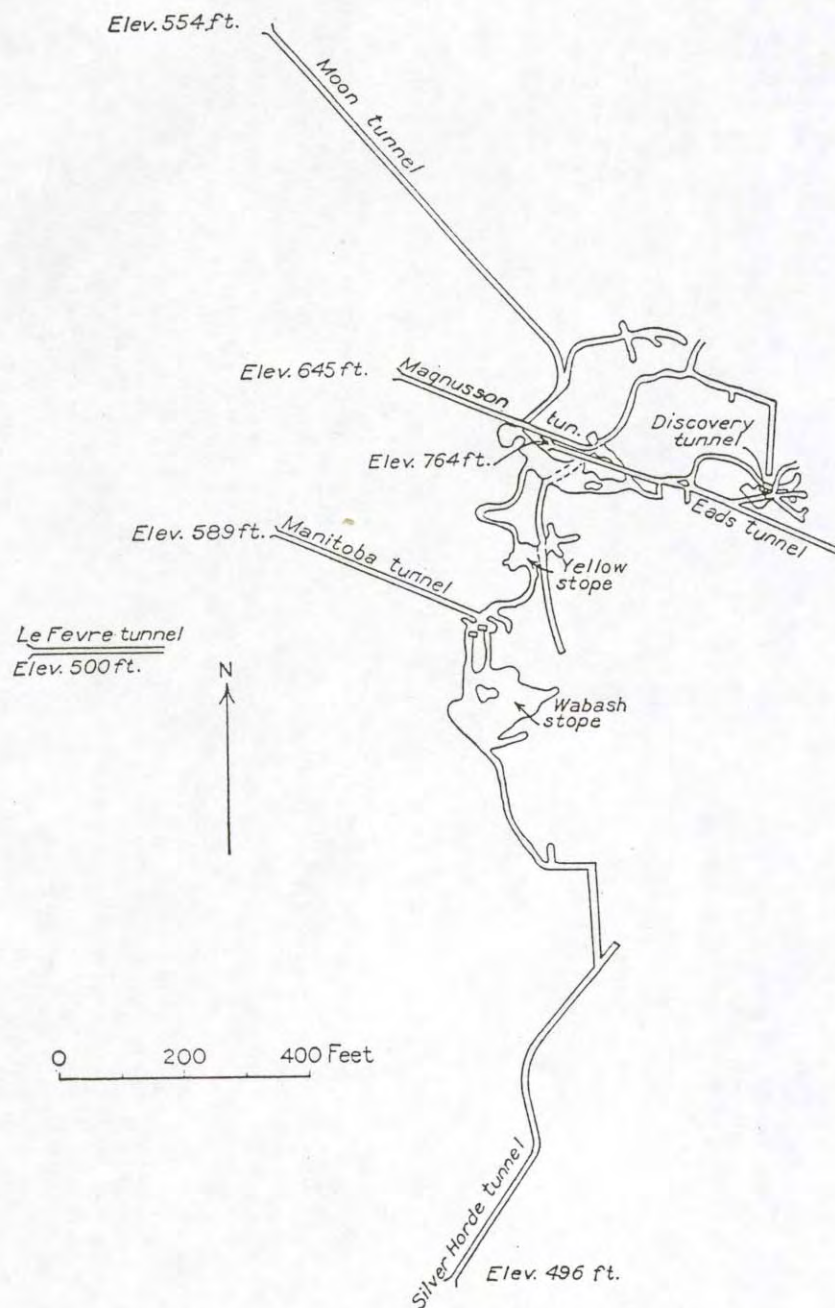
<sup>23</sup> Colorado Mine Inspectors' Reports: Box 104054, Monon Mine.

<sup>24</sup> Ibid.

<sup>25</sup> Ibid.

<sup>26</sup> Ibid.

Figure 7.3 Plan view of the Monon Mine workings. The large irregular masses in the illustration represent stopes where miners extracted ore. Independent groups of lessees apparently drove the five tunnels depicted, and as can be surmised, their efforts resulted in almost haphazard workings. While some form of surface plant stood at each tunnel portal during operations, little remains intact today. The Monon Tunnel was recorded as Site 5ML390, the Magnusson as Site 5ML370, the Manitoba as Site 5ML369, and the Eads as Site 5ML373. Vince Spero with the Forest Service recorded the Silver Horde Tunnel as Site 5ML319.



Today, Monon Hill features the Monon Mine's five principal tunnels that stand as a testament to the rich ore bodies worked in decades past. The mining activity during the 1950s, subsequent bulldozing, and road grading compromised the historical integrities of all of the tunnels. Collectively, however, the group forms an important component of the visual landscape in the Sunnyside area. Further, the Monon and Silver Horde tunnels feature standing structures built during or after the 1950s. While the buildings are not historic, they are similar in appearance to historic mine structures and contribute to the visual landscape and historic feel of the Sunnyside area. Because all of the tunnels lost their historical integrities, they were not recorded in detail, except for the Silver Horde Tunnel, which Vice Spero documented in 1999.

The Monon Tunnel (Site 5ML390) is the northern-most entry and served as one of two principal haulageways used by many of the mine's operators. The tunnel lies near the west base of Monon Hill, and it currently features a waste rock dump and a dilapidated ore bin built between the 1930s and 1950s. Much of the waste rock dump and surrounding area was bulldozed, and a road was incised through the area where the surface plant was located. The disturbance erased nearly all traces of the surface plant.

The Magnusson Tunnel (Site 5ML370) lies a short distance south of and upslope from the Monon Tunnel. It may have been driven in the mid-1910s by Samuel Magnusson, for whom the tunnel was named, and it accessed the mine's mid-level workings. During the 1950s a mining operation used a bulldozer to completely alter the waste rock dump and scrape down the area around the tunnel portal, which is currently closed. The operation erected log cribbing to retain waste rock around the tunnel portal and built an ore bin into the cribbing, and it cut a bench into the waste rock dump below the bin remnant. After the tunnel was abandoned, the bin was dismantled and the area was bulldozed again. Currently, the site features a partially intact waste rock dump, the log cribbing, the collapsed tunnel portal, and modern industrial refuse.

The Manitoba Tunnel (Site 5ML369) penetrates the southwest side of Monon Hill a short distance south of the Magnusson Tunnel. The Manitoba operation probably drove the tunnel during the late 1910s to intersect mid-level workings, and it may have been located on the property originally owned by the Quintet Mining Company. Like the other tunnels on Monon Hill, the Manitoba sustained heavy damage due to bulldozing, which erased evidence of the surface plant. Currently, a partially intact waste rock dump remains.

The Eads Tunnel (Site 5ML373) lies upslope from the Magnusson Tunnel, and since it was highest, it was probably the discovery adit driven before the others. Within recent decades a road was graded up the flank of Monon Hill, and the flat area where the surface plant was located, as well as the top-surface of the waste rock dump, were used to advantage and a switchback for the road graded over them. Currently, the collapsed tunnel portal and an intact portion of the waste rock dump remain. Several artifacts, including hole-in-cap food cans made with inner-rolled side seams, and aqua and amethyst bottle glass, indicate that the tunnel was active between the late 1890s and 1900s.

The Silver Horde Tunnel (Site 5ML319) was driven as the mine's other principal haulageway into the southwest base of Monon Hill. The site was heavily bulldozed, and it currently features two standing frame buildings, an ore bin, a mine rail line, and industrial refuse left during the 1950s or 1960s by an outfit engaged in exploration. The



presence of the ore bin suggests that the outfit may have extracted small quantities of payrock, as well. The entire waste rock dump, the area where the surface plant was located, and surrounding ground were heavily bulldozed. In addition, a bulldozer cut much of the slope over the site. The buildings stand near the tunnel portal, which collapsed, and the ore bin stands on the waste rock dump's flank, adjacent to a maintained road.

### Residential Occupation

None of the five tunnels comprising the Monon Mine featured evidence of residence on-site. Before the widespread embrace of the automobile, the mine's crew lived in two places. Some probably lived in the settlement of Sunnyside, which lay on flat ground at the confluence of Rat and Miners creeks adjacent and west. Other workers lived in a boardinghouse built by the Monon Mining Company in 1918 near or at the settlement of Sunnyside. The boardinghouse's location could not be identified, and recording the remnants of Sunnyside was outside of the scope of work for the Alpha-Corsair inventory. After automobiles became common in the 1930s, mine workers probably commuted from distant residences.

### Monon Mine Site Interpretation

The Monon Mine was a highly productive, long-lived producer worked intermittently over the course of 50 years. The mine workings constitute an interesting example of development and exploration conducted on a piecemeal basis by small groups of lessees, and by the consolidation of two neighboring companies. Traditionally, mining companies drove one or two tunnels to explore a claim's geology at depth. When miners encountered promising ground, they drove drifts and crosscuts in an effort to follow and define mineral bodies. When mining began, one main tunnel was used as a haulageway, and further exploration conducted from within. No so with the Monon Mine, which was developed through five tunnels at different altitudes. Prior to the property consolidation between the Monon and Quintet companies, each property owner leased their workings to partnerships that lasted for several years, at best. The groups of lessees conducted exploration and ore extraction as they saw fit, relying on accumulated knowledge and intuition, resulting in several tunnels per property and wandering underground passages. Samuel Magnusson probably elected to drive the Magnusson Tunnel while leasing Monon ground, and the Manitoba lessees apparently drove their own tunnel, probably on ground owned by Quintet. Prior to Magnusson and Manitoba, someone drove the Eads Tunnel high on the hill, and the Monon company drove the Monon Tunnel into the hill's base. When the Monon and Quintet companies consolidated their holdings, the property featured at least four tunnels that accessed, at differing elevations, a north-south trending series of stopes. The Silver Horde Tunnel may have been driven as part of the Monon effort, or it may have been a third operation consolidated into the Monon company. By the late 1910s the tunnel became the fifth entry into the Monon maze.

Unfortunately, the loss of evidence of the surface plants associated with the tunnels inhibits determination of the relationship of the different entries, and the means that the tunnels' operators supported their work underground. The Monon company

attempted to improve its operating efficiency by erecting a centralized surface plant that served most of the underground work. The plant consisted of a powerful air compressor supplied steam by a return-tube boiler, and it was upgraded with a second compressor and the replacement of the single boiler with two larger units. The plant also included a shop and change house. The compressors and boilers were production-class machines, and they represent a significant capital investment and the application of mechanization to increase the tonnage of ore mined per worker while reducing operating costs. But the use of steam, at a time when mining companies increasingly relied on electricity, reflects a conservative application of technology and probably a limited understanding of engineering. Two compressors and two boilers required stout foundations and a substantial building, which should have survived the disturbances caused to the sites, yet they could not be located.

### ***Sunnyside Mine*** ***Site 5ML376***

Site 5ML376 consists of the remnants of the Sunnyside Mine, which lies on the west side of Rat Creek at the east base of McKenzie Mountain's south spur. The site includes a tunnel driven into the base of a steep scree slope and other features lying on flat ground adjacent to the creek. The mine was worked sporadically between the 1890s and the 1970s. A few early surface plant components are evident although the late operations heavily altered the site with new surface plant facilities, compromising the site's historical integrity. The area surrounding the site is vegetated with riparian growth, fir trees, and Engelman spruce, and the banks of Rat Creek are lined with arctic willows. Historically, a road linked the site with the settlement of Sunnyside.

#### Mining Operations

When the Creede district boomed during the early 1890s, the rich Amethyst and Holy Moses veins commanded the attention of most prospectors. A few silver seekers, however, examined the Sunnyside area where the region's first strikes were made. Captain Freeman Thomen was one such prospector who found in 1892 what appeared to be a vein with potential on the east side of McKenzie Mountain's south spur. Sure that the vein would pay, Thomen approached local businessmen for capital to develop his claim and interested Thomas Vollintine and Thomas H. Davy.<sup>27</sup>

The Creede businessmen formed a company and furnished enough money to permit Thomen to begin driving a tunnel to intersect the vein at depth. Thomen worked into 1893 and was forced to stop when the Silver Crash caused the price of silver to plummet, followed by the onset of an economic depression. Vollintine and Davy were no longer willing to risk precious capital on the unproven Sunnyside and terminated the company. Thomen was sure that the vein contained rich silver and formed his own mining company.

After at least several years, Thomen intrigued another group of businessmen, this time from Fort Collins, including Albert Damm, Jeff McAnelly, Perry Learnard, and

---

<sup>27</sup> Colorado Historical Society Records, MSS Box 640, V24:p52.

M.H. Akin. Thomen may have attempted to solicit his company to non-mining business segments less impacted by the Silver Crash, such as those in the agricultural community of Fort Collins. With the new capital, Thomen and a small crew of miners drove the tunnel 750 feet where they finally struck the vein in 1901. As a reward for his perseverance, the vein featured rich ore as suspected, but the ore played out within a short time and Thomen elected to drive the tunnel another 300 feet. The additional exploration failed to locate further ore, Thomen suspended operations some time in the 1900s, and sold the property to D. Brennan. The Sunnyside certainly experienced further underground work and changes in operators and owners, but this history remains unknown due to a lack of archival information.

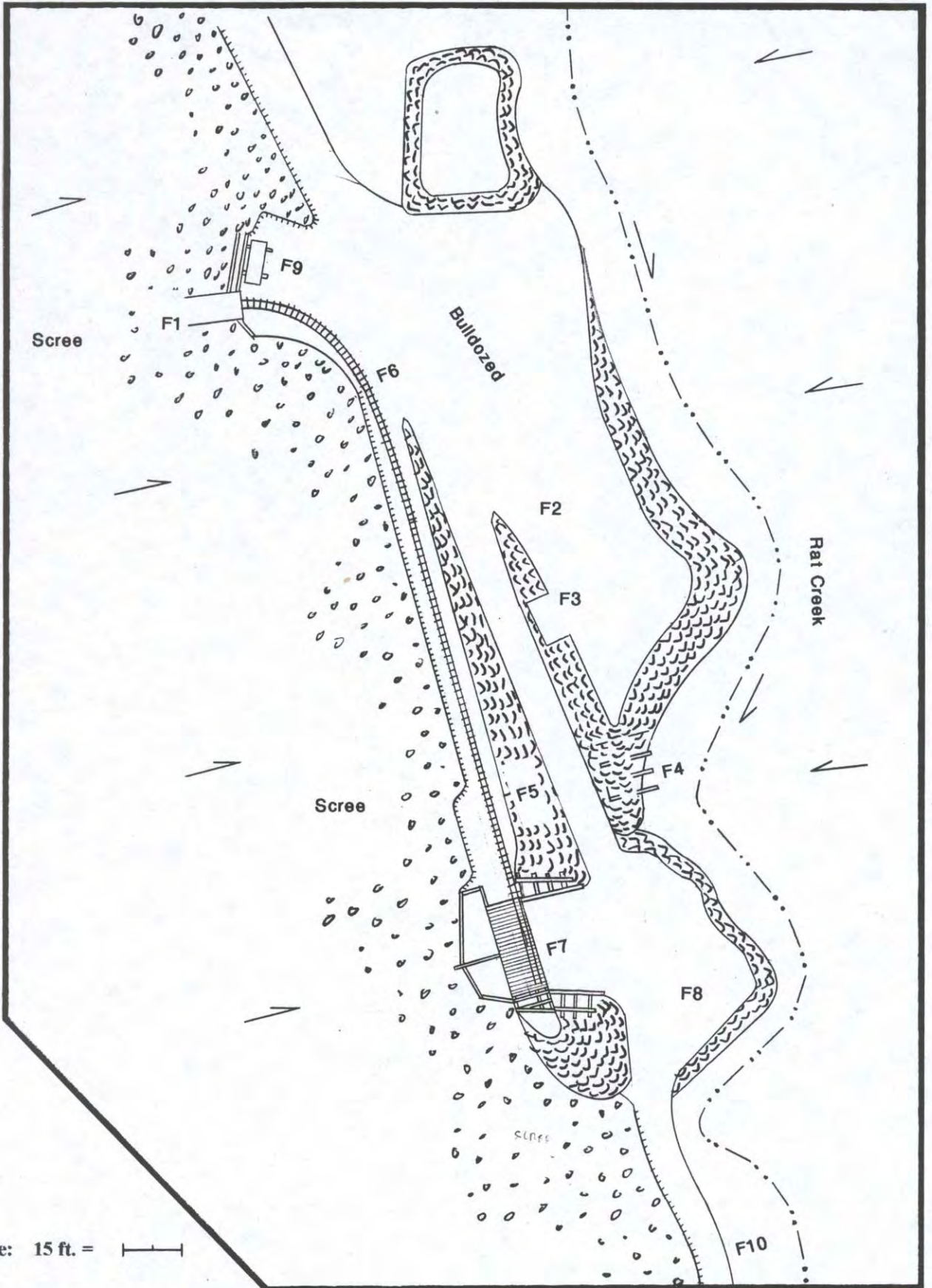
The Sunnyside Mine site currently features the remnants of surface plant components dating to several different operations, most of which were constructed between the 1960s and 1970s by an unknown mining operation. The earliest features on-site include the Sunnyside Tunnel, the associated waste rock dump, and two ore bin remnants.

The Sunnyside Tunnel (Feature 1) was originally driven by Freeman Thoman, and one of the mine's last operations modified the passage. Mine workers erected a series of 8x8 cap-and-post timber sets lagged with 3x10 planks on a foundation of bottom sills and cross-braces. The timbering is 8 feet wide, 33 feet long, and 8 feet high, and extends 15 feet out from the hillslope. Two buttresses extend diagonally off the end of the timbering. The buttresses, designed to retain the surrounding scree slope, consist of cribbing constructed with 4x4 timbers. The cribbing is 3 feet high and filled with gravel. Beyond the first 35 feet, the tunnel constricts to 4 by 7 feet in-the-clear, and descends. At the time Thomen drove the tunnel, standard interior clearances were around 3½ by 6½ feet in-the-clear, hence the tunnel's current size probably reflects enlargement. Ventilation tubing is currently suspended from the north ceiling and a compressed air line is suspended from the south ceiling. Someone installed a heavy gate 33 feet in from the portal, which is locked.

Miners associated with the Sunnyside's various operations trammed waste rock out of the tunnel and dumped it on the bank of Rat Creek, forming a broad, flat pad 60 by 160 feet in area (Feature 2). The pad of rock forced Rat Creek against the canyon floor's east side, and the mine's late operators used a bulldozer to scrape down the top-surface. The creek eroded adjacent portions of the dump.

The remnants of two ore bins lie on the dump's east portion. One of the mine's early operations constructed a 12 by 15 foot flat-bottom ore bin at the east end of the waste rock dump. Workers laid four log and timber footers over a waste rock pad, then constructed plank walls and a floor (Feature 4). Later operations buried the bin with waste rock. Currently, only portions of the floor and the north wall are visible. A later operation erected another flat-bottom ore bin (Feature 3), 6 by 12 feet in area, near the dump's center portion. The structure remnant currently consists of plank flooring supported by four posts nailed to a plank footer. Both bins stood adjacent to the road extending through the site.

SUNNYSIDE MINE  
Site 5ML376  
Creede Mining District, Mineral County, Colorado



The remainder of the site's surface plant components were erected between the 1960s and 1970s by the last operation. The most prominent features were parts of the mine's transportation and ore transfer systems. Mine workers relied on the traditional transportation system of ore cars on a mine rail line to move materials through the underground workings. Workers deposited a bench of waste rock (Feature 5) from near the tunnel portal south along the hillslope. The dump is 20 feet wide and 188 feet long, and mine workers built an ore transfer station at the south end. The mine's last operation excavated an area out of the scree slope with heavy equipment and constructed cribbing cells with 4x4 and 6x6 timbers, filled with rock, to retain the excavation's sides. Workers then constructed a plank deck, 9 by 30 feet in area, spanning the excavation. The cribbing cells supported the deck's ends.

Miners shuttled ore to the deck in cars that ran on a mine rail line (Feature 6). They constructed the rail line by spiking 25 pound rails 24 inches apart to ties spaced every 2 feet. Wooden ties are supplemented by steel ties embossed with "West Virginia", spaced every 5 feet. The rail line's gauge and the heavy-duty nature of the materials indicate that a locomotive pulled trains of cars out of the mine. When cars were stopped on the plank deck, a worker discharged the contents over the deck's east side, where an apron deflected falling rock into a parked truck.

Remnants of the compressed air system installed by the mine's last operation lie outside the tunnel. A receiving tank currently lies on timber bolsters adjacent to the tunnel portal. The tank was salvaged from an early operation and modified with welds by one of the mine's last operators. A 2 inch pipe extends from the tank into the tunnel. The lack of a compressor foundation indicates that a portable unit supplied the receiving tank with air.

The Sunnyside site features few artifacts except for the materials associated with the structure remnants. The artifact assemblage includes no early items and only a paucity of selenium bottle glass and vent-hole cans, reflecting activity between the 1920s and 1950s. When the mine's late operators scraped down the waste rock dump's top-surface, they bulldozed a heavy concrete machine foundation into Rat Creek. The foundation, made of portland concrete, is 3½ by 5½ feet in area and 4 feet high and features six anchor bolts. The foundation post-dates around 1920, indicated by the type of concrete, and the anchor bolt pattern indicates that it probably anchored a gasoline compressor.<sup>28</sup>

The site's last noteworthy aspects include a road and a pad of waste rock standing north of the principal waste rock dump (Features 8 and 10). The road ascends the drainage from the Sunnyside settlement, passes through the site, and terminates a short distance beyond. The waste rock pad, 33 by 65 feet in area, appears to have been pushed to its present location by a bulldozer.

---

<sup>28</sup> Twitty, 2002:97.

### Residential Occupation

The site features no evidence of residence. Miners working prior to the 1930s probably commuted from the settlement of Sunnyside on foot, while workers employed by later operations probably commuted from distant residences in trucks or automobiles.

### Sunnyside Mine Site Interpretation

Archival information pertaining to the history of the Sunnyside Mine is scant, therefore the material evidence form the prime body of information reflecting operations post-dating the 1910s. Unfortunately, even this evidence is incomplete, rendering interpretation of the site difficult. The two ore bin remnants indicate that, prior to the 1960s, two separate mining outfits produced ore. Both bins were small, flat-bottom structures, and they had the capacity to hold limited volumes of payrock. The eastern-most bin remnant may date to Freeman Thomen's ore production in 1901.

The dislodged compressor foundation lying in Rat Creek indicates that, after 1920, a mining operation employed rockdrills to drive underground workings. The compressor was a gasoline unit, which was a type popular between the 1910s and 1940s. Further, the compressor indicates that its parent company was moderately financed.

The surface plant remnants left by the mine's last operation retain characteristics, materials, a state of decay, and construction methods reflecting activity between the 1960s and 1970s. The last operation applied modern machinery to traditional underground mining methods. The machinery included a portable air compressor, a bulldozer or loader, a locomotive, a portable blower, and the use of trucks to transport ore and supplies. The recent structures and machinery, which were removed, reflect a moderate capital investment. Last, the ore transfer station indicates that the last operation produced some payrock.

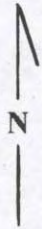
### ***Prospect Adit, Name Unknown Site 5ML372***

Prospectors drove an exploratory adit into a minor drainage on the west flank of McKenzie Mountain's south spur, near the Ace Mine. The site consists of a collapsed adit, the associated waste rock dump, and the remnants of a shop. The slope surrounding the site is forested with Ponderosa pines, fir trees, and Engleman spruce. Miners Creek lies a short distance downslope. Historically, prospectors accessed the adit by walking up the steep drainage on-site.

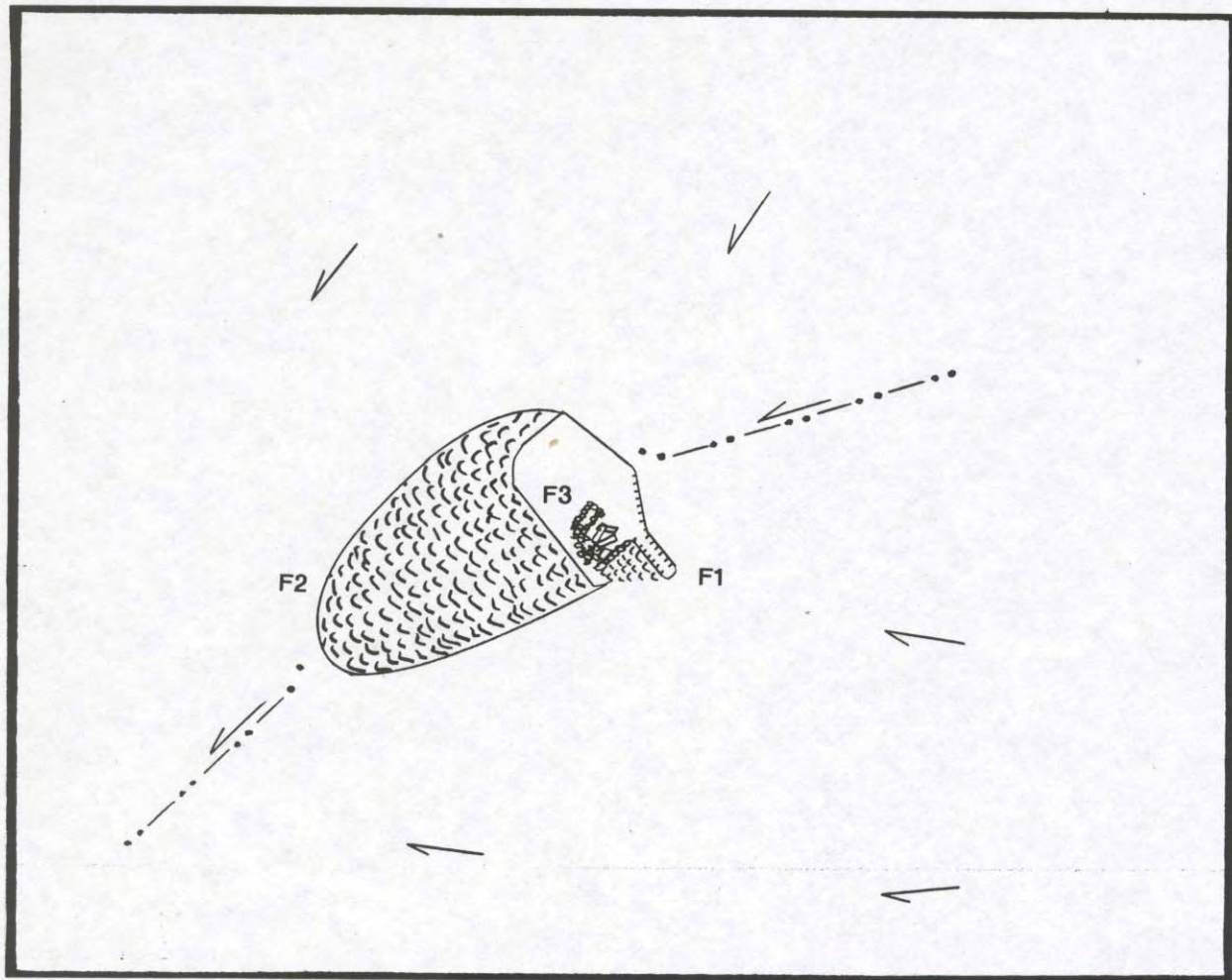
### Mining Operations

During the early 1890s, prospectors closely examined the south spur of McKenzie Mountain for silver veins associated with the Alpha-Corsair system. Following convention, to examine a claim's geology at depth, prospectors drove exploratory adits, which they abandoned when the adit failed to reveal ore. Site 5ML372 represents just such an effort.

PROSPECT ADIT, NAME UNKNOWN  
Site 5ML372  
Creede Mining District, Mineral County, Colorado



Scale: 15 ft. =



At the site, prospectors drove an adit into the surrounding hillslope at an oblique angle rather than straight in. They ejected waste rock into an adjacent drainage, resulting in a dump 40 by 65 feet in area. To provide an area for timber dressing and a blacksmith shop, the prospectors graded the dump's top-surface flat. The prospectors erected a simple 10 by 12 foot building for the shop adjacent to the adit portal. The structure consisted of a log frame sided with planks and corrugated iron built over dry-laid rock footers 2 feet high. The shop's upslope wall consisted mostly of rocks. After the adit was abandoned, the structure collapsed.

### Residential Occupation

No evidence of residence on-site exists. Prospectors commuted to the adit either from a nearby camp or from the settlement of Sunnyside approximately one mile south.

### Prospect Adit Site Interpretation

The physical remnants on-site are typical of unsuccessful prospect operations. The simple nature of the surface plant, including the shop, reflects a lack of capital. The absence of evidence of an ore storage facility indicates that the operation failed to produce payrock in economic volumes and the small waste rock dump represents shallow underground workings. Last, the above trends and the presence of wire nails indicate that the adit was worked for a brief period sometime after around 1891.

### ***Prospect Adit, Name Unknown Site 5ML368***

Prospectors drove a deep exploratory adit into the south flank of Monon Hill. The site consists of an open adit and the associated waste rock dump. The slope surrounding the site is moderately steep and south-facing, and features open meadow with stands of Ponderosa pines and fir trees. Within recent decades someone used a bulldozer to grade a road up to the adit portal and scrape down the waste rock dump's top-surface.

### Mining Operations

No archival information could be found pertaining to Site 5ML368, and as a result, the material remnants constitute the primary evidence reflecting past operations. Miners drove an adit from the end of a trench 6 feet wide and 18 feet long into a bedrock outcrop. The adit is 3 by 6 feet in-the-clear, and the Colorado Division of Minerals and Geology grated the portal closed.

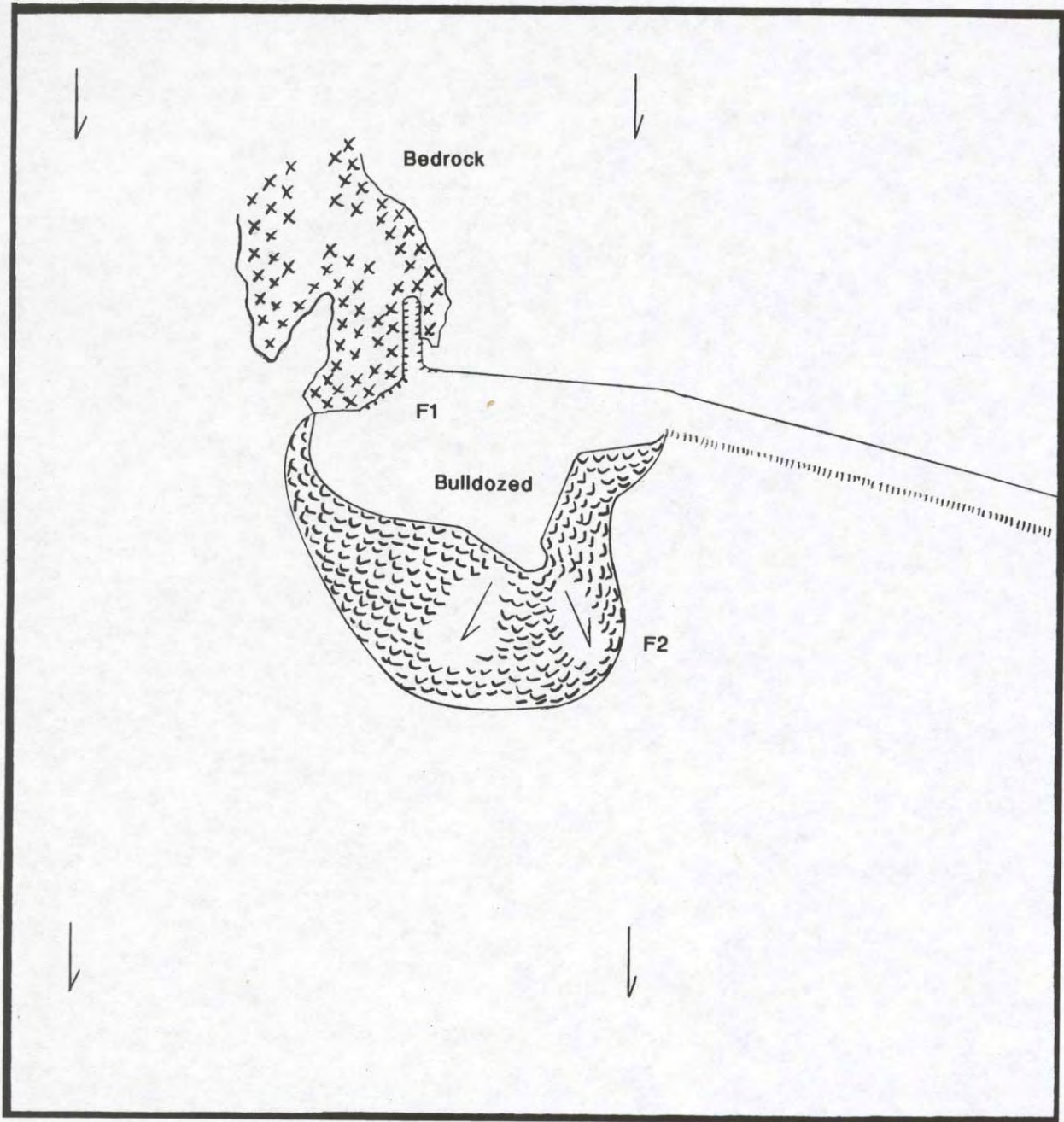
Miners deposited waste rock directly out of the adit portal, forming a large pad that features several lobes extending east and southeast. The prospect operation graded the dump's top-surface flat, which was scraped by a bulldozer, erasing most evidence pertaining to the surface plant's facilities. Structural materials lying on the dump and window glass on the dump's western portion indicate that a frame shop building stood near the adit portal.



**PROSPECT ADIT, NAME UNKNOWN**  
**Site 5ML368**  
**Creede Mining District, Mineral County, Colorado**



Scale: 15 ft. =



The site features few artifacts except for the structural materials. The combination of aqua bottle and window glass, and sanitary food cans indicate that prospectors drove the adit during the 1910s, possibly during the excitement created by a rich strike at the nearby Monon Mine.

### Residential Occupation

No evidence exists indicating that the prospectors lived on-site. Rather, they probably lived in the settlement of Sunnyside, which lay a short distance north.

### Prospect Adit Site Interpretation

Despite the heavy bulldozer disturbance, the site's physical remnants conveys some information regarding the prospect operation. The surface plant was simple and apparently consisted of a frame shop building and a mine rail line used to move materials into and out of the underground workings. The simple plant reflects a lack of capital, and the absence of evidence of an ore storage facility indicates that the operation failed to produce payrock in economic volumes. The moderate-sized waste rock dump represents fairly extensive underground workings and an intensive effort to locate ore. The adit's location on Monon Hill suggests that the operation sought ore bodies similar to those mined by the Monon Mining Company, and the associated artifacts reflect activity around the same time the Monon company struck payrock. In this context, prospectors probably drove the adit in a speculative effort during the excitement on Monon Hill.

## **Ore Systems West of the Amethyst Vein**

During the Creede district's initial boom, prospectors examined the hostile terrain that included the drainages of East and West Willow creeks. East Willow Creek flowed from north to south, West Willow Creek flowed from northwest to southeast, and they joined near the base of a group of mountains to form Willow Creek. Willow Creek continued south across flat land to the Rio Grande River a short distance away.

Several mountains bracketed East and West Willow creeks. What became known as Campbell Mountain separated the creeks, and the hummocky, massive Nelson Mountain rose to the north, separating the headwaters. Mammoth Mountain lay east of East Willow Creek, and Bachelor Mountain lay west of West Willow Creek. In sum, Bachelor and Mammoth mountains bracketed the creeks, and Campbell Mountain lay between. The Creede district encompassed the above landforms.

Prospectors and mining companies found that the district's two principal ore bodies, the Holy Moses and Amethyst veins, followed a pattern regarding the above topographical features. The Holy Moses Vein paralleled East Willow Creek and lay on the adjacent flank of Campbell Mountain. The Amethyst Vein paralleled West Willow Creek for two miles and lay on the adjacent flank of Bachelor Mountain. In sum, both veins lay a short distance west of and paralleled their respective creeks for great distances.

Once prospectors recognized the above geological patterns, most wealth seekers concentrated their efforts in the areas where the veins were known to lie. A few prospectors, however, began searching the landforms between the veins and respective creeks for additional, parallel ore systems. They probably reasoned that more north-south trending veins should exist between the Amethyst and Holy Moses formations. Similarly, some prospectors probably suspected that additional veins could lie west of, and parallel to, the Amethyst, on Bachelor Mountain. A few fortunate prospectors would prove these suspicions true and find minor ore systems between the Amethyst and Holy Moses veins, while most searching west of the Amethyst found nothing. Ironically, between the 1930s and 1960s, a mining company working deep underground in the Bulldog Mine in fact found the sought-after western veins, which did not reveal themselves on ground-surface.

***Prospect Complex, Name Unknown  
Site 5ML379***

Prospectors searching for ore bodies paralleling the Amethyst Vein drove a small cluster of workings into the south spur of Bachelor Mountain on the east side of Windy Gulch. In terms of historical attributes, the site currently consists of several adits and a shaft, associated waste rock, and the remnants of a simple surface plant. The site lies on a moderately steep scree slope punctuated by stands of old- and second-growth ponderosa pines and fir trees. The east-dipping floor of Windy Gulch lies south and downslope, and the flat tabletop of Bachelor Mountain rises above and north. Historically, prospectors accessed the property from the town of Bachelor by a pack trail that passed by several other small adits.

Mining Operations


During the early 1890s the geology of the Amethyst Vein was only beginning to be understood. With little knowledge to guide them, a party of prospectors staked a promising claim downslope from and south of the settlement of Bachelor and sought to examine the claim's geology at depth.

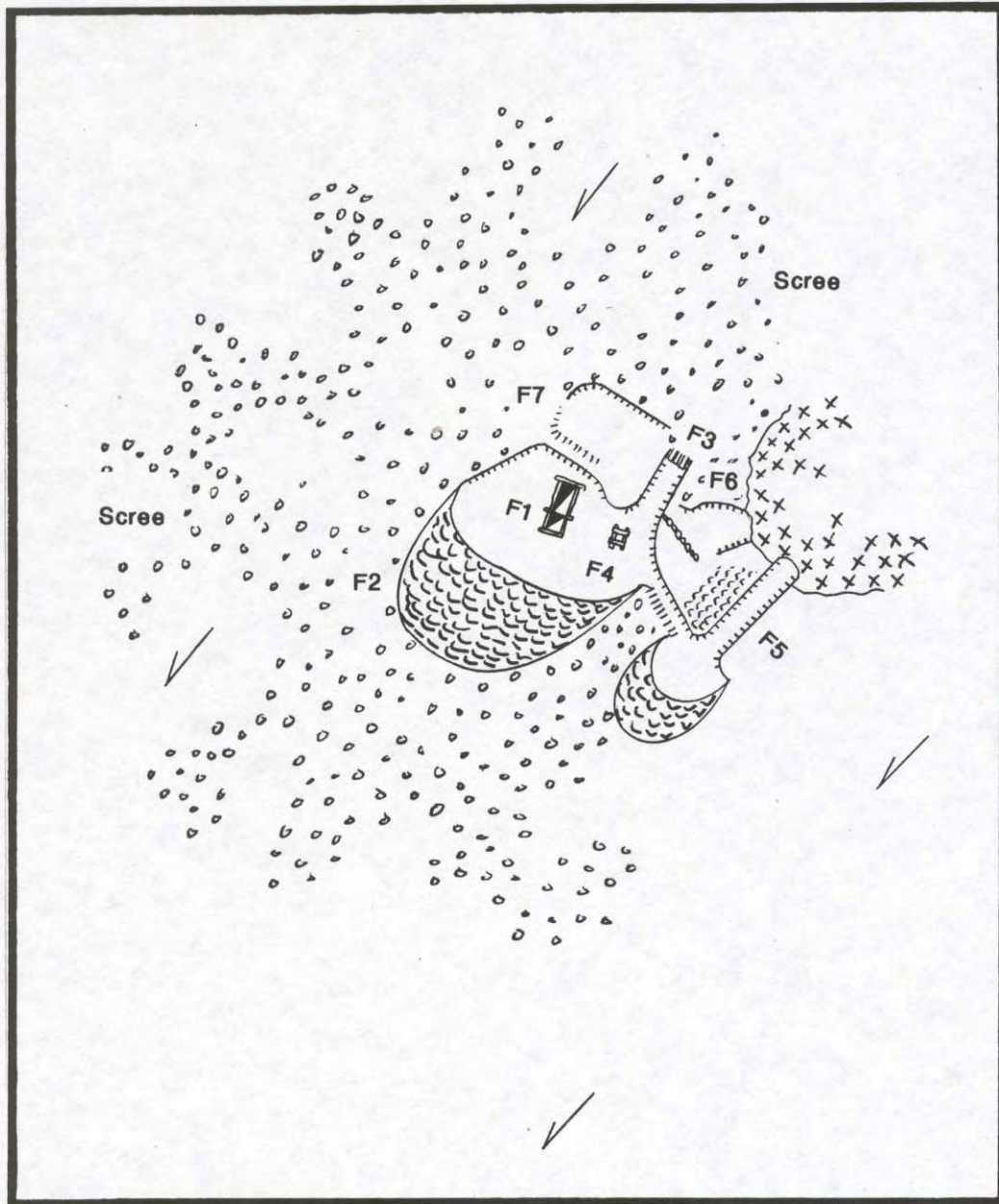
At first the prospectors labored by clearing scree away to expose stable ground from where they could drive underground workings. To explore the ground directly under foot, they sank a shaft, and to examine the ground under the adjacent hillslope they drove two short adits. The prospect shaft (Feature 1) is currently framed with a log bearer timber-set, and prospectors lagged the timbering with log cribbing. They divided the shaft into two compartments. The manway, 3 by 3 feet in-the-clear, forms the southern compartment, and the hoisting compartment, 3 by 6 feet in-the-clear, forms the north portion. The Colorado Division of Minerals and Geology carefully capped the shaft to preserve the timbering. The lack of evidence of a hoisting system indicates that a hand windlass was used to raise an ore bucket.

# PROSPECT COMPLEX, NAME UNKNOWN

Site 5ML379

Creede Mining District, Mineral County, Colorado

Scale: 15 ft = 



Prospectors drove one of the site's two adits northeast into the hillslope close to the shaft. The adit portal is currently supported by log cap-and-post timber-sets lagged with small logs. Prospectors used a combination of wire and cut nails to pin the logs together. The adit, 3 by 5 feet in-the-clear, extends 30 feet underground before terminating.

Prospectors dumped the waste rock generated by driving both the shaft and the adit at the mouths of the workings. The dump manifests as a pad primarily encircling the shaft. Since the adit was short, it contributed little rock. To provide an area for a shop and for dressing timbers, prospectors graded the dump's top-surface flat. The dump is 40 by 50 feet in area, and artifacts lie on the dump's surface and on its flanks.

Driving underground workings required a blacksmith shop where tools and hardware could be fabricated and maintained, which the prospect outfit erected between the shaft and the adit portal. They erected a small frame building or wall tent, built a forge within, and furnished necessary equipment. The building may have sheltered the shaft collar, as well. The shop is currently represented by the forge (Feature 4), blacksmith-related artifacts, and structural materials. Prospectors built the forge, 4 by 4 feet in area and 2 feet high, with hewn logs, they filled the interior with a basement of cobbles, and capped them with gravel.

In their efforts to examine the hillslope above the shaft, the prospectors drove a second adit (Feature 5) southeast from the site's other adit. The portal collapsed, leaving an area of subsidence 7 feet wide and 22 feet long. Waste rock was piled downslope.

