Pershing County Master Plan

Adopted January 2023


This Planning Commission approved the Pershing County Master Plan on November 9, 2022
The Board of County Commissioners approved the Pershing County Master Plan on January 18, 2023

Acknowledgments

Pershing County Board of County Commissioners
Shayla Hudson, Chair
Larry Rackley, Vice Chairman
Joe Crim, Commissioner
Carol Shank, Commissioner (Retired)
Karen Wesner, Administrative Assistant to the County Commission

Pershing County Planning Commission
Galen Reese, City of Lovelock Representative
Carl Clinger, Lower Valley Representative
Lou Lusardi, City of Lovelock Representative
Andrew Benolkin, Upper Valley Representative
Toni Apperson, Grass Valley/Imlay Representative
Donald Bridges, City of Lovelock Representative (deceased 2022)
Vacant, Outside Valley/Not Grass Valley/Not Imlay Representative

Special thanks to the residents of Pershing County for providing input and feedback in setting the master plan's goals and policies to establish the path forward for the next twenty years.

Project Staff
R. Bryce Shields, District Attorney
James Evans, Planning & Building Director
Pershing County Planning & Building
398 Main Street
Lovelock, Nevada, 89419
(775) 273-2700, Fax (775) 273-3617

Consultant
Cynthia J. Albright, FAICP CUD, GISP
Civic Analytics & Planning
1132 W. First Street
Reno, NV
Calbright0730@gmail.com
(775) 432-3488

For additional information please visit the Pershing County website www.pershingcountynv.gov or contact the Planning & Building Department.

istock: claudi mcmichael

Table of Contents

CONTENTS

LIST OF FIGURES

CONTENTS

LIST OF TABLES


Central Pacific Railroad photo by CJAlbright

00. Introduction

Why Plan?

Pershing County is situated in the northwest quadrant of the state and comprised of 6,067 square miles of land area; 75% of which are owned by the Bureau of Land Management (BLM). This may be viewed as a positive but overwhelming federal land ownership presents a wide range of problems associated with vast, unattended open space.

Pershing is a relatively large County compared to its neighboring administrative divisions but falls into the lowest interval for population distribution per County . Approximately 0.5% of the County's land mass is water. This is similar with the adjacent Humboldt County - 0.2%, Lander County 0.5% and Elko County 0.2% However, other counties do enjoy greater water resources than Pershing County.

Interstate I-80, that connects the east coast to the port cities of Oakland and San Francisco, divides the County into roughly two equal parts. This transportation system is vital to Pershing County. In addition to direct freeway access, UPRR rail runs adjacent to the Humboldt River near the interstate. The Pershing County Economic Development Authority is currently pushing Amtrak to reinstate passenger service that was discontinued in 1997.

The Derby Field Airport offers convenient fuel and associated facilities. The Lovelock Industrial Park has land for both sale and lease to accommodate office, commercial, and warehousing needs. Residents and visitors enjoy outdoor recreation opportunities at the Rye Patch Reservoir, Upper Pitt-Taylor and Lower Pitt Taylor Reservoir, Star Peak hiking trails, Old Razorback Mountain, Lovelock Caves Nature Trail, Trego Hot Springs, and numerous jeep trails throughout the East, Humboldt, and Seven Troughs Ranges. These wilderness areas are discussed in detail in the following pages.

Nevada Revised Status (NRS) Chapter 278 Planning and Zoning, provides guidance to public agencies about regional planning and zoning. Specifically, NRS 278.150 states,

(1) "The planning commission shall prepare and adopt a comprehensive, long-term general plan for the physical development of the city, County, or region which in the commission's judgment bears relation to the planning thereof.

(2) The plan must be known as the master plan, and be so prepared that all portions thereof, except as otherwise provided in subsections 3 ,4, 5, may be adopted by the governing body, as provided in NRS 278.010 to 278.630, inclusive, as a basis for the development of the city, County, or region for such reasonable period of time next ensuing after the adoption thereof as may practically be covered thereby.

(3) In counties who population is less than 100,000, if the governing body of the city or County adopts only a portion of the master plan, it shall include in that portion an aboveground utility plan of the public facilities and services element, as described in subparagraph (3) of paragraph (e) of subsection 1 of NRS 278.160." Subparagraph (3) of paragraph (e) of subsection 1 requires the identification of corridors designated for the construction of aboveground utilities and complies with the provisions of NRS 278.165."

NRS 278.160 describes the elements of master plan. In accordance with NRS 278.150, the Pershing County Master Plan includes charts, diagrams, schedule, appendices, and the

following elements that are appropriate for the County and its physical development thereof: Context for Planning, Conservation and Resources, Land Use and Growth Coordination, Public Facilities and Services, Transportation, Implementation, and Appendix C, the Water Resources Plan. There are other elements that may be included but are not required. The plan's focus is to address existing conditions, establish goals and objectives for each element, identify implementation strategies, and develop the future land use map.

Pershing County is committed to accommodating growth in both population and employers. Since new growth requires precious natural resources, future proposals to accommodate expansion must consider the valued agricultural and rural lifestyle while promoting Pershing County as a desirable place to live and work. Residents enjoy a strong sense of community that welcomes new residents, businesses, employees, and visitors.

What is the Master Plan?

This Master Plan is an overarching planning document and policy guide designed to help Pershing County establish the vision of who they will become in the future. This document will aid in the decision-making process on land use development and preservation. The Master Plan includes a spatial representation of land use, transportation, natural resources, public services, and community facilities supported by goals, policies, and implementation strategies. Solid financial policies and a capital improvements program, listing key projects to prioritize in the budget over the next 5-10 years, are required to implement the County's goals. The County's vision is supported by realistic and collaborative objectives.

The citizens provided their input on their desires and wishes to improve its quality of life over the next 20 years through engagement meetings held with elected and appointed officials and neighborhood gatherings. Some of the questions the community was asked include: Where are we now? Where do we want to go? What will we need to get there? What will we look like when the Master Plan goals are realized?

In summary, the Master Plan:

- Defines a 20-year vision for the County
- Summarizes existing demographics, housing, and growth trends that provide the context for planning for the future and supporting the planning processes
- Establishes goals and policies for each element of the Master Plan
- Provides guidance to the Planning Commission with goals and policies related to development proposals; and
- Outlines the process for monitoring, updating, and amending the Master Plan to ensure it addresses community needs as the County evolves over time

Chapter One, **Context for Planning**, establishes a context for master planning concurrent with an understanding of the natural and built environments, its demographic characteristics, trends, and community values. The geographic conditions continue to support Pershing County farming and mining natural materials while addressing the need for additional telecommunications and broadband to further expand employment and housing.

The basin and range topography produces a dry moderate climate. Sustained drought and climate change will continue to burden water supplies which may impact farming over the long term. The present shortage of surface water supplies requires a balance of conflicting desires for long term sustainability. Growth and prosperity require careful considerations to secure a reasonable harmony of natural resources, infrastructure, and service delivery, supported by fiscal responsibility. Growth in surrounding counties may lead to new prospects in Pershing which will require careful consideration until alternative water supplies are secured.

Chapter Two, **Conservation and Natural Resources**, identifies the land and water amenities, and cultural and historic resources whose preservation is important to maintaining the character of the


istock 675244578

community. Strategies to protect, manage, and advertise these resources will enhance the attractiveness of the County. **Appendix A** provides a list of Pershing's historic sites.

Chapter Three, **Land Use and Growth Coordination**, explores the land use patterns within the County, including public and private land, areas for development to meet future needs as determined by the other plan elements, and identifies the goals and policies to achieve the County's vision.

Chapter Four, **Public Services and Facilities**, includes a summary of the available water and sanitary sewer facilities, sheriff, fire services, parks and recreation facilities, and other social services important to the master planning effort. The complete Water Facility Plan is attached as **Appendix C**.

Chapter Five, Transportation, discusses transportation needs to efficiently manage the transportation infrastructure.

Chapter Six, **Implementation**, describes the process of maintaining a relevant Master Plan. It specifies actions to maintain and amend the plan to address community concerns. Plan monitoring is an on-going process by the County to assess its effectiveness in achieving the plan's goals and implementing plan policies. Together with the reference information included in **Appendices A-C**, these six (6) chapters comprise the Pershing County Master Plan -- ***a guide to future growth and sustainability***.

How was the Master Plan Update Prepared?

The original Pershing County Master Plan was developed more than 20 years ago with considerable public participation including workshops in Grass Valley, Imlay, Rye Patch, and Lovelock. Interviews with staff, the Regional Planning Commission, and Board of County Commissioners helped craft the community vision, goals, and policies. The Regional Planning Commission and Board of County Commissioners adopted an update in 2012.

The 2022 Master Plan update presents a modified vision for Pershing County with focused goals and policies to attract new employers and residents. The County remains connected to its farming economy and culture with an eye towards a future. With limited water resources and an over appropriated hydrographic basin, new development will be a balancing act until additional supplies are located by the Lovelock Meadows Water District. That should be Goal number one. Individual element goals and policies were modified to reflect a desire to diversify the economy as best as possible and cultivate a stronger association to the northern Nevada region.

This update includes the most current social demographic data (2019) since the U.S. Census is not yet releasing data from the 2020 Census due to challenges with data collection associated with the Covid pandemic and former White House mandates that disrupted the U.S. Census. Implementation strategies were updated to reflect changing economic trends with an eye toward a future that balances resources and growth.

How should the Plan be used?

The Master Plan is a document designed to guide the future actions of the County. It presents a vision, with long-range goals and policies for the important activities that affect the local government. It is not, itself, an implementation tool. By ensuring that individual actions are consistent with the policies of the Master Plan, the County should be able to effectively achieve its goals. For example, the Regional Planning Commission and the Board of County Commissioners will use the Plan's policies in making decisions whether to approve requests to change the Land Use Map. Land use designations coupled with the subdivision, building code, and construction standards will regulate development. Amendments to these regulations may be necessary to effectively achieve the Master Plan goals and policies.

The Pershing County Master Plan defines policies and recommends measures governing the application, modification, and interpretation of the development regulations. In accordance with the master plan recommendations, the County adopted a detailed facility plan for the water system. Facility plans may be ultimately necessary for wastewater and flood control. The master plan policies should be considered during the development of the County's capital improvement program and annual budget.

Community Vision

The community vision expresses the ultimate outcome of the Pershing County Master Plan through broad statements that reflect the local government's desired future. It was created in conjunction with economic, sustainability, and natural resources in mind. The vision is supported by a series of goals, objectives, and policies for each element that weave the chapters into a cohesive document. It's a vision for the upcoming 20 years.

Rural communities such as Pershing County often face harder challenges than simply managing growth, increasing affordable housing, and preserving historic resources. However, circumstances can quickly change. This is evident in neighboring northern Nevada counties where new employment and subsequent residential demand appeared without warning. After considering the expansion in Humboldt, Lyon, and Elko counties, Pershing County collaborated with the Western Nevada Development District during the preparation of this Master Plan update to determine its organizational readiness and capacity to respond to the overflow demands from neighboring counties .

Community Vision Statement

Pershing County is a business-friendly community that supports new industry and attracts residents who value affordable housing, a rural heritage, and a welcoming environment. The community celebrates it agricultural resources, historic architecture, vast open spaces, and unique location along the second longest interstate highway in the US.

The county has worked to expand water delivery, employment, and telecommunications services through a collaborative effort with local and state agencies to support its readiness for evolving change. The county is committed to balancing demand with available natural resources and infrastructure and supporting the Lovelock Meadows Water District in pursuing additional resources.

Residents and visitors access recreational opportunities including walking trails, natural hot springs, mountain peaks, and the Rye Patch State Recreation Area. There is a remarkable sense of community spirit in Pershing County.

Pershing County is committed to the creation of an economic climate that enhances the quality of life in their community. This can be achieved by fostering the development of environmentally sustainable occupations and opportunities for new employers and industries. The County and its Economic Development Authority will work to attract technology, industrial and manufacturing uses, ecommerce, and renewable energy employers. The agricultural economy provides a landscape and environment that support a small-town mindset.

However, downtown Lovelock is replete with vacant buildings and lacks an active sense of center. To attract new business and residents, investing in the downtown aesthetics must be prioritized and efforts to secure state/federal grant funding pursued. The County recognizes the importance of creating a welcoming downtown as well as supporting public services and amenities for the elderly and disabled, the value of arts and culture, and promoting a business-friendly development environment.

Guiding Principles

The principles described below reflect the values of the community leadership and residents expressed through the master plan update community engagement process combined with sound planning practices. Listed in random order, these core principles serve as a barometer for the County's planning decisions and its vision for the future.

Promote Sustainable Land Use Planning and Development.

Managing and directing future growth in Pershing County should be done in a manner that promotes the concept of sustainability, and the establishment of resilient neighborhoods. Sustainable land use and community-based planning practices include:

1. Foster growth in existing developed areas either by additional subdivision, infill, or redevelopment.
2. Promote complete communities with proximate public services such as schools, libraries, grocery which are accessible via car and include sidewalks to encourage safe and healthy lifestyles.
3. Revitalize Downtown Lovelock through federal grant applications, local support, and state involvement.
4. Protect natural and environmental resources.
5. Continue the pressure to get the Pershing County Economic Development and Conservation Act (the "Public Lands Bill") reconsidered and adopted in some form to consolidate land for efficient management and usage.

Advocate Positive Fiscal Impacts from Growth.

The County will ultimately achieve its goal to achieve the authorization of the Land Bill and have contiguous parcels for efficient sale and development. The Bill will reduce the BLM land ownership acreage and increase private ownership acreage for income-generating development, mining, public facilities, wildfire prevention, and conservation. Concerted and collaborative efforts with neighboring counties who also administer a checkerboard ownership pattern should join the effort and apply greater pressure as a unified force on Congress. The present political environment may be ripe to reduce federal land management responsibilities and improve the local economic opportunities.

Support Economic Diversity.

The County's resource-based economy is subject to fluctuations as mineral and agricultural product prices shift, mines open and close, agricultural yields vary, and sustained periods of drought and climate change affects water resources. Agricultural employment decreases as operations become mechanized. Economic diversity and growth are needed, particularly in the form of reliable middle wage jobs. The land-based Salmon farm, that will eventually produce and process up to 60 tons of fish using recycled groundwater, is an exceptional diversification without significantly diminishing natural resource reserves. More employers that produce jobs that use recycled resources are necessary.

