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**The best of times, the worst of times: A bio-cultural analysis of
the Ferguson District, 1892–1909**

Ferris, Dawna Eileen, M.A.

University of Nevada, Las Vegas, 1991

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**300 N. Zeeb Rd.
Ann Arbor, MI 48106**

**THE BEST OF TIMES, THE WORST OF TIMES:
A BIO-CULTURAL ANALYSIS OF THE
FERGUSON DISTRICT, 1892-1909**

**By
Dawna E. Ferris**

A thesis submitted in partial fulfillment
of the requirements for the degree of

Master of Arts

in

Anthropology

**Department of Anthropology
University of Nevada, Las Vegas**

August, 1991

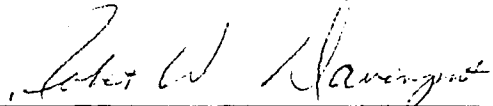
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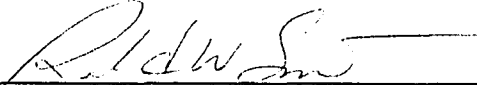
The thesis of Dawna E. Ferris for the degree of Master of Arts in Anthropology is approved.


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University of Nevada
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August, 1991

ABSTRACT

This study concerns a bio-cultural analysis of the Ferguson District, a late 19th-early 20th century gold mining district located in southeastern Lincoln County, Nevada. Historical events are reconstructed for the boom years between 1892 and 1909, using achival sources, limited archeological data, and personnal communications. Critical bio-cultural variables, including food and water supplies, housing patterns, sanitary practices, and the types and availability of medical care, are investigated. The effects of these factors on mortality and morbidity in the District are posited. The hypothesis that silicosis ("miner's consumption") was the leading cause of death in the Ferguson District during this period is tested in this research. Comparisons are made with mortality and morbidity data from the Comstock Lode between 1865-1880 and Goldfield, Nevada from 1904-1909 in order to assess the relative risk associated with life and work in the Ferguson District.

The results of the study indicate that infectious and chronic diseases of the respiratory system accounted for over 25 percent of the Ferguson District mortality. Systemic infectious diseases, chronic conditions, and traumas also contributed to the mortality pattern reported in the District. The hypothesis that silicosis was the leading cause of death among all Ferguson District residents was not supported by the available evidence. Comparative data from the Comstock Lode and Goldfield suggest that conditions in the Ferguson District did not pose significantly more hazards to health or survival than did many other Nevada mining districts.

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CHAPTER I

INTRODUCTION

In 1987 the Bureau of Land Management (Las Vegas District) provided limited funding for research pertaining to the cemeteries of the late 19th century Ferguson Mining District. Headstones and markers within the two cemeteries, located approximately 30 miles southwest of Caliente in Lincoln County, Nevada, were badly deteriorated. Many gravesites had been vandalized during the decades since the Ferguson District's demise in 1909. The Bureau, charged with management and interpretive responsibilities for those properties, attempted to compile obituary lists, using archival sources to supplement the limited physical data. It was soon apparent that many aspects of Ferguson District's history were poorly documented. The initial results indicated that several important research questions could be addressed by an in-depth analysis of the available materials. The expanded investigation has produced the data for this thesis.

Mining lore crosscuts the pages of Nevada's history

like veins of rich ore in country rock. Volumes have been written to chronicle this important economic and social phenomenon. Historians and geologists most frequently wrote the first accounts, emphasizing the mining production histories or technological innovations of the great mines and districts (Angel 1881; Lincoln 1923). Few early studies attempted to analyze the sociological aspects of mining life or the human costs associated with the extraction of the earth's mineral wealth. Lord (1883) proved a notable exception when he presented mortality and accident data in his account of the Comstock Lode between 1863-1880. He observed that health and safety conditions directly influenced the attitudes and actions of the mining community.

The most noticeable effect of the exceptionally high rate of mortality in the Comstock mines is the recklessness of temper and disposition toward fatalism which is thereby engendered among the miners (Lord 1883:404).

This "recklessness of temper" was visibly manifested in the excesses of drinking, eating, gambling, and other forms of "high living" reported in the Comstock camps.

Over the years, the emphasis in Nevada mining

studies has gradually shifted away from the chronicling of major mining events and toward a modeling of the cultural processes associated with the mining experience. Contemporary investigators now include historic archaeologists who combine perspectives and methodologies drawn from both history and anthropology in the evaluation of environmental and social factors. Data and artifacts collected from old mines, structures, and garbage dumps are used to supplement archival information in the reconstruction of the settlement patterns, economic networks, and population composition of Nevada mining areas (Hattori 1975; Hardesty 1981, 1986).

Physical anthropologists have long argued that even modern "processual" researchers continue to overlook several critical variables in their analyses of human activities (Alland 1970; McElroy and Townsend 1979; Wood 1979). Biological factors such as nutrition, sanitation, health, and disease are rarely included in the study of cultural dynamics. Without a synthesis of the cultural and biological components of human behavior, any reconstruction is incomplete. Further, bio-cultural studies are capable of generating "insights rarely attainable through traditional anthropological,

sociological,...or ecological analysis alone" (Wood 1979:x).

Until recently, this synthetic approach had only limited application in Nevada mining research. Reno and Reno (1988) and Zanjani (1990) have developed morbidity and mortality data for Silver City and Goldfield, respectively, using these trends as barometers of social conditions. As Zanjani (1990:47) observed

[t]he wild excitement, inflated expectations, and careless bravado long celebrated in western lore were mirrored in the epidemic diseases, foreshortened lives, and violence that constituted the boomtown way of death.

Objectives of the Research

This research centers around a bio-cultural analysis of events in the Ferguson District during its initial boom years. A late 19th-early 20th century gold mining district, the Ferguson District is reputed to have been one of Nevada's most hazardous mining areas. Several popular accounts (WPA Project 1940; Murbarger 1956; Labbe 1960; Averett 1963; Cerveri 1975; Paher 1970, 1976) cite high rates of mortality at DeLamar, the principal camp of the District. Murbarger (1956: 195-

196) alleged that "miner's con" (silicosis) killed workers after only "three or four months in the DeLamar mill" and that "women and children who never went near the mines succumbed to the dread silicosis". Little hard evidence has been offered to support these claims, yet the myth of DeLamar as the "Widowmaker" persists in the literature. The objectives of this research are twofold: 1) to compile a more complete account of the Ferguson District history between 1889-1909 and 2) to test the hypothesis that miner's consumption (silicosis) was the leading cause of death in the District, affecting all age groups and both sexes in the study area.

The Research Design

A bio-cultural research design was selected to achieve the objectives of this study. As noted above, extraordinary health hazards are alleged in the published accounts of the Ferguson District's boom years, with little supporting data provided. An interdisciplinary research focus can best investigate the complex biological and cultural variables that influenced morbidity/mortality rates.

Secondly, archival and archeological materials are

available to support this research. During the majority of its 17 year boom period, events in the Ferguson District were chronicled by a local mining camp newspaper, titled variously the *Ferguson Lode*, *The Lode*, and the *De Lamar Lode*. A series of home-town editors reported on national issues, mining news, juicy gossip, and events of local interest. These first-hand accounts, when combined with other primary and secondary sources, document many aspects of the daily lives of Ferguson District residents. Material remains from the principal camps and cemeteries comprise additional evidence pertinent to a bio-cultural study.

Finally, the Ferguson District boomed during the last decade of the 19th century, a period seldom studied in Nevada's mining history (see Shamberger 1982; Zanjani 1990). Events in the District were incompletely recounted, with prior studies limited to: brief chapters within more generalized histories (Davis 1913; Scrugham 1935; Myrick 1963; Hulse 1971; Earl 1986); monographs prepared by geologists (Callaghan 1937); journal articles (Townley 1972); and popular travel guides (WPA 1940; Murbarger 1956; Averett 1963). At the turn of the century, technological innovations were rapidly

increasing the efficiency of mining and milling operations. Heavy machinery, powered by steam, electricity, and gasoline, proliferated in the work place and rapidly replaced many manual laborers. These subjected the remaining workers to new occupational hazards. The effects of this modernization on Nevada's miners and mill workers have not been quantified; a bio-cultural analysis of the Ferguson District begins to address this deficiency.

Methodology for this analysis integrates complimentary lines of available evidence. Data limitations inherent in this research include the unavailability of the DeLamar Hospital records and gaps in the county death records for the period from 1892-1909. Primary and secondary archival sources, including contemporary newspapers, tax records, census data, Lincoln County Auditor's claims and death records, informants' recollections, and historical accounts, provide the database for a historical reconstruction of the boom period. Several research questions were generated to guide the data collection. Did large numbers of people die within a short period of time in the District? Were both sexes and all ages at risk?

What were the cause(s) of death in the District? Was disease more prevalent during specific periods? What other agents can be implicated in the morbidity and mortality rates? Was medical care available to residents? If so, what kind? What sanitary conditions prevailed in the Ferguson District during the study years? Were food and water supplies adequate to meet the biological needs of the local residents? What demographic variables were operant during the period of study?

Biases in the historical documents tend to distort and/or neglect some aspects of the recorded past (Deetz 1977; Hardesty 1985; White 1990). Archeology, which deals with the material remains of past human behaviors, compliments the written records by providing insights into the quotidian, mundane, or unattractive aspects of human activities. Archeological data recovery included the topographic mapping of the Ferguson District's cemeteries, the recording of tombstone data, and the measuring of selected structures within the settlements. The results of this investigation are used to supplement the archival information.

Obituary lists for the Ferguson District settlements

were derived from the historical reconstruction and include age at death, sex, and cause(s) of death. Data limitations (i.e. birth dates or age at death not reported) and the unstable population dynamics of the Ferguson District precluded the development of mortality tables. Leading causes of death are compiled and displayed as percentages of the reported mortality for the study area. These percentages are compared with similar data from the mining communities of the Comstock Lode between 1865-1880 and Goldfield, Nevada from 1904-1909, in order to assess the relative health risk associated with life and work in the Ferguson District.

The results of this investigation are organized as follows. **Chapter II** concerns the geographical and geological setting of the study area. **Chapter III** presents an account of events in the Ferguson District from 1889-1909. Critical bio-cultural variables, such as food and water supplies, housing, sanitation, and medical care, are detailed in **Chapter IV**, to aid in the analysis of living conditions in the Ferguson District. In **Chapter V**, morbidity and mortality trends are developed to test the hypothesis that miner's consumption (silicosis) was the leading cause of death for all

Ferguson District residents from 1892-1909. Mortality rates for the study area are compared with similar data from other mining communities in order to assess relative health and safety risks attendant upon life and work in the Ferguson District. Conclusions drawn from the research are presented in **Chapter VI**.

CHAPTER II

PHYSICAL SETTING OF THE STUDY AREA

Introduction

The location and environmental characteristics of the study area are described in the following sections. A synthesis is developed of those variables which directly influenced events in the history of the Ferguson District and the health and safety of its residents.

Location

The Ferguson District is located in east-central Lincoln County, approximately 30 miles southwest of Caliente, Nevada (**Figure 1**). The boundaries of the District, as reported in the *Pioche Weekly Record* (2/25/1892:1), extended "... from Cliff Springs on the north to Rigs [sic] Spring on the south, and from the Meadow Valley on the east to Ely or Dry Lake Valleys on the west" (**Figure 2**). The principal mining camps of the Ferguson District included Golden City (Ferguson), Helene, and DeLamar (Reeves), all situated on the west side of

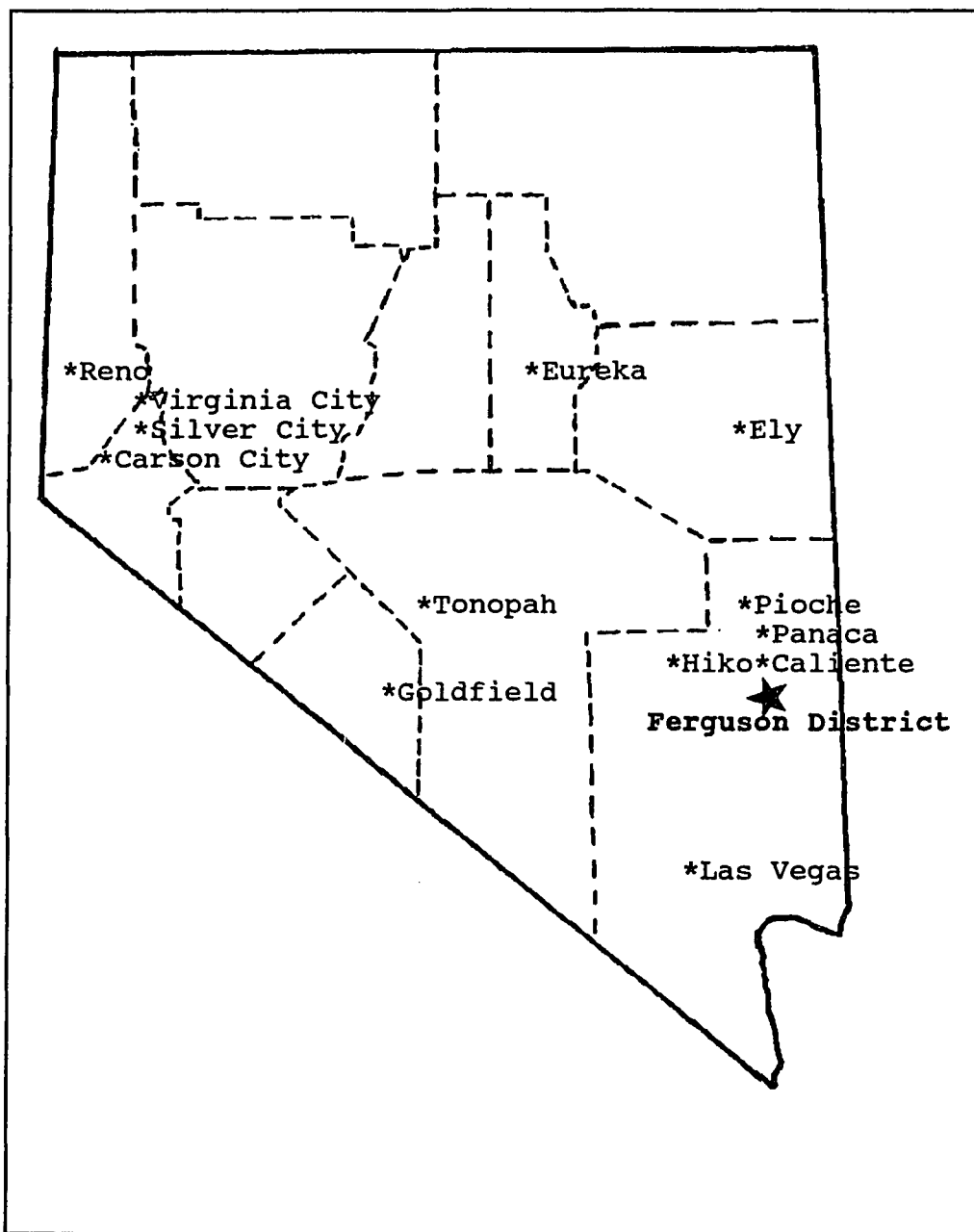


Figure 1. Location of the study area in Lincoln County and in the State of Nevada, with county boundaries as delineated in 1880.

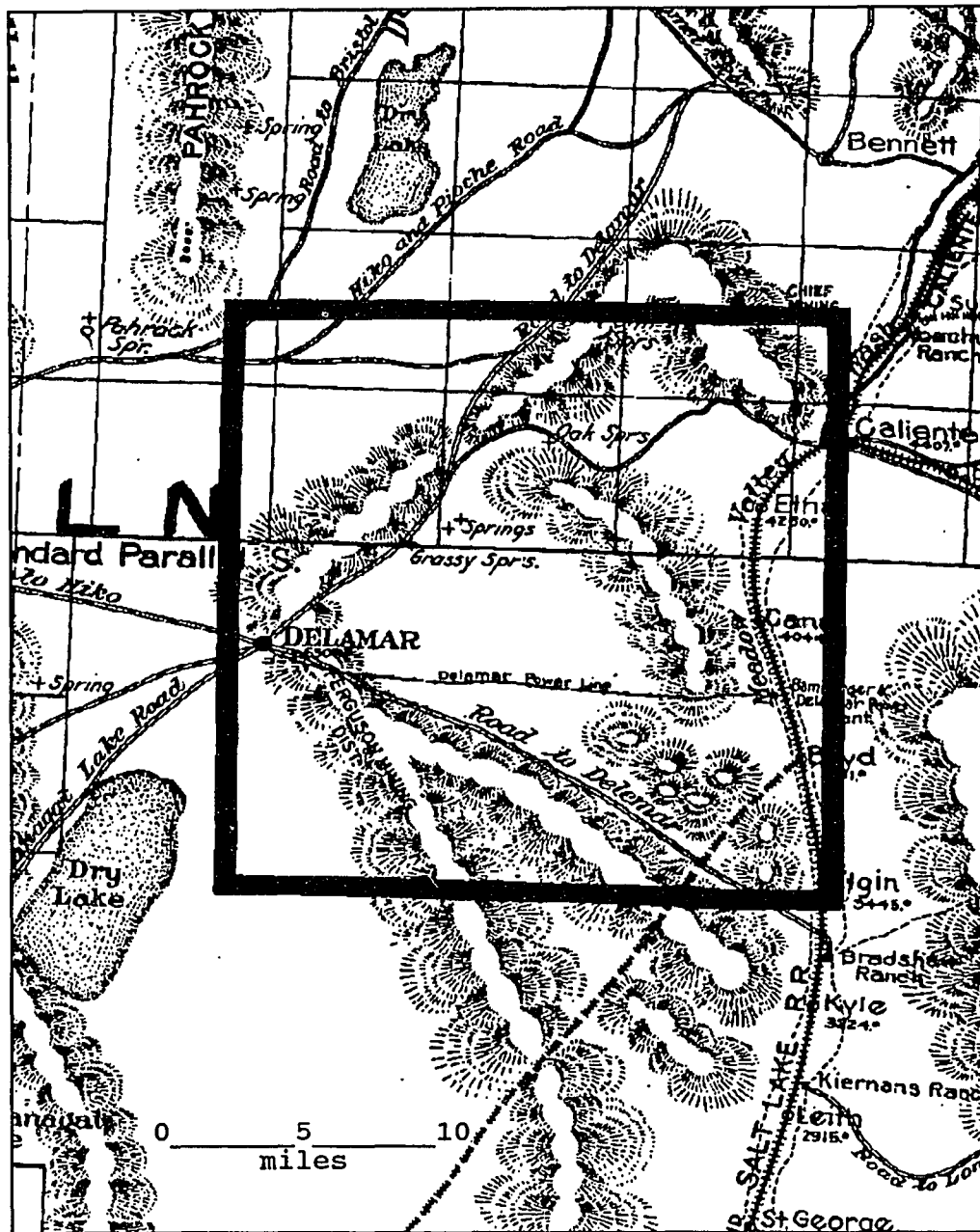


Figure 2. 1908 map of Lincoln County with boundaries of the Ferguson District, as filed in 1892, indicated. (After Freudenthal 1908).

the Delamar Mountains (**Figure 3**).

During the boom period of the Ferguson District, several spelling variants of "DeLamar" are used in the primary sources. The town was named for Captain J.R. De La Mar, but spelled "DeLamar", deleting the spaces between the parts of the name and retaining only the capitalized "L". The company headed by the Captain was titled the DeLaMar Nevada Gold Mining Company. The local newspaper retained one space in the name, calling itself the *De Lamar Lode*. In subsequent years, an alternate spelling, "Delamar", appeared in many of the popular histories of the Ferguson District (i.e. Callaghan 1937, Townley 1972) and on the topographic maps produced by the United States Geological Survey. The original orthography of the town, company, and newspaper names, "DeLamar", "DeLaMar", and *De Lamar*, respectively, are retained in this document. In order to conform with the topographic maps, "Delamar" is only used to designate the mountain range and valley adjacent to the historic townsite.

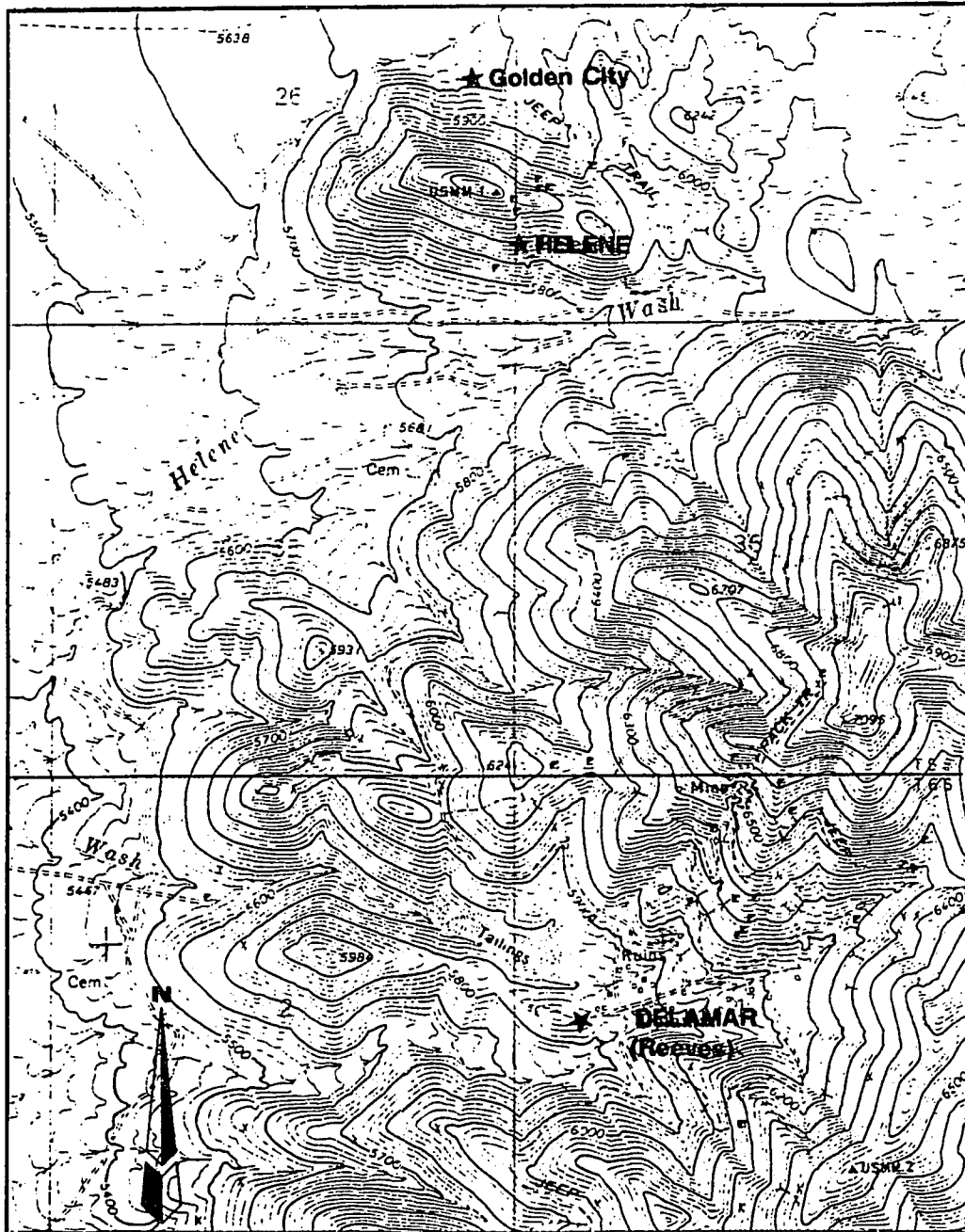


Figure 3. Location of the Ferguson District settlements, 1892-1909. USGS Topographical Map, Delamar Quadrangle, 1973. 1:24,000 scale.

Geographic Setting

Two mountain ranges, the Burnt Springs Range and the Delamar Mountains, are partially contained within the boundaries of the Ferguson District. The southern tip of the Burnt Springs Range is included within the study area, but was not the site of any mining-related activities. This discussion will focus on the Delamar Mountains, a precipitous north-south trending range situated at the southern extreme of the Basin and Range physiographic province. The mountains are bordered to the east by the canyon of Meadow Valley Wash, a tributary of the Colorado River, and by Kane Springs Valley. Broad alluvial basins, including Dry Lake, Delamar, and Coyote Springs Valleys, bound the western and southwestern edges of the range. Elevations rise above 7,200 feet above sea level (ASL) at several locations along the central cordillera of the Delamar Mountains; the Ferguson District mines and settlements are generally located at elevations between 5700 and 6,500 feet (ASL).

Climate

Climatic trends have not, as yet, been developed for the Delamar Mountains. Conditions are extrapolated for

the study area, using measurements taken for the past 30 years at a National Oceanic and Aeronautical Association (NOAA) weather station in Caliente, Nevada (elevation 4395 feet (ASL)) and data obtained from soil surveys conducted by the Soils Conservation Service (1991). Weather phenomena documented by the Ferguson District newspapers between 1892-1909 are also included in this extrapolation.

The regional climate is arid, characterized by hot summers and cool winters. Temperatures range from -20 degrees Fahrenheit (F) in winter to over 100 degrees F during the summer months. The average summer temperature is 85 degrees F, while the winter average is 20 degrees F. The average annual temperature is 54 degrees F. The growing season is limited to approximately 170 frost-free days, with both early and late frosts common.

Approximately half of the annual precipitation for the Delamar Mountains occurs in winter as snowpack. Summers are generally dry, although violent convection storms are common during late July and August. Lightning strikes and flash flooding during these precipitation episodes constitute localized hazards to human populations. The precipitation extremes are reflected

in the regional landforms. Deep washes, cut into sparsely-vegetated alluvial fans, attest to long periods of drought punctuated by explosive moments of intense rainfall that quickly runs off the landscape. Precipitation averages have been generated for the vegetative communities found in the Delamar Mountains: 16 to 20 inches in the Ponderosa Pine community; 12 to 16 inches in the Pinyon-Juniper woodland; and 8 to 12 inches in the Blackbrush community (USDA, SCS 1991). The settlements of the Ferguson District are situated within the Blackbrush community and would have received between 8 and 12 inches of annual precipitation.

The physiographic position of the Delamar Mountains is in part responsible for the erratic and unpredictable climatic conditions of the area. Located just north of the Mojave Desert Province and at the southern tip of the Basin and Range Province, the range receives weather influences from both regions. The steep escarpment formed by the western edge of the mountains, rising 2000 feet above the floor of Delamar Valley, funnels desert winds from the southwest to the northeast along its face. High wind velocities have been documented along this western escarpment, especially during the fall and winter

months (Ferguson Lode 10/3/1892:1; 11/28/1892:1;
11/25/1893:1).

Flora

Complex factors, including elevation, precipitation, soils, slope, and aspect, influence the distribution of vegetation types in the Delamar Mountains. At elevations above 6,800 feet (ASL), where precipitation generally exceeds 15 inches (as snowpack), ponderosa pine (*Pinus ponderosa*) can be found in association with Utah serviceberry (*Amelanchier utahensis*), manzanita (*Arctostaphylos pungens*), and scrub live oak (*Quercus turbinella*). A Pinyon-Juniper woodland covers the central cordillera and eastern slopes of the range, at elevations between 5200-6,800 feet (ASL). Singleleaf pinyon pine (*Pinus monophylla*) and Utah juniper (*Juniperus osteosperma*) dominate a community which also contains sagebrush (*Artemisia* spp.), scrub live oak, and a variety of cacti (*Opuntia* spp.). The western slopes are affected by a rain-shadow, created by the Meadow Valley Mountains to the south and the precipitous terrain of the Delamar Mountains. Available precipitation on the drier western side of the range supports the Blackbrush

community of the Mojave Desert province, occurring at elevations between 5,500 and 6,500 feet. Blackbrush (*Coleogyne ramossissima*), Joshua trees (*Yucca brevifolia*), shadscale (*Atriplex confertifolia*), Nevada jointfir (*Ephedra nevadensis*), desert needlegrass (*Stipa speciosa*), and other grasses comprise the association. Sparse pinyon and juniper are found as invader species on higher elevation slopes with a northern aspect. This vegetative community surrounds the mines and camps of the Ferguson District.

Fauna

The Delamar Mountains and adjacent valleys provide habitat for numerous animal species. Large mammals include bighorn sheep (*Ovis canadensis nelsoni*) and muledeer (*Odocoileus hemionus*). Pronghorn antelope (*Antilocapra americanus*) historically occurred in the Delamar and Dry Lake Valleys (De Lamar Lode 4/10/1900:3). Blacktailed jackrabbits (*Lepus californicus*) and the desert cottontail (*Sylvilagus audubonii*) are found in abundance during favorable moisture regimes. Large predators include mountain lions (*Felix concolor*), bobcats (*Lynx rufus*), and coyotes (*Canis latrans*).

Sitings of mountain lion within the town limits of DeLamar were reported on several occasions at the turn of the century (*De Lamar Lode* 2/3/1896:1; 2/20/1900:3). Rattlesnakes (*Crotalus* spp.) are also residents of the Blackbrush community and pose a potential health risk for human populations. Large rattlesnakes were frequently observed or killed by Ferguson District residents, especially during the early years of the District's development (*The Lode* 5/20/1893:3; 9/30/1893:3; 11/11/1893:3).

Water Resources

Natural springs or seeps are common in the Delamar Mountains, with 33 sources located within a 10 mile radius of the Ferguson District mines and settlements. Human activity in the Delamar Mountains since the boom years of the Ferguson District has been limited to small scale-mining and cattle grazing. It is assumed that water discharge of these springs at the turn of the century would have closely approximated the modern flow rates. Rates of flow for these springs were measured during a recent Bureau of Land Management water inventory (1981). **Table 1** displays these flow rates, which range

Table 1. Flow rates of Delamar Mountains springs.

Source Name	Type	Flow rate (gpm*)
1. Abandoned	Perennial	.17
2. Applewhite	Perennial	2.10
3. Balm of Gilead	Perennial	1.80
4. Bishop	Perennial	2.80
5. Blyth	Perennial	.20
6. Boulder	Perennial	.60
7. Cabin	Perennial	1.80
8. Canyon	Perennial	6.20
9. Chokecherry	Perennial	4.00
10. Cottonwood	Perennial	4.00
11. Coyote	Perennial	2.10
12. Grassy	Perennial	.30
13. Green	Perennial	1.80
14. Horn	Intermittent	.00
15. Log Trough	Perennial	2.10
16. Lower Indian	Intermittent	.00
17. Lower Riggs	Perennial	33.80
18. Pine	Perennial	1.00
19. Ponderosa	Perennial	1.10
20. Pot	Perennial	2.00
21. Robinson Seep	Intermittent	.50
22. Sawmill #1	Perennial	.60
23. Sawmill #2	Perennial	.20
24. Sevenoaks	Perennial	.30
25. Slidy Mountain	Perennial	.55
26. Tunnel #1	Perennial	.50
27. Tunnel #2	Perennial	2.30
28. Tunnel #3	Perennial	4.00
29. Upper Indian #1	Perennial	5.70
30. Upper Indian #2	Perennial	.55
31. Upper Riggs	Perennial	2.10
32. Upper Willow	Perennial	26.00
33. Willow	Perennial	25.00

* gallons per minute

(Source: Bureau of Land Management, Caliente
Resource Area Water Inventory 1981)

from a low value of .17 gallon gallons per minute (gpm) to a high of 33.8 gpm, with an average of approximately 4 gpm. Water quality data from these springs, where available, are presented in **Chapter IV** of this document.

Meadow Valley Wash, located 12 miles to the east of the Ferguson District settlements, is the closest perennial stream. This spring-fed system is a tributary of the Colorado River, flowing southeast through Lincoln County. Mean annual flow of the wash, measured at the gaging station in Caliente, Nevada, is 11.5 cubic feet per second (cfs). Peak flows, often in excess of 2,000 cfs, have been recorded annually during February and March, when winter snowmelt combines with spring precipitation to create flood conditions (USDI, BLM 1991). Information on water quality, as determined from samples taken at four locations along Meadow Valley Wash, are included in the discussion of water supply sufficiency in **Chapter IV**.

Soils

Soils in the Delamar Mountains are varied, reflecting their parent materials and depositional environments. Only those types within the immediate

vicinity of the Ferguson District mines and settlements are discussed in this section.

Hollace, Winklo, and Wyva soils types occur around the District's inhabited areas. Winklo and Wyva are formed in residuum and colluvium from volcanic tuffs, whereas Hollace soils develop in limestone residuum. These soils have very gravelly to very stony sandy loam textures (USDA, SCS 1991). They are relatively shallow soils, of generally less than 25 inches to bedrock, with gravelly surfaces and large amounts of gravel and stone just below the surface. Clay content of the three types varies with the composition of the underlying bedrock and the location of the soils on landforms. Moderate to high amounts of clay are generally found in slight concavities, lesser amounts on convex surfaces. Each of these soils have moderately slow permeability rates and are susceptible to rapid water runoff. Hollace and Winklo soils are found at elevations between 4,200-5,900 feet (ASL), with Winklo generally limited to south-facing slopes. Wyva soils originate on slopes with a northern aspect, at elevations from 4,800-5,600 feet (ASL).

Geology

The Delamar Mountains are generally composed of volcanic materials. However, Cambrian sedimentary rocks are exposed on the western slopes; these have intrusions of Tertiary age rhyolite, granitic porphyry, and basalt dikes (Tschanz and Pampeyan 1970). Normal and thrust faults are also concentrated on the western edge of the range, in close proximity to the locations of the mines and camps of the Ferguson District. Localized tectonic activity was common at the turn of the century, with particularly strong earthquakes and aftershocks reported by the local newspaper on November 23, 1892 and again on November 18, 1902. These faults in the earth's crust were also responsible for the ores of the Ferguson District. Over time, thermic waters carrying solutions of minerals followed the fracture lines, depositing gold, silver, lead, and other ores along the fault zones.

According to Callaghan (1937), the most productive ore bodies of the Delamar Mountains are contained in the Prospect Mountain Quartzite. Deposits are characterized by alternating beds of massive white to pink quartzite or thin-bedded reddish brown quartzite, with a silica content ranging from 50 to 70 percent (Humphrey 1945).

Ores are "Tertiary silver-gold epithermal deposits-that is, those formed near the surface at moderate or low temperatures and pressures" (Callaghan 1937:47). Gold occurs as a breccia of quartzite or as veins of cherty, fine-grained materials. Crushing and chemical processing of this quartzite is required to release the gold values from the ore. Silver is also found in the breccia, at an average ratio of 1:3 gold to silver.

Synthesis of Environmental Characteristics

The physiographic, biological, and geological variables described in this section influenced events in the history of the Ferguson District and the lifestyles of its residents. The Ferguson District, like most other hardrock mining areas of the West, was situated along the slopes of a high elevation mountain range. Extremes of temperature, high wind velocities, and heavy snowfall made living conditions unpredictable and sometimes arduous. Substantial housing was required to shelter residents from the often hostile elements.

Forest products for construction, as well as for heating and cooking, were available in close proximity to the District. Wood is a finite resource which

requires long-term regeneration. By 1902, a decade of intensive timber cutting for a variety of Ferguson District uses had depleted the pinyon-juniper forests in close proximity to the settlements. Fuel shortages were reported during the remaining boom years of the District. Other local vegetative types, such as the Joshua tree, blackbrush, and shadscale, were not economically useful as fuel or building materials.

The food production potential of the Ferguson District was very limited. Of the regional vegetation types, only the pinyon pine produces seeds (pine nuts) which are large and edible. These are neither a reliable nor predictable resource, as pine nut production fluctuates substantially from year to year and from stand to stand (Lanner 1981). No other native seeds, berries, fruit, tubers, roots, or nuts were abundant enough to have formed a dietary staple for the large, sedentary populations of the study area.

Agricultural endeavors in the Ferguson District were precluded by the inadequate water supplies, a short growing season, and the paucity of arable soils. The shallow, rocky soils and precipitous terrain of the Delamar Mountains were unsuited to large-scale crop

production. Although a few home gardens were attempted by Ferguson District residents during the period between 1892-1909, water shortages limited these efforts to ornamental flowers and shade trees.

The available wild game numbers could not sustain the Ferguson District populations. Newspaper accounts document that game was scarce and "the anxious hunter cannot find anything to hunt" (*De Lamar Lode* 5/23/1899:4). Miners and mill hands, who generally worked 10 hour days, six days per week, had little free time for subsistence hunting. The Native Americans associated with the settlements supplemented the meat supplies of restaurants with wild game, but on a very sporadic basis.

Ferguson District residents were dependent on merchants, nearby ranchers, and peddlers for their food supplies. Freight distances between the food-producing regions and the Ferguson District ranged from 25 miles to several hundred miles. The precipitous terrain of the Delamar Mountains made travel to the settlements of the District both hazardous and time-consuming. Periodic shortages of critical food resources were the results of this situation, affecting living

conditions in the Ferguson District.

Water was available from natural springs and seeps which occur within a few miles of the Ferguson District settlements. The average flow rate of the perennial sources is only 4.3 gallons per minute. The local springs could not meet the water demands of mines, on-site mills, and municipalities. Although alternate water supplies were eventually obtained from Meadow Valley Wash, water shortages were a chronic problem throughout the boom years of the Ferguson District. This resource limitation also dictated that "dry" mining and milling processes be used in ore production from 1892-1902. A by-product of these processes were dust clouds which created health hazards for workers and residents.

The nature of the geologic deposits exerted a strong influence on the course of events in the Ferguson District. Gold in brecciated quartzite is difficult (and costly) to mine and process. Blasting, drilling, crushing, roasting, and chemical precipitation are sequential steps in the mining and milling of these hardrock ores. Each of these phases requires heavy equipment and manpower. The high silica content of the country rock affected both men and machines.

In subsequent chapters, the impacts of these critical environmental factors are linked with events in the history of the Ferguson District. The adaptive responses of the District's residents are analyzed in the discussions of living and working conditions in the study area.

CHAPTER III

HISTORICAL RECONSTRUCTION

"It was the best of times, it was the worst of times..."

(Charles Dickens *A Tale of Two Cities*, 1859:1)

Introduction

Several authors, including Callaghan (1937), Myrick (1963), Paher (1970), Hulse (1971), Townley (1972), and Earl (1986), have published brief histories of the Ferguson District during the "boom" years from 1892-1909. These accounts are synthesized with new information from other primary and secondary archival sources to document major events in the discovery, development, and ultimate demise of the District. This historical overview is considered background information critical to an understanding of the bio-cultural processes that affected the residents of the Ferguson District. The essential bio-cultural elements of available food and water, adequate housing, and medical care related to occupational hazards and disease episodes are analyzed in Chapter IV.

Discovery and Early Developments

Accounts of the discovery and early development of the Ferguson District read like a Horatio Alger novel, in which a poor young man rises to fame and fortune through hard work and persistence. Gold bearing float was first discovered in the Delamar Mountains (formerly called the Bennet Springs Range or the Highland Range) by two young ranchers from the Pahranaagat Valley (*Pioche Weekly Record* 2/25/1892:1). Twenty-three year old John Ferguson and his friend Joe Sharp often combined prospecting with mustang trapping for "cash money" (Townley 1972:3). On one particular trip in the summer of 1889, the two set out from Hiko but

soon after leaving home discovered that they had neglected to take with them anything to break rocks with, consequently they kept an eye open for something to supply the place of a hammer. The first and only thing that was discovered was the main part of a monkey wrench with all the attachments long since departed, and with this they proceeded on their trip... (*Pioche Weekly Record* 2/25/1892:1).

While riding the western slopes of the Delamar range, Ferguson and Sharp noticed alluvial cobbles containing golden flecks. Using the monkey wrench as a makeshift hammer, they tested the ores and named their

discovery the "Monkey Wrench" claim. Subsequently, the partners continued exploration in the region, filing claims with the Lincoln County Clerk in Pioche, Nevada during June of 1890 (Townley 1972:3).

Scrugham (1935) documented that gold had previously been mined in the Delamar Mountains, after an Indian was reported to have shown members of the Riggs family, who ran cattle in the region, some ore-bearing deposits. They allegedly developed a mine called "the Siscel" (Scrugham 1935:618), although their workings were apparently never officially filed and the location remains uncertain. Ferguson and Sharp continued to prospect and stake claims during 1890 and 1891, in what was presumably a new mining district. Since neither of the partners had the capital to support their mining ventures, they looked for "grubstakes" from outside sources. Ferguson forwarded ore samples to known mining investors and struck paydirt when Hartwig A. Cohen, a central Nevada mining engineer "of means and enthusiastic on the question of mines" (*Pioche Weekly Record* 2/25/1892:1), agreed to finance further explorations. In the summer of 1891, Ferguson bought out Sharp's interest in the Monkey Wrench claims for

"two old gray horses and a broken-down wagon" (personal communication, Joseph Higbee 1990). Joe Sharp continued prospecting in the region and, according to family members, traded away several mining fortunes for horses during his lifetime (personal communication, Ed Sharp 1990).