The prospect outfit graded two platforms on both sides of the western adit, and their functions remain unknown. The eastern platform (Feature 7) is 9 by 18 feet in area and was graded with cut-and-fill methods at the base of a bedrock outcrop. In so doing, the prospectors minimized the risk of scree rolling onto the flat area. Over time, scree ultimately eroded onto the platform and it may currently conceal buried artifacts. The western platform was graded into the surrounding scree slope with cut-and-fill methods, and is 10 by 15 feet in area. It is possible that the platforms supported wall tents inhabited for a brief time, although the only associated artifact is a food can lying on the western platform. Small items such as nails may have been buried by scree.

Nearly all of the site's artifacts lie on the waste rock dump and include structural material left from the shop building, shop refuse, food cans, and a few mining industrial items. The mining artifacts include mine timbers and a miner's candlestick made from baling wire. The food cans could have been thrown onto the dump by prospectors residing on the site's two platforms.

### Residential Occupation

The site features evidence suggesting that the prospectors may have lived on-site for a brief period of time, and they probably relocated to the nearby town of Bachelor. The site features two platforms that may have supported wall tents, although they possess no evidence confirming such a function. Eight food cans lie scattered around the site, three of which contained institutional quantities of food, and more are probably buried underneath scree. Two trends may account for the presence of the food cans. The prospectors could have brought the small cans as part of lunch, or they may have been left from brief on-site residence. Given that the prospect crew was small, the large cans

could have supplied food over the course of several meals, suggesting some on-site residence. The overall number of cans, however, is disproportionate with the time required to develop the site.

### Prospect Complex Site Interpretation

The prospect complex represents a concerted but failed effort to locate ore. The surface plant, represented by the material remnants, consisted of temporary-class components typical of prospecting operations. The lack of evidence of a mechanized hoisting system serving the shaft indicates that prospectors relied on a hand windlass to raise an ore bucket. Windlasses were the most primitive type of hoisting system and had a depth capacity of 100 feet.<sup>29</sup> The site's intact adit is 3 by 5 feet in-the-clear, and mining engineers considered adits less than 3½ by 6 feet in-the-clear to be for prospecting only. The blacksmith shop also met temporary-class criteria. The shop was small and prospectors used local materials to construct a primitive forge. The lack of machine foundations and artifacts indicates that the shop was equipped with hand-tools.

The shaft, however, is unusual in form, and it represents an expectation of striking ore and planning for greater underground development. Typical prospect shafts were 4 by 8 feet in-the-clear and usually featured one large compartment. The shaft on-site was a total of 4 feet wide and 10 feet long and featured a utility and a hoisting compartment. The hoisting compartment's size was 3 by 6 feet in-the-clear, which almost met production-class criteria. Together, dividing the shaft into two compartments, including the large hoisting compartment, reflects intentions greater than merely prospecting.<sup>30</sup>

The small waste rock dumps indicate that the underground workings associated with the adits and the shaft were limited, and the absence of evidence of an ore storage facility reflects a lack of production. The simple, temporary-class surface plant, the paucity of artifacts on-site, and the shallow underground workings represent limited capital and brief occupation.

The presence of food cans, especially those that contained institutional quantities of food, and the two platforms that could have supported wall tents, suggest that the prospectors lived on-site for a brief period of time. However, much more time was required to drive the extant workings than is currently represented by the few food cans, indicating that they lived off-site during most of the work.

The material evidence on-site reflects activity during the Creede district's early years, between 1890 and 1891. The food cans were hole-in-cap vessels manufactured with lapped side-seams, except for one made with an inner-rolled side-seam. During the 1890s food packing companies phased out cans made with lapped side-seams and replaced the vessels with units assembled with inner-rolled side-seams. During the early 1890s wire nails phased out cut nails for general construction, and the combination of cut and wire nails on-site reflects this transition period.<sup>31</sup>

---

<sup>29</sup> Twitty, 1999:43.


<sup>30</sup> Ibid:39.

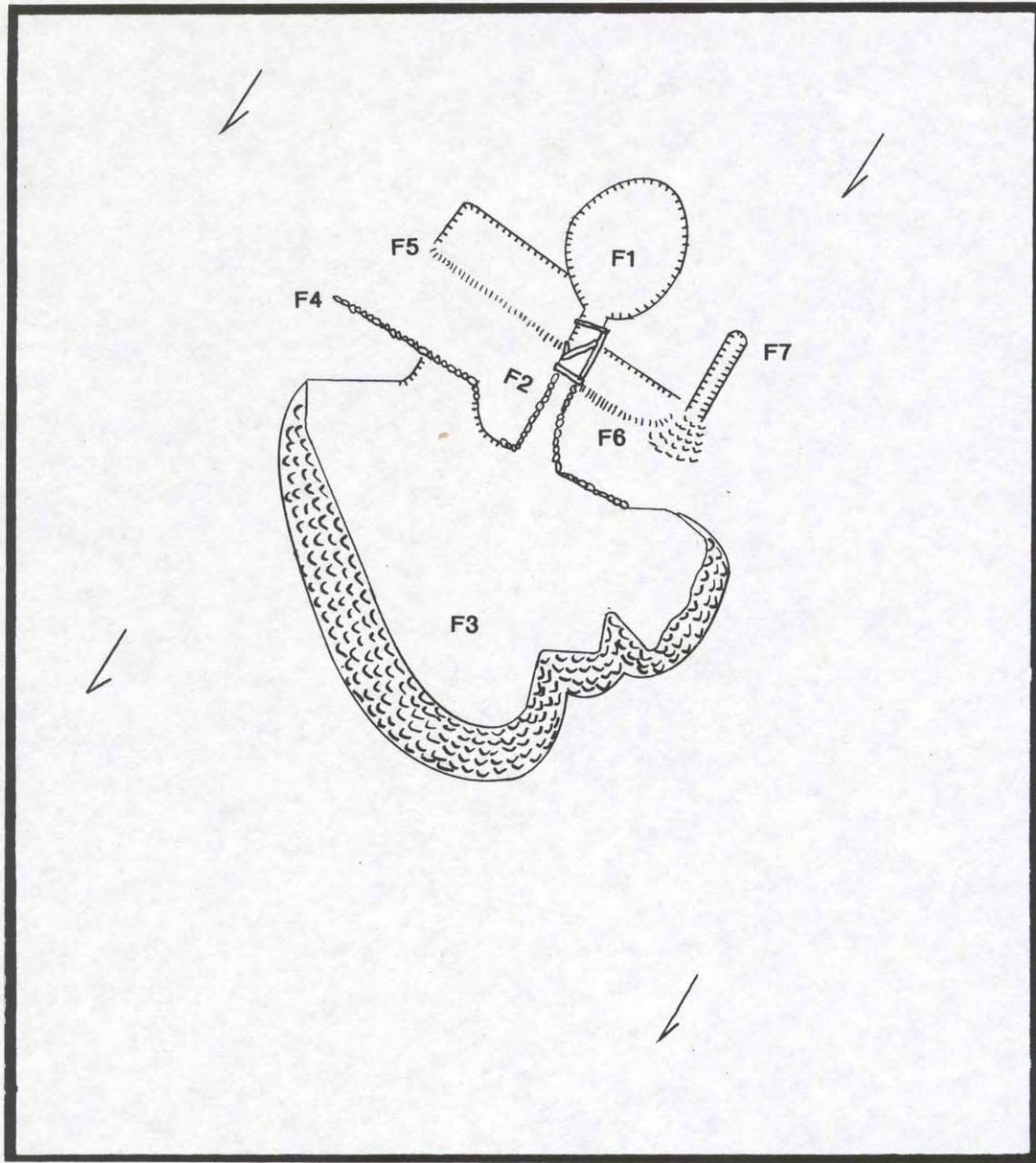
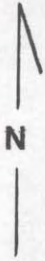
<sup>31</sup> For references for dateable artifact age ranges, see Appendix 1.

PROSPECT SHAFT, NAME UNKNOWN

Site 5ML378

Creede Mining District, Mineral County, Colorado

Scale: 15 ft = 



***Prospect Shaft, Name Unknown***  
***Site 5ML378***

Prospectors sank a shaft in hopes of finding ore on the south spur of Bachelor Mountain, on the east side of Windy Gulch. In terms of historical attributes the site currently consists of a shaft, associated waste rock, and the remnants of a simple surface plant. The site lies on a moderately steep scree slope sparsely vegetated with grass. The east-dipping floor of Windy Gulch lies south and downslope, and the flat tabletop of Bachelor Mountain lies a short distance north. Historically, prospectors accessed the property from the town of Bachelor by walking the short distance down from a historical road traversing the edge of the flat tabletop. Residents of Bachelor threw some of their refuse from the road downslope, manifesting today as a widely disbursed assemblage of a few food cans and bottle fragments.

Mining Operations

No archival information could be located pertaining to the site, hence the material evidence serve as the primary source of information regarding past activity. During the early 1890s the geology of the Amethyst Vein was only beginning to be understood and prospectors searched for ore bodies in seemingly likely areas. A party of prospectors at first excavated a prospect trench (Feature 7) to examine bedrock underlying the scree and soil, and after probably revealing promising minerals, elected to sink a shaft to examine the geology at depth.

They excavated a pit through the scree into the underlying soil and sank the shaft in the pit's floor (Feature 1). They cut a trench (Feature 2) south from the shaft for a distance of 30 feet through the surrounding hillslope to serve as an avenue to push loaded wheelbarrows out to the waste rock dump. The prospectors lined the first 20 feet of the trench's walls with dry-laid rock masonry, and erected log cap-and-post timber sets to support the remainder of the trench's walls. The timbering was covered with logs and it featured a plank door. The blocky, loose bedrock around the shaft collapsed, leaving an area of subsidence 25 by 30 feet in area and 20 feet deep, and the trench's timbering collapsed, allowing portions of the walls to slump in.

The prospectors dumped waste rock generated from sinking the shaft at the trench's mouth, resulting in a broad, irregular pad 50 by 90 feet in area (Feature 3). The dump slopes away from the trench and it possesses a hummocky texture, reflecting the use of wheelbarrows. Artifacts in the forms of general industrial refuse, structural materials, and food cans lie scattered across the dump, and they extend onto the scree slope below.

The prospect outfit graded several platforms on-site for support facilities and possibly a residence. They graded a gently sloping flat area on both sides of the trench's mouth and erected a dry-laid rock wall to retain the cut bank. The wall (Feature 4) is 36 feet long and 4 feet high, and portions are currently collapsed. The prospectors also graded two additional platforms on the east and west sides of the shaft. The western platform (Feature 5) is 12 by 34 feet in area, and when the shaft collar collapsed, the platform's east corner slumped in. Several nails lying on the platform reflect the presence of a structure. The eastern platform (Feature 6) is 10 by 18 feet in area, and one



hole-in-cap food can lies downslope. Both platforms were graded with cut-and-fill methods, and due to the light density of artifacts, their exact functions remain unknown. However, the presence of food cans downslope on the waste rock dump suggests that wall tents may have stood on the platforms.

### Residential Occupation

The site features evidence suggesting that the prospectors may have lived on-site for a brief period of time before probably relocating to the nearby town of Bachelor. The site's two platforms lack evidence of blacksmithing and other functions, and few structural items remain, suggesting that they supported wall tents. Twenty-two food cans lie scattered around the site, eight of which contained institutional quantities of food, and more are probably buried underneath scree. Two trends may account for the presence of the food cans on-site. The prospectors could have brought the small cans as part of lunch, or they may have left them during on-site residence. Given that the prospect crew was small, the large cans could have supplied food over the course of several meals, suggesting some on-site residence. The overall number of cans, however, is disproportionate to the time required to develop the site.

### Prospect Shaft Site Interpretation

The site features several characteristics uncommon to many prospect shafts. The arrangement of the trench excavated to access the shaft is very unusual. Typically, prospectors cleared soil away from bedrock as described above and installed cribbing to retain the shaft's walls. They ejected waste rock by upending an ore bucket downslope from the shaft, which formed a pad of rock adjacent to the shaft. As the dump's height increased, prospectors added additional cribbing tiers to keep the rock out of the shaft. Instead of following convention, the prospectors on-site excavated the trench and shuttled waste rock out to the trench's mouth in wheelbarrows where they dumped the material. Excavating the trench was labor-intensive, as was transferring waste rock from the ore bucket into wheelbarrows and pushing the wheelbarrows away.

The prospectors on-site engaged in the labor-intensive practice of erecting rock walls to retain material out of the shaft and off an adjacent flat area. The rockwork may have been an ethnic tradition imported from Cornwall, Ireland, or Italy where such practices were common, or from prospectors' conventions of using rocks instead of logs in woodless Great Basin mining districts.

Most of the site's other characteristics are typical of unproductive, exploratory shafts. The prospect outfit erected a remarkably simple surface plant consisting of portable facilities. The lack of blacksmith refuse suggests that the shop, a necessary facility for all underground operations, was located off-site. The site also lacks evidence of a mechanized hoisting system, indicating that the prospectors relied on a hand windlass to raise rock out of the shaft. Windlasses were the most primitive type of hoisting system and had a depth capacity of 100 feet.<sup>32</sup>

The small waste rock dump indicates that the underground workings associated with the shaft were limited, and the absence of evidence of an ore storage facility reflects

---

<sup>32</sup> Twitty, 1999:43.

a lack of production. The simple, temporary-class surface plant, the paucity of artifacts on-site, and the shallow underground workings represent limited capital and brief occupation.

The presence of food cans, especially those that contained institutional quantities of food, and the two platforms that could have supported wall tents, suggest that the prospectors lived on-site for a brief period of time. More time was required to drive the extant workings than is currently represented by the few food cans, indicating that they lived off-site during most of the work.

The material evidence on-site reflects activity during the Creede district's early years, between 1890 and 1891. Most of the food cans were hole-in-cap vessels manufactured with lapped side-seams, and the rest were made with inner-rolled side-seams. During the 1890s food packing companies phased out cans made with lapped side-seams and replaced them with units assembled with inner-rolled side-seams. During the early 1890s wire nails phased out cut nails for general construction, and the combination of cut and wire nails on-site reflects this transition period.<sup>33</sup>

### ***Exchequer Tunnel*** ***Site 5ML377***

The Exchequer site lies at the base of a bedrock cliff on the east side of a natural bowl bracketed by rock spires, on the west side of Bachelor Mountain's south spur. The areas between bedrock outcrops and cliffs are steep scree slopes sparsely vegetated with ponderosa pines and fir trees. The natural bowl constricts below the site into a steep, scree-choked chute that opens onto the railroad bed that linked the Nelson Tunnel to the north with the Humphreys Mill located south. West Willow Creek lies far below the railroad grade, and the cliffs and spires over the site rise to the tabletop of Bachelor Mountain. In terms of historical attributes, the site currently consists of an adit, associated waste rock, and the remnants of a simple surface plant. Historically, prospectors accessed the property from the Bachelor Mine, located north, by a pack trail.

### Mining Operations

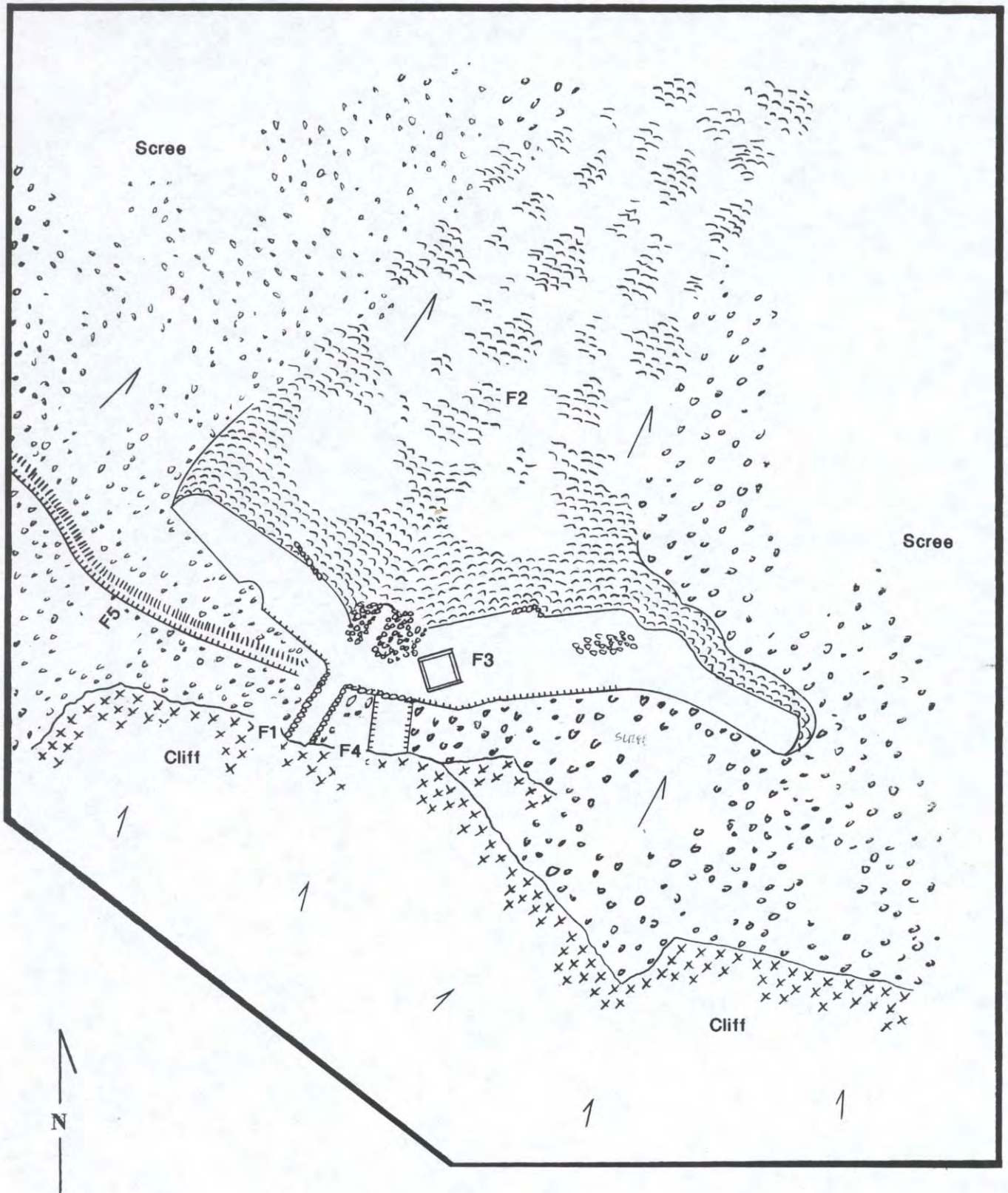
Archival information pertaining to the Exchequer operation is scant. Prospectors first encountered a possible vein among bedrock cliffs south of the Amethyst Vein and elected to drive an adit to intersect the formation at depth. It remains unknown when the prospectors began work, but by the 1900s they drove the adit approximately 1,000 feet where they finally, after exhausting effort, struck the vein. As suspected, the vein featured copper, confirming assays run on surface samples the prospectors collected. Much to the disappointment of the prospecting outfit, not only was the vein barren of other metals, the copper's content was uneconomical. By 1912 at the latest the operation was abandoned.<sup>34</sup>


---

<sup>33</sup> For references for dateable artifact age ranges, see Appendix 1.

<sup>34</sup> Emmons and Larsen, 1923:171.

**EXCHEQUER TUNNEL**  
**Site 5ML377**  
Creede Mining District, Mineral County, Colorado



Scale: 15 ft. = 

Today, the Exchequer site features the remnants of the exploratory operation, and they remain relatively undisturbed due to the site's remote nature. The adit is open and unobstructed and prospectors drove it directly into a northwest-facing bedrock cliff. They cleared a trench 22 feet long through scree to the cliff face and erected dry-laid rock walls to retain the trench's walls. At the portal the adit is 4 by 6 feet in-the-clear. Prospectors hammered a series of sprags into drill-holes driven along the north ceiling to hang ventilation tubing. Mine rail ties, made from split logs, and preserved industrial artifacts currently lie within.

Prospectors used ore cars on mine rail lines to dump waste rock at the adit portal, forming two lobes that extend along the hillslope in both directions. The remnants of dry-laid rockwork erected to retain the dump's shoulder is evident in places. The dump is 180 feet long and extends down the drainage at least 300 feet where prospectors erected log cribbing to keep rock from rolling onto the rail bed below. Prospectors created two piles of boulders, removed from underground, on the dump's shoulder near the shop, and two more piles on the dump's ends. Artifacts lie scattered across the dump.

Prospectors erected a crude shop on the waste rock dump north of the adit portal where they maintained and manufactured tools and hardware. The structure was a 9 by 9 foot shed supported by a frame consisting of four raw log posts at the corners with log cross beams nailed between. For siding, workers nailed a series of vertical logs to the frame, and used an axe to taper the ends of the logs to permit nails to pass through. Gaps between the logs were sealed with canvas or tarpaper nailed to the walls' interiors and exteriors. The roof consisted of a series of logs clad with sheet iron. A gravel-filled dry-laid rock forge was located in the south corner, an anvil block stood along the southeast wall, and a bellows lever was fixed to the north corner. A doorway breached the south wall. The shop's roof collapsed and the structure was shifted, probably by an avalanche, west off its foundation logs. Ventilation tubing lies stacked north and east, and artifacts surround the structure.

The prospecting outfit constructed a three foot wide pack trail from the Bachelor Mine to access the remote property. They used cut-and-fill methods where the trail crossed soil and excavated benches where the trail crossed scree slopes.

### Residential Occupation

To avoid an arduous commute by foot, the prospectors erected a 10 by 15 foot wall tent on-site as their residence. They graded a rough cut-and-fill platform in the scree slope against the cliff upslope from the shop and erected a dry-laid rock wall to retain the platform's fill material. Because the scree could not be adequately leveled, the residents stacked rocks to support the wall tent's plank floor.

Some structural and domestic refuse remains today and the platform is blanketed by scree, which almost certainly obscures additional items. The residential platform features only a paucity of structural debris. Because the property was difficult to access, it is unlikely that, when operations ceased, workers dismantled and hauled away the building materials. Therefore, the light density of structural items represents a wall tent. The structure featured a total of 150 square feet, which indicates that the crew consisted of two miners. During the time that the Exchequer was active, mine workers required at

least 60 square feet each, not including space for general domestic facilities such as a kitchen area and household goods storage.<sup>35</sup>

The domestic refuse consists primarily of food cans, bottle fragments, and a few household items. Undoubtedly, additional items are buried under surrounding scree and more are buried in waste rock downslope. The assemblage of artifacts reflects a few trends regarding residential occupation.

The site features seven food cans, three of which contained institutional quantities. The large cans reflect the preparation of meals intended to serve more than one individual at a time. If all of the cans' contents were not used for a single meal, then they were probably stored for later consumption. The presence of the cans and the absence of butchered bones reflect a reliance on preserved foods, which was a practice common at remote prospect operations. The site also featured three one-quart liquid cans, which could have contained industrial or cooking oil, or syrup. A baking pan indicates that the residents prepared baked goods and a coffee pot lid reflects the consumption of coffee. The prospectors apparently consumed a typical Victorian diet consisting of baked items and vegetables, fruit, meats, and stews available as canned goods. The assemblage of bottle fragments represents beer bottles and a condiment jar. The quantity of fragments is light and reflects the consumption of small quantities of liquor.

The domestic artifact assemblage also includes a boot remnant, a broom, and a portable sheet-iron stove. The broom represents an effort to keep the tent clean and the stove was a sound choice given the site's difficult access.

In general, the domestic artifact assemblage lacks articles superfluous to basic inhabitation, which suggests several trends. First, the site's remote nature discouraged hauling anything other than necessities to the operation. Second, the operation suffered from a lack of capital, which is also represented by the primitive nature of the surface plant. Third, the adit was driven on a seasonal basis due to the site's remote nature, and residence was therefore part-time. Last, the site was inhabited by male workers who focused their efforts on work instead of their residence.

### Exchequer Site Interpretation

The Exchequer site represents a substantial but unproductive prospect operation that labored under the assumption of striking ore. The surface plant erected by the outfit consisted primarily of temporary-class, portable facilities and equipment, although the adit was production-class in size. Because prospectors determined the vein they found featured copper at least, and other metals at best, they drove the production-class adit from the outset of operations. Doing so was wise because should the mine realize production, a smaller adit would serve as an impediment, possibly requiring costly enlargement. The Exchequer Tunnel was 4 by 6 feet in-the-clear, which met the production-class specifications recognized by mining engineers.<sup>36</sup>

The remainder of the Exchequer's surface plant consisted of temporary-class components. The shop was small and equipped with hand-powered appliances and tools, and as such represents facilities found at prospect operations. Production-class shops

---

<sup>35</sup> Hardesty, 1988:13.

<sup>36</sup> Twitty, 1999:17.

were usually larger and equipped with at least several mechanical appliances to expedite the handling of materials. The surface plant lacked additional structures except for the temporary residential building, and the absence of machine foundations indicates that prospectors accomplished nearly all work on-site by hand. The presence of ventilation tubing does, however, reflect the use of a mechanical blower to supply the workers underground with fresh air. The unit was undoubtedly hand-powered. The prospect outfit relied on the traditional transportation system of ore cars on a mine rail line to move materials through the underground workings. The shape and size of the waste rock dump, and artifacts including rails, rail spikes, ties, and ore car wheels, reflect such practices. The prospect outfit selected 12 pound rail for the track, which was considered to be light duty, to minimize the weight that had to be hauled over rough terrain to the site.

The assemblage of industrial and domestic artifacts indicates that most activity occurred between the 1900s and 1910s. For a detailed description of dateable items, see Appendix 1. The artifacts also reflect progressive practices regarding blasting, which was the primary means of moved rock. Most underground operations relied on blasting caps known as *triple strength* caps to detonate dynamite charges into the 1910s. The Exchequer's crew, however, used *quintuple strength caps*, represented by a blasting cap tin manufactured by the California Cap Company embossed with "XXXXX" on the lid. Quintuple strength caps were more expensive than triplex caps and provided a stronger explosion for the sure detonation of dynamite.<sup>37</sup>

The characteristics of the Exchequer site reflect additional information regarding operations. The relatively large waste rock dump confirms that the underground workings were fairly extensive and the absence of evidence of an ore storage facility indicates that the outfit realized little or no ore. The primitive nature of the surface plant reflects both the site's difficult access and limited capital investment, which was directed primarily toward driving the lengthy tunnel. Last, the surface plant's simple nature, small structures, ephemeral nature of the residence, and pack trail indicate that the operation was seasonal.

***Prospect Shaft, Name Unknown***  
***Site 5ML380***

The site lies on a short distance southwest of the Happy Thought Mine on the east portion of Bachelor Mountain's flat tabletop. In terms of historical attributes, the site currently consists of a collapsed shaft, associated waste rock, remnants of a simple surface plant, residential building platforms, and associated artifacts. Prospectors sank the shaft in an open meadow on a gentle east-facing slope. A fir and Engleman spruce forest surrounds the meadow and exhibits evidence of having been logged during the mining district's boom. Historically, prospectors accessed the property from the trails and roads that linked the various mines on the nearby Amethyst Vein.


---

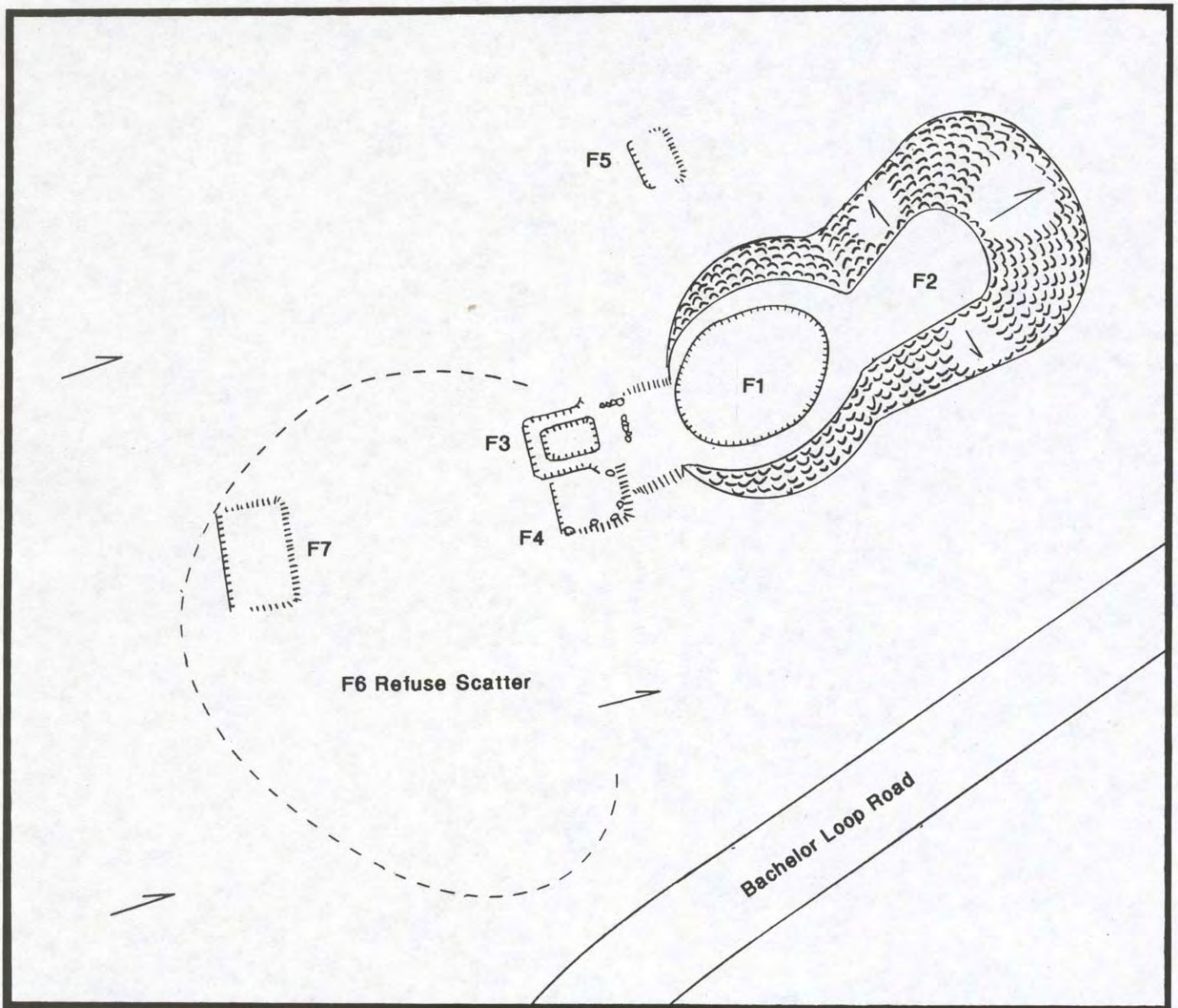
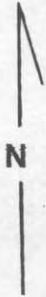
<sup>37</sup> Twitty, 2001:9.

**PROSPECT SHAFT, NAME UNKNOWN**

**Site 5ML380**

Creede Mining District, Mineral County, Colorado

Scale: 15 ft = 



## Mining Operations

No archival information pertaining to the site could be located, hence the material evidence serves as the primary source conveying the operation's history. At some point in time during the Creede district's boom, a party of prospectors sank a shaft a short distance west of the Amethyst Vein in hopes of striking parallel ore bodies.

The prospect outfit had access to enough capital to finance the erection of a substantial surface plant centered around the shaft (Feature 1). After the site's abandonment the shaft collar collapsed, leaving an area of subsidence 30 feet in diameter. Prospectors raised waste rock generated by shaft sinking out of the underground workings in an ore bucket and at first dumped the material around the shaft collar. Within a short time, the outfit instituted the traditional transportation system of an ore car on a mine rail line to shuttle waste rock away from the shaft. Such practices resulted in a waste rock dump that possesses a footprint featuring a pad encircling the shaft and a lobe extending northeast. Overall, the dump is 60 feet wide and 100 feet long, and prospectors graded its top-surface flat. The prospect crew dumped several loads of rock on both sides of the mine rail line adjacent to the shaft, which are currently visible.

To permit deep subsurface exploration, the prospect outfit installed a hoisting system consisting of a steam hoist, a headframe, and an ore bucket as a hoisting vehicle. They cut a platform for a hoist house (Feature 3) out of the hillslope southwest of the shaft and excavated a pit in the platform's floor for the hoist's foundation. They erected the headframe over the shaft. The system's components were removed following the property's abandonment. The hoist house platform is currently 12 by 20 feet in area and the prospect crew laid a rock alignment that supported the building's east side. When the hoist was removed, its foundation was exhumed, resulting in a pit visible today in the hoist house platform. A few wire nails, bottle fragments, and food cans lie on the platform, and more items may lie buried below the sod currently blanketing the area.

Because the hoist foundation was removed, determination of the machine's exact size is impossible. The pit's size and shape, however, indicate that the hoist was a single-drum steam model less than 5 by 6 feet in area. The absence of a boiler setting indicates that the prospect outfit relied on a portable boiler to supply the hoist with steam, and the absence of boiler clinker reflects the use of cordwood as fuel instead of coal.

The prospect outfit erected a small frame shop building on a cut-and-fill platform (Feature 5) northwest of the shaft. The shop was 10 by 12 feet in area and equipped with portable appliances and hand-tools. Currently, the platform is visible and a heavy deposit of forge clinker lies along the northeast edge. The associated artifacts consist of typical shop refuse and several lengths of ventilation tubing.

## Residential Occupation

The prospect crew lived in two frame buildings on-site. The first was a 12 by 12 foot structure adjacent to and south of the hoist house. The building stood on a cut-and-fill platform (Feature 4) and the residents placed rocks around the platform's perimeter to support the building's wall footers. Currently, only the platform and artifacts remain. The presence of structural materials reflects the presence of the frame building, and a significant quantity of food cans around the platform reflects residential occupation.



Other artifacts include miners' lunchpails, butchered bones, and a strainer made from a food can. Given that mine workers required at least 60 square feet each, not including areas used for household activities such as cooking, two miners could have lived in the building.<sup>38</sup> The presence of the food cans indicates that the miners lived independently from the site's other residents.

The second building stood upslope from and west of the prospect outfit's surface plant. Currently, a cut-and-fill platform (Feature 7) remains and its size indicates that the building was 15 by 25 feet in area. A rock alignment along the platform's fill bank supported the building's east wall footer. Structural materials and a few domestic items on and immediately around the platform reflect the structure's presence and residential occupation.

The residents of the second building threw most of their refuse downslope, which resulted in a sparse artifact scatter (Feature 6) evident today. The scatter covers an area 110 by 125 feet to the east, and consists primarily of bottle fragments, food cans, and miscellaneous items. The assemblage of artifacts comprising the scatter and associated with the building platform reflects several trends regarding the structure's occupation.

First, two scorifer dishes, small fire clay bowls specifically used to assay silver ores, lay adjacent to the building platform. The scorifer dishes, and a small quantity of coal used as assaying fuel, indicate that the building's residents tested samples probably taken from the shaft. Second, a corset part lay amid the refuse scatter and it reflects the presence of a female. Last, a decorative, nickel-plated suspender slide lay adjacent to the building platform and it suggests a display of status through fine apparel.

The assemblage of artifacts associated with both platforms reflects trends regarding diet and health. The site features numerous food cans and only several butchered bones, indicating that the prospect crew relied primarily on preserved foods, which was common in nascent mining districts. Six of the cans contained institutional quantities of food, reflecting the preparation of large meals to feed the crew en masse. The butchered bones were stew cuts, which typically had a high fat content. Based on typical canned goods and the butchered bones, the crew probably consumed a Victorian diet consisting of fruits, vegetables, meats, and stews. While no evidence exists, the above foods were probably supplemented with baked goods, grains, and vegetables that stored well such as potatoes and corn. Many of the cans contained milk, which may have been used in milk or coffee.

The artifact assemblage includes some evidence of the consumption of medicines, suggesting that the residents treated occasional illnesses. Three medicine bottle bases and cobalt-tinted bottle fragments lay amid the site's refuse scatter. The medicine bottle bases and cobalt fragments suggest that the residents of the southern building suffered from a temporary illness and constipation. Bottles tinted cobalt blue usually contained a laxative such as milk of magnesia. Evidence in the form of bottle fragments indicates that the residents of the site's southern building consumed some liquor and beer. Otherwise, the site features a notably low quantity of liquor bottle fragments, indicating that the crew consumed little liquor on-site.

---

<sup>38</sup> Hardesty, 1988:13.

### Prospect Shaft Site Interpretation

The remnants of the surface plant typify a deep and unsuccessful prospect operation. Although the surface plant was mechanized, it consisted of what mining engineers defined as temporary-class components. The hoisting system included a small steam-driven hoist, a portable boiler, a headframe, and an ore bucket. Hoists less than 6 by 6 feet in area, portable boilers, and ore buckets were temporary-class devices.<sup>39</sup> No evidence of the headframe remains today, indicating that it too was temporary. The shop was small and equipped with portable appliances and hand-tools, which typified such facilities at prospect operations. In addition, the shop was located some distance from the shaft, which necessitated a labor-intensive and inefficient movement of supplies and materials. Last, the hoist house was also a relatively small structure.

The surface plant reflects several aspects of the nature of the prospect operation. The steam-powered hoisting system represents a high degree of investor confidence. The operation's financiers were probably willing to speculate with their capital because the site was proximal to the Amethyst Vein and they felt the shaft would likely strike a parallel ore body at least, or the Amethyst Vein, which was known to dip west in places. However, the absence of evidence of an ore storage facility indicates that the prospect operation failed to meet the financiers' expectations. The modestly sized waste rock dump represents relatively shallow underground workings. The site's overall light density of artifacts, as compared with large mines, the moderately sized waste rock dump, and the temporary-class surface plant reflect brief occupation of the site.

The residential features bring to light several trends regarding the site's inhabitation. The presence of two residential buildings indicate that the prospect crew consisted of a small workforce. Prospect shaft operations such as the one on-site required at least two miners, a hoistman, a surface worker, and a blacksmith. In addition, some operations also included a superintendent who also served as the engineer. Two miners lived in the building adjacent to the hoist house and up to four more lived in the southern building, which is concurrent with the needs of the operation.

The spatial arrangement of the two residential buildings and their associated artifacts suggests a division according to socio-economic status and gender. The building that stood adjacent to the hoist house was a less desirable location compared with the other building located south of the surface plant. The artifact assemblage associated with the building adjacent to the hoist house included two miners' lunchpails and no decorative domestic items, indicating that miners inhabited the structure. Further, the lack of decorative items and costly materials reflects the residents' working-class status. The southern building platform stands in contrast. First, the associated artifact assemblage includes evidence of disposable income in the forms of the decorative suspender slide, medicine bottle fragments, and liquor and beer bottle fragments. Further, the practice of assaying reflects the residents' training in mineralogy and engineering, which was related to management and administration. Last, the corset part reflects the presence of a female who could have been part of a family or a hostler that attended to the prospect operation's housing.

---

<sup>39</sup> Twitty, 1999:40, 48, 58.

The site's artifact assemblage includes items that strongly suggest when the prospect operation was active. First, the assemblage of food cans consists of approximately 200 vessels made with lapped side seams and 40 vessels made with inner-rolled and soldered side seams. During the 1890s, food packers phased out cans made with lapped side seams in favor of those manufactured with inner-rolled seams. The group of cans, therefore, reflects the transition during the 1890s. The absence of cut nails, which were replaced by wire nails for construction around 1890, indicates that the prospect outfit erected the surface plant after the transition period. The artifact assemblage also includes a hand-finished crown bottle finish, which was patented in 1893. In sum, the artifact assemblage reflects activity during the mid-1890s.

### **Ore Systems Between the Amethyst and Holy Moses Veins**

#### ***Monte Carlo Mine Site 5ML381***

The Monte Carlo Mine, also known as the Kentucky Belle, lies high on the craggy east side of Campbell Mountain's south spur. In terms of historical attributes, the site currently consists of several adits, open-cut workings, associated waste rock, the remnants of simple surface plants, and residential features. The site lies at the head of a natural bowl bracketed by rock spires. The areas between bedrock outcrops and cliffs are steep scree slopes sparsely vegetated with Engleman spruce and fir trees. The natural bowl constricts below the site into a steep, scree-choked chute that opens over East Willow Creek, far below, and the spires over the site form the end of Campbell Mountain's south spur. Historically, prospectors accessed the property by a lengthy pack trail ascending from the Midwest Mine on Nelson Creek.


#### **Mining Operations**

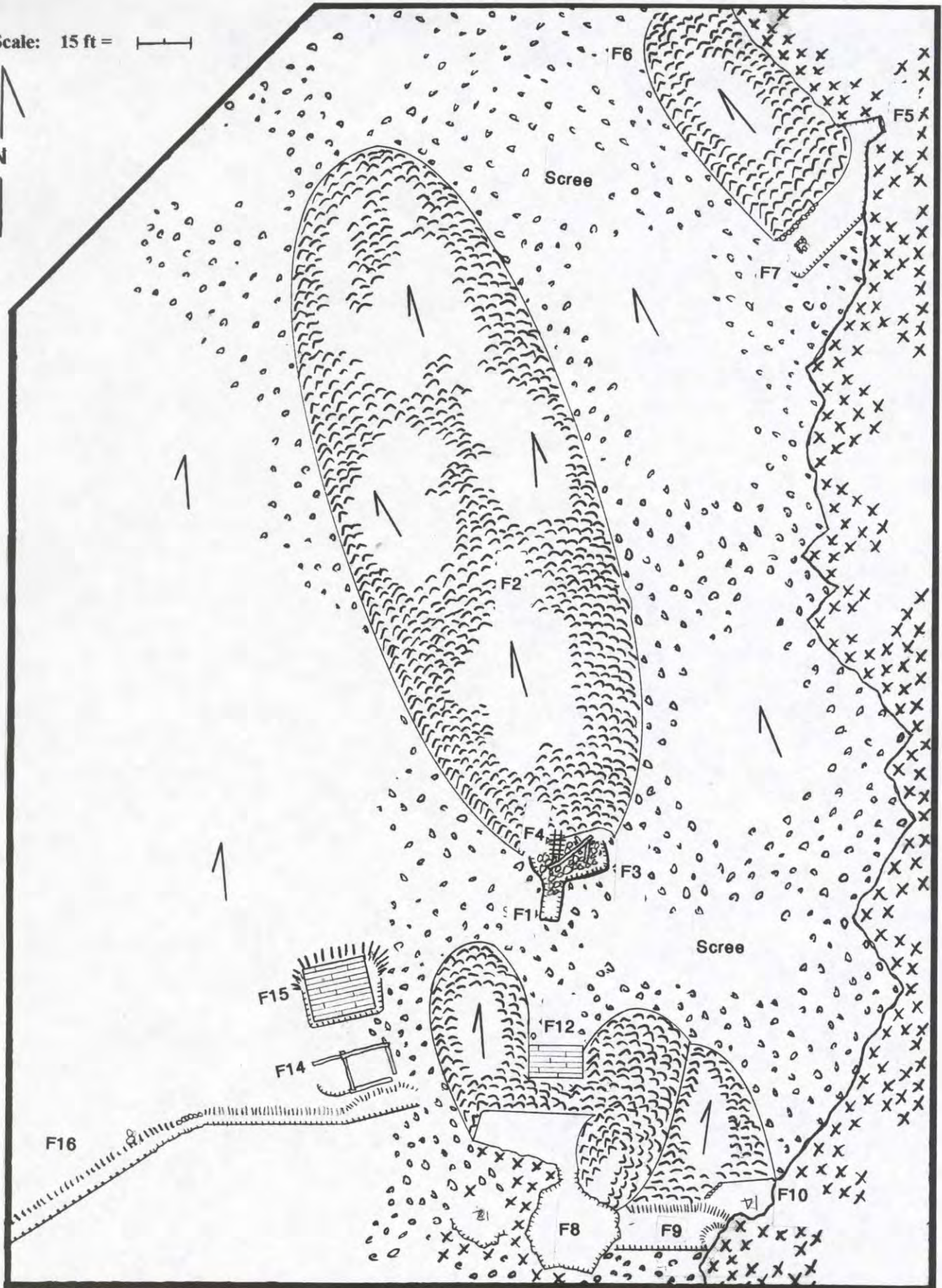
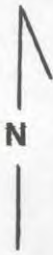
Little archival information pertaining to the mine could be located, hence the material evidence on-site today serves as the primary source conveying the operation's history. During the Creede district's first years, prospectors examined the inhospitable terrain forming the south spur of Campbell Mountain and found payrock in limited quantities. Within a year or two, a mining company began extracting profitable ore, and because the mine lay in a location accessible only by pack animal and foot, the company was relegated to extracting only the highest grades of payrock. Probably due to the Silver Crash and associated economic depression, the Monte Carlo lay quiet through the 1890s until another company reopened the workings. The new outfit probably erected the site's simple aerial tramway to alleviate the transportation difficulties. The operating costs were high, the property was difficult to access, and living conditions were arduous at best, so the company quit by around 1910, leaving silver ore in the workings.<sup>40</sup>

---

<sup>40</sup> Van Horn, 2000 features brief passages alluding to the mine's operation between the early 1890s and 1900s. The Colorado Mine Inspectors' program began in 1915, and the lack of records for this time indicate that the property was idle.