Coordinate Service Provision.

The land use plan should provide for a variety of residential housing options, supporting commercial, public facilities, and emerging

industry that supports the County's vision, values, and natural resource capacity.

Maintain Efficient Public Service Delivery.

Define appropriate levels of services given two decades of declining population growth and a forecast of less than 1% of growth for the upcoming decade. The rural areas of Grass Valley, Mill City, Imlay, Unionville, Buena Vista Valley, and lower Lovelock Valley need individual consideration. Develop and implement a reasonable maintenance schedule for ongoing funding of services and essential future infrastructure projects.

Consider Transportation and Mobility for All Users in Planning and Development Decisions.

Provide a transportation system that accommodates pedestrians, bicyclists, autos, and trucks and eliminates as many conflict points between them as possible. Restrict points of ingress/egress on major roads to improve safety and maximize carrying capacity of these roads. Increase pedestrian and bicycle safety by providing sidewalks and bicycle lanes or sharrows on appropriate roadways.

Enhance Recreational Opportunities. Value open space as an integral part of the County's attraction and take advantage of opportunities for expansion and enhancement made possible by actively searching for federal and state grant funding. Authorization of the Public Lands Bill will result in the release of Wilderness Study Areas and the designation of select areas as Wilderness for ease of access and management.

Manage Limited Water Resources.

Implement the water management policies in the Water Resources Plan (**Appendix C**) which includes maintaining the good standing of water rights held by the County to protect and ensure available water resources for all stakeholders into the future.

Conserve Agricultural Land.

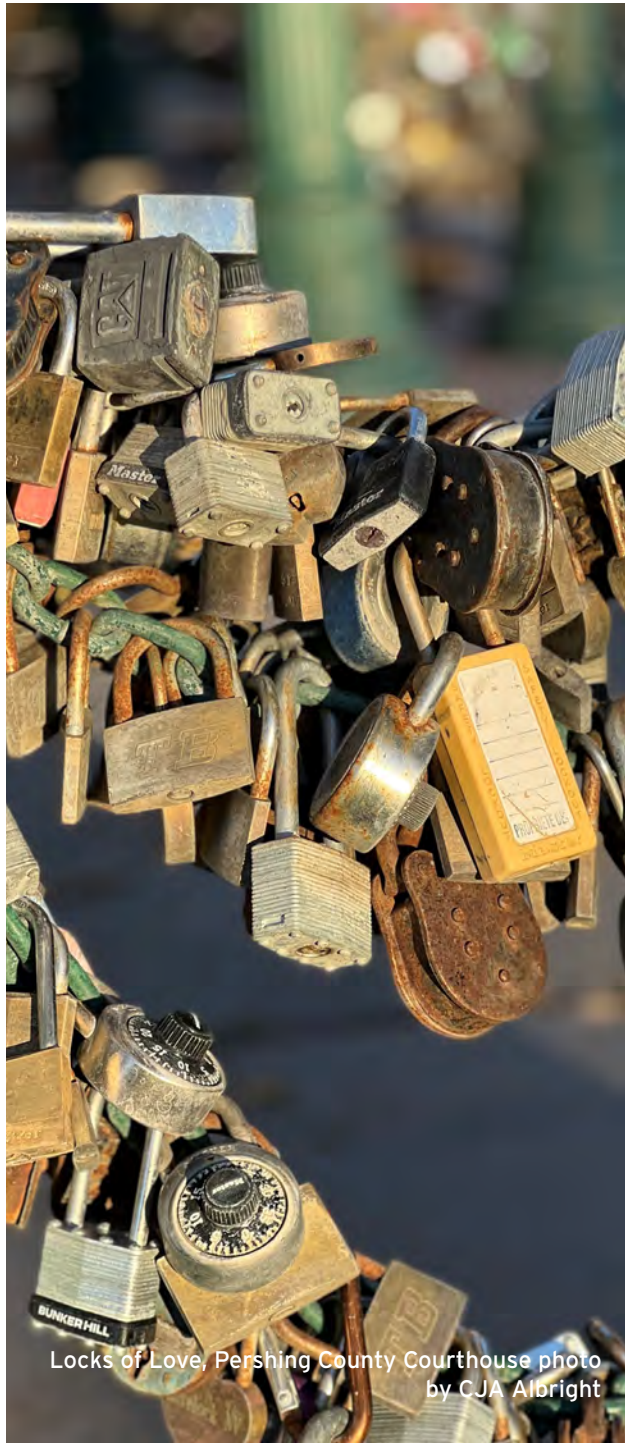
Continue managing agricultural land while promoting new industry, and local businesses consistent with the County's vision for economic prosperity.

Retain the Rural Character.

Balance growth and promote a diversification of employment and housing while considering the preservation of the County's agricultural character and community identity while promoting the county for new growth.

Preserve Historic Resources.

Support the enhancement of the historic resources in Pershing County while increasing access to relevant information for visitors. Promote the County's recreational opportunities, historic sites, community events and cultural venues. **Appendix A** lists historical sites including the Courthouse, ghost towns, and mines located in Pershing County.



Locks of Love, Pershing County Courthouse photo by CJA Albright

View east of the West Humboldt Range photo by CJAlbright

01. Context for Planning

Overview

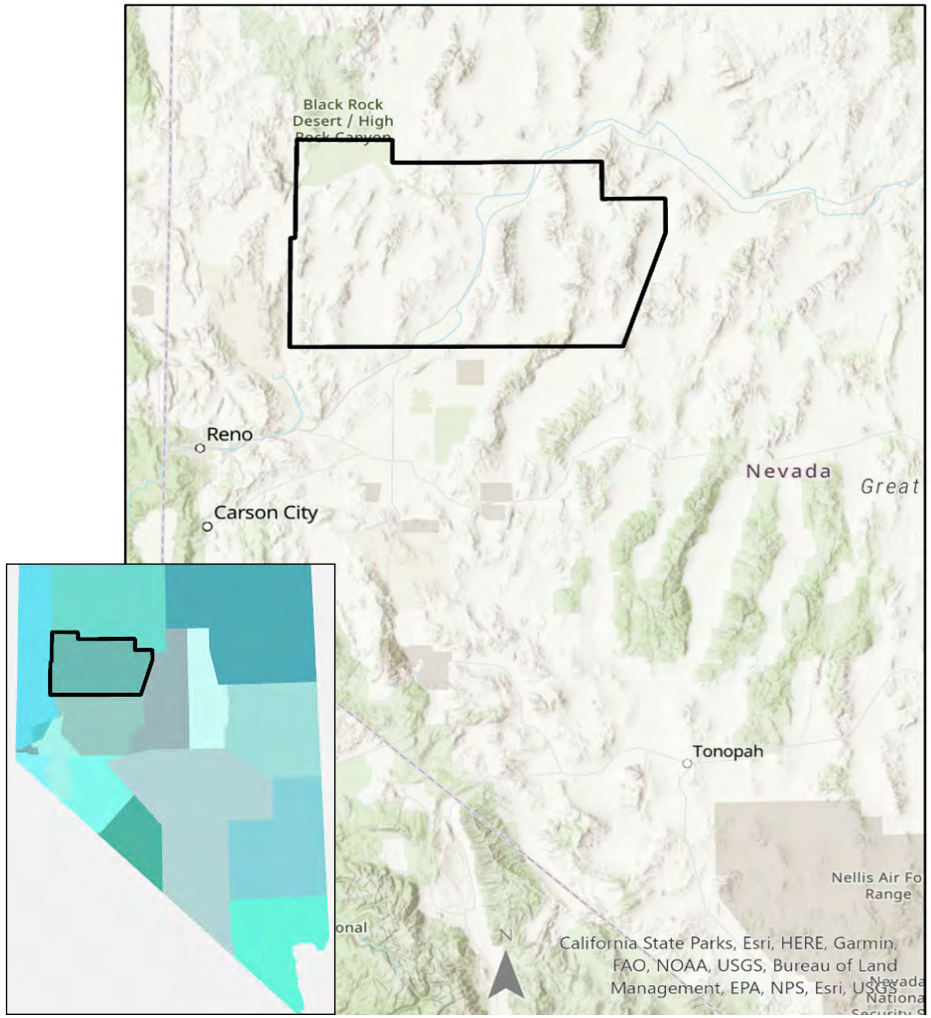
As shown in **Figure 1.1**, Pershing County lies in the northwest portion of the state and enjoys the Interstate 80 transportation corridor through its center. The Union Pacific Railroad (UPRR) follows I-80 along the Humboldt River. Pershing County envelopes the City of Lovelock, and consists of agriculture and mining uses. Several unincorporated communities, such as Grass Valley, Imlay, Mill City, Unionville, and Rye Patch are scattered throughout the Interstate 80 corridor. Grass Valley is the largest of these residential and agricultural areas in terms of population, located in the shadow of Sonoma Peak and less than 15 miles to the City of Winnemucca in adjoining Humboldt County, depending on point of origin and travel route. Many residents of Grass Valley work in Humboldt County and most resident acknowledged they acquire fuel and household items outside of Pershing County due to proximity of services.

Pershing County was formed in 1919 from Humboldt County and was the last County established in the state. This occurred one year before the women earned the right to vote and the collection of population and earnings data by the U.S. Census in 1920.

The City of Lovelock, in the lower portion of the County sits approximately 90 miles from the City of Reno, 75 miles northeast of the Storey County Tahoe Reno Industrial Center, and 60 miles from the industrial development transforming Lyon County.

These three areas combined significantly expanded the state's economy pivoting from primarily warehousing and gaming to include technology,

Figure 1.1 Pershing County Location Map



manufacturing, data centers, renewable energy, logistics and distribution. As these areas mature and land becomes more expensive and/or scarce, Pershing County may become the target to satisfy future demand for these economic sectors and their supporting uses. Growth in these economies requires appropriate infrastructure and be in place. Growth also requires water resources and reliable broadband technology. This topic will be discussed further in this Master Plan.

Pershing County's geographic location within the state and along an interstate with rail access is particularly important when considering future opportunities. While neighboring counties are flourishing, many others' economic vitality remain unchanged. Some counties are declining in population.

Adjacent Humboldt County grew in the past decade while Lander County to the east declined. To the south, Churchill County's population increased modestly while Washoe County's population and economy skyrocketed.

The 6,068 square miles of land mass in Pershing County consists of 0.51% surface water resources which attracts visitors and enjoyed by residents for recreation purposes. For comparison, Washoe County's water land area totals 3.67% and Churchill County nearly 2%. While Churchill's water resources significantly exceed Pershing, it's the robust marketing of all outdoor activities available in Churchill County that is noteworthy.

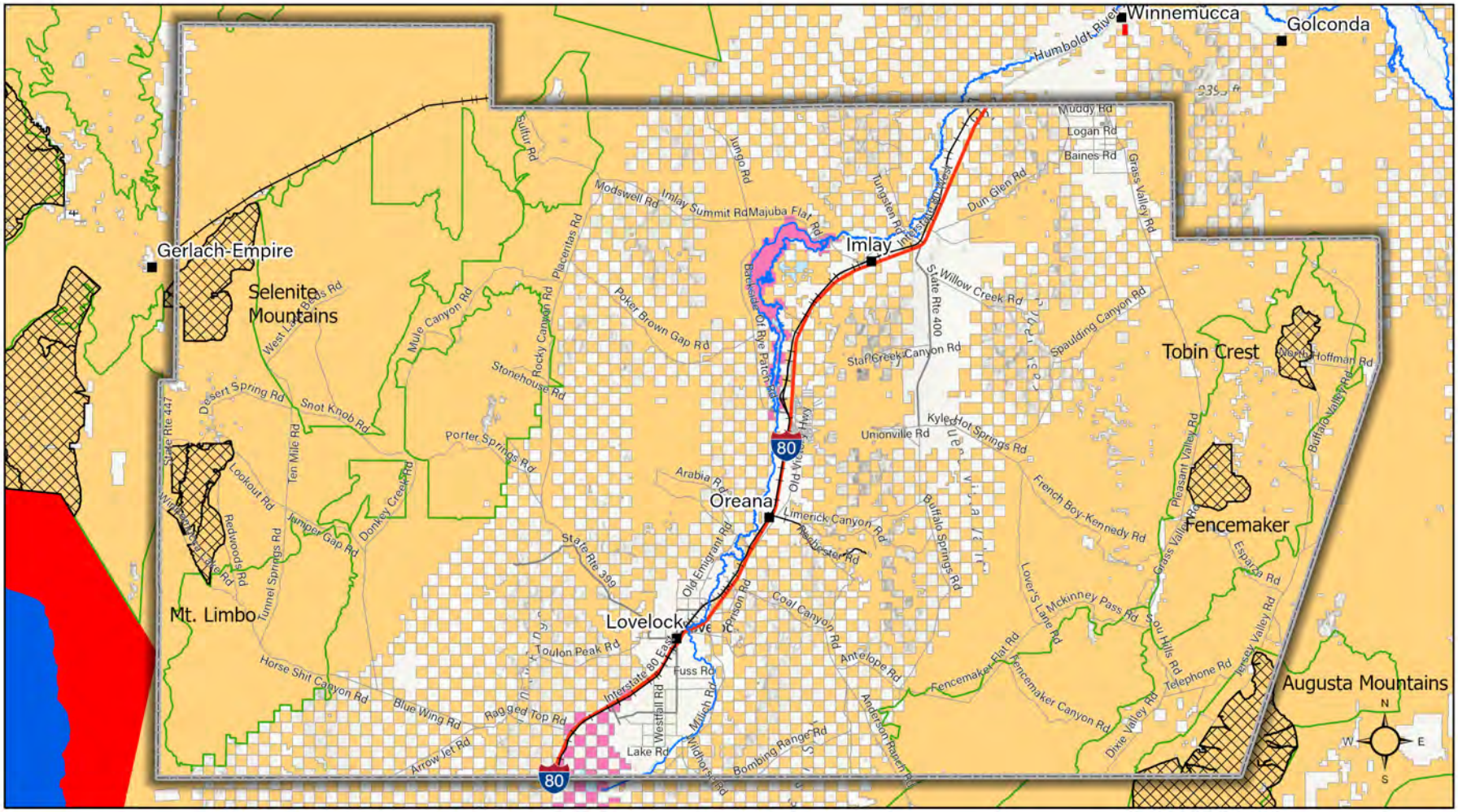
A website search revealed over 200 entries and with the growth in recreation-based tourism, attracting visitors to Pershing County will require increased marketing efforts with numerous objectives.