During October 1891, Ferguson searched for "the Mother Lode" in the vicinity of his original discoveries. There he encountered an "exposed outcrop standing six to ten feet above the surrounding area and about a quarter of a mile in length" (Townley 1972:4), showing substantial "color". Samples of the ores were mailed to Cohen, who was sufficiently impressed by the assay report of \$1000 per ton gold values to visit the area. Having seen the deposits, Cohen became an enthusiastic supporter, hiring three men to sink a shaft and to set up a whip and horse at the shaft. He sent information on the new district to the *Engineering and Mining Journal*, a national publication that he knew would reach a broad spectrum of mining capitalists. Cohen emphasized the silver rather than the gold potential of the area, hoping to attract investors who knew of the famous silver mines at nearby Pioche

(Townley 1972:18). The desired effect was achieved as prospectors, speculators, and businessmen, mostly from Eureka and Pioche, flocked to the Delamar Mountains between December, 1891 and January, 1892.

To avoid the claim disputes and violence that had characterized the early days of Pioche, Ferguson, his brother Alden, and the principal claimants of the new district met on February 20, 1892 to legally organize. "The question of a name for the new and rich district was discussed and on a motion of Mr. W.R. McFadden, the name was declared to be Ferguson in honor of the discoverer" (*Pioche Weekly Record* 2/25/1892:1). The 19 men in attendance were an assortment of local ranchers, businessmen, and "promoters" from Pioche. The important discoveries of the new Ferguson District, including the Magnolia, April Fool, and Jim Crow-Monitor were made by this group between March and September of 1892 (Figure 4).

The first settlement of the new district was established in April, 1892, near the original mine, and was aptly named Golden City (refer to Figure 4). The camp consisted of approximately a dozen tents; a tent saloon, run by H. H. Cooper, was opened in mid-April.

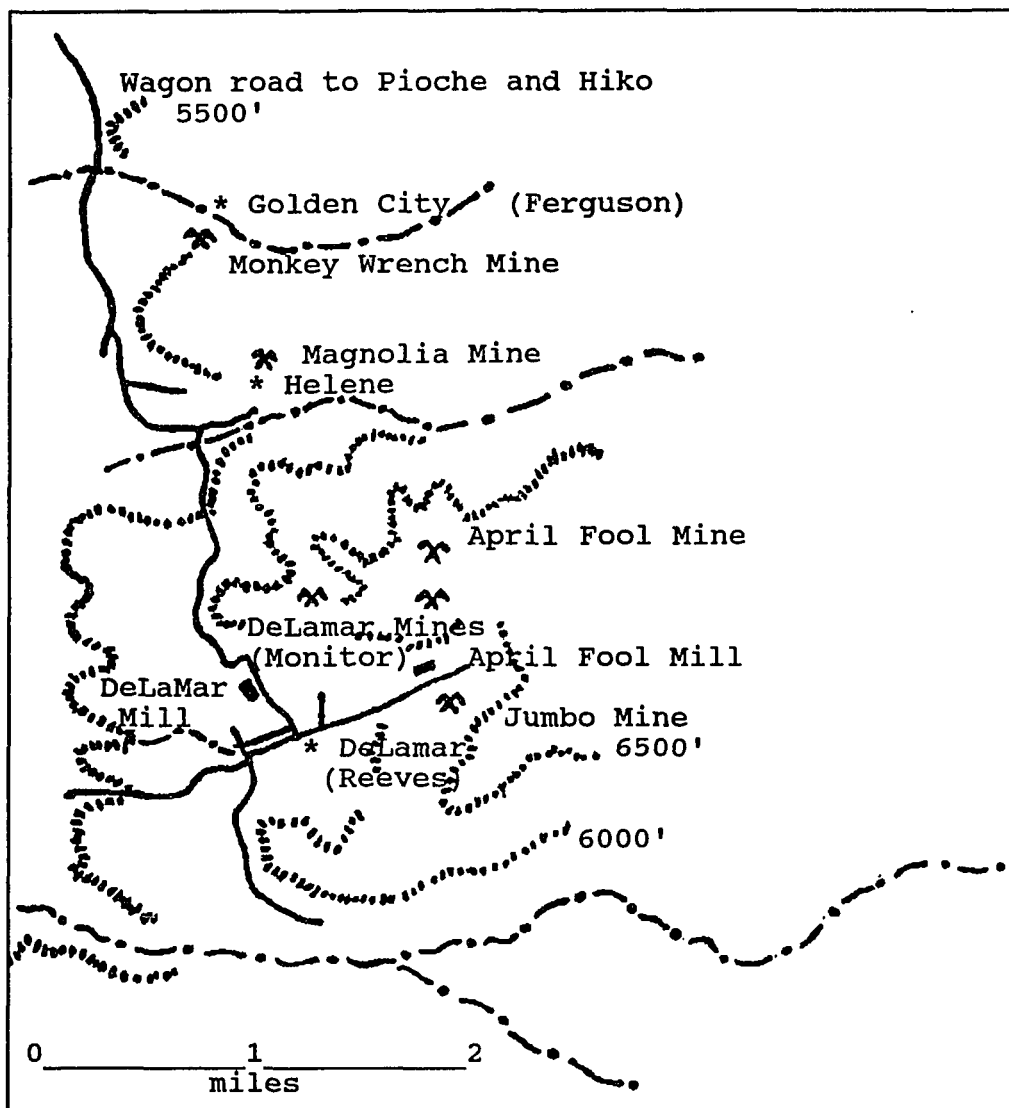


Figure 4. Principal mines and settlements of the Ferguson District, 1892-1909.

Golden City (renamed Ferguson in July, 1892) was short-lived as the hub of the new district, with a major exodus of residents starting within the month. While the number of miners remaining in camp is unknown, the newspaper reported in early 1893 that a boarding house had been established for the convenience of the miners there (*Ferguson Lode* 1/2/1893:1). This reference suggests that Golden City continued to be inhabited by a small number of residents throughout the early years of the District's development.

In late 1891, Cohen and Ferguson laid out a townsite, situated just below the Magnolia mine (see **Figures 4**). The town, named Helene after Cohen's wife, was soon home to most of the miners from Golden City. A modest building boom began, with several frame buildings under construction by June, 1892. A portable steam-powered sawmill, called the Monkey Wrench, was outfitted and placed in a heavily-wooded area east of town. The *Pioche Weekly Record* described the new community.

The town of Helene is prettily situated
between the hills and consists of about
a dozen tents and two frame buildings,
scattered over about ten acres of a level

spot in the canyon. The business houses consist of a drug store, a boarding house, a lodging house, and two saloons...(Pioche Weekly Record 6/2/1892:1)

Soon approximately 150 people were living in or near Helene, constituting a sufficiently large population to request the establishment of a voting precinct and post office. Both petitions were granted in July, 1892.

A third Ferguson District camp was started approximately one and a half miles south of Helene, also in April, 1892. Named Reeves, after one of the original discoverers of the Jim Crow-Monitor claims, the small tent camp was located south of those claims and west of April Fool claims (Figure 4). Approximately two dozen workers comprised the core population of the camp until mid-1894.

As the summer waned, Helene continued to grow, acquiring the trappings of a mining boomtown. In August, the town boundaries were established and J.A. Denton appointed Justice of the Peace. On September 5, 1892, the Lode Publishing Company moved from Pioche to Helene and began publication of the *Ferguson Lode*. Edited by Herbert Francis and managed by N. P. Dooley, the weekly edition contained national, regional, and

local news in a four page format. A monkey wrench appeared on the paper's banner, symbolic of the tool used in the discovery of the Ferguson District. Local merchants also copied this symbol, i.e. "the Monkey Wrench Saloon", and "adorned their false fronts with the design" (Townley 1972:5). The paper soon became the District's most vocal enthusiast, repeatedly touting (and often exaggerating) its potential.

During this period, skillful promotion of the Ferguson District mines attracted investors from Salt Lake City, Utah. Having no milling facilities, mine owners were forced to freight their ores by wagon 130 miles to the nearest railhead at Milford, Utah, then ship them by rail to Salt Lake for processing. The overall quality of most of the District's ores was low-grade. With a total cost of over \$45 per ton for shipment to Salt Lake, the profit margin was very slim (*Ferguson Lode* 9/26/1892:3). By carefully selecting only the highest grade ores for shipment ("high grading"), Ferguson District promoters were able to greatly inflate the assayed values of their claims. One "handsorted" shipment from the April Fool mine assayed at \$24,000 per ton, causing great excitement (Roske and

Planzo, 1978:709). Many potential investors were impressed with the prospects of the new district. John Sevenoaks of Salt Lake became the first lessee, taking a two-thirds option for \$50,000 on the Ferguson-Cohen Magnolia mine. In September, 1892, the Mahana group optioned the April Fool claims for \$150,000; a modest \$1000 downpayment was to be followed by substantial payments before the year's end. Crews of men, averaging over 20 men per mine, were put to work on eight hour shifts, sinking shafts and opening ore bodies on these and other claims. Prosperity seemed assured for John Ferguson, the once-poor rancher from the Pahrnagat Valley, and many of his fellow prospectors.

Helene residents reacted to the news of the leases and impending developments with typical mining camp enthusiasm. New tent saloons sprang up overnight; other businesses followed as buildings could be completed. Restaurants, Chinese laundries, additional lodging and boarding houses soon opened. Saloons provided the only entertainment in the camp, with poker and faro games cited as popular pastimes for miners. Hulse (1971:52) observed that, while there were "a few roughs in the Ferguson District...", the level of violence did not

approach the scale of the early days of Pioche. The newspaper noted that Helene was so tame that many miners were planning to move their wives and children there, "as soon as lumber can be procured with which to build homes..."(*Ferguson Lode* 10/3/1892:4). By mid-November, approximately 250 people were residents of Helene, with

two drug stores, two hotels, two restaurants, eight saloons, three general merchandise stores, one lodging house, an assay office, two laundries, three corrals, post-office, meat market, and one of the newest weekly newspapers published in Nevada--the *Lode* (*Ferguson Lode* 11/14/1892:1).

The lack of on-site mills and a shortage of building lumber were not the only problems which plagued the early development of the Ferguson District. The mines and camps were dependent on local spring sources (Tunnel and Cottonwood Springs) for their water supplies. Throughout 1892, spring developments were attempted and pipelines surveyed to bring water to Helene. Wells were dug at several locations near the camp, in a generally unsuccessful effort to find additional water supplies. By fall, water shortages had become a cause for concern, as several of the springs were beginning to dry up.

The bottom fell out of the first Ferguson District boom period in November, 1892. The Mahana group failed to make its final payment on the April Fool option; work crews were dismissed unpaid and equipment suppliers left with outstanding bills. The \$42,000 lease payment on the Magnolia mine was not made, as promised, in December. The principal claims of the District reverted to their local owners, who were financially incapable of further developments on the properties. Miners left Helene for more promising areas. By year's end, only the sawmill, moved to a timber stand near Riggs Spring, was still employing a sizable crew, totaling 30 men. Many businesses in Helene had closed, limiting the goods and services available there.

The new year of 1893 opened quietly in the Ferguson District, with a handful of miners, generally the mine owners themselves, attempting to work the claims. Ores were stockpiled, awaiting sufficient capital to finance the expensive shipments to Salt Lake. Other Lincoln County mining camps, including Pioche, Bristol, and Royal City, were experiencing even more dramatic slumps. For nearly three years, the silver market had been artificially buttressed by the Sherman Silver Purchase

Act of 1890. The Act committed the Secretary of the Treasury to purchase 4,500,000 ounces of silver monthly and to the issuance of legal tender silver certificates in payment (Hofstadter 1966:260). By December of 1892, a lopsided redemption of these silver certificates in favor of gold had cut the Federal gold reserves to fiscally irresponsible levels. In early 1893, this news caused a nation-wide financial panic, sending the country's economy into a tailspin. Production at the silver mines of eastern Nevada declined, as the national movement to repeal the Silver Purchase Act gained momentum. Unemployed miners eagerly sought news of improving conditions in the remaining regional mining areas, including the Ferguson District.

The final date for payment on the Magnolia lease came and went without any money changing hands. "Business men complain of dull times" (*Ferguson Lode* 1/23/1893:4) in Helene. The first baby born in the Ferguson District arrived on January 23, 1893, a son born to "Indian Jim" and his unnamed wife. The Native Americans associated with Helene continued to make news in February, when "Indian Tom" Morgan got drunk and ransacked the cabin of Mrs. Anna Berthol. A local posse

attempted to track the Indian after he had escaped from town; the vigilantes lost the trail a half mile out of town (*Ferguson Lode* 2/20/1893).

The newspaper also finally gave up the chase for patronage and advertisers in the near moribund Ferguson District. On February 27, 1893, the *Ferguson Lode* moved back to Pioche, continuing publication as *The Lode*. A regular feature of the paper was a front page column of news from Helene, where a dozen local businessmen and miner owners awaited a resurgence of activity.

John Ferguson and Hartwig Cohen, financially secure as a result of the Magnolia mine's production, attempted to resolve the milling dilemma for the District. They made arrangements to rent an old mill at Hiko, used in the 1870s to process silver ores from the Pahranaagat District near Mount Irish. The facility, with "...10 stamps, at 900 lbs apiece, twelve pans, six settlers, and a 30 ton ore scale" (*The Lode* 4/15/1893:1), was in good condition after 20 years of disuse and could be refitted to process gold ores from the Ferguson District. Since Hiko was only 20 miles west of Helene, the plan would significantly lower shipping costs and increase profits. While the mill underwent repairs, the

Magnolia, April Fool, and Jim Crow mines employed skeleton crews of 5-10 men and made shipments of high grade ores to Salt Lake. Smaller mine owners, operating on the proverbial shoestring, often resorted to unscrupulous tactics while waiting out the slump. In June, *The Lode* reported that a new Pioche judge had ruled for the plaintiff in the case of William McOwen against the owners of the Little Emma in the Ferguson District, for labor performed and not compensated. "The very bad practice of hiring men and then discharging them without a cent of pay is one that should be stopped..." (*The Lode* 6/17/1893:1).

By mid-year, prospects were brighter in Helene, as the Hiko mill refitting progressed. Mines enlarged their workforces and increased production, stockpiling ores in anticipation of local processing. On July 22, 1893, *The Lode* observed that "[t]he stage running to Helene is loaded to the guards every trip with passengers and freight" (7/22/1893:1). Several new springs had been located within 10 miles of Helene; others had been developed to capacity. John Ferguson and his brother Alden, believing their financial futures to be at last secure, both married young ladies from

Hiko during the summer of 1893. The champagne wedding reception in Hiko was the gala event of the Ferguson District social season (*The Lode* 7/23/1893:3).

The more prosperous owners still shipped ores to Salt Lake, with 50 tons leaving from the April Fool in August, 1893. Impatient with the time schedule for completion of the Hiko plant, the Nesbitt brothers of Pioche, half owners of the Jim Crow-Monitor claims, decided to lease and reopen the old silver mill in Condor Canyon, near Panaca. This facility, located approximately 60 miles north of the Ferguson District, could handle 16 tons per day, at greatly reduced freight and milling costs.

Despite the enthusiasm of the local promoters, experienced mining men could immediately spot the environmental limitations affecting the district. J.B. Stevens, "a mining man in the interest of San Francisco capital" visited the area in September of 1893 (*The Lode* 9/23/1893:1). He correctly observed that local water sources were insufficient to support milling operations and large communities. The nearest perennial water supplies were at least 12 miles distant which meant "a great expenditure of capital, to say the least of

purchasing and developing the properties..."(*Ibid*). In recognition of this grim reality, John Ferguson was reported to be attempting to sell his interests in the Magnolia (*The Lode* 10/28/1893:1). He and Cohen continued to finance the refitting of the Hiko mill, ordering leaching tanks and other equipment from the Eldorado Canyon mining district, located in what was then the southern portion of Lincoln County. Conversion work was also in progress at the Condor Canyon mill, with delays in getting equipment from Milford slowing completion of the job.

When shipping ores by freight wagon to Milford, the Ferguson District mine owners were plagued with problems other than high costs and time delays. Teamsters from Lincoln County and neighboring southern Utah settlements were employed to haul the ores. "A gentleman just up from Panaca informs us that two-thirds of the male population of that place are engaged in hauling ore from Ferguson District to Milford" (*The Lode* 10/28/1893:3). The less scrupulous freighters devised schemes for increasing their profit margins in the venture. *The Lode* (11/25/1893:1) carried the following story:

It has come to light that some would-be cunning teamsters instituted a very cute little piece of business. They would load their wagons at our mines very light, then after crossing the Desert summit would make up the weight with rich sand of the desert, thus getting paid for sand instead of ore, and also reducing the value of the ore.

By December of 1893, with the mills at Hiko and Condor Canyon nearly operational, the mines further increased their work forces. A "ripple effect" stimulated lumber orders, employed more teamsters, and buoyed up the local economy. Despite winter weather, with temperatures near zero, snow depths in excess of 18 inches, and violent wind storms, Helenites were reported "in high spirits over the future" (*The Lode* 12/2/1893:3). A Pioche promoter, Samuel T. Godbe, had recently acquired a \$450,000 bond on the Jim Crow-Monitor claims and was actively seeking an Eastern buyer for his option (Townley 1976:7). The Ferguson District appeared to be teetering on the edge of important breakthroughs.

During the winter months of 1894, the processing of ores began at the mills in Condor Canyon and Hiko. The first Ferguson District gold brick was shipped from the Condor mill to Salt Lake on February 9, 1894. The Hiko mill followed with a gold bar on February 28th. Mine

owners were optimistic that Ferguson District claims could, at last, be made profitable. Activity was steady at the Magnolia, Jim Crow-Monitor, and lesser properties until heavy snows in late February prevented further work. Rumors circulated around the mining camps that major transactions were being negotiated for the important District properties.

De La Mar Period

Between March and June of 1894, Samuel Godbe actively courted Captain John Raphael De La Mar of New York City to invest in the Ferguson District. De La Mar was a self-made millionaire, whose rise to fame and fortune inspired other would-be entrepreneurs. Born in Amsterdam, Holland, on September 2, 1843, he went to sea as a young man. Later, at age 23, he was placed in command of a vessel, upon the death of its captain. Settling in Massachusetts, De La Mar worked as a ship's contractor and salvager, accumulating sufficient funds to go West and prospect for gold (Johnson and Malone 1930). In the late 1870s, he acquired land and mining claims near Leadville, Colorado. De La Mar spent the next two years in Chicago studying metallurgy and

chemistry. With this knowledge, he was able to sell his Leadville property for \$2 million, shortly after his return to the West. After serving as a member of the Idaho territorial Senate in 1884, he left politics and began to invest in mining properties in Idaho and Utah. "The Captain" preferred to develop "high-volume properties where low-grade ores could be exploited through efficient mining technology" (Townley 1972:8).

When approached by Samuel Godbe in 1894, De La Mar felt that the new Ferguson District in Nevada might fit his operating style. In April, he and his staff of mining engineers came to Helene to examine the properties. The engineers evaluated the prospects and recommended against the purchase. Nevertheless, De La Mar remained convinced that the District held promise. He paid William Mathews, Johnny Newman, and Columbus Lee, teamsters from eastern Nevada, to freight ore samples to the railhead at Milford. The ores were forwarded to the DeLaMar holdings in Idaho for assaying (personal communication, Ross Mathews 1990). The Captain considered the results impressive enough to warrant investment in the Ferguson District. In late April, 1894, he purchased the Jim Crow claims for

\$66,000 and the Monitor for \$90,000. A certificate of organization for the DeLaMar Nevada Gold Mining Company was filed at the Lincoln County Recorder's Office on May 14, 1894.

De La Mar began an impressive program for the mines. Hartwig Cohen was hired as superintendent of the Nevada operations and wasted no time in expanding the scope of work. Tunnels were started into the deeper ore bodies of the newly-acquired claims. Construction of a blacksmith shop began at the mouth of the old Jim Crow tunnel and 20 more men were immediately employed in the new DeLaMar mines. Massive amounts of equipment and supplies were ordered from Pioche, Eureka, Salt Lake, and points east. In the tradition of late 19th century employer paternalism, the Company planned for the physical necessities of its employees, building company-run lodging and boarding houses immediately south of the mines. By early July, 1894, a telephone line connected the DeLaMar Company office with Pioche. Other business establishments, including the newspaper, were allowed to hook into the DeLaMar Company line. Employees and town residents were invited to use this convenience at the very modest charge of 50 cents per call (*De Lamar Lode*

7/2/1894:4).

The Captain attempted to overcome the shortcomings of the Ferguson District within the first months of his tenure. He proposed to remedy the water shortages by drilling a well in the Delamar Valley, approximately one mile west of the camp. If sufficient water could be developed, De La Mar planned to build an on-site mill. Cohen took preliminary steps toward that end, testing the Prospect Mountain Quartzite of the Ferguson District at several working mills to determine the most effective reduction process (Townley 1972:8). Ores milled at the Holden Chlorination Works of Cripple Creek, Colorado indicated that barrel chlorination should be the technique of choice. De La Mar recognized that the distance from a transcontinental rail network also greatly limited the profitability of his Nevada operation. The *De Lamar Lode* (6/23/1894:1) reported that the enterprising Captain was negotiating to get a rail line built between Milford and the Ferguson District.

The small tent camp of Reeves was transformed almost overnight into a bustling town. Miners, businessmen, and hucksters of all types hastened to the

camp. Tents were thrown up to house the newcomers, with more substantial frame structures following as materials became available. The local sawmill could not cut and finish building lumber quickly enough to meet the demand, despite several crews of 10 men each. Buildings were scattered over the narrow valley between the hillsides, at any nearly level spot available. Main Street ran east-west along a slope just south of the mines and was soon lined with false front frame mercantiles, saloons, drug stores, and small specialty shops (see Figure 5). New streets and roads soon branched off Main Street, connecting additional residential housing, Chinese laundries, brothels, and a Native American camp which appeared in the gulch southwest of the town. The Captain paid an inspection visit to his new acquisitions on June 7, 1894, "...arriving by private conveyance...from Desert [Springs, Utah] by way of Panaca in 11 hours " (*De Lamar Lode* 6/18/1894:1). A week after this visit, the "Reeves" name was dropped in favor of "DeLamar" and a request made for a post office under the new name. On June 15, 1894, *The Lode* returned to the Ferguson District, to become the *De Lamar Lode*. Most of Helene's

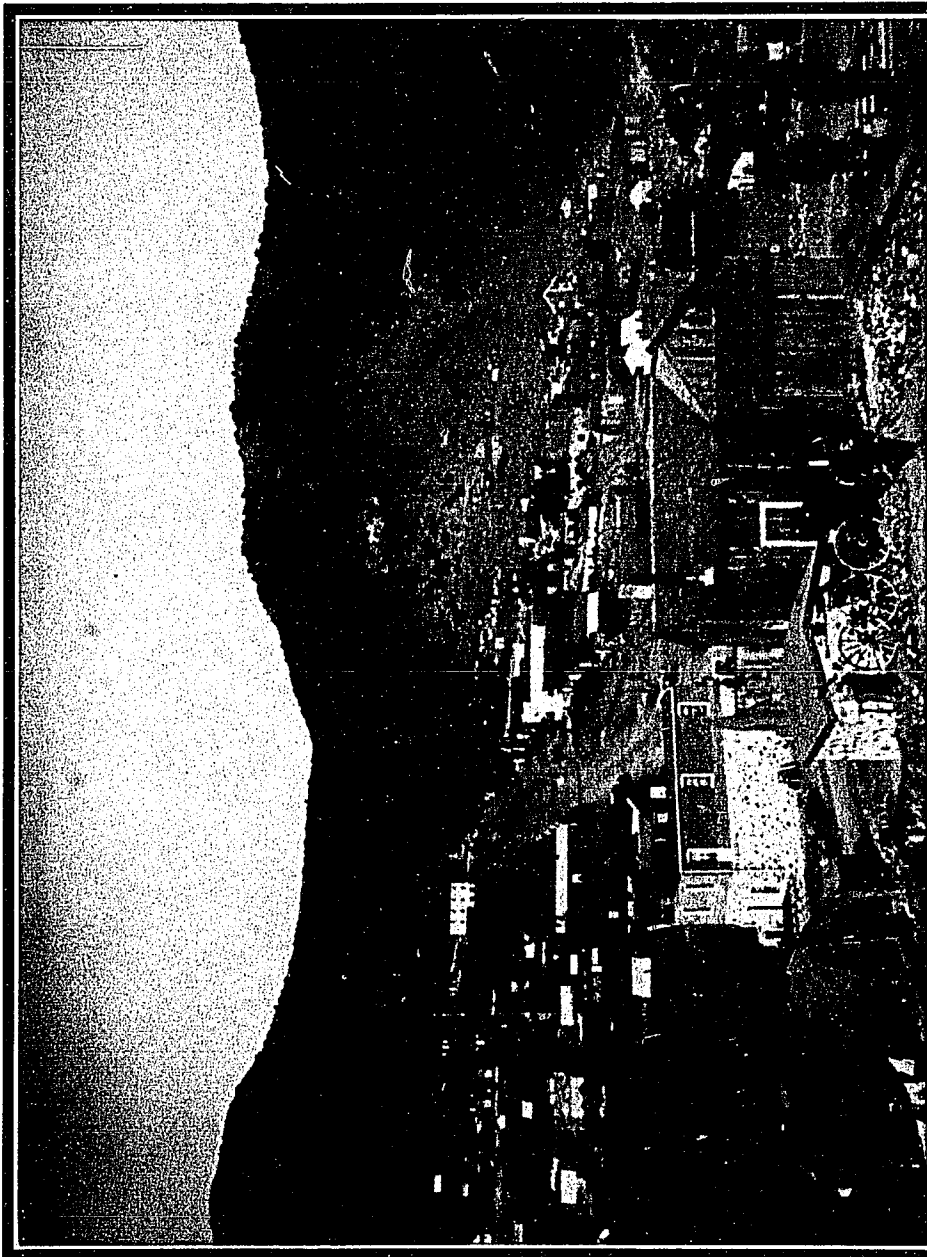


Figure 5. Main Street, Delamar, Nevada, ca. 1896. (Photograph courtesy of the Elbert Edwards Collection, Nevada State Historical Society, Reno, Nevada).

residents and businesses joined the exodus to DeLamar.

By fall, the town of DeLamar claimed 250 residents, scattered over a six square mile area. A constable had been appointed and a public school district organized.

The *De Lamar Lode* boasted that

[t]he class of people are for the most part an industrious, law-abiding people...always ready with an open hand to help the needy. There is one drug store in town, three boarding houses, two butcher shops, one lodging house, three general merchandise establishments, three saloons, one dairy, two blacksmith shops, two water supply wagons, two Chinese laundries, two feed stables, and corrals, one printing office ..., one barber shop, and tradesmen and mechanics find employment in various other channels. A Concord coach makes tri-weekly trips to Pioche and DeLamar is connected with Pioche by telephone (*De Lamar Lode* 9/27/1894:1).

In late 1894, the DeLaMar Company started construction of a barrel chlorination reduction facility, capable of handling 50 tons of ore per day. The *De Lamar Lode* indicated "[t]here are upwards of fifty men employed on the DeLaMar Company's mill building and fast progress is being made" (12/3/1894:1). Locally quarried stone and bricks were to be used in the construction of the mill and other company-owned buildings. Crews of skilled stone cutters fitted stones for the mill's foundations; bricklayers fired and laid

over 200,000 bricks for the firewalls. Carpenters and sheet metal workers would complete the wooden framing and corrugated metal roofing overlays. Fifty freighting teams had been hired by the Company to haul the heavy mill machinery from the railhead at Milford to DeLamar. Sawmills in all the nearby mountains were struggling to fill lumber contracts for the various DeLaMar Company projects. Orders for cordwood had been placed with numerous independent cutters to fill the DeLaMar mill woodyard. An estimated 250 cords of fuel wood per month would be needed to generate the electricity which would power the heavy crushers, rollers, and conveyor belts of the mill.

The new year of 1895 was greeted enthusiastically by residents of DeLamar. Over 300 men were employed by the DeLaMar Company in the mines or constructing the new mill (Townley, 1972:8). The mill, scheduled to open in March, was progressing quickly, with heavy machinery arriving by 6 and 12 team freight wagons daily. Two chlorination tanks, weighing over 16,000 pounds apiece, had been delivered. A 2,800 foot aerial ore tramway from the mine to the millsite was already in place. In March, a steam-powered generating plant was installed in

the mill, to provide electrical lighting in the mines and mill rooms (*DeLamar Lode* 3/18/1895:1). With light from 16 candle power electric lamps, night shifts worked to complete final phases of the mill. The newspaper reported that Captain De La Mar had also purchased an 100 horsepower electric hoisting plant to run the hoists, ore cars, and drills of the mines (*Ibid*). The DeLaMar properties would soon have all the state-of-the-art mining and milling technology that money could buy. Even before test runs were completed on the barrel chlorination facilities at the new mill, the Captain was investigating cyanide processing of gold ores, reported to be even more effective for low-grade ores. In April, 1895, De La Mar applied for a patent on a technique for cyanide processing that would allegedly recover nearly 100 percent of the gold and silver values, speed processing, and eliminate the retorting of expensive zinc shavings (*De Lamar Lode* 4/1/1895:1).

Milling operations began at the new DeLaMar facility at the end of March, 1895. The gold found in Prospect Mountain Quartzite was not a "free milling" ore that could be easily extracted. Effective processing began with the pulverization of the quartzite to

separate the metals from the dense, silica-rich matrix. Roasting of the ores, prior to chemical precipitation, was also required to further release the gold values from the gangue (rock with no ore). The DeLaMar mill employed a barrel chlorination system which operated as follows. Ores were deposited by the gravity-feed aerial tramway cars into a 50 ton bin, then moved to a platform where one worker could put the ores into dry process Griffin mills. The Griffins were simple vertical roller-type crushers that pulverized the rock, producing large quantities of dust with minute quartz particles as a by-product of the dry crushing. Most of the dust remained in the crushing rooms of the mill, although visible amounts diffused throughout the facility and escaped to the outside through the giant smoke stacks. These dust plumes generally settled on the townsite below the mill (see Figure 6). After crushing, the materials were moved by elevators to hoppers, then dumped onto screens. Coarser materials dropped from the screens to rollers for further mechanical breakdown. Finer grains moved onto a self-sampling/weighing device (the invention of H.Cohen), then into a series of reverbatory furnaces (Pearce turret), where they were

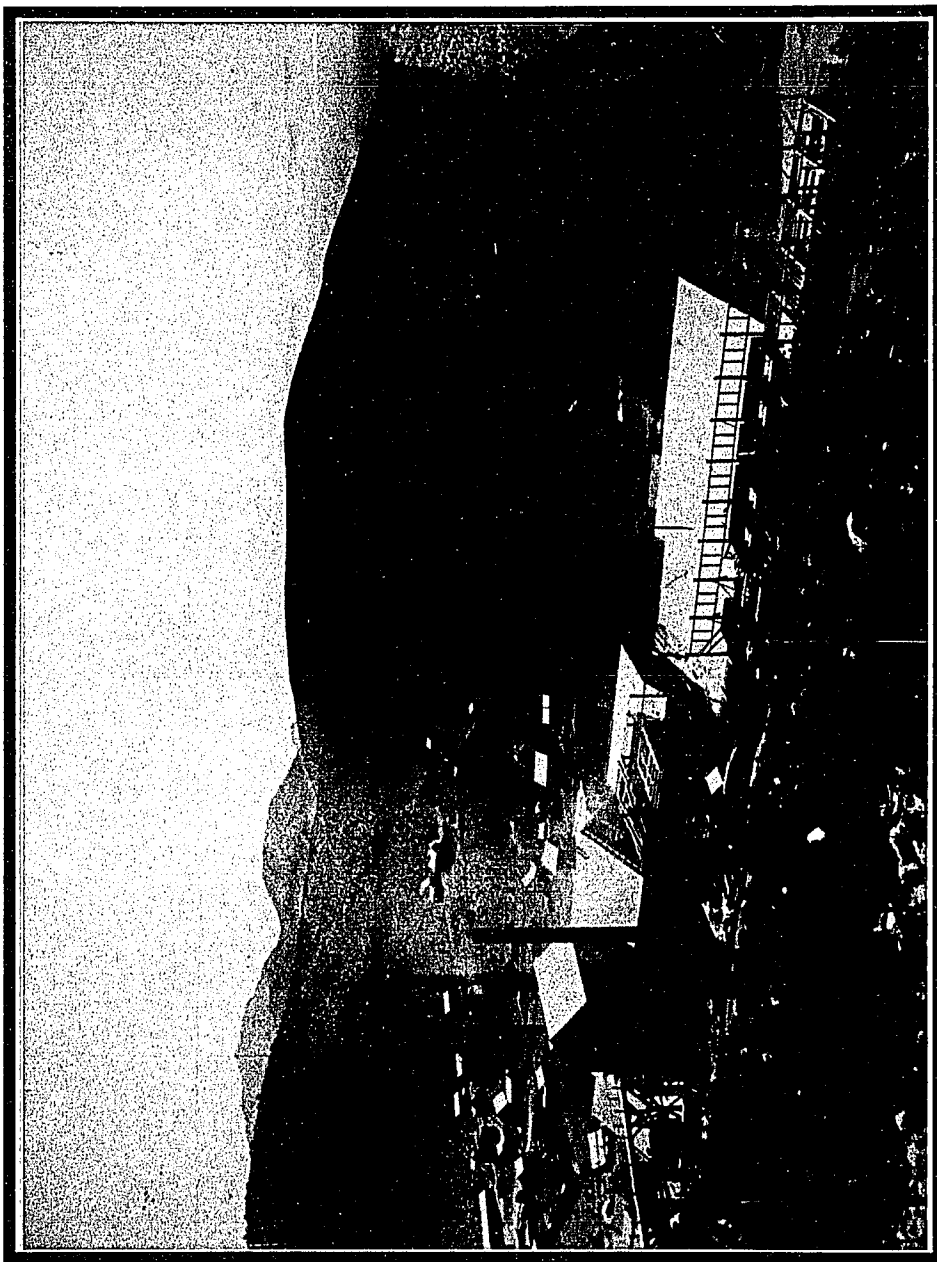


Figure 6. DeLaMar Company Mill, ca.1896. (Photograph courtesy of the Lincoln County Collection, Nevada State Historical Society, Reno, Nevada).

roasted with a one percent addition of common salt (Labbe 1960). After roasting, the cooled "fines" were emptied by five ton loads into chlorination tanks. The tanks were covered and all joints caulked. Heated chlorine gas, containing salt, sulfuric acid, and manganese oxide, was introduced through the porous "false bottoms" of the tanks and allowed to permeate the ores. Gold and silver were chemically altered to chlorides after two days and could be flushed from the tanks with water. The solution was drawn into precipitating tanks, containing either iron sulphate or charcoal dust. When the water was evaporated off, a gold resulted that could be melted and cast into bars of .995 purity (Labbe 1960:12). The *De Lamar Lode* (4/1/1895:3) reported with pride that "all work was performed by machines" and that "electrical signals in all parts of the mill...can stop and start machinery instantly and alarms [are] given in emergency situations". The first bullion from the mill, valued at \$100,000, was shipped to Milford on April 11, 1895, locked in a safe on board a specially equipped bullion coach, under the watchful eyes of ex-Sheriff D. Turner and three shotgun-armed guards. The bullion coach,

which traveled only by day, continued to make weekly trips to Milford until the rail lines were extended into Nevada in 1904.

During 1895, the DeLaMar Company was also making improvements in living conditions for the town's residents. A telegraph line now linked the town with Pioche and the outside world. Electric street lights were installed, at Company expense, along Main Street. The Company had also devised an interesting solution to the chronic currency shortage that plagued the town. DeLamar, as yet, had no bank. All money, both bills and coins, used in daily transactions around town had to be brought from Pioche at some risk and great inconvenience. In order to resolve this situation and hold onto its own cash reserves, the DeLaMar Company began to pay wages in light aluminum coins of 12 1/2 cent, 25 cent, 50 cent, and \$1 denominations. "On one side is printed 'Good for' whatever denomination, 'in exchange', and on the reverse 'At the office of DeLaMar's Nevada Gold Mining Company' " (*De Lamar Lode* 1/7/1895:1). The coins were accepted by local businesses and could be redeemed for U.S. currency at the Company office. The script was much appreciated in

DeLamar, but not so enthusiastically received by merchants in neighboring communities or by Native Americans doing wage labor for local residents. The newspaper carried this account of one incident.

One of our merchants employed an Indian to chop up a pile of wood and Mr. Redman started in with a vim and soon finished his task. The merchant offered him as pay some of the new DeLamar money. He looked at it for a while and finally muttered 'Kotch savez napias; no good. Me all the same Melican man, me want good money' (*De Lamar Lode* 1/14/1895:4).

Lincoln County officials, located in the near-defunct silver camp/County Seat at Pioche, viewed the rising star of DeLamar with fear and considerable envy. They are alleged to have reported this "minting of coins" to State and Federal agents in Carson City, who began immediate investigations (Townley 1972:10). The United States Government decided to prosecute officials of the DeLaMar Company for the illegal aluminum coins. On July 20, 1895, Charles Jones, U.S. Attorney for Nevada, and a U.S. Deputy Marshall arrived in DeLamar to arrest Cohen, now General Manager of the DeLaMar Nevada properties, on counterfeiting charges. Cohen was away, so the papers were served on Ralph Nichols, Company

Superintendent, which threatened a \$3,000 fine or imprisonment. In August, a hearing at Carson City ordered the redemption of the script. The DeLaMar Company decided not to protest the verdict and immediately began a recall of the aluminum coins, to be redeemed in U.S. currency until August 25, 1895 (*De Lamar Lode* 7/29/1895:3).

This affair was indicative of the rivalry that persisted between Pioche and DeLamar throughout the life of the latter community. The county government was initially slow to respond to the growth-related needs of the new boomtown. Road maintenance was ignored in the Ferguson District, despite heavy freighter use of the roads. Funds for a DeLamar jail were not immediately allocated. In mid-1895, after the great aluminum coins betrayal, local citizens (reportedly the editor of the *Lode*) started a campaign to move the Lincoln County Seat from Pioche to DeLamar. A petition was circulated that would have forced a public vote on the question. County officials, recognizing DeLamar's voter advantage, wisely avoided a showdown at the polls. A war of words ensued in the media, with Pioche residents alleging that "[t]he residents and citizens of DeLamar are hogs" (*DeLamar*

Lode 7/22/1895:1). The rivals decided to try peaceful, if not amicable, coexistence. DeLamar would receive its share of county-funded improvements and support if the county seat relocation movement was stopped. Over the next decade, the *Pioche Weekly Record* avoided publication of all but the most negative reports about the Ferguson District.

DeLamar became very cosmopolitan during 1895. Each Concord stage from Pioche brought potential investors, shopkeepers, and unemployed laborers, as well as an assortment of less desirables. New arrivals came from Ireland, Wales, England, Italy, and other western European countries, generally by way of various mining camps. Nearly every major language could be heard in the mines and saloons. Main Street was daily clogged with the teams and wagons of freighters and peddlers from the agricultural communities of southern Utah, who often set up overnight camps at the head of the street. Miners, mill hands, gamblers, prostitutes, and thugs crowded the saloons, imbibing "Dixie Wine", a highly intoxicating beverage freighted in from Utah (Townley, 1972:9). Members of a growing Chinese community, many transplanted from Eureka and Pioche, ran opium dens at

the southwestern edge of town, where smokers lay in darkened rooms, unable to move while under the influence of the opiate (personal communication, Joseph Higbee 1990). The editor complained that "[t]he squeak of the Chinese fiddle...elaborated by the martial strains given forth by the Chinese drum" (*De Lamar Lode* 1/14/1895:3) could be heard throughout the night, interrupting his slumber. Southern Paiutes and Western Shoshones from all over the region migrated to DeLamar with the boom and established a camp in the wash south of Main Street. They worked at odd jobs and held regular fandangos, gathering Native Americans from several counties together for successive nights of dancing and ceremonies.

The crime rate increased in tandem with the population. Formerly only an occasional drunken brawl disrupted the tranquility of local residents. Early in 1895, the *De Lamar Lode* reported men "shooting at all hours of the night on Main Street" (1/14/1895:1) and frequent fistfights. Repeated requests to fund a city jail for DeLamar fell on deaf ears in Pioche. Lincoln County Deputy Sheriff Jake Johnson and the DeLamar constable were forced to transport prisoners by stage to

the county jail in Pioche. Petty thefts increased as the months passed. By August, the newspaper warned that "[p]rowlers can be seen sneaking around at all hours of night and scrubs of this character are certainly not around for any good purpose" (*De Lamar Lode* 8/19/1895:3). Lincoln County officials continued to withhold funding for a jail, despite estimates that DeLamar's population now exceeded 1000. Captain De La Mar finally intervened, agreeing to partially fund the building if a special assessment were collected from county taxpayers to offset some of the costs (*De Lamar Lode* 8/16/1895:1).

The newspaper repeatedly editorialized about other municipal shortcomings in the burgeoning town. The bane of every western mining camp was fire. The perennial shortage of water and high proportion of wooden structures along DeLamar's Main Street made it particularly vulnerable to the "demon". The *De Lamar Lode* (2/11/1895:3) commended one of the town's shopkeepers, Spiro Docklestich, "for being the only business man in town who has taken precautions against fire", when he placed water barrels on the roof of his shop. Local blazes which destroyed tents, houses, and

personal effects were reported in grim detail by the paper, in a effort to alert townspeople to their vulnerability in such an emergency. A few of the local businesses heeded the warnings, building stone rather than frame buildings: "[t]he fireproof stone building of John Vietti, on the west side of lower Main street, measures 22x30 [feet] and is a gem"(DeLamar Lode 4/1/1895:4). Yet DeLamar went into the fall and winter of 1895, when the cold mountain temperatures and winter storms required the use of wood or coal oil stoves for heat, without firefighting equipment or an organized volunteer brigade.