MONTE CARLO MINE  
Site 5ML381  
Creede Mining District, Mineral County, Colorado

Scale: 15 ft = 



In 1925 the Monte Carlo's ore drew the interest of the Champion Leasing Company. At that time, the company, with Wallace Leary acting as secretary and Zed Wilson serving as manager, rehabilitated the site's principal tunnel, which was 200 feet long, and began production. During the year, miners brought 50 tons of ore to daylight. Either they exhausted the ore or they found that operating the mine was too difficult. In either case, by 1926 they ceased work and the mine fell permanently silent.<sup>41</sup>

Today, the Monte Carlo site features prospects, mine workings, surface plant remnants, and evidence of residence left by operations active during the early 1890s and the 1900s. Little evidence exists reflecting the Champion Leasing Company's 1925 occupation.

Prospectors seeking ore veins drove an adit (Feature 5) northeast into a bedrock spire northeast of and downslope from the site's main adit. They erected a plank door at the portal, which features a locking hasp. The adit is 3½ by 6 feet in-the-clear beyond the portal, and an ore screen was left inside. Prospectors laid a plank runway, portions of which currently remain, so they could push a wheelbarrow out of the underground workings. They ejected waste rock out of the adit, forming a dump (Feature 6) 36 feet wide and 80 feet long.

To maintain and fabricate tools and hardware, workers erected a frame shop building on a platform (Feature 7) graded with a combination of cut-and-fill methods and waste rock fill, located at the waste rock dump's south end. The platform is 12 by 15 feet in area and the remnants of a gravel-filled rock forge lie on the platform's southern portion. The platform features an artifact assemblage representing the frame building, which is no longer standing, and blacksmithing. Structural debris lies on and downslope from the platform and includes lumber, sheet iron, and wire and cut nails. Upset blades from hand-steels used for drilling, cut off the drill shank, lie on the platform, and they reflect the work of an inexperienced blacksmith. Poorly made and poorly tempered drill-steels often cracked when used, and their blades had to be cut off and new edges formed. The nozzle of a forge bellows lying on the platform indicates that the shop was equipped with rudimentary, hand-powered appliances and tools. Last, the combination of cut and wire nails indicates that the prospect adit was driven during the early 1890s.

The adit's simple surface plant and small waste rock dump reflect shallow underground workings and brief occupation.

Prospectors searching for ore drove additional exploratory workings in the site's south and upslope portions. They began an adit in a rock spire (Feature 9) and quit within a short time, and sank a shallow shaft (Feature 11) south of and above the remainder of the site. The shaft, currently plugged eight feet down, was 4 by 6 feet in area, which qualified exclusively as an exploratory working.

After much searching, prospectors finally struck an ore body in bedrock underlying scree adjacent to Feature 9. They cleared the scree away and, finding that the ore body cropped out on ground-surface, began extracting payrock. Today, the surface-mining manifests as an open-cut (Feature 8) 25 by 48 feet in area and 20 feet deep. Prospectors dumped overlying scree, as well as waste rock generated during mining, downslope, forming a dump. Remaining wire nails and window glass indicate that a building stood on the dump's top-surface, and the absence of additional structural

---

<sup>41</sup> Colorado Mine Inspectors' Reports: Box 104053, Miscellaneous K.

materials suggests that it probably was a wall tent. The presence of 20 food cans on the dump, more of which may be buried, suggests that the prospectors may have lived in the structure. The cans were hole-in-cap vessels and five were made with lapped side-seams. The combination of cans made with inner-rolled side-seams and the presence of those made with lapped side-seams suggests that prospectors worked the open-cut primarily during the early to mid-1890s. For further details regarding the site's dateable artifacts, see Appendix 1.

Like the prospectors that drove the site's northern adit, those that worked the open-cut erected a simple blacksmith shop to maintain and manufacture tools and hardware. They graded a 9 by 30 foot cut-and-fill platform (Feature 9) and erected a 9 by 12 foot frame shop building at the base of the bedrock cliff adjacent and east. In addition, they built a dry-laid rock wall to retain the eastern portion of the platform's fill material. The shop was equipped with hand-tools and a gravel-filled dry-laid rock forge constructed against the cliff. Currently, scree covers most of the platform, which may obscure artifacts, and the forge collapsed. Despite the scree, items reflecting the frame building and blacksmithing remain. The structural materials consist of lumber, wire nails, and window glass. Upset hand-steel blades indicate that the blacksmith was inexperienced as at the site's northern adit, and may have been the same individual.

Prospectors transferred the ore they extracted into a simple ore bin located at the base of the waste rock associated with the open-cut. The bin (Feature 12), currently collapsed, was an 8 by 12 foot roofless, flat-bottom structure consisting of plank flooring nailed to joists, and plank walls.

When the mining outfit realized that the ore body extended a significant distance below ground, it elected to drive an adit to tap it at depth. As with the open-cut, miners cleared scree away from the proposed adit location and cut a platform for a shop. They drove the adit (Feature 1), which was 3 by 6 feet in-the-clear, in the direction of the open-cut workings. As miners generated waste rock, they ejected it directly downslope, resulting in a dump 72 feet wide and at least 330 feet long. Some of the waste rock augmented the adjacent platform's surface.

To move materials into and rock out of the underground workings, miners relied on ore cars that ran on a mine rail line (Feature 4). Miners constructed the line by spiking 12 pound rails 18 inches apart. Rails of the 12 pound variety were light-duty, and the mining outfit probably chose such a rail weight to ease the task of transporting them to the site.

To permit work in adverse weather, miners erected a 10 by 25 foot tunnel house (Feature 3) on the platform, which sheltered a blacksmith shop and the adit portal. The building consisted of a vernacular frame sided with planks and a central log beam supporting a roof clad with corrugated iron. The structure collapsed and scree currently blankets most of the platform.

Structural, industrial, and domestic refuse lies on and downslope from the tunnel house remnant. A combination of cut and wire nails, and a combination of hole-in-cap cans made with lapped side-seams and inner-rolled side-seams indicate that the adit was initially driven and the tunnel house built during the early 1890s, probably immediately following the site's prospecting. A quintuple strength blasting cap and tin, and one-half inch thick dynamite box panels with lock-corner joints indicate that the facilities were

used during the 1900s. The spool of a hand windlass lying on the platform indicates that the underground workings featured vertical passages.

Transporting ore from the mine down to a shipping point proved to be a difficult and costly undertaking that limited the operation's productivity. At first, the original mining operation sacked the ore and packed it out on animals that followed the trail (Feature 17) leading down to West Willow Creek. One of the mine's later operations subsequently erected the single-rope reversible tramway that linked an ore bin near the property with the floor of East Willow Creek.

Miners erected the ore bin approximately 500 feet south of the mine complex on the other side of a knife-edge ridge of bedrock. The bin currently stands on a bench on an otherwise precipitous cliff. Workers input ore by transporting the payrock in pack animals from the mine, up a trail, to a notch breaching the knife-edge ridge. They probably lowered the rock in buckets or sacks more than 100 feet down the cliff to the bin, where the material was unloaded. To transport the ore down to the floor of East Willow Creek, they transferred payrock from the bin into a bucket that was part of the tramway. No evidence of either the input system or the reversible tramway currently exists. The bin is a 12 by 18 foot flat-bottom structure with plank walls supported by a post-and-girt frame. The bin (Feature 13), not represented on the map, could not be safely accessed for detailed description.

### Residential Occupation

Because the Monte Carlo property was remote and difficult to access, members of the various prospect and mining operations lived on-site. Apparently, the prospectors that initially developed the open-cut lived in a wall tent adjacent to the workings. Currently, bottle fragments, a basin, a glove, and 20 hole-in-cap cans on the associated waste rock dump reflect the early residence. Additional items are probably buried by waste rock and scree. As stated above, the cans reflect occupation during the early to mid-1890s.

The refuse attributed the early residents, albeit limited in volume, reflects several trends. First, based on the material evidence, the early residents consumed a diet primarily of preserved foods with little or no fresh meat or produce. Typically, meats, stews, vegetables, and fruit were widely available in cans. The residents probably supplemented the above foods with baked goods and grains, although evidence of this is absent. Such a diet was typical of prospectors and mining outfits living in remote locations. Second, the only other domestic item was a basin. The lack of additional items reflects primitive, temporary living conditions, and the lack of decorative artifacts represents the absence of females. Last, the lack of decorative and costly items suggests that the residents were of a lower socio-economic status. A liquor bottle finish indicates that the residents consumed some alcohol during their stay.

When mining began on a more intensive level and a crew larger than before became necessary, miners erected two residential buildings on a steep, forested slope west of and adjacent to the workings. Miners cut a bench out of the hillslope below a rock outcrop and constructed a 10 by 15 foot log cabin on the flat area. They assembled the walls with saddle-notch joints and installed a doorway in the east wall. The structure

(Feature 14) is mostly collapsed and the remnants are currently filled with 3 feet of soil and scree. A few artifacts lie downslope.

Miners cut a platform out of the hillslope immediately below the log cabin and erected a 15 by 18 foot frame residential building (Feature 15) on the flat area. After the mine was abandoned the structure completely collapsed, leaving the remnants of plank flooring on the platform, and lumber and domestic refuse scattered downslope. The debris indicates that the building featured walls consisting of a 2x4 post-and-girt frame sided with planks.

### Monte Carlo Mine Site Interpretation

The Monte Carlo Mine site illustrates the progression many claims underwent, from subsurface prospecting to development then extraction of ore. Prospectors first examined the area in either 1890 or 1891, and probably after finding samples of ore, focused their efforts where the Monte Carlo's extant workings lie. To examine the geology at depth, they drove two prospect adits and a prospect shaft in either 1891 or 1892, which they abandoned after failing to strike ore. Prospectors equipped the site's northern, lowest adit with a simple surface plant consisting exclusively of temporary-class, portable components, and the other two prospect workings featured no surface plants. The northern adit's surface plant included a small blacksmith shop equipped with hand-tools and a primitive forge bellows. Prospectors constructed the forge from local materials rather than haul in a portable free-standing unit. For transportation within the adit they used a wheelbarrow instead of a sturdy, and more costly, ore car.

Within a very short time of driving the adits and shaft, the prospectors discovered the site's main ore body under scree and worked it from the surface down, at first. The open-cut featured a surface plant similar to that at the northern adit. The principal difference lay in the ore bin, which reflects the production of payrock in economic volumes.

Miners subsequently drove the site's principal adit between 1891 and 1892, and erected a surface plant only slightly superior to the above two. The difference manifested primarily in the tunnel house that sheltered both the shop and adit portal. The surface plant associated with the principal adit lacked an ore storage facility, indicating that miners sacked ore either underground or in the tunnel house. Last, the rail system that served the adit was constructed with 12 pound rail, which was light in duty and easier to haul to the site than heavy-duty rail.

The Silver Crash of 1893 and the resultant depressed price of silver probably saw an end to early operations. According to material evidence on-site, the property was reworked around 1905, although most of the surface facilities changed little. For a description of dateable artifacts, see Appendix I. Possibly the circa 1905 operation erected the aerial tramway and ore bin on the other side of the rock ridge bounding the site's eastern edge to mitigate the transportation problem that plagued the mine. Despite the site's seemingly impossible winter access, the circa 1905 operation continued mining throughout the year.<sup>42</sup> Supplies were probably brought in via the tramway, as the circuitous overland trail would have been impassible.

---

<sup>42</sup> Van Horn, 2000: "Women had Tough Jobs Running Boarding Houses in Old Mining Days".



The residential accommodations during 1891 or 1892 were very primitive, and at this time work on the property was almost certainly seasonal. The log cabin, constructed with local materials, was built first, possibly by the mine's original operation, and the frame building may have been built by the outfit active around 1905. Archival information indicates that during this time, Della Mortensen ran what was known as the boardinghouse, which was probably the frame building.<sup>43</sup> The site's artifact assemblage included no gender-specific artifacts. The high volume of domestic refuse downslope suggests that the frame building featured dining facilities, and during the circa 1905 operation, the log cabin probably served as a bunkhouse.

The log cabin possessed 150 square feet and the frame building possessed 270 square feet. Given that mine workers required at least 60 square feet each, not including areas for domestic activities such as cooking, two miners lived in the log cabin.<sup>44</sup> If the frame building included dining space, then up to three people lived in the structure.

The residents of both buildings threw their refuse downslope in the manner typical of most Western mining camps, and the assemblage of items reflects trends regarding the mine crew's occupation. The log cabin remnant featured almost equal numbers of hole-in-cap cans made with lapped side-seams as those manufactured with inner-rolled side-seams, reflecting occupation during the 1890s and again during the 1900s. The refuse downslope from the frame building, some of which the log cabin's residents may have contributed, featured more cans made with lapped side-seams than those made with inner-rolled side-seams, reflecting a like timeframe. In addition, the assemblage of cans included vessels with crimped tops and lapped side-seams, which were manufactured only during the 1890s.

Together, both cabins featured almost 450 hole-in-cap food cans and only 10 butchered bones, indicating that the prospect crew relied primarily on preserved foods, which was common at remote mining operations. Most of the butchered bones were stew and shank cuts, which typically had a high fat content. The above foods were supplemented with baked goods, represented by baking powder cans, and they may have been supplemented with grains and vegetables that stored well, such as potatoes and corn, although no evidence exists. Many of the cans contained milk, which may have been used in milk or coffee. Based on canned goods typically available, the baked goods, and the butchered bones, the crew apparently consumed a typical Victorian diet.

The artifact assemblage includes little evidence of the consumption of medicines, suggesting that most of the crew's health was sound. Two medicine bottle bodies lay downslope from the frame building remnant and they suggest that the residents suffered from temporary illnesses. Evidence in the form of bottle fragments indicates that the residents openly consumed liquor and beer, and a lunchbox tobacco tin reflects the open consumption of pipe tobacco.

The artifact assemblage associated with the cabins features only a few items probably left by the Champion Leasing Company in 1925. One key wind coffee can and one sanitary food can lie amid the older items. Both types of cans were introduced during the 1900s, when the residential buildings were occupied, and not until the 1910s did they become popular.

---

<sup>43</sup> Van Horn, 2000: "Women had Tough Jobs Running Boarding Houses in Old Mining Days".

<sup>44</sup> Hardesty, 1988:13.

All of the surface plants and the residential accommodations reflect several basic factors regarding the prospecting and mining operations. They represent a lack of capital and investor confidence, and the production of limited quantities of ore. The site's difficult access severely impacted mining and residential operations. The difficulty of importing materials and equipment encouraged the use of local materials and simplicity. The difficulty of exporting ore relegated operations to extract only the richest payrock and abandon work before low-grade ore was actually exhausted.

***Midwest Mine  
Site 5ML300***

The Midwest Mine lies on the west side of Nelson Creek at the northwest base of Campbell Mountain. In terms of historical attributes, the site currently consists of a mine tunnel, associated waste rock, and the remnants of a surface plant including several standing buildings and a mine rail line. The surface plant components are all less than 50 years old and the mining operation that erected them erased nearly all of the site's historic attributes. The site lies at the bottom of a drainage forested with Engleman spruce and fir trees. In 1999 Vince Spero, an archaeologist with the Forest Service, recorded the mine under site number 5ML300. Because of the site's ambiance and accessibility, it is a posted stop on the Bachelor Loop Historic Tour and receives heavy visitation.

**Mining Operations**

Unlike most of the Creede district's historic mine and prospect sites, the Midwest Mine was developed relatively late. Prospectors probably staked claims on Nelson Mountain's south flank, including the Ground Hog, Edith, and Maid of Erin early in the district's history but did little to develop them. The claims apparently suggested the promise of a mineral body, and in 1923 Elwood Neff organized the Midwest Mining Company and acquired the claims.<sup>45</sup>

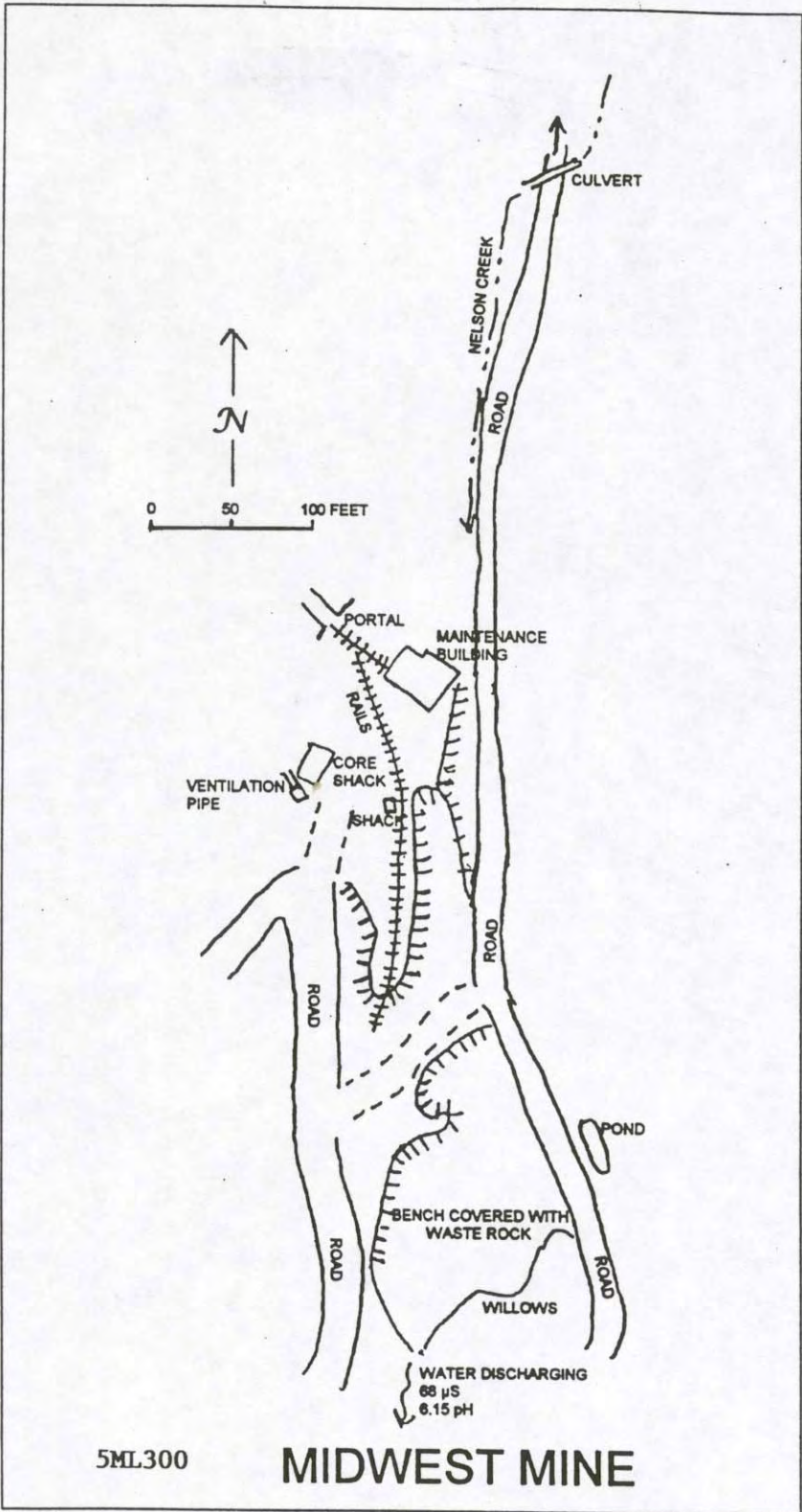
Work commenced in earnest and within two years miners, laboring by hand, drove the Midwest Tunnel, which was 4 by 6 feet in-the-clear, 2,000 feet. When they reached the area deep under the claims, a crew of five miners began driving exploratory workings in an attempt to locate the mineral body identified on ground-surface. The effort finally revealed a mineral body, but it lacked profitable ore and operations ceased in 1925.<sup>46</sup>

In 1934 President Franklin Delano Roosevelt signed the Silver Purchase Act into law, boosting the price of the white metal. In response, many of Creede's mines were subject to exploration at least, or brought into production at best. For reasons unknown, the Midwest, with its promising mineral bodies, remained quiet. Even the high demand for industrial metals and silver stimulated by World War II failed to pique an interest in the property.

---

<sup>45</sup> Colorado Mine Inspectors' Reports: Midwest Mine.

<sup>46</sup> Colorado Mine Inspectors' Reports: Midwest Mine; Spero, 1999.



5ML300

# MIDWEST MINE

During the time the Midwest lay abandoned, John Van Buskirk acquired ownership and with E.J. Dabney, staked additional claims including the Gateway and changed the property's name to the Gateway Mine. In 1950 he began a close examination of the workings and found an ore body 700 feet in from the tunnel portal. He employed the decades-old practice of drilling and blasting by hand and brought ore to daylight. At this time, the surface plant consisted of a single frame building that probably housed a blacksmith shop, which the local Colorado State Mine Inspector ordered moved away from the tunnel portal.<sup>47</sup>

Buskirk ceased work within the year probably because the ore was not rich enough. He sold the property to John Jackson of the New Midwest Mining Company, which was curious about the mine's potential. In 1968 the New Midwest Company leased the property to the Gateway Access Corporation, which engaged in serious exploration. Gateway erected a surface plant where there apparently had been only the simple frame building. The outfit erected two frame buildings, one of which was a shop equipped with power appliances. To facilitate transportation underground, the outfit upgraded the extant rail line and used a diesel locomotive to pull trains of ore cars. Miners used modern rockdrills and a mucking machine which drew air from a portable compressor. A powerful ventilation blower forced fresh air into the underground workings. With the equipment, between 1968 and 1970 miners drove exploratory workings searching for elusive ore bodies. The company also used a drill to draw core samples from ground-surface overlying the mineral body. The two years' effort proved tantalizing but fruitless, and like the operations before them, Gateway quit work after investing more than it took out of the property.<sup>48</sup>

The mine changed hands several times during subsequent years. By 1979 Japhne and Company acquired the property and in 1982 Japhne, or another party, conducted underground exploration. By 1984 the Crown Resources Corporation owned the Midwest and may have conducted exploration, as well. Despite the changes in ownership and the application of modern technology, the mine failed to yield profitable ore and fell permanently silent.<sup>49</sup>

The Midwest Mine site currently features remnants of the surface plant erected in 1968 by the Gateway outfit, with minor additions installed by the subsequent operations. The mine's historical surface plant was small and the activities after 1968 erased what little remained. The surface plant remnant features the tunnel portal, a shop building, another structure used to store core samples, a third shed, rail lines, and a large two-tiered waste rock dump. The rail line featured several branches, one of which extended into the shop and the other terminating over a trestle on the waste rock dump. The rail line is heavy-duty in nature, reflecting the use of a locomotive. Vince Spero adequately recorded the Midwest Mine and the site was not re-recorded for the Alpha-Corsair inventory of 2001.<sup>50</sup>

---

<sup>47</sup> Colorado Mine Inspectors' Reports: Midwest Mine; Spero, 1999.

<sup>48</sup> Ibid.

<sup>49</sup> Spero, 1999.

<sup>50</sup> As recorded by Spero in 1999.

### Residential Occupation

No evidence of residence on-site exists, indicating that the mine's various operators commuted from elsewhere. A log cabin stands approximately one-quarter mile east and down Nelson Creek from the site. The cabin was in existence before the Midwest, according to a 1912 geological map of the district.<sup>51</sup>

### Midwest Mine Site Interpretation

The Midwest Mine site represents the application of modern technology to traditional underground mining methods. In 1968 the Gateway company erected a substantial surface plant similar in layout and function to those constructed by mining companies in decades past. Gateway continued the traditional practice of drilling and blasting as the prime mover of rock underground, and it relied on ore cars on mine rail lines to bring materials through the underground workings. Further, Gateway erected a frame shop and other buildings on the surface. Gateway, however, incorporated modern machinery that permitted workers to drive greater footages of underground workings and bring out more rock per man-hour than in times past. Gateway and the subsequent operations also used modern drills to conduct core sampling rather than expending great sums of time driving blind underground passages in pursuit of ore.

Gateway's surface plant also reflects several other trends regarding the operation. The plant was well-equipped, indicating that the company possessed capital and investor confidence. The equipment included numerous portable but highly efficient machines, which represents the common use of heavy trucks to haul materials. Last, the subsequent operations were corporations that acquired and sold, on a speculative basis, multiple properties simultaneously. They possessed a pool of machines, especially for deep core sampling, that they transferred from site to site on trucks. In so doing, they were able to limit their investment in any single property until profitability was proven.

### ***Prospect Adit, Name Unknown*** ***Site 5ML382***

Site 5ML382 lies near the mouth of a minor drainage at the west base of Nelson Mountain's south spur. The site includes an adit and associated waste rock, a prospect pit, and a small residential complex. Within recent years, someone used a bulldozer to scrape down the waste rock dump's top-surface and widen a road that accessed the adit. A drainage extends north and the adit and waste rock lie on the steep east side, while the residential complex lies on the drainage's gently sloping west floor. A small meadow lies between the residential complex and the adit, and the remainder of the site and surrounding area are heavily forested with old- and second-growth firs and Engleman spruce trees. The historical mining operation accessed the property via a road graded up the drainage floor, and the road experiences occasional use today by recreationalists.


---

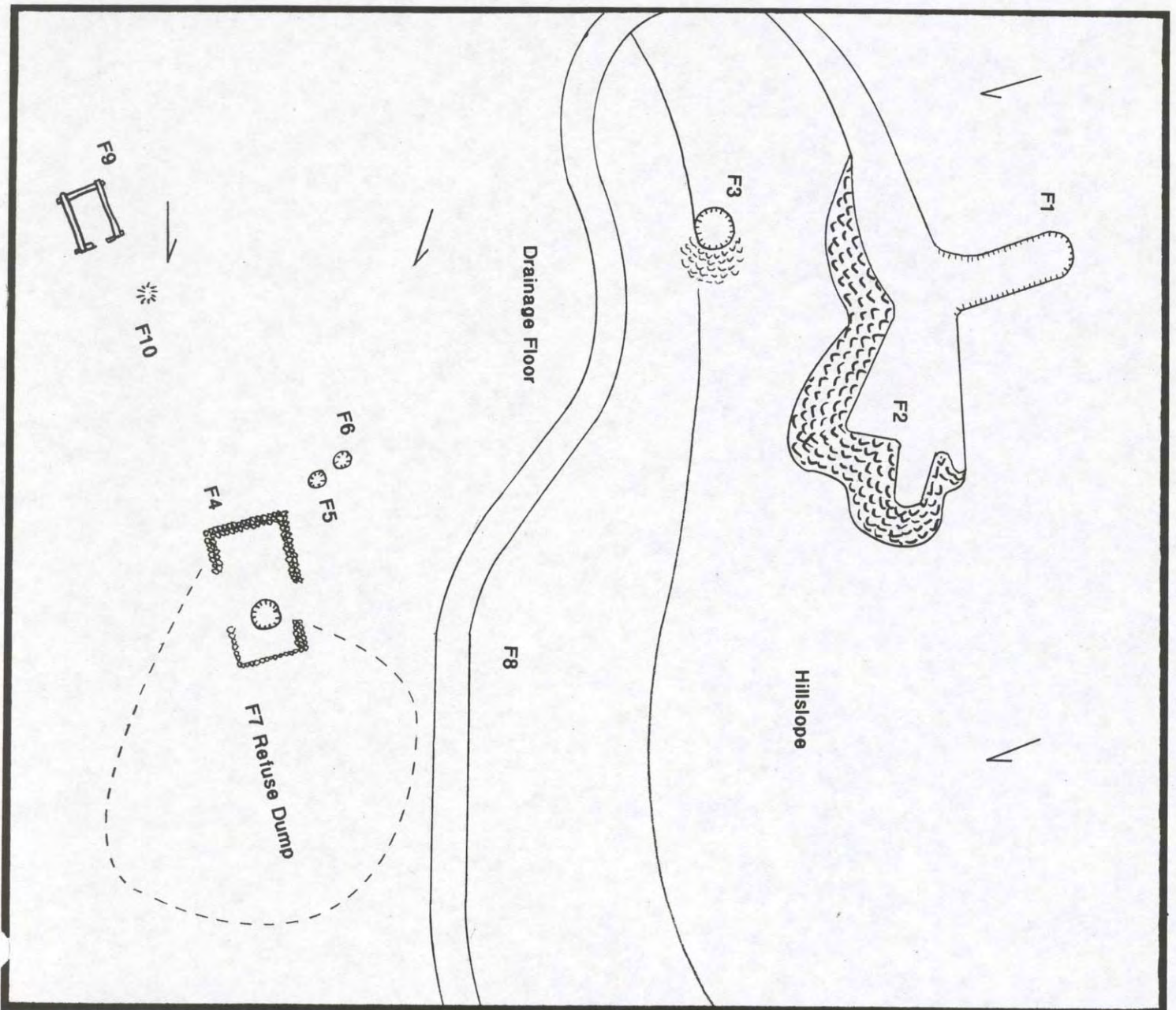
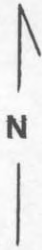
<sup>51</sup> Emmons and Larsen, 1923.

PROSPECT ADIT, NAME UNKNOWN

Site 5ML382

Creede Mining District, Mineral County, Colorado

Scale: 15 ft = 



### Mining Operations

No archival documentation pertaining to historical operations could be located, and as a result the material evidence on-site serves as the primary body of information regarding past activity. During the Creede district's boom-era, probably in the early 1890s, a party of prospectors began driving an adit northeast into Campbell Mountain's south spur. The adit trends toward a group of claims located high on the spur and may have been driven to explore the claims' geology at depth. Beginning in the 1920s, a company drove the Midwest Tunnel located on the other side of the spur to explore the claims, as well. The relationship, if any, shared by the two operations remains unknown.

In decades past, someone used a bulldozer to close the adit, destroying its historical attributes. The adit currently manifests as a trench 18 feet wide and 40 feet long. At the same time, the top-surface of the associated waste rock dump was scraped, which erased evidence of the surface plant that supported work underground. The waste rock dump's flanks, and the dump's southern portion remain intact. The dump is 45 by 90 feet in area and features three principal lobes, reflecting deposition with ore cars, and miners graded the dump's top-surface flat. Few artifacts lie on and downslope from the dump, and some may have been buried during the bulldozing. The remaining items include structural debris and a food pail made with a lapped side-seam, which reflects activity during the early 1890s. Despite the bulldozing, the notably light density of artifacts indicates that a simple surface plant served the adit.

### Residential Occupation

The first party of prospectors erected a 10 by 15 foot log cabin, which collapsed, on gently sloping ground west of the adit. They built the structure with saddle-notched log walls on a cut-and-fill platform, and the roof apparently consisted of lumber. A doorway breached the southeast wall and the residents used ventilation tubes as stovepipes. The cabin remnant (Feature 9) currently consists of portions of log walls up to three courses high, and structural artifacts.

The associated assemblage of artifacts includes primarily structural debris and a few domestic items. The cabin's builders used a combination of cut and wire nails, indicating that they erected the structure between 1890 and 1891 when wire nails supplanted cut nails for general construction. The domestic refuse includes 15 hole-in-cap cans made with inner-rolled side-seams and two rubber boot soles. During the 1890s food packers phased out hole-in-cap cans made with lapped side-seams and replaced them with vessels constructed with inner-rolled side-seams. The lack of cans made with lapped side-seams reflects inhabitation between the late 1890s and 1900s. Additional domestic items probably lie buried underneath the surrounding duff coverage.

The cabin's residents probably relied on a privy for personal use. A possible privy pit, which manifests as a raised pile of backfill, lies nearby. The pit may contain buried deposits.

The cabin remnant featured 150 square feet, which was enough space for two residents. The cabin's first occupants probably were the party of prospectors that began the site's adit.

During the 1900s, a second operation began work on the property and its workers erected a substantial 20 by 33 foot frame building southwest of the adit, downslope from the log cabin. They graded a platform (Feature 4), which currently remains, with cut-and-fill methods, and excavated a cellar pit in the south portion. The cellar pit, filled with erosional deposits, is 8 feet in diameter and 5 feet deep, and its backdirt was used as fill material for the platform. Workers erected a rock foundation, mortared with mud, around the platform's north half, and built a dry-laid rock alignment to retain the platform's fill material. Artifacts lie scattered around the platform and the cellar pit may feature meaningful buried deposits.

The building's residents disposed of their refuse in the manner typical of Western mining camps. They threw most solid waste downslope and south of the platform, forming a refuse dump (Feature 7) 85 by 90 feet in area. They also relied on a privy for personal use. Two pits (Features 5 and 6) lie northeast of and adjacent to the platform, and both are 6 feet in diameter and 1 foot deep. Domestic refuse lies in both pits and more probably lies buried underneath sod coverage.

The 20 by 33 foot frame building apparently was a boardinghouse where the crew employed by site's second operation lived. The large quantity of food-related items indicates that the building included kitchen and dining areas, as well as living quarters. Since the frame building included the residential complex's dining facilities, the log cabin was probably relegated to a bunkhouse, which the cabin's light artifact density reflects. The frame building featured 660 square feet and the cellar pit afforded additional storage space. Subtracting space for cooking and dining, the frame building accommodated up to around eight residents. If mine workers lived in the log cabin, then the total population was as numerous as ten individuals.

The artifact assemblage associated with the residential complex reflects trends regarding the makeup of the population. First, the presence of decorative and plain porcelain tableware fragments suggests the presence of a female, who may have been part of a family. The remnants of several canning jars also lay amid the residential complex and they reflect the domestic activity of preserving fresh fruit. Women usually carried out such tasks while mine workers, with limited time, usually did not. Second, single male workers constituted most of the site's residents, reflected by boot remnants, cartridge casings, and a miner's lunchpail. Single male workers were more likely to openly consume tobacco and liquor, which are represented by a substantial quantity of artifacts. Third, the light density of decorative items also suggests that most of the residents' socio-economic status was low as the residents apparently did not consume a high volume of status-related goods. The presence of the decorative porcelain, and butchered beef rib and steak bones, indicates that one of the residents was of a higher socio-economic status than the workers. Last, the residents on-site may have included several ethnicities. Fragments of a Lea & Perrins Worcestershire Sauce bottle suggest one of the residents may have hailed from the British Isles. The artifact assemblage included a green, applied, blob-top bottle finish, and such vessels were often made in Europe for bitters and wine. The finish's presence suggests that one of the residents may have been from Europe.

The artifacts amid the residential complex also reflect the residents' diet and health. The site's residents relied primarily on canned food, represented by over 1,400 food cans and only 32 butchered bones. Additional bones may have been present in the



past and were probably carried off by animals or buried underneath the duff coverage. The site's residents consumed a typical Victorian diet, which usually included fruits, vegetables, baked goods, grains, stews, and meats. The site's artifact assemblage reflects such a diet. The plethora of cans probably contained common versions of the above foods. The butchered bones on-site were primarily beef stew and shank cuts, and a baking pan reflects the preparation of baked goods. Several of the butchered bones were cuts of beef steak and ribs, which were traditional Victorian meats. Many cans contained milk, which residents probably used in coffee currently represented by coffee cans. The residents also probably supplemented the above foods with easily stored vegetables such as potatoes and corn.

The residents appear to have been in sound health. The assemblage of artifacts included only two medicine bottle bases, which probably reflect the treatment of temporary illnesses. The assemblage otherwise lacks evidence suggesting chronic or frequent illnesses.

### Prospect Adit Site Interpretation

The prospect operation that drove the adit suffered from limited financing and failed to strike economic volumes of payrock. The adit was equipped with a simple, temporary-class surface plant that probably consisted of a single frame shop building and a mine rail line for transportation. The absence of ventilation tubing suggests that the prospect operation neglected to install a ventilation system, which was a potentially dangerous and regressive practice. If the surface plant included substantial components or machinery, then some evidence would have probably survived the bulldozing. The absence of evidence of an ore storage facility reflects the operation's failure to realize payrock. Material evidence in the form of the food pail on the waste rock dump indicates that prospectors began the adit in the early 1890s, and the bulldozing destroyed evidence of later activity.

The residential complex, by contrast, reflects occupation by three parties at different times. The log cabin was the first structure on-site, probably erected by the prospectors that began the adit between 1890 and 1892. The cabin, and almost certainly the adit, lay abandoned following the Silver Crash of 1893, and when the economy recovered by the late 1890s and mining in the Creede district resumed with vigor, another outfit re-occupied the site and built the substantial frame boardinghouse. The artifact assemblage associated with the residential complex reflects occupation between the late 1890s and 1900s. Most of the dateable bottle fragments were from hand-finished vessels, which was a manufacturing technology that bottle makers phased out during the 1910s. The group of cans included 55 vessels with crimped tops and lapped side-seams, which were a prototype of the sanitary can used during the 1890s. The group of cans also included 90 sanitary vessels embossed on the lid with "SANITARY", which was a marking the Sanitary Can Company used for a brief time following the introduction of these types of cans in 1903. Last, 1,234 hole-in-cap cans made with inner-rolled side-seams lay amid the residential complex. By the 1910s food packing companies replaced hole-in-cap vessels with sanitary units.

A third group re-inhabited the residential complex during the late 1910s, probably when World War I stimulated a demand, and hence a high price, for industrial metal and silver ores. The artifact assemblage included fragments representing two bottles made during or after World War I. The group of cans included 40 sanitary vessels, 62 vent-hole milk cans, and 18 key wind coffee cans, all of which ascended to popularity during the 1910s. The artifact assemblage included no items that clearly post-dated 1920. In sum, the above assemblage of items indicates that the site's longest occupation was between the late 1890s and 1900s, and the occupation during the late 1910s was relatively brief.

The residential occupation curiously contrasts against the scale of the prospect operation. The small waste rock dump, lack of an advanced surface plant, and lack of ore production indicates that the adit saw brief activity. Further, with the substantial Exchequer Tunnel serving as an example, a crew of two or three workers were sufficient to drive the adit and carry out associated tasks. In this context, the available living space, numbers of residents, and duration of stay at the residential complex seems out of proportion with the adit. Therefore, the site's residents apparently worked off-site, and the complex may have served as a base for a prospect operation engaged in both surface and subsurface exploration elsewhere. The west flank of Nelson Mountain features other proximal prospect adits and shafts worked between the late 1890s and early 1900s, and they possess no evidence of associated residences dating to this timeframe. These include Sites 5ML383, 5ML384, 5ML385, the Dolgooth Shaft (5ML386), a small shaft north of the mouth of Deerhorn Creek, and an adit a short distance southeast.

***Prospect Adit, Name Unknown***  
***Site 5ML383***

Site 5ML383 lies on the east side of a minor drainage on the west flank of Nelson Mountain's south spur. The site includes an adit, associated waste rock, and the remnants of a shop. All equipment was removed long ago and within recent years someone used a bulldozer to grade a road to the site, scrape down the waste rock dump's top-surface, and close the adit. The site and surrounding area are heavily forested with old- and second-growth firs and Engleman spruce trees.


**Mining Operations**

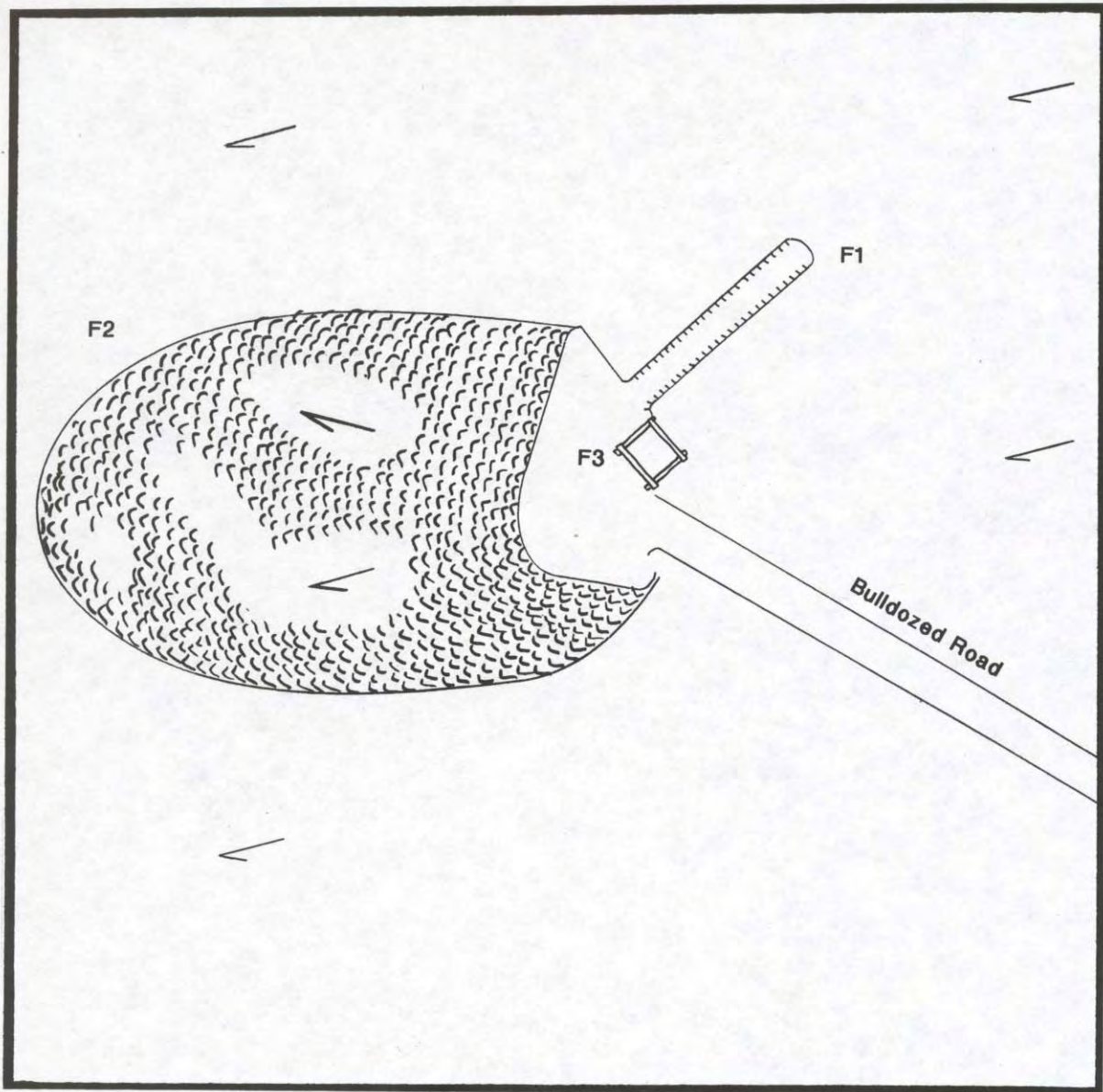
No archival documentation pertaining to historical operations could be located, and as a result the material evidence on-site serves as the primary body of information regarding past activity. During the Creede district's boom-era, probably in the early 1890s, a party of prospectors began driving an adit northeast into Campbell Mountain's south spur toward a group of claims. Beginning in the 1920s, a company drove the Midwest Tunnel, located on the other side of the spur, probably to explore the same group of claims.