Approximately 75% of the land area in Pershing County is owned by the Bureau of Land Management ("BLM"). **Figure 1.2** illustrates the extent of public land ownership as well as the Wilderness Study Areas.

For the past decade, Pershing County and its residents sought to resolve related land issues between the local and federal agencies. Assembling land for larger projects, such as renewable energy is complicated by the 'checkerboard' nature of public land ownership. County leadership submitted the Pershing County Economic Development and Conservation Act for congressional approval over a decade ago to bring various land ownership issues to conclusion including the conveyance of BLM land for public purposes, sale to permitted operating mines and potential new ones, land exchanges to eliminate the checkerboard land pattern, designation of new and release of other wilderness study areas.

The existing recreational resources located in Pershing County consist of the Humboldt State Wildlife Management Area, Lovelock Caves Nature Trail, Rye Patch and Pittman-Taylor Reservoirs, Star Peak hiking trails, Old Razorback Mountain, Thunder Mountain, and Thunder Mountain Monument. Expanding recreational opportunities and/or aggressively promoting the County's worthwhile outdoor destinations could reap economic benefits for the County by increasing tourism over time.


Big Meadow Cemetary photo by CJAlbright



Legend

- Railroads
- Interstate
- State Route
- Local Route
- Humboldt River
- Wilderness Study Area Boundaries
- Herd Management Areas
- Bureau of Indian Affairs
- Bureau of Land Management
- Bureau of Reclamation
- Private
- Water

Figure 1.2
Nevada BLM Wilderness Study Areas and Surface Management Agency

Source: Pershing County; Farr West Consulting digital data release 2021
USGS, ESRI, NASA, NGA, USGS, BLM
Cynthia Albright, LLC

Projection: State Plane Nevada West Zone, NAD 83, U.S. Survey Foot

Scale: 1 in = 66,000 Feet Date: 11//25/22

Physical Environment

The natural environment is one of the County's valuable resources. The temperate climate, clean air, and vast open space make Pershing County a desirable place for people who prefer a quieter lifestyle and small-town ambiance. With the dramatic change in employment conditions as a result of the pandemic, the opportunity for remote employment is wide open. There are estimates ranging between 20-40% of all workers could continue to work partially or fully from home post pandemic.

Remote employment seems to work best for occupations held by skilled and educated workers. The industries that could support at-home employment include Information, Finance and Insurance, Real Estate, Rental and Leasing, Professional, Scientific, Management, and Administrative. This list excludes the Public Administration sector since Pershing County staff report to work within designated offices and locations.

According to the U.S. Census, approximately 600 of the 2,177 civilian employees ages 16 years and over (27%), and hold jobs that could be conducted remotely. That estimate could expand as jobs in the fields of software development, IT managers, data scientists, medical and health care services, finance, legal, market research analysts, and others, also expands is this area.

The low cost of living in Pershing County is a significant attraction. However, upgraded telecommunications infrastructure is essential to attract people migrating out of expensive and populous states and counties in pursuit of a higher quality of life and affordability.

According to research from the Tax Foundation, net domestic migration from June 1, 2020 to June 1, 2021 handed Nevada a number 10 national ranking of all states with a migration rate of 8.06 persons per 1000 inhabitants.

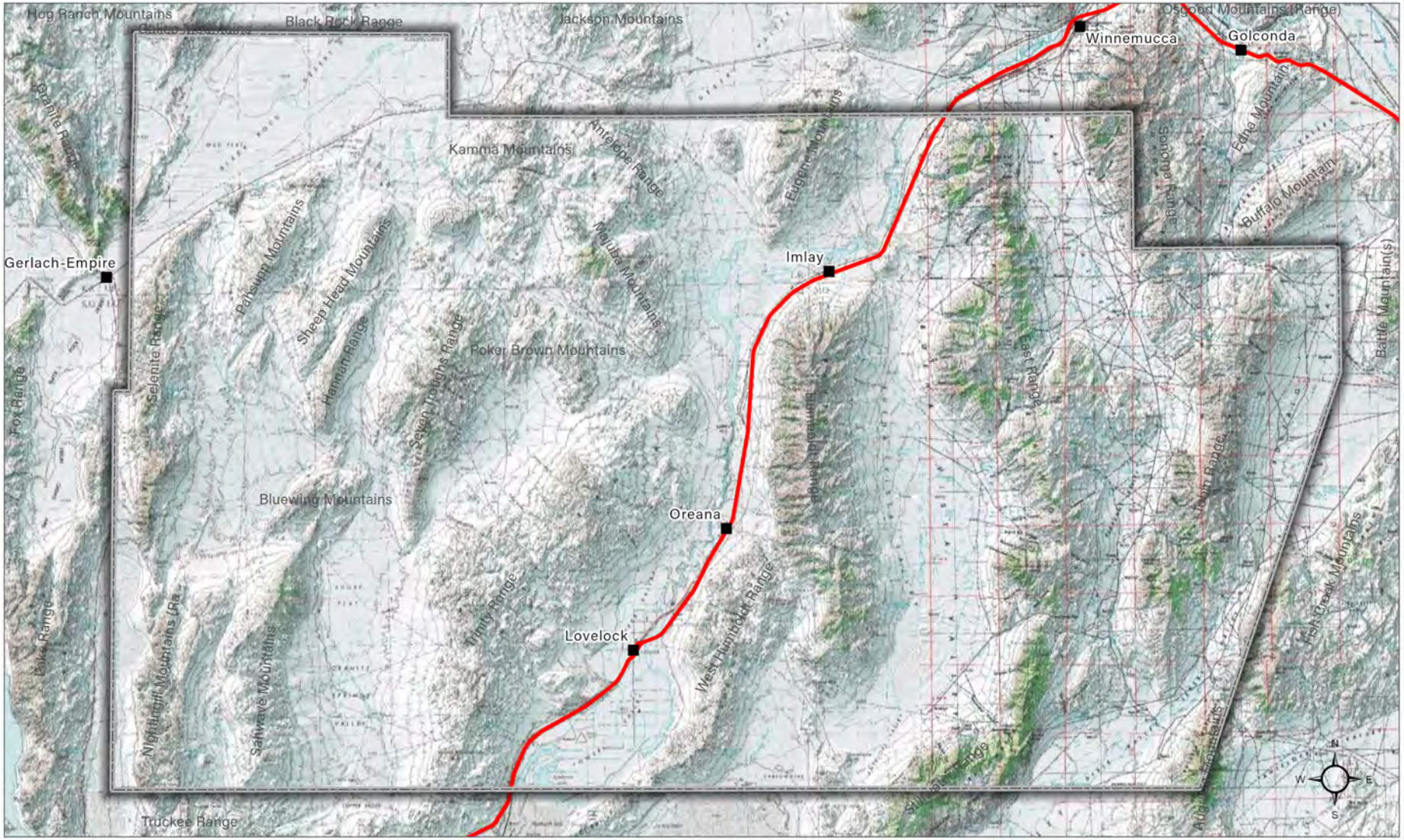
The community's climate, topography, and cost of living provide opportunities; its water supply and broadband infrastructure presents constraints. Decisions affecting growth and new development must be weighed in conjunction with these limitations. Pershing County's challenge is to maintain the services for existing residents and businesses while facilitating new growth to maintain economic prosperity.

Topography

The basins and mountain ranges in Pershing County create an interesting landscape throughout the County. As shown in **Figure 1.3** General Topography, I-80 runs through the middle of a basin and is flanked on either side with ranges between 6,150-6,800 feet in elevation. This is true throughout the County with over thirteen mountain ranges running north to south. The highest mountain, Star Peak, located in the Humboldt Range, exceeds 9,800 feet above sea level. The parking area and trail is accessible from Lovelock in less than 45 minutes by car. Crossing Pershing County from west to east, the following list identifies all thirteen (13) mountain ranges:

- Nightingale Mountains-Selenite Range
- Sahwave Mountains-Bluewing Mountains
- Kamma Mountains
- Seven Troughs Range
- Trinity Range
- Eugene Mountains
- West Humboldt Range
- Humboldt Range
- East Range
- Sonoma Range
- Stillwater Range
- Tobin Range


photo by CJAlbright



Legend

- Pershing County
- Interstate
- Cities and Towns

Figure 1.3
General Topography

Source: Pershing County; Farr West Consulting
digital data release 2010, 2000
NDOT, US Census Bureau
Stantec Consulting; Cynthia Albright, LLC

Projection: State Plane Nevada West Zone,
NAD 83, U.S. Survey Foot

Scale: 1 in = 12 Miles Date: 12/2/2022

Hydrology

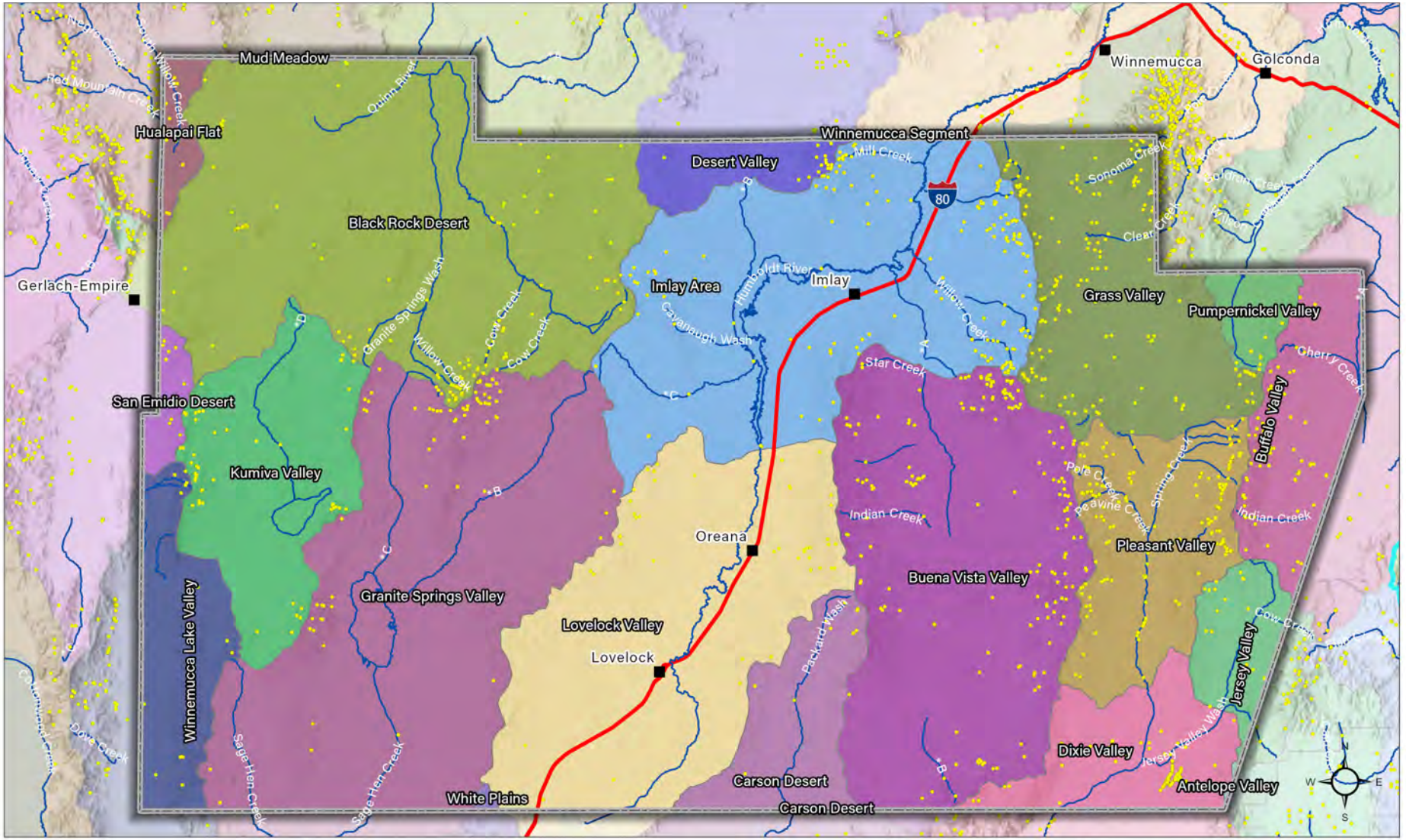
Water availbility are a limiting factor to growth within Pershing County. Because of these concerns, Pershing County adopted a Water Resource Plan in 2018 to establish the framework for managing and conserving the water resources throughout the County to assure sufficient resources for future generations. The major source of irrigation water for Pershing County is the Humboldt River.

Pershing County receives approximately 8 inches of precipitation annually in the Grass Valley area, 7 inches in Imlay, and 3 inches in the Lovelock Valley.

Figure 1.4 illustrates the County's hydrologic resources and spring locations. The Humboldt River drains the northern parts of the County, flowing in a southwesterly direction. For the most part, valleys drain into sinks, with little water escaping to neighboring counties. At higher elevations, small springs provide water for livestock and wildlife. Wells or springs provide water for domestic uses in the valleys.