In the same vein, the *De Lamar Lode* made successive appeals between April and October of 1895 for the enactment of town ordinances. As the town grew in typical haphazard mining camp fashion, sanitary conditions rapidly deteriorated. Further, the town had no legal restrictions on the storage of explosives, the discharge of firearms, or the disposal of garbage within the city limits. Town ordinances could only be enacted after approval by the Lincoln County Commissioners. Based on their dealings with county officials on the road maintenance and jail issues, concerned DeLamarites

were not optimistic that such ordinances would be soon approved. The newspaper continued to editorialize throughout the summer and fall months of 1895, as the first typhoid fever epidemic spread through the camp. This epidemic probably hastened the formulation of the stringent town ordinances which were enacted on October 1, 1895. A detailed discussion of these measures and sanitary conditions is presented in **Chapter IV**.

The early Ferguson District camps of Golden City (Ferguson) and Helene struggled to survive during 1895. The exodus of residents to booming DeLamar left only a small group of miners, employed at the Ferguson-Cohen Magnolia mine, as permanent residents. This number, which rarely exceeded two dozen, was insufficient to support local businesses and services. These soon moved their shops and facilities to DeLamar. The Helene post office was ordered closed on January 16, 1895, over the vehement protests of the remaining residents (*De Lamar Lode* 1/7/1895:4). Golden City and Helene residents would henceforth retrieve their mail at the DeLamar post office. Only 12 students of school age were reported living in Helene in March of 1895, reduced from twice that number at the start of 1894. The cemetery, located

approximately one mile west of Helene, however, remained a focal point for the various district settlements. By virtue of its accessibility, adjacent to a well-maintained toll road, this location became the public and Protestant cemetery for all Ferguson District residents. Consecrated in the fall of 1895, a second cemetery, "marked out as the Catholic cemetery and located at the lower end of the canyon leading west from town [DeLamar]"(*De Lamar Lode* 9/16/1895:1), was also used as a final resting place.

The *De Lamar Lode* (1/6/1896:1) began the new year with a front page review of the Ferguson District, detailing the properties and potential of the area. According to this article, Captain De La Mar had invested approximately \$200,000, beyond his initial purchase price, in developing the mines and constructing the barrel chlorination plant. The DeLaMar mill was already handling 100 tons of ore per day, with plans to increase its capacity by another 100 tons. An estimated \$100,000 had been spent in search of a reliable water system for the DeLaMar properties. Production for 1895 was valued at \$650,000. The *Lode* did not report that the Captain had received the lion's share of the

profits. De La Mar reduced the on-paper profits of his holdings and avoided paying appropriate bullion taxes to the State of Nevada "...by forming a separate company to mill ores and by charging exorbitant rates to eat up all the profits of the mine..."(Scott 1913:945). State and County tax collectors, even if they recognized the questionable leasing tactics, could not stop the practice.

Other properties in the District were also developing, at a much slower rate than the DeLaMar holdings. The six mines of the April Fool claims were active, with plans for the construction of a 10 stamp mill. Water for these activities was piped from several mountain springs, located up to 10 miles away. Work had slowed on the Magnolia claims, as John Ferguson took options on his discoveries and sought a serious buyer.

The following description of DeLamar appeared in the same review.

The town of DeLamar was started a little over a year ago and we now have several streets with Main street fairly well built up. There are four stone business houses all of which would be a credit to any town of 5,000 inhabitants, besides these there are some very fair lumber structures. There are six general merchandise establishments, one drugstore,

three fruit and confectionery houses,
one millinery establishment, two law offices,
one bakery, five lodging houses, two lunch stands,
six boarding houses, three butcher shops,
one Chinese store, three Chinese laundries,
two barbershops, three doctor's offices,
ten saloons, one water office, one tailor shop,
two blacksmith shops, two corrals and stables,
one assay office, one hardware store, and one
printing office. We have two resident ministers
of the gospel and two public schools. The population
numbers about 1,000 and consists of nearly all
classes and represents nearly all of the races
(*De Lamar Lode* 1/6/1896:1).

The winter and spring months of 1896 saw further expansion of the DeLaMar mill, with the installation of a new rock crusher and additional Griffin mills. By July, the April Fool mines had an on-site ore mill and needed a larger work force. New arrivals to DeLamar, often unskilled young men from southern Utah agricultural communities, could generally find employment as laborers in one of the two mills, at \$3.00 per day (Murbarger 1956:195).

DeLamar was maturing quickly. The newspaper argued successfully for a local hospital; by mid-July, an eight-bed hospital had been completed, with a full-time nursing staff. Soon afterward, a public meeting was held to authorize the building of a public school house, on a 100 square-foot lot south of Main Street, donated

by the owners of the Sally Ann claims. Construction on the school began in October, 1896. DeLamar had also received fire-fighting equipment, including hoses and a fire bell. "The first taps of the bell were quite a surprise to many DeLamarites who had not heard a bell for months" (*De Lamar Lode* 8/10/1896:3).

The social life of the community diversified during this period. The saloons were still the entertainment focus for most solitary men and local saloonkeepers strove to find unusual attractions to stimulate patronage. In October, for example, the Joshua Saloon featured a performer on a trapeze (*De Lamar Lode* 10/12/1896:1). Others were only able to provide the excitement of heavy betting roulette or poker games, drunken brawls, and an occasional shootout. Itinerant theatrical groups performed melodramas and comedies, playing to large and appreciative audiences. Married couples and the "respectable" single ladies of DeLamar soon encouraged other social outlets. Vietti's Hall became the scene of numerous dances and grand balls, with the newly-formed DeLamar Orchestra providing the music. When a phonograph arrived at the News Depot, local music lovers flocked there to hear the wondrous

invention of recorded music. Late in November, a floor of Oregon pine was installed in Vietti's Hall. The new craze of roller skating soon caught on, as DeLamarites careened over the slick pine floor, to the sounds of phonograph records, at all hours of the day and night.

Various religious sects and other social groups established their presence in DeLamar at this time. Catholic and Episcopal churches were started and bishops from the Latter Day Saints Church made frequent pastoral visits to DeLamar. Several benevolent societies, including the Masons and the IOOF began chapters; the Knights of Pythias, Rebeka Lodge, Evening Star, and others soon followed. These social groups performed needed community services, maintaining the cemeteries, and offering members the benefits of weekly cash allowances during illness or injury, nursing care, and burial under the auspices of the society. A chapter of the Lincoln County Miner's Union, Number 72, originally organized in Pioche, was also active in DeLamar and claimed nearly all the miners and mill workers as members. Like the benevolent societies, the Union offered care during illness or injury, burial at union expense, and other forms of social insurance unavailable

through other sources.

In January of 1897, new strikes in the vicinity of the old Magnolia mine revived the nearly-deserted camp at Helene:

Helene promises to be rebuilt immediately.
The first move is being made by China Dick,
who has commenced the erection of a boarding house.
It is the most pleasant site in this section
for a town (*De Lamar Lode* 1/4/1897:1).

Several miners soon returned to Helene, constructing new residences and continuing development on the new strikes.

At DeLamar, the new year was greeted several times. After the traditional January 1st celebrations, workers from the DeLaMar mines spent a lay-off day on January 30th celebrating Chinese New Year with the local "Celestials". The entire town turned out to hear the address of Edward Boyce of the Western Federation of Miners on February 8, 1897. Boyce had come to the Ferguson District to recruit union members and spent the next week explaining the labor issues and the advantages offered by affiliation with a national organization. A second meeting, held in Vietti's Hall on February 16th, had the largest turnout in DeLamar's history,

reflecting strong local support for the union movement. At the conclusion of the organization effort, the Western Federation of Miners had approximately 150 members signed up from the Ferguson District. Rumours circulated that a strike was being planned for higher wages and benefits.

Neither Boyce nor any of the local workforce anticipated the DeLaMar Company's response to these union activities. The Captain was infuriated at the recent union organization and feared labor unrest at the DeLaMar properties. In retaliation, he proposed to shut down operations and dismiss all the Company's employees, rather than allow such activism. Further, De La Mar viewed unionization as the consummate ingratitude for the many improvements that his company had made in life at DeLamar.

It has provided the camp with electric lights, established a perfect water system, provided the means for contending with the flames, constructed a telephone line that affords connection by wire with the outside world, and is now directly and indirectly furnishing about 600 people with employment
(De Lamar Lode 2/27/1897:1).

General Manager Cohen came to DeLamar just before

March 1st, in order to investigate the situation and begin closure of the DeLaMar Nevada properties. Upon his arrival, the miners and mill hands held a meeting and drafted the following resolution.

We, the employees of the DeLaMar company do hereby state that we are satisfied with the treatment and wages we have been receiving in the past, and have not contemplated a strike or other injury to the company (*De Lamar Lode* 3/8/1897:1)

The resolution went further, thanking the DeLaMar Company for the "kind treatment received, and also for the great expense they have gone to for our comfort"... (*Ibid*) and vowing not to participate any national union activities. This capitulation appeased De La Mar and other company officials. All shifts at the mines and mill were immediately put back on payroll and sent to work. No further union-related troubles disrupted the corporate bliss of the DeLaMar Nevada Gold Mining Company.

With the union crisis resolved, locals returned their attention to the remodeling activities ongoing at the DeLaMar mill. A new 500 horsepower compound engine and dynamo had been installed and a second tramway was

under construction to move the old tailings to the mill for reworking through the more efficient cyanide process. The barrel chlorination facility was gradually being dismantled, with new cyanide tanks and leaching equipment scheduled for arrival in the near future. Severe winter storms, however, made freighting nearly impossible between Milford and DeLamar. Mud and snow reduced the freighters' daily mileage to less than 4 miles per day; the trek from the railhead to DeLamar became a grueling 30 day trip, one way (personal communication, Ross Mathews 1990). The *De Lamar Lode* (2/16/1897:1) reported that the new cyanide pans for the mill were stuck in the mud about 6 miles from town and could not be moved until road conditions improved.

Deep snow and gusting winds during February and March also cut the town off from nearly all its supplies. "Our merchants are running short of many articles caused by the delay of freight on the Milford road" (*De Lamar Lode* 2/16/1897:1). The Culverwell sawmill was forced shut down in February, delaying completion of several buildings, including the Episcopal Church. Grain, eggs, and other foods became increasingly scarce as peddlers from neighboring

agricultural settlements were unable to reach the camp. Price soared and remained high well into April, when the long-awaited heavy machinery, merchandise, and commodities finally arrived. A "Hard Times Ball" was sponsored by the DeLamar Brass Band on April 12, 1897, to signal the end of the austerity period in town.

The record bad winter weather was followed by daily summer temperatures in excess of 100 degrees Fahrenheit; working conditions in the DeLaMar mill became nearly unbearable. The mill was running at near capacity, crushing over 200 tons of ore per day and burning 31 cords of wood per day to fire the steam boilers. "Cold water is the cry around the mill these hot days, those who prepare themselves to keep water cooling ...have it 'swiped' just when they want it most" (*De Lamar Lode* 7/26/1897:1). Summer rains during the monsoon season of late summer cooled the hot temperatures, but nearly destroyed the foundations of the mill. A half-hour cloudburst on August 3, 1897 caused flash floods that moved an estimated 100 tons of waste ore from the Number 10 tunnel of the DeLaMar mine onto the mill. Main Street was also littered with rocks and debris, houses flooded with muddy water, and several wagons swept

downhill, as a 10 foot wide wall of water came racing down from April Fool Canyon (*De Lamar Lode* 8/10/1897:1).

In November of 1897, Hartwig Cohen was reportedly negotiating with Reeves, Wilson, and Dooley, owners of the April Fool claims, to acquire those properties for the DeLaMar empire. Reeves was willing to accept \$100,000 for his share, but the others would not set a purchase price. The Company was also experiencing negotiating difficulties with the woodhaulers who filled the DeLaMar mill's yard with the pinyon and juniper cordwood required for ore processing and electricity production. "Wood teams are scarce and those who have taken contracts to deliver wood are unable to hire any that come from Utah" (*De Lamar Lode* 11/8/1897:1). Utah teamsters were convinced that higher wages could be obtained if they refused to deliver to DeLamar at the going rate of \$3.75 per cord. By mid-November, the DeLaMar Company surrendered to its overwhelming need for fuel and agreed to pay one dollar more per cord (*De Lamar Lode* 11/15/1897:1). The mill's woodyard was soon filled to its 4,000 cord capacity (see **Figure 7**).

DeLamarites were enjoying the advantages of living in southern Nevada's most prosperous and progressive



Figure 7. View of Delamar, Nevada ca. 1896, showing DeLaMar Company Mill. Mill woodlot is located at top-center of photograph. (Photograph courtesy of the Lincoln County Collection, Nevada State Historical Society, Reno, Nevada).

community. Professional photographer Al Smith had set up a studio in camp and was producing images of the town and its residents. A Literary Club had formed, holding meetings in the old post office. Traveling shows and theatrical companies flocked to DeLamar, confident of receptive audiences. In early November, an exhibition of X-rays was presented at Vietti's Hall, with live demonstrations of the amazing new technique (*De Lamar Lode* 11/8/1897:1). A month later, when a cineographic machine showed motion picture films in DeLamar

a large number stood up at the back end
of the hall for two hours and a half,
packed in like sardines, and never
complained but said they had more than
their money's worth (*De Lamar Lode* 12/14/1897:1).

A woodframe theater and dancing hall, nicknamed the Schaefer Grand, was scheduled for completion by year's end. The new building, measuring 70 feet by 34 feet, with a large stage, would be "suitable to accommodate the pleasure loving denizens of this enlightened town" (*De Lamar Lode* 12/7/1897:1). The glow from its 50 electric lights would allow DeLamarites to dance the night away in style.

During the winter of 1898, the first direct

allegations of health hazards associated with work in the DeLaMar mill appeared both in the *De Lamar Lode* and the Salt Lake City newspapers. Prior episodes of disease had been reported in the regional newspapers, beginning shortly after the mill opened in 1895. On February 15, 1898, the *Lode* published the obituary of William Corle, a 37 year old mill worker. The cause of death was listed as a

complication of diseases, the large amount of dust which had accumulated in the pit of the stomach, during fourteen months in the mill, not being the smallest cause. He did not suffer much except for the trouble he had in breathing
(*De Lamar Lode* 2/15/1898:1).

The *Salt Lake Tribune* of March 9, 1898 reported the death of Louis Conger, in St. George, Utah, with cyanide poisoning indicated as the cause of death. The same article went on to claim that the recent deaths of 18 DeLaMar mill employees could be attributed to dust and cyanide poisoning. The DeLamar paper was quick to refute the accuracy of that allegation, denying that recent deaths numbered 18 or that the cause had been the effects of working "in the dust in the mill" (*De Lamar Lode* 3/15/1898:3). The *Lode* did admit that "the dust is

supposed to have helped..."(*Ibid*) some cases along, but that improvements, including the installation of several fans, were being made about the mill to keep the dust down.

If working conditions at the DeLaMar mill were less than ideal, the same could not be said of life in the town. By the end of March, 1898, the newspaper boasted "DeLamar is now quite metropolitan, a string of lights light up on Main street, for the out-late pedestrians" (*De Lamar Lode* 3/29/1898:3). The Taylor Dramatic Company had recently played the Schaefer Grand, presenting "[t]he Golden Giant...a western play filled with sentiment, comedy and pathos,...that is fully appreciated by Western people" (*Ibid*). Violence was now rare, with the newspaper lamenting that local excitement was limited to scraps between boys, "two or three dog fights, and a good poker game or two"(*De Lamar Lode* 4/19/1898:3). Sanitary conditions were not always above reproach, but the town's four doctors stated that the citizens of DeLamar were "distressingly healthy" (*De Lamar Lode* 4/26/1898:3).

During the summer of 1898, local attention was focused on the events of the Spanish American War, with

four men from DeLamar heeding President McKinley's call for volunteers to fight in Cuba. The newspaper went to a daily format to chronicle the events of the conflict. July 4th celebrations in camp took on a heightened patriotic fervor, as reports of Admiral Sampson's naval victories in Santiago reached the town. For the majority who remained in DeLamar, extreme summer heat soon replaced the foreign conflict as the topic of conversation.

The hottest weather ever known in DeLamar is upon us and considerable sickness is the consequence, only one case of fever, however. 116 in the shade around town, and 120 to 130 in the DeLamar mill, is causing several of the men there to stop work for a time. If we do not get rain pretty soon it is hard to tell what will become of us all (*De Lamar Daily Lode* 8/2/1898:1).

Typhoid fever began its usual summer siege in the camp. In early July, the newspaper reported that "[a] good many are very sick", including Charles J. Pettee, owner-editor of the *Lode* (*De Lamar Daily Lode* 7/5/1898:3). The town's doctors, whose numbers had risen as high as five, were now reduced to two.

As 1898 drew to a close, Ferguson District

residents reflected on the prosperity that had finally come to their area. The DeLaMar Company was expanding and improving its facilities. Nearly every stranger who arrived in town was able to find work with "the Company" as a miner, mill laborer, or woodcutter. The April Fool claims, still in the hands of its original discoverers, had weathered the tough early days of development and now had six mines and a 10 stamp mill producing regular bullion shipments to Salt Lake. The town of DeLamar had all the amenities of more populous urban areas: electric street lights, indoor plumbing in many residences, a theatre, restaurants with the finest French cuisine, numerous shops selling luxury goods from all over the West, a hospital and two physicians, and nearly 100 percent employment at wages between \$3-\$6 per day. New discoveries had been made in the vicinity of the Magnolia mine, infusing Helene with new residents and businesses.

If a dark cloud loomed on this horizon, it took the shape of ill health among local residents. Outbreaks of typhoid fever, pneumonia, and influenza seemed to plague the community throughout the year. Rumours of more serious respiratory problems, caused by the dust from

the DeLaMar mill, were voiced for the first time in 1898. Articles appearing in the *DeLamar Lode* and *Salt Lake Tribune* brought the situation to the attention of local DeLaMar Company superintendents. The problem carried over into the next year and became the focus of even more uncomplimentary press for the Ferguson District.

In January of 1899, the 19th Nevada State Legislature began debates on a bill to limit the length of the workday to eight hours in all areas of industry. Few miners or mill workers at DeLamar supported the legislation. The newspaper reported their objections: "who is there among our mining gentlemen that want to work for Utah wages, less than \$3.00 a day, even if they do work less than ten hours a day?" (*De Lamar Lode* 2/21/1899:3). The bill was defeated in mid-February. Twelve hour shifts remained the normal working day for the mines and 10 hour days in the mill of the DeLaMar Company.

Mineral reports published in late March indicated that the Captain need not worry about his Nevada mining ventures. Production for the DeLaMar Nevada properties was at an all-time high. Between October-December of

1898, the Company had processed over 25,203 tons of ore and shown profits in excess of \$17,500. Other Ferguson District properties, including the April Fool and Magnolia, were also active, with gold values ranging from \$13-\$136 per ton being recovered. During May of 1899, representatives of W. A. Clark of Montana acquired an initial option on the April Fool claims for \$25,000. In August, a \$100,000 payment to Dooley and Wilson, two of the original discoverers of the claims, would complete the sale. Both men planned to retire from mining with their substantial nesteggs. The April Fool mines had produced ores valued at approximately \$700,000 since 1892. The sale of these claims represented another "poor boys finally strike it rich episode" in the history of the Ferguson District.

In summer of 1899, the DeLaMar mill dust problems again generated regional notoriety for the company and the town. The Utah press, particularly the *Salt Lake Tribune*, had published several articles alleging that the dust produced in the mill was responsible for an untold numbers of worker deaths. The *De Lamar Lode* responded to these claims on the June 13, 1899 with a page one column entitled "That Terrible Mill Dust".

The escaping dust in all parts of the great DeLamar mill has been a terrible thing to the men who have worked in it the past four years and there is no doubt of its being the cause of the death of a large number of men (6/13/1899:1).

The editor, Charles Pettee, wrote from first-hand experience, having worked in that mill for 14 months between 1896-1898. According to his remembrances,

[w]e have worked in the mill at a time when an electric light ten feet away looked like a fire bug, the air was so full of dust. (Ibid).

Admitting that he now suffered from the effects of dust exposure, Pettee remained convinced that his problems were dust accumulations in the stomach and that he was being successfully treated for the condition. Ever deferential to the largest employer in a small town, Pettee defended the DeLaMar Company. He maintained that "neither the Company or men realized the terrible danger of the dust" (*De Lamar Lode* 6/13/1899:1) and that mill workers made no efforts to protect themselves from exposure. The DeLaMar mill was currently undergoing modifications to improve working conditions. The high levels of silica dust produced by the dry crushing

Griffin mills and the deaths alleged to have been caused by the dust were troubling Company officials.

The Company have [sic] always been trying to do away with the dust in the mill, and especially in the past few months, have made many improvements in that line and will continue to do so until the trouble will be eliminated
(*De Lamar Lode 3/21/1899:3*).

Large fans were installed and "Kansas City Perfection" brand dust collectors, a type of cover, placed over two of the Griffin mills. When the DeLaMar engineers observed that these "bonnets" not only captured the dust but also residual gold values that escaped with the particulate matter, "Perfections" were ordered for all of the crushers. After a trip through the mill in April, Pettee declared that the improvements were dramatic and that most portions of the mill were now "clear as a bell" (*Ibid*). A doctor, sent by the DeLaMar Company's insurance firm, assured local workers that the DeLaMar mill, when all the equipment was finally installed, would be safer than many other mills, including the DeLaMar mill at Mercur, Utah (*De Lamar Lode 6/13/1899:1*). Townspeople were invited to tour the mill to see the improvements in late July.

The media debate continued throughout July and August, as numerous physicians and "mining experts" commented on the DeLamar dust situation. Dr. Betts presented a paper, illustrated with figures and photographs, to the Salt Lake City Medical Association. His report described cases of "chalicosis pulmonum or chronic interstitial pulmonurum", acquired through exposure to dust during employment at the DeLaMar mill. The paper was excerpted in the *De Lamar Lode*.

The mill had resumed operation with fifty to seventy-five men, but since its establishment five years ago, estimates furnished the doctor stated that 166 to 200 men had died from having their lungs solidified by this fine impalpable ore dust... Workmen became affected in two or three weeks. Some were used up in three months, but managed to live seven months longer after leaving the mill...the average time between entering the mill and death being twenty-three and one-half months. In seven autopsies held two in St. George, four in DeLamar, and one in Salt Lake City, the same fibrous condition of the lungs obtained, the tissues being found solid as muscle and full of silica. The condition of the sufferers, mentally as well as physically, was shown to be horrible, rapid loss of flesh, and horrible dreams being featured (*De Lamar Lode* 8/1/1899:1).

Attempts by the Salt Lake papers to hold Captain

J.R. De La Mar accountable for the deaths of those employed at the mill were "bitterly reproached by mining and mill men..." (*De Lamar Lode* 6/24/1899:1). In De La Mar's defense, a Dr. Clift of St. George reported that he had treated several men from his area who had gone to work in the DeLaMar mill for this same "chalicosis pulmonum or chronic interstitial pulmonurum". Clift alleged that the men were as much to blame for their illness as the company, since "they would not use the respirators furnished or take ordinary precautions to protect themselves..." (*De Lamar Lode* 8/1/1899:1). The doctor's opinion echoed that of Judge Henry Rives of Salt Lake, who noted that while numerous damage suits had been threatened against the DeLaMar Company for the mill working conditions, no cases had ever been prosecuted. Rives believed there was "good evidence that no reasonable grounds exist for such action" (*De Lamar Lode* 8/7/1899:1) and that the fault lay with the workers. They made no effort to protect themselves from the dust during the 10 hour shifts and that they were "too avaricious to protect their health ", staying with their jobs too long. (*Ibid*).

Dr. Harry N. Mayo, formerly one of the physicians

at DeLamar, entered the fray. Mayo denied the published reports of a death toll in excess of 166 for mill workers. He stated that only "thirty-four men in the mill had died, as far as he knew, from all causes" (*De Lamar Lode* 8/1/1899:1) including alcoholism and exposure. Mayo did admit that "dust might have been a factor in these deaths" (*Ibid*). He also defended the DeLaMar Company, claiming the Company had tried to protect the men, by supplying wet sponges and later respirators for use by the workers.

In an effort to end the controversy and mitigate the adverse publicity, the DeLaMar Company agreed to pay the expenses of an investigative committee to demonstrate that every possible dust abatement measure was in use at the mill. Dr. Betts accepted the invitation, arriving at DeLamar in late August, 1899. The *Lode* (8/22/1899:1) quoted Betts as being much surprised by the improvements made and of the opinion that the mill was as safe as any in the country. The doctor promised to publish his findings, with photographs, upon his return to Salt Lake. In September, Betts' name reappeared in the DeLamar paper, under the byline "Betts Sues for Fee" (*De Lamar Lode*

9/5/1899:3). Through his attorney, Dr. Betts was attempting to recover \$500 in professional fees for his inspection of the DeLaMar mill, at the request of the Company. The doctor had prepared a report, which took him 10 days to complete, made recommendations for further improvements, and had requested compensation from H. Cohen of the DeLaMar Company. Cohen refused the report, forcing Betts to demand a \$500 judgement through the court system. The newspapers made no further reference to the case and it is not known whether Betts was ever paid.

As a postscript to the summer of 1899 dust controversy, the following items appeared in the DeLamar paper during subsequent issues. Dr. H. Mayo, who gained notoriety during the summer media blitz, left Salt Lake City in early October, 1899 to accept a short professorship in several affiliated colleges in San Francisco (*De Lamar Lode* 10/3/1899:3). Former mill worker turned newspaperman, Charles J. Pettee, the ever-optimistic editor of the *DeLamar Lode* from 1898-1900, became increasingly debilitated during the fall months of 1899. Despite heroic efforts to be cured, including massive doses of purgatives prescribed by Dr. Campbell

of Pioche, Pettee succumbed to the effects of "chalicosis pulmonum or chronic interstitial pulmonurum", today known as silicosis, on January 20, 1900. The epithet "The Widow-maker", first coined by the Salt Lake papers during the summer of 1898 (and **never** used in the *De Lamar Lode*), became synonymous with the town of DeLamar.

At summer's end, DeLamar residents learned of the death of John E. Ferguson, one of the original discoverers of the Ferguson District. Born in the Pahrnagat Valley in 1866, Ferguson and his brother Alden had traveled to California as youths to work in the mines and mills. Ferguson struggled during those years to "support his widowed mother and smaller brothers and sisters" living in Nevada (*De Lamar Lode* 8/29/1899:1). Returning home in 1886, Ferguson and his brothers ran the family ranch near Hiko, while prospecting at every opportunity. His discoveries of the Monkey Wrench and Magnolia claims gave the Ferguson name to a now-famous district; leases and options on those claims assured Ferguson's financial well-being. In 1896, Ferguson developed an unnamed "dreaded disease" (possibly diabetes) which gradually sapped his strength

and left him totally blind at his death (*De Lamar Lode* 8/22/1899:1). He withdrew from active participation in mining. Contrary to reports published in the *Reno Evening Gazette* (11/13/1905), John Ferguson did not squander his money and return to work at the DeLaMar mill. Instead, he married, built a home in Hiko, described as the finest in southern Nevada, and died in bed on August 20, 1899 (*De Lamar Lode* 8/29/1899:1).

Other deaths followed during the fall and early winter months of 1899. Most were attributed to pneumonia, although the effects of the DeLaMar mill dust were implicated. When Heber Player, foreman of the mill, died at age 33, his obituary listed the cause of death as "pneumonia, which the weakened state of his health could not throw off" (*De Lamar Lode* 12/5/1899:1). Player was liked and respected among his fellow workers, having risen up through the ranks to his management position. Further, he had worked diligently during his two-year stint as foreman to improve working conditions and solve the dust problem in the mill.

[A] large cortege of carriages accompanied the coffin to Helene with nearly all the mill and mine employees (about 75) walking in the procession. Officers of the

DeLaMar Company acted as pall bearers (*Ibid*).

The death of a foreman, in part attributable to working conditions in the mill, may have influenced the decision made by the DeLaMar Company's officials one week later. During an inspection visit to DeLamar on December 11, 1899, General Manager Cohen and Assistant General Manager Oxnam "granted the petition of the employees in the crushing department and dust cars for an eight hour shift" (*De Lamar Lode* 12/12/1899:1).

The *Pioche Weekly Record* published a rare report from DeLamar in January of 1900, describing an unusual situation that prevailed during the Teacher's Institute meeting:

DeLamar's street lights are out for the past two weeks and the people there appreciate for the first time what the night lights really meant for the town. The second night the lights were out a man was assaulted by the Vietti Hall and struck on the head by one of the two men who immediately ran. The probabilities are that the lights will be put on again very soon through some arrangement of the citizens to pay for them (*Pioche Weekly Record* 1/25/1900:1).

In 1896, the DeLaMar Company had installed several street lights along Main Street, with the intent of

having the town maintain them. DeLamar apparently never kept its part of the arrangement. Late in January of 1900, the Company finally forced the issue by cutting off power to the lights. After several weeks of darkness, and a subsequent increase in crime along Main Street, local residents petitioned the Lincoln County Commissioners to transfer the sum of \$115 annually from the town fund to pay for the electric street lights (*De Lamar Lode* 2/20/1900:1).

After Charles Pettee died in late January of 1900, his father James took over the newspaper. The elder Pettee continued the overwhelmingly optimistic reporting style of his son. One of his first articles reported that production for the DeLaMar Nevada gold properties was in excess of \$7,293,000, with continued improvements planned for their operations. Superintendent Swindler was devising a method to leach the old tailings through the new cyanide process to extract residual values; a conservative estimate placed the values on the tailings piles at over \$400,000 (*De Lamar Lode* 8/14/1900:1). New construction was ongoing at the April Fool mill, under the Montana owners. The town of DeLamar boasted approximately 900 residents who enjoyed the "good life".

At the Hard Times masquerade ball, held on February 12, 1900, the editor observed

[t]here were but few samples of hard times visible. Everyone seemed to be so much impressed with universal prosperity they did not care to go back to the old hard times even in burlesque. The maids and matrons of DeLamar were beautifully costumed and all seemed to enjoy the merry dance (*De Lamar Lode* 2/13/1900:3).

Such unabated good fortune could not continue indefinitely. Repeated editorial warnings of the fire danger in a town of wooden buildings and limited water supplies had largely gone unheeded in DeLamar. Efforts to equip and organize a volunteer fire department had been met with a general lack of interest. On May 30, 1900, the most devastating blaze in town's history began in an abandoned building and destroyed over half the camp. The *Reno Evening Gazette* carried one of the first accounts of the fire, mistakenly locating the catastrophe in Pioche.

Among the buildings burned were the Schaffer [sic] Grand Opera House, Episcopal Church, and the school house. About a score of other structures, including the largest lodging house in the place, the office of the Messenger, Clark Bros. store, Poujade's residence,

John Shier's drug, and J. Roeder's residence were also consumed. To the east and north of the Schaffer Grand everything was wiped out. Giant powder was used to stay the progress of the flame (*Reno Evening Gazette* 5/30/1900:1).

Displaced lodgers and those who had lost their homes sought shelter in the remaining hotels, rooming houses, and with friends. Ironically, census takers began the 12th annual U.S. census at DeLamar on June 1, 1900, the day after the catastrophe destroyed numerous residences and disrupted households. A second smaller blaze struck the camp in July of 1900, burning several other structures. While the ashes still smoldered, concerned citizens finally organized a committee to plan for fire prevention and the purchase of a emergency water supply tank (*De Lamar Lode* 7/10/1900:3).

Publication of the newspaper and the rebuilding of DeLamar began at the end of June, after residents and businessmen had assessed their losses. The *Pioche Weekly Record* (6/29/1900:1) noted that insurance checks had already been issued to many property owners, partially compensating their losses. Some businesses were benefiting from the catastrophe.

Since the fire the restaurants seem to be doing a rushing business, and rumour has it that China Dick, better known as Ed Hing, intends to build again and resume business on a larger scale than before (*Pioche Weekly Record* 6/29/1900:1).

Reports that the DeLaMar Company had withheld water and men to aid in combatting the flames were vigorously denied by the firm's officials. Immediately after the fire, Captain De La Mar reportedly cabled Superintendent Swindler, authorizing him to assist the fire sufferers in any way possible. On July 19, De La Mar and his top company officials visited DeLamar to insure that relief efforts and reconstruction were progressing smoothly.

Those who had lost property were not the only victims of the great DeLamar fire; a typhoid epidemic soon raged in the community. The cause of the outbreak was attributed to a decline in sanitary conditions following the fire. The town's doctors were busy treating the dozens of residents sick with "the fever". In August, whooping cough was reported among the children of DeLamar. Perhaps as a result of the various types of stress engendered by the fire, accidents also became more common in the mines and mill. During the

period between July 17 and August 16, five serious accidents occurred, with three fatalities. William Sloan, for example, was fatally overcome by a combination of noxious fumes while painting Perifine (paraffin) on the walls of the cyanide tanks. The obituary included the following poignant note:

Mr. Sloan was happy as a bird the day before, he having recently purchased the home of Duncan McDonald and was remodeling it, preparatory to the arrival of his fiancée from Ireland (*De Lamar Lode* 8/14/1900:1).

By end of the long, hot summer of 1900, the residents of DeLamar were tired. The *De Lamar Lode* (9/4/1900:3) described rainshowers during the week as "cooling the air and laying the dust, for which we were very grateful". The siege of typhoid fever continued into the fall, claiming the life of Alden Ferguson, brother of the District's discover, on October 5, 1900. The younger Ferguson had participated in the early developments of his brother claims, but not in the big financial gains. He had been employed at the DeLaMar mill for several years and died at age 31 of "typhoid fever and lung complications" after a month-long illness

(*De Lamar Lode* 9/9/1900:3). The death toll continued to mount until three people had succumbed to typhoid in DeLamar by year's end. The newspaper ended the year on a wistful note, stating "[o]ur camp has been dealt with hardly, but is rising from the ashes..."(*De Lamar Lode* 12/25/1900:1).

DeLamar did not rebound from the devastation of 1900 as completely as the *Lode* editor would have wished. For the first time in the town's history, unemployment was a cause for concern. The newspaper reported that "[t]ramps, bunco men, idle bums"(*De Lamar Lode* 1/8/1901:1) abounded in town and was forced to admit that 15 to 25 men seeking work were turned away daily at the DeLaMar Company office. Some local businessmen, discouraged by the current economic situation, relocated in other mining camps, including Deerlodge and Fay, Nevada. The Episcopal bishop tendered his resignation, citing his frustration at poor attendance since the great fire destroyed his church (*De Lamar Lode* 1/22//1901:3).

The start-up of a new mining district in southwestern Nevada made local headlines in mid-February. Facilities at the new camp of Tonopah were

still primitive, but the claims made by Jim Butler looked promising. Captain De La Mar was reported to have offered Butler \$300,000 for the Tonopah property, but the price was rejected as too low (*De Lamar Lode* 2/12/1901:3). "Tonopah fever" soon infected many of the local miners, with a major exodus from DeLamar to the new boom town beginning in March.

By 1901, the persistent rumours of a railroad line from Milford, Utah through southern Nevada to the California coast were becoming a reality. A decade of railroad company reorganizations and intrigues placed two companies, the San Pedro, Los Angeles, and Salt Lake, owned by W. A. Clark, and Union Pacific (Oregon Short Line and Utah Northern), owned by A. Harriman, in competition for the use of the same right-of-way across southeastern Nevada. In April, surveyors and work crews from both lines were surveying in Clover Valley and Meadow Valley Wash, siting a route that would pass only 17 miles east of DeLamar. Town residents and DeLaMar Company officials were excited at the prospects of finally being close to a transcontinental system. Soon a railroad war was brewing, as each company claimed exclusive rights to the previously constructed Union

Pacific grade running west from the Nevada-Utah border. A court injunction, issued in mid-April, prevented the clash of armed camps of railroad workers in Clover Valley. For the next eight months, the ownership of the disputed right-of-way was argued in court, with decisions coming first in favor of the Union Pacific, then the San Pedro, Los Angeles, and Salt Lake (see Myrick, 1963, for a complete account of the events). The *De Lamar Lode* carried stories of the flip-flop court rulings and of the confrontations between the rival work gangs as they built grades and laid track throughout the spring of 1901.

In DeLamar, the mill continued to grind away, sending a record \$12,000 worth of gold bars by the bullion wagon to Milford in April of 1901 (*De Lamar Lode* 4/2/1901:1). By this time, most of the high-grade ores of the DeLaMar mines had been exhausted. Top company management began modifications on the mill in August, "in order to run lower grades of ore and use cheaper fuels" (*De Lamar Lode* 7/30/1901:1). The dry-crushing Griffin mills would be replaced with wet-processing Chilean crushers, greatly reducing the dust hazard in the plant. The electrical power system was modified to

burn coal, a cheaper fuel that would eventually be available when the rail lines reached Meadow Valley Wash. Rumours circulated in town that Captain De La Mar desired to sell his Nevada properties, having already reaped maximum profits from them. While the mill was closed for renovation, a new discovery was made on the hill immediately east of the DeLaMar mines' Number 7 tunnel. The area had originally been the site of a hog pen. Rooting by its porcine occupants had uncovered a gold-bearing ledge, showing 10 feet of exposed ore with assayed gold values of \$20 per ton. The find, appropriately named "the Hog Pen", convinced town supporters, including the indomitable *Lode*, that DeLamar's prosperity could last forever.

More pragmatic individuals saw the handwriting on the wall and left camp. The exodus of miners and mill hands became a torrent in August when the DeLaMar mill closed for repairs. The stages left town full of "Italians and Finlanders" (*De Lamar Lode* 7/30/1901:3), bound for Tonopah, where the population doubled each month of 1901.

The rail lines had progressed through Clover Valley and reached the junction with Meadow Valley Wash, a

location called "Calientes" because of its thermal springs. (The final "s" on Calientes was soon dropped from the official town name). By mid-August, a telegraph line had been run from Caliente down the new railroad grade in Meadow Valley Wash and over the mountains to DeLamar, paralleling the town's water pipeline. DeLamar was now in contact with Salt Lake, by-passing the connections from Pioche. The DeLaMar Company was already preparing to ship its bullion from Caliente and had ordered a reinforced safe for the bullion coach. In September, the DeLaMar mill renovations were reported as progressing well, but another 90 days would be required to complete the conversion to the wet process. The old crushing department had been dismantled and a foundation to support the new Chilean mills was being constructed. Production was limited to the leaching of the old chlorination tailings, requiring only reduced workforces at both the mines and the mill. During this period, the newspaper was hard-pressed to find sufficient local happenings to fill the front page; news from Tonopah and Caliente soon received extensive coverage.

The editor was able to report, in mid-October, the

sale of the April Fool claims to a syndicate headed by Simon Bamberger of Butte, Montana. For approximately \$100,000, the new owners were acquiring a group of claims that had produced about a half-million dollars to date, with on-site milling facilities and "...veins showing greater depths than others in the district" (*De Lamar Lode* 10/29/1901:1). The Bamberger group immediately suspended work on the April Fool properties until November 1, pending reorganization of the holding company. The new owners planned to begin extensive remodeling of their small 10 stamp mill to add agitation capabilities to their leaching process. The reorganization shutdown and proposed renovations meant more DeLamar workers would be unemployed, at least temporarily. The news of the sale was seen as a mixed blessing.

The new year of 1902 slipped quietly into DeLamar, with little of the fanfare that had marked earlier, more optimistic times. Work had begun on the April Fool mill renovations, with equipment for a recently patented leaching method being installed. The new technique would use mechanical agitation to eliminate the compaction of materials that previously impeded the

cyanide leaching of fine-grained tailings. The agitation method was more efficient and allowed the use of weaker cyanide solutions, making it particularly cost-effective for low-grade ores such as those remaining in the Ferguson District. The DeLaMar mill resumed production on January 8, 1902, with the *Lode* (1/14/1902:1) commenting "...the old time full blasted whistle is on again, which gives us hope that something like its former self will come to the camp again."

The DeLaMar Company revealed its plans to add two more Chilean crushers to its mill in March. The Hog Pen strike was producing over 50 tons of ore daily and 200 tons of tailings were being processed each day; greater milling capacity was needed to meet the demand. The Company also proposed to build an electric plant in Meadow Valley Wash, approximately 12 miles east of DeLamar. Coal and some hydro-electric power from the perennial stream would be used to generate the additional power required to run the enlarged mill. News of the proposed developments precipitated a modest boom in the Ferguson District. By May, the stages arriving in DeLamar were loaded to the guards with passengers and freight. New arrivals were filling "the

cabins on the flats" and the "...streets and places of entertainment were lively with people" (*De Lamar Lode* 5/6/1902:1). The new residents were now eastern Europeans ("Finns and Slavonians") who immediately found employment in the mines.