PROSPECT ADIT, NAME UNKNOWN

Site 5ML383

Creede Mining District, Mineral County, Colorado

Scale: 15 ft = 



Within recent decades, someone used a bulldozer to close the adit, leaving an area of subsidence 48 feet long and 10 feet wide. The adit eroded open and currently manifests as a small hole. Prospectors erected log cap-and-post timber sets to support the portal, the remnants of which are visible near the trench's end.

Prospectors employed ore cars on a mine rail line to dump waste rock outside of the adit portal, creating a pad 80 feet wide and 125 feet long. They graded the dump's top-surface flat and may have used the area for timber dressing and other activities, although evidence of this was destroyed when the dump was scraped down by the bulldozer. A few artifacts associated with the site's shop lie on the dump's top-surface.

To maintain and fabricate tools and hardware, the prospecting outfit erected a shop building, which remains partially standing, on a cut-and-fill platform south of the adit portal. The shop was a front-gabled log cabin, 9 by 11 feet in area, constructed with saddle-notch joints, and a central log beam supported a roof consisting of plank siding. The structure stood 7 feet high at the gable and 6 feet high at the roof eaves. The west wall features a 30 by 60 inch plank door and the south wall features a 24 by 30 inch window. A gravel-filled wood-box forge stands in the shop's south corner. Currently, the top several tiers of logs and the roof are collapsed. Artifacts lie in and around the structure. Evidence of other surface plant components and activity areas associated with the adit were erased by the bulldozing.

#### Residential Occupation

No evidence exists suggesting that the prospectors lived on or near the site. They may have commuted by foot from the residential complex at Site 5ML382, located a short distance downslope and south.

#### Prospect Adit Site Interpretation

The prospect adit site represents a substantial but failed attempt at locating ore bodies under Nelson Mountain's south spur. Prospectors erected a simple surface plant consisting of the adit portal, a mine rail line to transport materials through the underground workings, and a small shop building. The surface plant was temporary-class in nature and the prospect outfit constructed the shop with local materials. The shop was small and cramped, and prospectors equipped it with portable hand-tools and a vernacular wood-box forge, limiting the facility's capacity to simple work.

In sum, the moderately sized waste rock dump represents fairly extensive underground workings and an earnest attempt at subsurface exploration. The nature of the surface plant and the paucity of artifacts, however, reflect limited capital, marginal investor confidence, a reliance on hand-labor, and relatively brief occupation. The absence of evidence of an ore storage facility indicates that the prospect operation failed to realize ore in economic volumes. The artifact assemblage on-site indicates that prospectors drove the adit between the late 1890s and 1900s. Dateable items include wire nails and six hole-in-cap cans made with inner-rolled side-seams, which probably represent the consumption of mid-day meals.

***Prospect Adit, Name Unknown***  
***Site 5ML384***

The prospect adit lies at the head of a minor drainage on the west flank of Nelson Mountain's south spur. The site includes an adit and associated waste rock, and the remnants of a shop arranged on a moderate, west-facing slope on the drainage floor's east side. While the site lies undisturbed, all equipment was removed when the prospect operation ceased work long ago. The site and surrounding area are heavily forested with old- and second-growth firs and Engleman spruce trees.

Mining Operations

No archival documentation pertaining to historical operations could be located, and as a result the material evidence on-site serves as the primary body of information regarding past activity. During the Creede district's boom-era, probably in the early 1890s, a party of prospectors began driving an adit northeast into Campbell Mountain's south spur. The adit trends toward a group of claims located high on the spur and may have been driven to explore the claims' geology at depth.

After prospectors gave up their effort, the adit portal collapsed, leaving an area of subsidence 45 feet long and 6 feet wide. Prospectors employed an ore car on a mine rail line to dump rock outside of the adit portal, creating a pad 45 feet wide and 65 feet long that features two lobes. They graded the dump's top-surface flat and used the area for timber dressing and other activities. A few artifacts lie on the dump's top-surface near the adit, and at the dump's south base. A flat iron bar with drill-holes and a 2x4 plank indicate that the prospectors used primitive strap rail for their mine rail line. Strap rail consisted of iron straps nailed to the edges of 2x4 planks and arranged in parallel for use as rails.

To maintain and fabricate tools and hardware, the prospecting outfit erected a simple field shop, which remains partially intact, in the nadir of the site's minor drainage. Prospectors laid a low wall of fieldstones to retain the fill material of a 6 by 8 foot platform and erected a 3 by 4 foot gravel-filled rock forge on the platform's northwest edge. In the open-air shop, a blacksmith heated drill-steels in the forge and stood on the platform to sharpen them. A small concentration of shop refuse lies on and downslope from the platform, including anthracite coal, forge clinker, and a bucket made from a five-gallon can.


Residential Occupation

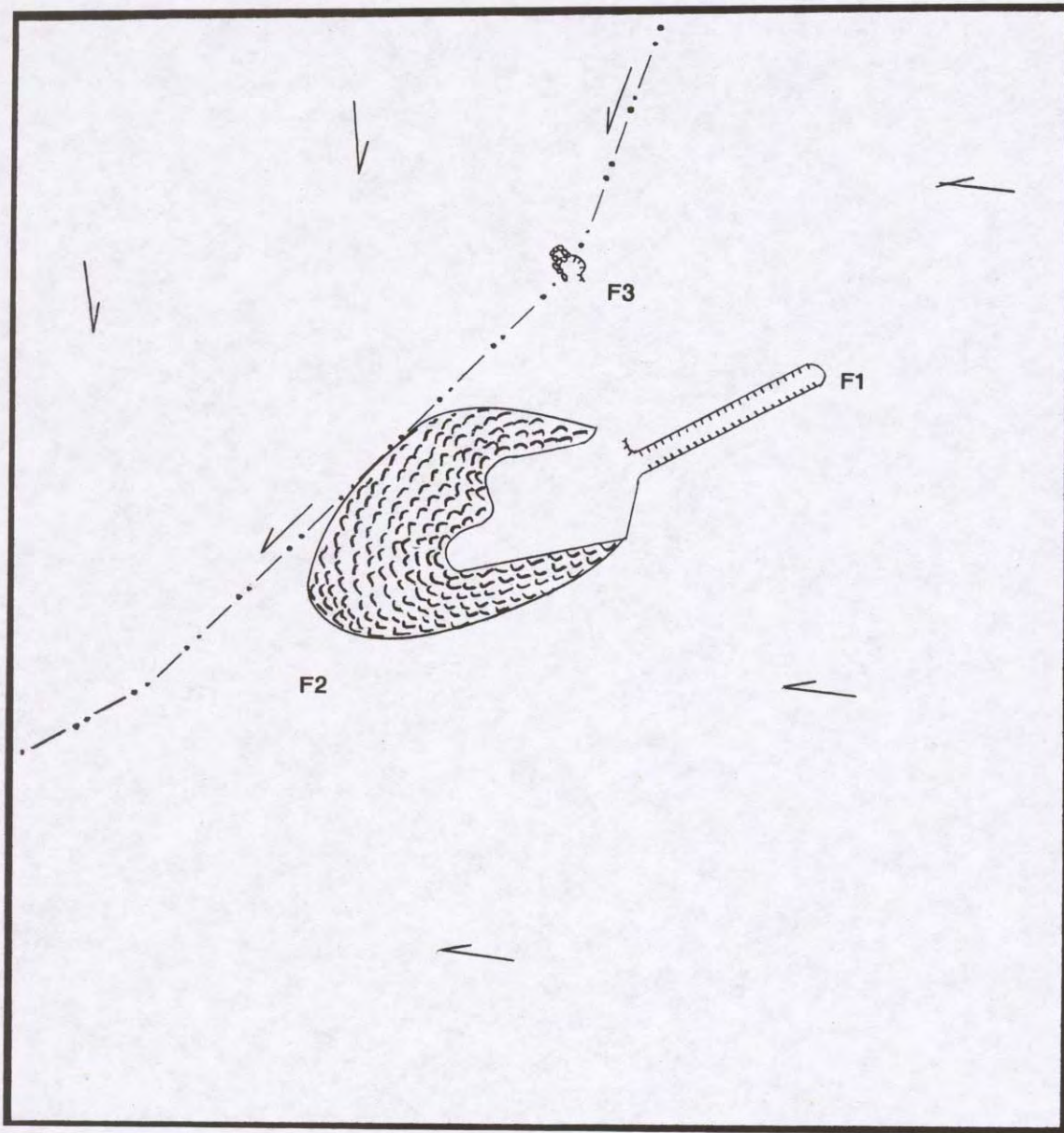
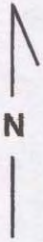
No evidence exists suggesting that the prospectors lived on or near the site. They may have commuted by foot from the residential complex at Site 5ML382, located a short distance downslope and south.

PROSPECT ADIT, NAME UNKNOWN

Site 5ML384

Creede Mining District, Mineral County, Colorado

Scale: 15 ft = 



### Prospect Adit Site Interpretation

The prospect adit site represents a brief, failed attempt at locating ore bodies under Nelson Mountain's south spur. Prospectors erected a simple, temporary-class surface plant consisting of the adit portal, a mine rail line to transport materials through the underground workings, and a field shop. Strap rail was the most primitive and least costly means of constructing a mine rail line, and its life was short. The prospect outfit constructed the field shop with local materials and equipped it with only the tools necessary for basic work. Further, the facility was temporary to the point of being in the open.

The small waste rock dump represents minor underground workings. The shallow workings, the simple surface plant, and the paucity of artifacts reflect limited capital, a lack of investor confidence, a reliance on hand-labor, and relatively brief occupation. The absence of evidence of an ore storage facility indicates that the prospect operation failed to realize ore in economic volumes. The artifact assemblage on-site indicates that prospectors drove the adit during the early 1890s. Dateable items include wire nails, three hole-in-cap cans made with lapped side-seams, and a dipper made from a food pail manufactured with a lapped side-seam. The food cans, few in number, probably represent the consumption of mid-day meals.

### ***Prospect Shaft, Name Unknown*** ***Site 5ML385***

The prospect shaft lies on the flank of a minor knoll extending west off Nelson Mountain's south spur. The site includes an adit, a shaft, associated waste rock, and the remnants of a surface plant arranged on a steep, west-facing slope vegetated primarily with open meadow. Old- and second-growth bristlecone pines, firs and Engleman spruce trees surround the meadow, and many of those on the meadow's downslope side are dead. While the site lies undisturbed, all equipment except for a geared horse whim was removed when prospectors ceased work long ago. Historically, prospectors accessed the property by foot from a road that paralleled West Willow Creek, far downslope and west.

### Mining Operations


No archival documentation pertaining to historical operations could be located, and as a result the material evidence on-site serves as the primary body of information regarding past activity. During the Creede district's boom-era, a party of prospectors first drove an adit northeast into the surrounding hillslope, and shortly afterward sank a shaft by the adit to explore a claim's geology at depth.

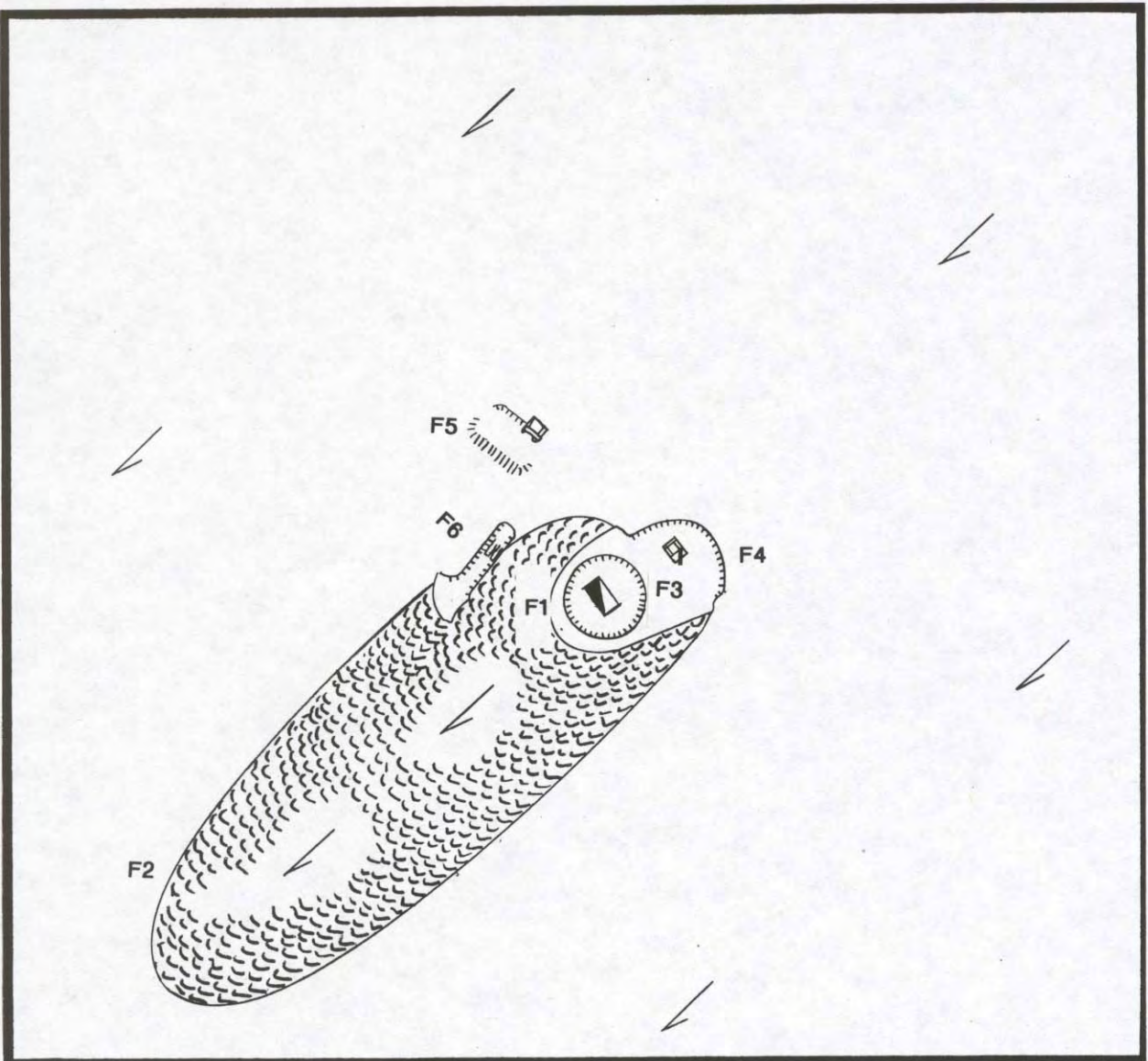
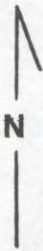
After prospectors abandoned the property, the adit portal (Feature 7) collapsed, leaving an area of subsidence 18 feet long and 5 feet wide. Remnants of hewn log cap-and-post timbering are currently visible in the area of subsidence. Prospectors employed a wheelbarrow to dump rock outside of the adit portal, creating a small pad that slopes away.

PROSPECT SHAFT, NAME UNKNOWN

Site 5ML385

Creede Mining District, Mineral County, Colorado

Scale: 15 ft = 





When the adit failed to strike payrock, the party of prospectors sank a shaft a short distance east. The shaft is currently open, however the collar collapsed, leaving an area of subsidence 16 feet in diameter. Below the area of subsidence, open log cribbing retaining the shaft walls remains intact and the shaft is 4 by 8 feet in-the-clear.

To raise waste rock out of the shaft, prospectors installed a horse whim hoisting system. Such systems consisted of a whim, a headframe standing over the shaft, and an ore bucket as the hoisting vehicle. To raise the ore bucket in the shaft, a draft animal tethered to a harness beam walked a track around the whim, winding the hoist cable. The cable passed from the whim through a shallow trench to a pulley fastened to the headframe's base, over another pulley atop the headframe, and down the shaft. When the draft animal brought a load of rock to the surface, the whim operator engaged a brake lever and disengaged the whim's clutch, grabbed the ore bucket, and wrestled it to the shaft's collar. He then upset the bucket, emptying its unwanted contents.

The site currently features the remnants of several of the whim system's components. Prospectors graded a circular track for the draft animal (Feature 4) northeast of the shaft. They cut half of the track out of the adjacent hillslope and superimposed the other portion over the waste rock dump. They excavated a shallow pit at the track's center for a timber foundation and bolted the whim to the woodwork. The whim (Feature 3) currently remains in place and is a 2½ by 3½ foot horizontal geared unit. A directional arrow cast into the cable drum's flange indicates that the draft animal walked clockwise. The whim's harness beam and control linkages were removed after the shaft was abandoned, and the trench that accommodated the hoist cable extends from the whim to the shaft.

The repeated emptying of the ore bucket resulted in a waste rock dump (Feature 2) 50 feet wide and 135 feet long. The dump cascaded over a portion of the site's adit, indicating that prospectors abandoned the adit before they sank the shaft. Prospectors graded the dump's top-surface flat, in part to accommodate the draft animal track necessary for the whim. A few artifacts, consisting primarily of structural debris and hole-in-cap food cans, lie on the dump's surface and down its flank.

To maintain and fabricate tools and hardware, the prospecting outfit erected a simple field shop, which remains partially intact, on the hillslope a short distance northwest of the shaft. Prospectors cut a 9 by 12 foot platform (Feature 5) for the shop and constructed a 3 by 3 foot gravel-filled hewn log forge along the platform's cut bank. In the open-air shop, a blacksmith heated drill-steels in the forge and stood on the platform to sharpen them. A small concentration of shop refuse lies on and downslope from the platform, including anthracite coal, forge clinker, and wire nails. The platform is currently heavily eroded and the forge is partially buried by scree.

### Residential Occupation

No evidence exists suggesting that the prospectors lived on or near the site. They may have commuted by foot from the residential complex at Site 5ML382 or from a camp on West Willow Creek.

### Prospect Shaft Site Interpretation

The prospect site represents a brief, failed attempt at locating ore bodies under the west flank of Nelson Mountain's south spur. Prospectors erected a simple surface plant consisting of the adit portal and shaft collar, a horse whim hoisting system, and a field shop. The surface plant was temporary-class in nature and primitive. Horse whims were the simplest of mechanical hoisting systems and had depth capacities of up to 300 feet.<sup>52</sup> The fact that the draft animal track associated with the whim was superimposed over the shaft's waste rock dump indicates that the prospectors already sank a portion of the shaft and dumped rock around it before installing the whim. The prospect outfit constructed the field shop with local materials and equipped it with only the tools necessary for basic work. Further, the facility was temporary to the point of being in the open.

The small waste rock dump represents minor underground workings. The shallow workings, the simple surface plant, and the paucity of artifacts reflect limited capital, a lack of investor confidence, a reliance on hand-labor, and relatively brief occupation. The absence of evidence of an ore storage facility indicates that the prospect operation failed to realize ore in economic volumes. The installation of the whim represents an expectation of sinking the shaft to a significant depth. The artifact assemblage on-site indicates that prospectors drove the adit between the late 1890s and 1900s. Dateable items include wire nails and four hole-in-cap cans made with inner-rolled side-seams, which probably represent the consumption of mid-day meals.

### ***Dolgooth Shaft No.2*** ***Site 5ML386***

The Dolgooth operation lies within sight of West Willow Creek, west of Deerhorn Creek's mouth. The site includes a shaft, associated waste rock, and the remnants of a surface plant amid an old- and second-growth fir and Engleman spruce forest. The site lies at an abrupt change in topography; the flank of an unnamed ridge ascends steeply northeast from the site while the slope southwest remains gentle. All equipment and most building materials were removed long ago, the site's two structures collapsed, and a road was bulldozed up to the waste rock dump. Historically, prospectors accessed the property from a road that paralleled West Willow Creek, a short distance west.

### Mining Operations

During the Creede district's boom-era, a party of prospectors searched for ore bodies north of the known termination point of the Amethyst Vein and staked the Dolgooth claim where they hoped the vein continued. To explore the claim's geology at depth, they sank the Dolgooth Shaft No.1 and Dolgooth Shaft No.2 some distance apart along a linear topographic depression. They may have chosen the depression because such surface expressions hinted at fissures and areas of weakness often associated with ore bodies. The Dolgooth Shaft No.1 never progressed beyond a shallow prospect working, but the Dolgooth Shaft No.2 became a significant endeavor. Archival

---

<sup>52</sup> Twitty, 1999:43.

documentation is scant and exactly when the shaft was worked remains unknown, and a lack of Colorado Mine Inspectors' Reports indicates that the property was abandoned by 1915.

When the Dolgooth Shaft No.2 showed signs of promise and warranted a substantial surface plant, prospectors engaged in surface development of the property. They cut away the hillslope above the shaft to create a flat area for various activities, and as they sank the shaft, they dumped waste rock southeast. They graded the dump's top-surface flat and installed a power hoisting system on the flat area.

The hoisting system consisted of a mechanical hoist, a headframe standing over the shaft, and an ore bucket as the hoisting vehicle. A frame hoist house sheltered the hoist and a blacksmith shop.


Currently, the site features archaeological evidence of most of the above improvements. The remnants of a collapsed hoist house lie on the waste rock dump's southeast portion, and it was based on a 2x4 post-and-girt frame sided on the interior and exterior with planks. The hoist was located in the building's north corner, and the shop was located in the south corner, denoted by the remnants of a gravel-filled wood-box forge. The lack of a hoist foundation and the absence of evidence of a steam boiler indicate that the prospect operation relied on a portable gasoline hoist to raise an ore bucket in the shaft. Gasoline donkey hoists required no foundation because their weight was sufficient to keep them in place against the forces of raising a loaded bucket, and they had depth capacities in the high hundreds of feet.

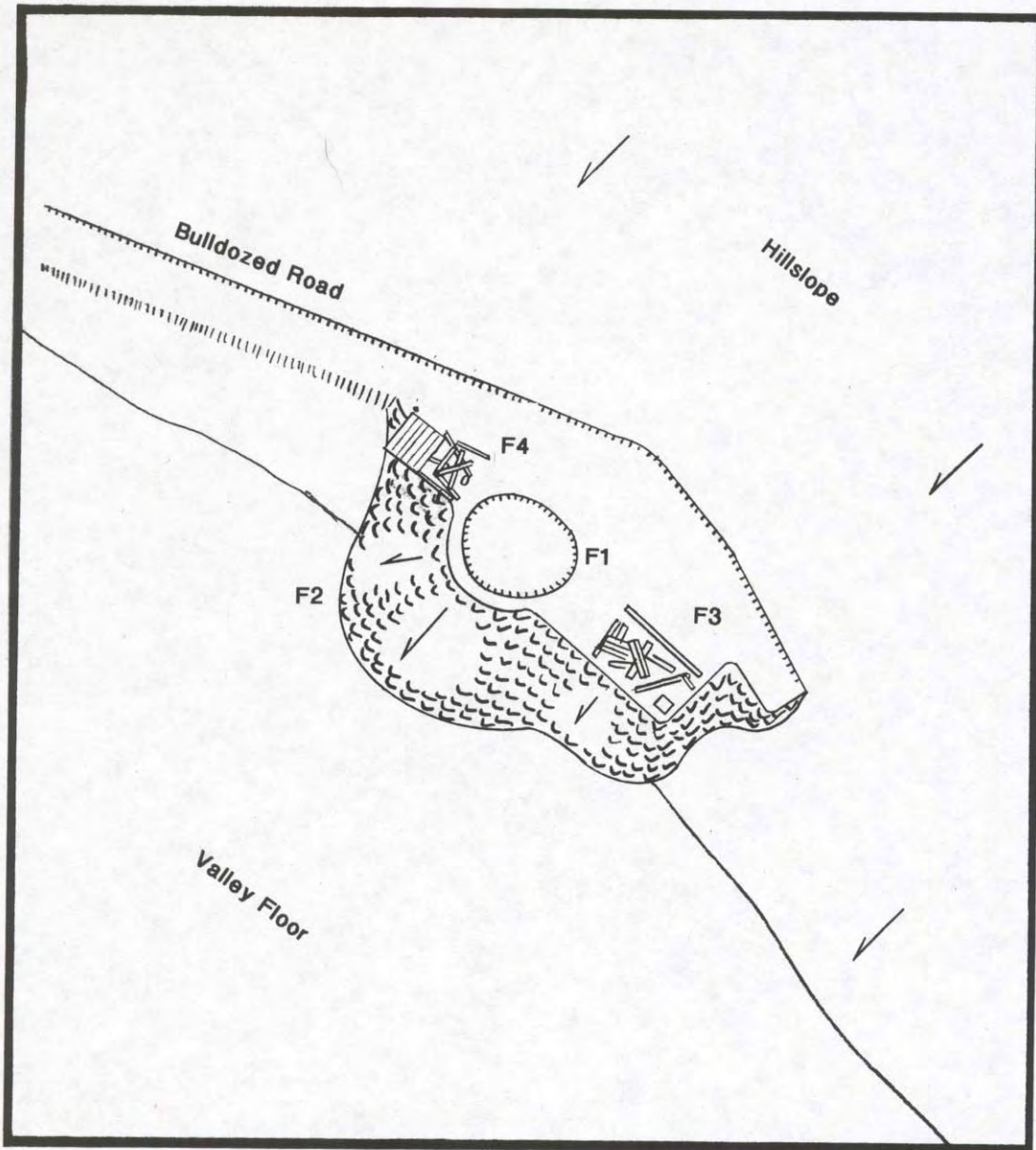
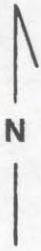
In addition to the structural debris associated with the hoist house, additional artifacts lie around the building remnant. They consist of shop refuse such as forge clinker, forge-cut iron scraps, cut pipe scraps, and barrel hoops, as well as food cans.

As prospectors sank the shaft, they continued to dump waste rock northeast and northwest of the shaft. To do so, they transferred rock from the ore bucket into ore cars that ran on a mine rail line. At the time of abandonment, the waste rock dump attained the size of 60 feet wide, 105 feet long and 10 feet high at the shoulder. They erected a hewn log cribbing wall northwest of the shaft to retain enough rock to form a platform. Over time, the shaft collar collapsed, leaving an area of subsidence 25 feet in diameter and 15 feet deep, drawing in the surrounding portion of the waste rock dump.

At some point in the mine's history, the prospect operation erected another frame building over the platform retained by the cribbing. The building, different in materials than the hoist house, was based on a 2x6 post-and-girt frame and was sided on the interior and exterior with planks. After the mine's abandonment, the building collapsed, leaving structural debris and a portion of an articulated wall. The building's exact function remains unknown, and evidence suggests that it served as a part time residence.

**DOLGOOTH SHAFT NO.2**  
**Site 5ML386**  
Creede Mining District, Mineral County, Colorado

Scale: 15 ft = 



### Residential Occupation

Where the mine workers lived during the Dolgooth's main period of activity remains uncertain. A small quantity of hole-in-cap cans made with lapped side-seams lie widely disbursed on the flat area a distance downslope from and southwest of the shaft, reflecting some form of residence. No tent or building platforms could be located. The type of cans suggests that they were left during the early 1890s. The residence may either represent a temporary camp of the party of prospectors that began sinking the Dolgooth shafts, or an unrelated party of prospectors examining the region during the district's initial rush.

A bed frame and a cot frame associated with the second frame building at the Dolgooth shaft indicate that the building served as a part time residence. The paucity of domestic refuse on-site indicates that residence was very brief.

### Dolgooth Shaft No.2 Site Interpretation

The Dolgooth shaft site represents a significant but failed attempt at locating ore bodies north of the Amethyst Vein. Prospectors erected a simple but mechanized surface plant typical of deep prospect shafts. The surface plant consisted of a temporary-class hoisting system and shop. The hoisting system featured a portable gasoline hoist, a free-standing headframe, and an ore bucket. The headframe was a simple structure that stood on timber footers whereas a production-class headframe required a substantial timber foundation that would have been exposed by the shaft's area of subsidence.

The shop was small in area and equipped with hand-tools, and possibly several hand-powered appliances such as a vice and a drill-press. The shop had a capacity for only basic repair and fabrication, which met temporary-class criteria.

The power hoisting system and the former presence of two buildings represents a modest capital investment and moderate investor confidence.

The shaft's relatively small waste rock dump represents minor underground workings. The limited workings and the paucity of artifacts reflect a relatively brief occupation, and the absence of evidence of an ore storage facility indicates that the prospect operation failed to realize ore in economic volumes. The installation of the power hoist represents an expectation of sinking the shaft to a significant depth.

The artifact assemblage on-site indicates that prospectors sank the shaft between the late 1890s and 1900s. Dateable items include wire nails and five hole-in-cap cans made with inner-rolled side-seams, which probably represent the consumption of mid-day meals. Aqua window glass associated with both buildings indicates that they were erected prior to 1920, when selenium-tinted glass prevailed. The use of a gasoline hoist also reflects this timeframe. Gasoline hoists were introduced during the early 1890s and did not become popular until the late 1890s. The site also includes ten sanitary cans and three vent-hole milk cans that suggest brief occupation probably during the 1930s. The sanitary cans were opened with a rotary opener, which became popular by that time. The people who left the cans may have used the cot and bed in the site's second frame building.

***Captive Inca Mine***  
***Site 5ML387***

The Captive Inca Mine was one of the Creede district's most substantial, advanced operations apart from the mines on the Holy Moses and Amethyst veins. The Captive Inca lies on the steep, west side of the Deerhorn Creek drainage amid an old- and second-growth fir and Engleman spruce forest. While all equipment was removed long ago, much evidence of the surface plant that served a shaft remains. Within recent decades a mineral exploration company graded several drilling pads in the site's north portion, creating minor disturbance, and the shaft collar collapsed, leaving a large area of subsidence. Historically, miners accessed the property by a road that linked the mine with a small residential complex southeast on Deerhorn Creek.

Mining Operations

During the Creede district's initial rush, hundreds of prospectors intensively searched the rugged country comprising the Willow Creek drainage for silver ore. Over time, through subsurface exploration, prospectors and mining outfits began to realize a pattern regarding the Creede district's ore bodies. They found that the district featured two principal ore-bearing veins, which were the Amethyst and the Holy Moses. The Amethyst Vein, in particular, was noteworthy among engineers and geologists because mining outfits proved a length of approximately two linear miles of ore. Geologists and engineers became deeply interested in the pattern the ore bodies seemed to follow, and they noted that the bodies tended to strike primarily northwest-southeast. As they studied the Creede district, they noted not only the distribution of the ore bodies, but the existence of numerous faults, fissures, and zones of weakness that also followed the pattern. The Amethyst Vein received the most attention, and geologists noted that it, like the other veins, lay along a fault.

By the late 1890s, the Park Regent Mine was recognized as the northern-most point of the Amethyst Vein's ore-bearing zone, and miners there proved that the fault continued north but was barren of payrock. At this time, a group of optimistic capitalists speculated that ore deposits resumed in the fault some distance north of the Park Regent, separated from the main portion of the Amethyst Vein by a segment of barren ground. In the late 1890s the capitalists formed the Captive Inca Mining Company and hired a geologist or engineer to trace the Amethyst fault as it continued north from the Park Regent. One of the clues that defined the fault's northern trend manifested as the intersection of West Willow and Deerhorn creeks. Faults were zones of weakness in underlying geology, and hence were prone to erosion over time.

Once the company geologist or engineer determined that the fault crossed West Willow Creek at the confluence, the company elected to sink a shaft on a claim located a short distance north. Under the superintendency of W.G. Boyle, miners began work during the late 1890s and by 1900 sank the Captive Inca shaft to a depth of 500 feet. To search for the fault, Boyle had miners drive several drifts at 100 foot levels. One of the drifts struck the geological formation, which was barren much to the dismay of the company. Unwilling to concede defeat, the company had the miners drive a particularly long drift from the 500 Level along the fault in hopes of striking at least the promise of

ore. Working conditions in the drift were difficult, at best. Like the productive portions of the Amethyst Fault to the south, the ground was especially gaseous and hindered work. To stop gases from seeping out of the drift's rock walls, the miners coated them with concrete as a barrier.<sup>53</sup>

Exploration continued through 1903 with no success. Shortly afterward, the Captive Inca company was no longer willing to invest money in the property and declared an end to its efforts. Without proven ore to rouse the speculation of subsequent outfits in later years, the property became permanently silent. Despite its failure, the Captive Inca Mine did serve the interests of mining on the Amethyst Vein, for it confirmed that the Park Regent Mine was, in fact, the northern terminus of profitable ground.

Today, the Captive Inca site features the remnants of the substantial but failed speculative effort. The site also features evidence indicating that the Captive Inca was not the only effort to discover a northern continuation of the wealthy Amethyst Vein on the east side of West Willow Creek.

The site illustrates the stages of exploration and development the Captive Inca property underwent when workers first searched for the continuation of the Amethyst Fault. Before miners began sinking the Captive Inca Shaft, the exact location of the fault had to first be determined. The company suspected the fault was somewhere on the targeted property, and miners first excavated prospect pits (not on the site plan view) downslope from where they would sink the shaft. Afterward, they drove an adit upslope from the pits to crosscut the geology at depth and reveal the fault. The site currently features the discovery adit (Feature 1), which miners drove west in their effort to crosscut the north-trending fault. Miners erected log cap-and-post timber sets to support loose ground, and after the property's abandonment they collapsed, leaving an area of subsidence 45 feet long and 6 feet wide.

Miners used wheelbarrows to transport waste rock out of the adit and they dumped the material at the portal's mouth, forming several small lobes totaling 30 by 45 feet in area and 5 feet high. The dump (Feature 2) slopes east and its hummocky texture reflects the use of wheelbarrows rather than ore cars. A few structural artifacts, primarily wire nails, lie on the dump.

The Captive Inca company subsequently sank its shaft near or at the area where the adit contacted the Amethyst Fault. To support the intensive, deep prospecting, the company erected a surface plant substantial and advanced enough to facilitate production, should the mine realize ore. The surface plant consisted of components typical of large shaft operations.

The operation's critical surface plant components were enclosed in a large frame shaft house that workers erected on a platform cut out of the hillslope west of the shaft. The shaft house enclosed the hoisting system, a boiler, and a work area in the western half, and the shaft collar, a shop, and an air compressor in the east half. A hewn log wall retained the platform's cut-bank and a water pipe for the boiler extended out of the cut-bank near the hoist. When the shaft collar collapsed, the subsidence probably wrecked the shaft house, as well as drawing in the platform's eastern portion where the

---

<sup>53</sup> *EMJ*, 3/7/03 p384; V.V. Clark "A Geological Study with Historical Notes of Creede Mines, Inc." 1934; Colorado State Archives, Engineers' Reports, Box 31301 File: Creede Mines, Inc.

compressor and shop were located. The remaining structural debris indicates that the shaft house was based on a 10x10 square-set frame. Currently, the western portion of the platform, 35 by 70 feet in area, is visible, and structural debris lies on the flat area and in the shaft's area of subsidence.

The hoisting system consisted of a steam-powered hoist, a headframe that stood over the shaft, a steam boiler to power the hoist, and a hoisting vehicle. Because the headframe was removed and the shaft completely collapsed, the type of hoisting vehicle remains indeterminate. The hoist was a 5 by 6 foot single-drum steam model anchored to a timber foundation (Feature 6) west of the shaft. Mine workers constructed the foundation with 10x10 timbers pinned together by the hoist's anchor bolts.

The boiler setting remnant (Feature 7) lies on the shaft house platform south of the hoist foundation. The setting enclosed a return-tube boiler, and the remnant's size indicates that the boiler shell was 5 feet in diameter. When the shaft collar collapsed, the east portion of the setting was drawn into the area of subsidence. Mine workers constructed the setting by laying a 2 foot thick foundation of fieldstones in the shaft house platform, and erecting brick walls over the footing to enclose the boiler shell. The footing was exposed by the shaft collar's collapse, and the bricks and shell were removed.

Mine workers periodically cleaned residue generated by burning coal, known as clinker, out of the boiler's firebox. They deposited the waste south of the shaft house, resulting in a dump (Feature 8) 20 by 45 feet in area. The dump contains a substantial quantity of material, reflecting sustained use of the boiler.

To provide the boiler with a constant and reliable source of feed water, mine workers erected a water tank upslope from the shaft house, which pressurized the main with gravity flow. Mine workers excavated a platform out of the hillslope and erected a 10x10 timber cribbing foundation for a wood box water tank on the flat area. Currently, the foundation and the pipe that drained the tank are visible (Feature 9). The pipe that carried the feed water to the boiler currently extends out of the shaft house platform's cut-bank near the hoist.

As miners sank the shaft and drove exploratory drifts, they brought waste rock to the surface, which had to be disposed. They relied on traditional ore cars on mine rail lines to shuttle the rock away from the shaft, which they dumped southeast. The resultant dump attained the significant size of 108 by 210 feet in area and 22 feet high, and featured two principal lobes. Several log posts project out of the ends of the lobes and were supports for rail trestles. When the shaft collar collapsed, a significant portion of the dump slumped into the area of subsidence. Artifacts lie scattered across the dump's top-surface and along the south flank.

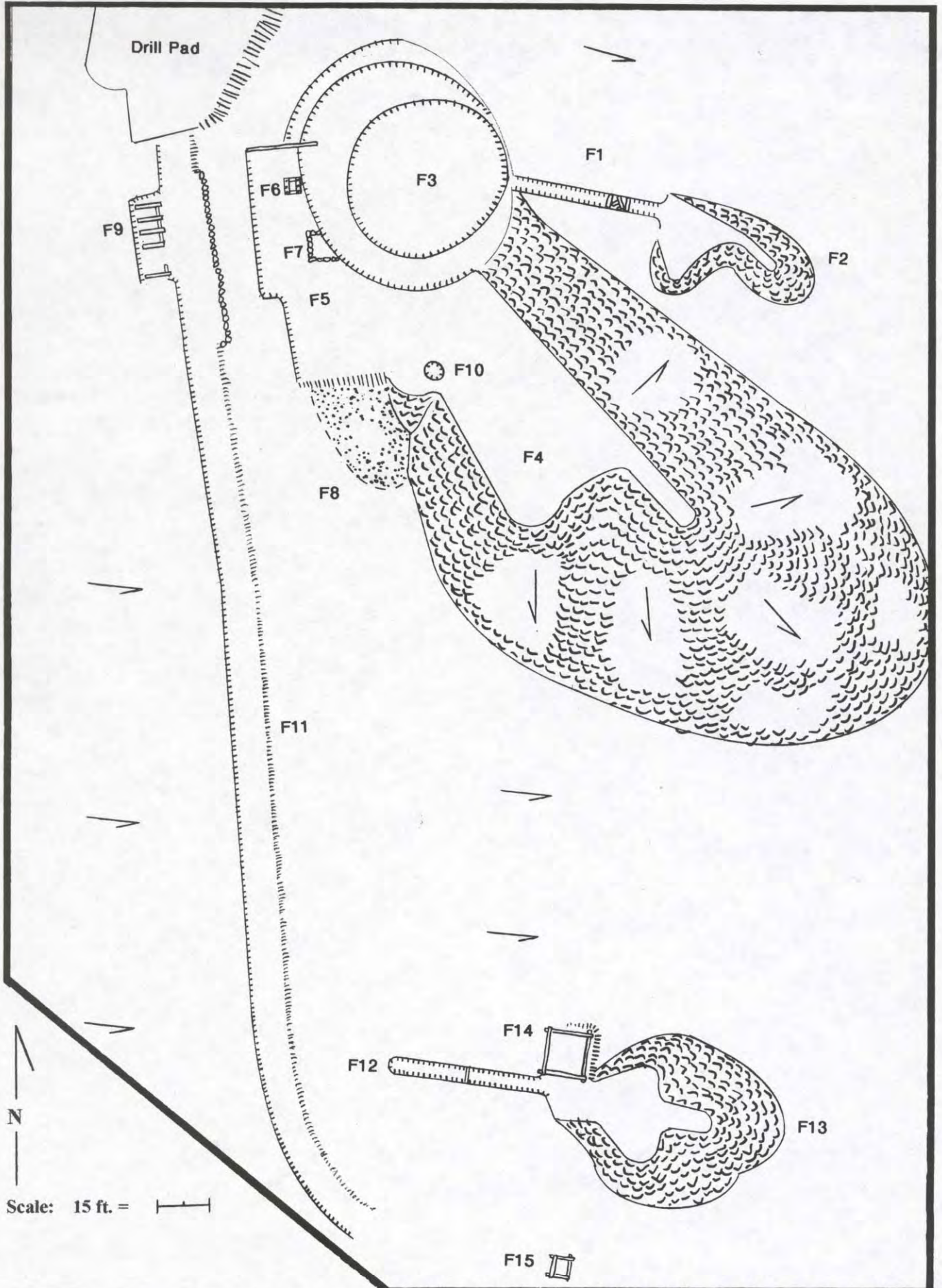
Mine workers erected a privy for the surface crew's use south of the shaft. The privy building stood over a pit retained by log cribbing in a crook in the waste rock dump. Currently, the pit remains and is filled with decayed wood, and lumber lies downslope on the waste rock dump's edge. The pit may feature meaningful buried deposits.



# CAPTIVE INCA MINE

Site 5ML387

Creede Mining District, Mineral County, Colorado



Wagons were necessary to haul in the materials used to build the surface plant and supplies that sustained operations. In response to this transportation need, mine workers graded a wagon road up from Deerhorn Creek. Southeast of the site, the road was widened with a bulldozer, but the portion of the road (Feature 11) on-site remains intact. The road was graded to a width of 10 feet with cut-and-fill methods, and workers erected a low dry-laid rock wall above the shaft house to retain fill material.

The assemblage of artifacts at the shaft reveals additional information about the surface plant's makeup and engineering. The surface plant remnant currently does not feature the foundation for an air compressor; the foundation probably collapsed into the shaft's area of subsidence. However, the presence of a steel spiral-wrapped air hose reflects the use of rockdrills underground, and a compressor was necessary to power these machines. Archival information makes no mention of a high water table in the underground workings, but the presence of a de-watering pump hose indicates that the mining company employed a pump to keep deep workings drained. Several lengths of 30 pound mine rails lay about the site, indicating that the mining company constructed a stout, well-built network of tracks for heavy ore cars. Seven segments of ventilation tubes lay on the waste rock dump, and they reflect the use of a ventilation blower to supply the miners with fresh air in the otherwise foul atmosphere. The artifact assemblage also included typical shop refuse, boiler clinker, and structural materials.