Water supply is the primary constraint to new growth. While proof of water rights is a condition for development in the County, there is concern that water rights may exceed reliable supplies. As with much of the arid west, agricultural rights will need to be purchased. In Pershing County, water is available for purchase for new development within the Lovelock Meadows Water Distict for domestic use. Within the water district is the most appropriate location from a growth management perspective. To deliver water resources outside of the district, new resources are required and the Lovelock Meadows Water District should be exploring federal and state grants to help in the research and exploration for additonal resoruces

Lower Valley draiinage photo by C.J.Albright



Legend

- Pershing County
- Interstate
- Cities and Towns
- Spring Locations
- Rivers and Streams

Pershing Sub-Basins

- Antelope Valley
- Black Rock Desert
- Buena Vista Valley
- Buffalo Valley
- Carson Desert
- Desert Valley
- Dixie Valley
- Granite Springs Valley
- Grass Valley
- Hualapai Flat
- Imlay Area
- Jersey Valley
- Kumiva Valley
- Lovelock Valley
- Mud Meadow
- Pleasant Valley
- Pumpernickel Valley
- San Emidio Desert
- White Plains
- Winnemucca Lake Valley
- Winnemucca Segment

Figure 1.4
Hydrology and Spring Locations

Source: Pershing County; Farr West Consulting digital data release 2010, 2000
NDOT, US Census Bureau
Stantec Consulting; Cynthia Albright, LLC

Projection: State Plane Nevada West Zone, NAD 83, U.S. Survey Foot

Scale: 1 in = 12 Miles Date: 12/2/2022

Soils

Soil quality in Pershing County varies based on geography. The soils in the mountainous areas, having been developed on sedimentary or volcanic deposits, are stony or gravely, medium textured, and drain too excessively well. Therefore, these areas are unsuitable for agricultural production and less desirable fr urban development. Generally, soils tend to be shallow, unstable, or subject to severe erosion. **Figure 1.5** illustrates the wide range of soil types in Pershing County.

Table 1.1 describes the soil associations located within the Lovelock area of Pershing County.

The Lovelock Valley soils have been formed primarily under conditions of a high-water table and poor drainage. Soils on upland benches and terraces developed primarily in alluvial deposits. They are moderately deep, stony, and well
drained. Salt and alkali concentrations are slight and some of these soils are underlain by a cemented clay-pan or cemented gravel.

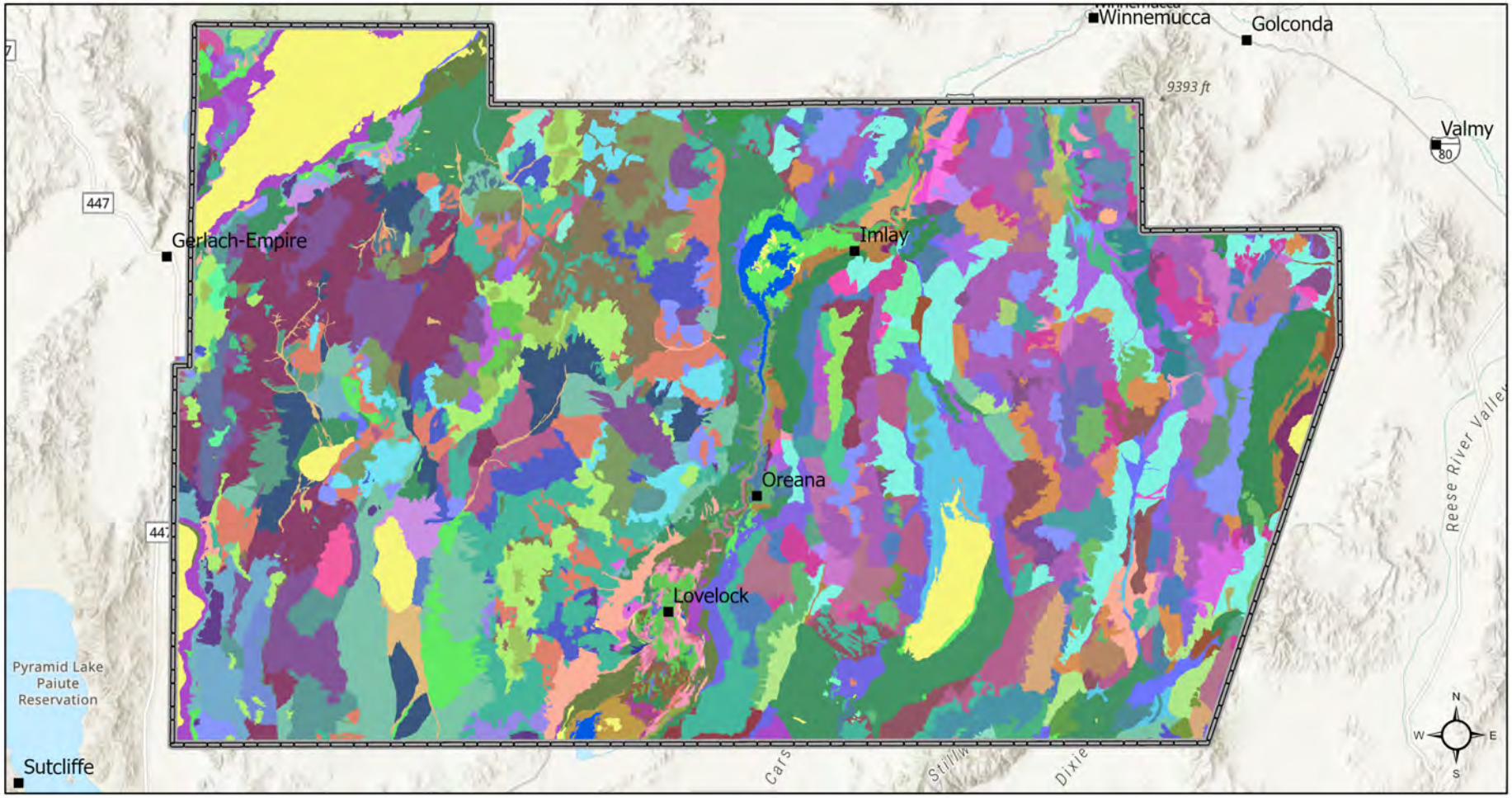
The floodplain of the Humboldt River presents gentle slopes or nearly flat land. Much of the built-up portion of the County, including the area in the vicinity of Lovelock, possesses this characteristic.

Soils in the floodplains are primarily composed of lake sediments or reworked lake sediments, which may have mixtures of alluvium and loess (type of deposit). They are deep, fine textured, and poorly drained. Soils have a medium texture and a high concentration of organic matter. Farmers created a system of drainage canals to lower the high-water table and enhance drainage. Since much of the valley is irrigated and receives low rainfall, naturally occurring alkali has increased the pH of some agricultural lands. This trend can impact long term productivity unless a mitigation program is implemented.

Table 1-1 Soil Association Descriptions

Association	Slope	Physiography	Uses	Drainage	% Lovelock Area	Pershing Location
Sonorma-Placeritos	Smooth to Nearly Level	Loamy Alluvium	Pasture, crops	Imperfect	45	Floodplain from Humboldt River
Humboldt-Rye Patch	Smooth to Nearly Level	Somewhat Stratified, Loamy and Clayey Alluvium	Pasture, crops	Imperfect	32	Floodplain and Upper Delta plain of Humboldt River
Lovelock-Kodiak	Level to Nearly Level	Loamy Eoliam to Alluvium	Pasture, crops	Poor, imperfect	17	Lower Delta plain of Humboldt and former bed of Humboldt River
Mazuma-Unionville	Nearly Level to Sloping	Loamy Alluvium to Residum	Sand and Gravel Mining	Well drained	6	Strip along western boundary and small areas along eastern boundary

Source: Soil Survey, 1973



County Boundary
Cities and Towns
Aboten
Acrelane
Adelaide
Alley-Snowmore
Alyan-Chen
Appian-Isolde
Arclay
Arents
Argenta
Armydrain
Atlow
Badland
Bango
Batan
Bedwyr
Benin
Beoska-Oxcorel
Biddleman
Biga
Bigmeadow
Blackhawk
Bliss-Chiara
Bluewing
Bojo variant
Boomstick-Majuba
Boton
Brinker
Bubus
Burnborough
Burrita-Burnborough
Chiara
Chilper-Trocken
Cleavage-Burnborough
Cleaver-Trocken-Bluewing
Colado
Coldent
Cortez
Cresal
Daick-Rezave
Deadyon
Dedmount
Denay
Devada
Dewar
Dorper
Duffer
Dump
Dun Glen
Dune
Eastwell
Envol
Eaglerock
Findout-Izod
Genegraf-Trocken
Gol-Say
Golconda
Goldrun
Golsum-Spinlin-
Granshaw
Gravel pits
Grumblen
Gwena-Enko

Figure 1.5
Soils

Source: Pershing County; Farr West Consulting
digital data release 2010, 2000
NDOT, US Census Bureau
Stantec Consulting; Cynthia Albright, LLC

Projection: State Plane Nevada West Zone,
NAD 83, U.S. Survey Foot

Scale: 1 in = 13 Miles Date: 12/2/2022

Agricultural Land

In 1965 the Soil Conservation Service (SCS) of the U.S. Department of Agriculture (USDA) conducted a soil survey of the area in and around the City of Lovelock in Pershing County. The survey determined the types of soils in the area, where they are located, and how they could be used. The Lovelock area is composed of the four predominant soil types described above in **Table 1-1**: Sonoma-Placeritos, Humboldt-Rye Patch, Lovelock-Kodak, and Mazuma-Unionville. Sonoma-Placeritos is a light-colored, very deep, and imperfectly drained soil on the flood plain of the Humboldt River.

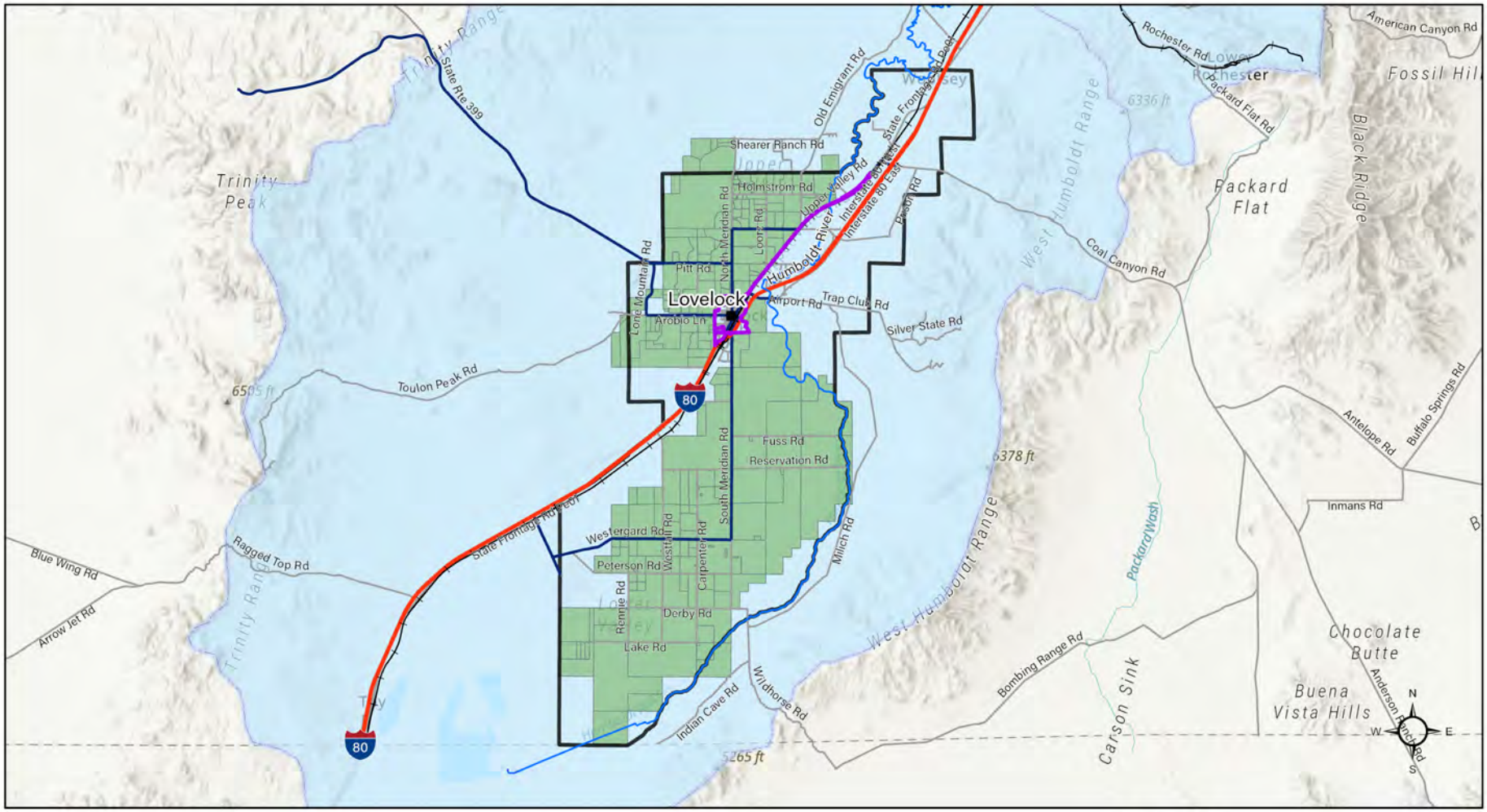
The native vegetation, consisting of greasewood and saltbush, which grows on this soil type, provides little grazing for livestock. While this soil type is not generally conducive to agriculture, irrigation and proper drainage measures have allowed for successful returns of alfalfa, corn, and small grain. Humboldt-Rye Patch is dark-colored and like Sonoma-Placeritos soil. Lovelock-Kodak soil is suitable only for the growth of small grains and alfalfa due to poor drainage and high salt content. Mazuma-Unionville soils cover large sand and gravel reserves. Due to the high elevation, this soil type is typically unsuitable for farming.

In terms of defining prime agricultural lands, the SCS utilized "capability" ratings show how the soils would perform for most kinds of farming. **Class I** soils are those that have few limitations to restrict their uses. Unfortunately, no Class I soils were found in the Lovelock area. The Lovelock area received a **Class II** rating. Class II encompasses soils that present some limitations and challenges for farming. With effort and good management techniques, Class II soils have been used successfully. The pressure to expand the Lovelock urbanizing area was settled in 1992 with adoption of the Agricultural Preservation Overlay District to preserve farmlands. **Figure 1.6** illustrates the Lovelock Meadows Water District and Agricultural Preservation District Boundaries. **Figure 1.7** depicts the BLM Grazing Allotments throughout the County.