Bamberger Syndicate Period

In May of 1902, the *De Lamar Lode* (5/26/1902:1) reported that Captain De La Mar had accepted a one million dollar option from the Simon Bamberger syndicate for the DeLaMar Nevada Gold Mining Company properties. Members of that syndicate included several wealthy investors, including Marcus Stine, vice-president of the International Pump Corporation, Philip Lehman of Lehman Brothers, Henry Morgenthau, and E. Nash, president of the American Smelter and Refining Company. The group, by its prior acquisition of the April Fool claims, would control the major claims and production facilities in the Ferguson District. The DeLaMar properties alone had grossed approximately \$14 million, with good potential still to be realized from the recent Hog Pen strikes. Bamberger and six mining experts traveled to DeLamar in late May to make final inspections of their new real

estate. The *De Lamar Lode* printed a farewell to the De La Mar era. "The withdrawal of the Captain from the camp will be regretted as he has been the maker of the camp and has always favored it while helping himself" (*De Lamar Lode* 5/27/1902:1). Within the next month, the Bamberger syndicate paid \$125,000 for the Magnolia claims, in order to unite "the bonanza of the great gold camp under a single partnership" (*De Lamar Lode* 6/17/1902:1). Their holdings now comprised three miles of gold bearing lode along the western edge of the Delamar mountains.

The new owners immediately closed the DeLaMar mill and began improvements, proposing to add five additional Chilean crushers to the existing facilities. An order for \$30,000 worth of electrical equipment was placed with General Electric, as the Bamberger group pushed construction of the new power plant in Meadow Valley Wash (*De Lamar Lode* 7/15/1902:1). Captain De La Mar received a payment of \$600,000 in July, making the final sale price \$750,000. The Bamberger syndicate intended to sell shares for a total capitalization value of \$5 million to underwrite their investment in the Ferguson District. The first four gold bars were shipped from the Bamberger-

DeLaMar mines in August, 1902, representing the output of a single Chilean mill for a 26 day period.

The towns of DeLamar and Helene again hummed with activity. Increased work forces were employed to work the mines, remodel the mills, begin construction on the Meadow Valley Wash power plant, and construct new roads over the Delamar Mountains to connect the properties. The *De Lamar Lode* boasted that "[e]verything looks like prosperity for the camp in the near future" (8/19/1902:1). The DeLamar school district had difficulties filling the superintendent's position since new applicants feared that an educator's pay could not match the increasing cost of living in the booming town. By the fall of 1902, some expenses had skyrocketed in DeLamar. Cordwood had doubled in price and was now selling at \$8.00 per cord. The newspaper reported "[w]ood ...getting to be a luxury in this camp, all the hills for miles around having been spoiled of their pines and cedars" (*De Lamar Lode* 11/18/1902:3).

The headlines of the *De Lamar Lode's* first issue in 1903 announced that thousands were working on the rail lines between Caliente and Moapa, through Meadow Valley Wash, with completion anticipated by the San Pedro, Los

Angeles, and Salt Lake in May. The once-remote town of DeLamar would soon be a mere 30 miles from a railhead at Caliente, where a passenger station and freight depot were already under construction. Work was progressing on the various Bamberger projects, with 700,000 tons of tailings piled around the old DeLaMar mill awaiting processing. Heavy equipment was en route for the mill, and

[g]oing out over the north Toll Road yesterday, we met three large teams consisting of 22 horses, loaded with machinery for the Bamberger-DeLamar company. Two of their big wood wagons were loaded, one with a big Crusher, the other with a Chilian Mill (*De Lamar Lode* 2/24/1903:1).

New strikes had again been made on the Hog Pen claims, greatly increasing their potential lifespan. The newspaper changed hands in late February, with James Pettee selling to F.R. McNamee and the paper moved into a new office.

In March of 1903, the Nevada Legislature passed a bill mandating eight hour shifts in "...underground mines and smelters, ore reduction works, and providing penalties for violation thereof" (*De Lamar Lode* 2/17/1903:1). The Bamberger syndicate promised that

wages at the Ferguson District properties would not be cut, thus allaying the fears of many workers. On April 21st, the totally renovated mill was opened, with a capacity of 550 tons and state-of the-art equipment, capable of processing lower grade ores and tailings at maximum efficiency. The mill and the mines were now working two 8 hour shifts, with the last shift ending at 3:00 a.m. In early June, the first electrical currents were generated from the Meadow Valley Wash power plant, named Stine in honor of Marcus Stine of the Bamberger syndicate. Arc lamps provided an ample supply of light and "[t]he interior of the mill now presents a handsome appearance" (*De Lamar Lode* 6/9/1902:1).

The remainder of 1903 passed without newsmaking events in DeLamar, as the new Bamberger-DeLaMar mill processed the tailings and ores from the Hog Pen mine. The new railhead at Caliente facilitated the movement of freight, bullion, and passengers between the Ferguson District and Salt Lake City. Over 250 men were employed on the Bamberger-DeLaMar payroll and the syndicate was sending regular shipments of bullion to the railhead at Caliente for trans-shipment to Salt Lake. A two week period of milling resulted in a \$15,000 bullion shipment

in early May of 1903. According to company estimates, 500,000 tons of tailings were stockpiled on the dumps of the DeLaMar, April Fool, and Magnolia mines. These could be reprocessed through the cyanide agitation leaching, "... at a net profit of \$1.00 per ton" (*De Lamar Lode* 5/17/1904:3). Three shifts were running at the two mills, with good prospects for steady long-term production from the Ferguson District properties. Despite this, the *De Lamar Lode* reported that "the town is very dull" (5/3/1904:3). Gambling was the most exciting pastime, with several high stakes games reported from the local saloons.

Events reported by the local newspaper throughout the remainder of the year tended to focus on completion of the railroad line to California and the exciting mining developments in southern Nevada. Tonopah continued to attract the attention of western mining interests; Goldfield showed even greater potential. Sensational strikes had also been made near Indian Springs, with assay values in excess of \$20,000 per ton coming from the Lida district. These reports sowed the seeds of discontent among the workers of the Ferguson District. In May, miners from the Bamberger-DeLaMar went

on strike for higher wages. At the end of two days, "25 Austrians and Slavonians... drew their time and departed for different camps throughout the state" (*De Lamar Lode* 5/23/1905:1). The remaining crews, apparently resigned to their circumstances, returned to work. Throughout the fall, the Bamberger syndicate found new arrivals to replace laborers who chased the mining booms elsewhere. Most of the new workers were foreign-born, generally from eastern Europe. Language problems surfaced in the workplace and in the community. In November, the newspaper reported that the number of young children in the primary school who didn't speak English "makes considerable trouble and worry for the teachers" (*De Lamar Lode* 11/21/1905:3).

The two Bamberger mills continued to process the old tailings and ores from the extensive Hog Pen claims. Despite the conversion to wet processing, dust remained a perpetual problem in and around the facilities. In July, a "Sagebrush Column" by Professor Horntoad appeared in the local newspaper, documenting conditions in DeLamar. Horntoad described how an open door at a local chop stand let "in a gust of cyanide dust-laden wind which nearly demoralized the flies feeding on the

limberger left from my lunch " (*De Lamar Lode* 7/25/1905: 1). The Bamberger syndicate also responded to the steady barrage of wind-blown silicates, by moving the building "containing the offices and mess, ... to get way from the dust..."(*De Lamar Lode* 8/8/1905:3).

At the outset of 1906, the Bamberger syndicate announced further expansion of the mill. Five additional gold precipitation plates and new cyanide tanks would be added to the plant's equipment, in order to increase capacity and capture all the available gold values. When the proposed modifications were completed in March, the mill could handle an estimated 1,000 tons of ores and tailing per day. Other Ferguson District properties, including the SunBeam and Little Emma, had recently been bonded or sold to outside investors, signaling continued interest in the metallic resources of the area. Local businessmen and other residents also made visible commitments to the future of DeLamar. In January, many of the saloonkeepers and business houses along Main Street had new signs installed and the logos and decorations on their false fronts and windows repainted. Townspeople "engaged in making gardens around their residences" (*De Lamar Lode* 3/14/1906). From all

appearances, DeLamar was still viable, despite competition from the highly touted mining areas elsewhere in southern Nevada.

The spring months of 1906 were extremely wet, with the melting snowpack and spring showers causing extensive flooding throughout the region. The Bamberger power station at Stine was damaged on March 24, 1906, when torrents of water ran through Meadow Valley Wash, cutting a new channel west of the facility. The tracks and grades of the San Pedro, Los Angeles, and Salt Lake rail line in Clover Valley and Meadow Valley Wash were washed out, stranding passengers, mail, and freight in Caliente. DeLamar remained without mail, electricity, telegraphs, and rail-supplied goods for much of April, as repeated flooding episodes disrupted repairs to the rail lines and power plant. The mill and mines could only work at half capacity, due to electrical shortages. During the shutdown, it was reported that "[t]he wet groceries of DeLamar are doing a thriving business" (*Ibid*).

All services were restored to DeLamar by June and the Bamberger-DeLaMar mill began grinding between 300-800 tons per day. Work on the Hog Pen claims had progressed down to the 14th level, with a new gasoline

powered hoist scheduled for installation in the mines. In mid-June, the newspaper announced that its final issue published in DeLamar would appear on June 19, 1906. The booming railroad town of Caliente had finally lured the loyal *De Lamar Lode* away from the Ferguson District. A new paper, called the *Caliente Lode-Express* and headed by W.F. Connell, would now chronicle events in both communities, as well as regional and national news. In subsequent issues, the reports from DeLamar gradually diminished both in frequency and detail. The headlines focused on the railroad developments in southern Nevada and the exciting progress being made in Tonopah and Goldfield. By August, the controversial proposal to create a separate county in southern Nevada, composed of territory from Lincoln, Nye, and Esmeralda counties, had Lincoln County politicians waging a war of words in the press.

Nothing from the quiet town of DeLamar could compete with these more current topics. The *Lode-Express* observed that July 4th was particularly dull in the old town, with many DeLamarites away in the Pahrnagat Valley, "under the shade of the trees picking fruit" (*Caliente Lode-Express* 7/7/1906:1). A local resident

quipped that the town was as "quiet as a country town in Arizona where they hold prayer meetings seven days a week" (*Caliente Lode-Express* 8/18/1906:1). Business of all types was in a slump, despite the steady employment provided by the Bamberger-DeLaMar mines and mills. By mid-summer, the ladies of the demi-monde were reported exiting DeLamar for more lucrative and exciting camps (*Caliente Lode-Express* 7/14/1906:1). Utah peddlers still supplied food items to DeLamar, but reserved their better quality goods and produce for the more prosperous town of Caliente.

Most of DeLamar's American born workers had been replaced by eastern Europeans, including many Austrians, Serbians, and Czechs, commonly called "Slavonians" by Lincoln County residents. The *Lode-Express* noted the communication problems in the mines and mills, resulting from the diverse languages spoken there. Many of the new arrivals continued customs which raised local eyebrows. The Slavonian practice of kissing one another on the cheek upon arrival and departure was said to "be very common in DeLamar of late years" (*Caliente Lode-Express* 9/1/1906:1). The most exciting social event of the 1906 season in DeLamar was a Halloween party, held at McNamee

Hall, with 70 people in attendance. Although whist games and songs by the Glee Club entertained the party goers, the night was a far cry from the gala balls at the old Schaefer Grand, when 400 people danced in the dawn.

Heavy snows began the new year of 1907, slowing mining and milling activities in DeLamar. Freight was delayed by road conditions between Caliente and DeLamar and the lack of a suitable bridge across Meadow Valley Wash. The Caliente Commissioners were postponing construction on a bridge, perhaps hoping that the railroad would instead oblige. Local DeLamar businessmen (many of whom also had shops or saloons in Caliente) angrily protested the delay, apparently to no avail. Teamsters took advantage of the impending shortages of supplies and food at DeLamar by raising freighting charges 10 cents per hundred pounds (*Caliente Lode-Express* 1/5/1907:1). Fifteen years of intensive woodcutting in the Delamar Mountains had generally stripped the hills of their trees, creating a heavy dependence on cordwood brought in from other areas. With the January slowdown in freighting, fuels became scarce for town residents. The Bamberger officials responded to the crisis, taking "timbers and planks from old

workings in the mine and distributing them among the needy" (*Caliente Lode-Express* 1/19/1907:4). Another exodus of miners and mill hands occurred during this period of cold and shortages. Their places in the workforce were gradually filled by Slavic-speaking laborers from Bingham, Utah. The newcomers proved to be a violent crowd, provoking bar room brawls and gunfights in the saloons around DeLamar. Sheriff Johnson began making arrests and confiscated over 20 weapons. Local residents hoped that the syndicate would "soon supplant them by white miners" (*Caliente Lode-Express* 2/23/1907:4).

In March of 1907, the Ferguson District was again a headline item in the *Lode-Express*, as new discoveries were made approximately two miles south of the DeLamar townsite. The Banovitch Consolidated Mining Company, composed of long-term local businessmen, had found silver lodes assaying between 50 and 160 ounces per ton. The deposits were so extensive that they promised to eclipse the original Ferguson District discoveries, despite the relatively low prices paid for silver on the market. The news of these strikes stimulated a modest rush to the area, now being called "the New DeLamar District". By

mid- April, 100,000 shares of the Banovich Mining Company had been sold to finance further developments. A tent camp and a few hastily constructed frame buildings were established in the vicinity of the new claims.

Reports of these activities were overshadowed only by stories of the catastrophic flooding in Meadow Valley Wash. During its yearly spring rampage, the perennial stream again managed to wipe out 60 miles of railroad tracks and bury Caliente in mud and debris. Rail service and the delivery of supplies were disrupted. The first episode of flooding in early March was quickly followed by others, with water levels rising several inches higher during each successive flood. Repairs to tracks and bridges were swept away within hours of being completed. The San Pedro began construction on a new grade, with a system of protective dikes and tunnels, to be built above the floodplain. The Bamberger operations were also brought to a standstill by the high waters.

Owing to the recent washouts on the Salt Lake road, the mines and mills of DeLamar were compelled to close down. At first, it was regarded as a calamity. But many of the employees have gone prospecting in the new district and new strikes are reported *Caliente Lode-Express*(3/16/1907:4).

Regular rail service was finally resumed in April, just after Harriman of the Union Pacific had bought out W. Clark's shares in the San Pedro, Los Angeles, and Salt Lake line. The Bamberger-DeLaMar mines and mill were also able to start production, following repairs to the Stine power plant. Simon Bamberger made an inspection trip to the properties in mid-July of 1907 and seemed satisfied with the operations. The New DeLamar District had several claims under development, with a hoist on order for the Banovich mine. A labor shortage was reported during the summer months. "There is a dearth of good American miners and all who apply for employment will be accommodated" (*Caliente Lode Express* 7/13/1907:4).

Newspaper coverage of events in DeLamar during 1908 was extremely limited. By mid-year a new editor, Harry Preston, had taken control of the *Caliente Lode-Express*; unlike his predecessors, he had no ties to the mining town. In October, the editor spoke to Ernest Green, manager of the DeLamar Central Gold Mining Company, who reported veins of milling ore from the New DeLamar District assaying as high as \$85 per ton. "The general condition of the camp is ... high-toned" (*Caliente Lode-*

Express 8/29/1908:1).

Front page articles in the regional papers documented the steady progress being made by all parties at work in the Ferguson District in early 1909. The Bamberger syndicate employed approximately 250 men and made semi-monthly shipments of bullion. These "have amounted to about the same, always requiring five figures to designate the value of precious metal sent out to the government mints" (*Pioche Weekly Record* 4/10/1909:1). The March output totaled 4,200 ounces of gold, valued at \$24,000. Soon the syndicate proposed to begin on-site milling of its Magnolia claims, rather than leasing out the mines. The *Pioche Weekly Record* also described conditions in DeLamar.

The population of the town of DeLamar is composed principally of Slavs and Italians, but a more peaceable and contented community would be difficult to find. The wage paid is low; yet the laborers are satisfied and therefore, strife between the company and its employees unknown. There are three general merchandise stores, one clothing house, two butcher shops, two restaurants, three lodging houses, and six saloons, all of which are doing a thriving business (*Pioche Weekly Record* 4/10/1901:1).

The Prospector (5/1/1909) reported in early May that

DeLamar was to install a modern fire-fighting system, with 600 feet of hose, a fire hook, new bell, and sheds for the equipment. The community was, at that time, the only settlement of any size in Lincoln County not heavily bonded by debts and with a solvent town fund.

In mid-May, the *Pioche Weekly Record* brought to light allegations of tax evasion by the Bamberger syndicate. The Bullion Tax Report from Lincoln County showed that the company had a total output of \$134,000 for 1908, but reportedly only paid \$28.40 in bullion taxes to the State of Nevada. "It is hoped that during the present year, a method will be devised whereby this glaring and shameful condition will be remedied..." (*Pioche Weekly Record* 5/15/1909:7). The result of this revelation was an immediate visit by Steven Hawley, the Nevada Bullion Tax Collector, who carefully reviewed Lincoln County's tax books. During the audit, the Bamberger-DeLaMar mill made a \$40,000 bullion shipment to Salt Lake, the product of a 15-day mill run. The syndicate also laid off 40 men and "otherwise curtailed expenses owing probably to the presence of the State Auditor..." (*The Prospector* 7/3/1909:1). While the initial bullion tax figures quoted proved to be in error,

it was apparent after the audit that the Bamberger syndicate had paid a mere \$1671.41 in taxes for its 1908 operations (*Pioche Weekly Record* 9/4/1909:4).

Between mid-July and the end of August, rumours circulated around Lincoln County that the Bamberger syndicate was planning to pull out of the Ferguson District. Increased processing costs, diminishing ore supplies, and anticipated closer scrutiny by Nevada's tax collectors were reasons cited for the drastic step. "Even if there is only a temporary suspension it will be a hard blow to DeLamar, for the operation of this mine was almost the sole resource of the town" (*Pioche Weekly Record* 8/28/1909:1). Final notice of the impending closure was received, with August 31, 1909 declared to be the last day of operations for the Bamberger-DeLaMar mill. *The Prospector* (9/4/1909:1) documented the final hours of that day.

The Swan Song of the famous gold camp that for 17 years has been the leading industry of Lincoln County was caroled Tuesday night by the shrill blast of the air whistle whose fading echoes died among the hillsides as the midnight hour passed. The DeLamar mill has ceased to grind and the entire Bamberger industry has been abandoned. The power plant at Stine is being dismantled and will taken to Lagoon, Utah. The mill machinery is being hauled

to Caliente where it is being stored for the present... The employees decided to imitate the Roman emperor Nero and Miss Lena Rives and Andrew Foster were summoned from Caliente to furnish music for the farewell dance. The Dance began as the electric light first beamed for the last time and the evening was spent in a merry revel by old and young. As midnight approached, the dancers halted and the orchestra played 'Nearer My God to Thee' while the lights slowly faded never to shine again. After midnight tallow candles were scattered around the hall and again the music resumed in rapid measure till gray dawn denoted the day of DeLamar's demise (*The Prospector* (9/4/1909:1)).

Within weeks, most of the businessmen and residents of DeLamar had deserted the camp. A few of the miners waited in DeLamar for their final paychecks. The courts were asked to liquidate the syndicate's assets as quickly as possible to compensate the workers (*The Prospector* 9/11/1909:1). The Bamberger syndicate dismantled the mill equipment and moved it to a warehouse in Caliente for temporary storage. When the final distributions of funds to creditors was made, it was determined that the company had a total indebtedness of \$80,000, with bullion and equipment on hand to liquidate that debt. The only explanation offered by the syndicate for the closure was simply that

[t]he Bamberger engineers, after repeated attempts, found the ore could not be worked profitably and the only solution of the problem was a close down (*The Prospector* 9/11/1909:1).

Postscript

Captain John Raphael De La Mar died in New York City in 1918. The DeLaMar-Nevada Gold Mining Company had grossed an estimated \$13 million dollars from its operations in the Ferguson District between 1894-1902. De La Mar continued to speculate in various mining ventures world-wide and at his death left a fortune totalling \$20 million dollars. Half of that amount he bequeathed to his daughter. The remainder was donated to the medical schools of Columbia, Harvard, and Johns Hopkins Universities, with the stipulation that the funds be used for "research on the origins of human disease" (Earl, 1986:125). It has been suggested that this generous gift was an effort on De La Mar's part to assuage his guilt over working conditions at "the Widomaker", the Nevada mining town that was his namesake (Earl 1986).

CHAPTER IV

BIO-CULTURAL FACTORS ANALYSIS

"Every ecological niche presents its own particular hazard to survival" (Wood 1979:xv).

Introduction

Humans depend upon their environment for the essentials of life, whether they live in simple villages or modern industrialized cities. Adequate food, water, and shelter must be available if individuals are to grow, reproduce, and function. Deficiencies in the amount or quality of these critical resources can provoke episodes of disease or dysfunction which threaten survival. Cultural adaptations also comprise integral components of the human environment. Technological advancements compensate for human biological limitations and natural resource deficiencies. These same innovations often pose health or safety risks.

The totality of the human environment, from both biological and cultural aspects, must be examined in order to fully understand the effects on the individual

and society. Included here is a detailed description of the bio-cultural variables which affected residents in the Ferguson District between 1892-1909. In the following discussions are analyses of the availability of food and water, the types of local housing, sanitary conditions in the District settlements, and the availability of medical care.

Food Supplies

Farb and Armelagos (1980:4) have argued that

food ... is inseparable from the behavior and biology of the human species and from the adaptation that humans have made to the conditions of existence on the planet. Cultural traits, social institutions, national histories, and individual attitudes cannot entirely be understood without an understanding of how these meshed with our varied and particular modes of eating.

Adequate nutrition and good health are also directly linked, since dietary deficiencies lower the body's resistance to disease. Data on food supplies in the Ferguson District during the study period are reviewed as these are linked to health and living conditions in the area.

Conlin (1986) has suggested that complex demographic and sociological variables influenced the patterns of

eating which evolved among western miners during the 19th century. The mining districts of the '49er period were located at great distances from the transcontinental rail system and major supply centers. Mountainous terrain and adverse weather conditions further hindered the movement of necessities and foods to these remote areas. "Hunger and serious shortages were 'social problems' of the mining frontier" (Conlin 1986:99). Within a decade, merchants and peddlers had extended the supply networks to the mining regions of the West. Flour, canned goods, fresh meat, and luxury items like tinned oysters, French champagne, and fine cigars reached even the most remote camps.

Women were few in number on the early mining frontier. The solitary men became accustomed to eating out at restaurants, saloon "chop stands", and boarding houses. These establishments adapted to the hours of the mine shifts, serving meals both day and night. Chop stands and restaurants frequently employed Chinese cooks who prepared exotic, highly seasoned dishes for their customers. French-inspired cuisine, which symbolized the affluence each miner hoped to attain when he finally discovered the "Mother Lode", also became a favorite

among the '49ers. Eating houses capitalized on those fantasies, wooing patrons with dining extravaganzas. Multiple course dinners, featuring elegant meats, imported fish, oysters, fruit, ice cream, and champagne, were served in wallpapered and mirrored surroundings. These gastronomic revelries helped to relieve the daily drudgery of work in the mines and were considered a worthwhile expense by even the poorest miner (Conlin 1986:127). The miners and their exotic food preferences moved from camp to camp throughout the region; these eating habits persisted into the 20th century.

The peculiar foodways of the mining frontier were reinvigorated in every new boom town. The miner arriving in Goldfield, Nevada, in 1905 would have found much the same restaurant his father (or he) had found in Virginia City in 1865. Every new strike was 1849 all over again (Conlin 1986:194).

A reconstruction of food supplies and food preferences in the Ferguson District between 1892-1909 can be used to test Conlin's hypothesis.

In 1892, the Ferguson District was as geographically isolated from the major transportation networks as the mid-19th century Comstock Lode. The intercontinental rail lines stopped at Milford, Utah, located 150 miles

to the northeast. Pioche, situated 50 miles north of the District, was the closest node on an established regional supply route. Few roads crossed the precipitous terrain of southeastern Lincoln County. The trip from Pioche to Milford by freight wagon required a week or a month, depending on weather and road conditions. The fastest stage and mail coaches between Pioche and the Ferguson District rarely completed the trip in less than two days. Freight costs were calculated by mileage and weight, placing customers furthest from the railheads at a distinct economic disadvantage.

The new mining district was situated in close proximity to several important food production areas. Pahrnagat Valley, 30 miles to the west, enjoyed a moderate climate and abundant springs. Local ranchers raised fruits, vegetables, livestock, and poultry. Native fish (Pahrnagat roundtail chub), were deliberately "farmed" in small ponds (*Ferguson Lode 1/2/1893:1*).

Less than 30 miles to the east of the Ferguson District were the ranches and gardens of Meadow Valley Wash. A perennial stream, mild year-round conditions, and rich alluvial soils made this a fertile valley. Many

varieties of fruit, including apples, pears, peaches, apricots, grapes, and melons, were grown by pioneer settlers like the Kiernans, Bradshaws, and Conways, whose orchards and vineyards had been established in the 1870s (personal communication, Don Bradshaw 1990). Many of the ranchers also raised potatoes, grains, and cattle. Their produce, homemade wines, and beef had been sold to the miners of Pioche for nearly two decades. By 1893, declining activity in that silver camp was forcing the Meadow Valley Wash ranchers to seek new markets.

The town of Panaca, Nevada (see **Figure 1**), located in upper Meadow Valley Wash approximately 40 miles north of the Ferguson District, was an established agricultural community of approximately 400 residents (*Ferguson Lode* 1/2/1893:1). Since the mid 1870s, Panaca residents had sold vegetables, fruits, grain, eggs, butter, meat, and ice in Pioche. They were skilled freighters and peddlers, dependent on those activities for much-needed hard currency.

In April of 1892, the first miners and prospectors of the Ferguson District pitched their tents at Golden City and Helene. They brought with them food supplies purchased in Pioche. Each man's "grubstake" consisted

of canned goods (beans were a prospector's staple), sacks of flour, tins of lard, and a slab or two of bacon. Tea or coffee, whiskey, a plug of tobacco, and simple cooking equipment completed his outfit (*De Lamar Lode* 11/1/1901:3). Beans, bacon, and biscuits were the miner's staple fare until his next trip to Pioche, where he could replenish his supplies and indulge his gastronomic cravings.

Merchants from Pioche soon joined the miners in the new district. Within days of the rush to the area, H. Cooper began selling "liquid groceries" in his tent saloon. In June of 1892, a Mrs. Webber opened a boarding house to provide meals for the predominantly male camps. Her produce and meat supplies were purchased on weekly trips to the Pahrnagat Valley (*Ferguson Lode* 9/9/1892:1). Meals were also served at the newly-constructed Magnolia Hotel, after a Mrs. A. Yoakum brought a large cooking stove from Pioche, "...the finest ever sold in the county" (*Ferguson Lode* 9/19/1892:3). During the fall of 1892, several more saloons opened in Helene, generally in partnership with fast-food concessionaires. Warren and Brown completed a frame building to house a saloon and a chop stand, run by Tommy

Cockbin, "...where everything that can tempt the appetite of an epicure can be found" (*Ferguson Lode* 11/21/1892:1). In late November, a Chinese restaurant began serving the spicy dishes favored by western miners, with meal prices ranging from 15 cents to \$1.00 (*Ibid*).

Economic conditions soured in the Ferguson District late in 1892. Many of the merchants folded their tents and moved back to Pioche, leaving the remaining residents with inadequate food supplies. The *Ferguson Lode* observed that "[l]ocal items are few and far between..." (12/26/1892:1). The shortages forced many Helenites to spend Christmas in Pioche (*Ferguson Lode* 12/19/1892:1).

Work on the existing mines expanded during 1893, in anticipation of milling facilities at Hiko and Condor Canyon. Businesses returned to the District and, by June, "...fairly prosperous conditions" (*The Lode* 6/3/1893:1) were reported at Helene. A big banquet was held in Helene on the 4th of July, with "...the tables fairly groaning under the good things furnished by Dave Wertheimer" (*The Lode* 7/8/1893:1). Southern Utah peddlers visited the Ferguson District, selling green fruit "at high prices" in July (*Ibid*).

During the fall of 1893, ranchers from the nearby valleys delivered their harvests and livestock to the District. In October, fresh pork was briefly available at the newly-opened meat market in Helene. Mrs. A. Geer, a Pahrnagat Valley rancher's wife, arrived with a wagonload of freshly butchered beef and quickly sold the entire supply to the meat-hungry miners. Local residents "...made a barbecue of a fine quarter [beef], which was relished by all" (*Ferguson Lode* 10/14/1892:1). An economic interdependence was developing between the cash-poor but commodity-rich ranchers and the cash-rich but commodity-poor miners of the Ferguson District.

Old Man Frenchey, on the 14th, took a few dressed pigs and without money, started out to capture his tax receipt. He first thought of going to Helene, but on learning that A.W. Geer had been there..., he determined to go to Pioche, taking in the small city of the Saints [Panaca], so he commenced hitting the road in that direction. All went well until he struck the road over which the ore from the Ferguson is being hauled and here he met with some difficulty from bad road. Finally disposed of his swine at a very low figure in Panaca... (*The Lode* 11/25/1893:1).

In early 1894, word of the new Ferguson District was spreading throughout eastern Nevada and southern Utah. Peddlers trickled into the new mining area, bringing

limited quantities of food and other supplies. During the winter months, shortages of many food items were reported in Helene: "...everything improves with age but women and butter, both of which are a scarcity here" (*The Lode* 1/6/1894:3). Eggs were scarce, as was flour and meat (*The Lode* 1/20/1894). Freight wagons from the southern Utah agricultural communities came weekly to Pioche, loaded with supplies. The teamsters refused to make the rough, 50 mile trek south to the Ferguson District if they could dispose of their goods in Pioche. In Helene, the food prices fluctuated wildly with supply and demand. Eggs, which had sold for \$2.25 per dozen in December of 1893 (*The Lode* 12/22/1893:3), dropped to 10 cents per dozen in February, 1894, when supplies briefly improved (*The Lode* 2/3/1894:3).

Captain J. De La Mar invested in the Ferguson District in the spring of 1894 and began freighting machinery and equipment to the mining camp at Reeves (renamed DeLamar in June, 1894). Roads were constructed to accommodate the heavy freight wagons. News of the explosive activity at the DeLaMar Nevada Gold Mining properties stimulated a second rush to the District. Miners and construction workers crowded the dining rooms

of the hotels, restaurants, and company-run boarding houses. The saloons also provided meals for the many single (or solitary) men who flocked to DeLamar. The Germania Restaurant and Chop Stand advertised itself as the only "house of its kind which employs no Chinese" where board could be purchased for \$5 per week (*De Lamar Lode* 7/2/1894:4). Board included breakfast, a box lunch, and an evening meal; the prices charged were less than the cost of three single meals. Meal tickets were also sold for one day's board, allowing the purchaser to take advantage of discounted prices and still retain the flexibility of dining out at different places. Meal costs remained remarkably constant throughout the boom period of the Ferguson District. From 1894 to 1909, the local "eateries" regularly advertised single meals starting at 25 cents and meal tickets at three for \$1.00. Board rates also fluctuated very little during this period. Weekly board could be purchased for \$5-\$5.25 at all of the boarding houses, restaurants, and hotels. Monthly rates ranged from \$22.50 to \$27.50, depending on the quality of the meals provided.

Proximity to the fresh food suppliers kept costs down in the District between 1894 and 1909. The prices

charged for meals and long-term board in the DeLamar were approximately one-half of those charged in other western mining settlements. Data compiled by Conlin (1986:174) indicated that board costs ranged from \$10 to \$12 per week in most mining camps where workers earned from \$3 to \$7 per day. Yet, even at the higher rates, the lowest paid miner still had extra cash for indulgences (Conlin 1986:127). The Ferguson District workers, who earned comparable wages, were certainly able to enjoy other amenities, given the modest costs for meals in the District. The extra cash was spent in the saloons, at the gaming tables, entertaining the ladies of the demi-monde, buying gourmet food items, and dining out at fancy restaurants.

By late 1894, the freighters and peddlers had altered their trade routes, by-passing Pioche and heading directly to the Ferguson District. Food shortages became less common, as merchants ordered flour, grain, and canned goods by the ton. Business relations between the local merchants and itinerant peddlers were not cordial, as documented by the following account.

A little flurry on Main street
Saturday evening between one of
our merchants and a teamster from

Utah over the sale of butter by the teamster, caused some excitement. The merchant claimed the teamster had no right to dispose of butter without a license (*De Lamar Lode* 12/17/1894:4).

Many of the DeLamar merchants were former Pioche businessmen who had fought similar turf-battles during the early days of that silver camp. They successfully instituted a licensing system in the Ferguson District, forcing the itinerant peddlers to purchase a license in order to do business.

The merchants began stocking those foods which had been relished by miners since the early days of the Comstock: corned beef, pig's feet, pickled eggs, tinned oysters, and sardines. Lingenfelter (1974) has suggested that the hardrock miner's craving for foods with acidic or salty flavors was caused by working conditions in the deep mines. While toiling in the intense heat underground, miners drank huge quantities of ice water for relief from the temperature extremes. This practice "...wracked many a miner's stomach, making his normal diet unpalatable" (Lingenfelter 1974:15). The miner's desire for special foods is likely to have been more than just a matter of taste. Such cravings were, in all probability, a physiological response to the loss of

salts and electrolytes through sweat and urine. The consumption of salty or acid foods replaced the excreted sodium, potassium, and chloride, thus preventing dehydration, muscle cramping, and hyperthermia.

Similar working conditions prevailed during the boom years of the Ferguson District, with temperatures in excess of 120 degrees reported in the DeLaMar mill boiler rooms and in the deep stopes of the mines (*De Lamar Lode* 7/20/1896:1; 7/26/1897). The weekly advertisements for fish and oysters suggest that these items were in demand. The *De Lamar Lode* (3/21/1899:3) documents that George Latimer regularly delivered "...a load of sauerkraut and pickles"; these acidic foods were quickly purchased by DeLamarites. It can be argued that Ferguson District workers were unknowingly treating their chronic salts and electrolyte depletion with appropriate dietary items.

Fresh meat supplies were guaranteed when the new DeLamar Meat Market set up its corrals and slaughter yard at the mouth of Cedar Wash, approximately one mile south of DeLamar (*Ferguson Lode* 7/9/1894:3). Livestock could now be driven to the Ferguson District, held in a feed lot, and butchered as needed. Fresh beef and pork were generally available in quantity throughout the period of

generally available in quantity throughout the period of study. In May of 1895, the first herd of 25 sheep arrived from Cedar City, Utah and were corralled at the slaughter yard. China Dick's restaurant was reported serving "the finest mutton at every meal" (*De Lamar Lode* 5/23/1895:3). Prices for mutton were quoted in the weekly butcher shop advertisements, confirming that sheep were brought to the Ferguson District at regular intervals. "Fresh Pahranagat carp" was also sold by the markets.

Several butcher shops opened in DeLamar after 1895. Competition and abundant supplies of meat kept prices low throughout the Ferguson District boom years. Cheaper cuts of beef, pork, or lamb sold for 6 to 8 cents per pound, while beef steaks and lamb chops cost 10 to 12 cents per pound (*De Lamar Lode* 10/3/1899:4). Bologna, link or bulk sausage, and roast beef all commanded the same price of 12 to 13 cents per pound (*Ibid*). The weekly newspaper advertisements document that meat prices fluctuated little during the period between 1896 and 1909.

After the winter of 1894, the only meat shortage to affect the Ferguson District occurred prior to

Thanksgiving, in 1895. Turkey supplies could not meet local demand and many residents reluctantly substituted other meats for their Thanksgiving dinners (*De Lamar Lode* 11/25/1895:4). The following year, the DeLamar butcher shops ordered poultry of all kinds from nearby ranchers. The newspaper reported that "[t]urkeys and chicken are plentiful in our market" (*De Lamar Lode* 11/23/1896:3).

Fresh meat and other perishable foods had to be consumed immediately or ways devised to inhibit spoilage and contamination. Local butchers purchased ice in quantity from regional suppliers, who cut ice from the lake at Hiko and the stream in Condor Canyon, near Panaca. An ice wagon began residential deliveries in DeLamar during April of 1895, charging from 3 to 5 cents per pound. Local saloons and restaurants also purchased large quantities from these suppliers. In 1898, William Imes opened a cold storage plant in DeLamar. His ice-making machinery could produce up to five tons of ice per day, at half the price of the imported supplies. The cold storage was used by local merchants to keep butter, eggs, fish, and meat fresh (*De Lamar Lode* 2/1/1898:1). No episodes of food poisoning were reported in the Ferguson District, suggesting that the availability of

ice and cold storage had a positive effect on the health of local residents.

Fresh fruits and vegetables were generally available on a year-round basis in the Ferguson District between 1894-1909. Two fruit stores opened in DeLamar during the spring of 1895; others followed as the years passed. The proprietors were able to stock bananas, oranges, lemons, dates, and nuts, ordered weekly from Salt Lake City, Utah, and transported by rail to Milford. Barring adverse weather conditions, the fruit could be delivered by freight wagons within a few days. By 1901, the Ferguson District was also receiving produce from more distant markets. "California radishes, lettuce, cauliflower, and cabbages" (*De Lamar Lode* 3/19/1901:3) were shipped by rail to Milford and freighted to DeLamar.

Growers from eastern Nevada and southern Utah made regular trips to DeLamar and Helene, where cash customers eagerly awaited their fruit and produce. In August of 1894, "Bradshaw and Hearty were each in with a load of fruit from the Wash [Meadow Valley]" (*De Lamar Lode* 8/20/1894:4). By the following summer, deliveries came from Bunkerville, Overton, Mesquite, Panaca, and the Pahrnagat Valley in Nevada; St. George, Santa Clara, and

Richfield in Utah; and Littlefield, Arizona. Apples, apricots, cantaloupe, cherries, figs, grapes, peaches, pears, seedless raisins, strawberries, and watermelon were available in the Ferguson District throughout much of the year. Fresh asparagus, greens, radishes, and potatoes were also grown and delivered by the ranchers of Meadow Valley Wash.

The quality and prices of the local Nevada produce were generally lauded by the loyal hometown newspaper.

Joe Kiernan brought two loads of fruit to our market Thursday and disposed of it in a short time. His fruit cannot be beaten for flavor and quality (*De Lamar Lode* 8/24/1896:4).

Ten cents per pound for peaches and apricots was described as "pretty high yet" (*De Lamar Lode* 5/2/1905), suggesting that low prices for fresh fruits were common in the Ferguson District.

Supplies coming from the agricultural settlements of southern Utah were often not so enthusiastically reviewed.

Those who are partial to worms can get a good supply by purchasing a few of the apples peddled around town. The Utah hucksters are bound to get worms into the ungodly (*De Lamar Lode* 8/11/1906:3).

The teamsters from Utah were repeatedly accused of trying to get exorbitant prices for their "...wormy dried fruits" (*De Lamar Lode* 2/3/1896; 8/11/1906).

Eggs and butter were the only food items consistently reported as scarce in the Ferguson District. In late 1893, eggs were hard to find and priced accordingly at \$2.25 per dozen. The shortage persisted throughout 1894, with eggs reported as "scarce" and selling at \$1.00 per dozen (*The Lode* 2/2/1894:1). The same complaint reappeared in the newspaper during 1895, as prices fluctuated but supplies generally fell short of the demand. Figure 8 displays the average price for a dozen eggs in the study area for the period from 1893-1909. In 1896, the situation had apparently improved, forcing the newspaper to admit that:

[t]he brethren [Mormons] are keeping
us pretty well supplied with hen
produce at 30 cents per dozen...
Each has a better grade than the
other fellow and everything goes
in a brotherly way, if the gentile
is only made the huckleberry "
(*De Lamar Lode* 2/3/1896:5).

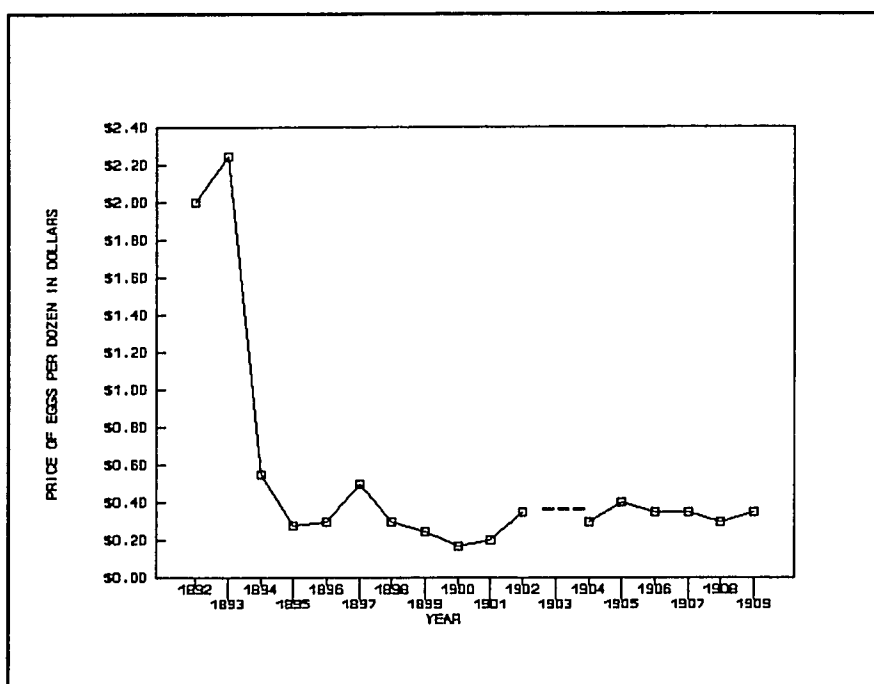


Figure 8. Average price of eggs per dozen in the Ferguson District, 1892-1909.