Some of the items left by the Captive Inca outfit are dateable and confirm the mine's timeframe of activity. Aqua and amethyst bottle and window glass lay on the waste rock dump and amid the remnants of the shaft house, and glass possessing such a tint pre-dates around 1920. The steel spiral-wrapped air hose also pre-dates around 1920. Two hole-in-cap cans made with inner-rolled side-seams lay on the waste rock dump, and food packing companies used these vessels between the 1890s and 1910s. Three dynamite box panels, three-eighths of an inch thick and featuring lock-corner joints, were scattered on the waste rock dump. Dynamite makers used boxes made with such panels between 1895 and 1905, when they increased the panels' thickness to one-half inch in compliance with government mandates.<sup>54</sup> In total, the assemblage of artifacts includes only items that date between the late 1890s and 1910s, and nothing post-dating this period.

The Captive Inca Shaft was apparently not the only project seeking the Amethyst Fault. A second party of prospectors drove an exploratory adit into the hillslope south of the shaft around the same time. Currently, the site includes the remnants of the prospecting effort.

Prospectors drove the adit west into the hillslope, probably with the intent of crosscutting the underlying geology like the Captive Inca operation. After the property's abandonment, the prospect adit (Feature 12) collapsed, leaving an area of subsidence 45 feet long and 6 feet wide. The remnants of cap-and-post timbering are visible.

Prospectors apparently employed an ore car to transport waste rock out of the adit, and they created a dump (Feature 13) featuring three lobes. The dump became 50 by 64 feet in area and 6 feet high, and prospectors graded its top-surface flat. Currently, domestic refuse lies on the dump's top-surface and flanks.

---

<sup>54</sup> Twitty, 1993.

A scatter of forge clinker lies on the waste rock dump near the adit portal, indicating that the prospectors maintained tools on-site. They may have used a cabin they erected adjacent to the adit to shelter the shop part time, but because the cabin also served as their residence, it seems unlikely that the prospectors conducted much blacksmithing in the structure. Rather, they probably set up a free-standing pan forge underneath a tarp fastened to one of the cabin's walls. The shop was equipped only for basic work.

The prospect outfit constructed the 13 by 13 foot log cabin (Feature 14) on a cut-and-fill platform adjacent to the adit. They assembled the walls with V-notch joints and chinked gaps between the logs with mud and log strips. The cabin's south wall featured a 30 inch doorway and the east wall featured a 30 by 30 inch window. Currently, the top tiers of logs and the roof are missing. A few artifacts lie downslope and most of the associated refuse lies on the waste rock dump.

### Residential Occupation

The crew that worked the Captive Inca property lived in a residential complex southeast on Deerhorn Creek and commuted approximately one-quarter mile by foot, according to a 1912 topographic map. The residential complex could not be accessed for examination.

The prospectors that drove the site's southern adit lived in the log cabin currently standing adjacent. The accommodations were primitive as the structure may have also sheltered the blacksmith shop in adverse weather. The cabin's square footage totaled approximately 170, which could accommodate up to two residents with space for cooking and other domestic activities.

The prospectors threw their refuse downslope from the structure in the manner typical of Western mining camps and relied on a privy for personal use. They erected a crude, roofless privy (Feature 15) over a shallow pit south of the adit. The prospectors constructed the 6 by 6 foot enclosure by nailing logs together and nailing planks to the interior to block the gaps. The pit is unlikely to feature buried deposits.

The artifact assemblage associated with the site's southern adit reflects some information regarding the prospectors. An abundance of food cans and a lack of butchered bones indicates that their diet consisted almost exclusively of preserved foods, which was typical of short-term, remote prospect operations. The cans probably contained commonly available foods such as beans, vegetables, fruits, stews, and meats. Some of the cans also contained milk, which may have been used in coffee or tea. Fragmented bottles reflect the consumption of modest quantities of liquor, medicine, and condiments. The medicine suggests that at least one of the prospectors suffered an ailment. The artifact assemblage's lack of decorative domestic and other personal items suggests that the two residents were men, probably of a low socio-economic status.

The domestic items and structural materials indicate that the prospectors drove the adit between the last years of the 1890s and early 1900s. The cabin and the privy featured wire nails and no cut nails, reflecting construction after the early 1890s. The assemblage of cans included 93 hole-in-cap vessels made with inner-rolled side-seams and 41 such cans made with lapped side-seams. The bottle fragments included a base embossed with a maker's mark used by the Western Glass Company between around

1900 and 1907. The remainder of the bottle fragments pre-dated around 1920. No evidence existed suggesting later occupation.

### Captive Inca Mine Site Interpretation

While the Captive Inca site retains characteristics typical of a productive mine, in actuality it was merely a deep prospect. Engineers equipped the operation with a well-designed, mechanized surface plant capable of ore production. The surface plant featured a combination of what engineers recognized as production-class and temporary-class components.

Because the shaft collar collapsed, a complete interpretation of the hoisting system remains impossible. The hoist foundation, constructed of timbers, currently is the primary remnant of the system. The foundation's size and footprint indicate that it anchored a 5 by 6 foot single-drum steam hoist. Hoists less than 6 by 6 feet in area were intended for deep shaft sinking, and timber foundations were considered temporary-class.<sup>55</sup> The Captive Inca's engineer installed an air compressor to power rockdrills, which miners used underground to bore blast-holes. The employment of rockdrills was a production-class practice, and it permitted miners to expedite the blasting process and drive greater footages of workings than by hand-drilling. When the shaft collar collapsed, the compressor foundation was drawn into the area of subsidence, hence the exact type of machine and foundation materials could not be ascertained. It seems highly likely that the machine was a straight-line model bolted to a timber foundation.

The Captive Inca company installed a return-tube boiler to supply the hoist and compressor with steam. The remaining foundation indicates that the boiler shell was five feet in diameter, but because a portion of the foundation slumped into the shaft's area of subsidence, the shell's length could not be determined based on material evidence. The boiler's size can, however, be determined based on the machinery it powered. The hoist required approximately 30 horsepower to operate and the compressor probably required a similar horsepower, totaling around 60. The Captive Inca company also employed a steam pump to keep deep workings dry, which could have consumed around 20 horsepower. Therefore, the total demand placed on the boiler was around 80 horsepower. A boiler shell 5 feet in diameter and 16 feet long, which was a standard size used throughout the West, was capable of supplying the necessary steam.<sup>56</sup>

Based on the material evidence on-site, workers constructed a mine rail line with 30 pound rails. Most mine rail lines incorporated 16 pound rails and the use of 30 pound rails reflects a production-class rail line intended to endure heavy use.<sup>57</sup>

The Captive Inca company erected a shaft house to enclose the above surface plant components, as well as a shop. Structural remnants currently lying on the shaft house platform indicate that carpenters erected a square-set frame to support the building. Such a frame indicates that the shaft house was a large, well-built, lofty structure. Such buildings were production-class in nature and represent operation throughout the year.

The Captive Inca's surface plant remnant reflects sound, quality engineering and planning. The machinery and shop were clustered around the shaft so they could be

---

<sup>55</sup> Twitty, 1999:16, 48.

<sup>56</sup> Twitty, 2002:320, 317.

<sup>57</sup> Twitty, 1999:18.

enclosed in a single building to ease servicing and to minimize the loss of steam power, which occurred over distance through decreased pressure and heat. The hoist, boiler, and probably the compressor were bolted to foundations built on solid ground. The engineer planned a plumbing system, including a tank, which ensured the boiler a constant source of feed-water. Miners dumped waste rock in several long lobes extending southeast from the shaft to avoid burying the discovery adit east of the shaft. The adit may have been maintained as a second entrance to the shaft, possibly as an escape exit in the event the shaft house caught fire. Workers graded the Captive Inca's access road upslope from the surface plant to facilitate a gravity-assisted transfer of heavy materials and fuel coal. Last, the engineer arranged the boiler to rely on coal instead of cordwood, which was more efficient.

The Captive Inca's surface plant remnant reflects sound investor confidence and a significant capital investment. The massive waste rock dump indicates that the underground workings were extensive and that miners spent a considerable amount of time exploring the claim. The lack of evidence of an ore storage facility, however, represents a lack of production. The overall low artifact density and the narrow age-range of items indicates that the Captive Inca was not active over a protracted period of time, in contrast to the productive mines on the Holy Moses and Amethyst veins. Further, the assemblage of dateable artifacts suggests that the Captive Inca was worked between the late 1890s and 1900s.

The prospect adit driven by the site's other exploration outfit stands in contrast against the Captive Inca. The prospect outfit installed a simple surface plant consisting of a rail line to move materials into and rock out of the adit, and an open-air shop. The small waste rock dump indicates that the underground workings were shallow. These factors represent minimal capital and investor confidence, brief occupation, and a lack of production. The living conditions at the adit were primitive and intended to be temporary. Few artifacts lay amid the remnants associated with the adit, and they reflect activity between the late 1890s and 1900s.


### **Equity Ore System**

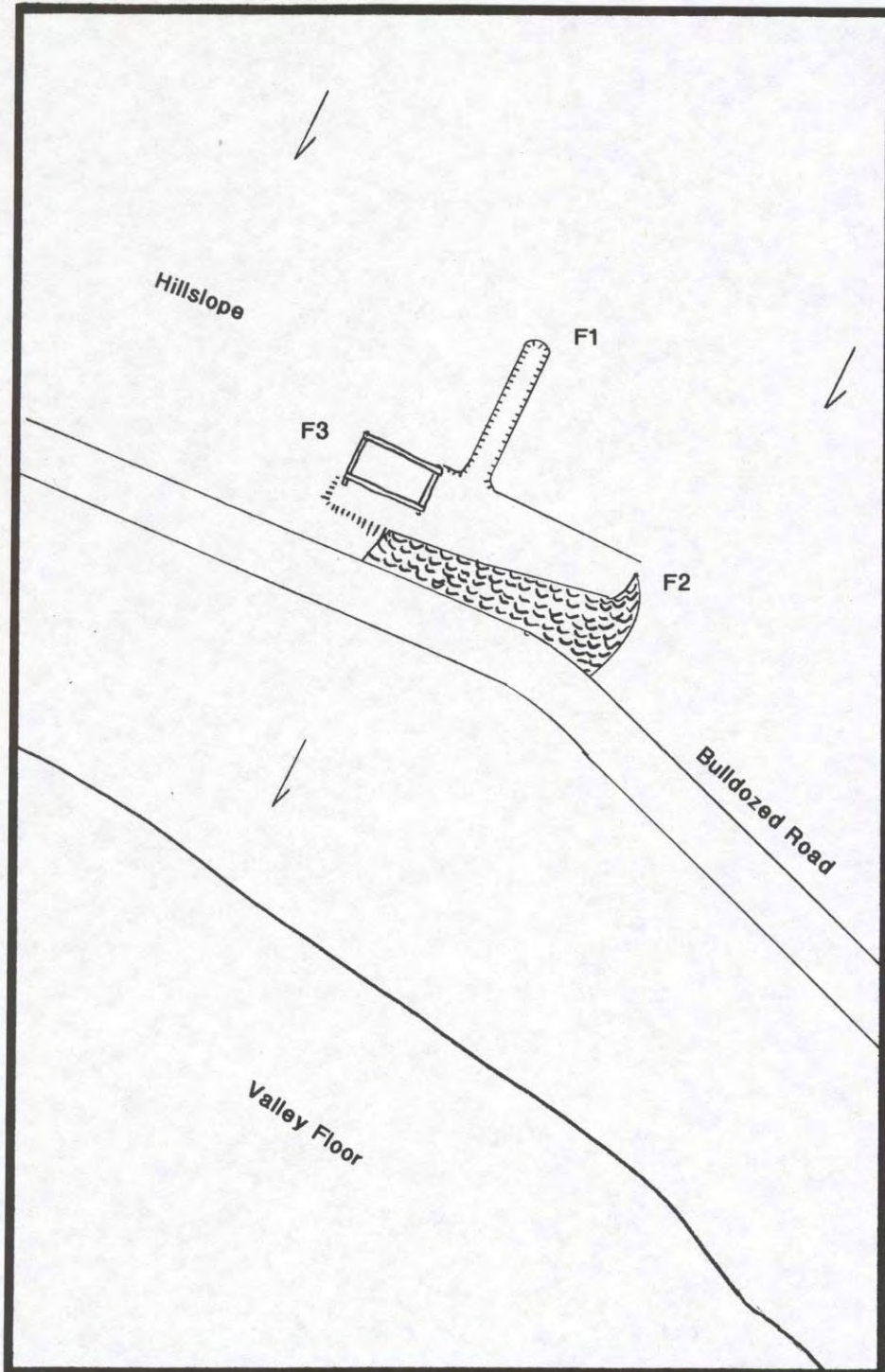
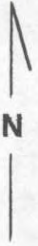
During the 1890s, the Holy Moses and Amethyst veins attracted the most attention in the Creede district, yet parties of prospectors continued to search surrounding areas in hopes of finding additional ore bodies. When prospectors examined the upper stretches of West Willow Creek, they found promising leads above tree line on the drainage's east side. Between the late 1890s and 1900s, the Equity Mining Company proved that the leads in fact became a discernable vein at depth, which geologists in the 1920s and 1960s recognized as the Equity Ore System. Prospectors that attempted to locate strikes in addition to the Equity Mine found that the ore system was limited.

PROSPECT ADIT, NAME UNKNOWN

Site 5ML388

Creede Mining District, Mineral County, Colorado

Scale: 15 ft = 



***Prospect Adit, Name Unknown***  
***Site 5ML388***

Site 5ML388 lies on the east side of West Willow Creek at the base of an unnamed north-south-trending ridge. In terms of historical attributes, the site currently consists of an adit, a standing building, and the associated waste rock dump. The adit penetrates a moderately steep slope forested with stands of Engleman spruce trees and firs interspersed by meadow. The flat floor of the West Willow Creek drainage lies immediately below the mine and features lush grass, arctic willows, and stands of fir and spruce trees. A gravel road passes by the site and was the historic road up to the Equity Mine.

Mining Operations

No archival documentation pertaining to the site could be located, hence material evidence serves as the principal source of information for the site's history. Prospectors drove an adit northeast into the surrounding hillslope to explore the underlying geology at depth. The era during which they drove the adit remains unknown. After the operation was abandoned, the adit portal collapsed, leaving an area of subsidence 30 feet long and 6 feet wide.

Prospectors ejected waste rock out of the adit portal, forming a dump 20 by 42 feet in area and 3 feet high, and they graded the dump's top-surface flat. The dump extends southeast from the adit portal and its footprint suggests that prospectors used an ore car to deposit the waste rock. Within the last 50 years, a broad road was bulldozed through the dump's base, truncating the toe.

The site's prospect outfit constructed a 10 by 17 foot cabin on a cut-and-fill platform adjoining the waste rock dump's west edge. The cabin, currently standing, is a front-gabled square-notched log structure on log foundation footers. The builders chinked gaps between the logs with mud and cement. The roof consists of corrugated sheet iron nailed to planks supported by a central roof beam. Fiberboard is sandwiched between the roof's planks and the sheet iron, reflecting recent rehabilitation. The east wall features a 30 by 48 inch doorway, the south wall features a 36 by 60 inch doorway, and the west wall features a 30 by 30 inch window. The roof's northwest corner features a stovepipe port. Raw logs were used to assemble the cabin, and the structure stands 6 feet high at the roof eaves and 7 feet high at the gable's peak. Currently, the platform's cut-bank slumped, pushing in the decayed north wall. Most of the roof is missing and the structure leans north. The area around the cabin is unlikely to feature buried deposits.

The site lacks evidence of a blacksmith shop, which is usually present at prospect adits. The cabin may have enclosed the shop, but evidence confirming this is lacking.

Residential Occupation

The prospectors that examined the claim apparently lived in the cabin for a brief period of time. The cabin featured 170 square feet of floor space, which accommodated up to two residents and an area for cooking and other domestic activities. The residents threw their domestic refuse out onto the waste rock dump, and the resultant artifact

assemblage consists primarily of food cans and a few bottle glass fragments. The cans were sanitary vessels opened with a rotary opener, and the bottle glass was tinted a selenium color. Rotary openers became popular by the 1930s and selenium glass predominated after 1920. The few artifacts present therefore suggest that the adit was worked during the 1930s or later, after passage of the Silver Purchase Act boosted the price of the white metal. The sparse domestic artifacts consisted almost entirely of food cans, indicating that the residents consumed a diet primarily of preserved foods, and the bottle glass reflects the consumption of some sort of beverage. The lack of decorative items suggests that the residents were males of a low socio-economic status, which is concurrent with the social and economic climate of the Great Depression.

### Prospect Adit Site Interpretation

The remnants of the surface plant associated with the adit are typical of prospect operations. The surface plant consisted of a mine rail line transportation system, the adit portal, and a residential cabin. The prospect outfit may have conducted a little blacksmith work in the cabin, although evidence of shop work was absent. The small waste rock dump reflects shallow underground workings, and the absence of evidence of an ore storage facility indicates the operation failed to produce payrock in economic volumes. In all, the site's simple nature and paucity of artifacts represent a lack of capital and investor confidence, brief occupation, and hand-labor.

It remains unknown when the adit was driven and when the cabin was built. The fiberboard underlying the corrugated sheet iron roofing material indicates that it was rehabilitated in the 1950s or later, probably for recreational use. The small quantity of domestic items and the lack of evidence of blacksmithing suggest the prospect operation worked the property on a limited, part-time basis, and conducted blacksmithing off-site. Hauling tools to a distant shop for maintenance was labor-intensive and required convenient transportation, such as a truck.

The prospect adit site lacks evidence of activity prior to the 1930s. Most other prospect sites in the Creede district saw their principal periods of activity during the boom-era, and few were occupied during or after the Great Depression.

### ***Equity Mine Site 5ML389***

The Equity Mine lies on the east side of West Willow Creek at the base of an unnamed north-south-trending ridge. The site retains no historical integrity due to active mining into the 1980s and subsequent reclamation. The site lies at the base of a steep, mostly barren slope punctuated by stands of Engleman spruce trees and firs interspersed by meadow. The flat floor of the West Willow Creek drainage lies immediately below the mine and features lush grass and arctic willows. A maintained gravel road passes through the site and currently serves as the access to the La Garita Wilderness area.



## Mining Operations

During the Creede district's boom-era, prospectors staked a quiltwork of claims over the most promising areas. By the late 1890s, the central portion of the Creede district had little new ground to offer and prospectors were forced to make forays into the district's fringes. While most remote lands proved barren, one group of prospectors found promising leads in the upper reaches of West Willow Creek. During their examinations, they staked a group of claims above timberline on a ridge north of and adjacent to West Willow Creek, and minor subsurface exploration revealed a potentially rich silver and gold ore body.

During the 1900s the profitability of the proven ore systems in the Creede district eclipsed interest in unproven, remote discoveries such as the one on upper West Willow Creek. As a result, the party of prospectors had difficulty rousing attention in their claims. As mining on the proven ore systems declined during the late 1900s, a group of financiers may have realized the discoveries on upper West Willow Creek had the potential to become the district's new source of production. At this time, they proposed driving a tunnel to strike the promising mineral body at depth. Work started in either 1909 or 1910, and by 1911 miners working underground finally struck payrock.

Much to the investors' delight, the ore contained not only enough silver to be profitable, but also gold in economic quantities. During 1912 miners brought 1,400 tons of ore to daylight, returning handsome profits to the investors, who probably organized the Equity Creede Mining Company around this time. For reasons unknown, work stopped in either 1913 or 1914.<sup>58</sup>

In 1917 the Equity Creede Mining Company, which may have initially developed the property, made preparations to resume operations. By 1918 the property became highly profitable again with miners drilling and blasting ore in a single large stope. At this time, the Equity Tunnel was 750 feet long, and the Equity Creede company invested a considerable sum of capital erecting a substantial surface plant. To supply rockdrills underground with air, workers installed a belt-driven Ingersoll-Rand Imperial Type 10 compressor powered by a Fairbanks-Morse vertical diesel engine. The underground workings featured a vertical winze served by an electric hoist, while a blower, located on the surface, forced fresh air into the gaseous workings. A Fairbanks-Morse dynamo powered by another diesel engine generated electricity to power the hoist and blower. A large compressor house was built to enclose the electrical system and compressor. To house the crew, the company provided a boardinghouse. Despite the significant improvements, the mine yielded ore for only another year and by 1920 fell idle.<sup>59</sup>

During the 1920s, the Equity-Creede Trust Company acquired the mine in hopes of locating new ore bodies. In 1927 Equity-Creede leased the property to the North Amethyst Mining Company, organized by Charles Hollister and Edward Futterer. North Amethyst inherited most of the surface plant erected in 1918, except for the electrical generating machinery. To power the winze underground and the blower, they installed gasoline engines. For two years the North Amethyst company, which employed only a handful of workers, pursued small ore bodies left by the previous operations. The dismal

---

<sup>58</sup> Emmons and Larsen, 1923:171; Henderson, 1926:15.

<sup>59</sup> Colorado Mine Inspectors' Reports: Equity Mine.

economic conditions spawned by the Great Depression in 1929 forced the operation to cease work.<sup>60</sup>

When President Franklin Delano Roosevelt signed the Gold and Silver Purchase acts into law in 1934, many mines were examined, rehabilitated, and brought back into production. For reasons unknown, the Equity remained quiet during this resurgence of mining. After almost 25 years since its abandonment, in 1953 an interested party took an option on the Equity and engaged in underground exploration. The effort failed to strike ore sufficiently profitable and the mine was again abandoned. Afterward, Leslie Turnipseed acquired ownership, and in 1966 Equity Mines, Incorporated repeated the cycle of exploration and abandonment.<sup>61</sup>

Apparently, the previous exploration efforts were insufficiently funded, did not fully understand the local geology, or relied on inadequate equipment, and as a result met with failure. In 1971, the Homestake Mining Company applied its expertise to the Equity and found some ore. Homestake had experience finding ore in the Creede district where none was thought to lie. During the 1960s Homestake used deep drills to sample ground southwest of the Amethyst Vein that prospectors and mining companies in decades past determined to be barren. Through strategic drilling, Homestake discovered the Puzzle Fault, acquired the Bulldog Mine near the town of Creede, and drove the tunnel to a great length where rich ore lay. Probably because operation of the Bulldog Mine subsumed the company's attention and resources, the Equity strike was not pursued.

After the Bulldog Mine closed in the early 1980s, Homestake finally turned its attention to the Equity property. In 1984 workers began a campaign of deep drilling from the surface and underground exploration to determine the exact extent and nature of the extant ore bodies. Within the year the Equity Mine once again yielded rich ore, and exploration revealed additional deposits. Homestake financed the construction of a new surface plant that consisted of a cluster of buildings and modern machinery. Of note, several drill-holes were bored through to the surface for ventilation. Finally, in 1987 the costs of production exceeded profits and Homestake closed and reclaimed the site.<sup>62</sup>

Today, the Equity Mine barely resembles an underground mine. Reclamation, carried out with bulldozers, erased nearly all traces of the surface facilities, leaving several large waste rock dumps, flat areas, and cuts in the surrounding mountainside. No historic artifacts or features remain, and the site lost all historical integrity.

---

<sup>60</sup> Colorado Mine Inspectors' Reports: Equity Mine; Larsen, 1929.

<sup>61</sup> Colorado Mine Inspectors' Reports: Equity Mine.

<sup>62</sup> Ibid.

## CHAPTER 8 EVALUATIONS AND RECOMMENDATIONS

Chapter 8 discusses the significance evaluations and management recommendations for the sites inventoried on the Alpha-Corsair and other ore systems. All of the sites were evaluated for their significance on local, state, and national levels. The sites significant on state and national levels are recommended as eligible for listing on the State and National Registers of Historic Places, and the evaluations are based on the applicability of State and National Register Criteria, and physical integrity. The National Register of Historic Places (NRHP) is a list of sites that hold importance to the nation's past. The National Park Service administers the NRHP, and it defined a set of four basic Criteria by which a historical site could be eligible. The Colorado Office of Archaeology and Historic Preservation devised a State Register (SRHP) modeled after the National Register. The Criteria are as follows:

*Criterion A:* Association with events that made a significant contribution to broad patterns of history.

*Criterion B:* Direct association with the lives of persons significant to our past.

*Criterion C:* The embodiment of distinctive characteristics of a type, period, or method of construction, or representing the work of a master.

*Criterion D (SRHP Criterion E):* A likelihood of yielding information important to history.

In addition to the above, a site must possess historical integrity relative to one or all of the applicable Criteria. For example, if a mine in the Creede district is associated with an important person, then the site must retain historical characteristics developed or in existence during the important person's activities. As another example, if a site is claimed to embody the distinctive characteristics of an early 1890s mine, then the site must not have seen heavy alterations afterward.

One of the underlying areas of importance shared by the sites recommended as eligible is an association with the exploration, development, or settlement of the Creede Mining District. Depending on a site's role in the district, through an association with the mining district, a site can be considered significant on local, state, or national levels. For a detailed account of the Creede district's history and associated references, see the historical context.<sup>1</sup>

The Creede Mining District was an important center of hardrock metals mining tied to local, state, and national events, patterns, and systems. On a local scale, the district became the economic and political hub of the region and drew a population, industries, and promotion to a previously little-inhabited area. Colorado State officials carved Mineral County out of Saguache, Hinsdale, and Rio Grande counties specifically to administer to the needs created by the Creede district.

On a state level, the Creede district was connected to several broad and important themes. Not only was the Creede district one of Colorado's most productive silver mining districts, but also by the late 1890s its mines began producing high volumes of

---

<sup>1</sup> Twitty, 1999.

industrial metal ores. In this light, the district contributed significantly to the theme of the state's economy in several ways. First, investors from across the nation funneled capital into the district to facilitate the extraction of ore. The money directed at securing supplies, equipment, services, and property improvements went to businesses within the state. Second, much profit realized from ore production remained in Colorado in the hands of investors, workers, and businesses. Third, Colorado, and especially Denver, was a center of one of the world's most advanced and prolific mine supply and machinery manufacturing industries. By acquiring many of their industry-specific supplies and machines from Colorado manufacturers, Creede's mining and prospecting companies helped the state's mine supply industry maintain its supremacy. Fourth, acquiring, transferring, managing, and distributing the capital and profits fostered systems of banking and commerce.

The Creede district played a part in the theme of Colorado's agricultural and ranching industries. Thousands of people populated the district and they required food. Most of Creede's residents adhered to the traditional Victorian diet consisting of meats, vegetables, fruits, and grain products, all offered in abundance by Colorado's ranches and farms. Because of the lack of adequate refrigeration most of Creede's foods had to be purchased from regional sources and shipped before they spoiled. In this context, the demand for foods directly supported regional farming and ranching, most of which was located in the Rio Grande River and San Luis valleys.

The Creede district played a role in the theme of Colorado's social structure. First, Creede's mines contributed to the maintenance of the social strata among mining industry participants. A few of Colorado's mining elite, including David Moffat, Sylvester T. Smith, A.E. Reynolds, and the Wolcott family acquired all of the district's most profitable mines. During the early 1890s these owners realized personal fortunes from Creede's mines and rose to or maintained positions among the state's and Denver's high society. Members of the mining elite lost their fortunes during the Silver Crash of 1893 when silver was devalued and silver mines suspended operations. By infusing capital into Creede's mines during the late 1890s and resuming operations when the economy recovered, the mines' productivity permitted the established elite to maintain their social positions. Investors of lesser means and management of mining companies also profited and formed an upper-middle class. The need for workers in the mines and mills ensured that a working class remained.

Second, the cycles of boom and bust in the Creede district helped foster a mobile workforce as jobs were created and terminated. Such a skilled, necessarily mobile workforce contrasted sharply with Colorado's sedentary farming and ranching societies.

Third, some workers employed at Creede's mines and dependent industries were immigrants, mostly from European countries. The development of Creede's mines drew people of different ethnicities to Mineral County and the collapse of mining propelled them to other parts of the state.

Creede directly participated in the theme of Colorado's mining frontier. Creede was one of many metals mining districts that drew Euro-American settlement, economy, industry, transportation, and population to the Rocky Mountains. As a result of the wealth, capital, and engineering in districts like Creede, the state of Colorado attained legendary proportions worldwide for its hardrock mining industry.

The Creede district was also connected to broad themes on a national level. Some of the themes parallel those on the state level, with the addition of inter-state connections, and some are primarily on a national level.

The Creede district participated in the theme of a national economy. First, many investors and mining companies were based outside of Colorado. Communication, finance, and the acquisition and shipment of mining and domestic supplies and food occurred on an inter-state level. In this light, the Creede district was a part of complex national economic and financial systems. Second, national economics created the demand for the ores produced by Creede's mines. Federal acquisition of silver prior to 1893 created a demand for the white metal, and by the late 1890s, a heavy national demand for industrial metals came to the fore. The demand peaked during World War I, faltered, skyrocketed during World War II, and remained high during the 1950s. Creede's mining companies responded by producing great volumes of such ores. Last, many of Creede's mining companies shipped their industrial metal ores outside of Colorado for treatment, to massive smelters in to Omaha, Nebraska, and Joplin, Missouri, where industrial metals were also mined. In so doing, the Creede district became part of an inter-state ore treatment system.

The Creede district participated in the theme of the nation's social structure. When the district experienced its first boom in the early 1890s, it drew optimistic people of many social strata and ethnicities from across the nation. In this context, Creede perpetuated a social group of mobile workers and businessmen. The wealth that investors and businessmen outside Colorado realized from Creede's mines helped the growing upper-middle and middle class social strata to develop.

The Creede district played an important role in the theme of national politics. During the 1890s and 1900s, powerful capitalists owned Creede's productive mines. Some of the elite, such as Thomas Bowen and members of the Wolcott family, held public offices and directly influenced policies that affected the West, and especially the mining industry. The other powerful capitalists, such as David Moffat, A.E. Reynolds, and Sylvester T. Smith supported the politicians that influenced policies. The net result was the promotion of policies in the West that impacted the public, as well as special interests. For example, all of the capitalists that gained from mining advocated Federal price supports for silver, and when the supports ended in 1893, they fought for reinstatement.

Creede directly participated in the theme of the Western mining frontier. The aspects were similar to those discussed with the theme of Colorado's mining frontier. Like Colorado, the wealth, capital, and application of technology in districts like Creede created a mining industry that, up to the 1910s, set a precedent for hardrock mining in other nations.

The Creede district also participated in the resurgence of silver mining when President Franklin Delano Roosevelt signed the Silver Purchase Act into law in 1934. The Act created Federal price supports for the metal, which revitalized mining in many of the West's silver districts, including Creede. The re-opening of Creede's silver mines mobilized capital, created jobs, and contributed to the demand for supplies, food, and services, which came from sources in and outside of Colorado.

Last, the Creede district directly participated in the development of both mining and industrial technologies and engineering, as its mines served as proving grounds. In

1892 an electrical plant went on-line in the district, which was among the first in the West. Until the 1900s, the application of electricity in the West, specifically for mining, was experimental and rare. Through the 1890s the Creede district's electrical grid improved and the power source was used to an increasing degree to run mill and mine machinery. In this vein, the Creede district's electrical grid and the use of electrical machinery served as an example for engineers elsewhere.

In 1892 the Nelson Tunnel Company began a massive engineering project in which it drove a tunnel along the Amethyst Vein, the district's principal ore body, with the intent of linking the prominent mines at depth.<sup>2</sup> The tunnel's purpose was to facilitate deep drainage, to ventilate the workings of many mines, and to serve as a haulageway for the extraction of ore in economies of scale. While the use of lengthy tunnels for the above purposes dates back several decades prior to 1892, the complexity, scale and success of the Nelson Tunnel rendered the project unique. Over the course of ten years, the tunnel attained an unprecedented length of over two miles and linked all of the mines on the Amethyst Vein. The tunnel required the support of a complex infrastructure, which engineers in other mining regions recognized. Not only did the tunnel serve as a celebrated example of fine engineering, but also it demonstrated that mineral claims could be worked from the inside out. The tunnel permitted mining companies to access their claims from within, rather than from separate shafts and adits conventionally driven from ground-surface.

The Creede district also saw the application of other technologies. In the late 1890s diamond drills were used to bore long-holes with success in the Nelson Tunnel. At this time these machines were in a developmental state, and after the 1920s they became important to the mining industry for deep core sampling. Aerial tramways, installed to move ore in high volumes over hostile terrain, were just becoming popular in the 1890s. The Holy Moses Mine hosted the district's first tramway in 1892, and two more systems were built at the Bachelor and Amethyst mines in the late 1890s. The success of these complicated and costly transportation systems served as examples for engineers in other mining districts.

The significance evaluations for each site inventoried on the Alpha-Corsair and other ore systems are detailed below. Most of the sites recommended as eligible are associated with or exemplify aspects of the Creede district and are therefore associated with the themes and patterns discussed above. To avoid repetition in the following evaluations, the sites' roles in the Creede district's history are discussed but the above associations are not repeated.

The sites on the Alpha-Corsair and other ore systems have the potential for significance in another arena not discussed above. Collectively, all of the historic sites, inventoried or not, form a visual landscape within the natural setting of the geographic areas defined in Chapter 1. While individual sites can be significant, the overall entity of the visual landscape is likewise important for several reasons. First, it represents a major portion of the Creede district's important mining industry. Second, it possesses intrinsic value in of itself. Last, the legacy of the Creede district's mining industry is highly important to the region's economy, since numerous tourists from within and outside of

---

<sup>2</sup> The Nelson Tunnel was recorded as part of the Amethyst Vein inventory under Site 5ML346 in 1999.

Colorado visit Creede specifically for its historic resources. In this light, each site has the potential to serve as a contributing element to the visual landscape and historic fabric of the mining district.

### **Alpha-Corsair Ore System/Sunnyside Area Sites**

#### ***Ace Mine Site 5ML299***

The Ace Mine site holds little significance on national, state, and local levels, and is recommended as ineligible for listing on the NRHP and SRHP. The small complex possesses questionable historical physical integrity and features a standing structure less than 50 years old.

While the site is associated with prospecting in the Creede district, the paucity of archival information and poor integrity render the site's relationship to the district difficult to determine. In addition, the scant archival evidence suggests that the site was apparently not associated with significant persons. The site retains no unique attributes, it is not a sound example of a prospect operation, nor is it likely to yield important information.

While the Ace Mine is recommended as ineligible, it can serve as a sound component of the visual landscape of the Sunnyside area. The site, which features a standing structure and a waste rock dump, is a prominent landmark on the gravel road extending along Miners Creek, which is heavily traveled by recreationalists. Management recommendations suggest no further work.

---

#### ***Alpha Mine Site 5ML371***

The Alpha Mine was one of the most important properties in the Creede Mining District. It was the first underground operation on the first claim, staked in 1876, 13 years before activity commenced in earnest in the district. Despite its historical association with the Creede district, the Alpha Mine is recommended as ineligible for listing on the NRHP and SRHP because the site retains little historical integrity. The mine featured two adits, one on the valley floor and the other a short distance upslope. The waste rock dumps and surrounding areas were bulldozed, erasing nearly all historical features and artifacts.

While the site is one of the most visually prominent mines in the Sunnyside area, it would not serve as a component of the historical landscape. The bulldozing destroyed the site's historical appearance, and a modern house was built adjacent to the lower adit. No further work is recommended.

---

***Corsair Mine***  
***Site 5ML375***

The Corsair Mine shares with the Alpha Mine the importance of being one of the Creede district's earliest operations, developed in 1876. The mine continued an important role by being one of the most profitable producers in the Sunnyside area. The site currently features voluminous waste rock dumps, a tunnel portal, and two standing structures. But because nearly all of the site's features are less than 50 years old, the site is recommended as ineligible for listing on the NRHP and SRHP. The recent mining activity erased most historical features and artifacts, ruining the site's historical integrity. The site does possess easily accessed underground workings and a privy pit. But because the mine was heavily worked within the last 50 years, their analysis probably would not contribute meaningful data. Further, because the site retains little integrity, there is no context for data realized from excavating the privy pit.

The Corsair possesses an appearance very similar to historic mines and is a prominent landmark on Rat Creek. In this light, the site would serve as an important component of the Sunnyside area's historic landscape. Management recommendations suggest no further work. However, due to the site's potential to serve as a component of the visual landscape, possible environmental remediation should disturb the waste rock dumps as little as possible.

---

***Kreutzer Mine***  
***Site 5ML374***

The Kreutzer Mine is recommended as ineligible for the NRHP and SRHP. While the site holds some importance on state and local levels through its association with the Creede district, it suffers a lack of historical integrity. In addition, the site is not associated with significant persons, it is not a sound or unique example of a prospect operation, nor is it likely to yield important information. The site features two adits that suffered heavy disturbance in the forms of bulldozing and residential development. The area where the boardinghouse stood may have been erased by road and parking lot development.

The site would not serve as a component of the Sunnyside area's historical landscape. The bulldozing destroyed the site's historical appearance and a modern house was built adjacent to the lower adit. No further work is recommended.

---

***Monon Mine***  
***Sites 5ML319, 5ML369, 5ML370, 5ML373, and 5ML390***

The Monon Mine consists of a complex of five tunnels driven into the northwest and southeast flanks of Monon Hill. Miners drove the Monon Tunnel, the northern-most entry, into Monon Hill's northwest base. The Quintet Mining Company drove the Silver



Horde Tunnel into the hill's southeast base, and the Magnusson and Manitoba tunnels lay between. The Eads Tunnel, the property's discovery adit, lies above all. While the Monon complex was significant on state and local levels through its importance to and association with the Creede district, all of the sites are recommended as ineligible. In 1999 U.S. Forest Service archaeologist Vince Spero recorded the Silver Horde Tunnel and found the site ineligible for the NRHP and SRHP. Spero's recommendation is sound. Due to the lack of historical integrities, all other sites comprising the Monon complex are likewise recommended as ineligible. Bulldozing and mining within the last 50 years destroyed most evidence of historic features and artifacts.

Collectively, the Monon complex forms an important component of the visual landscape in the Sunnyside area. Currently, the five tunnels and associated waste rock dumps are highly visible and lie spread over much of Monon Hill's east and south faces. Further, the Monon and Silver Horde tunnels feature standing structures built during or after the 1950s. While the buildings are not historic, they are similar in appearance to historic mine structures and contribute to the visual landscape and historic feel of the Sunnyside area. Management recommendations suggest limiting the visual impact of possible environmental remediation efforts.

---

***Sunnyside Mine***  
***Site 5ML376***

The Sunnyside Mine is recommended as ineligible for the NRHP and SRHP. Mining within the last 50 years erased nearly all historical features and artifacts, compromising the site's integrity. The site may hold some importance on state and local levels through its association with the Creede district, however, due to the lack of archival information, the site's associations are difficult to ascertain. The site is apparently not associated with significant persons, it is not a sound or unique example of a historic mine, nor is it likely to yield important information.

In terms of an underground mine less than 50 years old, the site does retain physical integrity and is similar in appearance to historic mines. Because of this, the site could serve as a component of the Sunnyside area's historical landscape. If the site is subject to environmental remediation, management recommendations suggest limiting impact to the waste rock dump.

---

***Prospect Adit, Name Unknown***  
***Site 5ML372***

The Prospect Adit is recommended as ineligible for the NRHP and SRHP. The site apparently holds little importance on state and local levels despite its association with the Creede district. The site is apparently not associated with significant persons, it is not

a sound or unique example of a historic prospect, nor is it likely to yield important information.

In terms of the Sunnyside area's historical landscape, the site would contribute little. The site retains marginal historical integrity and is obscured by trees and topography. Management recommendations suggest no further work.

---

***Prospect Adit, Name Unknown***  
***Site 5ML368***

The Prospect Adit is recommended as ineligible for the NRHP and SRHP. Within the last 50 years, someone used a bulldozer to cut a road to the site and scrape down the waste rock dump's top-surface, ruining the site's historical integrity. The site may possess some significance on state and local levels through its association with the Creede district, however due to the lack of archival and material evidence the site's association is difficult to determine. The site is apparently not associated with significant persons, it is not a sound or unique example of a historic prospect, nor is it likely to yield important information.

The site could serve as a component of the Sunnyside area's historical landscape. The waste rock dump is visually prominent, and from a distance, appears unaltered. Management recommendations suggest no further work.

---

**Ore Systems West of the Amethyst Vein**

***Prospect Complex, Name Unknown***  
***Site 5ML379***

The Prospect Complex site holds significance on state and local levels, and is recommended as eligible for listing on the SRHP. The complex possesses a fair degree of physical integrity and it meets State Register Criterion A. The site is probably not important enough individually for eligibility to the National Register and is a fairly common site type in the Western states.

In terms of *Criterion A*, the site is associated with events that made contributions to patterns of Colorado and local history through its role in the Creede district. The prospect workings were driven between 1890 and 1892 to locate ore bodies on the south flank of Bachelor Mountain, west of the Amethyst Vein, and they retain elements remaining from this timeframe. The site is therefore directly tied to and a manifestation of the initial exploration of the Creede district and the definition of the Amethyst Vein.

The prospect complex fails to meet the other Criteria. The operation was not connected to important persons, nor is it a sound or unique example of a prospect complex. While the site includes two platforms partially buried by scree, they are

unlikely to possess archaeological deposits that can yield important data. Management recommendations suggest no further work.

The prospect complex lies on an undisturbed scree slope in full view of the Bachelor Loop Road, which is a historic tour route. Because of these characteristics, the site can serve as a component of the mining district's historical landscape.

---

***Prospect Shaft, Name Unknown***  
***Site 5ML378***

The Prospect Shaft site holds significance on state and local levels, and is recommended as eligible for listing on the SRHP. The complex possesses a fair degree of physical integrity and meets State Register Criteria A and C. The site is probably not important enough individually for eligibility to the National Register and is a fairly common site type in the Western states.

In terms of *Criterion A*, the site is associated with events that made contributions to patterns of Colorado and local history through its role in the Creede district. The prospect shaft was sunk between 1890 and 1892 to locate ore bodies on the south flank of Bachelor Mountain, west of the Amethyst Vein, and it retains elements from this timeframe. The site is therefore directly tied to and a manifestation of the initial exploration of the Creede district.

In terms of *Criterion C*, the site retains characteristics unusual for a prospect shaft. The arrangement of the trench excavated to access the shaft is very unusual. Typically, when prospectors sank a shaft, they cleared soil away from bedrock and installed cribbing to retain the shaft's walls. They ejected waste rock by upending an ore bucket downslope from the shaft, which formed a pad of rock adjacent to the shaft. As the dump's height increased, prospectors added additional cribbing tiers to keep the rock out of the shaft. Instead of following convention, the prospectors on-site excavated the trench and shuttled waste rock out to the trench's mouth in wheelbarrows where they dumped the material. Excavating the trench was labor-intensive, as was transferring waste rock from the ore bucket into wheelbarrows, and pushing the wheelbarrows away.

The prospectors on-site engaged in the labor-intensive practice of erecting rock walls to retain material out of the trench and off an adjacent flat area. The rockwork may have been an ethnic tradition imported from Cornwall, Ireland, or Italy where such practices were common, or from prospectors' conventions of using rocks instead of logs in woodless Great Basin mining districts. Few if any prospect shafts in the Creede district exhibit such unusual characteristics.

The prospect complex fails to meet the other Criteria. The operation was not connected to important persons, nor is it likely to yield further data. While the site includes two platforms partially buried by scree, they are unlikely to possess archaeological deposits. Management recommendations suggest no further work.

The prospect complex lies on an undisturbed scree slope in full view of the Bachelor Loop Road, which is a historic tour route. Because of these characteristics, the site can serve as a component of the mining district's historical landscape.

---

***Exchequer Tunnel***  
***Site 5ML377***

The Exchequer Tunnel holds importance on state and local levels, and is recommended as eligible for listing on the NRHP and SRHP. The site possesses a high degree of archaeological integrity and meets State Register Criteria A, C, and E, and NRHP Criterion D. Because the site is remote and difficult to access, it has seen little disturbance and features many artifacts and a partially intact structure.