Table 1-2 BLM Grazing Allotment, Pershing County

BLM State	District Office	Field Office	Allotment Number	Allotment Name	Acres in Pershing Co.*	% of Allotment in Pershing	Type of Livesock	Total Actual Active AUMS	AUMS Based on Acres in Pershing
NV	Battle Mountain	Mount Lewis	10021	Buffalo Valley	79,020	84.85	Cattle/ Sheep	7,140	6,058
NV	Battle Mountain	Mount Lewis	20015	Cottonwood	126	0.11	Cattle/ Sheep	5,683	7
NV	Battle Mountain	Mount Lewis	142	South Buffalo	15,078	100.00	Cattle/ Sheep	9,201	9,201
NV	Carson City	Stillwater	3006	Boyer Ranch	12,755	8.63	Cattle	1,790	155
NV	Carson City	Stillwater	3013	Copper Kettle	314	0.27	Cattle	2,333	6
NV	Winnemucca	Humboldt River	135	Blue Wing/7 Troughs	1,186,640	86.22	Cattle/ Sheep	20,213	17,517

Table 1-2 continued page 20



Legend

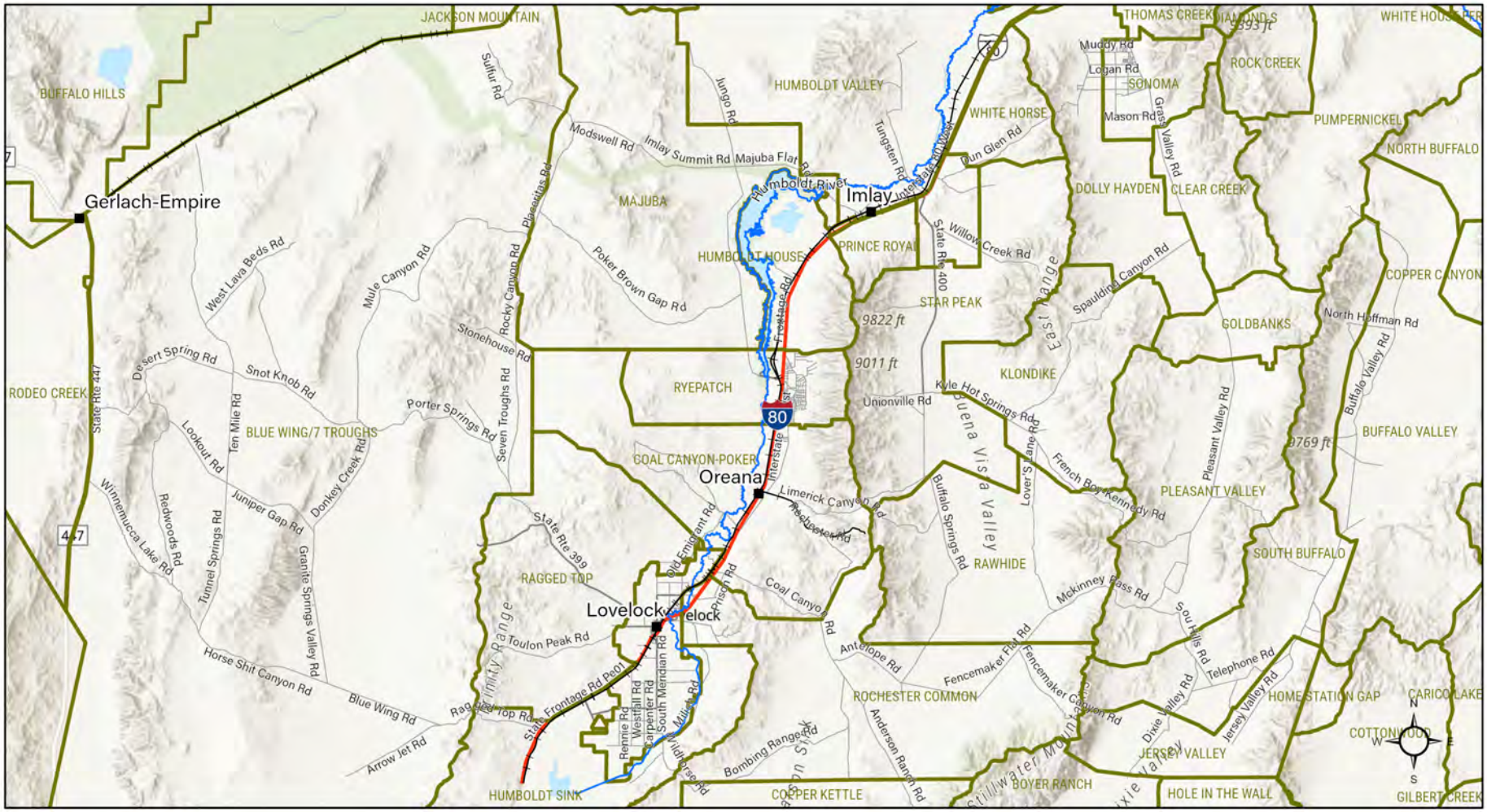
- Cities and Towns
- Interstate
- State Route
- Local Route
- Railroads
- Humboldt River
- Lovelock Boundary
- Water Basins 73A & 73
- Lovelock Meadows Water District Service Area
- Agricultural Preservation Overlay District
- Public Land

Figure 1.6
Lovelock Meadows Water District Service Area

Source: Pershing County; Farr West Consulting digital data release 2021
USGS, ESRI, NASA, NGA, USGS, FEMA
Stantec Consulting; Cynthia Albright, LLC

Projection: State Plane Nevada West Zone, NAD 83, U.S. Survey Foot

Scale: 1 in = 21,875 Feet Date: 11/22/22



Legend

- Railroads
- Interstate
- State Route
- Local Route
- Humboldt River
- Cities and Towns
- BLM Pershing County Grazing Allotment Polygons

Figure 1.7

Nevada BLM Grazing Allotment in Pershing County

Source: Pershing County; Farr West Consulting digital data release 2021
USGS, ESRI, NASA, NGA, USGS, BLM
Cynthia Albright, LLC

Projection: State Plane Nevada West Zone, NAD 83, U.S. Survey Foot

Scale: 1 in = 60,000 Feet Date: 11//25/22

BLM State	District Office	Field Office	Allotment Number	Allotment Name	Acres in Pershing Co.*	% of Allotment in Pershing	Type of Livesock	Total Actual Active AUMS	AUMS Based on Acres in Pershing
NV	Winnemucca	Humboldt River	109	Clear Creek	44,554	73.36	Cattle	2,931	2,150
NV	Winnemucca	Humboldt River	104	Coal Canyon--Poker	176,132	100.00	Cattle/Sheep	3,144	3,144
NV	Winnemucca	Humboldt River	121	Dolly Hayden	91,642	0.14	Cattle	1,067	911
NV	Winnemucca	Humboldt River	105	Goldbanks	40,957	2.18	Cattle/Sheep	2,357	2,357
NV	Winnemucca	Humboldt River	3030	Hole in the Wall	118	100.00	Cattle	1,488	2
NV	Winnemucca	Humboldt River	10064	Home Station Gap	240	39.01	Cattle	602	13
NV	Winnemucca	Humboldt River	112	Humboldt House	60,659	63.07	Cattle/Sheep	728	728
NV	Winnemucca	Humboldt River	113	Humboldt Sink	74,404	99.97	Cattle	1,582	617
NV	Winnemucca	Humboldt River	138	Humboldt Valley	140	100.00	Cattle	2,900	1,829
NV	Winnemucca	Humboldt River	148	Jersey Valley	374	92.45	Cattle	1,173	1,173
NV	Winnemucca	Humboldt River	124	Klondike	68,226	100.00	Cattle	4,610	4,610
NV	Winnemucca	Humboldt River	140	Majuba	112,405	100.00	Cattle	3,325	3,074
NV	Winnemucca	Humboldt River	114	Pleasant Valley	259	20.54	Cattle	10,553	10,533
NV	Winnemucca	Humboldt River	115	Prince Royal	105	100.00	Cattle/Sheep	153	153
NV	Winnemucca	Humboldt River	116	Pumpernickel	185,319	100.00	Cattle/Sheep	9,569	1,965
NV	Winnemucca	Humboldt River	131	Ragged Top	20,934	87.86	Sheep	0	0

*Acres Based on BLM GIS
Table created September 15, 2022 by Tracey Jean Wolfe. Data from BLM NV Grazing Allotment shapefile and BLM Rangeland Administration Systems (RAS) reports https://reports.blm.gov/reports.cfm?application=RAS

Table 1-2 continued page 21

BLM State	District Office	Field Office	Allotment Number	Allotment Name	Acres in pershing Co.*	% of Allotment in Pershing	Type of Live-stock	Total Actual Active AUMS	AUMS Based on Acres in Pershing
NV	Winnemucca	Humboldt River	119	Rawhide	157,956	100.00	Cattle	2,740	2,740
NV	Winnemucca	Humboldt River	117	Rochester Common	224,388	87.86	Cattle/Sheep	3,186	2,799
NV	Winnemucca	Humboldt River	106	Ryepatch	67,238	100.00	Cattle/Sheep	1,981	1,981
NV	Winnemucca	Humboldt River	10102	Sonoma	36,252	90.11	Cattle	1,485	1,338
NV	Winnemucca	Humboldt River	11	StarPeak	171,519	100.00	Cattle/Sheep	3,075	3,075
NV	Winnemucca	Humboldt River	143	White Horse	36,838	97.30	Cattle	1,970	1,917
NV	Winnemucca	Black Rock	127	Buffalo Hills	60,883	12.59	Cattle	4,114	518
NV	Winnemucca	Black Rock	58	Jackson Mountain	157	0.04	Cattle	8,857	4
NV	Winnemucca	Black Rock	129	Rodeo Creek	990	0.50	Cattle	5,542	28
					3,655,710			**125,595**	**80,622**


istock: 675244578

Mineral Resources

Pershing County's rich mining history reflects its abundance of mineral deposits, which include copper, iron, tungsten, fluorspar, mercury, gold, silver, antimony, beryllium, diatomite, clays, geothermal resources, and perlite. Dolomite and gypsum may also be found in parts of Pershing County. **Table 1.3** lists the general location and availability of these minerals.

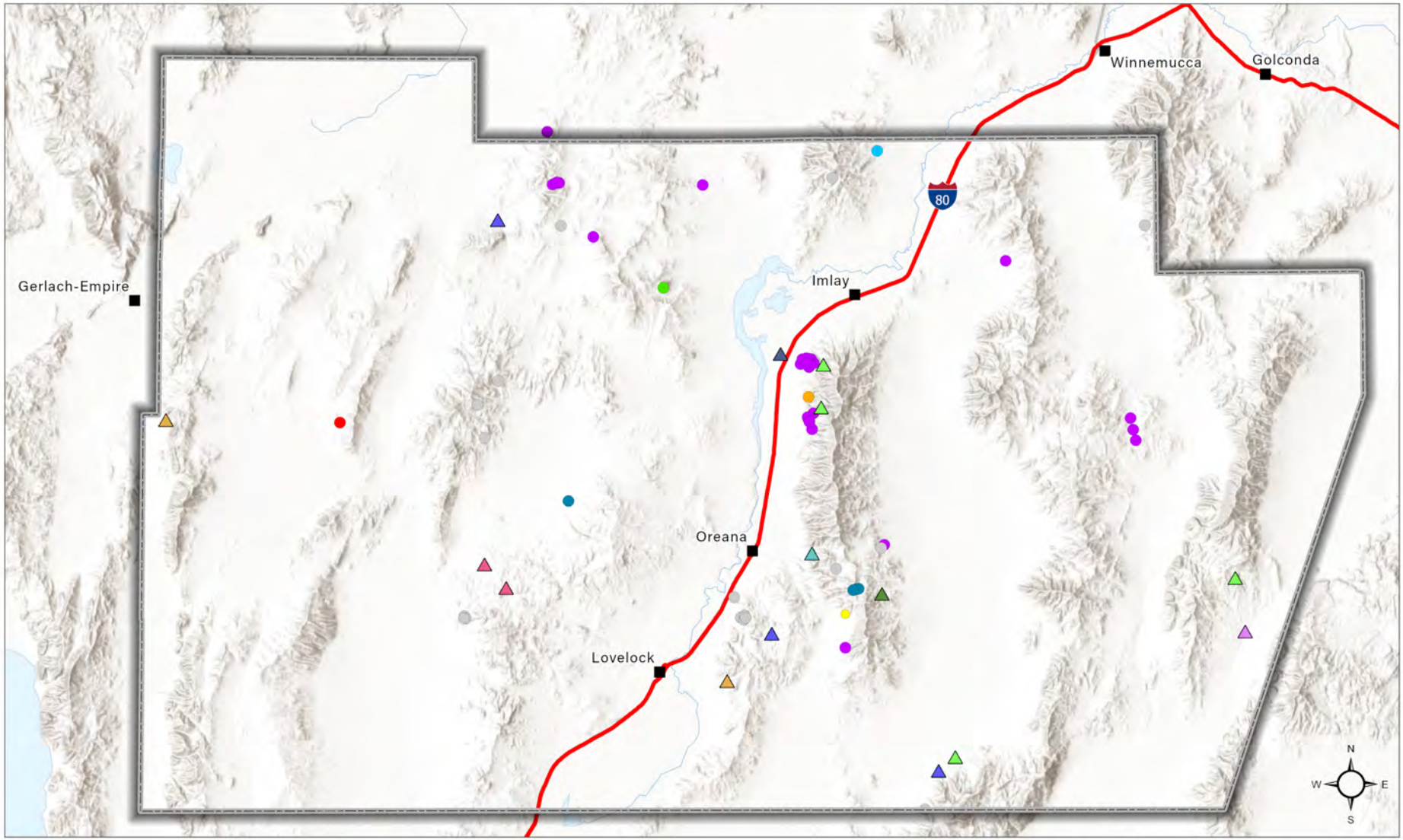
Pershing County is desirous of cooperation from the Bureau of Land Management (BLM) and other Federal agencies in being guided by these policies. If at any time, according to the National Environmental Protection Act (NEPA), FLPMA or any other legislation, the U.S. Government (under any agency) intends to change uses or availability of resources on public lands in a way that will impact current, historical, and cultural uses, input from the citizens of the County is required and the Board of County Commissioners will be consulted. In addition, the County Commission should be consulted on any interpretation of these policies.

Figure 1.8 illustrates the geographic location of the precious metals and industrial minerals present throughout the County.