Later that year, the hens of Utah were reported "...on strike, hence the scarcity of eggs in our market" (*De Lamar Lode* 10/12/1896:5). During 1897 and 1898, "hen fruit" (*De Lamar Lode* 12/7/1897:3) supplies were down in the District and prices remained at or above 50 cents per dozen.

A few DeLamar residents set up chicken coops and attempted to grow their own "hen fruit". A dietary calcium deficiency (personal communication, Dan Love,

D.V.M. 1990) affected some of the local hens, which laid eggs with fragile shells that would "...squash in handling them" (*De Lamar Lode* 3/13/1906:3). Utah sources remained the most reliable egg suppliers for the Ferguson District. The newspaper continued to grumble about the quality of the Utah eggs.

If the venerable Methuselah were in DeLamar at the present time and compared age with the 'nice fresh eggs' shipped in from Salt Lake, he would consider himself but a babe in years (*De Lamar Lode* 10/31/1905:3).

Egg prices dropped when the rail lines were completed along Meadow Valley Wash and a railhead established at Caliente, Nevada in 1904. Eggs now cost 25 cents per dozen, a reflection of the significant reduction in freighting costs to the Ferguson District. In the spring of 1906, the railroad tracks washed out along the Meadow Valley Wash, causing supply shortages throughout the region. DeLamar school boys were reported stealing eggs from the local chicken coops to offset the missing supplies (*De Lamar Lode* 4/10/1906:3). The problems of flooding and interrupted service along the rail lines were not resolved until after the demise of the Ferguson District in 1909. Residents were plagued

with egg shortages throughout the history of the District.

Butter was also not predictably available in the Ferguson District during the study period. In early 1894, butter was reported to be as scarce as women in the new mining area (*The Lode* 1/16/1894:1). A "butter famine" was declared in 1895 (*De Lamar Lode* 4/8/1895:3) and shortages were chronicled throughout the history of the Ferguson District. Milk deliveries to DeLamar began in 1895, when the Delmue's dairy wagon arrived from Panaca. By 1900, a number of District residents were keeping dairy cows and selling milk. Local butter production never completely satisfied the demand and the shortages continued.

In 1905, daily rail deliveries from Salt Lake City to Caliente promised to end the Ferguson District butter problems. Flooding and track washouts in 1906 disrupted all shipments to Caliente, cutting off supplies to DeLamar. The newspaper reported that "[a] few of our citizens had to 'butter' their bread with the good old reliable extract of bacon or resort to axle grease" (*De Lamar Lode* 4/10/1906:3). The butter crisis continued

throughout the year, with the following incident recounted in the newspaper.

Recently provisions got short in DeLamar. There was no butter, potatoes, etc. to be had in town, when three six-horse teams arrived loaded to the guards. They had on one case of butter and the balance of the freight consisted of barrels of liquid that made a certain city famous. There will be no starvation here (*Caliente Lode-Express* 9/1/1906:1).

Little additional information on the butter situation in the Ferguson District can be gleaned from the archival sources. In mid-1906, the local newspaper moved to Caliente, 30 miles away from DeLamar, and reduced its coverage of events in the District. It is assumed that butter supplies continued to be unpredictable during the periods of disrupted rail service (caused by track washouts and reconstruction). From 1907-1909, the Ferguson District residents dwindled in number to less than 500. The available butter supplies may have met the demand of this smaller population.

Summary of the Subsistence Patterns

The following conclusions can be drawn about the availability of food in the Ferguson District during the study period. From 1892 to 1894, many staple foods,

including eggs, flour, meats, fresh fruits and vegetables, were unavailable or in short supply in the newly-organized mining district. The first residents subsisted on beans, bacon, and biscuits and may have risked malnutrition or deficiency diseases like scurvy, as a result of these dietary limitations. The archival sources do not report any cases of deficiency diseases or fatalities related to nutritional problems during this period. It can be concluded that the food shortages were of limited duration and did not seriously affect the health of the District's residents.

After 1895, the Ferguson District was well supplied with a wide variety of fresh and canned foods. The close proximity of ranches and orchards in the Pahrnagat Valley and Meadow Valley Wash helped to offset the geographical isolation of the region from the intercontinental transportation networks. Fresh meats, fruits, and vegetables were available in the District throughout the year, in quantities generally sufficient to meet local demands. Eggs and butter were the only commodities reported in short supply during the study period.

Food prices were within the means of the workers, who earned from \$3 to \$6 per day. For the average miner or mill worker who purchased his meals from a restaurant or boarding house, food expenses consumed one-third or less of his daily wage. If he chose to buy and prepare food for himself, a smaller percentage of his salary was devoted to subsistence. The diets of Ferguson District residents can be assumed to have been nutritionally sufficient. No cases of malnutrition, scurvy, or other deficiency diseases were reported during the Ferguson District boom years; no fatalities resulted from these causes.

Food availability and costs in the Ferguson District can be compared with conditions at the mining town of Tonopah, Nevada in 1901. Published accounts suggest that food shortages and high prices were common at Tonopah.

The food here is the worst on earth. The camp, only 60 miles from a railroad, has, as a rule, for daily fare, bacon and bread with spoiled water (called tea or coffee) on the side. Three fourths of the time this is the daily fare and we are within 40 or 50 miles of ranches where vegetables and fruits are rotting. The way people are fed is an outrage and the cost more than at the Palace Hotel in San Francisco. These people charge \$1.25 per day and from six bits to \$6 for an average meal (*Walker Lake Bulletin*, quoted in the *De Lamar Lode* 8/13/1901:1).

During that same period, a former DeLamar miner, who had joined the exodus to Tonopah during the winter of 1901, wrote a series of letters to the DeLamar newspaper editor. The letters documented the scarcity of fresh foods in Tonopah:

I often wish some of our southern peddlers would pull in with a load of their good fruit and vegetables. We haven't had a bit of fruit since we came here, vegetables almost as scarce. I think if we staid [sic] there [DeLamar] until spring, it would have been better and we would have liked it better (*De Lamar Lode* 9/3/1901:1).

The comparative data from the Tonopah indicate that food supplies in the Ferguson District were more abundant and less costly than in other mining districts. The absence of reported fatalities resulting from dietary deficiencies supports the conclusion that food availability was adequate to sustain the health of the local population.

Data from the Ferguson District also confirm Conlin's (1986) observations that uncommon tastes and eating habits persisted among western miners into the 20th century. The fare of District miners and mill workers continued to include the staples of the 49ers:

beans, bacon, biscuits, tinned oysters, and pickled foods. Single or solitary workers purchased meals from boarding houses, chop stands, and restaurants, preferring the variety of dishes that could be obtained only by "eating out". Ferguson District residents celebrated special occasions by elaborate gastronomic spectacles. At the DeLaMar Company boarding house, the cook prepared "...a meal that was fit for the President" on Thanksgiving Day of 1897 and "[a]ll of the delicacies of the Salt Lake market were on the table" (*De Lamar Lode* 11/29/1897:3). In 1898, Thanksgiving Dinner served at the Palmer House included

Ham with Champagne Sauce, Lamb Pie with
Macaroni and Cheese, Turkey with Cranberry
Sauce, Goose with Apple Dressing, Muscovy
Duck with Giblet Gravy, Loin of Pork with
Applesauce, Lamb with Mint Sauce, and Ribs
of Beef...(De Lamar Lode 11/22/1898:4).

Six different vegetables with "Frenchy" sauces (hollandaise and bernaise), elegant desserts, champagne, and fine liquors complimented the feast. Special Sunday dinners were served at the Palmer House and other "quality" restaurants, in a drawing room atmosphere (*De Lamar Lode* 5/23/1899:4). The meals were multi-course

extravaganzas which invariably included ice cream, strawberries, and French champagne. From these examples, it is possible to conclude that the food preferences and eating habits of the late 19th century Ferguson District residents mirrored those which evolved among the '49ers a half century earlier. Food continued not only to meet the physiological demands of the body, but also psychological needs of the soul.

Water Supplies

Water is a constituent element of the human body and a critical component of all metabolic processes. The quality of water available for human consumption is as important as its abundance. Inorganic solids and heavy metals, including arsenic, lead, mercury, barium, and chromium, can occur at potentially toxic levels in natural water sources. Organic contaminants, especially the broad spectrum of coliform bacteria (*Enterobacter aerogenes*, *Klebsiella* spp.) introduced by mammalian feces, are also present in natural springs and streams. These bacteria pose health risks to humans, causing intestinal maladies such as gastroenteritis and dysentery. Other pathogens, especially *Vibrio cholerae*

(cholera), *Streptococcus faecalis* ("strep" infections), and *Salmonella typhi*, the infective agent for typhoid fever, are transmitted through contaminated water sources (Nester et al. 1973; Brunner and Suddarth 1975). Humans must assure themselves of both a reliable and relatively pure water supply if health hazards are to be avoided.

Early in the history of the Ferguson District, residents were faced with the dilemma of developing water supplies for human consumption and ore processing. As noted in **Chapter II**, 33 natural springs and seeps are found within a 10 mile radius of the District's settlements. Flow rates from these water sources average 4.3 gallons per minute (gpm), an amount sufficient only for small-scale uses. From December of 1891 through the fall of 1892, water was collected from springs in the immediate vicinity of Golden City and Helene and transported in barrels to the camps. The output of these sources was not adequate to meet the needs of the 100 or so miners living in the District. By the summer of 1892, the "lack of water and heat was forcing many prospectors to leave" (Townley 1972:17). In November of 1892, a water shortage spurred local residents to more

aggressively augment their supplies. The *Ferguson Lode* (10/3/1892:1) reported that more than four miles of pipeline would be required in order to bring the water from Cottonwood Spring into Helene. Efforts to expand the rate of flow at Cottonwood Spring were accelerated in November and December. John Sevenoaks of Salt Lake bonded a mill site adjacent to that spring for \$6,000 and contracted to have a water tunnel built into the hill above the spring. Attempts were also made to sink wells in the Delamar Mountains, to the east of Helene, and in Cedar Wash, located three miles to the south of that camp.

Water supply improvements generally slowed during the early months of 1893, as the Ferguson District suffered through its first "bust" period. In March of 1893, *The Lode* (3/18/1893:3) reported that work had been abandoned on a well being sunk east of Helene, after "...a depth of 60 feet was obtained without indications of water".

During the summer of 1893, activity resumed in the Ferguson District and water problems again confronted would-be developers. Prospectors not only sought rich ore bodies, but also searched for perennial water

sources. A front page story, carried by *The Lode* in August, reported the discovery of four large springs, located less than 10 miles east of Helene. John Ferguson, Joe Sharp, and Charles Lamson had been led to these springs by an aged Paiute named "Indian Tom". The news caused "...considerable excitement in Ferguson mining district" (*The Lode* 8/5/1893:1) as the quantity of water available from the four sources appeared to be sufficient to support on-site milling facilities.

The Nesbitt brothers of Pioche, part owners of the April Fool claims, began spring improvements and constructed pipelines to carry water into the camp of Reeves (later DeLamar). By October of 1893, several sources located to the south of Reeves (modern-day Tunnel Springs #1, #2, and #3) were connected by a network of pipelines and the water was ready to be piped to a proposed mill site, south of the April Fool mine (refer to **Figure 4**). The combined flow of these springs totaled less than 25 gpm, a rate considered insufficient for large-scale milling.

In the spring of 1894, Captain John De La Mar acquired controlling interests in the Jim Crow-Monitor claims and began pouring money and machinery into his

investment. A first priority for De La Mar was to resolve the water problem, in order to construct a mill in the Ferguson District. A state-of-the art artisian boring machine, capable of drilling to depths over 3,000 feet, was purchased by the DeLaMar Company. Work was begun on the floor of the Delamar Valley, with four factory technicians supervising the drilling activities. When the Captain visited the District in June of 1894, he spent "...several days looking at springs and water sites" (*De La Mar Lode* 6/18/1894:1). Drilling on the well continued throughout July and August, to depths in excess of 900 feet, with no signs of water.

The population of DeLamar (formerly Reeves) rapidly grew to over 250 residents, putting an extreme strain on available water supplies. In early July of 1894, the town was suffering "...through the experience of a genuine water famine, and malt liquor was more easily obtained than Adam's ale" (*De Lamar Lode* 7/9/1894:3). Local entrepreneurs saw the profit potential in water sales. Frank McMahon purchased a water wagon and was reported working night and day during July to fill orders for water at the mines and in the town (*De Lamar Lode*

7/16/1894). A second water wagon began servicing DeLamar in late August.

By fall, the DeLaMar Company had abandoned work on the artisian well in the valley. Negotiations were concluded to acquire water rights in Meadow Valley Wash, located 12 miles to the east of DeLamar. The chlorination mill proposed for construction by the DeLaMar Company would require a steady water supply of 40 gallons of water per minute. Construction of two 3.5 inch pipelines and three steam-powered pumping stations was soon underway to bring water from Meadow Valley Wash to that mill site. As an interim measure, the Company connected the various feeder lines from nearby wells and springs to a central pipeline and ordered two large storage tanks, each holding in excess of 15,000 gallons. With this consolidation, the DeLaMar Company effectively gained control of the town's water supply. A company-backed water wagon began delivering water, priced at one cent per gallon or 40 cents per barrel, to local residents.

For the period between 1892 and mid-1895, local springs and wells provided all of the water for the Ferguson District. The available supplies met the

demands of approximately 300 people and the half-dozen active mines. The mines needed drinking water for the miners and draft animals (mules and horses) and limited quantities of industrial water for their blacksmith shops. Although water shortages were periodically reported, these appear to have been of limited duration. The shortfalls were remedied by spring improvements and the piping of water from ever-greater distances. With the initiation of home water delivery, Ferguson District residents enjoyed adequate (if not abundant) water supplies.

The prices charged for water (one cent per gallon or 40 cents per barrel) appear modest when compared with those at the contemporaneous mining towns of Tonopah and Goldfield, Nevada. In 1901, water sold in Tonopah for \$1.50 per barrel, more than triple the rate charged in the Ferguson District (*De Lamar Lode* 8/13/1901:1). Annie Ellis settled in Goldfield during 1906 and watched prices soar on all basic commodities, as supplies declined. Whiskey was cheaper than water which sold for "15 cents per pailful", when it could be had (Ellis 1929:251). Wages paid to miners and mill workers were roughly comparable in each of these early 20th century mining

districts, ranging from \$3 to \$6 per day. The comparatively low cost of water in the Ferguson District made it affordable to even the lowest paid workers.

Although the quality of Ferguson District drinking water during the study period can never be assessed with complete accuracy, some conclusions can be extrapolated from modern test results. In 1977, samples from five springs in the Delamar Mountains were collected and analyzed for constituent and contaminant levels, as established by the Environmental Protection Agency's (EPA) National Public Drinking Water Standards (Sierra Environmental Monitoring 1977). Selected parameters from that analysis are shown in **Table 2** and summarized below. Two of the tested springs (Grassy and Riggs) are known to have been used as drinking water sources for Ferguson District residents between 1892-1895. Range cattle, wild horses, and wildlife comprise the primary modern-day users of these sources; this situation also prevailed during the boom period of the Ferguson District. It can be assumed that the constituent and contaminant levels detected by the water quality analysis are comparable to those which would have been present in the 1890s.

Table 2. Water quality analysis of five springs from the Delamar Mountains.

Spring	Parameters		
	Nitrates (milligrams per liter)	Total Coliforms (#100 per milliliter)	Dissolved Solids (milligrams per liter)
1. Boulder	0.4	144	146
2. Bishop	1.2	0	359
3. Kane	1.6	2	298
4. Riggs	0.8	121	48
5. Grassy	2.4	11	*

* Data not available

(Source: Sierra Environmental Monitoring 1977)

The five Delamar Mountains' springs contain nitrates, at levels above the EPA established maximum limit of 0.1 milligrams per liter (mg/l) for untreated public drinking water (USDI, BLM 1990:71). Nitrates (in non-agricultural areas) result from the presence of fecal materials in the water sources. Total coliforms, a measure of water pollutants from fecal coliform bacteria, were present in four of the tested samples. While EPA standards for untreated drinking water rate the presence of any coliforms as a potential health hazard, the measured counts in the Delamar Mountains springs are comparatively low. Total dissolved solids reflect the

salts contained in the water sources. The levels of dissolved solids from four of the five springs were well below the EPA maximum limit of 1000 milligrams per liter (USDI, BLM 1990:71). No heavy metals, including arsenic, lead, mercury, barium, or chromium, were detected in the water samples. Small quantities of lead may have been present in the water when it reached the Ferguson District residents, as a result of contact with the soldering compounds used in the water pipes and storage tanks.

The relative purity of the water supplies available during the early years of the Ferguson District is supported by the extremely low incidence of water-borne diseases reported among residents between 1892 and mid-1895. Only one case of typhoid fever was diagnosed, in May of 1893. That individual, a 29 year old miner, died from a "bilious remittent fever and congestion of the lungs" (*The Lode* 6/3/1893:1) after an illness of several weeks. No instances of dysentery, cholera, streptococcus infections, or gastroenteritis were reported in the Ferguson District during the three years when local springs and wells were the primary suppliers of the public drinking water.

In the fall 1895, the pipelines from Meadow Valley Wash began conveying water to the two large storage tanks located above the new DeLaMar Company mill. These tanks supplied the mill and the rapidly growing community of DeLamar, whose population now exceeded 1000 residents. The Company continued to provide home delivery of water drawn from its storage facilities, issuing a brass water check to facilitate payments (*De Lamar Lode* 8/19/1895:3).

The quality of the water obtained from Meadow Valley Wash during that period can be extrapolated, using data obtained during a recent analysis (Sierra Environmental Monitoring 1977). The study sampled water from the upper Meadow Valley Wash, that portion of the stream which provided water to the Ferguson District. Uses along this perennial water course have not changed markedly since the late 19th century. Range cattle, wild horses, and wildlife continue to graze along its banks and drink from the stream. Alfalfa and fruit trees are raised on small ranches which dot the floodplain. Despite the passage of nearly a century, the human population along Meadow Valley Wash has grown little since 1900.

In 1977, samples were taken at four locations along Meadow Valley Wash (between Panaca and Elgin) and

analyzed for EPA public drinking water constituent and contaminant levels. The results for selected parameters are listed in **Table 3**. Nitrate levels exceeded the EPA established maximum limits (0.1 milligrams per liter) in three of the four samples. Total coliforms ranged from a low of 30,600 bacteria per milliliter to a high of 220,000 bacteria per milliliter. The numbers of coliform bacteria present in the samples from Meadow Valley Wash exceeded those present in samples from the five Delamar Mountains springs by a minimum of 50 percent (see **Table 2**). Dissolved solids also occurred at higher levels in the water from Meadow Valley Wash, but were below the maximum limits of 1000 milligrams per liter established by the EPA. Low levels of arsenic, copper, and iron were detected in the Meadow Valley Wash samples. The quality of the water from Meadow Valley Wash, as rated by these parameters, was generally lower than that of the five sampled springs in the Delamar Mountains. Standards established by EPA for untreated public drinking water were exceeded by the high levels of coliform bacteria. The assumption that the water from Meadow Valley Wash contained potentially hazardous coliform levels appears

Table 3. Water quality analysis of four samples from Meadow Valley Wash.

Spring	Parameters		
	Nitrates (milligrams per liter)	Total Coliforms (#100 per milliliter)	Dissolved Solids (milligrams per liter)
1. MVW #1	0.1	2200	650
2. MVW #2	0.8	522	626
3. MVW #3	1.1	1660	602
4. MVW #4	0.3	340	560

(Source: Sierra Environmental Monitoring 1977)

to be supported by morbidity events in the Ferguson District. In the fall of 1895, just after residents began drinking and using water from the Wash, the first typhoid epidemic was documented. Between August and December, over 60 cases of typhoid fever were diagnosed in DeLamar, affecting men, women, and children. Eight fatalities resulted before this epidemic ran its course. The newspaper echoed the speculations of local residents who believed that the outbreak was

[c]aused by the mingling of different people from strange communities...the gas and acid fumes of the mill... the water (*De Lamar Lode* 10/7/1895:1).

During the outbreak, the DeLaMar Company cleaned the water storage tanks weekly with chloride of lime, which was believed to act as a disinfectant. Residents were instructed to boil all water obtained from these tanks (Townley 1972:11). Many people left DeLamar for short visits to Panaca when it was reported that the "pure mountain water... seems to benefit them very much" (*De Lamar Lode* 10/21/1895:3). In late November, a series of editorials, written by an unknown "Philo", appeared in the *De Lamar Lode*. Philo alleged that the water "contained sufficient organic matter to infect any community" and that it was "...the greatest producer of the bacillus Typhoidus" (*De Lamar Lode* 11/25/1895:1).

The synchronicity of the typhoid epidemic and widespread municipal use of water from Meadow Valley Wash suggests that contaminated water was the cause of the outbreak. Other etiologies must also be examined, since typhoid fever is known to be transmitted by several mechanisms. *Salmonella typhi*, the bacteria which causes typhoid fever, is excreted in human feces and urine and can survive outside the body for months (Brunner and Suddarth 1975). Surface water supplies are most susceptible to contamination by fecal matter containing

S. typhi. The bacteria can also be spread by fires, insects, and shellfish contaminated by sewage. A common method of typhoid fever transmission is through physical contact with a human carrier ("Typhoid Mary") who has completely recovered from the infection but who still excretes large numbers of bacilli (Nester et al. 1973).

DeLamar's boom was fueled in 1895 by the opening of the barrel chlorination mill. Miners and mill workers flocked to the town, many coming from mining camps where typhoid fever, cholera, and other infectious diseases of bacterial origins were prevalent. Some of the recent arrivals may have been carriers of *S. typhi*, capable of spreading the bacteria through any form of physical contact. During this period of explosive growth, sanitary conditions in the town rapidly deteriorated. Privies were dug to shallow depths and allowed to overflow from neglect. Garbage was dumped in close proximity to businesses, restaurants, and residences. Common houseflies may have spread the bacteria, as they flew from open privies to meal tables. Local residents also frequently recycled their drinking water supplies.

The water, purchased by many, is put
through several processes of use until

it forms an alabi [sic] with the human
filth, which is by no means scarce
(*De Lamar Lode* 10/7/1895:3).

Several possible causal agents, including contaminated water sources and mobile carriers of the bacillus, can be implicated in the typhoid epidemic which struck the residents of the Ferguson District between August and December of 1895. Similar outbreaks of typhoid fever were reported throughout the next decade. The marked seasonality of these epidemics suggests those conditions which encouraged the spread of the disease were most prevalent during the summer months (**Figure 9**). *S. typhi* colonies grow and proliferate most quickly in warm temperatures (Nester et al. 1973). Municipal water supplies drawn from surface sources, i.e. Meadow Valley Wash, would contain higher levels of bacterial contaminants during the summer than at other times of the year. The cumulative effects of seasonally contaminated water supplies, lax sanitation practices, and multiple typhoid fever vectors could account for the periodic outbreaks observed in the Ferguson District.

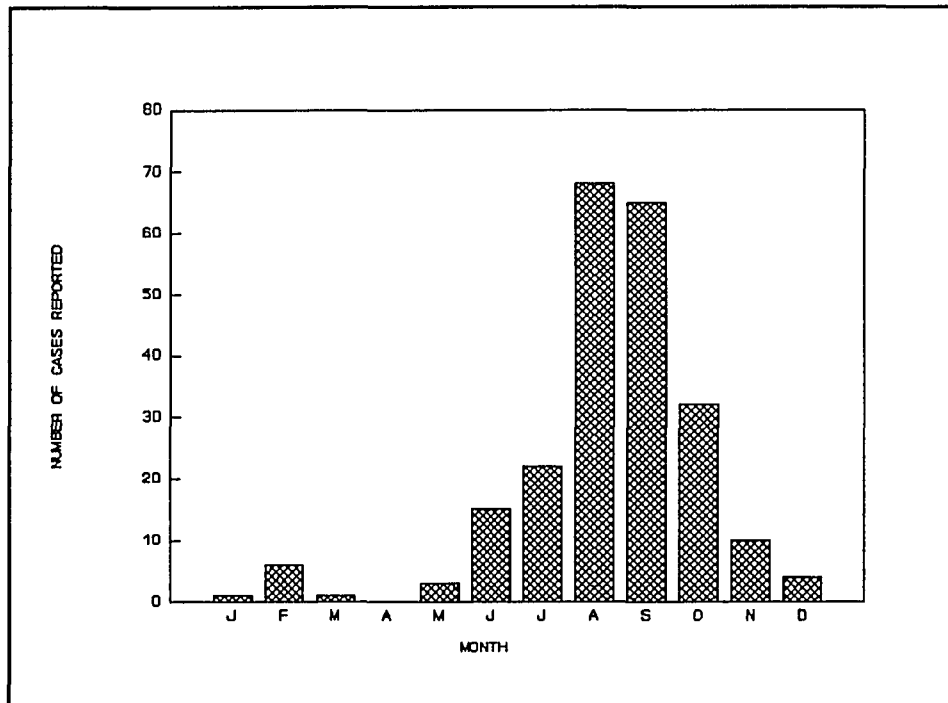


Figure 9. Monthly totals of reported typhoid cases in the Ferguson District from 1892-1909.

From 1895-1902, the DeLaMar Company's water wagons made daily deliveries to local residents. In early 1896, its monopoly on municipal supplies was ended when the Nesbitt brothers began selling water, piped from their four springs in the Delamar Mountains to a large storage tank in town.

They have a trough in front of the store on Main street and are having a cart fixed up to deliver around town. They did a fair

business during the week and the cart delivery will greatly increase the sale as it will prove a great convenience (*De Lamar Lode* 2/24/1896:3).

By fall, the Nesbitt's were reported doing a brisk business, "...going steadily to supply the wants of most of the people of town" (*De Lamar Lode* 8/31/1896:3). The competition between the DeLaMar Company and the Nesbitts was, by all accounts, good-natured.

In 1896, the DeLaMar Company began to construct small feeder lines from the water storage tanks to other parts of its operation. A large pump, electrically powered by a wood-fired steam "dynamo" in the DeLaMar mill, could now supply water to the company mines and blacksmith shops. This network of pipelines grew yearly and by 1899 included many local businesses and residences. With the convenience of water piped directly to their homes, DeLamarites enjoyed a luxury quite uncommon in Lincoln County at the turn of the century.

This convenient water system was not particularly reliable. The winter weather extremes of the Delamar Mountains routinely played havoc with the pipes and the pumping machinery. Workmen dug trenches to bury the main and feeder pipes below the frost line, housed the pipes

in wooden casings, and repeatedly attempted to coldproof the system. Despite these efforts, sub-zero temperatures caused the lines to freeze (and subsequently break) annually during the Ferguson District boom years. In early February of 1898, the *De Lamar Lode* lamented that nearly every water supply pipe in town was frozen, including the small pipes near the mill and "those supplying residences in that vicinity" (2/1/1898:1). Water shortages were again reported during the winter months of 1902-1903, when frozen pipes forced the water wagon drivers to collect water by the barrel from local springs. The water delivery wagons and saloons did a brisk business whenever the water supply system was frozen.

The three pumping stations which lifted the water from Meadow Valley Wash over the mountains to DeLamar experienced repeated mechanical failures and fuel shortages. In March of 1903, the equipment at the Rock Springs station broke down, necessitating repairs which took several weeks to complete. No water could be pumped from Meadow Valley Wash to refill the storage tanks at DeLamar. The mill, which had been modified in 1902 to use a "wet" agitation cyanide process, was forced to

close temporarily due to insufficient water supplies. DeLamar residents were also inconvenienced by the shortages. The editor of the newspaper quipped that sun baths were the only baths available these days, due to the water shortage (*De Lamar Lode* 3/10/1903:4). The situation did not improve during the summer months, when fuel shortages closed the pump station in Meadow Valley Wash. The pump machinery at this station had recently been converted to burn coal rather than cordwood, in anticipation of the day when the soon-to-be completed rail line would deliver that fuel directly to the facility. Until that time, sacks of coal were freighted by wagon from the new railhead at Caliente 10 miles south along the Wash to the pump station. Summer monsoon showers in late July caused torrents of water to flow down Meadow Valley Wash, damaging the pump station equipment and washing out the wagon roads. No coal supplies could reach the station and all pumping ceased for several weeks. The mill was again forced to shut down operations. The Bamberger syndicate, which had purchased the former DeLaMar Company facilities in 1902, began construction of additional water storage tanks, in hopes of alleviating the now frequent water shortages.

DeLamarites were reported to be totally dependent on deliveries from the Nesbitt's springs for their supplies (*De Lamar Lode* 8/4/1903:3).

During the winter months of 1904, frozen and broken water pipes again created water shortages for the mill and the townspeople. Water supplies were rationed and reused by local residents, increasing the risk of water contamination and water-borne diseases. This period of water austerity was immediately followed by a rare winter outbreak of typhoid fever. Five cases of typhoid were diagnosed in DeLamar during February of 1904, with one fatality.

Shortly afterwards, the Bamberger syndicate decided to eliminate some of the services which the DeLaMar Company had provided to local residents. In May, the syndicate appointed E.D. Turner to begin "the collection of charges for electrical lights and water used by the residents of the town" (*De Lamar Lode* 5/19/1904:1). The former DeLaMar Company-backed water wagon service was stopped, greatly inconveniencing those who lived on the outskirts of the town. The Bamberger group did agree to extend the feeder pipe system to these outlying areas, for all who were willing to pay the fees. Most local

residents accepted the new situation and the new pipelines.

Water shortages became less common during the last years of the Ferguson District boom period. Rail service was extended through Meadow Valley Wash, bringing coal supplies directly to the pumping station on a regular schedule. The Bamberger syndicate increased its water storage capacity to over 200,000 gallons, an amount sufficient to guarantee supplies during those periods when the pipelines or pumps were inoperable. Describing the town of DeLamar in 1909, the editor of the Caliente newspaper observed that

[t]he houses and streets are lighted by electricity and every house is equipped with modern water supply from mains [which] intersect the main thoroughfare (*The Prospector* 5/1/1909:1).

Populations declined in the Ferguson District between 1906 and 1909, lessening demand on the municipal water supplies. When the Bamberger syndicate announced the closure of the mill at DeLamar in late August of 1909, less than 500 people were reported to be living in the District (*The Prospector* 5/1/1909:1). After the mill closed, workmen began dismantling the pipelines which

carried the water from Meadow Valley Wash to DeLamar. The few miners and merchants who remained in the Ferguson District were forced haul their water supplies by barrel from the nearby Delamar Mountains' springs and wells.

Summary of Water Availability

Water was a critical bio-cultural factor in the lives of Ferguson District residents between 1892-1909. The local springs of the Delamar Mountains provided water of good quality but of insufficient quantity to support large scale industrial and municipal uses. Water shortages were frequently reported, forcing local residents to recycle the precious fluid. Water reuse greatly increased the risk of contamination and associated health hazards. By 1895, water had to be piped from Meadow Valley Wash to meet the increasing demands of the developing mining district. Water supplies became more abundant and predictable, but at a significant cost in human lives. The higher contaminant levels of the Meadow Valley Wash supplies were at least in part responsible for the typhoid fever outbreaks that occurred seasonally in the Ferguson District between 1895 and 1905. Those epidemics affected all segments of the

District's population, young and old, male and female, and resulted in 22 fatalities. The extension of the water piping system to many of the DeLamar residences by 1904 may have decreased the opportunities for water contamination. Typhoid fever cases decreased in number and severity, with no fatalities reported after 1905. Water quality and its abundance exerted a strong influence on quality of life in the Ferguson District and on the health of its residents.

Housing

Geographical and geological variables influenced the types of housing constructed in the Ferguson District. As noted in **Chapter II**, the settlements and mines of the District were located on the western slope of the Delamar Mountains, a high elevation range situated between the Mojave and Great Basin Deserts. Heat and cold, heavy winter snow, strong winds, and locally intense summer thunderstorms characterized the regional climate. Substantial housing was required to shelter residents from these climatic extremes. The consequences of insufficient shelter were hyper- or hypothermia and possible death.

To meet the physiological and psychological needs of its occupants, housing must also be of sufficient size to allow a minimum amount of space per individual. Crowded living conditions often compromise sanitary practices and facilitate the spread of disease. The psychological stresses of overcrowding undermine the individual's resistance to disease (McElroy and Townsend 1979). In the following pages, a reconstruction of the types of housing in the Ferguson District between 1892-1909 is linked with overall health and living conditions in the study area.

The first miners and prospectors in the newly-organized Ferguson District arrived during the spring months of 1892. A dozen or more tents were set up, approximately one-half mile north of the Magnolia mine (refer to **Figure 4**), and the camp named Golden City. Few additional details on housing in Golden City (renamed Ferguson in July, 1892) are available from the archival sources. The *Ferguson Lode* (1/2/1893) reported that Charles Garrett had set up a boarding house at Ferguson in January of 1893 and that a few other miners, including Alden Ferguson, continued to live in the camp (*Ferguson Lode* 12/30/1893:1). Archeological reconnaissance

conducted at the reported location of Golden City/Ferguson identified only two remaining structural features (Ferris 1990). A tent platform, measuring 9 feet by 9 feet, was recorded at the base of Gold Hill. The small size of the platform suggests that the tent probably functioned as a residence. Artifacts in close proximity included a small number (<50 artifacts) of late 19th century-early 20th century bottle glass sherds (alcoholic beverage bottles) and tin cans. These materials suggest a short-term use of the site.

The second feature comprised a shallow pit, measuring 20 feet in length by 30 feet in width. Artifacts surrounding this large depression included hundreds of beverage bottle fragments, numerous tin cans, and fragments of crockery and dinnerware. The abundance of these domestic items suggests that this structure may have functioned as a boarding house. Several other small artifact scatters are all that remain of the first Ferguson District camp of Golden City.

By June of 1892, the majority of Golden City's residents had relocated to Helene, moving their tents onto the alluvial fan south of the Magnolia mine. Tents provided limited shelter from the heat, often in excess

of 100 degrees F, and intense summer thunderstorms. As winter approached, many Helenites foresaw the need for more substantial housing. The mountains provided potential building materials in close proximity to the Ferguson District settlements. In 1892, dense stands of ponderosa and pinyon pine, as well as Utah juniper, grew within three miles of Helene. Cobbles and boulders of Prospect Mountain Quartzite were abundant in the alluvium of the western mountain slopes. By late September, the newspaper noted that

[a] miner's cabin is being erected on the lot directly back of the post office. It would not be out of order to see a number more such put up (*Ferguson Lode* 9/26/1892:1).

Within a week, a wind storm wreaked havoc in the Ferguson District camps.

The heaviest wind storm ever experienced in Helene occurred last Friday. Many tents were blown over, outbuildings overturned and it was impossible to walk about town. At Ferguson [Golden City], every tent was blown down and for a time it looked as if nothing could be saved. Mr. Sevenoak's tent above town and the lodging house at the April Fool were dismantled (*Ferguson Lode* 10/8/1892:1).

Heeding this windy warning, many residents hastened to purchase lots in Helene (prices ranged from \$10 to \$150 for property near Main Street) and began construction on their homes. Lumber was ordered from the Monkey Wrench sawmill, located in the timber stands a few miles east of Helene, and from other regional mills. A construction boom was soon underway in Helene. The newspaper commented that the "...sound of hammers can be heard on all sides" (*Ferguson Lode* 10/17/1892:3). Others used the abundant cobbles and boulders contained in the alluvium to build small stone cabins. By mid-November, 50 houses, "all good, substantial structures" (*Ferguson Lode* 11/14/1892:3) were completed. Lumber shortages were delaying the start of other buildings. These new shelters were tested by the forces of Nature as a severe windstorm, three earthquakes, numerous aftershocks, and a snow storm buffeted Helene during a one week period (*Ferguson Lode* 11/23/1892:3). Many of the remaining tents and outhouses were blown over and roof damage inflicted on the wooden and stone structures.

Despite the economic slow-down in early 1893, residential and commercial construction continued at Helene. Several frame hotels and lodging houses provided

accommodations for travelers and residents who could not afford to acquire property in the camp. Beds were available by the day, week, or month, with "reasonable rates" charged; these rates were never specified in the advertisements (*The Lode* 4/1/1893:4). Newcomers to Helene were often forced to improvise housing, until lumber became available for more permanent structures. *The Lode* (10/21/1893:1) reported that

John Horton has about completed the erection of a log cabin. Johnny says he doesn't think his joshaway wigwam will be as comfortable for the winter as a log cabin.

In order to assess the size and adequacy of residential housing in Helene, a sample of single-story dwellings was examined and selected variables evaluated. A total of five stone structures, representing 10 percent of the 50 houses reported by the *Ferguson Lode* in 1893, were measured to determine the floor space contained within each structure and the width of the walls. The structures were identified as having been residential units from the Lincoln County Tax Assessment Rolls for 1893, which indicated ownership and general locations for the five dwellings. Three cabins owned by the Sunshine

Mining Company and two cabins with unknown owners were measured during the field investigation (**Figure 10**). The smallest structure contained 72 square feet of interior space, the largest 163 square feet, with an average of 130 square feet (complete measurement data are presented in **Appendix A**). All walls were constructed of stone cobbles and boulders, with an average wall width of 1.6 feet. Census data is not available to determine the number of individuals who resided in each dwelling. Cook (1972) has shown in a cross-cultural study that no more than six persons will live in a space smaller than 350 square feet or less than 58 square feet per person.

Based on Cook's model, the archeological data indicate that none of the five sampled dwellings were large enough for six persons. The Helene cabins each contained floorspace sufficient for only one or two persons. This conforms to accounts from the *Ferguson Lode* which generally describe the majority of Helene residents as single or solitary men, whose families remained in other locations. The width of the walls suggest that the stone cabins of Helene were constructed with substantial walls which would have afforded good protection from the elements. The thick stone walls would have acted as

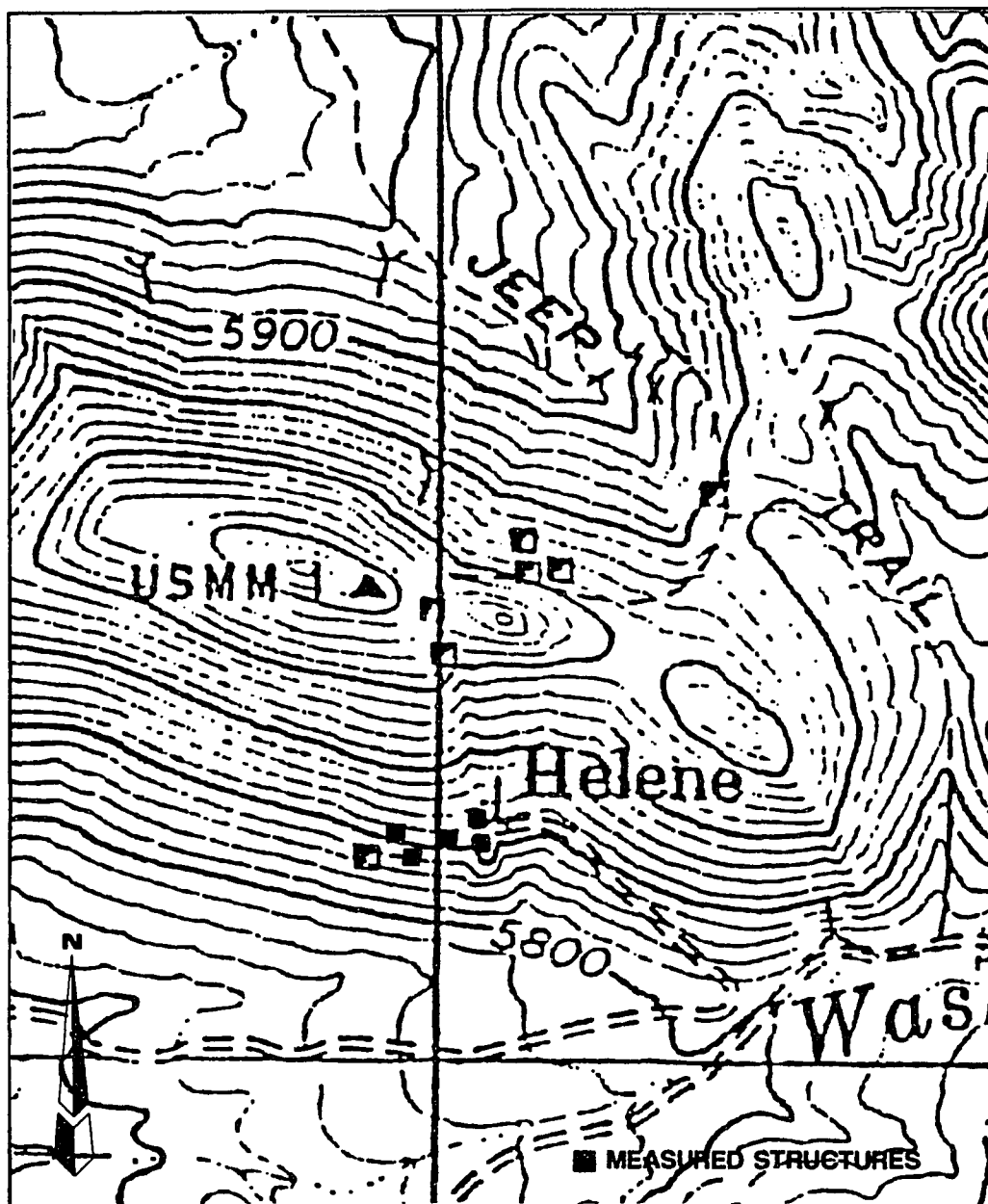


Figure 10. Location of measured structures in Helene, Nevada. USGS Topographic Map, Delamar Quadrangle, 1973. 1:24,000 scale.

thermal barriers throughout the year, retaining heat in winter and helping to keep the interior relatively cool during the summer months. Only tentative conclusions can be drawn about the thermal properties of the wood frame structures which were constructed in Helene. It can be speculated that such buildings were not as easily heated or cooled and provided less effective shelter from the weather extremes.