In terms of *SRHP Criterion A*, the site is associated with events that made contributions to patterns of Colorado and local history through its role in the Creede district. The tunnel was driven in the early 1900s during the Creede district's second boom and retains elements from this timeframe. The site is therefore directly tied to and a manifestation of the continued exploration, development, and settlement of the Creede district.

In terms of *SRHP Criterion C*, the site soundly represents a remote circa 1900 prospect operation. The nature of the operation and associated residence are clearly represented by archaeological and structural remnants. The site features a partially intact shop building that not only is a sound example of a small mine blacksmith shop, but also retains unusual characteristics. The structure was a shed supported by a frame consisting of four raw log posts at the corners with log cross beams nailed between. For siding, workers nailed a series of vertical logs to the frame, and used an axe to taper the ends of the logs to permit nails to pass through. In terms of Criterion C, the site retains historical integrity.

In terms of *SRHP Criterion E and NRHP Criterion D*, the site holds a high potential to yield important information. Specifically, the interior of the adit is dry and otherwise perishable artifacts lie within. By recording the artifacts underground, an artifact assemblage that includes items not usually found either on ground-surface or through excavation can be compiled. The assemblage would represent the activities, products, and practices used in mine workings. To date, no such comparative assemblage exists, nor has such archaeological work been done underground.

While the site holds a limited visual impact, being hidden by the surrounding cliffs, it retains such a high degree of integrity and could serve as a component of the Creede district's historic landscape and fabric. Management recommendations suggest stabilizing the shop building and research in terms of SRHP Criterion E and NRHP Criterion D.

***Prospect Shaft, Name Unknown***  
***Site 5ML380***

The Prospect Shaft site may hold significance on state and local levels through its association with the Creede district, but because its historical integrity is poor, the site is recommended as ineligible for listing on the NRHP and SRHP. The lack of archival information rendered determination of the site's association with important persons difficult. All structures and equipment were removed, leaving marginal evidence representing the prospect operation. While the platforms that supported buildings are clearly evident, little is left that clearly represents the components of the hoisting system and other surface plant facilities. In this light, the site is not a sound or unique example of a prospect shaft operation. Because the site's underground workings are inaccessible and archaeological deposits are scarce, the site is unlikely to yield important information.

The site lies in an undisturbed meadow in full view of and adjacent to the Bachelor Loop Road, which is a historic tour route. Because of these characteristics, the site can serve as a component of the mining district's historical landscape. Management recommendations suggest no further work.

**Ore Systems Between the Amethyst and Holy Moses Veins**

***Monte Carlo Mine***  
***Site 5ML381***

The Monte Carlo Mine site holds significance on state and local levels through its association with the Creede district. The site features prospect workings, mine workings, surface plant remnants, and residential features erected in the first years of the Creede district. However because the site's historical integrity is poor, the site is recommended as ineligible for listing on the NRHP and SRHP. The site lies on a steep scree slope, and soil and scree creep, and erosion damaged most features. In this light, the site is not a sound or unique example of a prospect or mining operation. In addition, the site appears unassociated with significant persons. Because the site's underground workings are inaccessible and archaeological deposits are scarce, the site is unlikely to yield important information.

The site does hold a high value in terms of the Creede district's historical fabric and visual landscape. The site is in a unique natural setting and is a destination for recreationalists interested in the Creede district's history. Management recommendations suggest no further work.

***Midwest Mine  
Site 5ML300***

The Midwest Mine holds significance to the Creede district as it was one of the last underground operations. Various parties conducted extensive underground exploration into the 1980s. The site currently consists of a mine tunnel, associated waste rock, several standing buildings, and a mine rail line left by the late operations. Because the surface plant components are all less than 50 years old and the mining operation that erected them erased nearly all of the site's historic attributes, the site is recommended as ineligible for the NRHP and SRHP.

While the site no longer retains historical integrity, the buildings and features appear very similar to historic mines. The mine is highly visible and currently is a posted stop on the Bachelor Loop Historic Tour. Because of these reasons, the site would certainly serve as an important component of the mining district's visual landscape and historic fabric.

***Prospect Adit, Name Unknown  
Site 5ML382***

The Prospect Adit site holds importance on state and local levels through its association with the Creede district, and is recommended eligible for the NRHP under Criterion D, and the SRHP under Criteria A and E. The site currently features the remnants of a prospect adit, which lost its historical integrity to bulldozing, and the remnants of an associated residential complex that retains archaeological integrity. The complex's remnants clearly represent the nature of the buildings and occupants.

In terms of *SRHP Criterion A*, material evidence indicates that the site was briefly occupied during the Creede district's first several years and is associated with the district's initial development. Material evidence indicates that the residential complex was re-occupied during the district's second boom. The second occupation deviates from the patterns typical of prospect adits. Specifically, an unknown outfit apparently used the site as a base of operations for work off-site. The site featured a boardinghouse and cabin that accommodated up to 10 workers. The number of workers is out of proportion with the crew requirements of the adit on-site and they probably labored at other nearby prospects. No other sites representing organized, centralized prospect outfits have been recorded in the Creede district.

In terms of *NRHP Criterion D and SRHP Criterion E*, the residential complex is likely to yield important information. The site features two definite privy pits, a possible privy pit, and a cellar pit which may contain meaningful buried deposits. The possible privy pit is associated with a cabin erected between 1890 and 1892. The potential buried deposits may reveal information regarding lifestyles, foodways, consumption patterns, ethnicity, and gender at remote prospect operations during the early 1890s. The two

definite privy pits and the cellar pit probably contain material evidence capable of conveying similar trends pertaining to the late 1890s and 1900s. The pits may include assemblages different than those on ground-surface, as privies offered a secluded environment for the secret or accidental disposal of items, and the intentional disposal of organic matter. The cellar pit may feature an assemblage representative of stored goods. Last, the above can be viewed in terms of an organized, centralized prospect outfit, rather than the traditional population attributed to a single mining operation.

While the site lies secluded in forest and offers little visual impact, it's unique role in the Creede district's prospecting history renders the site an important component of the historical fabric. Management recommendations suggest testing the buried deposits, followed by excavation in the event they prove voluminous.

---

***Prospect Adit, Name Unknown***  
***Site 5ML383***

The Prospect Adit site holds significance on state and local levels through its association with the Creede district. The site features an adit, a moderate-sized waste rock dump, and a partially standing log shop building worked during the Creede district's second boom. However because the site's historical integrity is poor, the site is recommended as ineligible for listing on the NRHP and SRHP. Within the last several decades, someone used a bulldozer to grade a road to the site, scrape down the waste rock dump's top-surface, and close the adit. In this light, the site is not a sound or unique example of a prospect operation. The site appears unassociated with significant persons, and because the underground workings are inaccessible and archaeological deposits are scarce, the site is unlikely to yield important information.

The site does hold some value in terms of the Creede district's historical fabric and visual landscape. The site offers little visual impact and is difficult to access, however it features the partially standing shop. Because of the shop, the site could serve as a remote component of the district's visual landscape. Management recommendations suggest no further work.

---

***Prospect Adit, Name Unknown***  
***Site 5ML384***

The Prospect Adit site holds significance on state and local levels through its association with the Creede district. The site features an adit, a small waste rock dump, and the remnants of an open-air blacksmith shop worked during the Creede district's first boom. While the site remains undisturbed, the site is recommended as ineligible for listing on the NRHP and SRHP. The site possesses no unique attributes, and it is not a sound example of a prospect operation. The site appears unassociated with significant

persons, and because the underground workings are inaccessible and archaeological deposits are scarce, the site is unlikely to yield important information.

The site holds little value in terms of the Creede district's historical fabric and visual landscape. The site offers little visual impact, being concealed by forest, and is difficult to access. Management recommendations suggest no further work.

---

***Prospect Shaft, Name Unknown***  
***Site 5ML385***

The Prospect Shaft site consists of archaeological and engineering features that clearly represent a prospect shaft operation. Because of this, and the site's association with the Creede district, the site is recommended as eligible for the NRHP and SRHP under Criteria A and C.

In terms of *Criterion A*, the site features the remnants of a prospect operation active during the Creede district's second boom, between the late 1890s and 1900s. The site participated in the further exploration by and the development of the district's mining industry. The material evidence on-site, including the intact horse whim, possess integrity in terms of *Criterion A*, and clearly represent the nature of the prospect operation.

In terms of *Criterion C*, the site features archaeological and engineering features that serve as a clear representation of the prospect shaft operation. The shaft remains mostly intact and support cribbing is visible below the shaft collar. The prospectors installed a horse whim hoisting system to raise rock out of the workings and the horse whim remains on-site. The whim was factory-made and consists of a cable drum, gearing, and a capstan bolted to an iron and timber frame. In general, intact whims are rare.<sup>3</sup> The draft animal track that encircles the whim is also intact. The remnants of an open-air blacksmith shop lie a short distance west of the shaft. The shop consisted of a vernacular forge and flat work area, which remain preserved. In sum, the features on-site represent the type of surface plant typically associated with a small prospect shaft.

The site could serve as a component of the Creede district's historical fabric and visual landscape. The site possesses a set of intact surface plant features and a preserved whim. In addition, the site is visible from the Bachelor Loop Road. Management recommendations suggest preventing erosion from burying features, and stabilizing the shaft collar.

---

<sup>3</sup> According to a file search at the Colorado Office of Archaeology and Historic Preservation.



***Dolgooth Shaft No.2***  
***Site 5ML386***

The Dolgooth Shaft No.2 site holds significance on state and local levels through its association with the Creede district. The site features a collapsed shaft, a small waste rock dump, and the remnants of a mechanized surface plant worked during the Creede district's second boom. While the archaeological remnants clearly represent the nature of the Dolgooth prospect operation, the site is recommended as ineligible for listing on the NRHP and SRHP. The site retains only a modest degree of integrity, it possesses no unique attributes, and it is not a sound example of a prospect operation. The site appears unassociated with significant persons, and because the underground workings are inaccessible and archaeological deposits are scarce, the site is unlikely to yield important information.

The site holds little value in terms of the Creede district's historical fabric and visual landscape. The site offers little visual impact, being concealed by forest, and features a moderate degree of historic integrity. Management recommendations suggest no further work.

---

***Captive Inca Mine***  
***Site 5ML387***

While the Captive Inca Mine never produced ore, it was one of the Creede district's most substantial, advanced operations apart from the mines on the Holy Moses and Amethyst veins. The site features a collapsed shaft, a large waste rock dump, and the remnants of a complex, highly mechanized surface plant. However, when the shaft collar collapsed, it created an area of subsidence large enough to draw in a significant portion of the adjacent shaft house platform and other surface plant component remnants, compromising the site's historical integrity. For this reason, the site is recommended as ineligible for listing on the NRHP and SRHP. The site appears unassociated with significant persons, and because the underground workings are inaccessible, the site is unlikely to yield important information in terms of engineering. The Captive Inca's surface plant remnant does, however, feature a privy pit which may yield information regarding the crew. Since the pit was located in an industrial workplace setting, it can contain an artifact assemblage different from pits associated with residential complexes. Mine workers could have used the pit to dispose of items under secrecy, and items workers carried during their shifts could have accidentally fallen in. Since the Captive Inca was worked for a well-defined, short period of time, the buried artifact assemblage could be used to represent an industrial mining deposit characteristic of the early 1900s.

The site holds a high value in terms of the Creede district's historical fabric for several reasons. First, the Captive Inca played an important role in defining the Amethyst Vein's geology and nature of ore deposits. Second, the Captive Inca was one of the district's best-equipped operations. Last, the site features a partially intact cabin and

privy, which serve as components of the district's architectural resources. The site, however, currently holds little potential to serve as a component of the district's visual landscape. Heavy forest and topography conceal the site from public view, and private land blocks easy access. Management recommendations suggest several actions. First, the privy pit located amid the Captive Inca's surface plant should be tested for subsurface deposits. Second, the residential complex where the crew lived, located on private land on Deerhorn Creek, should be recorded and evaluated.

### **Equity Ore System**

#### ***Prospect Adit, Name Unknown Site 5ML388***

The Prospect Adit site holds significance on state and local levels through its association with the Creede district. The site features a collapsed adit, a small waste rock dump, and a standing cabin occupied during the Great Depression. Despite the site's historical association, it is recommended as ineligible for listing on the NRHP and SRHP. The site retains only a limited degree of integrity and the remnants currently existing do not completely represent the nature of the prospect operation. Aside from the cabin, the site possesses no unique attributes and is not a sound example of a prospect operation. The site appears unassociated with significant persons and because the underground workings are inaccessible and archaeological deposits are scarce, the site is unlikely to yield important information.

Because the site's standing cabin and waste rock dump are clearly visible from the main road accessing the La Garita Wilderness, the site could serve as a component of the mining district's historical fabric and visual landscape. Management recommendations suggest no further work.

#### ***Equity Mine Site 5ML389***

The Equity Mine played an important role in the Creede district. Not only was the mine one of the Creede district's few producers outside of the primary ore systems, it was the last underground operation in the district. Despite the mine's historical importance, the Equity Mine is not eligible for listing on the NRHP and SRHP because the site possesses no physical integrity. The site suffered heavy disturbance during the 1970s and 1980s when the Homestake Mining Company intensively mined the property then reclaimed the site, leaving almost no readily identifiable features.

Due to the significant disturbance, no further work is recommended, and the site would not contribute to the visual landscape of the historical mining district.

## CHAPTER 9 PROJECT SUMMARIES AND CONCLUSION

The prospect and mine sites on the Alpha-Corsair and other ore systems are rich in material remains, and some are referenced in archival sources. This legacy lends itself well to an interpretation of each individual site, as well as shedding light on broad patterns and trends of mining and prospecting on the Creede district's minor ore systems. In some senses, the patterns that apply to the prospects and mines on the Alpha-Corsair and other ore systems carry over to the rest of the Creede district because the mining industry was fairly universal.

The following chapter addresses both the individual research questions posed in the research design, as well as other important trends. In keeping with the research design, the interpretations are based on the interdisciplinary approach of wedding archival research and the analysis of archaeological and architectural remains. A significant component of the analyses involved using features and artifacts to reconstruct both the surface plants and the residential complexes associated with the mines. Below, each research question is stated, followed by an analysis and interpretation.

### *Mining Operations*

Question 1. Did the inventoried operations follow technological convention during the different times they operated?

To accurately determine whether the operations followed technological convention, they must be divided into the categories of productive mines and failed prospects. Further, these two categories should be viewed in the contexts of the timeframes the operations were active. The Creede district experienced four principal periods of mining. The first occurred between 1890 when the district was being developed and 1893 when the Silver Crash forced nearly all mines to close. In general, at this time the nation's hardrock mining industry relied primarily on hand-labor and incorporated some mechanization. Technology and engineering was coming to the fore and it was costly. The second period of mining in Creede occurred between the late 1890s, when the economy recovered following the Silver Crash, and the early 1910s when mining companies exhausted most of the viable ore. Between these dates, technology and engineering reached an advanced state, capital was abundant, and mining companies applied mechanization to produce ore in economies of scale. The Creede district remained relatively quiet until 1934 when President Franklin Delano Roosevelt signed the Silver Purchase and Gold Reserve acts into law, which boosted the prices for the metals. Mining continued sporadically into the early 1940s, and the 1950s saw the last significant period of mining in the Creede district.

The inventoried sites represent sixteen intact prospect operations, which lend themselves to interpretation in terms of technological convention. The Creede district's initial boom years were a time of optimism and prospecting as wealth seekers drove numerous adits and shafts in hopes of striking ore bodies. As time progressed and the

district's ore systems became common knowledge, prospecting in the district's central portion declined. Five of the sites date to the district's initial boom-era, and most of their operations and surface plants can be readily reconstructed based on the sites' material remains. Prospectors sank shafts on sites 5ML378 and 5ML380, and drove an adit and sank a shaft on site 5ML379 in search of ore bodies west of the Amethyst Vein. Prospectors drove adits on sites 5ML384 and 5ML382 to locate ore in the area between the Amethyst and Holy Moses veins.

Most of the above prospect operations followed technological convention of the day. Their surface plants were simple, labor-intensive, and consisted of inexpensive temporary-class components and portable equipment. Site 5ML382, the Dolgooth Shaft No.2, and the Captive Inca Mine were the only prospect operations mechanized to a significant degree.

Site 5ML382 lay a relatively short distance west of the Amethyst Vein, and the site's close proximity stimulated enough inventor confidence to permit the operation to install a power hoisting system capable of deep exploration. The system consisted of a sinking-class steam hoist powered by a portable boiler, a headframe, and an ore bucket as a hoisting vehicle. All of the hoisting system's components met temporary-class criteria, which included portability, low cost, and limited power. The blacksmith shop was small and equipped with hand-tools. The hoisting system, arrangement of surface plant components, and shop all conformed to convention in terms of operations equipped for deep exploration.

The Dolgooth operation installed a mechanized hoisting system similar to the one at Site 5ML382, except the system relied on a portable gasoline hoist instead of a steam unit. Prospectors sank the Dolgooth during the district's second boom, and by this time portable gasoline hoists became conventional. However, their use in the Rocky Mountains was relatively rare, where steam equipment predominated.

While the Captive Inca Mine was in actuality a deep prospect operation, its surface plant followed the convention of highly mechanized mining operations. The Captive Inca was equipped with a combination of temporary-class and production-class surface plant components. The hoisting system featured a large, temporary-class steam hoist, which was conventional for deep shaft sinking. The operation was equipped with an air compressor that powered rockdrills underground, and a de-watering pump. Both items were production-class machines. A production-class return-tube boiler powered the machinery and a shaft house enclosed the above surface plant components.

All of the other prospect sites were shallow and featured little or no mechanization. When prospectors at Sites 5ML378 and 5ML379 sank shafts, they erected hoisting systems consisting of hand-windlasses, which were the simplest, most primitive means of raising materials out of the shafts. To transport waste rock away from the shafts prospectors relied on wheelbarrows instead of ore cars. Wheelbarrows were inexpensive, portable, conventional transportation systems for prospect operations in the initial stages of development. The prospectors driving the adit at Site 5ML384 erected an open-air blacksmith work area where they maintained tools. The prospectors at Site 5ML379 erected a simple blacksmith shop sheltered by a frame building. Both shops featured basic tools and vernacular forges. The above operations lacked additional surface plant components.

One site, 5ML378, deviated from convention. Typically, when prospectors sank a shaft, they cleared soil away from bedrock and installed cribbing to retain the shaft's walls. They ejected waste rock by upending an ore bucket downslope from the shaft, which formed a pad of rock adjacent to the shaft. As the dump's height increased, prospectors added additional cribbing tiers to keep the rock out of the shaft. Instead of following convention, the prospectors on-site dug a pit to bedrock and sank a shaft in the pit's bottom. They excavated a trench through the adjacent hillslope to the pit, and shuttled waste rock through the trench in wheelbarrows to a dump. Excavating the trench was labor-intensive, as was transferring waste rock from the ore bucket into wheelbarrows, and pushing the wheelbarrows away. Further, the prospectors erected lengthy rock walls to retain the trench's walls, and to retain material off flat areas downslope from the shaft.

Ten of the prospect sites appear to have been worked during the Creede district's second boom between the late 1890s and 1900s. Prospectors drove adits in search of ore bodies proximal to the Alpha-Corsair system, west of the Amethyst Vein, and between the Amethyst and Holy Moses veins. One of the prospect sites, 5ML388, was worked during the Great Depression. All of the prospect operations followed convention and erected simple surface plants similar to those discussed above.

When companies equipped the productive mine sites, they relied on conventional surface plant components, machines, and engineering, except for two sites. During the late 1910s, when most of the Creede district's ore veins appeared exhausted, miners working under Monon Hill struck rich silver ore. The owners of at least two properties consolidated their interests into the Monon Mining Company. At that time, the Monon featured five separate adits leading into a maze of underground workings, center of which lay several stopes where miners removed ore. Initially, the five adits probably featured independently functioning surface plants that supported work underground. However, to ease logistical management the Monon Mining Company constructed a central surface plant that included a shop and several air compressors powered by boilers. The plant deviated from convention in several respects. First, the mine's engineer located it on the valley floor instead of adjacent to the mine's principal tunnel. Second, the engineer incorporated steam power at a time when the greater mining industry embraced electricity. Because the mine had no electricity, the engineer installed a gasoline hoist underground to raise materials out of a winze, whereas most mining companies preferred clean, quiet electric hoists.

The Corsair Mine saw significant production during the Creede district's second boom and again during the 1930s. During the latter time, in its attempts to minimize the outlay of capital, the Big Ben Mines, Incorporated rehabilitated the steam-driven compressed air system and shop erected by the Monon Mining Company nearby. Big Ben routed plumbing over to the Corsair to carry the compressed air. By the 1930s, few mining companies used steam power, relying instead on conventional electric machinery and gasoline engines where there was no electric service. Big Ben deviated from convention by continuing to use the old steam machinery, but only for a few years, for the company substituted a salvaged automobile engine.

The other inventoried sites followed technological convention relative to when they were active. Miners worked the Monte Carlo Mine during the Creede district's first

and second boom periods and equipped the property with simple surface plants not much different from those at prospect operations. The miners did so because the property was one of the most difficult to access, prohibiting hauling in heavy equipment. The use of simple, labor-intensive surface plants was conventional in the context of remote locations.

Mining companies worked the Corsair and Sunnyside properties on the Alpha-Corsair ore system, the Midwest Mine in the area between the Amethyst and Holy Moses veins, and the Equity Mine on the Equity ore system between the 1950s and as late as the 1980s. All of the above operations followed the convention of applying modern technology to traditional underground methods and engineering. The above operations relied on either V-cylinder compressors or portable compressors to power rockdrills, core drills, pumps, hoists, and mucking machines underground. Portable generators or utility service permitted the use of electricity to operate ventilation blowers, shop tools, and lighting. Last, all of the above operations relied on trucks and heavy equipment to move equipment and earth.

Question 2. Are the surface plants associated with the inventoried prospect and mine sites proportional to the underground workings?

The surest way to address the above question is to examine the underground workings of each operation and compare them to the associated surface plants as reconstructed from material remnants on-site. Since the underground workings were not accessed, the associated waste rock dumps must, therefore, serve as approximate representations. In terms of prospects, the volumes of waste rock dumps can accurately reflect the extent of underground workings, small dumps reflecting shallow workings and large dumps reflecting extensive workings. In terms of profitable mines, the dumps reflect only those workings driven during exploration and development. Stopes, where miners removed ore, are not represented because they sent the ore to be milled.

Of the inventoried sites, the Captive Inca, Corsair, Midwest, and Monon mines featured the most extensive underground workings, represented both by voluminous waste rock dumps and archival records. The sets of surface facilities for the above sites were substantial. All of the above mines featured multiple buildings serving specific functions, as well as compressed air systems and other machinery. The Captive Inca Mine featured a substantial hoisting system and a compressor powered by a boiler, all enclosed in a shaft house. The Monon Mine possessed five openings, two compressors powered by steam boilers, and a substantial shop. Additional buildings, including ore bins, stood at the various adits. The Corsair and Midwest mines featured several buildings each, including compressor houses and shops. In addition, electric locomotives hauled trains of cars through the underground workings.

The surface plants associated with the prospect operations were concurrent with their underground workings. The prospect sites possessed shallow underground workings according to the small waste rock dumps. The surface plants associated with most of the prospects were simple and featured only a few components, including one or no structures, no ore storage facilities, and no power-driven machinery. Site 5ML380 was a deep prospect shaft, indicated by a moderate-sized waste rock dump, and the

prospecting outfit equipped the property with a steam-driven hoisting system, a separate hoist house, and a separate shop. The surface plant is concurrent with the nature of the underground workings. While the Monte Carlo Mine in fact produced ore its workings were shallow, reflected by the site's small waste rock dumps. The mine's surface plant was similar to those associated with the prospect sites.

Question 3. Do the inventoried sites follow the trends of temporary-class and production-class surface plants for mines and prospects? If not, why?

All of the prospects, except for the Captive Inca Mine, featured surface plants equipped with temporary-class components as represented by archaeological remnants. Such components were intended to meet the rigors of prospecting, being simple, portable, and above all, inexpensive. Prospect operations had little need for surface plant facilities intended to facilitate ore extraction since the presence of ore was not yet confirmed. The shallow prospects were equipped with surface plants simpler than the deep prospects. All of the prospect operations featured small blacksmith shops that facilitated only the most basic work, and the shops were equipped with portable appliances and hand-tools. Prospectors at Sites 5ML379, 5ML384, 5ML385, the Exchequer Tunnel, and the Dolgooth Shaft No.2 erected stationary, vernacular forges built with local materials. In terms of transportation, the shallowest prospect operations, such sites 5ML378, 5ML379, 5ML385, and an adit at the Monte Carlo Mine relied on wheelbarrows to move waste rock while the other operations employed ore cars. Some of the deeper prospect operations also employed temporary-class ventilation systems consisting of hand-powered blowers that forced air into tubes that extended underground. The use of ventilation systems represents significant prospecting efforts.

While the prospect outfit at site 5ML380 installed a steam-powered hoisting system to raise materials out of a shaft, the system's components and the shop were temporary-class in nature. The hoist was a single-drum unit less than 5 by 6 feet in size and the boiler was a portable model. Mining engineers recognized both pieces of machinery as temporary-class.

The Captive Inca Mine stands in marked contrast to the above prospect operations. A group of local investors organized the Captive Inca company in the late 1890s to explore the Amethyst Fault in hopes of finding ore, which never materialized. They equipped the property with one of the Creede district's most substantial surface plants that included many production-class components. According to material evidence, the hoisting system included a 5 by 6 foot single-drum steam hoist, which was the largest temporary-class hoist available. Mining engineers recognized larger hoists as intended for light ore production. The surface plant included an air compressor, which was a production-class component. A production-class return-tube boiler powered the hoist, compressor, and a de-watering pump located underground. A reliable water system, including a tank, ensured the boiler a constant source of feed water. A large shaft house, based on a square-set frame, enclosed the above machinery, as well as a shop. Such a shaft house was a production-class structure. If the mine never produced ore, why did the Captive Inca company finance such a production-class surface plant? Two reasons are plausible. First, the investors probably felt confident that the Amethyst Fault would yield

ore since the property lay a relatively short distance north of the productive Park Regent Mine. Second, the financiers, hoping to sell a barren mine, may have attempted to stimulate an artificial sense of confidence among other investors through the substantial surface plant.

Most of the inventoried, productive mines featured surface plants equipped with production-class components. The purpose of such components was to maximize the flow of ore out of the mine while minimizing operating costs such as labor, time, and energy consumption per ton of rock removed. Production-class components and machines fell along a spectrum. Advanced, large, and costly components and machines permitted greater production with more savings per ton than those that were smaller and less costly. Mines with substantial ore bodies stood to benefit from the more efficient surface plant components.

In 1918 the Equity Creede Mining Company featured the most substantial surface plant of its time period. To supply rockdrills underground with air, workers installed a belt-driven Ingersoll-Rand Imperial Type 10 compressor powered by a Fairbanks-Morse vertical diesel engine. The underground workings featured a vertical winze served by an electric hoist, while a blower, located on the surface, forced fresh air into the gaseous workings. A Fairbanks-Morse dynamo powered by another diesel engine generated electricity to power the hoist and blower. A large compressor house was built to enclose the electrical system and compressor. All of the above facilities were production-class in nature.

Around the same time the Equity Mine was active, the Monon Mining Company invested a considerable sum of capital erecting a substantial surface plant, which was the second largest. The Monon company erected a centralized plant consisting of a duplex steam compressor powered by a return-tube boiler, and a large shop. In 1920 the company replaced the single boiler with two 150 horsepower return-tube units and added a second duplex compressor. The compressed air system and plumbing necessary to route the air underground were certainly production-class in nature. In addition, other buildings stood at the portals of the mine's various adits. In sum, the Monon's collection of facilities was impressive. Nothing currently remains.

Between the 1950s and 1980s various mining companies re-worked the Corsair, Midwest, and Sunnyside mines and equipped their properties with production-class components. Powerful, portable compressors provided air for rockdrills, hoists, and mucking machines. Electric locomotives pulled trains of cars through the underground workings, and electrical generators powered the locomotives. The shops featured power appliances and tools, and individual buildings served special needs.

By contrast, several of the above properties active during the Great Depression featured simple surface plants consisting of temporary-class components. According to archival information, the partnership of Weaver and Oates worked the Monon Mine and supplied their own small, portable compressor. The surface plant consisted of little else. Big Ben Mines, Incorporated profitably mined the Corsair property on the other side of the canyon and rehabilitated the Monon's steam-powered compressors. The use of compressors to power rockdrills was certainly a production-class practice, however steam equipment was obsolete by the 1930s. Material evidence suggests that an unknown outfit re-opened the Sunnyside Mine and installed a gasoline compressor to power rockdrills.



Such compressors were considered marginally production-class in duty. Considering the production-class natures of the surface plants at these properties before and after the Great Depression, the facilities installed during the 1930s appear simple and regressive. The reason lies with the poor economic climate of the era. At this time, capital was scarce, and mining outfits invested little and were satisfied with marginal production.

The Monte Carlo Mine was the only productive operation that featured a temporary-class surface plant. Miners accessed the underground workings through an adit equipped with no more than a rail line and a small shop, which they enclosed in a frame tunnel house. The surface plant was simple for several reasons. First, the site's remote nature inhibited the equipment that could be transported. Second, the ore bodies were not rich enough to warrant the expenditure of the huge sums of capital necessary to install production-class facilities.

Question 4. What does the spectrum of inventoried sites reflect about the expertise of engineers?

While archival information pertaining to the inventoried sites makes no direct mention of engineering practices or specific engineers, the material and archival evidence reflects several trends regarding engineering. The shallow prospect operations had few needs, which their surface plants reflect. The surface plants associated with the prospect operations required little engineering and experienced prospectors were capable of installing the facilities that fulfilled immediate requirements. Since prospectors had to be somewhat self-sufficient, they understood basic blacksmithing, transportation of materials in the underground workings, and ventilation. In addition, they were versed in driving adits and sinking shafts.

The Captive Inca and Site 5ML380 both were deep shaft operations and beyond the rough-and-ready skills of most prospectors. Engineering surface plants for deep shafts required knowledge of spatial arrangement, the application of specific machines, and the flow of materials into and out of the mine. Further, experienced engineers were necessary to survey a shaft and ensure it remained plumb, they had to understand the construction and performances of power hoisting systems, and they had to set up a surface plant within economic constraints.

The prospect shaft at site 5ML380 featured a basic steam-powered hoisting system that included a single-drum hoist anchored to a timber foundation, a portable boiler, and a headframe. Such a system was within the skills of many engineers who could have acquired their knowledge through experience, although by the 1920s most received a technical education.<sup>1</sup> The location of the shop some distance west of the shaft reflects poor planning; usually, engineers located shops adjacent to a shaft to minimize unnecessary handling of heavy steel tools and other items.

The Captive Inca Mine was equipped with one of the Creede district's most substantial surface plants, which required advanced engineering. The Captive Inca was equipped with a mechanized hoisting system designed to work at great depth, as well as a compressed air system, and a de-watering system for the underground workings. A boiler powered the machinery, and it required a reliable source of feed water. Further,

---

<sup>1</sup> Spence, 1993:18.

the surface plant had to be arranged to function in adverse weather. To build the hoisting system, the engineer had to select a hoist based on anticipated working depth, hoisting speed, and load. He then designed a headframe that could withstand the forces of the hoist's horizontal pull and vertical stresses. For the compressed air system, the engineer had to determine the total number of rockdrills, their air consumption, and pressurizing the plumbing, and acquire a capable compressor. The machine also had to be easily transported and installed. The air plumbing had to consist of pipes large enough and strong enough to convey the air without a debilitating loss in pressure or bursting. To arrange the de-watering pumping system, the engineer had to estimate the flow of water into the mine workings and install a pump and plumbing with better capacity. To power all of the above machinery, the engineer had to add the total steam consumption and select a boiler accordingly. Last, all of the above components had to be clustered close enough to be sheltered in one building, yet far enough apart to permit servicing. Such engineering usually required technical training and experience, and the remnants of the Captive Inca Mine reflect such expertise.

The Monon Mine reflects several curious trends regarding engineering practices. During most of the 1910s, various mining companies and parties of lessees working ground owned by the Monon and Quintet mining companies drove five adits into Monon Hill. Each party was responsible for its underground workings and associated surface plants. Since each party was independent, the workings attained a haphazard organization, and most of the adits featured simple surface plants that lacked mechanization. In 1918, the various properties were consolidated into the single entity of the Monon Mining Company, which probably hired a resident engineer. At this time, the engineer sought to economize by constructing a centralized surface plant that served the mine's cumulative needs. He arranged for a compressed air system and a shop on the valley floor proximal to the Monon Tunnel. The compressed air system included a duplex steam-driven compressor driven by a return-tube boiler, and in 1920 the engineer added a second compressor and replaced the single boiler with two 150 horsepower units. The remnants of the central shop and compressed air system could not be identified during the site inventory.

The haphazard workings and individual surface plants arranged by the lessees at each adit prior to 1918 reflect a lack of professional engineering, planning for future needs, or an understanding of organization. The centralized surface plant erected in 1918, on the other hand, reflects the work of a trained, experienced engineer. As with the Captive Inca Mine, the Monon's engineer exercised calculation and an understanding of machinery when he arranged for the compressed air plant. However, the engineer displayed a limited familiarity with then-modern machinery by selecting steam-powered equipment. By the 1910s, the mining industry embraced electric power to drive machinery and where electricity proved uneconomical, it heavily employed petroleum engines. In some cases, such as at the Equity Mine, petroleum engines powered electrical generators. The use of steam equipment during the 1910s reflects, in the climate of the Creede district's technologically advanced industry, regressive and conservative engineering. The Monon's engineer also displayed inexperience in long-range planning by installing a gasoline hoist underground when an electric model would have been better suited.

The surface plant at the Equity Mine, of which nothing remains, indicates that the Equity Creede Mining Company employed an experienced, technically trained engineer. The specialist effectively combined petroleum engines and electricity to power a compressor, a ventilation blower, and a hoist. Specifically, he arranged an engine to power the compressor and an engine-driven generator to power the blower and hoist. Such an assemblage of equipment reflects an understanding of the optimum application of technology at a remote mine.

The Monte Carlo Mine site exhibits characteristics of engineering exercised by miners with a limited knowledge. The operation incorporated little mechanization and the surface plants were simple to the point of being like those at prospects. Evidence suggests that miners extracted ore as they encountered it rather than systematically developing the ore vein as experienced engineers would have done. The miners first extracted ore from the ground-surface, then through a shallow adit. A windlass spool on-site, a primitive form of hoist, indicates that when miners exhausted ore in the adit, they sank an internal shaft in pursuit of more payrock.

Big Ben Mines, Incorporated probably employed an engineer that addressed the Corsair Mine's needs for mechanization in light of the limited capital available during the Great Depression. To save money, the engineer sequestered the centralized surface plant erected by the Monon company in 1918 and had workers rehabilitate the aged steam equipment. He designed a plumbing system that routed the compressed air into the Corsair's workings where miners used rockdrills. Within several years, the engineer replaced the boilers with a salvaged automobile engine to power one of the compressors.

The operations that worked the Corsair, Sunnyside, and Midwest mines between the 1950s and 1970s relied on specialists to employ engineering on modest scales. The application of advanced technologies to traditional underground methods was within the scope of many engineers at this time. Specifically, the above mines were equipped with powerful compressors, electric locomotives, and well-appointed shops. The outfits that worked the above properties faced limitations in terms of the engineer it could employ. Highly experienced engineers capable of advanced work often commanded wages that a company with modest capital and ore reserves of unknown extent could not justify.

Question 6. To what degree did electricity impact mining on the Alpha-Corsair and other ore systems? How extensively was electricity applied, and what was the power source used for? When did electricity actually become popular?

The Creede district hosted one of the first electrical generating systems employed in Western mining districts when the Creede Electric Light and Power Company switched on its circuits in 1892. By the late 1890s, all of the principal mining companies in the district installed their own powerplants to run efficient mill and mine machinery. Despite this precedent-setting use of electricity, nearly all of the sites inventoried on the Alpha-Corsair and other ore systems did not employ electricity until the technology was widely available by the 1950s.

The Equity Mine was the only operation to electrify at least some of its machinery. In 1917 the Equity-Creede Trust Company's engineer installed a diesel-powered dynamo to power a hoist underground and a ventilation blower. Some of the other mines certainly had an opportunity and a need to follow the Equity's example. The Monon Mine, like the Equity, featured vertical workings underground that warranted an electric hoist, but the resident engineer employed a gasoline hoist instead.

Two reasons can explain why the mining companies on the Alpha-Corsair and other ore systems failed to employ electricity during the district's early years. First, the technology required advanced and progressive engineering skills, which conservative engineers with limited knowledge lacked. Second, acquiring the necessary equipment and an engineer that understood electricity was prohibitively expensive.

By the 1950s, however, the use of electricity was common for mining as well as other industrial uses, and engineers were well-versed in its application. In addition, rural electrification programs wired many remote areas for the power source. The operations that worked the Corsair, Sunnyside, Midwest, and Equity mines at this time relied on electricity for lighting critical areas and to run machinery. Those mines without service installed their own generators.

In sum, electricity had little impact on mining on the Alpha-Corsair and other ore systems during the Creede district's boom-era and the Great Depression. By contrast, the mining companies on the nearby Amethyst Vein, and to a lesser degree on the Holy Moses Vein, embraced electricity and applied the power source for both mining and milling. During the 1950s the power source became almost a necessity and most of the mines active at this time used the power source for industrial purposes.

Question 7. To what degree were rockdrills employed on the Alpha-Corsair and other ore systems, and what types of operations used the machines?

Popular history suggests that that the mining industry universally accepted rockdrills during the 1880s because the machines permitted a significant increase in production and the driving of underground workings. Miners used the machines to bore blast-holes deeper and larger in diameter than was possible with traditional hand-drilling methods. Once the holes were bored, miners loaded them with explosives, which was the prime means of breaking and moving rock underground. In reality, the mining industry experimented with rockdrills during the 1870s and only heavily capitalized companies employed them during the 1880s. By the 1890s improvements in drill and compressor technology and the availability of capital brought the machines within reach of smaller companies. The trend accelerated through the 1900s and not until the 1910s did drills become common.<sup>2</sup>

Purchasing and installing a compressor, its power source, compressed air plumbing, and drills were beyond most prospect operations. Therefore, the prospect operations on Alpha-Corsair and other ore systems are not expected to have employed the machines. The profitable, well-capitalized mines, on the other hand, had the financial and engineering resources to use rockdrills and they also had the need. The two most

---

<sup>2</sup> Twitty, 2001:43.

profitable operations, the Monon and Equity mines, employed rockdrills during their peaks in the late 1910s. Archival information indicates that both operations installed compressed air systems as part of their surface plants. All other operations except for the Captive Inca Mine did not rely on rockdrills. The Captive Inca Mining Company sought an extension of ore on the Amethyst Fault during the early 1900s and its organizers installed a compressed air system to expedite the driving of underground workings. The company erected the system as part of one of the Creede district's best-equipped surface plants in anticipation, perhaps certainty, that miners would strike ore.

By the 1950s, rockdrills were considered necessary for profitable ore production as well as exploration, and they proliferated in the mining industry. In this context, the Corsair, Midwest, and Sunnyside sites are expected to feature evidence of the use of rockdrills. All of the sites in fact feature evidence in the forms of air hoses, plumbing, and an air receiving tank, as well as archival documentation.<sup>3</sup>

Question 8. Did the inventoried mines and prospects feature shops concurrent with the needs of the operation? How were the shops equipped?

All prospect and mining operations required shop facilities where tools and equipment were maintained and fabricated. Drill-steels and picks had to be sharpened, machines repaired, and materials and hardware custom-made. Prospect operations had simple needs, primarily sharpening tools, while large mines had additional needs. Mining and prospect operations therefore erected facilities that were capable of handling the anticipated work.

In keeping with the above trends, nearly all of the inventoried prospect operations featured basic shops capable of only simple work. Further, the shops adhere to a pattern in terms of size, location, and equipment.

Based on the information in the table below, the shops at most of the prospects were around 10 by 12 feet in area and equipped only with facilities for basic blacksmithing. In their attempts to minimize capital investment, most of the prospects erected either tents or buildings constructed with local materials. Further, the prospectors at Site 5ML384 left the shop in the open and the prospectors at Site 5ML385 may have done so as well. If the shops were in fact open-air, the prospectors probably erected canvas tarps to shelter the worker and protect the equipment. Also in their attempts at minimizing capital, six of the prospect operations constructed forges with lumber or local materials and only two used portable, free-standing units. None of the shops featured evidence of the use of mechanical appliances.

---

<sup>3</sup> See Chapter 7.

**Table 9.1 Shop Facilities on the Alpha-Corsair and Other Ore Systems**

Site	Operation Size	Shop Location	Shop Size	Building Type	Equipment
5ML372	Very Small	Adjacent to adit	10 by 12 ft	Log and lumber	Free-standing forge, hand-tools
5ML378	Small	Off-site	Unknown	Unknown	Unknown
5ML379	Small	Adjacent to shaft	Unknown	Tent or frame	Vernacular log forge, hand-tools
Exchequer Tunnel	Moderate	Near adit	9 by 9 ft	Log frame sided with logs	Rock forge, bellows, hand-tools
5ML380	Moderate	Away from shaft	10 by 12 ft	Frame	Free-standing forge, hand-tools
Monte Carlo	Small	Adjacent to adit	12x15 ft	Frame	Rock forge, forge bellows, hand-tools
Monte Carlo	Small	Adjacent to surface workings	9x12 ft	Frame	Rock forge, hand-tools
Monte Carlo	Small	Adjacent to adit	10x15 ft	Frame tunnel house	Unknown
5ML383	Moderate	Adjacent to adit	9 by 11 ft	Log cabin	Wood box forge, hand-tools
5ML384	Very small	Away from adit	6 by 8 ft	Open-air	Rock forge, hand-tools
5ML385	Very small	Away from shaft	9 by 12 ft	Tent or open-air	Log forge, hand-tools
Dolgooth	Moderate	Near shaft		In hoist house	Wood box forge, hand-tools
Captive Inca	Large	Near shaft	Unknown	In shaft house	Unknown
5ML388	Small	Off-site	Unknown	Unknown	Unknown

The Monte Carlo Mine was the only productive boom-era operation that featured identifiable shop remnants. In their search for ore, prospectors drove a short adit in the site's north portion and erected a 12 by 15 foot frame shop building adjacent to the adit. The shop was equipped with a rock forge, a bellows, and hand-tools. When prospectors discovered an ore body that cropped out on ground-surface, they worked the body from the top down. They graded a platform near the open-cut and erected a 9 by 12 foot frame shop building on the flat area against a bedrock cliff. This shop was equipped like the one at the prospect adit. When the ore body showed signs of extending to a significant depth, the prospectors drove an adit to intersect it. They graded a platform adjacent to the adit portal and erected a 10 by 25 foot frame tunnel house that enclosed another blacksmith shop as well as an area for other activities. Because the structure collapsed, the shop's makeup remains indeterminate.

Recent mining and other activities destroyed the remnants of associated shops at the rest of the inventoried sites. Only the Corsair and Ace mines featured shops left from operations active between the 1950s and 1970s. During the 1970s the B-N-B Exploration Company erected a 15 by 15 foot frame building some distance from the tunnel portal that served as both a shop and equipment storage. The shop featured a freestanding forge, a workbench, hand-tools, and possibly mechanical appliances. Prospectors that last worked the Ace property erected a 10 by 15 foot frame shop building near the adit portal. The shop was equipped with a free-standing forge and hand-tools.