Table 1.3 Mineral Resources in Pershing County

Mineral	Location	Classification
Copper	Eastern Half of Pershing County	Abundant
Iron	Southern Portion of Pershing County (from Toulon to Lander County border)	Abundant
Tungsten	Pershing County (except for Black Rock Desert)	Abundant
Fluorspar	Central and Southeastern Pershing County	Abundant
Mercury	Pershing County	Abundant
Gold	Eastern two-thirds of Pershing County (north of Lovelock)	Abundant
Silver	Eastern two-thirds of Pershing County (north of Lovelock)	Abundant
Antimony	Eastern three-quarters of Pershing County	Abundant
Beryllium	Central Pershing County (near the drainage area of the Humboldt River)	5 Known Occurences
Perlite	Eastern three-quarters of Pershing County	Abundant

Source: Nevada Division of Water Resources Report, Forecasts ofor the Future - Mining, 1973.



Legend

- Interstate
- Cities and Towns

Precious Metals

- Ag
- Ag, Au
- Ag, Au, Cu, Pb
- Au
- Au, Ag
- Au, Ag, W
- Cu, Ag, Au, Pb, Sn
- Pb, Ag, Au, Cu

Industrial Minerals

- AM
- Clay
- Gypsum
- Sulfur
- TM
- Zeolite
- Fluorspar
- Diatomite

Figure 1.8
Mineral Resources

Source: Pershing County; FarrWest Consulting
digital data release 2020
NBMG
Stantec Consulting; Cynthia Albright, LLC

Projection: State Plane Nevada West Zone,
NAD 83, U.S. Survey Foot

Scale: 1 in = 12 Miles Date: 12/2/2022

Demographic Characteristics and Trends

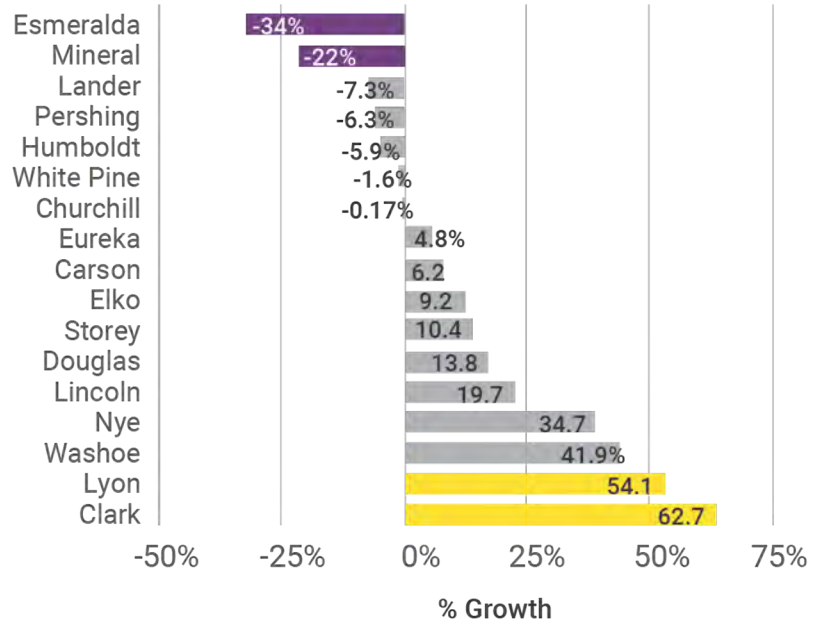
The demographic and socio-economic characteristics of a community change over time. External factors such as the construction of a transcontinental interstate freeway, opening or closing of mines, and an unexpected influx of new industries in neighboring counties can alter a community's natural growth trajectory.

In the previous decade, 2010-2020, Apple constructed a data center campus in Washoe County and a logistics facility in downtown Reno. Storey County exploded with anchor tenants that include Tesla, Google, Switch, Zulily, Wal-Mart, FedEx Supply Chain, Chewy, and Blockchains and hundreds of other tenants. The 107,000-acres Tahoe Reno Industrial Center (TRIC) ran out of raw land in 2018, twenty years after inception. The developers moved forward with TRI II on 20,000 acres in Lyon County, west of Highway 95A on the south side of Fernley, practically abutting the eastern border of TRIC. According to an article in the Northern Nevada Business Weekly December 2021, "...we have buyers stacked up with nowhere to go. Because of that saturation, a lot of buyers are going to Utah, Texas, Arizona, or New Mexico which are our biggest competitors for these companies."[1]

In Lyon County, the Board of Commissioners approved the Northern Nevada Industrial Center ("NNIC") on 6,000 acres of land northwest of Silver Springs for industrial and commercial uses in June 2020. The NNIC project also includes 1,000 acres dedicated to solar power generation. In 2019, Lyon County unveiled plans for a 4,300-acre commercial and industrial park in Fernley referred to as the Victory Logistics District. The project is north of I-80 on the eastern edge of Fernley. The representatives believe build-out will require 10-20 years from approval.

However, developers began looking for future opportunities long before buildout. Pershing County's economy and growth trajectory could change if leadership takes the necessary steps to ready the organization to welcome development inquiries if growth trends continue eastward along I-80.

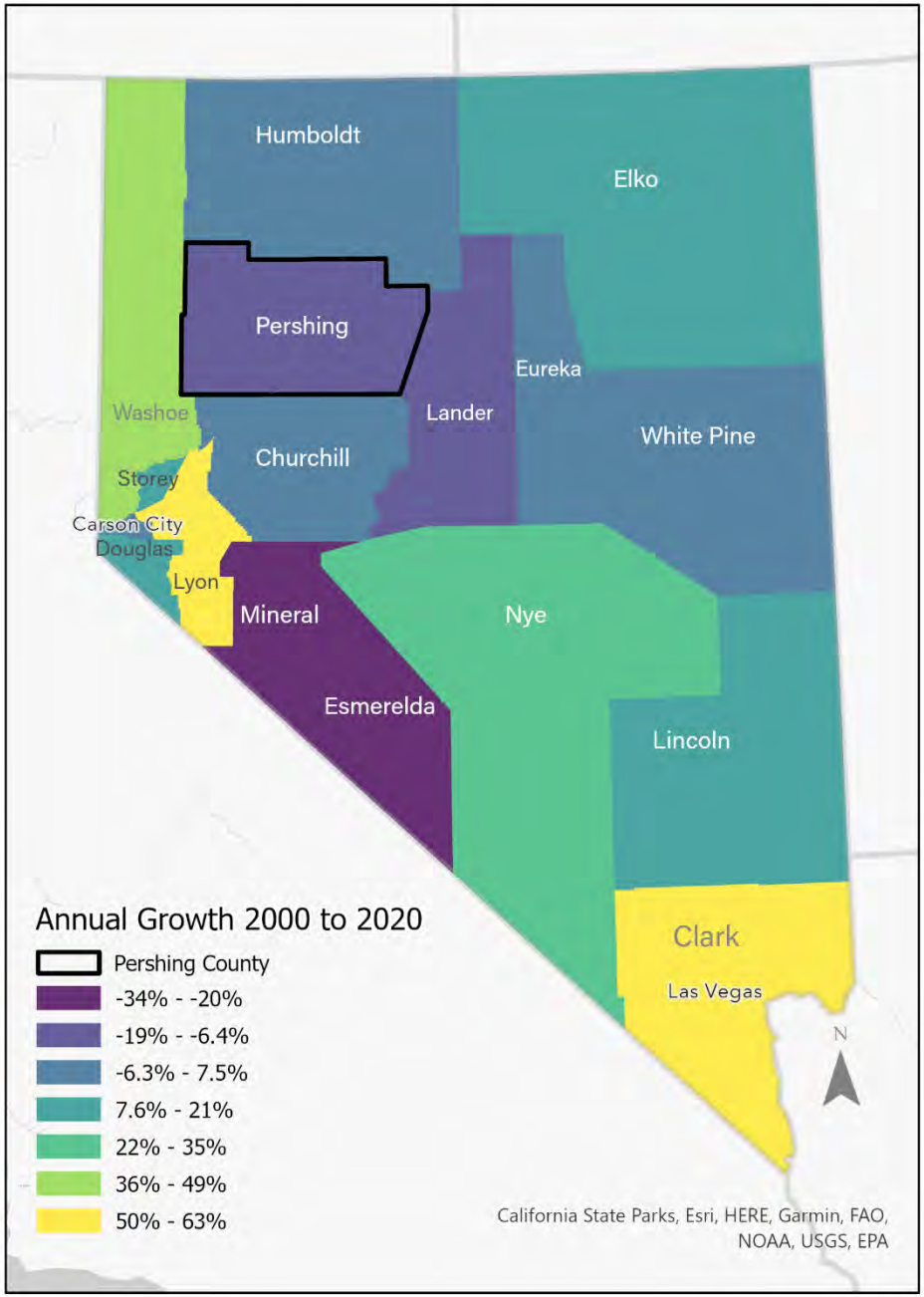
Figure 1.9(a) Annual Growth Rates of Nevada Counties, 2000 - 2020



Source: Nevada Legislative Counsel Bureau, April 14, 2021; https://storymaps.arcgis.com/stories/a7162079243d4f1dab82cc908cf8cf29

1 https://www.nnbw.com/news/2021/dec/14/developers-detail-plans-sprawling-tri-ii-project-f/

Figure 1.9(b) Annual Growth Rates of Nevada Counties, 2000 - 2020



Population Overview

Pershing County experienced a population growth rate of -4.30% from 2000 to 2010 and a growth rate of -2.10% from 2010 to 2020. The rate for the full twenty years (2000-2020) reflects a decline of -6.37%.

Esmeralda and Mineral Counties also experienced a significant loss of population from 2000 to 2010. Although Mineral County bounced back with a growth rate of 9.5% since 2010, Esmeralda County continued to lose population since 2010. Both counties are adjacent to fast-growing counties that buffer denser communities.

The ten-year population data for Pershing County reveals a fluctuation between 2010 and 2016 followed by small but steady increases to 2021.[2] Overall, the County realized a decline in population since 2010 totaling 149 persons or -2.1% according to the certified estimates of Nevada Counties, Cities and Towns 2000-2021.

However, Pershing isn't the only County that reported population declines: Lincoln, Esmeralda, Churchill, Douglas, and Humboldt all reported decreases ranging from -50 persons (Churchill) to -1,162 (Humboldt).

[2] Estimates from NV State Demographer, NV Department of Taxation and represents estimates as certified by Nevada's Governor each year. It is not a time series reflecting Census 2010.

Figure 1.10 illustrates the annual population estimate by year starting with 2010 and visualizes the County's annual growth trends through 2021.

Pershing County's growth trends since 2010 are consistent with those of a few Nevada counties while the state as a whole and several counties are booming. The U.S. Census Bureau estimates the state's population growth since 2010 is 15.9% raising the total to 3.15 million residents. The growth rate for the U.S. was just 6.3%. Nevada has outpaced the national growth rate since the 1930s and was the fifth fastest growing state according to the 2020 Census.

A map of the 100 years of population growth in Nevada would reveal gradual increases during the 1920s-1950s followed by a soaring growth curve that mirrors a near doubling every decade up to 2020. The state's spotlight for growth shines on Clark County which averages an annual growth rate of almost 2% and represents 73.4% of the state's total population. Clark, Washoe, Lyon, and Eureka counties all reported growth rates better than 10% since 2010.

Figure 1.9(a), created by the Nevada Legislative Counsel Bureau and reproduced here by the author, visualizes the annual growth rates from 2000-2020. Population and economic growth in the bordering counties with Pershing, namely Washoe and Lyon, may ultimately influence future growth in Pershing County. The former Executive Director from the Western Nevada Development District stated as much at a workshop with the Board of County Commissioners in March 2022.

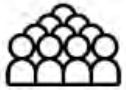
The U.S Census Bureau reconfigured its website making data access easy. The Bureau also incorporated infographics to display information. A summary of essential demographic metrics is provided in the following figures.

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Population	7133	6847	7013	6882	6714	6750	6693	6743	6858	6935	6983	6984

Figure 1.10 Pershing County Annual Population Estimates, 2010-2020

Pershing County, Nevada

Pershing County, Nevada has 6,036.6 square miles of land area and is the 8th largest County in Nevada by total area. Pershing County is bordered by Churchill County, Humboldt County, Lander County and Washoe County.



Populations and People
Total Population
6,650
P1 | 2020 Decennial Census

Employment
Employment Rate
38.9%
DP03 | 2020 American Community Survey 5-year est.

Business and Economy
Total Employer Establishments
59
CB2000CBP | 2020 Economic Surveys Business Patterns by Legal Form of Organization
Legal forms include C-corporations, government, individual proprietorships, non-profit, other non-corporate legal forms of organizations, partnerships, and S-corporations. There may be other employers in Pershing County not accounted for in this Census business survey.

Housing
Total Housing Units
2,278
H1 | 2020 Decennial Census

Families and Living Arrangements
Total Households
2,009
DP02 | 2020 American Community Survey 5-year est.

Income and Poverty
Median Household Income
$57,074
S1901 | 2020 American Community Survey 5-year est.

Farming Economy
Total Farms Land in Farms (acres)
154 **330,294**
Market Value of products sold **$33,820,000**
Total net cash farm income **$ 7,344,000**
USDA | 2017 Census of Agriculture

Education
Bachelor's Degree or Higher
10.3%
S1501 | 2020 American Community Survey 5-year est.

Health
Without Health Care Coverage
12.0%
S2701 | 2020 American Community Survey 5-year est.