In the spring of 1894, Helene suffered a major depopulation, as merchants and residents moved to the now booming camp at Reeves. Captain J. De La Mar had recently acquired the Jim Crow-Monitor claims and was actively developing the new DeLaMar Nevada Company properties. Many of the wood frame structures in Helene were dismantled by their owners and hauled south to Reeves (renamed DeLamar in honor of the Captain in June, 1894). New arrivals in DeLamar found lumber in short supply and many opted to build with the available native stone. Residences were first constructed adjacent to Main Street, which ran east-west along the alluvial fan south of the new DeLaMar mines. In late June, the *De Lamar Lode* (6/25/1894:1) reported that the town consisted of 30 stone or frame buildings and 60 or more tents and

small stone cabins. As available lots near Main Street were sold, residents built on the hillsides and along the wash south of town.

Most of the new residences were single-story structures, although more elaborate homes were constructed as DeLamar grew and prospered. In February of 1895, T. E. Dula started building a large, two-story residence, "[o]f the Queen Anne style such as no other around here..." (*De Lamar Lode* 2/18/1895:4). The Native Americans, living along the wash south of DeLamar, also decided to enlarge their dwellings:

Indian town is making some extensive improvements in the real estate and if Bash Head Jim's residence continues to be added to it will be a skyscraper (*De Lamar Lode* 7/29/1895:3).

Entire buildings continued to be exported to DeLamar from neighboring communities. Pioche was particularly hard-hit by the structural cannibalism.

The old Wagner lodging house, on upper Main street [Pioche] is being torn down and will be removed to DeLamar by Mrs. E.H. Bawden... When we look back and think how many towns and ranches have been built up from buildings taken down in Pioche, we cannot help but think of what a lively and prosperous camp dear old Pioche has been... (*De Lamar Lode* 7/29/1895:3).

Despite the importation of structures and ongoing construction, housing shortages were frequently reported from 1895 through 1900. In the fall of 1896, the newspaper noted that "[o]ur population is still increasing and demands for cabins are numerous" (*De Lamar Lode* 9/21/1896:1). The DeLaMar Company responded to the housing crisis by constructing a bunk house and a 25-room lodging house for its employees. The Company also built a series of roomblocks, containing a total of 50 rooms, along the slopes south of the DeLaMar mines. The rooms were constructed of quartzite blocks, dressed and fitted by the DeLaMar Company stone cutters, and organized into from one to three room apartments. Other amenities of the DeLaMar "Company Row" complex included electrical lighting in each room, a bath house, and cleaning service "by one person who will attend to each house" (*De Lamar Lode* 9/21/1896:1). The apartments were provided to DeLaMar Company managerial and office staff at nominal charges. The additional company-funded units helped to alleviate the housing shortage.

On May 30, 1900, a devastating fire raged through DeLamar, destroying nearly 60 percent of the frame buildings along Main Street and adjacent side streets to

the east and north. Many residences and lodging houses were also totally consumed, leaving dozens homeless until reconstruction could be completed. Victims of the fire sought temporary lodging with friends or in make-shift shelters. Outhouses and water storage facilities were destroyed, further disrupting daily life in the town. Typhoid fever reached epidemic proportions in DeLamar within a month of the fire and an outbreak of whooping cough was reported among the children of the town (*De Lamar Lode* 7/17/1900:4). Inadequate housing conditions undoubtedly contributed to the severity of these disease episodes, which lasted throughout the summer and early fall of 1900. Many businessmen and workers elected not to remain in the devastated and epidemic-stricken town.

From 1901 until 1909, the population of DeLamar gradually declined. Miners and laborers were lured away to the booming mining camps of Tonopah and Goldfield. Several merchants moved their businesses to the new railhead at Caliente. In 1902, the sale of the DeLaMar Nevada Gold Mining properties to the Bamberger syndicate convinced many that DeLamar's heyday was over. Housing became increasingly available, as the number of DeLamar residents dropped from approximately 900 in 1901 to less

than 400 in 1909. Many of remaining workers, described as Slavs, Italians, and Austrians, elected to live in the former DeLaMar "Company Row": "[t]he Austrian portion of the population live mostly in low stone cabins of two to three rooms" (*The Prospector* 5/1/1909:1). These small, apartment-like rooms were undoubtedly more comfortable and economical than the available frame structures and were equipped with the added conveniences of electricity and indoor water piping. With the closure of the Bamberger-DeLaMar mill in August of 1909, the population of DeLamar dwindled to a handful of miners, who continued to occupy the stone cabins which dotted the hillsides of the town. The majority of the wood frame structures were dismantled and hauled to new locations in neighboring communities.

An assessment of DeLamar housing is not complete without information on the size of those structures. A sampling strategy was developed to gather data on the interior floor space of single-story structures. Census data collected at DeLamar in June of 1900 (U.S. Census 1900) enumerated 896 residents organized into 385 households. Measurements taken from 38 residential structures, 10 percent of the census recorded households

in 1900, provide information on the sizes of selected residences. Samples were drawn from four geographic locations within the town limits: rooms in "Company Row" on the northern edge of town; residences near the April Fool mine to the east of Main Street; residences in the vicinity of Nob Hill to the south of Main Street, and those located in the wash to the west of Main Street (Figure 11). Only single-story stone structures were measured, to assess more accurately the available interior floor space. The exterior wall widths of the structures were also noted, in order to evaluate the thermal efficiency of each dwelling. Interior floor space of the 38 sampled structures ranges from 54.4 square feet to 380 square feet, with an average of 178.6 square feet (complete measurement data are presented in Appendix A). Exterior wall widths averaged 1.9 feet.

According to Cook's (1972) data, a minimum of 58 square feet of living space is required by each individual within a household. The floor space of the 38 sampled DeLamar single-story residences averaged 178.6 square feet per unit, an amount sufficient for three persons. According to the DeLamar 1900 census data (U.S. Census 1900), 118 of the 385 enumerated households were

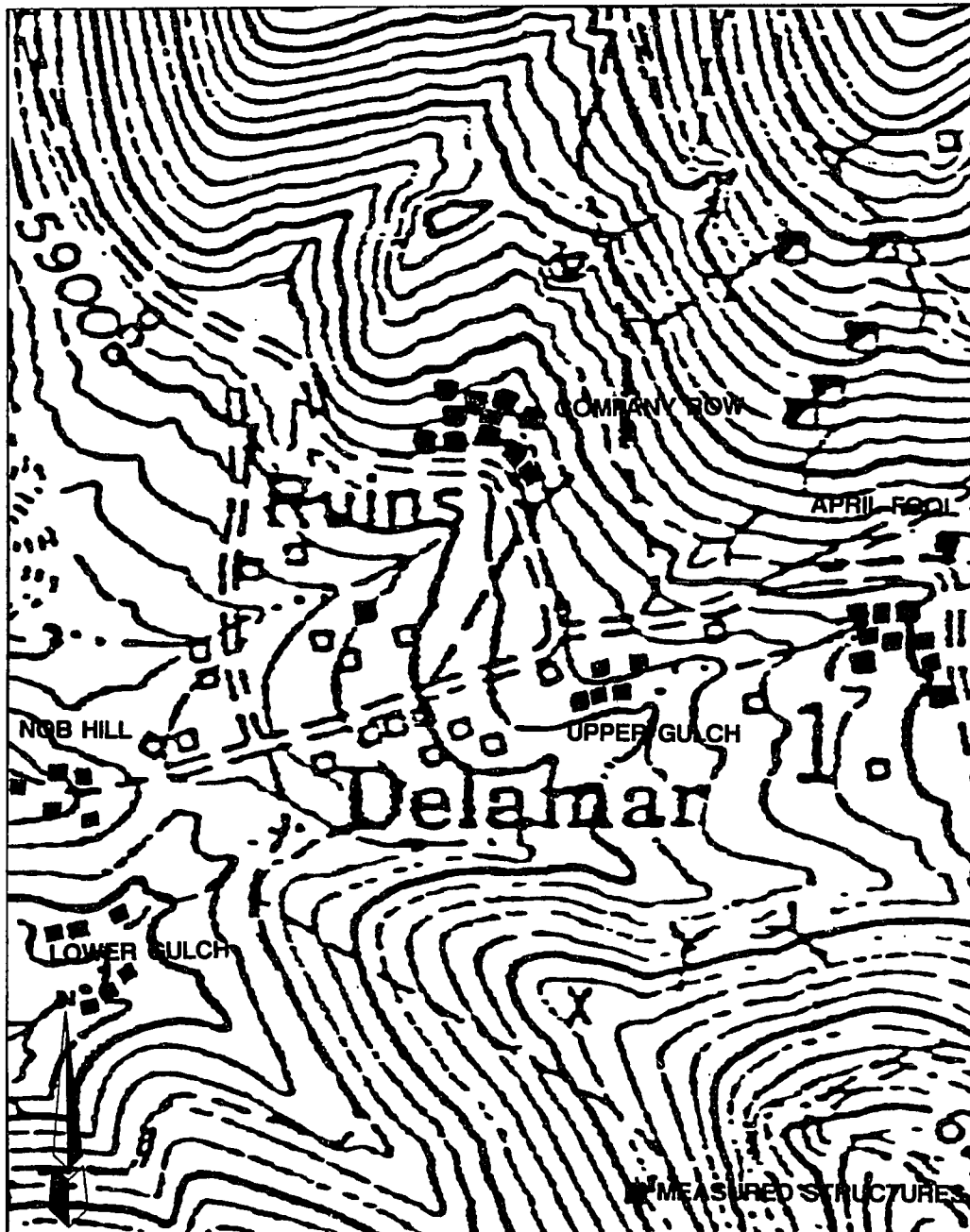


Figure 11. Location of measured structures in DeLamar, Nevada. USGS Topographic Map, DeLamar Quadrangle, 1973. 1:24,000 scale.

single person households, representing 30.6 percent of the total. Solitary males comprised the overwhelming majority (95 percent or 113 households) of the single person households. Households of two to five persons accounted for 221 of the 385 enumerated households or 57.4 percent of the total. The sampled DeLamar single-story residences would have provided ample living space for the 30 percent of the population who lived alone. More than 57 percent of the town's residents lived with from one to four other persons. For these households, the available square footage of the measured structures would have been marginally adequate or insufficient. Crowded living conditions would have been a causal factor in the spread of infectious diseases like influenza, typhoid fever, or pneumonia.

Summary of the Housing Data

These conclusions summarize the data concerning housing in the Ferguson District and its impacts on the health and safety of local residents. In the early camps of Golden City (Ferguson), Helene, and Reeves (later DeLamar), tents and improvised housing provided occupants with minimal protection from the elements. The initial

rush to the District occurred during the spring and summer months of 1892, when temperate weather permitted the use of inadequate shelters. With the onset of winter conditions, residents hurried to construct more substantial stone or wood frame structures for comfort and safety. The frequent reports of "prevalent" colds among the miners working at the Magnolia and April Fool mines suggest that weatherproof housing may not have been completed in time for some of the District workers (*Ferguson Lode* 12/9/1893:1). Archeological data obtained from selected Helene residences indicate that the stone structures afforded substantial year-round protection from the elements. The cabins would have provided adequate, thermally efficient housing for from one to three persons, without compromising the physiological or psychological needs of the individual. Few communicable diseases (other than the common cold) were reported among Helene residents, suggesting that overcrowding was not a serious problem in that camp.

During the boom period from 1894-1909, the newspaper documented frequent housing shortages in DeLamar. These appear to have been of limited duration and were occasioned by temporary shortages of building lumber, the

rapid influx of new residents, or the fires of 1900. Responses to these housing crises included the construction of several multi-room bunk houses and contiguous apartment units by the DeLaMar Company, and the establishment of additional privately-run lodging houses and hotels. Small stone or wood cabins were built by individual residents, often in close proximity to one another near Main Street. From measurements taken at 38 sampled DeLamar stone cabins, it is concluded that the stone walls, averaging 1.9 feet in thickness, would have provided substantial protection from the weather extremes of the region. The measured interior floor space of the stone residences would have sufficed for one to three persons; more than 30 percent of the census reported DeLamar households in 1900 fell within this range. For households with four or more persons, the available interior space would not have been adequate. Overcrowding and the close proximity of dwellings may have contributed to the frequent episodes of infectious disease, including typhoid fever, pneumonia, whooping cough, and influenza, reported during the boom years of DeLamar.

Sanitary Conditions

Sanitary conditions are critical factors in the social environment of any human population, potentially affecting the health and safety of individuals and the group. Many disease-causing organisms are spread by contaminated food or water sources. "Feces, directly or indirectly,...[are] the usual source of water and food contamination" (Nester et al. 1973:420). Since the emergence of the first cities, the efficient disposal of human wastes and refuse has challenged the organizational and technological capabilities of every society.

Hine (1980) concluded that the deplorable sanitary conditions which typified many 19th century mining camps were a behavioral reflection of the miner's basic attitudes about the environment and his place within a mining community. From 1849 onward, miners followed the boom and bust cycles, moving from one camp to another throughout West. They perceived themselves as sojourners in an area, never developing strong emotional attachments to a particular location or settlement. Lacking a "sense of place", miners "could gouge and litter with impunity" (Hine 1980:73). These irresponsible and anti-social attitudes were often diametrically opposed to the values

which women, professionals, and merchants brought to the mining communities. Social dissonance often resulted when these disparate viewpoints attempted to coexist.

Relative to this discussion is a consideration of sanitary conditions in the Ferguson District settlements, reconstructed and linked to health and living conditions during the period between 1892-1909. These data are also used to test Hine's hypothesis that miners' social behaviors reflected the impermanence of their associations with mining communities.

During the early spring of 1892, the tent camps of Golden City (Ferguson) and Helene were established by solitary miners and prospectors, whose principal focus was the quest for gold. Scant attention was paid to the legal organization of a community or the enactment of public ordinances to protect health and safety. By September of 1892, a number of merchants had set up shop in Helene and the wives and families of many miners were arriving in camp. With the construction of wooden and stone buildings and the completion of water pipelines into town, Helene took on the appearances of a permanent community. Local citizens were encouraged by the *Ferguson Lode* to patent the townsite and devise standards

for public safety. "From a financial, lawful, and peaceful standpoint, the sooner some action is taken the better" (*Ferguson Lode* 9/26/1892:4). During 1893, the town was legally organized and a post office, voting precinct, and school district established. The development of town ordinances, however, appears not to have progressed further than the enactment of a law to prohibit domestic animals from running loose in the streets (*The Lode* 1/1/1893:3). The sanitary practices of the first Ferguson District residents were not chronicled by the local newspaper. During archeological reconnaissance at Golden City and Helene, the author observed numerous trash scatters containing tin cans, bottle sherds, and other domestic items. These scatters were generally located adjacent to structural features, indicating that refuse was discarded in close proximity to residential and commercial buildings. Small depressions were also observed within a few yards of the habitation sites; these may mark the prior locations of outhouses and privies. This circumstantial evidence suggests that human excrement may have been deposited within a few feet of inhabited structures. Disease vectors, especially houseflies, rodents, and even strong

gusts of wind, could have spread contaminants from these refuse piles and privies to the food and water supplies of the nearby occupants. A reported case of typhoid fever in May of 1893 may have been caused by such mechanisms. That such incidences were not more common can only be explained by the relatively low population densities in Golden City and Helene and by the short duration of their boom periods.

Reeves rapidly evolved from a temporary bivouac for the April Fool miners to a full-fledged town. From April to July of 1894, 250 people of all ages, both sexes, many nationalities, and diverse occupations came to live in Reeves (renamed DeLamar in June, after the Ferguson District's new investor). As a result of this explosive growth, the basic municipal services could not keep pace with the increasing population. Water supplies were insufficient to meet local needs and the condition of local streets and roads were reported as "deplorable" (*De Lamar Lode* 7/2/1894:1). Residential and commercial refuse was discarded indiscriminantly around the town, provoking the newspaper to comment that

[a] snap-shot view of the garbage dump in the rear of the *Lode* [building] would make an

excellent subject of one of the fashionable impressionist pictures. If only the odor could be painted in, or else used as a frame (*De Lamar Lode* 7/16/1894:3).

Dogs, cats, and pigs roamed at will through DeLamar, strewing garbage in their wake. Privies were neglected and used as makeshift trash dumps. The growing community had also no protection against a municipal fire. "With our present limited abilities for fighting the fiend, no power on earth could save the entire business portion of town..."(*De Lamar Lode* 7/30/1894:3).

By mid-1895, sanitary conditions in DeLamar had dramatically worsened. Over 1000 people now lived in a community which still had no public health and safety codes. The newspaper began an editorial campaign to improve the situation. Concerned citizens were called upon to attend a public meeting on September 16, 1895 at Vietti's Hall, to enact public ordinances, and to take action on the "filthy conditions" (*De Lamar Lode* 7/22/1895:1) in town. Deputy Sheriff Jake Johnson ordered many residents to remove garbage from their premises. Compliance with the Sheriff's order was not immediate nor universal, as documented by the following account published several weeks later.

It takes a strong constitution to stand some of the stench one may meet in the course of a walk around town. It hardly seems possible that so much filth will accumulate in such a very short time, but we have the best evidence of it being so, and again we say for your own welfare, and the welfare of your neighbors, clean your back yards, at least" (*De Lamar Lode* 8/12/1895:1).

Within days of this report, Dr. Bjornson acknowledged that he had diagnosed more than 20 cases of typhoid fever in DeLamar. That number continued to rise in succeeding months, totaling 62 cases by year's end and claiming eight lives. Local residents speculated about the causes of the outbreak, citing the hot and dry weather conditions, fumes from the DeLaMar mill, contaminated water supplies, and the co-mingling of people from various regions (*De Lamar Lode* 9/16/1895:1). The newspaper and the town's physicians remained convinced that the lax sanitary practices of the townspeople were primarily responsible for the epidemic.

An inspection of back yards and outhouses (which in many instances form the front yard of a neighbor) presents pig pens, chicken coops, rubbish, decayed vegetable, spoiled merchandise with rotten meats, in short comprise a complete stink pot of destruction (*De Lamar Lode* 10/7/1895:1).

Town ordinances for DeLamar were finally approved by the Lincoln County Commissioners and enacted on October 1, 1895. The municipal limits of DeLamar were established at one square mile in all directions from Wertheimer's General Merchandise Store on Main Street. Within these boundaries, rubbish could no longer be thrown in the streets. Domestic garbage had to be hauled at least one mile down the wash southwest of town for disposal. All animal carcasses, including horses, cows, dogs, cats, and pigs, were to be buried within 12 hours of death. Deputy Sheriff Johnson was now empowered to prosecute those property owners whose "...privies, commodes, or cesspools...overflow or [are] in a condition to be considered a public nuisance" (*De Lamar Lode* 9/23/1895:1). Within weeks, a massive clean-up campaign was begun under the watchful eyes of the law. Winter snows and cold temperatures helped to slow the spread of disease-causing organisms from the privies and dumps. By December, the typhoid fever epidemic had run its course for 1895.

In the early spring of 1896, the *De Lamar Lode* blew the whistle on the local restaurants owners who were not

complying with the town health ordinances. The newspaper reminded the offenders that they were required to

throw the refuse of the dining room
and kitchen into a barrel and when it is
full have it carried out of the city limits.
Old cans that contained meats, vegetables,
or fruits should not be thrown about. In
fact, nothing of a food nature should be
left to decay at the back doors. (*De Lamar*
Lode 3/2/1896:1).

Local residents and businessmen were warned about the disposal of dirty water and organic garbage in their outhouses, as this was believed to cause disease. Supplies of chloride of lime were made available to DeLamarites by local merchants, for use as an outhouse disinfectant and deodorizer.

From 1896-1906, the *De Lamar Lode* waged a never-ending battle against the lax sanitary practices of DeLamar residents. In April of 1898, for example, the newspaper again decried the odorous conditions in DeLamar.

The most sickening stench comes from one of
the back alleys and it can almost be located...
and nobody can get an argument out of us if
they charge there are two-legged hogs in
DeLamar (*Daily Lode 4/26/1898:3*).

The newspaper made repeated efforts to develop a sense of pride in the community among local residents and to

encourage optimism in the potential longevity of DeLamar. "DeLamar is seeing its worst days now and the camp will improve and is good for many years yet" (*De Lamar Lode* 3/22/1899). During the summer of 1899, many residents had apparently responded to the Sheriff's annual clean-up demands. The *De Lamar Lode*, observing the town had never been so free of disease, hailed the new "regard of cleanliness" shown by the townspeople (*De Lamar Lode* 7/17/1899:1).

The recent improvements made in DeLamar's sanitary conditions were tragically undermined by the great fire of May 30, 1900. The fire destroyed at least 60 percent of the town's businesses and residences. Residents were crowded together in the remaining homes, lodging houses, and hotels while awaiting the reconstruction of DeLamar. The blaze also burned the wooden outhouse buildings, water storage barrels, and tanks. The outhouse pits were left completely exposed, allowing animals, wind, and water to spread their contents over the landscape. Residents were so preoccupied with reconstruction efforts that local ordinances on garbage removal went unenforced for weeks. Water supplies, in short supply after the

battle to put out the flames, were also at greater risk of contamination during the weeks following the fire. By mid-July, 10 cases of typhoid fever had been diagnosed, with many serious cases in need of hospitalization. The outbreak persisted into October and resulted in three fatalities.

After the great fire, Deputy Sheriff Johnson and Dr. J. Jennison began another crusade against the unhealthful sanitary conditions in DeLamar. The Sheriff threatened immediate prosecution for nuisance offenses, with fines, cleaning charges, and jail terms to be levied against all offenders. He published "Public Notices" in the newspaper every spring, advocating a general clean-up of all properties.

As this is the time of year when people are most subject to diseases of different kinds, and also when decayed vegetable matter and waste material are throwing off poisonous gases and disease germs, it is necessary for the public welfare that such things should be destroyed or carried to some place where they will be harmless
(De Lamar Lode 3/24/1904:1).

In May of 1905, an outbreak of typhoid and pneumonia was reported to have claimed over 50 lives in the contemporaneous mining camp of Tonopah, Nevada. The severity of this epidemic provided Dr. Jennison an

opportunity to again harangue DeLamar residents about the consequences of poor sanitation. Mounting his editorial soapbox, Jennison stated that

{a}ll mining camps seem prone to epidemics of disease in a most deadly form. The answer, I believe, is short and easy. It is just FILTH. I will give my reasons:
1. Our new mining camps have no sewerage systems for carrying away refuse from the kitchens and the excreta from water closets.
2. Residents in mining camps... show a disposition to crowd their habitations as close together as possible, thus favoring the accumulation of filth and garbage... (*De Lamar Lode* 5/9/1905:3).

Dr. Jennison recommended that DeLamarites regularly haul off their garbage, dig deeper privies, and screen their windows and doors to exclude house flies, if they wished to avoid epidemics and death from infectious diseases.

The public education efforts of the newspaper and the local doctors, as well as the Sheriff's efforts to strictly enforce DeLamar's health ordinances, undoubtedly contributed to the gradual decline of typhoid fever. (No other diseases with sanitation-related etiologies were prevalent in the Ferguson District). While outbreaks of typhoid fever, "the summer complaint", were reported annually after 1895, the number of cases and fatalities decreased dramatically through time. Fatalities

resulting from typhoid fever in 1896 were, for example, less than half the number which had occurred during the previous year. In subsequent years (with the exception of 1900), typhoid fever was generally responsible for only a small number of local deaths (Figure 12).

Summary of Sanitary Conditions

Observations based on this reconstruction of the Ferguson District sanitary conditions between 1892-1909 indicate that neither the organization of a viable community nor the development of public health and safety mandates were of great concern to the first miners and prospectors who rushed to the District in 1892. Only after the arrival of merchants, businessmen, and women were such organizational tasks undertaken. The disposal of human excrement and garbage in close proximity to residences was never legally interdicted in Golden City and Helene. Lax sanitary practices may have contributed to a fatality from typhoid fever in 1893. The relatively small populations and short boom period of these camps undoubtedly prevented more numerous episodes of diseases related to unsanitary conditions.

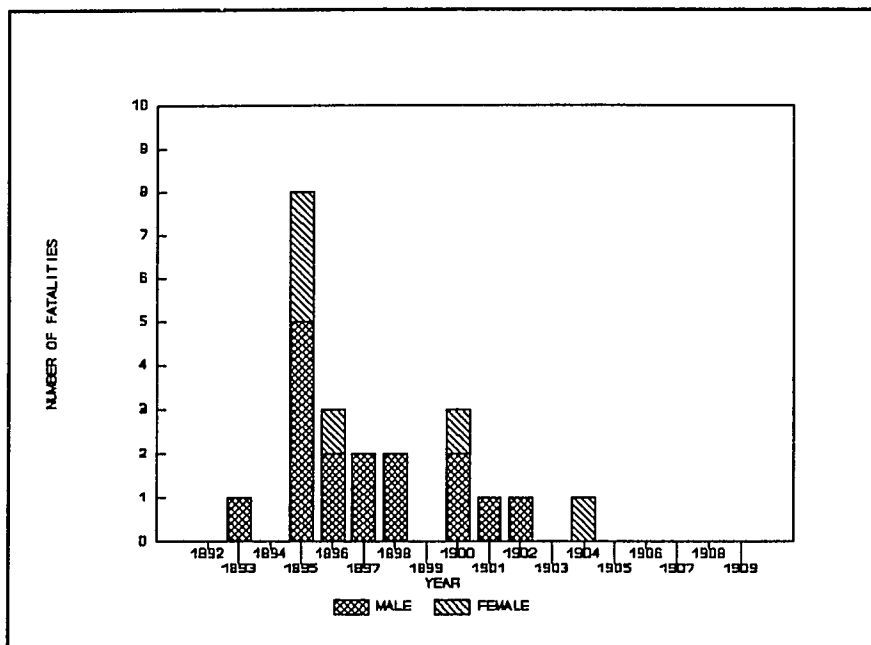


Figure 12. Ferguson District typhoid fever fatalities from 1892-1909.

The town of DeLamar was not so fortunate. Within weeks of its explosive growth, garbage dumps, foul odors, and overflowing privies were reported throughout the new community. Despite repeated warnings from the newspaper and local law officers, the town's organizational structure and health and safety ordinances were not approved until months later. Throughout the remaining years of the town, the miners and mill workers, the majority of the town's residents, appear to have complied

only sporadically with these ordinances. The repeated epidemics of typhoid fever were, at least in part, the direct result of the prevalent unhealthful sanitary conditions. Twenty-two DeLamar residents lost their lives to typhoid fever.

Circumstances in the Ferguson District conform closely to Hine's model of differing social behaviors among the major occupational groups of western mining camps. For the mining industry employees, Golden City, Helene, and DeLamar were just short-term stops on the circuit of mining camps. Many had recently come from other dying camps (i.e. Pioche) and anticipated moving on at the first signs of bust in the Ferguson District. They made minimal investments in housing, preferring to spend any surplus cash on high living. Such attitudes allowed them to dispose of garbage and excreta literally within their own yards, knowing that they would probably depart long before the filth and stench were totally intolerable. By contrast, the newspaper editor, law officers, merchants, and professionals made long-term commitments to these communities. They established businesses, built permanent residences, and worked to improve the quality of life in the community. The

editorials of the *De Lamar Lode* and Dr. Jennison expressed the continued frustration which these citizens felt when confronted by the social indifference of the miners. The gap between these dichotomous value systems was never bridged during the boom period of the Ferguson District.

Medical Care

As Wood (1979:xi) has observed, the ability to give care and comfort during illness or injury is a uniquely human trait, "...a product of our evolutionary history". The cultural innovation of medical care has increased the survival advantage of the species and minimized the social disruption attendant with episodes of disease or dysfunction. The types of health care available to residents is reconstructed for the Ferguson District during the boom period from 1892-1909. These data are integrated in an analysis of the effects of this critical bio-cultural factor on the survival rates of District residents.

From the first rush in early 1892 until December of 1894, Ferguson District residents could only obtain professional medical attention by traveling to Pioche,

50 miles to the north. The miners and other residents living in Golden City and Helene were obliged to attend to their own health problems and cooperate with one another in providing care to sick or injured co-workers. For example, when "Max Schaeffer... had the misfortune to fall from the horse he was riding" (*The Lode* 3/25/1893:1), he was brought back to Helene and cared for by his neighbors until his injuries healed. The more seriously ill or injured were taken by wagon, over the rough roads, to Drs. Bjornson or Campbell in Pioche. Sam Keeley, age 29, died from typhoid fever on May 30, 1893 in Pioche. He had been sick for several weeks but was not "brought over from Helene... to be placed under doctor's care" (*The Lode* 6/3/1893:1) until two weeks before his death; by then "...it was too late" (*Ibid*).

Although doctors were not present during the early months of the Ferguson District, alternative medical options were available. Two drug stores were opened in Helene by former Pioche residents. "Doc" Meeks, a pharmacist, ran one of these ventures and was considered a surrogate physician by many of the District's residents. Meeks was called upon to make diagnoses, prescribe medications, and preside at funerals. Members

of the local Chinese population may have practiced acupuncture, Eastern healing practices, or simply provided opium to relieve pain. The local newspaper carried the following account:

Dick Hunt met with a painful accident while at work in the stope of the Monitor tunnel Friday morning. He was knocking down some loose rock when a large quantity suddenly fell, one of the larger pieces striking him on the foot, breaking and nearly severing the second toe. Tie, the Chinaman, who is cooking for the Monitor people, took the patient in hand and Dick says he hasn't felt the least pain since... (*Ferguson Lode* 11/25/1893:1).

Captain J. De La Mar's infusion of capital into the Ferguson District during the spring of 1894 resulted in explosive growth at Reeves/DeLamar. The need for onsite medical facilities became readily apparent as the town's population continued to climb. In December of 1894, Dr. A. Bjornson relocated his practice from Pioche to DeLamar and contracted a residence and private hospital (**Figure 13**), located on DeLamar Street, south of the DeLaMar Company offices. While the building was being completed, Bjornson set up an office in the Palmer House and began treating patients. His arrival was apparently timely. During the first month of his practice in DeLamar,

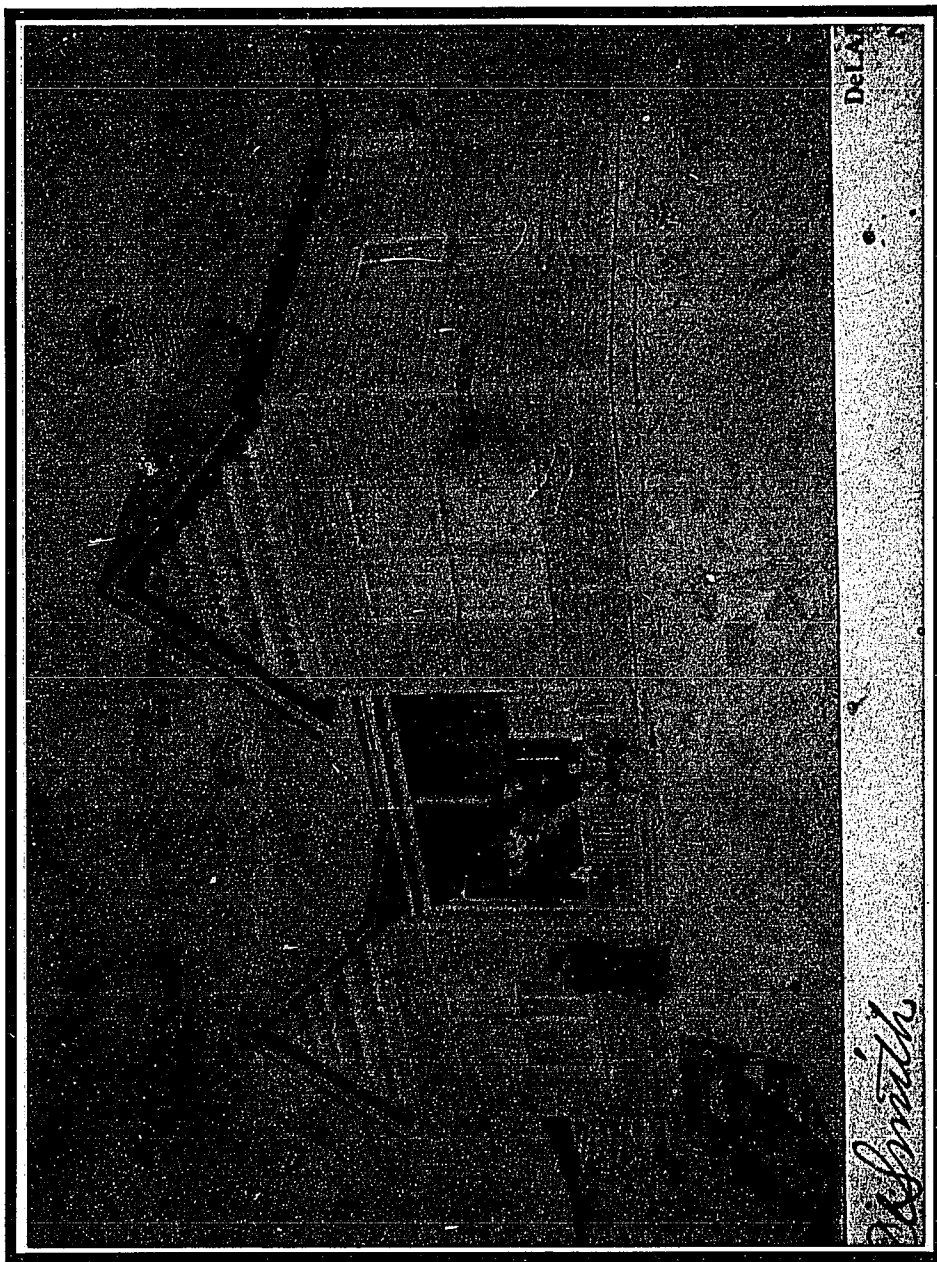


Figure 13. Dr. Bjornson's office, clinic, and nursing staff at Delamar, Nevada, ca. 1896. (Photograph courtesy of the Elbert Edwards Collection, Nevada State Historical Society, Reno, Nevada).

Bjornson was reported to have dressed a series of superficial wounds; set Jesse Coperly's leg, broken while brawling in a saloon; and treated the "considerable indisposition about town" (*De Lamar Lode* 12/10/1894:4). News of the Ferguson District boom also convinced Dr. M.W. Snow, an itinerant dentist who traveled a circuit around the Nevada mining camps, to visit DeLamar for a few days during December of 1894.

Throughout 1895, Dr. Bjornson served as the only doctor for the Ferguson District settlements and as the official physician for the DeLaMar Company. His duties included repairing the major and minor injuries sustained by the miners and construction workers, who were busy completing the new DeLaMar Company mill. Skin lacerations and broken bones were the most common traumas treated by the doctor. Peter Greggersen, while "...setting shots" (blasting) in the Flagstaff mine, prematurely detonated a shot which knocked "him off the timbers to the level, breaking his right leg in two places... and badly cutting his head and shoulders" (*De Lamar Lode* 2/18/1895:1). The doctor set the bones and stitched the cuts; within a month Greggersen was reported limping around town again.

In emergency situations, Bjornson traveled by wagon or on horseback to treat patients at the remote sawmill and woodcutters' camps high in the Delamar Mountains. In late January of 1895, he struggled through heavy snow to the woodcamp east of DeLamar to treat Joe Platt. Platt had been thrown from the seat of a wagon and his right leg crushed "between the ankle and the knee" by the wheels of the wagon (*De Lamar Lode* 1/21/1895:3). Bjornson set the broken bones and transported the injured man back to DeLamar for further treatment.

Disease episodes also occupied Bjornson's time and necessitated the hiring a two-person nursing staff to minister to those patients who required hospitalization at his clinic. During the winter months of 1895, measles, influenza, pneumonia, and colds were reported among the residents of the Ferguson District. The first typhoid fever epidemic was diagnosed in August, with Bjornson diagnosing 22 cases of the fever. None of the fever victims appeared, in his professional judgement, to be "seriously sick" (*De Lamar Lode* 8/19/1895:1). The doctor apparently underestimated the severity of these cases and within weeks, six of the typhoid patients were dead.

In December, Dr. Harry N. Mayo of the Sandwich Islands arrived in DeLamar and set up a medical practice. Within a week, he had performed his first surgery, operating on J.H. Clinton to sever a "contracted muscle on the right side of Clinton's neck" (*De Lamar Lode* 12/9/1895:3). The operation was successful and Clinton regained full mobility in his neck within weeks of the procedure.

With the arrival of a second physician, the DeLaMar Company was faced with the dilemma of selecting an "official" company doctor. The newspaper reported that

all employees of the DeLaMar Co. are requested to vote for their preference for a doctor. The vote to be cast at the Company's office by the 1st of January, 1896. The two physicians being voted for are A. Bjornson and H. Mayo (*De Lamar Lode* 12/16/1895:3).

The vote was inconclusive, indicating the employee reluctance to choose between the two doctors. In early January of 1896, a Dr. Wilbur relocated from Eureka, Nevada to DeLamar and was building a residence and office south of Main Street. Dentist Alonzo Hudge, formerly of Winemucca, Nevada, had also joined the Ferguson District medical community. He and Bjornson went into partnership

on a drug store and were reported "...doing a land office business" (*De Lamar Lode* 1/27/1896:3). With the influx of these medical practitioners, the DeLamar Company and local residents gave up any efforts to select a single medical care-giver. They instead enjoyed the advantages which competition among the doctors afforded the community.

Despite the increasingly favorable doctor/patient ratio in DeLamar, the town still did not have a municipal hospital. While each doctor maintained an office, the only facility for major surgery or long-term care was Dr. Bjornson's private hospital. The newspaper actively lobbied for a municipal facility throughout the spring of 1896, stating that "the necessity of a hospital is more important than anything else" (*De Lamar Lode* 2/3/1896:3). In July, the DeLamar hospital was finally completed, near Dr. Mayo's residence on April Fool Avenue.

Within weeks of the opening of that facility, rumors circulated around DeLamar that the hospital would have to close, due to a lack of support by the townspeople. The editor of the *De Lamar Lode* interviewed Dr. Mayo and

was given full information on how the hospital was to be funded.

Employees of the mining companies...will be charged a fee of \$2.00 per month for single men to insure medical care, surgical attendance, medicines, board and room, and nursing care in the event of sickness or injury. The hospital will receive 75 cents from that amount for its maintenance. Patients may select their physician from the available doctors. A fee of \$2.50 will be charged to married men and he [sic] will be entitled to go to the hospital if he chooses for care. Workers at the woodcamps and sawmills can have the same advantages if they pay the fees (*De Lamar Lode* 8/3/1896:1).

Mayo pointed out that "[a] lodging house or cabin is not a fit place for a sick man" (*Ibid*) and that the price for nursing care from other sources would easily exceed \$4.50 per day. Voluntary support of the hospital would make good economic and health sense for the community. Between August and December, an epidemic of typhoid fever struck DeLamar, with 34 cases reported. The eight beds of the municipal hospital were "all occupied by fever patients" (*De Lamar Lode* 10/5/1896:1) during this siege. That only three fatalities resulted from this outbreak can, at least in part, be attributed to the improved health care provided by the hospital.

Mayo's attempts to convince Ferguson District residents that a hospital and professional care warranted the expense were made in recognition of the independent nature of miners and mill workers in the late 19th century. During times of illness and injury, many chose to ignore the symptoms or pain, remaining in their rooms or cabins until too far gone for medical intervention. According to 1900 census data (U.S. Census 1900), more than 30 percent of DeLamar's population was comprised of solitary men who had no family in camp to provide nursing care. More than 50 percent of the other households were miners or mill workers who lived with one or two other men. All members of these households held jobs and would have been unable to provide adequate nursing care or food preparation for their roommates during periods of illness or injury. Only a hospital could offer the care and support that would help these individuals to survive disease or accidental trauma.

In lieu of seeking professional medical treatment, many Ferguson District residents also attempted to "doctor" themselves with patent medicines, obtained from drug stores and itinerant peddlers. These concoctions, generally containing a high percentage of alcohol, were

used to treat complaints ranging from rheumatism to tapeworms. A product called "Trib" was advertised weekly in DeLamar newspaper and described as an all purpose tonic, useful in treating both horses and humans. By 1905, an estimated \$80 million dollars worth of patent medicines were sold annually in the United States, the equivalent of a \$1.00 sale for every man, woman, and child in the country (*De Lamar Lode* 3/14/1905:4). Opiates, including laudanum and morphine, were also available from the local drug stores and were used to alleviate the pain of injuries, chronic conditions, and decaying teeth. John Franks of Helene died in May of 1899 from an "...accidental overdose of morphine which he was taking to alleviate the pain of a badly bruised foot" (*De Lamar Lode* 5/14/1899:4).