In sum, the shops associated with the inventoried prospects were concurrent with the needs of the operations. All of the shops were small and equipped only for basic blacksmith work. Many of the buildings and forges incorporated local building materials and most of the equipment was portable. Such shops reflect an effort to minimize capital, to meet immediate needs, and to limit the materials and equipment that prospect operations had to haul to their workings. The natures of the shops at the productive mines remain indeterminate because mining and bulldozing erased historic evidence.

Question 9. Did the mines and prospects on the Alpha-Corsair and other ore systems follow trends regarding fluctuations in the price of silver?

**Table 9.2: Dates of Operations, Properties on the Alpha-Corsair Ore System**

Site Number	Site Name	Site Type	Dates of Activity	
			Prospecting	Mining
5ML299	Ace Mine	Prospect	Boom-era, 1950s	Post None
5ML368	Prospect Adit, Name Unknown	Prospect	1910s	None
5ML371	Alpha Mine	Mine	1876-1890, 1934	1902-1912
5ML372	Prospect Adit, Name Unknown	Prospect	Unknown	None
5ML375	Corsair Mine	Mine	1876-1890, 1974, 1979-1981	1902-1903, 1922, 1925-1933-1940
5ML374	Kreutzer Mine	Prospect	Late 1890s, 1926	None
5ML319	Monon Mine: Silver Horde Tunnel	Mine	Boom-era 1953-1963	1918-1921, 1925-1928, 1937-1940
5ML369	Monon Mine: Manitoba Tunnel	Mine	Boom-era 1953-1963	1918-1921, 1925-1928, 1937-1940
5ML370	Monon Mine: Magnusson Tunnel	Mine	Boom-era 1953-1963	1916, 1918-1921, 1925-1928, 1937-1940
5ML373	Monon Mine: Eads Tunnel	Mine	Late 1890s	1918-1921
5ML390	Monon Mine: Monon Tunnel	Mine	Boom-era 1953-1963	1900s, 1918-1921, 1925-1928, 1937-1940
5ML376	Sunnyside Mine	Mine	1892, 1900s	1970s

**Table 9.3: Dates of Operations, Properties on Ore Systems West of the Amethyst Vein**

Site Number	Site Name	Site Type	Dates of Activity	
			Prospecting	Mining
5ML377	Exchequer Tunnel	Prospect	1900s	None
5ML378	Prospect Shaft, Name Unknown	Prospect	1891-1892	None
5ML379	Prospect Complex, Name Unknown	Prospect	1891-1892	None
5ML380	Prospect Shaft, Name Unknown	Prospect	Mid-1890s	None

**Table 9.4: Dates of Operations, Properties on Ore Systems Between the Amethyst and Holy Moses Veins**

Site Number	Site Name	Site Type	Dates of Activity	
			Prospecting	Mining
5ML300	Midwest Mine	Mine	1923-1925, 1950, 1968-1970, 1979-1982	Early 1950s
5ML381	Monte Carlo Mine	Mine	1890-1891	1891-1893, 1900s, 1925
5ML382	Prospect Adit, Name Unknown	Prospect	1890-1892	None
5ML383	Prospect Adit, Name Unknown	Prospect	Late 1890s-early 1900s	None
5ML384	Prospect Adit, Name Unknown	Prospect	1890-1892	None
5ML385	Prospect Shaft, Name Unknown	Prospect	Late 1890s-early 1900s	None
5ML386	Dolgooth Shaft No.2	Prospect	Late 1890s-early 1900s	None
5ML387	Captive Inca Mine	Prospect	Late 1890s-1903	None

**Table 9.5: Dates of Operations, Properties on the Equity Ore System**

Site Number	Site Name	Site Type	Dates of Activity	
			Prospecting	Mining
5ML388	Prospect Adit, Name Unknown	Prospect	1930s	None
5ML389	Equity Mine	Mine	Boom-era, 1953, 1966, 1971	1909-1914, 1917-1920, 1927-1929, 1984-1987

Mining and prospecting on the Alpha-Corsair and other ore systems were to a significant degree a function of the price of silver. However, several other factors influenced when they operated. To discover patterns of when the inventoried sites were active and why, they should be discussed in terms of the various ore systems, which are summarized in the tables above.

In general, Creede's silver mining industry and associated prospecting followed the market trends of silver. Until 1893, silver commanded the relatively high price of over one-dollar per ounce. Such an economic environment provided incentive to discover and mine silver ore bodies, and the Creede district saw extensive prospecting immediately followed by mining during this time. When the value of silver dropped by approximately half in 1893, the operating costs exceeded profits and most of the district's mines suspended operations and prospecting ceased. The 1893 Silver Crash wrecked Colorado's economy for years and the resultant depression came to an end by the late 1890s. With capital abundant once again, mining in the Creede district resumed and the industry declined in the 1910s when miners finally exhausted the ore veins. During World War I, economic instability in Europe stimulated the acquisition of silver and the metal's value increased to over one-dollar per ounce. Following Armistice, silver's price plummeted to previous lows. In 1922 Western representatives and senators promoted the Pittman Act, which re-monetized silver, in an attempt to revitalize the Western mining industry. For only for a year silver attained a value of around one-dollar per ounce before



the Act expired. The value of silver dropped again, rendering mining unprofitable for most operations. In an attempt to devalue the dollar and reinvigorate metals mining during the Great Depression, the Roosevelt Administration signed the Silver Purchase Act in 1934, boosting silver's price to around \$.71 per ounce. The price remained unchanged for decades afterward. To some degree, the prospect and mine sites inventoried on the various ore systems followed the above market trends. However, many exceptions exist due to factors outside of the silver market.

When H.M. Bennett first struck silver ore in what became the Creede district in 1876, the San Juan Mountains were the scene of a silver mining boom, and at this time the value of silver was relatively high. However, not until 1890, a year after Nicholas C. Creede discovered the famed Holy Moses Mine, did the Creede district see its first significant wave of prospecting. It seems likely that, at this time, the Alpha-Corsair area was caught up in the widespread prospecting excitement. Little mining followed, however, and the area remained quiet until the late 1890s and 1900s. While the value of silver remained low at this time, activity in the Creede district resumed in the context of the general economic recovery after the Silver Crash. The availability of capital and recovered economy created an environment conducive to mining, and some prospecting resumed on the Alpha-Corsair ore system. At this time, mining companies worked the Alpha, Corsair, Monon, and Sunnyside properties.

In contrast to the decline of mining elsewhere in the Creede district during the 1910s, the Alpha-Corsair ore system saw its most significant period of production beginning around 1916, when the value of silver was high as a result of World War I. Several mining outfits almost simultaneously struck rich silver ore under Monon Hill and extracted the payrock until the early 1920s when they exhausted the richest ore at the same time the value of silver dropped.

Despite the institution of the Pittman Act in 1922, confidence in the mines on the Alpha-Corsair system remained low enough to discourage activity. Only one mining outfit attempted to work the Corsair Mine at this time. Curiously, even though the price of silver remained low during the rest of the 1920s, interested parties re-opened the Monon and Corsair mines in 1925 and the Monon produced until the onset of the Great Depression brought operations to a halt in 1928.

In keeping with the price supports signed into law in 1934, some of the mines on the Alpha-Corsair ore system were re-opened. Big Ben Mines reactivated the Corsair Mine in 1933 and in 1937 the partnership Weaver and Oates began work in the Monon Mine. The reason why several years passed before Weaver and Oates reopened the Monon probably lies with the difficulty of acquiring capital and finding a buyer for ore during the Great Depression.

With the price of silver unchanged since 1934, the mines on the Alpha-Corsair ore system closed in 1940, probably due to labor and materials shortages attributed to World War II. Prospecting and mining resumed in the 1950s at the principal mines, and continued into the 1970s at the Sunnyside Mine. By this time, monetary inflation rendered the relative value of silver low, and only rich, extensive deposits were economical to mine. However, improved technology reduced the costs of mining and permitted the extraction of high volumes of ore. In this context, an outfit engaged in

underground prospecting in the Monon Mine and another outfit successfully mined the Sunnyside property, which remained idle for decades.

Most of the prospects on the ore systems west of the Amethyst Vein follow both trends of the price of silver and the broad economic trends that effected Creede's mining industry. When the price of silver was high prior to Silver Crash of 1893, prospectors worked Sites 5ML378 and 5ML379. Finding little of value, they abandoned the properties. When the economy began showing signs of a recovery in the mid-1890s, an outfit sank the shaft on Site 5ML380 in search of an extension of the Amethyst Vein. Failing, it too abandoned efforts. The Exchequer Tunnel serves as somewhat of an exception. Prospectors drove the adit to strike a copper vein at depth. While the Exchequer outfit was not directly beholden to the price of silver, it shared an indirect relationship with silver's market. The prospectors that discovered the copper vein originally searched for silver ore, which the area was known for, after the economy recovered from the Silver Crash in the late 1890s. The copper vein finally encountered by the Exchequer Tunnel proved inadequate and the prospect outfit abandoned operations.

Most of the prospects and the Monte Carlo Mine on the ore systems between the Amethyst and Holy Moses veins parallel trends of both the price of silver and the region's economy. When the price of silver was high prior to 1893, prospectors examined what became the Monte Carlo Mine, as well as Sites 5ML382 and 5ML384. With confirmed ore, an outfit began mining the Monte Carlo property. When the economic climate became conducive to mining between the late 1890s and 1900s, prospecting resumed in the area. At this time, prospectors worked Sites 5ML383, 5ML385, the Dolgooth Shaft No.2, and the Captive Inca Mine. Standing as a testament to the sound economy and optimism in the Creede district's mining industry, the Captive Inca Mining Company erected a capital-intensive surface plant based on the assumption that it would strike ore. All of the above prospects proved to be failures. Activity at the Monte Carlo Mine clearly responded to the price of silver and the district's economic climate. Miners extracted ore between 1891 and 1893, and quit when the price of silver dropped. Another outfit resumed mining during the 1900s when the economy was sound and ceased when miners exhausted the richest ore. A third outfit re-opened the Monte Carlo in 1925 and probably abandoned operations when operating costs exceeded the low value of the ore.

The Midwest Mine railed against the trends of silver's market value. The Midwest Mining Company invested limited capital to drive a tunnel between 1923 and 1925 to explore a group of claims when the value of silver was low. Subsequent companies engaged in further exploration between the 1950s and 1980s, even though monetary inflation reduced silver's relative value. Adequate volumes of ore were not forthcoming.

The Equity ore system featured only two substantial operations, including a prospect adit and the Equity Mine. The prospect adit, Site 5ML388, was worked during the 1930s in the context of the Silver Purchase Act. The prospect outfit failed to strike ore and abandoned operations.

The Equity Mine follows a history of discovery and development similar to the Monon Mine on the Alpha-Corsair ore system. The excitement over the Creede district's principal ore veins drew attention away from the outlying areas such as the Equity ore system, retarding development there for years. As with the Monon Mine, while the remainder of the Creede district slipped into decline during the 1910s, the Equity Mine came to the fore. The ore system featured silver, which commanded a high value, as well as gold, which held a relatively constant value. The ore's high gold content almost certainly supported activity during the late 1920s. When the Reagan Administration lifted price restrictions on gold in the 1980s, the metal's value skyrocketed, providing the Homestake Mining Company incentive to re-open the Equity Mine in 1984. When miners exhausted the ore, Homestake closed the Equity in 1987.

Question 10. Do the inventoried sites reflect the market trends for industrial metals mineralogically associated with the silver ores of the Alpha-Corsair and other ore systems?

Some of the veins in the Creede district featured silver ores that were complex blends of silver, lead, and zinc. When silver commanded high prices prior to devaluation in 1893, the mining companies naturally emphasized the ores' silver content. However, the rise of industry in the United States during the 1890s fostered at first a lucrative market for lead, then zinc by the 1900s when milling technology permitted its recovery. After silver was devalued in 1893, some of the district's mining companies marketed their ores for their lead and zinc content. The value of lead and zinc remained constant through the 1910s, spiked during World War I, subsided during the 1920s, increased again during World War II, and remained high through the 1950s.

The Monon Mine's ores were almost exclusively silver, and so activity at the property is not expected to follow market trends of industrial metals. The Alpha and Corsair mines' ores included some lead, which may have permitted profitability in light of silver's low value. Ore fragments found at the Monte Carlo Mine site consisted of galena, which was a silver-lead-zinc compound. Because lead and zinc fetched low values per ton, the Monte Carlo's ores were not profitable given the high production costs. The Equity Mine's ore consisted primarily of silver with some gold content. When the price of gold soared during the 1980s, the Equity's ores became economically viable. In sum, because the ores of the above mines possessed primarily silver, activities at the properties only loosely followed the market trends for industrial metals.

Question 11. Did a strong alliance exist between the profitable mines and powerful capitalists? Were mines equipped with advanced surface plants associated economically and in terms of ownership with wealthy capitalists? Were the inventoried prospects allied with investors of limited means?

According to archival information, capitalists of modest means owned or financed most of the profitable mines on the Alpha-Corsair and other ore systems. Because the properties on these ore systems featured limited ore reserves at best, or were unproven at

worst, the most notable capitalists of the Creede district such as Thomas Bowen, David H. Moffat, and Albert E. Reynolds focused their interests on the wealthy Holy Moses and Amethyst veins. On the Creede district's minor ore systems, the most notable investors were Richard and J.N.H. Irwin, who owned the Alpha and Corsair mines. Richard Irwin lived a life in the West of almost legendary proportion. At age 17 he traveled to Utah from Canada and took up an exciting position as an express rider during the 1850s. Finding the Rocky Mountain region to his liking, in 1859 Irwin joined a company of traders that did business with Indians in southern Wyoming, and lured by the Pikes Peak Gold Rush, journeyed to Denver in 1860. Enticed by the possibility of striking gold, Irwin began prospecting around the Gregory Diggings, which became Central City, and quickly experienced success. He mined in Gilpin County for several years and traveled up Clear Creek to prospect for silver, where he and other prospectors located the profitable Baker and Chihuahua mines, stimulating in part the rush to Georgetown. Irwin's successes lent fuel to his desire to continue prospecting, and he journeyed to the San Juan Mountains, back to Utah, and as far south as Mexico. Irwin spent most of his time in Colorado, where he continued to make fortunate strikes. Flush with success on the Front Range, Irwin traveled south to prospect the Wet Mountain Valley in 1870 where he encountered silver specimens in an area he named Rosita. While Irwin failed to find rich deposits, he paved the way for other prospectors who located ore several years afterward, fostering a rush. In 1879 he was one of the first to find silver ore in the West Elk Mountains, where he and other prospectors organized the Ruby Mining District. There, miners and prospectors named the district's principal settlement in honor of Irwin. The illustrious prospector traveled a short distance east in the same year where he and others established the town of Independence in the Collegiate Mountains. In 1885 the Irwins acquired the Alpha and Corsair claims, which produced some ore during the Creede district's first and second booms, and acquired other claims in the district, as well. During his career as a prospector and miner, Irwin amassed a group of holdings and interests in mines, and made considerable profits.<sup>4</sup>

The owners of the other profitable mines passed into history leaving little information. The Monon Mine, which was one of the richest in the Alpha-Corsair area, was owned by a group of investors that included T.H. Thomas, M.J. LeFevre, M.J. Moses, and George Manley. The Sunnyside, which was a failure during the Creede district's boom years, was owned by Freeman Thomen and Fort Collins businessmen Albert Damm, Jeff McAnelly, Perry Learnard, and M.H. Akin. Albert Damm apparently owned a number of properties in Fort Collins and may have been a local land baron, and M.H. Akin was a northern Colorado cattle rancher.<sup>5</sup>

The absence of archival information pertaining to the other boom-era mines and prospects strongly suggests that they were owned by little-known investors. Once the mines on the Alpha-Corsair and other ore systems exhibited signs of exhaustion, the above capitalists or their estates sold the properties to other investors of limited means.

---

<sup>4</sup> Canfield, 1893:62; Wolle, 1991:212, 245, 275.

<sup>5</sup> *Fort Collins Weekly Courier* 12/30/03; McWilliams and McWilliams, 1995:23.

Question 14. Archival research revealed that many of the Creede district's mines were leased by companies from property owners. When did this practice begin and why? How does the leasing system manifest in terms of material evidence?

Operating a profitable mine required much capital and incurred great costs. Companies were burdened with overhead costs in the forms of labor, management, engineering, maintenance of facilities, and coordinating the acquisition of supplies and shipping of ore and mill concentrates. As long as a mine featured rich ore bodies, a company usually found it profitable to extract the payrock itself. When the rich ore became exhausted, rather than let the property remain idle, some companies scaled back operations and leased the mine, or portions of the underground workings, to independent groups of workers. Companies charged fees by time or per ton of ore mined and shifted the costs of operating onto the lessees.

All of the profitable mines on the Alpha-Corsair and other ore systems were worked first by primary companies, then by parties of lessees. Exactly when primary companies began working the profitable mines on the Alpha-Corsair ore system remains unknown. It seems likely that, during the Creede district's early years, primary companies originally worked the Alpha, Corsair, and Monon mines, although archival information is lacking. During the Creede district's second boom in the late 1890s parties of lessees began working some of the properties. Between 1902 and 1903 a small outfit mined the Alpha and Corsair properties, and leasing continued into the 1920s. In 1909 the primary Equity Creede Mining Company profited from the Equity Mine and lessees took over the property in the late 1920s.

The Monon Mine presents an interesting example of how primary mining companies preferred to work their properties when the ore was rich. During the mid-1910s, two parties of lessees drove underground workings on the Monon and adjacent Quintet claims, and almost simultaneously discovered ore. When they proved that the ore bodies were substantial, the owners of the Monon and Quintet properties did not renew the leases the following year and instead consolidated their holdings under the Monon Mining Company in 1918. Suspecting that more ore lay underground, the Monon company leased only a portion of the claims to the Manitoba Leasing Company, which proved the presence of yet more ore. The Monon company failed to renew Manitoba's lease, hired a crew of miners, and extracted the ore itself until it showed signs of exhaustion in 1921. With the best ore gone, in 1922 Monon reverted to the lease system and the Wabash Mines and Power Company profited for only one year. Through the remainder of the 1920s, small parties of lessees gleaned the mine's remaining ore.

Through the 1930s, lessees worked most of the profitable mines on the Alpha-Corsair ore system, while the profitable mines on the other ore systems, including the Equity and Monte Carlo, remained idle. Because the mines on the Alpha-Corsair system suffered heavy disturbance in recent decades, ascertaining the material evidence left by lessees remains impossible.

Question 18. Did the remote operations on the Alpha-Corsair and other ore systems rely heavily on local materials to minimize costs?

First, the degree of remoteness of the inventoried mines and prospects was a function of the Creede district's development. Between 1889, when Nicholas Creede discovered the Holy Moses Vein, and 1892, when the Denver & Rio Grande Railroad arrived, most of the Creede district was remote. Supplies had to be imported into the district by wagon from Wagon Wheel Gap, which was the nearest rail station. Further, the tortuous canyons of East and West Willow creeks exacerbated the difficulties of freighting materials to and ore from mines and prospects. The arrival of the Denver & Rio Grande Railroad lowered freighting costs to the edge of the Creede district and mining companies cooperated in the construction of artery roads as far as they could be graded, given the impenetrable topography. The evolution of the district's transportation systems rendered formerly remote areas accessible, while some mines and prospects remained isolated.

Given the above, when the mines and prospects on the Alpha-Corsair and other ore systems began operations during the early 1890s, they lay in what was at that time a remote area. In response to the high costs of shipping materials, many operations utilized local building materials for structures and mine timbering. In the area west of the Amethyst Vein, the prospectors at Sites 5ML378 and 5ML379 relied on local building materials for some of their structural needs and used easily transported wall tents for their residential buildings. At Site 5ML379 prospectors used local logs to timber an adit portal and built a forge with hewn logs and cobbles. At Site 5ML378 prospectors used local logs and extensive dry-laid rock masonry. Prospectors also used local materials in the area between the Amethyst and Holy Moses veins. At the Monte Carlo Mine, they erected a cabin with hewn logs and constructed forges with cobbles. At Site 5ML382 the prospectors there likewise erected a log cabin and at Site 5ML384 constructed a blacksmith work area with local fieldstones.

Despite the development of a network of roads by the late 1890s, many operations remained remote, and to save the costs and avoid the undue effort of hauling freight, continued to rely on local building materials. The prospectors that drove an adit on Site 5ML372 erected a small blacksmith shop with a combination of logs and dry-laid rockwork. The Exchequer Tunnel, in the area west of the Amethyst Vein, lay in a particularly inaccessible location, and prospectors there used split logs for mine rail ties and to build a blacksmith shop. In addition, they erected a wall tent as their residence. Between the Holy Moses and Amethyst veins, the prospectors at Site 5ML383 built a log blacksmith shop and used logs for the forge. At Site 5ML385 prospectors also used logs for a forge.

By contrast, several of the sites located close to roads exemplify the preference for dimension lumber when transportation systems permitted. Site 5ML380 lay close to the Amethyst Vein, which featured roads leading to the profitable mines there. Developed during the mid-1890s, the prospect outfit used lumber for all of its structures. Site 5ML382 lay close to a road, and in the late 1890s or 1900s a prospecting outfit erected a large frame boardinghouse. While the Monte Carlo Mine lay in a remote location, during the 1900s a mining outfit there used lumber to build a boardinghouse and an ore bin.

Question 21. How did profitable companies facilitate the input of supplies and the output of ore? How did prospect operations respond?

Establishing a mine or prospect required the initial transportation of materials and equipment, the constant input of supplies during operations, and for profitable mines, the shipping of ore. Since prospects had little material needs, their means of access could be simple, but profitable mines, on the other hand, necessitated efficient systems. Further, since mine owners expected their properties to operate throughout the year, the transportation systems had to function during adverse weather.

The inventoried sites follow several trends regarding transportation access in light of the above. According to material evidence, some of the prospect operations, including the Exchequer Tunnel and Site 5ML379, purposefully graded pack trails to their properties. While the Monte Carlo Mine was a profitable operation, its remote location required a pack trail. The above operations only required the initial delivery of some building materials and portable equipment, and the occasional input of supplies which could have been transported by pack animals. In most cases pack trails became impassable during heavy snows, relegating the remote prospects to being seasonal operations.

Because profitable mines required substantial quantities of building materials, machinery, and supplies, and the shipment of ore, mining interests often graded roads from the nearest points of commerce. The area around the Alpha-Corsair ore system featured much flat ground conducive to grading roads, which the existing gravel roads linking the mines today may follow. Likewise, the current road to the Equity Mine may follow an original road graded to the property. The Captive Inca Mine best exemplifies the necessity of a road for a substantial operation. The mine was equipped with one of the Creede district's most substantial surface plants and featured heavy machinery and large buildings. To haul the equipment to the site and to permit the constant input of fuel coal and supplies, workers graded a wagon road from West Willow Creek.

During the 1950s when the profitable mines on the Alpha-Corsair and Equity ore systems were active, mining companies relied on trucks to ship ore and deliver supplies. Trucks were usually necessary for such moderate-sized operations to remain profitable because they offered inexpensive transportation. Fortunately for mining companies, by the 1950s bulldozers became common, which eased the tasks of grading and maintaining necessary roads. Like most mines active at this time, the Monon, Corsair, Sunnyside, Midwest, and Equity mines reflect the use of bulldozers to grade roads.

### ***Residential Occupation***

Question 1. Can the numbers of workers at the mines and prospects be determined by the material evidence? If so, did all workers live on-site?

Because most of the mines on the Alpha-Corsair Ore System were located near the settlement of Sunnyside, most miners employed at these operations probably lived in the town, which was not recorded with the Alpha-Corsair inventory. Therefore, the material evidence on the Alpha-Corsair does not represent the numbers of workers at those operations. However, because many of the prospects and mines on the other ore systems were remote, workers lived in adjacent residences and the remaining building platforms reflect the numbers of workers. Estimating the numbers of workers at a site depends on calculating the square footages of associated residential structures, and since the buildings no longer exist, the remaining platforms represent the square footages. In his publication on mining archaeology entitled *The Archaeology of Mining and Miners*, Professor Donald Hardesty suggests that single workers required a minimum of 60 square feet for bedding and personal possessions when living in communal households.<sup>6</sup> Residential buildings that were self-contained included areas for food preparation and other domestic activities, and so required additional square footages. For example, a building that housed two residents not only required 120 square feet for the workers, but also more space for cooking and a common area.

In the area west of the Amethyst Vein, most of the prospect sites retain residential features capable of suggesting the numbers of workers. Specifically, Site 5ML379 featured two tent platforms with 150 and 162 square feet, which could have accommodated up to two residents each with space left for domestic activities. If both platforms were residential, then the prospect crew consisted of up to four members, which was more than enough to drive the workings on-site. The prospectors at the Exchequer Tunnel lived in a wall tent that possessed 150 square feet of floorspace. Such a structure could have housed a crew of two and an area for domestic activities. A crew of two was sufficient to drive the Exchequer Tunnel. Site 5ML380 was a mechanized shaft operation that required a larger crew than the simple prospects noted above. To sink a shaft and operate a surface plant such as the one at Site 5ML380, a crew often consisted of a hoistman who ran the hoist and fired the boiler, a blacksmith who also emptied the ore bucket and ore cars, at least two miners underground, and a superintendent. To house the operation's workers, the prospect company at Site 5ML380 erected two buildings. One stood near the surface plant and featured 144 square feet, and the other was located away and featured 375 square feet. The small building was large enough to house two workers with the additional space serving domestic purposes. The other building was also a self-contained residence, and according to material evidence, it featured a simple assay work area. In addition, one of the residents was a woman who may have been part of a family. Given the need for space for domestic activities and assaying, and given that families often occupied more square footages than single workers, the building probably housed up to four residents. The site's total number of residents is concurrent with the size of crew that typically worked mechanized prospect shafts.

---

<sup>6</sup> Hardesty, 1988:13.



Several of the sites in the area between the Holy Moses and Amethyst veins possess residential features that suggest the numbers of workers at these operations. Several outfits worked the Monte Carlo Mine at different times, and their respective crews were different in numbers. During the early 1890s, a party of prospectors first examined the site and developed it into a mine over the course of several years. The prospectors at first lived in a wall tent of unknown size and subsequently erected a hewn log cabin that featured 150 square feet of floorspace. Provided the cabin and tent were not simultaneously inhabited, the crew may have consisted of two members. Between the late 1890s and 1900s, another outfit mined the property and erected a frame boardinghouse that featured 270 square feet, and more if the building featured a loft. Subtracting dining and food preparation space, the boardinghouse could have accommodated up to three residents, and one more if it featured a loft. Two more workers may have lived in the log cabin. Since one of the residents served as a hostler during the mine's second occupation, the Monte Carlo's crew could have consisted of four workers, which was enough to fill necessary labor positions.<sup>7</sup>

Site 5ML382 presents an interesting case where the number of residents was much greater than the needs of the associated prospect operation. The site features the remnants of a small prospect adit, the remnants of a log cabin, and a platform for a boardinghouse. During the early 1890s prospectors erected the cabin, which possessed 150 square feet. The cabin had the capacity to accommodate two residents, which were sufficient to drive the adit. During the 1900s, another outfit re-occupied the site and erected a frame boardinghouse with 660 square feet. A cellar pit provided storage space and the building could have featured a loft. Subtracting space for dining and other domestic activities, the boardinghouse could have accommodated up to eight residents. Both the cabin and boardinghouse together represent up to 10 residents, which were more than necessary to drive the adit on-site. The associated artifact scatter includes over 1,000 food cans, confirming a large number of residents. Therefore, most of the residents worked off-site, and may have engaged in developing a group of prospect adits and shafts on the mountainside above, which possess no associated residential features.

On the Equity Ore System, only Site 5ML388 retained residential features. Prospectors driving the adit on-site erected a log cabin that featured 170 square feet. Including space for food preparation and other domestic activities, the cabin could have housed up to two residents, which were sufficient to drive the adit.

In sum, most of the self-contained households associated with prospects possessed around 150 square feet. Given that single workers required a minimum of 60 square feet each, the households accommodated up to two residents with additional space for food preparation and other domestic activities. Some of the sites featured buildings with more square footages, which represent a greater number of residents. However, boardinghouses also had to include large areas for food preparation and dining.

Question 2. Did women live at the sites on the Alpha-Corsair and other ore systems, and if so, did they hold a greater presence at the large operations where jobs accepted by society were available? Were families present?

---

<sup>7</sup> Van Horn, 2000: "Women had Tough Jobs Running Boarding Houses in Old Mining Days".

In general, women traditionally commanded a strong presence in the household and managed domestic activities either as members of families or as hostlers in hotels and boardinghouses. In an effort to maintain an acceptable household, women tended to consume domestic items of luxury and décor that men, especially single workers, did not prioritize. Some types of items, such as decorative tableware, cut-glass fragments, and other decorative artifacts suggest the presence of women, while other items such as women's boot remnants and corset parts directly represent their presence. In a few cases, archival information documented the presence of women. Domestic artifact assemblages that lack decorative items and include many male-specific items strongly suggest an all-male population.

While men apparently predominated at most of the inventoried mines and prospects, according to archival and material evidence women in fact lived at a few of the sites. Archival information indicates that Della Mortensen served as the hostler at the Monte Carlo Mine during the 1900s.<sup>8</sup> The associated artifact assemblage, however, lacks evidence of Mortensen's presence. Material evidence at Site 5ML380, which was a mechanized prospect shaft operation, reflects the presence of a woman. The outfit's crew lived in two buildings on-site, one of which stood near the surface plant and the other, which was larger, stood in a meadow away from the workings. The artifact assemblage associated with the larger building included a corset part, which directly reflects the presence of a woman, and it included imitation cut glass, which suggests the presence of a woman. Site 5ML382 featured a prospect adit, the remnants of a log cabin, and a boardinghouse platform. The artifact assemblage associated with the boardinghouse platform featured a relatively high proportion of decorative tableware fragments that represented at least one vessel with floral decals, another with a gilt floral pattern, and several porcelain vessels. The assemblage also included evidence of two canning jars. The jars and the decorative tableware fragments suggest that a woman lived in the boardinghouse.

In sum, of the seven sites that featured associated residential features, archival and material evidence strongly suggest that women lived at three of these. Further, at the Monte Carlo Mine and Site 5ML382, the women lived in boardinghouses and probably served as hostlers. The relatively high proportion of prospect sites inhabited by women indicate that, at least in the Creede district, they commanded a presence amid prospect operations, as well as at the large corporate mines.

Question 3. Do the inventoried mine and prospect sites reflect the presence of ethnicities, and if so, what occupations did they hold?

Determining the presence of ethnicities is a difficult proposition and may be accomplished through the analysis of structural remnants, artifacts, and archival research. Ethnic groups different from the Euro-American culture that dominated hardrock mining, such as Chinese, Hispanics, and Native Americans, had the potential to leave distinct artifacts and material use patterns. However, European and American ethnic groups shared similar cultural aspects in terms of household, diet, consumer goods, and dress. In this light, the material evidence left by European ethnic groups often appears similar to

---

<sup>8</sup> Van Horn, 2000: "Women had Tough Jobs Running Boarding Houses in Old Mining Days".

that left by American groups. However, some differences can be ciphered out of artifact assemblages. European ethnic groups may have preferred familiar European consumer goods and foods, which may be represented by bottles, types of meat, tablewares, and other items. In addition, some groups may also have employed traditional construction practices, such as the propensity of Italians, Irish, and Cornish to erect rockwork foundations, walls, and structures.

While archival information indicates that Northern European immigrants worked in the Creede district, the artifact assemblages at the inventoried mine and prospect sites lack clear evidence of their presence.<sup>9</sup> Several of the sites in the areas west of the Amethyst Vein, and between the Amethyst and Holy Moses veins, possess evidence suggesting members of the workforces were of European origin. Prospectors at Site 5ML378 employed an unusual method when they sank a shaft there in the early 1890s. According to convention, when prospectors sank an exploratory shaft, they cleared the soil down to bedrock and erected log cribbing to retain loose material. As they generated waste rock, the prospectors usually hauled a loaded ore bucket up to the shaft collar and emptied it. As the surrounding waste rock dump grew in height, they added courses of cribbing. By contrast, the prospectors at Site 5ML378 cleared the soil to bedrock and excavated a trench through the surrounding hillslope to the shaft, which allowed them to shuttle rock away in wheelbarrows. As they developed the property, the prospectors made great use of dry-laid rockwork to retain the trench's walls and to retain soil off the waste rock dump. The unusual development strategy suggests that the prospectors were unfamiliar with conventional shaft sinking. In addition, the extensive use of rockwork suggests that they may have employed construction practices common to European cultures, such as in Italy, Ireland, or Cornwall.

The artifact assemblage at Site 5ML382 features a few items suggesting crew members there may have been of European origin. Fragments of a Lea & Perrins Worcestershire sauce bottle may suggest that one of the workers was from the British Isles. The assemblage also included a green blob bottle finish manufactured with applied techniques. Such a finish probably represents a wine bottle, and the manufacturing techniques suggest the bottle was foreign. By the 1900s, when the boardinghouse was occupied, most American bottle makers used lipping tools to finish bottles while European manufacturers continued to use applied methods. Therefore, the bottle may represent an individual of European origin consuming a familiar product.

Question 5. To ensure the presence of a workforce, capitalized mining companies attempted to strike a balance between providing a tolerable living environment while investing minimal capital on housing. Do the residential buildings among the inventoried sites reflect this trend? Did the capitalized companies provide housing superior to that at small mines? Did the housing of the above differ from the accommodations at prospect operations?

The natures of residential buildings at the inventoried sites can be reconstructed based on material evidence in the event sites lack standing architecture. Material evidence includes structural debris, artifacts, and building platforms. The structural

---

<sup>9</sup> Van Horn, 2000 features vignettes noting the presence of many Swedes in the Creede district.

remnants and associated artifacts can be analyzed to determine whether housing featured amenities such as electric lighting, plumbing, abundant space, and adequate heat.

While the mines on the Alpha-Corsair Ore System suffered disturbance in the recent past, if they featured associated residences, some evidence would have probably survived. The lack of evidence therefore suggests that the mines' workers lived in the nearby settlement of Sunnyside. Archival information indicates that the Monon Mining Company erected a boardinghouse for its miners during the late 1910s which apparently stood on the edge of Sunnyside. On the Equity Ore System, the Equity-Creede Mining Company provided company housing, however site reclamation erased all evidence. The Captive Inca Mine also provided company housing located in Deerhorn Valley away from the site, which could not be accessed for study.

Most of the prospects inventoried on the ore systems west of the Amethyst Vein, and between the Amethyst and Holy Moses veins, retained residential features that convey the nature of housing. Prospectors at Site 5ML379, the Exchequer Tunnel, and the Monte Carlo Mine erected wall tents as their residences, which are currently represented by platforms featuring only a paucity of structural debris. Such accommodations were primitive and intended to be seasonal. Within a year or two, the prospectors at the Monte Carlo erected a small log cabin, as did the prospectors at Site 5ML382. The cabins currently lie in ruins. Like the wall tents, the log cabins served as primitive residences that featured few comforts. The above operations featured such primitive accommodations instead of superior frame buildings for several reasons. First, prospect outfits usually possessed limited capital, which prospectors directed toward sustaining their work. Second, erecting a permanent frame building on an unproven property was financially imprudent. Last, the above operations were remote and hauling in building materials was an undue burden.

The larger prospect and mining operations erected frame buildings as residences, and some offered a living environment not much better than the primitive cabins. The prospect company that sank a shaft on Site 5ML380 provided two frame buildings for the crew, which are currently represented by platforms. The buildings were small, one being 12 by 12 feet in area and the other being 15 by 25 feet in area. The small building stood adjacent to the shaft's surface plant while the other stood in a meadow a short distance away. The small building's location provided its residents with an industrial atmosphere that included scents and sounds from the boiler and machinery. Both buildings were probably austere and evidence suggests that they lacked amenities. The Monte Carlo Mine offered its crew challenging living conditions as the site was notoriously cold.<sup>10</sup> When a mining outfit re-occupied the site during the 1900s, it erected a frame boardinghouse 15 by 18 feet in area immediately downslope from the cabin already there. Because the mine lay in a steep north-facing drainage, little level ground was available for leisure activities. Further, due to the topography and mature fir trees, the site saw only brief hours of sun in the winter and was exposed to both high winds and lightning storms. The boardinghouse, represented by debris, was a simple frame building that lacked amenities, and due to its location, was probably cold. By contrast, the prospect outfit that re-occupied Site 5ML382 during the 1900s erected a substantial boardinghouse in a favorable location. The building, which was spacious, stood on a rock foundation and featured a cellar pit for storage. The building stood at the edge of a south-facing

---

<sup>10</sup> Van Horn, 2000: "Women had Tough Jobs Running Boarding Houses in Old Mining Days".

meadow where it received plenty of sunlight and featured flat ground. Material evidence suggests that the boardinghouse lacked amenities.

In sum, the housing inhabited by miners and prospectors at the inventoried sites fell into three categories represented by material evidence. The small, short-lived prospects featured wall tents which were the most primitive accommodations. Tents were relatively easy to haul to a site and could be inhabited only on a seasonal basis. A few prospects also featured log cabins erected as impermanent residences. By erecting cabins, prospectors saved capital while providing living conditions slightly superior to tents. The substantial prospects and the Monte Carlo Mine featured simple frame buildings which offered austere living conditions. These substantial operations were probably run by organized companies which attempted to provide living conditions tolerable to wage laborers.

Question 8. Does the material evidence at the sites on the Alpha-Corsair and other ore systems reflect a difference between the socio-economic status of laborers and management? Did management live separately from the workers?

Different socio-economic groups can be identified by analyzing artifact assemblages and architectural and structural remnants. Artifact assemblages representing a relatively high status can include high-quality decorative items, butchered bones left from costly cuts of meat, evidence of expensive, fine goods, and items consumed as benchmarks of status. The reverse would be true of artifact assemblages attributed to a low status. The artifact assemblages attributed to workers should include slightly different items than those attributed to management. Mine workers generated refuse in the forms of heavy boots, lunchpails, candlesticks, miners' felt hats, and other durable articles. The artifact assemblages of each feature representing a residence can then be compared for socio-economic indicators. In the event a site offers standing architecture, the residences of management may feature amenities, greater space, and a location away from a mine's surface plant.

Only a few sites featured evidence suggesting a difference in socio-economic status and a separation of management and crew. Material evidence at Site 5ML380, which was a mechanized prospect shaft operation, presents the most pronounced differences. A crew of up to six individuals lived in two buildings on-site, represented by platforms. One building was 12 by 12 feet in area and stood adjacent to the shaft's surface plant, and the other, 15 by 25 feet in area, was located in a meadow away from the surface plant. The artifact assemblage associated with the small building included general domestic refuse, no decorative or costly items, and several miners' lunchpails. The assemblage's content therefore represents single workers. The artifact assemblage associated with the other building platform, however, represents residents of a higher status. The overall quantity of domestic refuse is higher and includes liquor and medicine bottles, suggesting the occupants had more disposable income. A decorative suspender slide and imitation cut glass fragments reflect the consumption of fine goods. Last, the artifact assemblage included evidence of assaying, indicating that one of the building's occupants was educated in metallurgy and mineralogy. Together, the decorative items and evidence of assaying suggest that the prospect operation's

management lived in the building. The locations of the buildings reflect a separation between labor and management. The small building, in the least desirable location, housed workers, while management chose the building that was removed from the shaft's surface plant.

Site 5ML382 possesses some evidence suggesting some differentiation between management and workers. During the 1900s, a company erected a boardinghouse on-site for nearly all of the crew and it appears that management lived in the building. However, the artifact assemblage suggests that management enjoyed meals not served to the rest of the crew. The group of butchered bones represents primarily cuts for beef stews and roasts, and it features a few bones representing ribs and steaks, which were choice meats. The few rib and steak bones in proportion to the numerous stew and roast cuts indicate that ribs and steaks were served on a limited basis, probably to management. Further, the artifact assemblage includes decorative tableware fragments representing a few vessels distinguished from the plain white plates and bowls used by the crew. The decorative tableware reflects an individual with a higher disposable income than common workers.

Except for the above two sites, the other prospects and mines lack evidence of a separation of management and labor. Based on this, the workforce appears to have been fairly uniform in terms of socio-economic status, and workers and management lived together in the same residential buildings.

Question 11. Popular history suggests that miners ate a poor diet based on canned food. Does this assumption hold true for prospect operations? Does it hold true for the crews of productive mines? If not, why? What did the typical diet at each type of operation consist of?

The material evidence at the inventoried mine and prospect sites featuring residential features provides sound information permitting a reconstruction of workers' diets. When activity peaked in the Creede district, the dominant Euro-American work culture favored certain types of foods that can be termed the *Victorian diet*, which evolved from traditional Northern European cuisine. Meals emphasized foods high in fat, protein, carbohydrates, and starches, and consisted of meat dishes, egg dishes, baked goods, grains, beans, vegetables, and fruit.<sup>11</sup> Beef was favored over other meats, pork was least desirable, and fresh meats and vegetables were preferred over preserved foods.<sup>12</sup> The nature of kitchen facilities such as preparation areas, stove size, and cookware influenced the types of meat and vegetable dishes prepared. Meat dishes often took form as roasts, stews, and fried cuts, while vegetables tended to be boiled and potatoes roasted.

Even if the workers in the Creede district followed the convention of a preference for fresh foods, they could not consume such foods if they were unavailable. In this context, the nature of the transportation system that served the district and the seasons had a direct impact on the diets of the workers.

During the Creede district's first several years, the region's population consisted primarily of prospectors who had little need for a formal transportation system. Between

---

<sup>11</sup> Conlin, 1986:12-16; Mehls et al, 1995:52.

<sup>12</sup> Conlin, 1986:11, 15-16.

1890 and 1892, the development of mines and the establishment of settlements required avenues for the movement of materials and people, and freighting supplies on the scale necessary for the Creede district's growth could only be accomplished with wagons. Local rancher Martin Van Buren Wason graded a toll road into the district, and mining companies and local government drove additional roads into the district's remote areas. In 1892, the mining industry held such potential that the Denver & Rio Grande Railroad built a line to the district's gateway.

Each successive improvement to the district's transportation network offered the district's population benefits in several ways. First, the cost of goods fell both through reduced shipping prices and an increase in volume. Second, the relatively rapid shipment of goods permitted animals for slaughter and fresh foods to be imported with little spoilage. Therefore, the early, primitive transportation system meant that high costs, slow shipment, and unavailability of some foods limited the diet of miners and prospectors mostly to preserved foods. The reduced costs of food and the greater availability of fresh meats and produce in the wake of improved transportation systems offered the population an opportunity to consume improved diets.

The artifact assemblages associated with Sites 5ML378, 5ML379, and 5ML380, and the Monte Carlo Mine, provide examples of the diets of prospectors and miners prior to the development of a transportation system. As can be expected, domestic artifacts represent almost exclusively canned food, which included milk, and probably stews, beans, meats, vegetables, and fruits. While the artifact assemblages include few other items, the prospectors at these sites supplemented their canned food with grains, dry beans, and baked goods. The sizes and types of cans are few, which represent a diet with little variation.