Race and Ethnicity
Hispanic or Latino (of any race)
1,499
P2 | 2020 Decennial Census

Populations and People

Age and Sex

42.6 +/- 2.2
Median Age in Pershing County

38.2 +/- 0.1
Median Age in Nevada

Table:
S0101

Table Survey/Program:
2020 American Community Survey
5-Year Estimates

Population in Age Range in Pershing County, NV

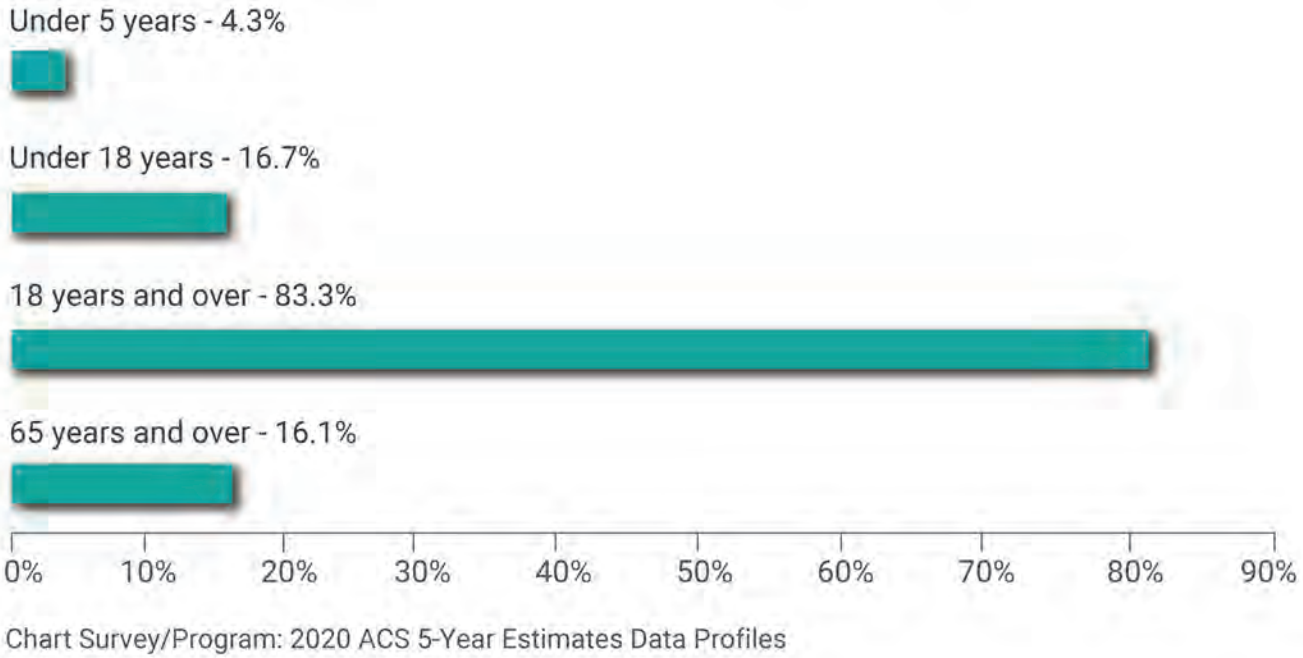


Chart Survey/Program: 2020 ACS 5-Year Estimates Data Profiles

Figure 1.11 Pershing County Population by Age and Sex, 2020

In 2020, the County resident population estimate for males was 4,223 and 2,368 females. Comparing the ratios of men and women in 2010 and 2015, the estimates remain consistent averaging 64-66% men and 33-35% women. The resident population is aging, of course. The percentage of men 65 years and older increased from 9.8% in 2010 to 14.4% in 2020. The same is true for women 65 years and older totaling 15% of the total female population increasing to 19.1% in 2020. Children on the other hand, ages 0-5 years and male are steadily decreasing from an estimate of 4.4% of the total population in 2010 to 2.9% in 2020. Girls, ages 0-5 years, are increasing as a percent of the total from 4.9% in 2010 to 6.7% in 2020.

Older Population

16.1% +/- 0.9%
65 Years and older in Pershing County

15.8% +/- 0.1%
Median Age in Nevada

Table:
DP05

Table Survey/Program:
2020 American Community Survey 5-Year Estimates

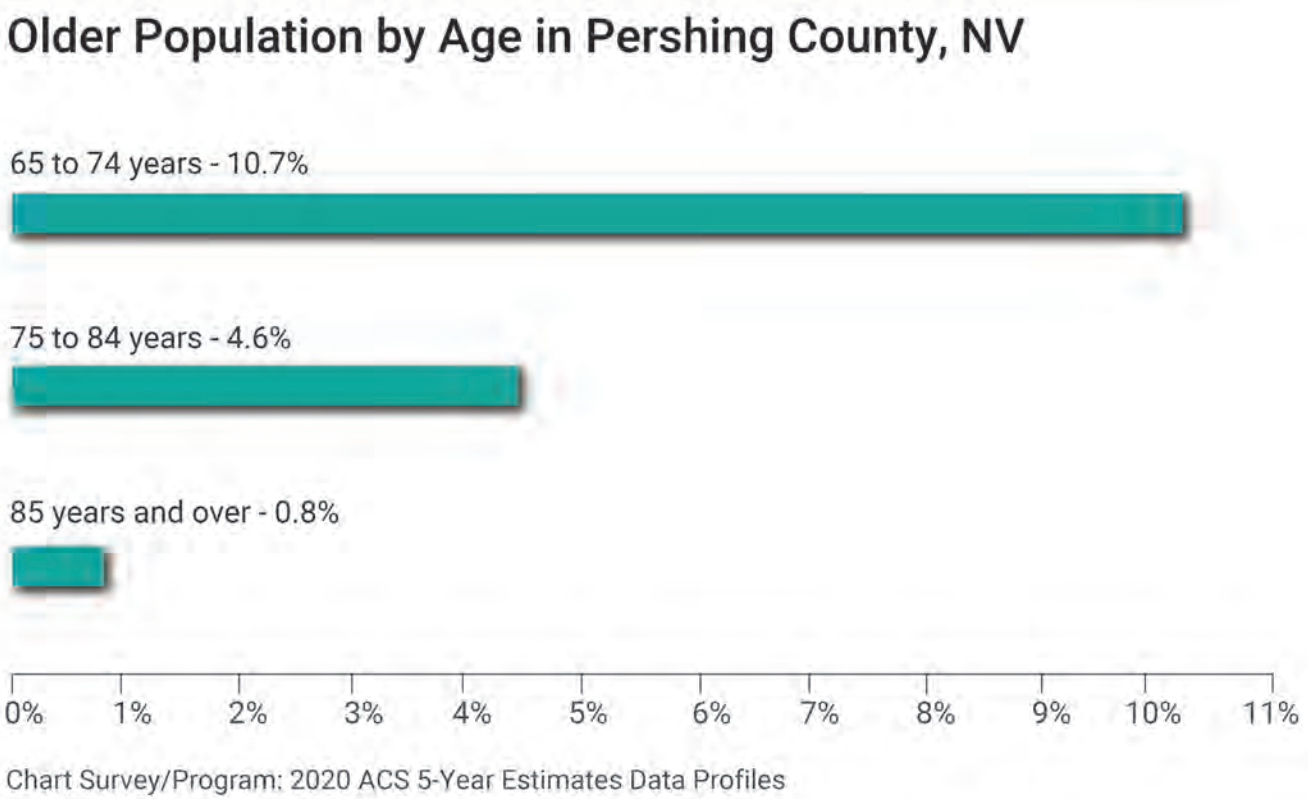


Figure 1.12 Pershing County Older Population by Age, 2020

Over time the ratio of men and women as a percentage of the total population in these age groups steadily increased. In 2010, men ages 65-74 represented less than 7% of the total population. By 2020, the ratio rose to 9.4%. Women in the same age cohort totaled 11.4% in 2010 climbing to 12.9% in 2020. Women are living longer as well.

The Countywide ratio of the population 85 years and older (0.8%) diminishes the high percentage of elderly women in 2020, summing to 2.6% compared to just 0.1% for men. The ratio of the oldest female cohort nearly doubled from 1.4% five years earlier in 2015.

Housing Units

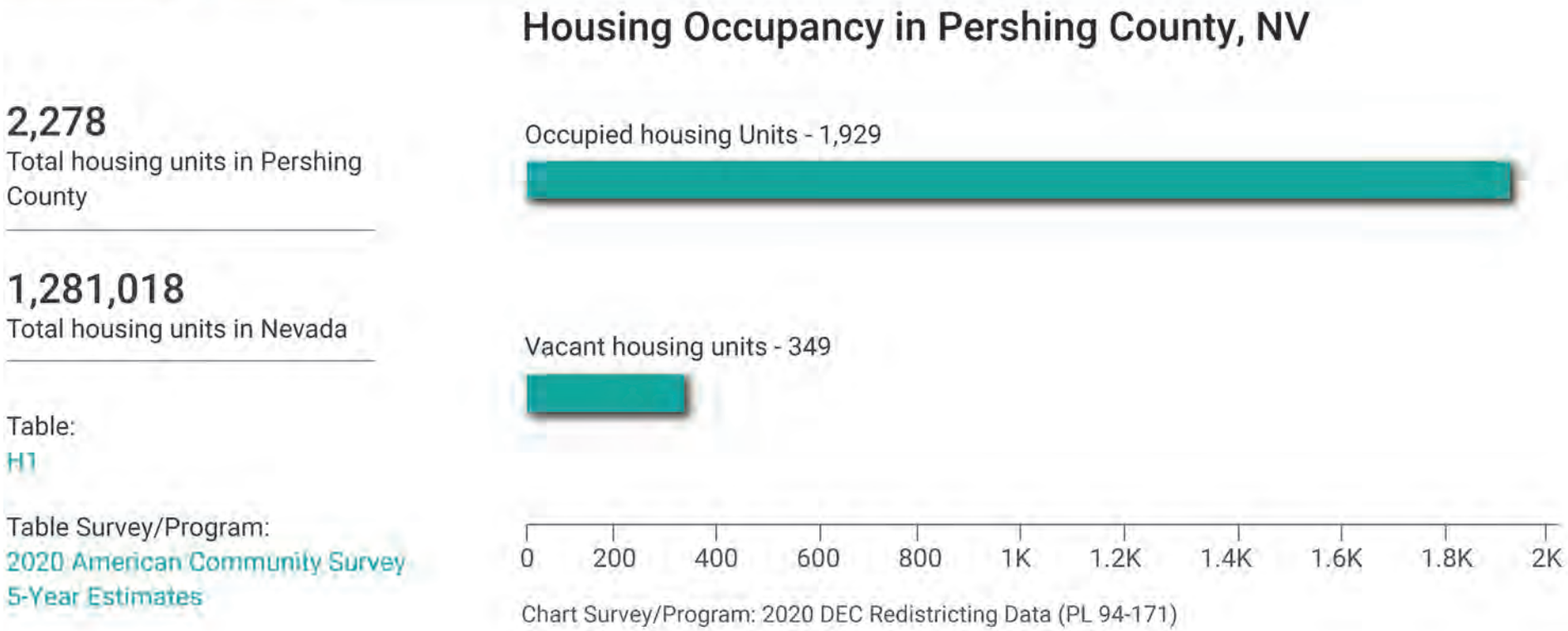


Figure 1.13 Pershing County Housing Occupancy, 2020

Total housing units in 2020 is estimated at 2,278, of which 1,929 are considered occupied. The housing supply is generally comprised of 44% mobile homes, 39% one-unit or single family detached, and 17% attached units and/or apartments. Less than 1% was categorized as Boat, RV, van, etc. Most of the existing housing was constructed before 1939 and up to and including 1999. According to the data, only 12% of the total housing units were constructed since 2000. This suggests a predominately aging housing supply which affects taxable value and the overall economics of the County. Historically, demand for new housing has been flat. Despite increasing employment growth in Pershing County, the availability of housing is low.

Very few new homes or rental housing has been constructed in recent years. According to rentalsource.com the median rental rate in November 2022 is $927/month which may be 39% lower than the median for state of Nevada but may be considered expensive for households with earnings below the income level needed in order to not exceed the standard 30% rent-to-income ratio.

Vacancy

349
Vacant housing units in Pershing County

103,369
Vacant housing units in Nevada

Table:
H1

Table Survey/Program:
2020 American Community Survey 5-Year Estimates

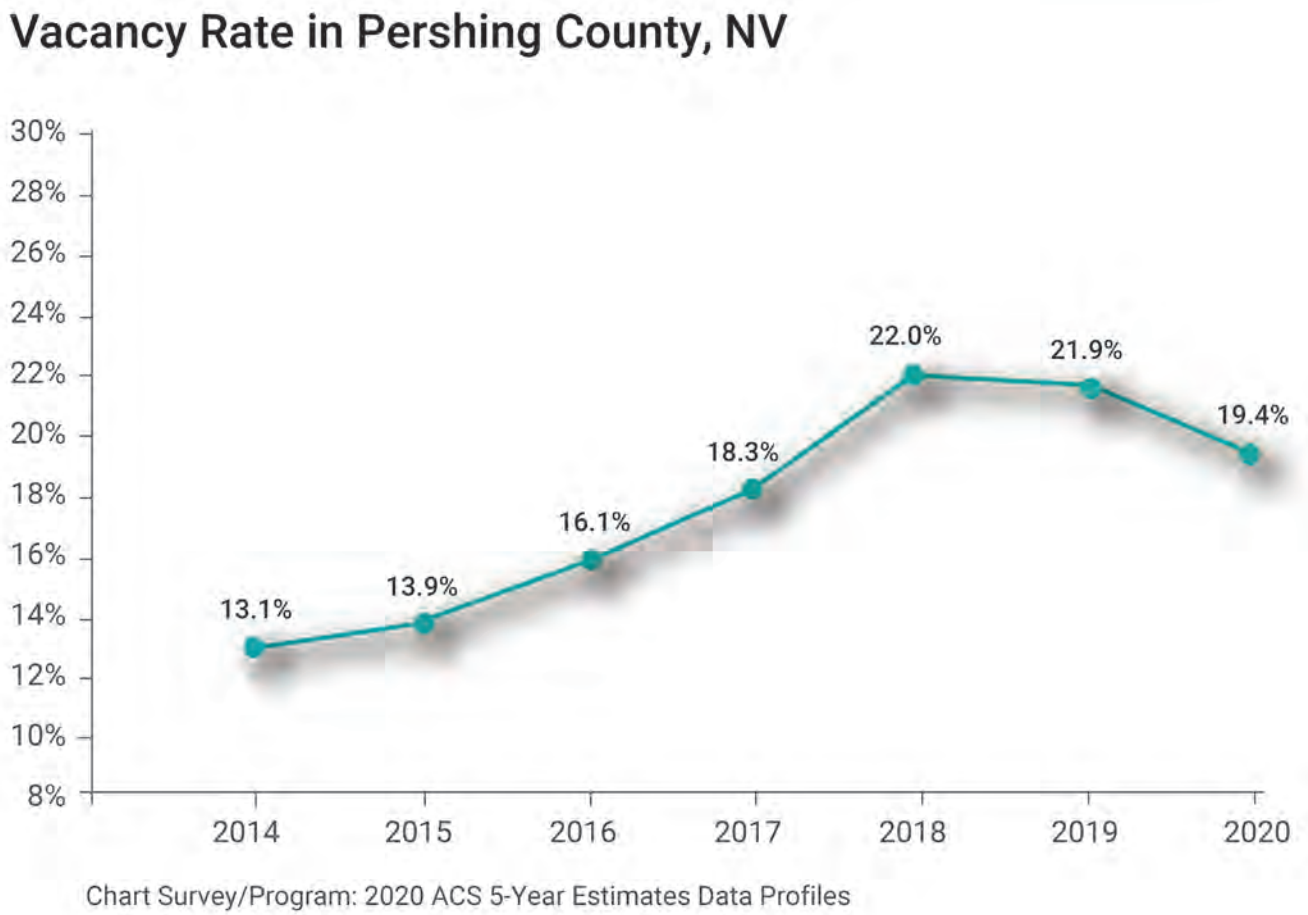


Figure 1.14 Pershing County Housing Vacancy Rates by Year, 2014 -2020

As the data indicates, vacancy rates increased steadily between 2014-2018 and since leveled off and declined. With the planned opening of a few new businesses in the Lovelock area as well as further north near Humboldt County, it is reasonable to assume the downward trend in housing vacancy could continue. New housing development is necessary.