From 1896 through 1899, numerous physicians and dentists passed through the Ferguson District, many coming from failed mining camps and in search of greener pastures. Most established practices in DeLamar for brief periods and all appear to have worked cooperatively to provide good quality medical treatment for District residents. In December of 1896, Dr. Hagar from Winemucca, Nevada joined the medical community at

DeLamar, setting up an office on Main Street. Early in 1897, Dr. L.C. Hammond of Chicago also began a general practice there, using a room in the Dupont Lodging House as his office. In February, Hammond and Hagar collaborated to amputate the leg of P. Sullivan, who had been injured in a mine accident. Within days, the victim was reported "on the road to recovery" (*De Lamar Lode* 2/23/1897:1). In March, Hagar submitted the lowest bid to the Lincoln County Commissioners and was awarded a contract to care for the indigents of DeLamar. He agreed to provide medical care and medicines for "...the sum of \$25 per month" (*De Lamar Lode* 3/8/1897:1). During the same period, a "Dr." George Gardiner from Pioche was reported investigating the professional opportunities in the Ferguson District. After passing several bad checks and leaving numerous unpaid debts, the good "doctor" skipped town for Gold Creek, Nevada (*De Lamar Lode* 3/1/1897:1).

In November, Hagar and Hammond again cooperated to treat an 11 year old tuberculosis victim, but were unsuccessful in arresting the progression of the disease. During the same month, Drs. Mayo and Hammond began to treat a Native American who had accidentally shot himself

in the leg several weeks prior. Gangrene had set in before "Indian George" was brought to DeLamar for Western medical care by a Southern Paiute traditional healer. The patient was uncooperative and the doctors reported that it was "impossible to get him to take the treatment properly" (*De Lamar Lode* 11/22/1897:1). Dr. Mayo, with Dr. Hagar assisting, amputated the leg of Indian George "about midway between the knee and hip" in early December, 1897 (*De Lamar Lode* 12/14/1897:1). As shown in **Figure 14**, the operation was conducted outside, with Indian George resting on planks supported by wooden boxes. A bevy of onlookers, including Nick Johnson, a black Civil War veteran who worked as a nurse in the DeLamar hospital, watched the procedure. Despite early optimism that Indian George would survive the surgery, he continued to resist treatment and died on February 19, 1898 (*De Lamar Lode* 2/22/1898:1).

Dr. Bjornson, the first Ferguson District doctor, was also the first to give up his practice in DeLamar, perhaps as a result of the increasing competition for patients. "Dr. Mayo has moved into the residence recently occupied by Dr. Bjornson, on Pioche avenue" (*De Lamar Lode* 5/3/1897:1). Later in the year, Dr. Hudgins

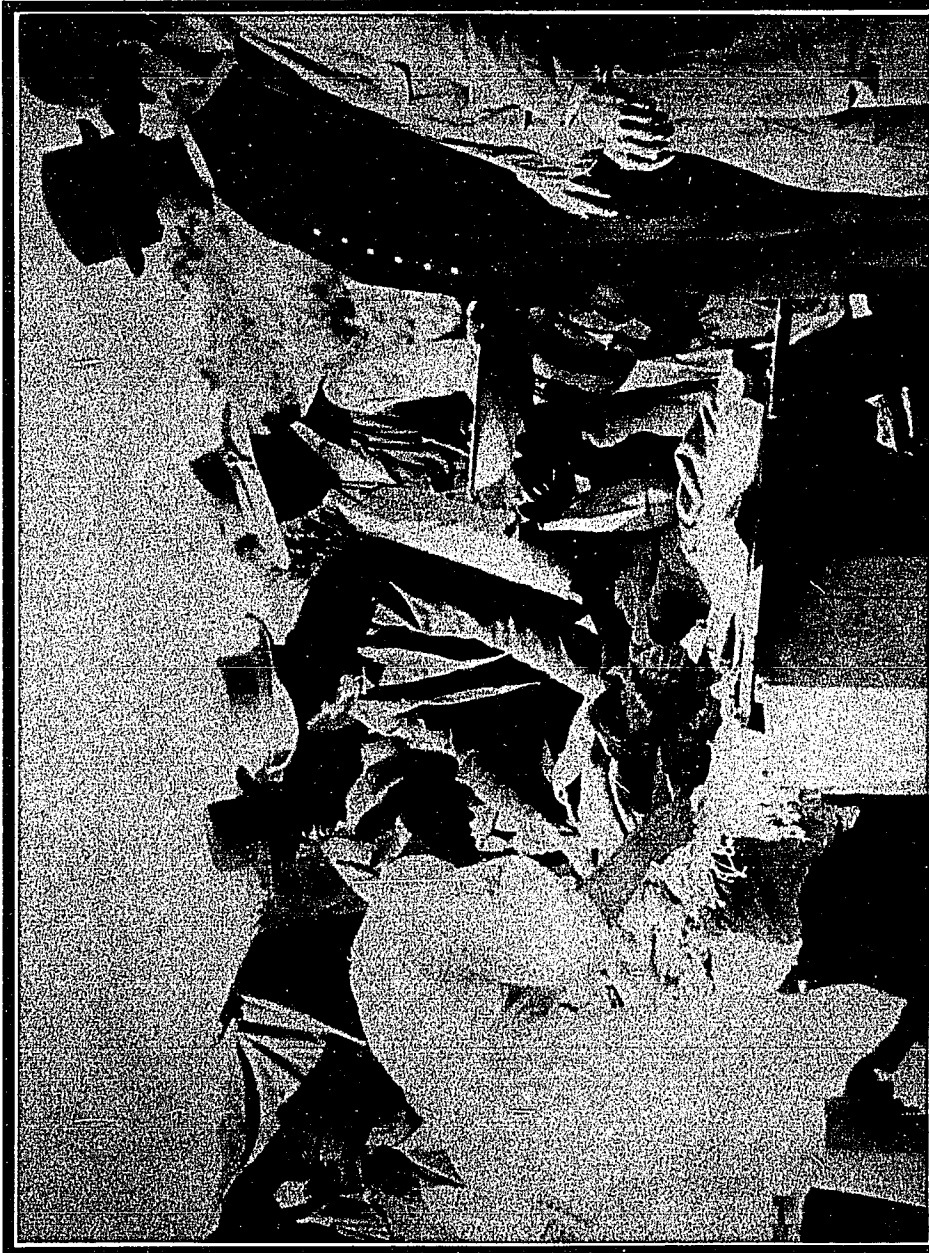


Figure 14. Dr. Harry Mayo amputating Indian George's leg, at Delamar, Nevada on December 14, 1897. (Photograph courtesy of the Lincoln County Museum, Pioche, Nevada).

closed his dental office and left the District. A Dr. Ascher, who specialized in diseases of the eyes, ears, nose, and throat, arrived in DeLamar and briefly worked in partnership with Dr. Hammond. Both Ascher and Hammond had moved on to other Nevada mining camps by February of 1898.

Drs. Mayo and Hagar continued to treat the assortment of injuries, illnesses, and medical needs of the Ferguson District residents. Mining and milling accidents occurred throughout the boom period of the District, resulting in serious traumas that required medical care. During the summer months, typhoid fever was prevalent in DeLamar and both doctors were "kept on the go" (*De Lamar Lode* 7/26/1898). As the number of cases of typhoid fever declined each fall, outbreaks of pneumonia and influenza were reported. Silicosis or miner's consumption, often aggravated by another infectious respiratory disease like typhoid fever or pneumonia, claimed numerous victims in DeLamar.

The Ferguson District doctors also assisted at childbirths, with Mayo reported doing "...a rushing business, presiding at the arrival of two boys inside of 24 hours" (*De Lamar Lode* 9/27/1898:3). They provided

post-natal and pediatric care, treating the outbreaks of brain fever, measles, scarlatina, whooping cough, and typhoid fever which afflicted the children of the settlements. The two doctors also repaired the cuts and broken bones of the local youngsters and were rarely idle.

Dr. Mayo, after three years in the Ferguson District, accepted employment in Salt Lake City, Utah and made plans to leave DeLamar in March of 1899. He turned over his DeLamar practice, which included private patients as well as a substantial portion of the DeLaMar Company employees, to Dr. J.E. Jennison, then residing in Salt Lake. Jennison, a graduate of the University of Minnesota, had worked as a surgeon for the Duluth and Iron Range Railroad until 1895, when he was compelled to come West because of ill health (*De Lamar Lode* 1/15/1901:3). His skills as a surgeon were demonstrated by the delicate and extremely technical procedures which he performed while in the Ferguson District. Within a month of his arrival in DeLamar, Jennison successfully completed a skin graft on Clarence Leavitt's ankle, using tissue obtained from Leavitt's brother. "This is a new operation for this section of the country and the success

of the operation will be watched with interest" (*De Lamar Lode* 4/4/1899:1). During the next decade, Jennison performed three other skin grafts, numerous limb amputations, delicate eye surgery on a small boy, and removed two cancerous tumors. He also rejoined two severed fingers to the hand of a DeLamar mill carpenter (*De Lamar Lode* 8/4/1906:3). When Dr. Campbell of Pioche suffered blood poisoning in his arm and faced amputation of the limb, he elected to have Jennison perform the surgery, rather than seeking more sophisticated medical care and facilities in Salt Lake City (*De Lamar Lode* 9/23/1902:3). All of these patients survived and the operations were reported as successful.

Jennison was also actively involved in efforts to improve sanitation and overall health conditions in DeLamar. During the stressful months which followed the fire of 1900, the doctor filed a weekly "Health News" column with the newspaper. The column reported on the medical condition of the hospital patients, including the many typhoid fever cases and accident victims. Jennison also repeatedly admonished local residents to boil their water supplies and dispose of organic garbage away from their dwellings. He expanded the staff of the hospital

to three attendants, under the supervision of a professional nurse. In July of 1900, Jennison hired a Miss Higgins as a domestic for the hospital, to allow the nurses more time with the patients. Two years later, the doctor had water pipes installed in the hospital, providing both hot and cold water for use in the facility.

By 1903, the heyday of DeLamar was over and miners and mill hands were steadily being lured away by the promise of higher wages in Tonopah and other southern Nevada camps. All of the other physicians had exited the Ferguson District, leaving Dr. Jennison as the only source of professional medical care. Recognizing that the hospital was in financial jeopardy, Jennison lowered the monthly contribution rate to \$1.00 for single men and \$2.00 for men with families. In March of 1904, he quipped to the editor of the newspaper that "the health of the people of DeLamar is so good that his position is almost a *sine cure*" (*De Lamar Lode* 3/22/1904:3). Jennison remained until the closure of the Bamberger-DeLaMar mill, undoubtedly dancing in the dawn with the other residents on August 31, 1909. He sold his office

and residence for \$200 and, with his wife and daughter, departed for Los Angeles, California.

Summary of Medical Care Availability

The reconstruction of data related to medical care in the Ferguson District indicates that the availability and quality of such care improved as the District settlements matured. From 1892 to late 1894, no doctors were present in the camps and residents were forced to travel to Pioche for medical attention. Alternatives to the arduous trip included reliance on the advice and recommended treatments of a local pharmacist or the care of other non-professionals, including the practioners of Chinese medicine. At least one fatality can be attributed to the lack of professional medical care in the Ferguson District during this two-year period.

After 1895, the rapid expansion of the DeLaMar Company operations and the growth of DeLamar encouraged a number of doctors and dentists to set up practices in the District. Archival accounts suggest that the majority of physicians who practiced in the Ferguson District were competent medical professionals. Drs. Bjornson, Mayo, Hagar, and Hammond diagnosed and treated

the myriad of illnesses and injuries common to Western mining camps, with a high overall rate of success. The survival rate during the typhoid fever epidemics, for example, generally exceeded 85 percent of the reported cases. Dr. Jennison successfully performed delicate surgeries which would have been considered high-risk procedures even in more elaborate operating theatres. More specific data on morbidity and mortality rates for the Ferguson District are presented in **Chapter V**.

Medical care facilities were also available to all residents of the District during the boom years. Employees of the DeLamar Company, who often numbered over 300, subsidized the DeLamar municipal hospital. A funding program, the equivalent of modern-day medical insurance, guaranteed hospitalization with board, their choice of physicians, and nursing care to all participants, for a fee which amounted to less than one day's pay per month. This coverage was extended to other Ferguson District employees and their families at the same nominal charges. The availability of a hospital and nursing staff enhanced the effectiveness of the medical treatment provided by the local doctors.

Synthesis of the Bio-cultural Factors

Health and living conditions in the Ferguson District were affected by the interplay of the bio-cultural factors analysed in this section. Food supplies were generally abundant and reasonably priced during the period between 1894 and 1909. Important staple foods, especially fresh vegetables, fruits, milk, and meats, were more readily available in the Ferguson District settlements than at the contemporaneous mining camp of Tonopah. Malnutrition and dietary insufficiencies did not affect the health of District residents.

The initial water problems which plagued the area dictated that dry mining and milling processes be used in the Ferguson District until more abundant water supplies could be guaranteed. These processes endangered the health of local workers and residents by generating persistent clouds of silica-rich dust which filled the mines and mills. Many residents died from the effects of this dust. The water shortages were eventually solved by the development and storage of additional supplies from Meadow Valley Wash. These surface water supplies were particularly susceptible to contamination by coliform bacteria and may have caused the outbreaks of

typhoid fever which occurred seasonally in the District. Periodic temporary shortages increased the risk of water reuse and subsequent contamination.

Lax sanitary practices and crowded housing conditions can also be implicated in the persistence of infectious diseases like typhoid fever, pneumonia, and influenza in the Ferguson District. These disease episodes resulted in numerous fatalities in the Ferguson District during the boom years. The availability of doctors, a hospital, and nurses helped to lessen the impacts of the injuries and illnesses on the local population. Morbidity and mortality data contained in **Chapter V** will permit a more precise assessment of overall effects of these critical bio-cultural factors on the survival of Ferguson District residents.

CHAPTER V

MORBIDITY AND MORTALITY ANALYSIS

Introduction

A total of 182 individuals are reported to have died in the Ferguson District between 1892 and 1909. The pattern of mortality observed in the District during the study period can be attributed to the interplay of several bio-cultural variables. Food and water supplies, housing, sanitary conditions, and available medical care affected the health and survival of local residents. Contaminated water and lax sanitary practices have been implicated in the proliferation of *Salmonella typhi*, the micro-organism responsible for seasonal outbreaks of typhoid fever. Local housing types and their spatial patterning would have facilitated the spread of other infectious diseases. Occupational hazards, which included concentrations of silica-laden dust, threatened workers in the study area.

The population characteristics of the Ferguson District also influenced local morbidity and mortality. Census data for the DeLamar precinct, collected in June

of 1900, show a total population of 896 individuals. Of that total, 550 (61.4 percent) were adult males, 142 (15.8 percent) were adult females, and 204 (22.8 percent) were children under the age of 19 (U.S. Census 1900). Most of the residents probably did not, at least initially, suffer from degenerative maladies (i.e. cardio- or cerebro-vascular diseases) or debilitating conditions (diabetes, rheumatism, etc.). Work in the mines, mills, and life in a remote frontier camp would not have attracted those already suffering from such complaints. The population characteristics recorded in 1900 are presumed to have been typical of the Ferguson District throughout the period under consideration.

Principal Causes of Death

Archival sources were used to reconstruct morbidity and mortality patterns in the Ferguson District between 1892-1909. Supplemental data was obtained during field reconnaissance and mapping at the two cemeteries associated with the District settlements; these are presented in **Appendix B**. Fatalities can be attributed to the following general causes: infectious and chronic

diseases, substance abuse, and traumas. Figure 15 shows this data by year and broad categories. Table 4 specifies the causes of death, expressed as percentages of the total mortality and narrative considerations of the leading causes of death are discussed.

The most common infectious diseases present in the Ferguson District were those which attacked the respiratory system. Pneumonia, influenza, tuberculosis, whooping cough, and "strep" throat (*Streptococcus pyogenes*) were reported throughout the boom years of the District. These diseases accounted for 26 deaths among Ferguson District residents or 14.2 percent of the total mortality.

The most virulent of the infectious respiratory diseases was pneumonia, which claimed a total of 22 lives from all segments of the local population. Pneumonia is an inflammation of the lungs, caused by one or more micro-organisms. The most common of these infective agents is *Streptococcus (Diplococcus) pneumoniae*, normally present in the upper respiratory tract of all human beings (Nester et al. 1973). *S. pneumoniae* proliferate whenever the protective mechanisms of the

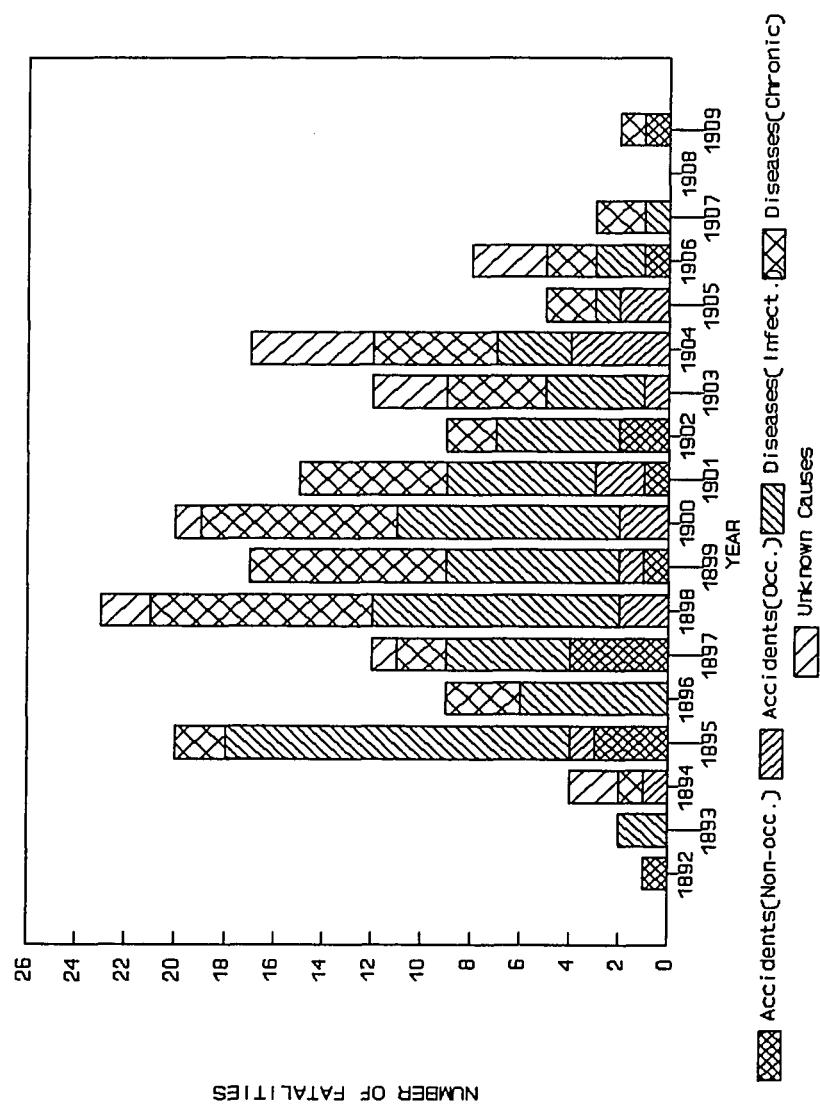


Figure 15. Principal causes of death in the Ferguson District, 1892-1909.

Table 4. Ferguson District mortality, 1892-1909, by sex and age.

Cause of Death	Sex (%)		Age (%)			
	M	F	>50	19-50	≤18	Unkn.
Accidents	10.9	---	1.6	9.3	---	---
Chronic Diseases	4.3	.6	1.6	2.7	.5	---
Cardio/ Cerebro Vascular Disease	8.3	2.1	6.5	3.2	.5	---
Respiratory Diseases	25.8	.5	4.9	12.6	.5	7.1
Other Infectious Diseases	11.6	4.3	1.6	8.2	4.9	1.0
Suicide	1.0	.5	---	1.6	---	---
Homicide	1.6	.5	---	1.6	.5	---
Maternal Mortality	---	1.6	---	1.6	---	---
Perinatal/ Infant Mortality	7.6	4.9	---	---	12.6	---
Other Causes	11.5	1.6	3.2	6.5	---	---
Totals	N= 151	31	36	88	37	21

lungs fail (i.e. the cough reflex is depressed) or other stresses lower the individual's resistance to infection. Less common pathogens which cause pneumonia are enterobacteria of the genus *Klebsiella*, present in contaminated water supplies (Nester et al. 1973). The symptoms of pneumonia include inflammation of the lung pleura, high fever, chest pains, and the production of sputum. The infection is spread among individuals by droplets of mucus or sputum. Populations experiencing crowded living or close-contact working conditions are at risk of wide-spread pneumonia episodes. Effective treatment of the disease is dependent upon the use of antibiotics, especially penicillin.

Between 1892 and 1909, nearly 50 cases of pneumonia were reported in the Ferguson District. The outbreaks were seasonal in nature, with the majority of cases diagnosed in winter (Figure 16). During these periods of inclement weather, District residents spent more time indoors, in close contact with others. Individual resistance to disease may have been compromised by exposure to cold temperatures and other respiratory infections, including the common cold and influenza. Workers employed in the mines or at the DeLamar mills

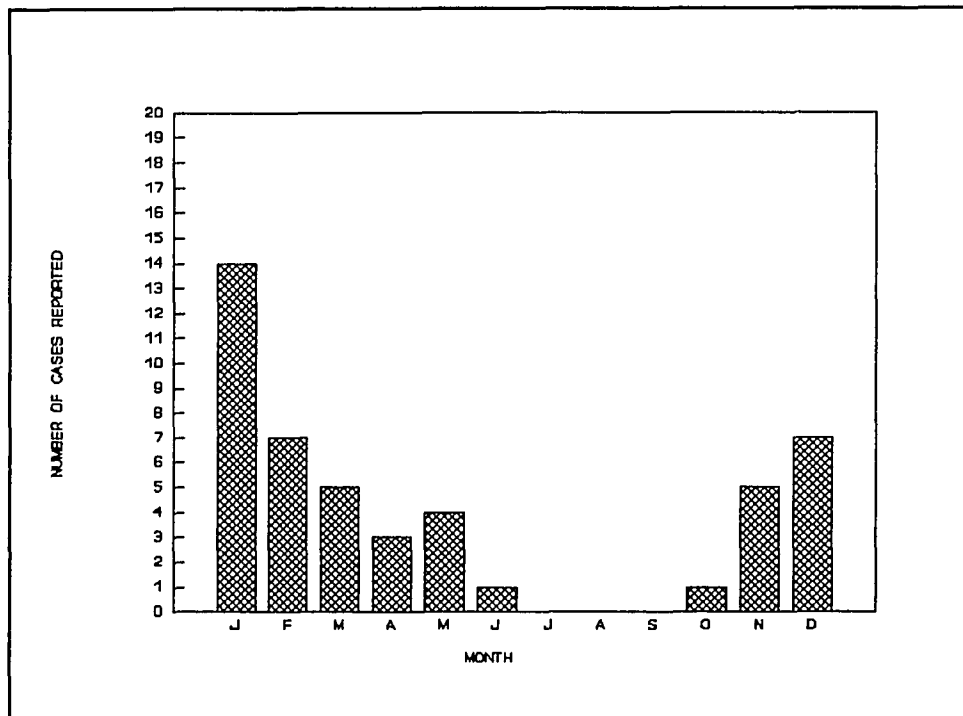


Figure 16. Monthly totals of reported pneumonia cases in the Ferguson District, 1892-1909.

would have been particularly susceptible to pneumonia. The rapid temperature changes experienced while walking from the warm mine shafts or hot mill boiler rooms to their residences or lodging places would have left them more vulnerable to chills and exposure. Silica dust concentrations in their lungs would have facilitated the proliferation of the bacterial pathogens.

The Ferguson District physicians could provide only the most rudimentary medical intervention in pneumonia

cases. Since antibiotics were unavailable at the turn of the century, the doctors attempted to control the fever and other complications through bedrest. In the early 1900's, pneumonia was the second leading cause of death nationwide (Zanjani 1990:55). The mortality rate from pneumonia in the Ferguson District rose to approximately 47 percent of all reported cases during this period.

Other infectious respiratory diseases accounted for fewer fatalities among District residents. Influenza, whooping cough, and "strep" throat each claimed one life between 1892 and 1909; all of the victims were children, under the age of 12. Deaths from tuberculosis accounted for only 1 percent of the total Ferguson District mortality. The low incidence of this disease in the District is remarkable, since tuberculosis was the principal cause of death among Americans at the turn of the century (Nester et al. 1973).

Infectious diseases which were more systemic in nature also accounted for fatalities in the area. **Figure 17** displays both respiratory and systemic infectious diseases for the Ferguson District (40.4 percent of the total mortality). Typhoid fever was the most prevalent

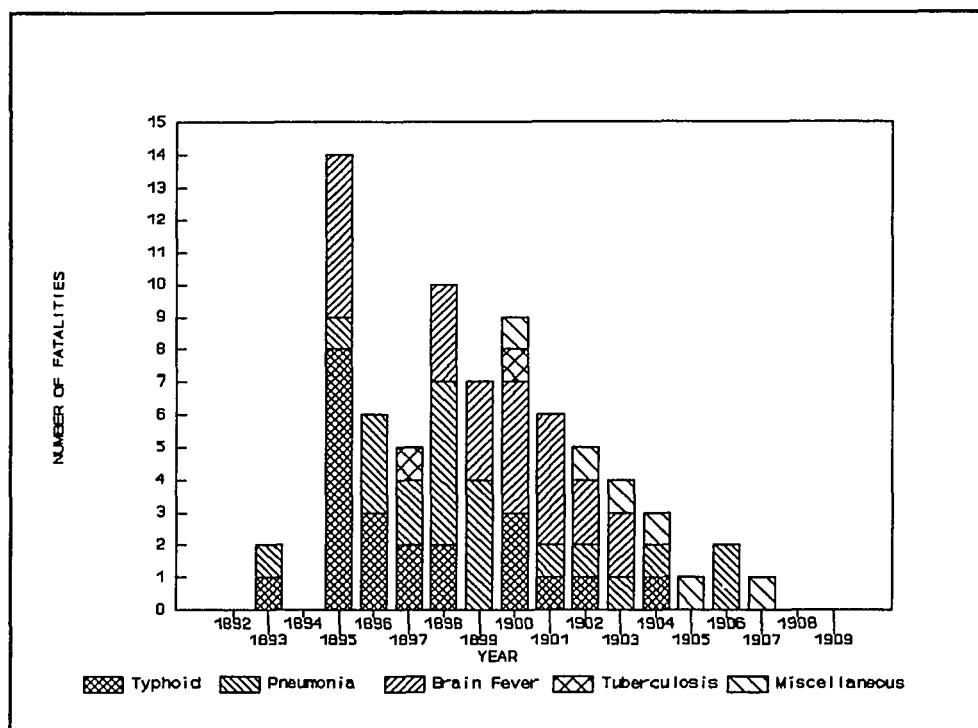


Figure 17. Fatalities from all infectious diseases in the Ferguson District, 1892-1909.

of those diseases, claiming 22 lives (12 percent of the total mortality). *Salmonella typhi*, the causative agent, is ingested with contaminated foods or water or transmitted through contact with a carrier (Nester et al. 1973). The organism proliferates rapidly, causing the victim to experience a high fever (104-106 degrees F), headache, and abdominal pain within the first few days of the illness (Brunner and Suddarth 1975). Rose-

colored spots often appear on the abdomen and are considered diagnostic of typhoid fever. As the disease progresses, other organs including the spleen, intestines, and lungs are often involved, with ulceration and/or perforation of the peritoneum and intestines common. Prior to the discovery of antibiotics, mortality from typhoid fever was high and recovery time slow (Brunner and Suddarth 1975).

In the Ferguson District, all segments of the population were affected by the periodic typhoid fever epidemics. Two infants (less than one year old) died during the outbreaks. Men and women succumbed to the "DeLamar fever" (see Figure 18). Over 63 percent (N=14) of the typhoid fatalities were adults between the ages of 22 and 43. Mortality from typhoid fever gradually declined, as sanitary conditions and medical care improved, and depopulation of the District settlements occurred (refer to Figures 10 and 13).

Measles, scarlet fever, and "brain fever" also contributed to mortality in the Ferguson District. Infants and children were most at risk from these systemic infectious diseases, which claimed 26 lives (14.2 percent of total mortality) from 1892 to 1909.

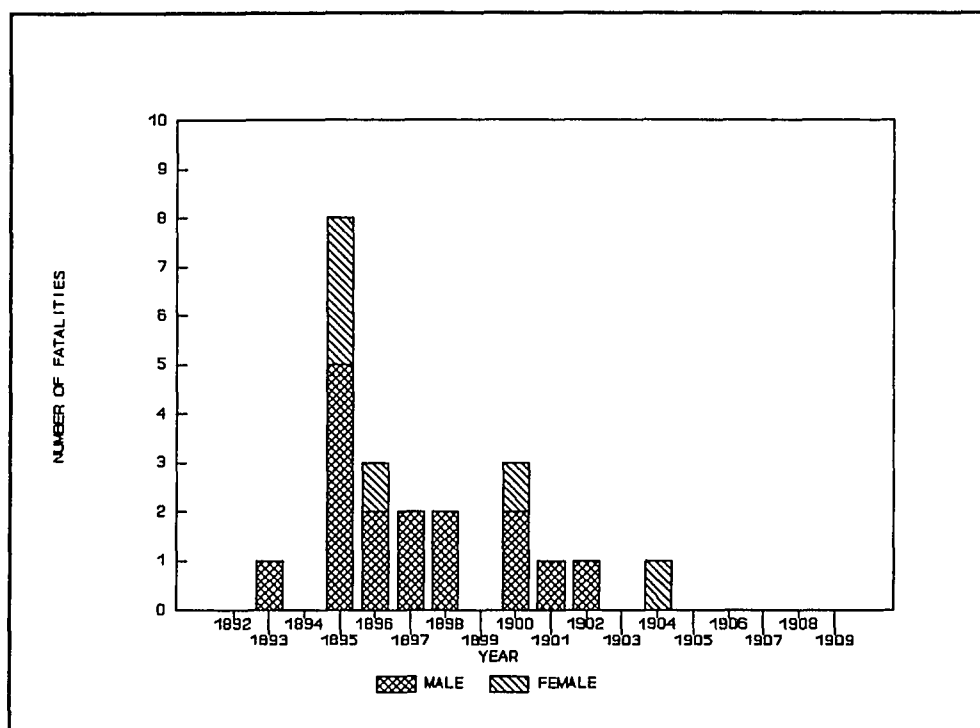


Figure 18. Fatalities from typhoid fever in the Ferguson District, 1892-1909, displayed by sex.

Measles killed two males, one aged 7, the other a young adult, age 24. Scarlet fever was responsible for the deaths of two children under age 9. "Brain fever" was the term applied to a fever, generally of short duration, which exacted a heavy toll among District infants less than a year old. Symptoms included restlessness, high fever, "spasms" or convulsions, and death within minutes or hours after the onset of the disease. The fever may

have been bacterial or viral in origin; its precise etiology cannot be determined from the archival sources which are descriptive not diagnostic. A total of 23 infant deaths (14 males, 9 females) resulted from "brain fever", making it the leading cause of death among District residents under age 19 between 1892-1909 (63 percent of total infant/child mortality).

Infections following childbirth were responsible for the deaths of three women in the Ferguson District from 1892-1909. The reported illnesses are assumed to have been puerperal (childbirth) fever, caused by the prevalent *Streptococcus pyogenes*. The bacteria are frequently transmitted during childbirth by direct contact with contaminated hands or instruments (Nester et al. 1973). The median age of death for the three women was 25 years.

Other infectious diseases alleged to have been common in Nevada mining camps (Lord 1883; Zanjani 1990) were conspicuously absent in the Ferguson District. No cases of cholera, small pox, dysentery, or diphtheria were reported and no fatalities attributed to any of those diseases. The symptoms or effects of venereal diseases were not documented in the archival sources and no fatalities were diagnosed that resulted from these

causes. These "social" diseases were probably present, but remain unreported in the archival sources due to the *mores* of the period.

Mortality rates from chronic maladies were substantially lower than those from infectious diseases in the District between 1892 and 1909. Infectious diseases of all types were the causal agents in over 40 percent of total Ferguson District mortality. Fatalities from chronic conditions (including silicosis) accounted for 21.8 percent of total mortality in the study area. Chronic diseases diagnosed by the local physicians included Bright's disease (diabetes), cancer, cardiovascular and cerebro-vascular diseases, kidney disease, and silicosis (phthisis or miner's consumption). Deaths from chronic diseases (other than silicosis) occurred predictably among the older residents of the District. Nineteen fatalities resulted from cardiovascular or cerebro-vascular diseases. The median age of death for the three women who succumbed to these conditions was 69 years old. For the 16 men who died of these causes, the median age of death was slightly younger than the women, about 60 years old. Cancer, Bright's disease (diabetes), and kidney disease claimed

a total of nine lives, including one women and eight men. Median age of death could not be computed for these fatalities through gaps in the archival records.

Accurate assessments of mortality rates from silicosis are more difficult to obtain. The condition was caused by long-term inhalation of the fine, silica-rich dust produced during the mining and milling of ores like the Prospect Mountain Quartzite of the Ferguson District. In the lungs (and stomach to a lesser extent), the angular dust particles irritated the tissues. Fibrous nodules eventually enclosed the irritants and fluids collected in the lungs, ultimately impairing lung function (Foster 1910; Lingenfelter 1974). The "hard, racking cough" (Young 1970:207), which developed as the individual's condition worsened, resembled that of tuberculosis, hence the name "miner's consumption". As Lingenfelter (1974) noted, the relationship between the inhalation of silica dust and the debilitating condition of mining employees was not understood, even by medical personnel.

As late as 1911, physicians in Butte, Montana, where about half the miners were still suffering from it [silicosis], testified to a legislative committee that dust was 'absolutely not responsible

for the miner's disease' (Lingenfelter 1974:16).

Solidification of the lung tissues and fluid accumulations left silicosis victims particularly susceptible to other forms of respiratory disease. The common cold, influenza or pneumonia would kill the individual long before silicosis had exacted its toll. Typhoid fever or other infectious disease could also prove fatal for the silicosis sufferer, whose resistance was already weakened by his chronic condition. For these reasons, other diseases were often listed as the primary causes of death for mining camp residents who suffered from silicosis, making the data difficult to compile.

Mortality from silicosis also went unreported when the individuals did not die in the mining settlement where the condition was contracted. As the disease progressed, most employees were forced to quit work. In aggravated cases, such as those reported in the Ferguson District, debilitation could occur within two years after the onset of the disease. Many employees were reported by the local newspaper to have returned home, gone to live with friends or relatives who could care for them, or sought cures in other areas. Those victims who died away from the Ferguson District have to remain untallied

in the mortality rates developed for that chronic condition in this analysis.

From 1892-1909, 24 deaths in the Ferguson District were attributed to "lung congestion" or "dust accumulations in the lungs". All of the victims were male (Figure 19), with a median age at death of 42 years. Deaths attributed to silicosis occurred during nearly every month of the year throughout the study period (Figure 20), as would be predicted for a chronic condition. These fatalities comprise 13 percent of the total Ferguson District's mortality. It is probable that this chronic condition precipitated some of the pneumonia and typhoid fever fatalities as well.

The total number of individuals who died from silicosis can never be accurately determined. Estimates in the contemporaneous Salt Lake City newspapers placed the toll at over hundred men. Other popular histories have repeated or exaggerated those figures to include women, children, and mules (Murbarger 1956).

Many District residents left the region when they became too debilitated to work. The *De Lamar Lode* chronicled the last weeks of Frank Carter's struggle with

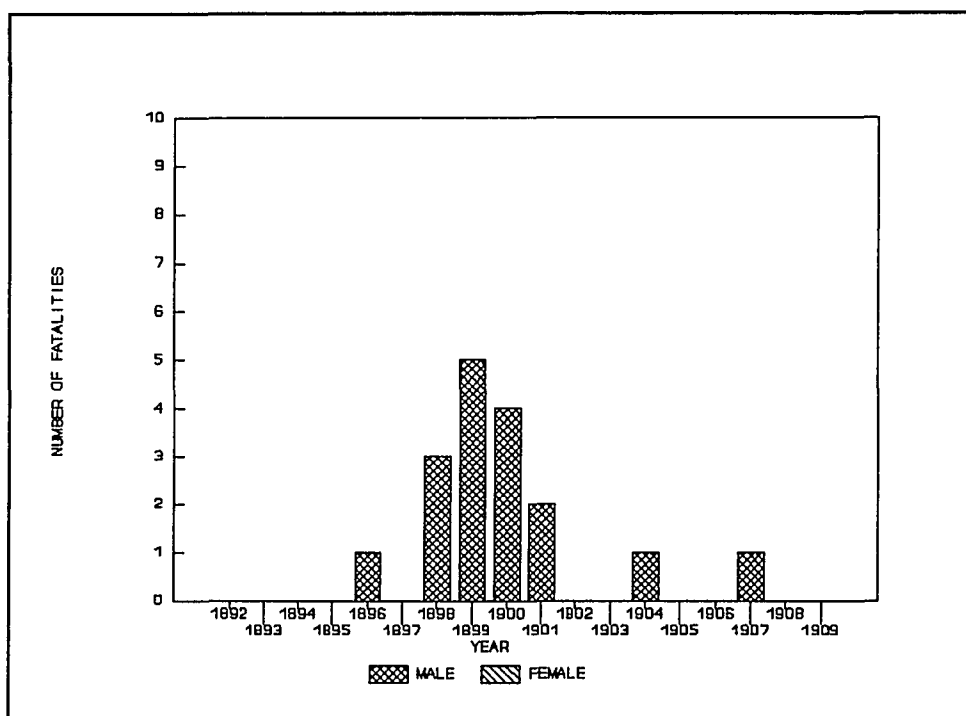


Figure 19. Fatalities reported from silicosis in the Ferguson District, 1892-1909, by sex and year of death.

silicosis.

Frank Carter left for St. George yesterday.
\$175 was raised for him in the mine and quite
a sum in the mill. Frank is an old mill fore-
man at the time the dust was so bad and is now
suffering from the effects of it (*De Lamar Lode*
6/6/1899:1)

Carter died and was buried in St. George on the 14th of
June, 1899, one week after arriving home.

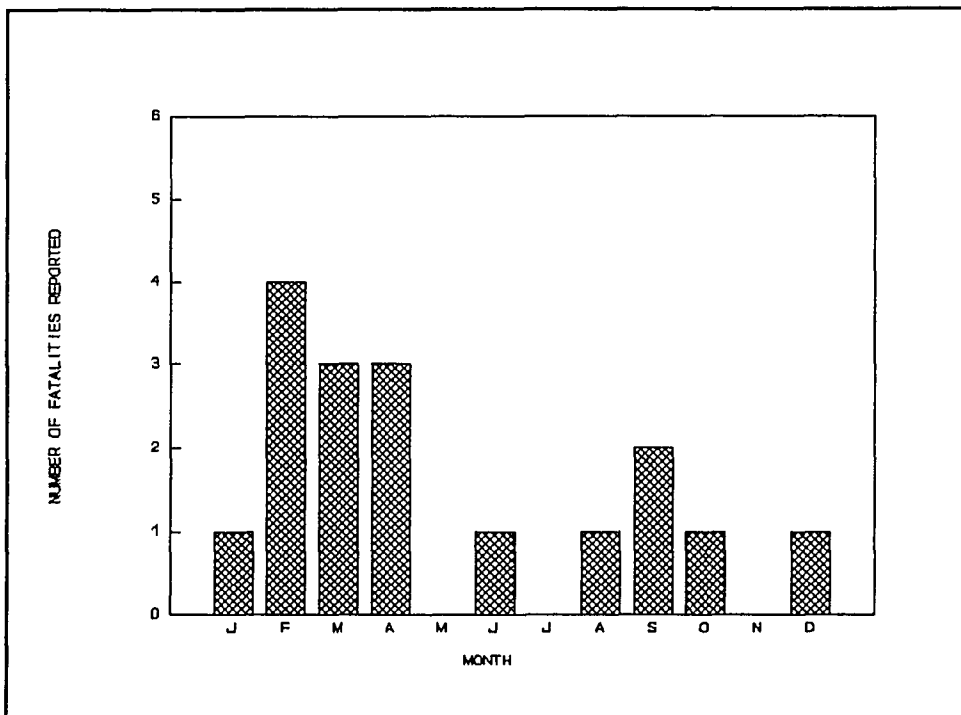


Figure 20. Monthly totals of reported silicosis fatalities in the Ferguson District, 1892-1909.

Substance abuse, either accidental or intentional, contributed to the mortality rates reported in the Ferguson District from 1892-1909. The deaths of three men and one woman can be attributed to overdoses of drugs or alcohol during this period. Two of the substance abuse cases were suicides, both occurring during 1897. William Davidson, the bookkeeper for the DeLaMar Company, used a mixture of laudanum and creosote to end his life. He was buried in the public cemetery, west of Helene.

Clio (Stella) Heath, a 23 year old prostitute, died from an overdose of morphine in November of 1897. Zanjani (1990) and others have observed that suicide rates were particularly high among young prostitutes in western mining camps from the Comstock to Colorado. This mortality pattern apparently continued in the Ferguson District. John Franks accidentally took an overdose of morphine in May of 1899, while attempting to treat himself for a painfully bruised foot. In 1902, James Berry, a miner with a history of alcoholism, succumbed to alcohol poisoning after several weeks of non-stop drinking (*De Lamar Lode* 1/14/1902:4).