By the late 1890s, when most of the other inventoried prospect and mine sites were active, a developed transportation system served the Creede district. Yet, according to material evidence, canned food continued to proliferate. The artifact assemblages associated with the boardinghouses at the Monte Carlo Mine and at Site 5ML382 feature numerous food cans that contained milk and probably stews, meat, vegetables, and fruit. The artifact assemblages also include butchered bones, albeit in limited proportions, primarily for beef stews and roasts, which indicate that the prospectors and miners consumed some fresh food. If fresh meat was served, then some fresh vegetables were also probably provided, and may have included types that transported well, such as corn, potatoes, and cabbage. The artifact assemblage associated with Site 5ML382 included parts for canning jars, indicating that the crew there consumed some fresh fruit. Further, the cellar pit at Site 5ML382 provided a cool storage environment typically used to preserve fresh foods. Baking pans at the Exchequer Tunnel and Site 5ML382 confirm that prospectors consumed baked goods, and fragmented condiment bottles at the above sites reflect the consumption of sauces and pickles. Last, the greater variety of can types and sizes at the sites active between the late 1890s and 1900s reflects the consumption of a varied diet by this time.

Site 5ML388 presents a contrast to the above trends. Prospectors worked the adit on-site and lived in an adjacent cabin sporadically during the Great Depression. The artifact assemblage features only a few cans and bottle fragments and no evidence of the consumption of any fresh food. The cans are uniform in size and represent a limited diet.

In sum, material evidence indicates that during the district's early years, canned food proliferated, and the diets of miners and prospectors had little variation and included a minor amount of fresh food. By the late 1890s, when the Creede district featured developed transportation and commercial systems, prospectors and miners at the remote sites continued to rely on canned food. However, they consumed a diet with greater variation. Prospectors and miners at the more accessible sites apparently supplemented their canned diets with some fresh foods, represented by butchered bones and baking implements. The butchered bones at the various sites all represent cuts of beef, which confirms the preference for such meat. Where fresh meat was served, other forms of fresh foods were probably also provided. The mining and prospecting companies often obtained fresh foods from regional sources in the Rio Grande and San Luis valleys, where the growing season was short. Therefore, fresh foods were unavailable for a significant portion of the year and preserved food became a mainstay during these times.

Question 12. Does the material evidence at the inventoried prospect operations and mines reflect the presence of ethnicities identified by certain foods?

Archival evidence indicates that at least a few European-based ethnicities worked in the Creede district, and that Swedes apparently held the strongest presence.<sup>13</sup> In many cases, immigrant laborers retained some cultural traditions, including a preference for certain foods and consumer goods. Some of the ethnic foods involved imported bottled goods and types of meat, which may be represented in artifact assemblages.

The material evidence at the inventoried sites, however, exhibits little sure evidence of the presence of ethnicities. The artifact assemblage associated with Site 5ML382 possesses a few domestic artifacts that suggest individuals of European ancestry lived on-site. Lea & Perrins Worcestershire sauce bottle fragments may suggest that one of the crewmembers was from the British Isles and consumed a familiar product. The assemblage also included a green blob bottle finish manufactured with applied techniques. European bottle makers often used blob finishes manufactured with applied techniques for wine bottles as late as the 1900s. Therefore, the bottle may represent an individual of European origin also consuming a familiar product.

Question 13. Popular history portrays mine workers as living in the clutches of vices such as a heavy consumption of alcoholic beverages and tobacco. Does the material evidence support this assumption? Did workers at prospect operations consume more or less liquor than those employed by organized mining companies? What factors possibly account for the trend?

The material evidence at the mine and prospect sites featuring residential complexes certainly reflects trends regarding the consumption of alcohol and tobacco. Certain types of fragmented bottles and earthenware jugs represent alcoholic beverages, and cans and tins represent tobacco. Liquor and beer bottles can be identified by makers'

---

<sup>13</sup> Van Horn, 2000: "The Swedes on Sunday", and other vignettes make references to Swedes.



marks, proprietary labeling, shape, and finish types. Likewise, tobacco companies packed their products into cans with specific shapes, sizes, and closures.

Only the substantial prospect sites and the Monte Carlo Mine exhibit fragmented bottles indicating that workers consumed alcoholic beverages, and contrary to popular myth, the paucity of bottles indicate the residents imbibed only limited quantities of alcohol. The artifact assemblage associated with Exchequer Tunnel includes fragments from one liquor and two beer bottles, and the assemblage at Site 5ML380 represents several liquor and beer bottles. The number of vessels at both operations must be viewed in the context of a small number of residents and brief occupation. The artifact assemblage at Site 5ML382 represents 13 liquor bottles and 2 beer bottles, and hundreds of glass fragments probably represent additional vessels. Because the number of residents was relatively high, the quantity of fragmented bottles can be expected to be proportionate. The cabin at the prospect adit on the Captive Inca site featured no evidence of alcohol containers. Site 5ML388 also possessed no evidence of the consumption of liquor, which is concurrent with the fact that prospectors drove the adit when Prohibition was in effect.

The small, briefly occupied prospects, including Sites 5ML378 and 5ML379, lacked evidence of the consumption of liquor.

In terms of productive mine sites, the Monte Carlo site featured evidence of the consumption of liquor. The associated artifact assemblage represented seven liquor bottles, and glass fragments may suggest additional containers. The number of vessels must be viewed in the context of the site's occupation during both the early 1890s and between the late 1890s and 1900s.

Only several sites, apparently operated by companies, possess evidence indicating that workers used tobacco. The artifact assemblage associated with Site 5ML382 included seven upright pocket tobacco tins and two lunchbox tobacco cans, which contained significant quantities of pipe tobacco. The assemblage associated with the Monte Carlo Mine featured one lunchbox tobacco can. In addition to cans and tins, tobacco companies also used perishable cloth pouches for cigarette tobacco, which were not represented in the artifact assemblages.

In general, according to material evidence, prospectors and miners at all of the sites consumed little liquor. Prospectors at the smallest sites may have abstained due to a lack of disposable income and the difficulty of transporting fragile bottles to remote locations. The workers at the sites operated by companies, such as Sites 5ML380, 5ML382, and the Monte Carlo Mine may have abstained for the same reasons, and possibly due to company policy. The consumption of tobacco at most sites appears to have been limited, as well. However, the workers at Site 5ML382 and at the Monte Carlo Mine consumed some tobacco.

Question 14. How does the material evidence reflect the health of workers? What diseases were present? Water-borne pathogens were poorly understood, and food preservation was difficult and also poorly understood, fostering an environment for gastro-intestinal diseases. Are these represented by the material evidence?

The artifact assemblages at the mine and prospect sites featuring residential complexes reflects some aspects regarding the health of workers. Many of the sites exhibit evidence in the form of fragmented bottles that workers consumed medicines on occasion. At Site 5ML380, the artifact assemblage associated with the manager's residential platform includes fragments from three medicine bottles. Site 5ML382 featured two fragmented medicine bottles, which must be viewed in the context of the site's large number of residents. The log cabin at the prospect adit on the Captive Inca site featured two medicine bottles. The Monte Carlo Mine's artifact assemblage represented three medicine bottles, which must be viewed in the context of the site's two occupations. While the specific contents of the patented medicine bottles at the sites are difficult to determine, they were generally sold as cures to internal ailments of various types.<sup>14</sup> Therefore, the bottles probably represent an attempt to treat temporary illnesses. The other sites lacked evidence of the use of internal or topical medicines. In general, the material evidence strongly suggests that the health of most workers was sound and that some individuals suffered from periodic illnesses. The artifact assemblage associated with the manager's residential platform at Site 5ML380 also featured cobalt-blue fragments from a medicine bottle. Bottles with such a color often contained laxatives, suggesting an individual in the house suffered from constipation, which may have been the result of a diet high in meats and starches and low in fiber.

### *Conclusion*

In sum, the historic mines on Alpha-Corsair and other ore systems reflect the influence of six basic patterns endemic to the historical Western hardrock mining industry. The patterns are:

1. Equipping and operating a mine was a function of money. Mining properties with great promise were able to inspire the caliber of investors capable of providing ample capital for development. The wealthiest investors equipped their mines with the biggest and best surface plants.
2. Large and complex surface plants reflect large ore reserves. Investors financed the erection of large surface plants at mines with large ore reserves in hopes of maximizing production while minimizing operating costs. Small surface plants reflect limited production.
3. The time period during which a mine operated influenced how and to what degree it was equipped. Mines that were active late in a district's life tended to be better equipped than those active early in the district's life.
4. Structural geology influenced how miners and engineers set up and operated a mine. Steeply dipping veins were more conducive to being developed through shafts. The topography overlying an ore vein, determined by structural geology, influenced the type of surface plant that engineers built. Flat terrain was conducive to sinking shafts, while steep terrain was suited for driving tunnels.
5. The geographic locations of mining operations influenced the degree to which they were developed and equipped. Mining operations located near commercial centers

---

<sup>14</sup> Fike, 1987:3.

and close to the richest portions of the vein were more apt to attract wealthy investors, and hence a greater degree of capital.

6. The physical climate influenced how miners and engineers set up a mine. Operating throughout the year required substantial buildings to shelter a mine's critical surface plant facilities, while prospect operations that were active only during warm months could afford simple and small structures.

#### The Influence of Financiers, Capital, and Ore Production

In terms of the first and second influential factors discussed above, the historic mine sites on Alpha-Corsair and other ore systems reflect the relationship between investors' financial status, capital investment, and the composition of the mines' surface plants. Investors of modest means acquired the most productive operations and supplied what capital they could to fund the development of underground workings supported by modest surface plants. Few of the mines were heavily mechanized, which reflects modest financing. None of the inventoried mines produced ore in volumes comparable to the large mines on the Amethyst and Holy Moses veins, which is concurrent with the lack of ownership by prominent investors. The Alpha and Corsair mines were owned by Richard C. Irwin, who was an investor of some means, although not on the same scale as the owners of the mines on the Amethyst and Holy Moses veins.

The prospect operations, except for the Captive Inca, apparently were not owned by investors of financial means, which their simple surface plants represent. In contrast to most of the prospect operations, the Captive Inca was heavily mechanized and only wealthy investors could have furnished the necessary capital.

#### The Influence of Operating Timeframe

The mines and prospects on the Alpha-Corsair and other ore systems reflect patterns regarding the influence of operating timeframes. According to archaeological remains and archival information, prospectors sank shafts and drove adits to examine the geology at depth in the areas west of the Amethyst Vein and between the Amethyst and Holy Moses veins, in the first years of the Creede district. While evidence is almost absent, the area around the Alpha-Corsair ore system was prospected in the Creede district's early years. Within a short time, the prospects that proved unsuccessful were abandoned.

The remains existing at Sites 5ML378, 5ML379, 5ML384, and the prospect adit associated with the Monte Carlo featured surface plants consisting of relatively inexpensive, temporary-class components. During the timeframe of the Creede district's first several years, the lack of developed transportation systems, economic uncertainty, and a lack of commercial infrastructures discouraged prospectors from erecting anything but the most simple surface plants.

In the late 1890s, when the Creede district experienced its second boom, various parties became interested in the Alpha-Corsair ore system, areas west of the Amethyst Vein, and areas between the Amethyst and Holy Moses veins. By the late 1890s the economy recovered from the Silver Crash of 1893 and capitalists were again willing to

furnish money to equip mines and support prospecting. At this time, the costs of purchasing and shipping equipment fell and milling technology improved. These two trends had the effect of lowering the costs of mining and rendering previously uneconomical ores profitable to treat.

As a result, companies began working a few of the mines on the Alpha-Corsair ore system, including the Alpha and Corsair. In addition, a company began re-working the Monte Carlo Mine, located near the Holy Moses Vein. At the same time, prospectors began to drive underground workings to locate ore on the Alpha-Corsair and Equity ore systems, west of the Amethyst Vein, and between the Amethyst and Holy Moses veins. On the Alpha-Corsair ore system, parties engaged in underground exploration at the Sunnyside, Monon, and Kreutzer properties. In the area west of the Amethyst Vein, a pair of prospectors drove the Exchequer Tunnel. Between the Amethyst and Holy Moses veins, a prospecting company erected a central boardinghouse and may have dispatched crews that drove an adit on Site 5ML383, adits on several other sites not recorded due to a lack of integrity, and sank a shaft at Site 5ML385. The Captive Inca stands as the most significant prospecting endeavor. There, a company erected one of the Creede district's most advanced shaft operations on the presumption that miners would strike an extension of the Amethyst Vein. After several years, the effort proved to be a bust.

Like many properties in the Creede district, those that failed to reveal ore became silent by the 1910s. Curiously, while many profitable mines on the Amethyst and Holy Moses veins waned at this time, those on the Alpha-Corsair and Equity ore systems came to the fore. Parties of lessees found rich silver ore bodies under Monon Hill, which paid handsomely, and the Equity-Creede Mining Company developed the Equity Mine. These operations produced intermittently through the 1920s.

In 1934, in the depths of the Great Depression, President Franklin Delano Roosevelt signed the Silver Purchase Act into law, which provided artificial price supports for the white metal. The Act stimulated silver mining in the West, and miners reopened many of the Creede district's mines. During the wave of activity, parties of lessees re-worked the Alpha, Corsair, Monon mines, and possibly the Sunnyside. These properties still offered ore as late as the 1930s, possibly because the properties received minor attention during the Creede district's boom periods. The inventoried sites on most of the other ore systems remained quiet during the 1930s, except for Site 5ML388, which was a prospect on the Equity Ore System. Interest in the sites remained low because they were either unproven prospects or mines with records of only limited production, which discouraged the investment of capital during the poor economic climate of the Great Depression.

During the late 1940s and early 1950s mining companies reopened many of the Creede district's proven mines on the Amethyst and Holy Moses veins. Despite the growing interest in formerly productive properties at this time, all of the inventoried mines remained quiet except for the Midwest Mine, located between the Amethyst and Holy Moses veins. In 1950 the Midwest's owner began underground exploration followed by the extraction of a small quantity of payrock. The inventoried mines probably experienced little activity because they offered records of only minor production.

Improved mining technology decreased the costs of ore extraction, improved milling technologies rendered low-grade ores profitable, and the demand for industrial

metals remained strong in the 1950s. During this time, however, several factors conspired against mining in Creede. Mining shifted to foreign nations where production expenses were low, economic inflation decreased the relative value of metals, and increased safety and environmental regulations increased costs, rendering mining in many Western districts unprofitable. Despite the increasingly poor economic climate, several of the mines on the Alpha-Corsair and Equity ore systems saw renewed activity in the 1960s and 1970s. Parties began exploration campaigns in the Corsair and Monon mines, and producing ore in the Sunnyside Mine. In the area between the Amethyst and Holy Moses veins, a company began exploration in the Midwest Mine. Last, the Homestake Mining Company heavily sampled the Equity Mine. By the early 1980s, all of the above properties but the Equity Mine proved uneconomical in light of inflation, high production costs, low metals prices, and exhausted ore reserves. In 1984, Homestake finally reopened the Equity and produced an abundance of ore until 1987. Homestake was able to profit from the Equity because the ore featured a high gold content, unlike the silver ores of the other mines, and by the mid-1980s the Federal Government lifted restrictions of the price of the precious metal.

In sum, the inventoried sites felt the influence of timeframes in terms of several factors. First, the state of the Creede district's infrastructure determined the degree to which prospectors developed their properties. Second, the economic conditions associated with the early 1890s, Silver Crash, recovery by the late 1890s, the Great Depression, and foreign competition of the 1960s influenced when companies worked the inventoried sites. Third, the periodic improvement in mining and milling technologies made previously unprofitable ores viable.

### The Influence of Structural Geology

The mine and prospect sites on the Alpha-Corsair and other ore systems exhibit the influences structural geology had on how prospectors and engineers organized underground operations. McKenzie, Bachelor, Campbell, and Nelson mountains are components of a volcanic formation, and they possess typical characteristics. The mountains feature flat tops bordered by steep, rocky slopes. In general, where the terrain was relatively flat, prospectors and engineers traditionally sank shafts to strike ore bodies, while they drove adits into the steep flanks of mountains.

In keeping with traditional practices, the mining companies and prospect outfits drove adits and tunnels to strike the Alpha-Corsair Ore System because steep slopes predominated the topography. By contrast, the relatively flat topography of Bachelor Mountain predominated the area west of the Amethyst Vein. There, prospect outfits sank shafts to search for ore, except for the Exchequer Tunnel which undercut a precipitous, rocky slope. Steep mountainsides formed most of the topography between the Amethyst and Holy Moses veins, and most prospect and mining outfits accordingly drove adits and tunnels to strike mineral bodies, except for the Dolgooth Shaft, which lay near the flat valley floor. Last, the Equity Ore System underlay steep mountainsides, and miners and prospectors there also drove tunnels and adits.

### The Influence of Geographic Location

The inventoried prospect and mine sites illustrate the influence of geographic location on the constitution of their surface plants. The profitable mines on the Alpha-Corsair Ore System were located near a broad valley floor near the confluence of Rat and Miners creeks, which was easily accessed from the railhead at Creede. Archival information indicates that the Monon Mining Company erected a mechanized surface plant featuring heavy machinery. The other properties in the area featured primitive surface plants primarily because they possessed little ore. Site 5ML380 was a shaft operation equipped with a steam-driven hoisting system, and it lay close to the wagon roads graded to the profitable mines on the Amethyst Vein. The same holds true for the Captive Inca and the Dolgooth Shaft, also located near a wagon road, which featured mechanized surface plants.

The surface plants associated with the other prospect operations stood in contrast against the properties close to wagon roads. These operations were remote, difficult to transport materials to, and accessed by pack trails. The surface plants consisted of simple, temporary-class components, and local building materials were heavily used for structures and mine timbering.

As the network of roads expanded in the Creede district between the 1920s and 1950s, many properties became easier to access. As a result, transporting machinery and fabricated building materials proved economically feasible, which manifests among the sites' material remains.

### The Influence of Physical Climate

The inventoried sites reflect the prospect and mining companies' responses to the influence of weather on operations. The Captive Inca, Monte Carlo, Monon, Corsair, and Equity mines operated throughout the year, which required both sheltering vital surface plant components in heated structures, and maintaining transportation arteries for the input of supplies and the output of ore. Archaeological remains and archival data indicate that these operations featured surface plants equipped for work during winter.

The surface plants at the Monte Carlo and Monon mines featured buildings enclosing the tunnel portals and shops. Likewise, the Captive Inca featured a shaft house that sheltered the shaft and all machinery. In addition, the above outfits erected workers' housing near the surface plants to ensure a workforce during the winter. To facilitate transportation in poor weather, the Captive Inca Mining Company graded a wagon road to its mine, and the Monon and Corsair mines lay near a road that linked the town of Sunnyside with Creede. The Monte Carlo Mine, however, could only be accessed via a pack trail, which became impassable in heavy snows. To facilitate the input of supplies and shipment of ore, during the 1900s the company there erected a single-rope reversible aerial tramway to the mine, which was impervious to weather.

The small prospect operations, on the other hand, reflect activity only during the warm months. All featured small structures which offered little protection against the weather, and were accessed by avenues easily blocked by heavy snows. The prospectors working Sites 5ML384 and 5ML385 installed open-air blacksmith shops, which could

not function in inclement weather. In sum, due to their difficulty of access during the winter, and the lack of adequate buildings, the prospect operations were seasonal endeavors.

### Application of Technology

The mine and prospect sites recorded on the Alpha-Corsair and other ore systems fit broad patterns regarding the application of mining technology. The outfits that engaged in prospecting and deep exploration relied on conventional Gilded Age equipment and facilities to support work underground. They followed convention and equipped their surface plants with relatively inexpensive, small, and portable temporary-class facilities, and workers carried out most labor by hand. The sites west of the Amethyst Vein that reflect such practices include 5ML378, 5ML379, 5ML380, and the Exchequer Tunnel. In the area between the Amethyst and Holy Moses veins, Sites 5ML383, 5ML384, and 5ML385 reflect such practices.

The surface plants associated with most of the prospects typically consisted of a small blacksmith shop equipped with hand tools, a simple transportation system, and several structures at most. Prospectors at most of the prospects used ore cars on rail lines, while the prospectors at Sites 5ML385 and 5ML372, and the prospect adit at the Monte Carlo, relied on wheelbarrows. The surface plants associated with the Exchequer Tunnel and Site 5ML380 also included hand-powered ventilation blowers, which the prospectors used to force fresh air into the underground workings.

The prospect shaft operations also included temporary-class hoisting systems. At Sites 5ML378 and 5ML379, west of the Amethyst Vein, prospectors relied on hand windlasses to raise materials out of their shafts, which was the most primitive form of hoist. At the Dolgooth Shaft, prospectors there used a gasoline donkey hoist, and at Site 5ML380, the prospect outfit relied on a small steam hoist powered by an upright boiler. Both forms of mechanical hoists were temporary-class in nature.

The Captive Inca was the only prospect that deviated from convention. The Captive Inca Mining Company erected a substantial, steam-powered surface plant that consisted of a combination of heavy-duty temporary-class and production-class components. The company did so probably because it was sure miners would strike an extension of the Amethyst Vein. The operation proved a failure.

Most of the mining companies that worked the productive properties also applied conventional Gilded Age technology. They equipped their surface plants with some production-class components capable of supporting deep, intensive underground work. The largest operations, the Monon and the Equity mines, included plant facilities designed to maximize production and minimize operating costs over protracted periods of time. These two mines, by no coincidence, were also several of the biggest producers outside of the Amethyst and Holy Moses veins. By contrast, the Monte Carlo Mine, another profitable operation, was equipped with simple, temporary-class facilities due to the property's remote nature.

The Monon Mine's surface plant can be viewed as somewhat unconventional. In 1918, the Monon company installed two air compressors to power rockdrills in the

underground workings. At this time, the mining industry finally embraced electricity and phased out cumbersome, energy-intensive steam equipment. The Monon company, however, relied on two large boilers to power its air compressors. During the 1930s, the Big Ben Mines company resurrected the Monon's antiquated steam compressors when it began working the Corsair Mine, across the drainage. By the 1930s, the use of steam equipment was uncommon, as gasoline engines and electricity offered an economical power source. Big Ben revived the use of steam because doing so required minimal capital investment.

### Architecture

The buildings that the mining and prospect operations erected at the sites on Alpha-Corsair and other ore systems reflect the influences of time frame, geographic location, and the availability of construction materials.

When the mines were initially developed during the early 1890s, the transportation infrastructures to the district, and local sawmills, were under development. Lumber commanded premium prices, and in response, prospectors and miners on the Alpha-Corsair and other ore systems turned to local building materials. Then, with the coming of the railroad, the establishment of a network of passable roads, and the development of a local logging industry, the cost of lumber fell. While Site 5ML388 features the only standing building in the inventory, evidence left from buildings at the other sites reflects the transition from local building materials and wall tents to lumber. The primary factor governing the use of local building materials appears to have been remote location and difficulty of access, rather than timeframe. Specifically, wall tents served as the residential and industrial buildings at Sites 5ML378 and 5ML379. The outfits at the Exchequer Tunnel and the Monte Carlo Mine, active during the Creede district's second boom, used a combination of log cabins and wall tents. The structures erected at Sites 5ML372, 5ML382, and 5ML383 were of logs. Buildings constructed during the latter portion of the 1890s and the 1900s at most of the accessible sites were of lumber. The large industrial structures that involved fine engineering, such as the shaft house at the Captive Inca Mine, required the regularity and uniformity offered by lumber, and logs could not be substituted.

### *Site Eligibility*

Most of the historic sites on Alpha-Corsair and other ore systems are ineligible for listing on both the National and State Registers of Historic Places (NRHP and SRHP). The ineligible sites lack integrity, suffered disturbance, or fail to meet the necessary Criteria. A few sites west of the Amethyst Vein and between the Amethyst and Holy Moses veins are recommended as eligible for listing on the SRHP. Of these, many participated in broad patterns of history through association with the Creede district, they serve as sound archaeological examples of prospect operations, or have the potential to yield further information. Only the Exchequer Tunnel, Site 5ML382, and Site 5ML385 are recommended as eligible for the NRHP. The Exchequer Tunnel's underground workings feature preserved, perishable industrial artifacts. The artifact assemblage could



represent activities, products, and practices used by miners underground. Site 5ML382 features two privy pits and a cellar pit that may contain buried domestic deposits capable of contributing to the current understanding of labor, ethnicity, gender, diet, and health in mountain mining districts. Site 5ML385 encompasses an assemblage of surface plant features clearly representing a prospect shaft operation, including an intact, well-preserved horse whim.

**Table 9.6 Site Identification and Eligibility Summary: Alpha-Corsair Ore System**

Site Number	Site Name	Integrity		Eligibility		NRHP Criteria	SRHP Criteria
		Yes	No	Yes	No		
5ML299	Ace Mine		X	X	X	None	None
5ML368	Prospect Adit, Name Unknown		X		X	None	None
5ML371	Alpha Mine		X		X	None	None
5ML372	Prospect Adit, Name Unknown		X		X	None	None
5ML375	Corsair Mine		X		X	None	None
5ML374	Kreutzer Mine		X		X	None	None
5ML319	Monon Mine: Silver Horde Tunnel		X		X	None	None
5ML369	Monon Mine: Manitoba Tunnel		X		X	None	None
5ML370	Monon Mine: Magnusson Tunnel		X		X	None	None
5ML373	Monon Mine: Eads Tunnel		X		X	None	None
5ML390	Monon Mine: Monon Tunnel		X		X	None	None
5ML376	Sunnyside Mine		X		X	None	None

**Table 9.7 Site Identification and Eligibility Summary: Ore Systems West of the Amethyst Vein**

Site Number	Site Name	Integrity		Eligibility		NRHP Criteria	SRHP Criteria
		Yes	No	Yes	No		
5ML377	Exchequer Tunnel	X		X		D	A, C, and E
5ML378	Prospect Shaft, Name Unknown	X		X		None	A and C
5ML379	Prospect Complex, Name Unknown	X		X		None	A
5ML380	Prospect Shaft, Name Unknown		X		X	None	None

**Table 9.8 Site Identification and Eligibility Summary: Ore Systems Between the Amethyst and Holy Moses Veins**

Site Number	Site Name	Integrity		Eligibility		NRHP Criteria	SRHP Criteria
		Yes	No	Yes	No		
5ML300	Midwest Mine		X		X	None	None
5ML381	Monte Carlo Mine		X		X	None	None
5ML382	Prospect Adit, Name Unknown	X		X		D	A and E
5ML383	Prospect Adit, Name Unknown		X		X	None	None
5ML384	Prospect Adit, Name Unknown	X			X	None	None
5ML385	Prospect Shaft, Name Unknown	X		X		A and C	A and C
5ML386	Dolgooth Shaft No.2		X		X	None	None
5ML387	Captive Inca Mine		X		X	None	None

**Table 9.9 Site Identification and Eligibility Summary: Equity Ore System**

Site Number	Site Name	Integrity		Eligibility		NRHP Criteria	SRHP Criteria
		Yes	No	Yes	No		
5ML388	Prospect Adit, Name Unknown		X		X	None	None
5ML389	Equity Mine		X		X	None	None

The historic mine and residential sites on the Alpha-Corsair and other ore systems offer a rich legacy of more than 100 years of mineral exploration and mining. The material evidence and archival information gathered for this inventory compliment each other and illustrate the application of mining technology, the industrialization of the region, and the collapse of mining in the late twentieth century. While the archival data gathered in association with this publication revealed much regarding the history of the Creede district's outlying ore systems, the sites contain more information in the form of archaeological remnants. The analysis of these remnants greatly enhances the current understanding of mining in the area, as well as life in the deep Rocky Mountains during the Gilded Age and Great Depression.

**BIBLIOGRAPHY**General History

Abbott, Carl; Leonard, Stephen; McComb, David *Colorado: A History of the Centennial State* University Press of Colorado, 1994 [1982].

Bennett, Edwin Lewis and Spring, Agnes Wright *Boomtown Boy in Old Creede, Colorado* Sage Books, Chicago, Ill, 1966.

Brown, Ronald *Colorado Ghost Towns* Caxton Printers, Caldwell, ID, 1993 [1972].

Canfield, John G. *Mines and Mining Men of Colorado* John Canfield, Denver, CO, 1893.

Conlin, Joseph *Bacon, Beans, and Galantines: Food and Foodways on the Western Mining Frontier* University of Nevada Press, Reno, NV 1986.

Dallas, Sandra *Colorado Ghost Towns and Mining Camps* University of Oklahoma Press, Norman, 1984 [1979].

Eberhart, Perry *Guide to the Colorado Ghost Towns and Mining Camps* Swallow Press, Athens, OH 1987 [1959].

Feitz, Leland *Creede: Colorado Boom Town* Little London Press, Colorado Springs, CO 1963.

Fell, Jay, Ph.D. History Professor and Mining Historian *Personal Interview* Boulder, CO 1999.

Francaviglia, Richard *Hard Places: Reading the Landscape of America's Historic Mining Districts* University of Iowa Press, Iowa City, IA, 1991.

Greever, William S. *Bonanza West: The Story of the Western Mining Rushes, 1848-1900* University of Idaho Press, Moscow, ID 1990 [1963].

Henderson, Charles W. *USGS Professional Paper 138: Mining in Colorado: A History of Discovery, Development, and Production* U.S. Geological Survey, Government Printing Office, Washington, DC 1926.

King, Joseph *A Mine to Make A Mine: Financing the Colorado Mining Industry, 1859-1902* Texas A&M University Press, 1977.

- Leonard, Steven and Noel, Thomas *Denver: Mining Camp to Metropolis* University Press of Colorado, Niwot, CO 1990.
- McElvaine, Robert S. *The Great Depression: America, 1929-1941* Times Books, New York, NY 1993 [1984].
- Meyerrriecks, Will *Drills and Mills: Precious Metal Mining and Milling Methods of the Frontier West* Self Published, 2001.
- Mumey, Nolie *Creede: The History of a Colorado Silver Mining Town* Artcraft Press, Denver, CO 1949.
- Schulze, Susanne A *Century of the Colorado Census* University of Northern Colorado, Greeley, CO, 1976.
- Smith, Duane A. *Rocky Mountain Mining Camps: the Urban Frontier* University of Nebraska Press, Lincoln, NE 1974 [1967].
- Smith, Duane A. *Colorado Mining: A Photographic Essay* University of New Mexico Press, Albuquerque, NM 1977.
- Smith, Duane A. *Song of the Hammer and Drill: The Colorado San Juans, 1860-1914* Colorado School of Mines, Golden, CO 1982.
- Smith, Duane A. *Rocky Mountain West: Colorado, Wyoming, & Montana 1859-1915* University of New Mexico Press, Albuquerque, NM 1992.
- Spence, Clark C. *Mining Engineers and the American West* University of Idaho Press, Moscow, ID, 1993.
- Twitty, Eric "From Steam Engines to Electric Motors: Electrification in the Cripple Creek Mining District" *Mining History Journal* 1998.
- Twitty, Eric *Blown to Bits in the Mine: A History of Mining & Explosives in the United States* Western Reflections, Montrose, CO, 2001.
- Twitty, Eric *Riches to Rust: A Guide to Mining in the Old West* Western Reflections, Montrose, CO, 2002.
- Van Horn, Beverly *Early History of Mineral and Rio Grande Counties, Colorado* Beverly Van Horn, 2000.
- Voynick, Stephen M. *Leadville: A Miner's Epic* Mountain Press Publishing Co., Missoula, MT 1988 [1984].

- Voynick, Stephen M. *Colorado Gold: From the Pike's Peak Rush to the Present* Mountain Press Publishing Co., Missoula, MT 1992.
- Wallace, Robert *The Miners* Time-Life Books, 1976.
- Watkins, T.H. *Gold and Silver in the West: the Illustrated History of an American Dream* Bonanza Books, New York, NY, 1971.
- Wolle, Muriel Sibel *Stampede to Timberline: The Ghost Towns and Mining Camps of Colorado* Swallow Press, University of Ohio Press, 1991 [1949].
- Wyman, Mark *Hard Rock Epic: Western Mining and the Industrial Revolution, 1860-1910* University of California Press, Berkeley, CA, 1989 [1979].
- Young, Otis *Western Mining* University of Oklahoma Press, Norman, OK, 1980 [1970].

### Geology

- Burbank, WS; Eckel, E.B.; and Varnes, D.J. "The San Juan Region" *Mineral Resources of Colorado* State of Colorado Mineral Resources Board, Denver, CO 1947.
- Burbank, Wilbur S. and Luedke, Robert G. *USGS Professional Paper 535: Geology and Ore Deposits of the Eureka and Adjoining Districts, San Juan Mountains, Colorado* U.S. Geological Survey, U.S. Government Printing Office, Washington, DC 1969.
- Cross, Whitman; Howe, Earnest; and Ransome, F.L. *Geologic Atlas of the United States: Silverton Folio, Colorado* U.S. Geological Survey, Government Printing Office, Washington, DC 1905.
- Emmons, William H. and Larsen, Esper S. *USGS Bulletin 718: Geology and Ore Deposits of the Creede District, Colorado* U.S. Geological Survey, U.S. Government Printing Office, Washington, DC 1923.
- Kemp, James F. *The Ore Deposits of the United States* The Scientific Publishing Co., New York, NY 1896.
- Larsen, E.S. "Recent Mining Developments in the Creede District: *USGS Bulletin 811: Contributions to Economic Geology* U.S. Geological Survey, U.S. Government Printing Office, Washington, DC 1929.

- Larsen, E.S. and Cross, Whitman *USGS Professional Paper 258: Geology and Petrology of the San Juan Region, Southwestern Colorado* U.S. Geological Survey, Government Printing Office, Washington, DC 1956.
- MacMechen, Thomas E. "The Ore Deposits of Creede, Colo." *Engineering and Mining Journal* March 12, 1892 p301.
- Ratte, James C. and Steven, Thomas A. "Ash Flows and Related Volcanic Rocks Associated with the Creede Caldera, San Juan Mountains, Colorado" *USGS Professional Paper 524: Shorter Contributions to General Geology* U.S. Geological Survey, Government Printing Office, Washington, DC 1965.
- Ransome, Frederick Leslie *USGS Bulletin No. 182: A Report on the Economic Geology of the Silverton Quadrangle, Colorado* U.S. Geological Survey, Government Printing Office, Washington, DC 1901.
- Steven, Thomas A. and Ratte, James C. *USGS Professional Paper 487: Geology and Structural Control of Ore Deposition in the Creede District, San Juan Mountains, Colorado* U.S. Geological Survey, Government Printing Office, Washington, DC 1965.
- Vanderwilt, John W. *Mineral Resources of Colorado* State of Colorado Mineral Resources Board, Denver, CO 1947.

#### Cultural Resource/Archaeology Reports

- Carrillo, Richard *Boggsville Historical Site: Research Design for Fall 2001 Archaeological Testing at the Site of the Carson House, Boggsville Historical Site (5BN363), Bent County, Colorado* Cuartelejo HP Associates Inc., La Junta, CO, 2001.
- Curtiss, Ross *A Reconnaissance Survey of Historic Cultural Resources in the Red Mountain Mining District, Ouray and San Juan Counties, Colorado* Durango Archaeological Consultants, Durango, CO, 1998.
- Curtiss, Ross *Archaeological Investigations at the Historic Town Sites of Tellurium/White Cross (5HN302) and Argentum (5HN300), Hinsdale County, Colorado* Durango Archaeological Consultants, Durango, CO, 2001.
- Hardesty, Donald *The Archaeology of Mining and Miners: A View from the Silver State* Society for Historical Archaeology, 1988.

- McWilliams, Carl and McWilliams, Karen *Agriculture in the Fort Collins Urban Growth Area: 1862-1994* McWilliams Cultural Resource Historians, Fort Collins, CO, 1995.
- Mehls, Steven F.; Lennon, Thomas J.; Morris, Rick; Monique, Kimball; Hardesty, Donald as Contributor *A Treatment Plan for 939 Total Acres of the Cresson Project, Teller County, Colorado* Western Cultural Resource Management, Boulder, CO, 1995.
- Ringhoff, Mary *The Archaeological Study of "Little Rome": Investigation of a Historic Mining Community in Hinsdale County, Colorado* University of Nevada, Reno, 2002.
- Spero, Vince *Willow Creek Project: Class III Cultural Resource Inventory Report, Mineral County, Colorado* U.S. Forest Service, San Juan/ Rio Grande National Forest, Colorado, 1999.
- Twitty, Eric *Historical Context for the Creede Mining District* Mountain States Historical, Boulder, CO, 1999.
- Twitty, Eric *Mining the Amethyst Vein: Selective Cultural Resource Inventory of the Principal Historic Mine Sites on the Amethyst Vein* Mountain States Historical, Boulder, CO, 2000.

#### Mine Sites

- Colorado Historical Society, Denver, CO Colorado Bureau of Mine Manuscripts.  
*Creede Mines* Box 640, v24.
- Colorado State Archives, Denver, CO Mine Inspectors' Reports.  
*Bachelor Mine* Box 104053  
*Bulldog* Box 104053  
*Corsair Mine* Box 104053  
*Creede Exploration Co.* Box 104053  
*Emperius* Box 104053  
*Equity Mine* Box 104053  
*Happy Thought Mine* Box 104053  
*Holy Moses Mine* Box 104053  
*Kentucky Belle* Box 104053  
*Kreutzer-Sonata Mine* Box 104053  
*Last Chance Mine* Box 104053  
*Midwest Mine* Box 104053  
*Monon Mine* Box 104053  
*New York Mine* Box 104053

- Outlet Tunnel* Box 104054  
*Phoenix Mine* Box 104054  
*Quintet Mining Co.* Box 104054  
*Soloman Mine* Box 104054  
*Sunnyside Mine* Box 104054
- Creede Camp* [No Publisher] 1892, Colorado Historical Society, Box 1170C4:113.
- Francis, J. *Creede Mining Camp* Press of the Colorado Catholic, Denver, CO, 1892.
- "General Mining News: Colorado, Mineral County" *Engineering and Mining Journal* 1895-1925.
- "General Mining News: Colorado, Rio Grande County" *Engineering and Mining Journal* 1889-1892.
- "General Mining News: Colorado, Saguache County" *Engineering and Mining Journal* 1893-1894.
- Schwarz, T.E. "Colorado" *Engineering and Mining Journal* Jan.2, 1892 p55.

#### Artifacts

- Busch, Jane "An Introduction to the Tin Can" *Historical Archaeology* Vol.15, No.1, 1981.
- DeBolt, Gerald *American Pottery Marks: Whiteware & Porcelain* Collector Books, Paducah, KY, 1994.
- Fike, Richard *The Bottle Book: A Comprehensive Guide to Historic, Embossed Medicine Bottles* Peregrin Smith Books, Salt Lake City, UT, 1987.
- Gail, Firebaugh "An Archaeologist's Guide to the Historical Evolution of Glass Bottle Technology" *Southwestern Lore* Vol.49, No.1, 1983.
- Martin, Andy *Blasting Cap Tin Catalog* Old Adit Press, Tucson, AZ, 1991.
- Rock, Jim *Tin Canisters: Their Identification* Self Published, Yreka, CA, 1989.
- Rock, Jim *Basic Bottle Identification* Self Published, Yreka, CA, 1990.
- Rock, Jim "Cans in the Countryside" *Historical Archaeology* Vol.18.



Toulouse, Julian *Bottle Makers and Their Marks* Thomas Nelson, Inc., New York, NY 1971.

Twitty, Eric *Blasting Powder and Dynamite: Makers and Artifacts* Unpublished Manuscript, 1993.

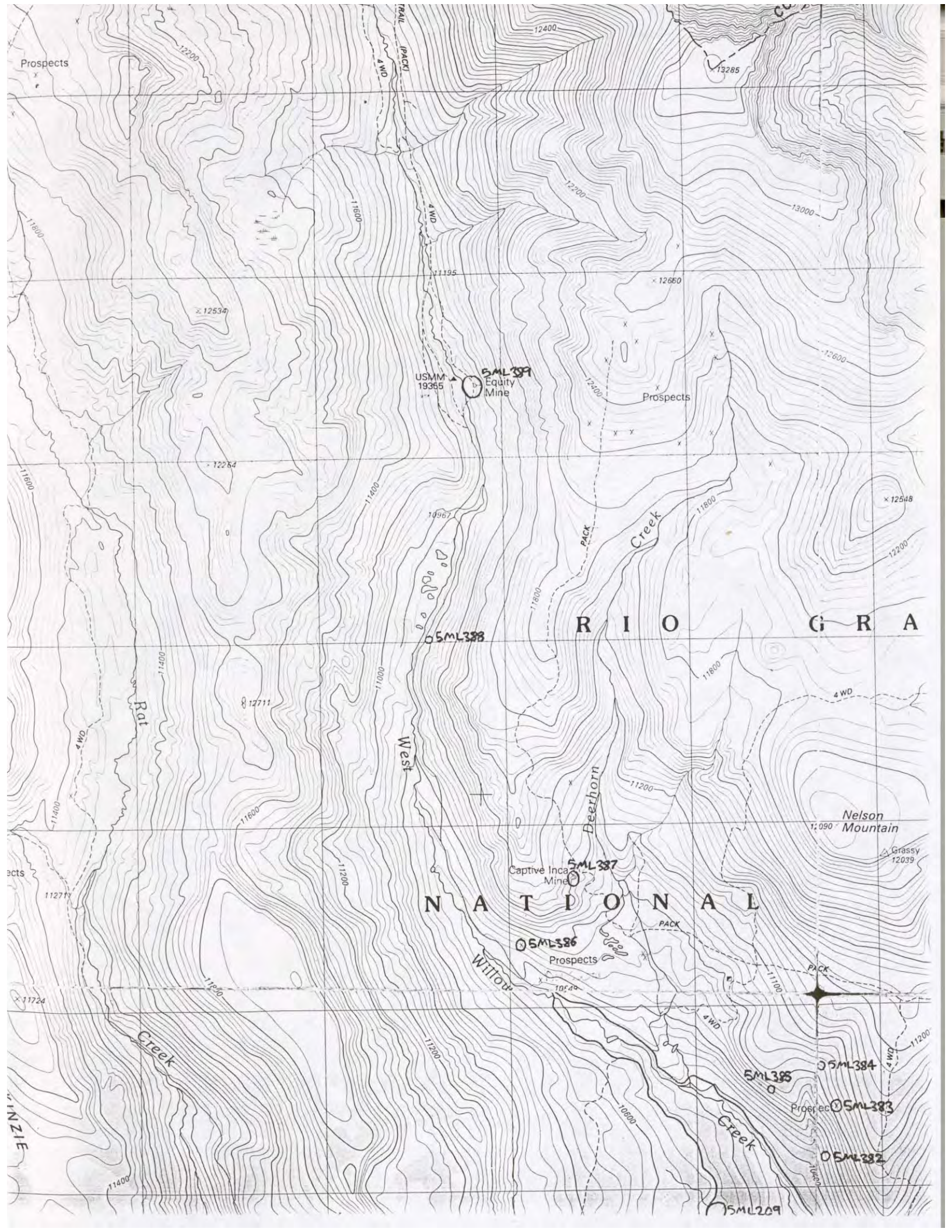
Maps

Sanborn Map Co. *Creede, Mineral County, Colorado, 1893* Sanborn Map Co., Brooklyn, NY 1893.

Sanborn Map Co. *Creede, Mineral County, Colorado, 1898* Sanborn Map Co., Brooklyn, NY 1898.

Sanborn Map Co. *Creede, Mineral County, Colorado, 1904* Sanborn Map Co., Brooklyn, NY 1904.

Sanborn Map Co. *Creede, Mineral County, Colorado, 1910* Sanborn Map Co., Brooklyn, NY 1910.



4559 / NE  
1401 / CINCO

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

1926

107°00' 107°30' 107°00'

4930000 N

492

491

490

T 42 N  
T 41 N



461 (SAN)