Traumas also constituted a leading cause of death among District residents. As could be predicted, given the hazardous activities associated with the mining industry, occupational injuries affected many workers. Between 1898 and 1909, 16 lives were lost to accidents in the four principal occupations which employed District residents (**Figure 21**). These deaths comprised 8.8 percent of the total mortality rate for the area. All of the victims were men; the median age at death could not be derived from the available archival information.

Miners were the single largest group to sustain

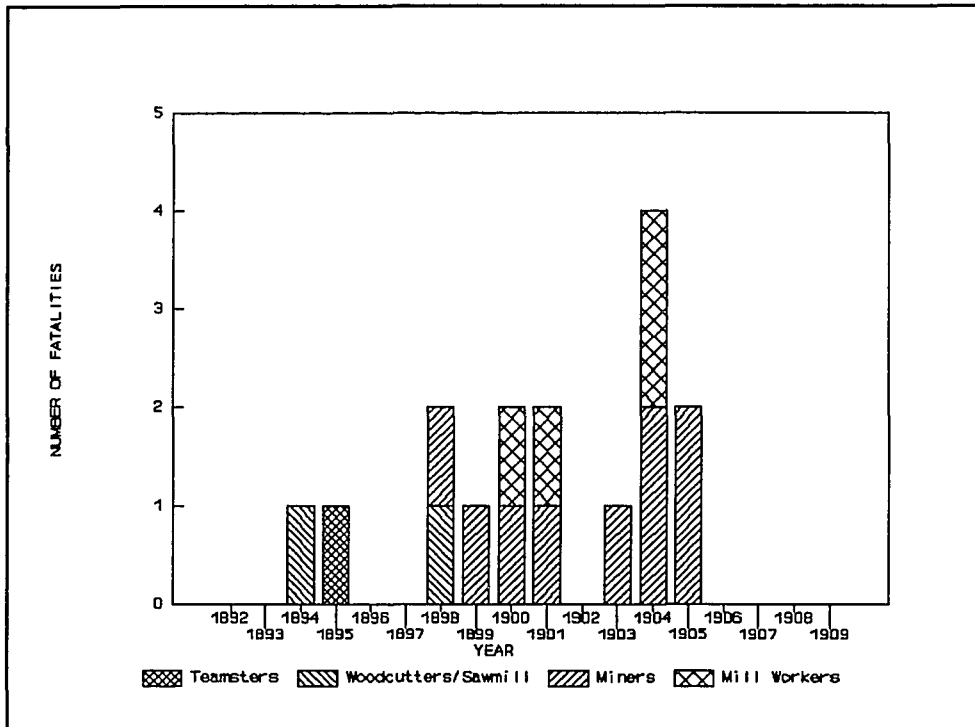


Figure 21. Fatalities from occupational accidents in the Ferguson District, 1892-1909.

mortalities from accidental traumas. Nine miners were killed between 1892-1909, with a total of 61 mining accidents reported for that period. Two types of accidents were responsible for the majority of those deaths. Cave-ins of shafts and adits claimed the lives of three men; falls from timbers or in mine shafts caused four fatalities. Mine explosions and falling objects accounted for the two remaining deaths. Six of the nine

fatalities occurred to individuals between the ages of 28 and 47.

More than 50 of the reported mine accidents left surviving victims with long-term injuries or disabilities. Injuries were most frequently reported to the head/eyes and upper body (N=43). Lost limbs and blindness often resulted from these traumas. The accident which crippled John Corkish, a young miner working at the April Fool in June of 1900, typified such events. Corkish accidentally drilled down on an unexploded dynamite charge. The resulting blast riddled his face and upper body with rocks and debris, blew out his left eye, destroyed the sight in his right eye, and injured both of his hands (*De Lamar Lode* 6/19/1900:1). Dr. Jennison performed multiple operations to remove the imbedded rocks from Corkish's chest and back and was later forced to amputate the miner's right hand. His injuries left the young man permanently disabled, unable to work, and dependent on the very modest pension and nursing care provided by the Lincoln County Miner's Union. Despite numerous charitable events sponsored by the local benevolent societies to ease his financial plight, Corkish (and others with similar occupational

disabilities) was condemned to a near pauper's existence after his accident.

Mill workers in the Ferguson District sustained fewer injuries and fatalities from occupational accidents than did the miners. From 1892-1909, four deaths resulted from a total of 39 reported mill accidents. All of the victims were male, with a median age at death of 29 years. These data suggest that mill workers, as an occupational class, were a young population. The District mills were automated, using steam, electrical, and later gasoline-powered machines to replace human labor. The remaining jobs (i.e. loading cordwood or supervising the operation of machinery) did not require the specialized training or experience which hardrock mining demanded. Younger, less skilled individuals made up the workforce in the mills; this population characteristic is reflected in the reported mortality patterns.

The accidents which claimed the lives of the mill workers comprised three general types: chemical poisoning, contacts with heavy machinery, and falls. Of those accident types, contacts with heavy machinery accounted for 50 percent of the reported fatalities. In

1901 and 1904, two individuals were caught in the belts of the crushing or agitation equipment and sustained fatal traumas. A fall into the ore crushers killed Peter Johnson, age 23, in 1904. Exposure to a lethal mixture of industrial chemicals, while cleaning the cyanide leaching tanks, ended the life of William Sloan during the summer of 1900.

Non-fatal traumas to mill workers also created long-term injuries and disabilities. The body extremities were most frequently injured during milling activities, as hands, feet, arms, and legs made contact with moving machinery parts. The several mishaps of Charles Maunder illustrate the types of accidents which befell mill workers.

Charles Maunder is in hard luck. In July he had the first and second fingers of his right hand cut off at the first and second joints, included with a hard shaking up, but Saturday last had the inside two fingers of his left hand mashed flat under a Griffin shaft that slipped its support. As he could not get under it to lift the weight from his hand, he jerked his hand out, injuring it still more (*De Lamar Lode* 10/17/1899:3).

Similarly to the miners, disabled mill workers were often forced to leave the mining settlements in search of other employment. Those who remained in the Ferguson District

rarely found work and therefore survived on charitable contributions and subsidies from the Miner's Union until the District's demise. Their fate after 1909 is unknown.

Occupational traumas caused the deaths of two woodcamp/sawmill employees and one teamster. Haswell Lytle, age 22, was crushed by a log while cutting wood for the sawmill in July of 1894. Mace Dixon, age 66, fell backward on the moving sawblade at the steam-powered sawmill in the Delamar Mountains and was fatally cut in April, 1898. Teamster Charles Zimmerman, age 50, was crushed by the wheels of his wagon, after a fall from the wagon seat threw him into the path of that vehicle. Both of these occupations employed individuals from disparate age groups.

Non-occupational traumas accounted for 4.9 percent of the total mortality in the Ferguson District between 1892 and 1909. Life in the mining settlements placed individuals at risk of injury and death during routine contacts with draft animals, wagons, and firearms. The risks attendant with mining and milling occupations, "high living", and uncertainties about the future engendered unusual psychological stresses among District residents. Acts of violence were often an outlet for

those stresses. From 1892-1909, nine residents lost their lives to such non-occupational traumas, with eight men and a 12 year old Native American girl comprising the victims. The fatalities resulted from accidental gunshot wounds (N=3), suicide by gunshot (N=1), homicides (N=4), and horse/wagon accidents (N=1). **Figure 22** shows all the types of non-occupational trauma deaths in the study area.

Three deaths followed the accidental discharge of firearms. Frank Jorgensen died in 1892, when his gun fell from his belt onto the floor of a moving wagon. The weapon discharged, with the bullet striking Jorgensen in the chest; he died within minutes. This same type of accident was reported on several occasions during the boom years of the District, but did not result in other fatalities. The eventual demise of Indian George, described in **Chapter III**, followed a self-inflicted, accidental gunshot wound. Terrance Devitt, a 47 year guard on the DeLaMar Company bullion coach, died when a six-shooter accidentally discharged during cleaning,

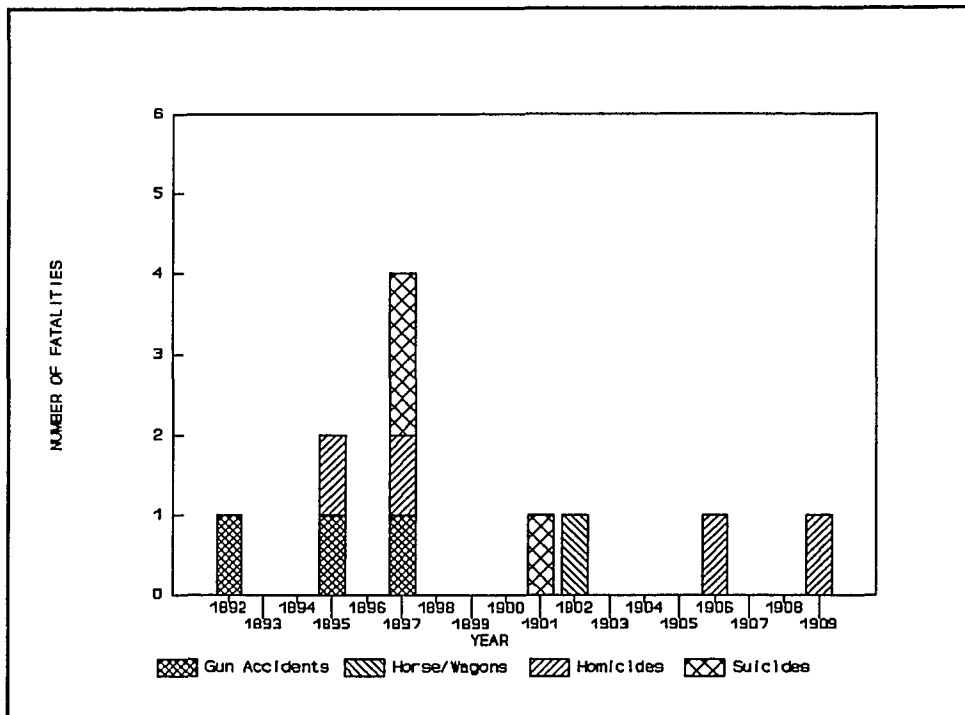


Figure 22. Fatalities from non-occupational traumas in the Ferguson District, 1892-1909.

fatally wounding Devitt in the stomach.

A single suicide can be attributed to trauma during the boom years of the Ferguson District. In November of 1901, the body of John Tyler was found in his cabin. Tyler had shot himself in the chest, by arranging his gun so "that he could push the trigger with a piece of hose filled with a file and a long needle, with his foot" (*De Lamar Lode* 11/14/1901:3). The miner left no indications as to the reason for his act.

Four homicides were committed in the Ferguson District between 1892-1909. Gunshot wounds ended the lives of the three male victims, whose median age at death was 35 years old. A 12 year old Paiute girl was raped and murdered by a blow to the head with a blunt instrument at the hands of the Italian miner "Delai" on October 14, 1895. Three of the assailants were acquitted of all charges, with the homicides ruled as justifiable. "Delai" was sentenced to 20 years in the Nevada State Penitentiary for the rape/murder of the Indian girl.

Between 1892 and 1909, 14 horse/wagon related accidents were reported among Ferguson District residents and a total of 20 persons injured. Most injuries were superficial and involved the lower limbs. Four broken legs were set by the local DeLamar doctors following the more serious horse/wagon accidents. A single fatality was documented in 1902, when local merchant Spiro Docklestich, age 36, was thrown from his saddle horse. He sustained broken bones and internal injuries and was taken to the hospital. For reasons not explained in the archival sources, the local doctors made no effort to surgically intervene. Docklestich was dead within hours of the accident.

Causes of death were reported for the majority of the 182 fatalities which occurred in the Ferguson District between 1892-1909. For 19 fatalities, no causes were indicated or only general phrases, i.e. a "wasting" disease, used to describe the fatal condition. Of these fatalities, two were women and 17 men. All were adults, although precise ages at death were not often reported.

The principal causes of death in the District were reconstructed using available archival sources. **Table 4** summarizes the percentages of the total mortality rate recorded for these causes. Infectious and chronic diseases of the respiratory system (including silicosis) accounted for 26.3 percent of the total mortality. Other systemic infectious diseases, especially typhoid fever, claimed the lives of 15.9 percent of the Ferguson District population. Chronic conditions accounted for only 15.3 percent of the reported mortality. Perinatal and infant mortality was equal to 12.5 percent of the total mortality in the District. Maternal mortality accounted for 1.6 percent of the reported rate, while all other causes, including substance abuses, homicides, suicides, and unknown causes, comprised the remaining 28.4 percent of all mortality.

Mortality in Other Mining Communities

In order to assess the relative risk associated with life and work in the Ferguson District from 1892-1909, available morbidity and mortality information from other Nevada mining districts was assembled and compared with trends observed in the study area. Lord's (1883) analysis of the "Pains and Perils of Mining" for the Comstock Lode detailed disease and accident rates in that northern Nevada mining region between 1865 and 1880. Zanjani's (1990) recent study developed similar data for Goldfield, in southern Nevada, for the period from 1904 to 1909. Comparisons of mortality in a much earlier mining region and a roughly contemporaneous district might signal mortality trends through time and form a standard against which to assess the alleged health hazards of the Ferguson District. **Figure 23** shows the principal causes of death, expressed as percentages of total mortality, for the three mining districts.

Striking differences can be seen in mortality patterns of the earlier Comstock Lode and the two later mining districts. Deaths from accidents accounted for 43 percent of total mortality in the Comstock Lode between 1865-1880. Accident rates from the Ferguson

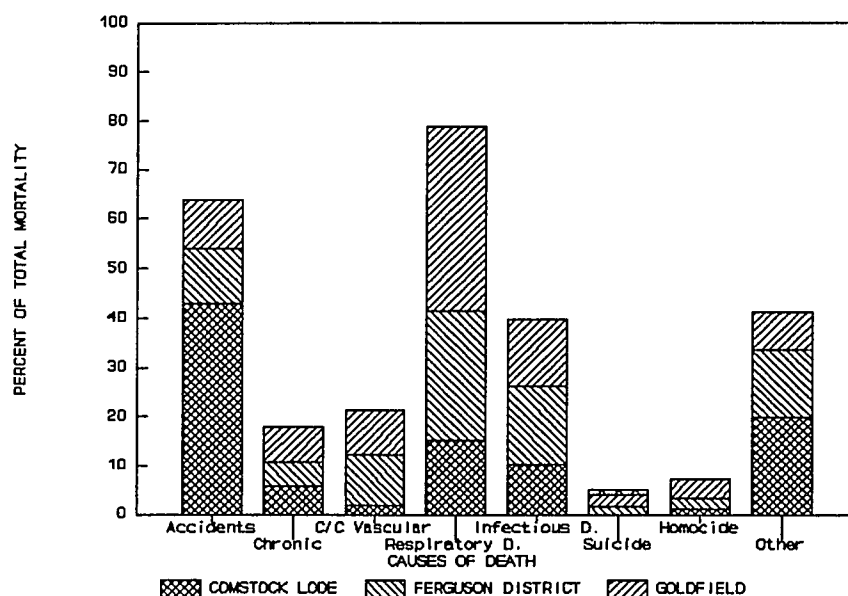


Figure 23. Mortality in three Nevada mining districts. Comstock Lode data derived from Lord (1883); Goldfield data derived from Zanjani (1990).

District and Goldfield are much lower and roughly comparable, comprising 10.9 percent and 9.9 percent, respectively, of total mortality.

Respiratory diseases (including tuberculosis) became increasingly fatal through time. During the Comstock Lode period, such diseases only comprised 15.2 percent of total mortality. In the Ferguson District, respiratory diseases accounted for 26.3 percent of

mortality. Residents of Goldfield between 1904-1909 perished from these maladies at a rate of 37.3 percent. According to Zanjani's study, pneumonia was the "largest single cause of death, accounting for more than a third of all the deceased" in Goldfield (Zanjani 1990:53).

Reported mortality rates from chronic diseases, including all cardio-vascular and cerebro-vascular conditions, also increased in the decades between the Comstock Lode and the later districts. From 1865-1880, all chronic conditions accounted for only 7.6 percent of total mortalities. By the turn of the century, these percentages had doubled, with 15.3 percent of the Ferguson District mortality attributed to these causes and 16.2 percent of Goldfield's mortality rate. Mining camp populations were surviving infectious diseases and traumas long enough to develop the degenerative and debilitating chronic conditions, often associated with increasing age.

Silicosis (miner's consumption) exacted a substantially higher toll of victims in the Ferguson District than in the other two Nevada mining districts. Fatalities attributed to this occupational disease accounted for only 5 percent of total mortality in the

Comstock Lode and 4 percent in Goldfield. Available data from the Ferguson District suggest that 13 percent or more of total mortality can be attributed to silicosis.

Fatalities from systemic infectious diseases comprised a higher percentage of total mortality in the Ferguson District (15.9 percent) than in the other mining districts. Rates from the Comstock Lode were 10.3 percent of total mortality; the Goldfield data indicate 13.5 percent of mortality. The types of infectious diseases varied among the three districts. Cholera accounted for 13 deaths in the Comstock Lode between 1865 and 1880; small pox claimed 31 victims (Lord 1883:436-439). Vaccinations and improved water systems had lessened the impacts of those diseases by the boom years of the Ferguson District and Goldfield. No cases of cholera or small pox were diagnosed in the later districts. Data on typhoid fever occurrences was not included by Lord in the Comstock Lode analysis. In the Ferguson District, typhoid accounted for 12 percent of total mortality. In Goldfield, the rates were higher, since typhoid was "...the cause of 30 percent of Goldfield's deaths within the nonrespiratory communicable disease category" (Zanjani 1990:62).

Homicides rates in Goldfield were nearly double those of the other two mining districts. Four percent of total mortality for Goldfield resulted from homicides, as compared with 1.2 percent for the Comstock Lode and 2.1 percent for the Ferguson District. Zanjani (1990:63) has speculated that the level of violence at Goldfield was, in part, related to the increasing numbers of foreign born persons among the town's mining population. Accounts in the Ferguson District newspapers after 1901 noted that recent arrivals from the eastern European countries tended to interact more violently than the other residents of the District (see *De Lamar Lode* 5/6/1902). "Slavonians" arriving in DeLamar from the mining camp of Bingham, Utah in the spring of 1902 had provoked numerous fist and knife fights in the local saloons, causing Sheriff Johnson law enforcement problems. Many of these new immigrants soon left DeLamar to follow the gold booms in Tonopah and Goldfield. Their volatile behavior patterns were probably continued at Goldfield, thus accounting for the higher homicide rates reported in that mining district.

Comparative mortality data from the Comstock Lode and Goldfield suggest that life and work in the Ferguson

District did not pose significantly more hazards to health or survival than many other Nevada mining districts. Fatalities from accidental traumas were substantially lower in the Ferguson District than in the earlier Comstock Lode and roughly comparable to those in contemporaneous Goldfield. New advancements in mining technology perhaps accounted for the observed differences. Automation in the local mills also reduced the numbers of men exposed to life-threatening accidents. The death toll from silicosis in the Ferguson District was more than double that of the two other mining regions. The data confirm that the dry-mining and milling processes used in the District did constitute a health hazard to employees. No evidence is contained in the archival sources to substantiate the claims that all residents of the Ferguson District were equally affected by this occupational disease, as all reported silicosis fatalities were adult males.

The increased rates of mortality from chronic diseases among both men and women in the turn-of-the century districts suggest residents were living longer, as a result of more available medical care and higher standards of living. Respiratory and other types of

infectious disease continued to exact a high toll among mining camp populations through time. From all accounts, sanitary conditions and unsafe water supplies typified both early and late period mining camps. As long as these environmental conditions persisted, epidemics and death were part of the "boomtown way of death" (Zanjani 1990).

CHAPTER VI

SUMMARY AND CONCLUSIONS

This study concerns a bio-cultural analysis of the late 19th century Ferguson District which expands and amplifies the prior insufficient research related to this mining area. Living conditions in this area during the boom period between 1892-1909 were reconstructed, using archival sources, limited archeological data, and personal communications. The hypothesis that silicosis was the leading cause of death in the Ferguson District was tested in this research. A series of questions concerning health conditions and demographics in the Ferguson District were also formulated to guide the research. Several critical bio-cultural factors, including food and water supplies, housing patterns, sanitary practices, and the availability of medical care, were investigated and their effects on morbidity and mortality rates posited. The principal causes of death in the Ferguson District were examined, as percentages of total reported mortality for this area. These data were compared with mortality rates from two other Nevada

mining districts in order to assess the relative risk associated with life and work in the District.

Life in the Ferguson District between 1892-1909 was the best of times and the worst of times for the local residents. The early years of discovery and development were plagued by many uncertainties. John Ferguson, the new district's founder, and other claimants struggled to find investors, develop water supplies to meet local needs, and solve the dilemma of on-site ore processing for their discoveries. Food and water were often in short supply in the Ferguson District from 1892-1894; professional medical care and hospital facilities were not locally available. The small populations, generally uncrowded living conditions, and comparatively pure spring water supplies contributed to the low morbidity and mortality rates reported at the camps of Golden City (Ferguson), Helene, and Reeves prior to the boom period.

In the spring of 1894, the pace of development in the Ferguson District accelerated, following the arrival of a self-made mining millionaire Captain John De La Mar. After purchasing the Jim Crow-Monitor claims, De La Mar transformed these properties into state-of-the-art mining ventures. The scope of work was expanded at the mines

and construction of a large chlorination mill begun. The DeLaMar Company installed telephone and telegraph lines, connecting its office and the District settlements with the outside world. Water sufficient to operate an on-site mill was piped long-distance from Meadow Valley Wash. Although supplies from the Company tanks were made available to local residents at a nominal charge, water was never abundant during the boom years of the Ferguson District.

The small tent camp of Reeves was transformed within months into the bustling town of DeLamar, home to over 1000 people. Wages paid by the DeLaMar and April Fool Companies were considered high for mining camps of that period, ranging from \$3 to \$7 per day. The hard cash available in DeLamar prompted suppliers from all over the region to transport fresh foods, entertainment, and the latest fads to the once-isolated District. Electricity and indoor plumbing, made possible by the DeLaMar Company's industrial expansions, afforded residents luxuries uncommon in other communities of southeastern Nevada. Medical practitioners also flocked to the Ferguson District; a municipal hospital was constructed in 1896. Health insurance, in the form of modest

subsidies paid by mining company employees, guaranteed workers treatment by a local physician and nursing care during illness or injury. Other local benevolent organizations offered similar types of social welfare.

The good life enjoyed by Ferguson District residents was soon interrupted by the health and safety problems which typified many Nevada mining communities. Contaminated water supplies, lax sanitary practices, and crowded housing conditions encouraged the spread of infectious diseases. Typhoid fever, pneumonia, influenza, and other communicable diseases periodically became epidemic in DeLamar, claiming nearly 100 lives.

Occupational accidents and hazards also exacted a toll among local workers. Mining and milling accidents claimed nine lives. Fatal accidents to woodcutters and teamsters accounted for three additional deaths. The silica-laden dust clouds produced by the dry-mining and milling processes of the Ferguson District constituted a significant health hazard to the workforce. Miners and mill workers developed silicosis or miner's consumption, a chronic condition which debilitated and eventually killed. Many died from other causes, including pneumonia or typhoid fever, when their lowered respiratory

functions allowed disease-causing organisms to proliferate. Mortality rates from silicosis can only be approximated during this period. The disease was reported to have comprised at least 13 percent of total mortality in the Ferguson District. The hypothesis that silicosis was the leading cause of death in the area was not proved by the available data.

This analysis also attempts to verify popular accounts alleging that silicosis claimed the lives of women and children in DeLamar. No evidence is available from the archival sources to support that contention, as all documented silicosis cases involved men. Possibly silicosis may have been an undiagnosed, contributory factor in the deaths of those women and children whose primary causes of death were listed as pneumonia, influenza, or other respiratory diseases. The full effects of silicosis on the morbidity and mortality rates in the Ferguson District can not be completely determined from the available sources.

Mortality rates in the Ferguson District were compared with published data from the Comstock Lode (1865-1880) and Goldfield, Nevada (1904-1909). The principal causes of death, expressed as percentages of

total mortality, were analyzed. From this comparative material, it can be concluded that life in the Ferguson District was generally no more hazardous than that in the other mining regions. Infectious diseases were a leading killer of mining camp residents in the mid-19th century Comstock Lode; this trend continued into the 20th century at the Ferguson District and Goldfield. Dramatic declines in fatalities from accidents were apparent when percentages from the Comstock were compared with data from the two turn-of-the century districts. Advancements in mining technology and mechanization of the industry are proposed as partial explanations for this shift in mortality trends. Occupational disease, in the form of silicosis or miner's consumption, accounted for a higher percentage of mortality in the Ferguson District than in the other two mining districts. This mortality pattern indicates that silicosis was a serious health hazard in the Ferguson District, but does not confirm accounts which allege that it was the leading cause of death among residents, affecting both sexes and all ages of the local population.

The reconstruction of events in the Ferguson District between 1892-1909 permits the following

generalized statements about demographic trends in the District. During the first decade of the Ferguson District boom, miners and merchants arrived from other regional mining camps, especially Pioche, Eureka, and Hamilton. Newspaper accounts, census data, and obituary records confirm that many had originally come from western European countries, particularly Ireland, England, Wales, and Italy. They were soon joined by young men from the southern Utah, who came to fill the high-paying, low skill jobs available at the DeLaMar and April Fool mills. Native Americans, Chinese, and a few blacks, including Civil War veteran Nick Johnson, also settled in DeLamar.

After the turn of the century, a subtle demographic shift occurred in the Ferguson District. Incoming workers were reported to be immigrants from eastern European countries or the Baltic states. Communication problems were reported in the workplace and the local schools, as no common language could be found in this polyglot society. By the demise of the Ferguson District in 1909, population characteristics of its settlements had shifted dramatically, with Greeks, Austrians, and Serbians now comprising over 50 percent the local

population.

The Ferguson District declined in population and importance after 1909. A handful of workers remained, mining and shipping ores for processing in much the same fashion as the early developers of the District. Those who remembered the heyday of DeLamar, both the best times and the worst times, also recalled the following verses by Ben Brown-Lee, quoted in the *De Lamar Lode* (7/18/1904:1). These lines captured the essence of the camp which boomed at the end of Nevada's 19th century mining era.

"DeLamar"

Oh DeLamar! My DeLamar
with tin cans in your street
and not a single William goat
those same tin cans to eat.

I've wandered midst your sagebrush nooks
the rippling brook to hear;
but not a ripple have I heard
except the rippling beer.

I've sat beneath the Joshua's shade
until the sun would fall.
In Indian language, swapping lies with
the Paiute, 'Button All'.

I've spent my money like a prince,
all I could earn and more as well.
And not a dollar have I saved
if I should go to-Pioche.

APPENDIX A
MEASUREMENT DATA

Residential structures in the Ferguson District were inventoried to determine the sufficiency of local housing types. A 10 percent sample of single story residences was randomly selected for field investigation in Helene and DeLamar (see **Figures 10 and 11**). Measurements were taken to determine room dimensions and wall thickness; the data are shown in **Tables 5 and 6**.

Table 5. Dimensions of measured residential structures at Helene, Nevada.

Structure Number	Room Length (ft.)	Room Width (ft.)	Wall Thickness (ft.)	Interior Space (sq.ft.)
1	12	11.25	2.9	135
2	8	9	2.8	72
3	15.5	10.5	3.1	163
4	13	12	3.2	156
5	11.5	10.5	2.8	120

Table 6. Dimensions of measured residential structures at DeLamar, Nevada.

Structure Number	Room Length (ft.)	Room Width (ft.)	Wall Thickness (ft.)	Interior Space (sq.ft.)
Nob Hill				
1	9.75	7.75	2.2	75.5
2	26	12.2	2.3	317.2
3	16.2	12	1.6	194.4
4	20	8.6	1.7	172
	19.5	10.9	1.6	212.5
5	19.5	10	1.6	195
Lower Gulch				
6	18	11.5	3.0	207
7	15	9	3.0	135
8	28	10.5	1.6	294
9	14	12	2.0	168
10	19.5	9	2.0	175
11	12	9	2.0	108
Company Row				
12	10.5	8	1.5	84
13	8.5	8.5	1.6	72.2
	12	11.3	1.6	135.6

Table 6. (continued).

Structure Number	Room Length (ft.)	Room Width (ft.)	Wall Thickness (ft.)	Interior Space (sq.ft.)
Company Row				
14	20	14	1.6	280
15	14	12	2.0	168
16	13	12	2.1	156
17	12	10	1.6	120
	19.5	10.9	1.6	212.5
18	12	10	1.6	120
	15	10	1.7	150
19	16	12	2.1	192
20	12	10	2.0	120
21	12	12	2.0	144
22	11.5	8	2.1	92
23	12	8.5	2.0	102
Upper Gulch				
24	12	10.6	1.6	127.2
25	12	11	2.0	132
	5.5	5	2.0	27.5
26	10.2	7.8	2.0	79.5
27	13.5	12	1.9	162
28	12	8	2.1	96

Table 6. (concluded).








Structure Number	Room Length (ft.)	Room Width (ft.)	Wall Thickness (ft.)	Interior Space (sq.ft.)
April Fool				
29	16	12	2.0	192
30	11	7.9	1.6	86.9
31	11.5	10	2.1	115
32	14	11	2.0	154
33	14	12.5	1.6	175
34	9.9	5.5	1.6	54.4
35	10	8	2.0	80
	11	7	1.7	77
36	8	6	2.1	48
	19	12	2.1	228
37	19	14	2.0	266
38	19	13	2.1	247

APPENDIX B
CEMETERY DATA

The two cemeteries associated with the Ferguson District were investigated in order to supplement and substantiate the archival sources. Topographic maps were generated for the Ferguson District Public Cemetery, located west of Helene, and the Catholic Cemetery, situated approximately one mile west of DeLamar (**Figures 24 and 25**). All known and suspected grave features were mapped and available tombstone data recorded.

Confirmed and potential grave features totaled 109 for the two cemeteries, with 50 located at the Public Cemetery and 59 at the Catholic Cemetery. Total mortality in the Ferguson District during the period between 1892-1909 was reported as 182 deaths. Of that total, 58 individuals were buried at other locations, generally in their hometowns of southern Utah. Two individuals (Arthur Timson and "Infant" Beck), originally buried in the Ferguson District cemeteries during the period between 1892-1909, were later disinterred for

Map Key

-  Headstone
-  Grave features
-  Wrought iron fence
-  Wood fence
-  Rock mound
-  Rocks
-  Depression or pot hole

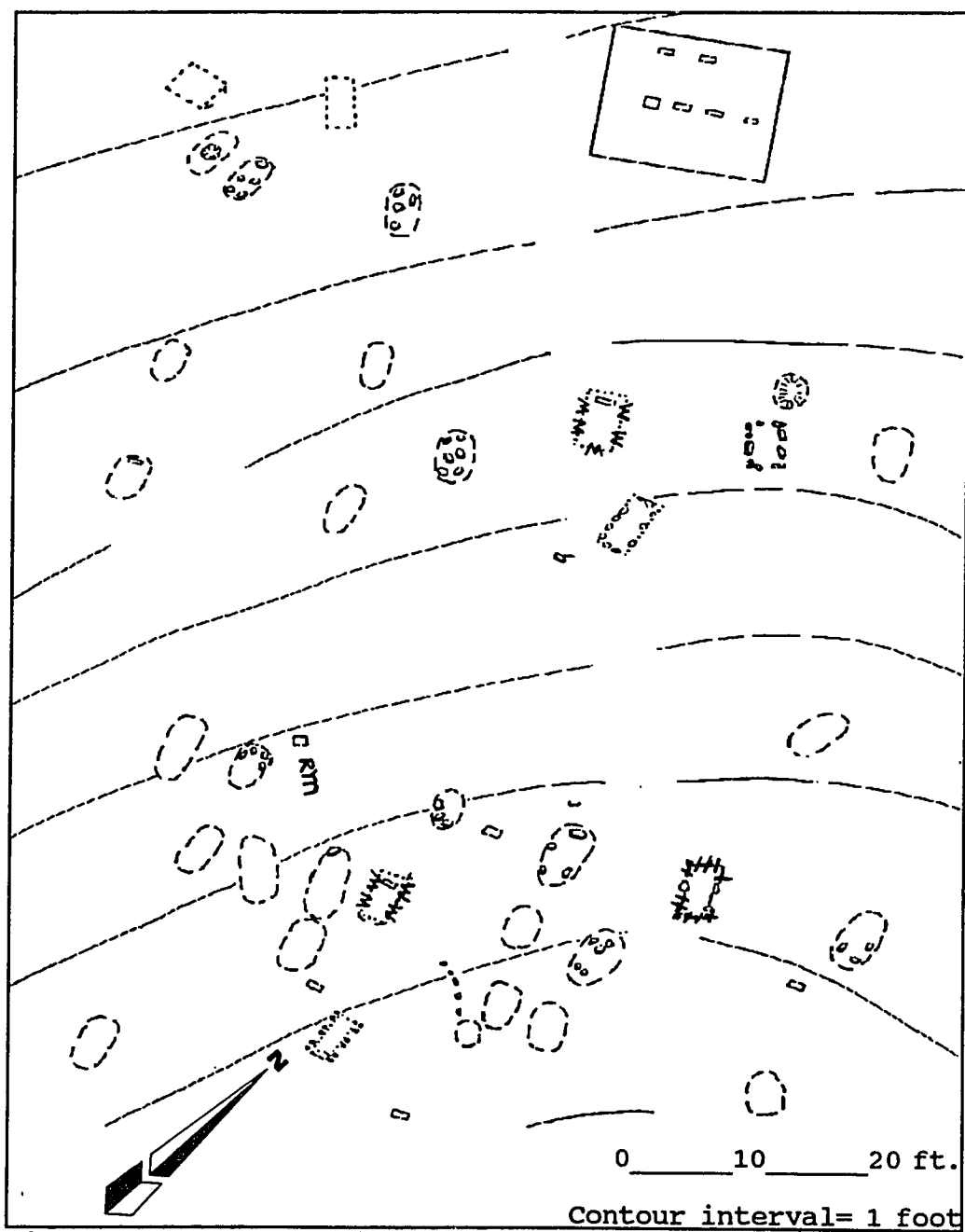











Figure 24. Topographic map of Helene (Public) Cemetery, Ferguson District.

Map Key

	Headstone
	Grave features
	Wooden cross
	Wrought iron fence
	Wooden fence
	Broken wooden fence
	Rock mound
	Rocks
	Depression or pot hole

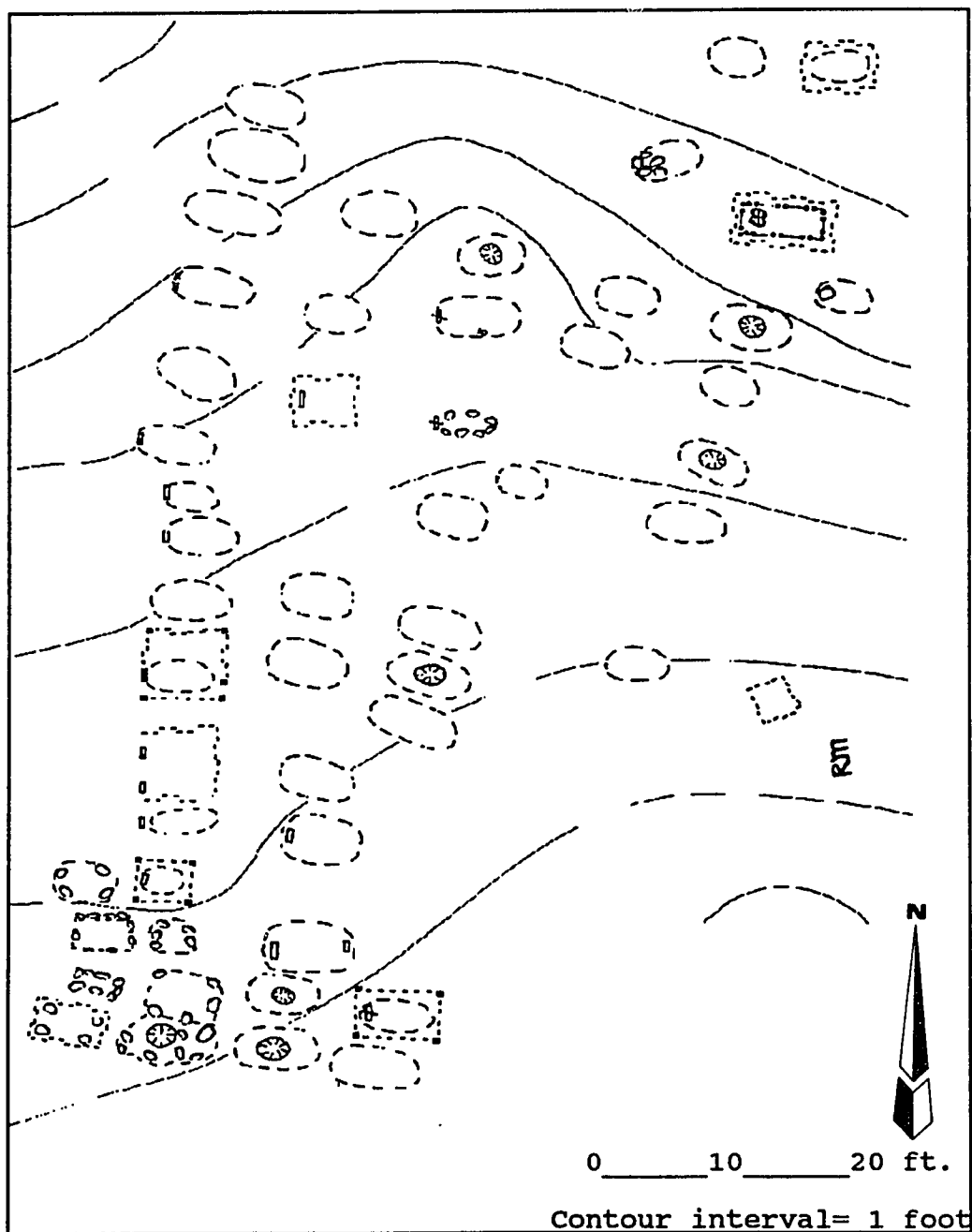


Figure 25. Topographic map of DeLamar (Catholic) Cemetery, Ferguson District.

reburial at other locations.

Archival information indicated that 58 individuals had been buried at the Helene (Public) Cemetery during the period between 1892-1909. Internments also continued at that cemetery after the initial demise of the District in 1909. The last resident of DeLamar, Mary Agnes Horn, was buried there in 1945. Sixty-six individuals were reported to have been interred in the Catholic Cemetery between 1892-1909. If the archival records are correct, at least 124 graves should have been present in the two Ferguson District Cemeteries. The observed total of 109 does not account for a minimum of 15 graves.

A number of factors may account for the discrepancies between the archeological data and the archival record. Vandalism and other activities (off-highway vehicle driving) impacted the integrity of both of these properties prior to 1978, when protective fences were constructed around the cemeteries. Potential grave features may have been obliterated by these disturbances. The dense stands of blackbrush which cover the cemeteries may have obscured the detection of other gravesites, although care was taken during initial reconnaissance to identify all features. Disinterment activities may also

have obliterated adjacent grave features. In general, the numbers of gravesites present in the Ferguson District cemeteries support the mortality rates accounted for by the archival sources.

Only six readable markers or tombstones were observed in the two cemeteries, five in the public cemetery and one in the Catholic cemetery. Those markers contained the following information:

Public Cemetery

Robert Corkish
Oct. 12, 1871- Nov. 21, 1915

Etta Frank
1873-1896
DeLamar, Nevada

Mary Agnes Horn
1872-1945
DeLamar, Nevada

Fred A. Horn
August 3, 1893- March 19, 1912
In Loving Memory of Fred A. Horn,
Son of Agnes.
DeLamar, Nevada

Richard J. Gordon
March 8, 1857- Nov. 22, 1907
DeLamar, Nevada

Catholic Cemetery

William Henry Strauss
August 5, 1865- October 6, 1898

The gravesite of Dr. John S. Hoyt, who died at DeLamar from Bright's Disease complications, was also located during this research. Although funeral services were conducted in DeLamar following his death on February 1, 1895, no burial location was reported in the DeLamar newspaper. A previously recorded gravesite (26LN 2172) was investigated by the author and determined to be Hoyt's gravesite. Located on an alluvial terrace overlooking the Lower Pahrnagat Lake approximately 12 miles southeast of Alamo, Nevada, the vandalized gravesite contains fragmentary portions of a quartzite tombstone. The data visible on that marker, which included a partial name, birth and death dates, were used to make the identification. The birth and death dates (born: February 8, 1836; died February 1, 1895) substantiate the obituary data reported for Dr. Hoyt.

Vandalism and erosion have diminished the information potential of the Ferguson District cemeteries. The simple wooden headboards used to mark many of the graves have eroded past the point of readability after more than a half century in the southern Nevada sun. Two of the remaining headstones are riddled with bullet holes, which have obliterated

portions of the text. The mortality data from the tombstones of Etta Frank, Richard Gordon, William Strauss, and John S. Hoyt confirm the archival accounts of their birth and death dates. The remainder of burials with readable markers occurred after the initial boom years of the Ferguson District.

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