Residential Mobility

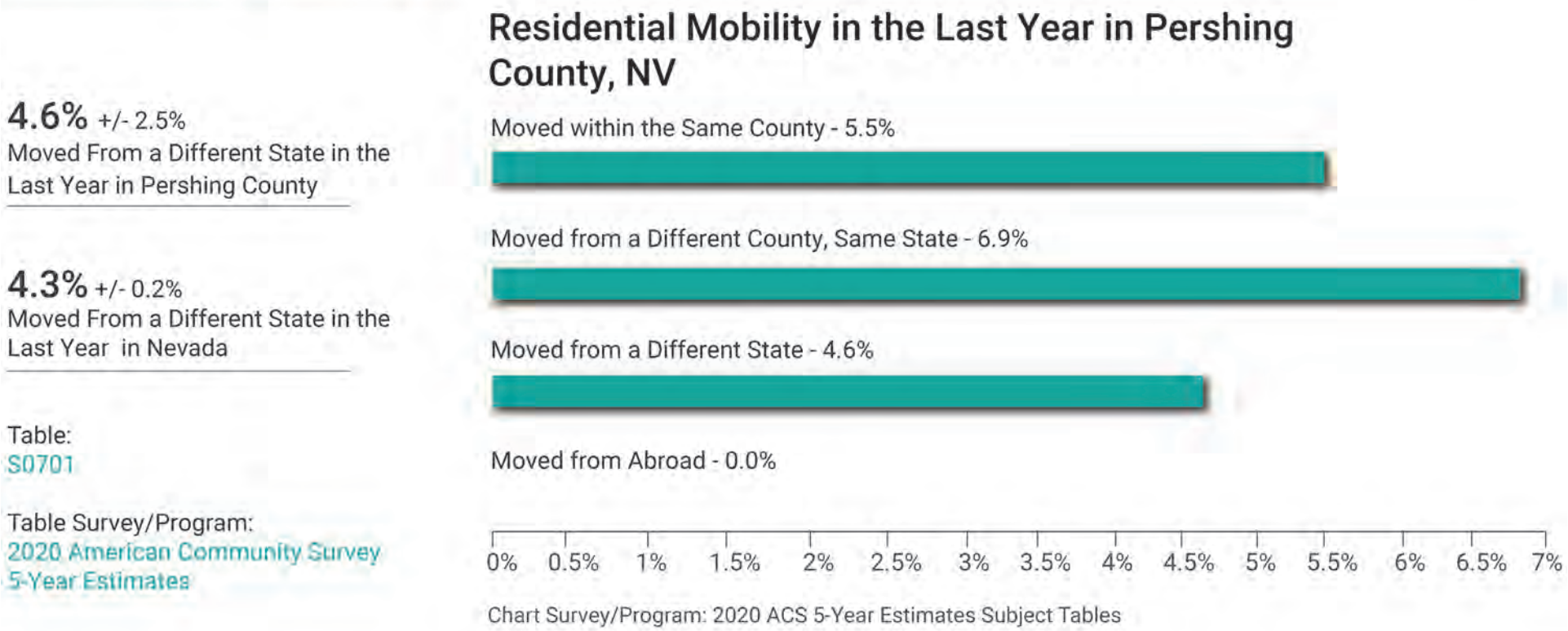


Figure 1.15 Pershing County Residential Mobility, 2020

Residential mobility in Pershing County is slightly higher than the state comparing estimates and excluding the margin of error. A deeper dive into the data reveals men moved from a different county within Nevada at a rate nearly 4x higher than women in 2020 (9.2% vs. 2.4%). This migration may be explained by employment opportunities in the Mining industry, which represents nearly 30% of all jobs.

Oil and Gas Extraction/Mining and Quarrying together with Retail Trade and Accommodations and Food Services constitute 55% of all County jobs when classified by NAICS industry sector. Male workers constitute 65.4% of employees compared to 34.6% female.

The data indicates women move from a different state in higher numbers than men (6.6% vs 3.5%). Both sexes reported near equal rates of mobility within the County.

Income and Poverty

Income and Earnings

$57,074 +/- $8,595
Median Household Income in Pershing County

$62,043 +/- $445
Median Income in Nevada

Table:
S1901

Table Survey/Program:
2020 American Community Survey 5-Year Estimates

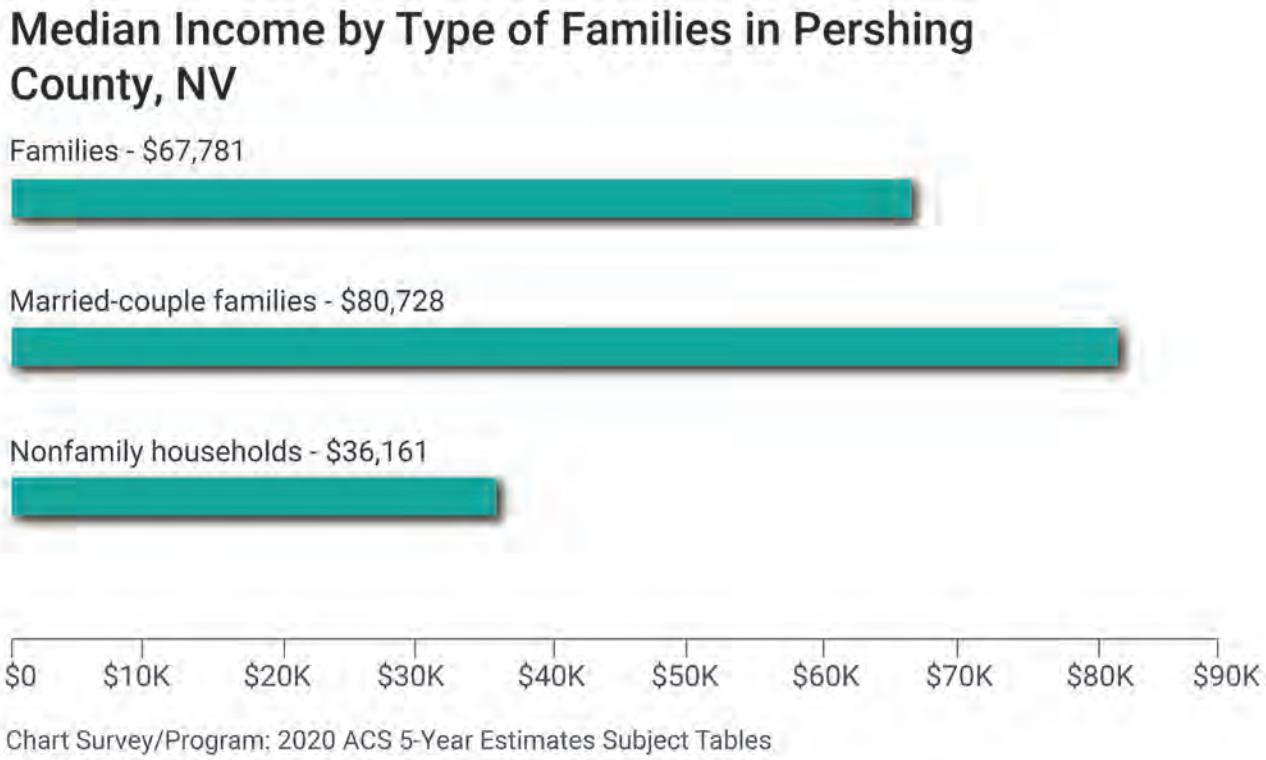


Figure 1.16 Pershing County Income and Poverty, 2020

The Federal Poverty Level or income threshold ranges from $12,880 annually for an individual to $26,500 for family/household of 4 persons. The median income for all household types and families in Pershing County is significantly higher than the federal poverty level. The U.S. Census data indicated there are 2,009 households and 648 nonfamily households in the County. Approximately 20.7% or 134 nonfamily households reported incomes of less than $10,000, designating them as living in poverty. Another 8.2% or 53 nonfamily households disclosed an income greater than $10,000 and less than $14,999: an upper limit slightly above the threshold. About 9.5% or 190 households also reported income less than $10,000 bringing the total number of households and nonfamily households living at the Federal Poverty Level to 324 in 2020.

Those living in poverty account for 12.1% of Pershing County's total households which is lower than the state of Nevada (12.5%) and the City of Las Vegas, which is 16.2%.

Employment

Class of Worker

21.5% +/- 7.1%
Local, State & Federal Government Workers in Pershing County

11.9% +/- 0.2%
Local, State & Federal Government Workers in Nevada

Table:
S2406

Table Survey/Program:
2020 American Community Survey 5-Year Estimates

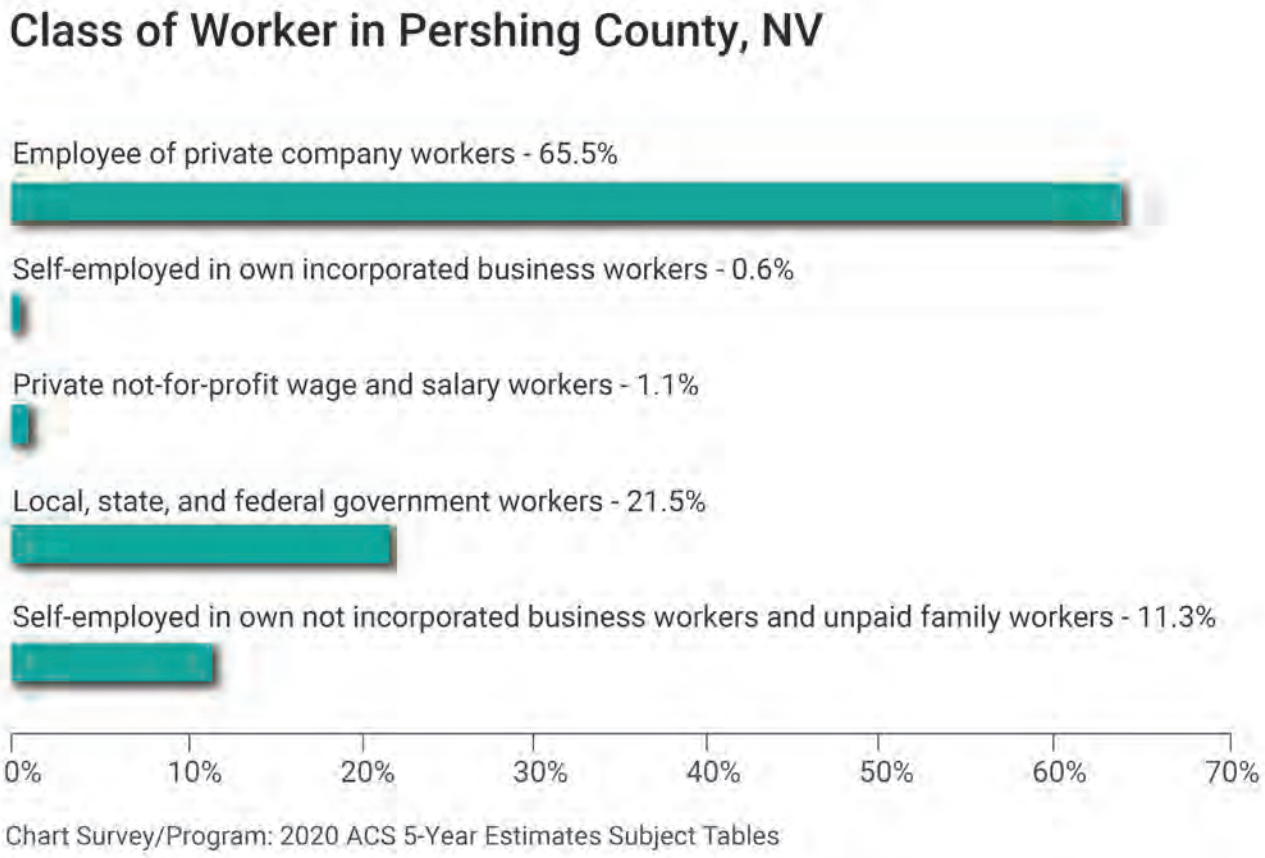


Figure 1.17 Pershing County Employment by Class of Worker, 2020

The data indicates approximately one-quarter of the Pershing County population is employed by a local, state or federal government entity. The correctional facility outside of Lovelock coupled with the number of jobs in the Forestry sector with several state and federal agencies with land and resources to manage in the county.

Private company employees comprise the majority of workers and when added to self-employed represent 76.8% of all workers.

Industry

0.0 +/- 40.5% *
Females in Agriculture, Forestry, Fishing, and Hunting in Pershing County

23.2 +/- 4.9%
Females in Agriculture, Forestry, Fishing, and Hunting in Nevada

Table:
S2404

Table Survey/Program:
2020 American Community Survey 5-Year Estimates

* Local feedback confirms numerous females employed in the Agriculture, Forestry, Fishing and Hunting, and Mining indstries.

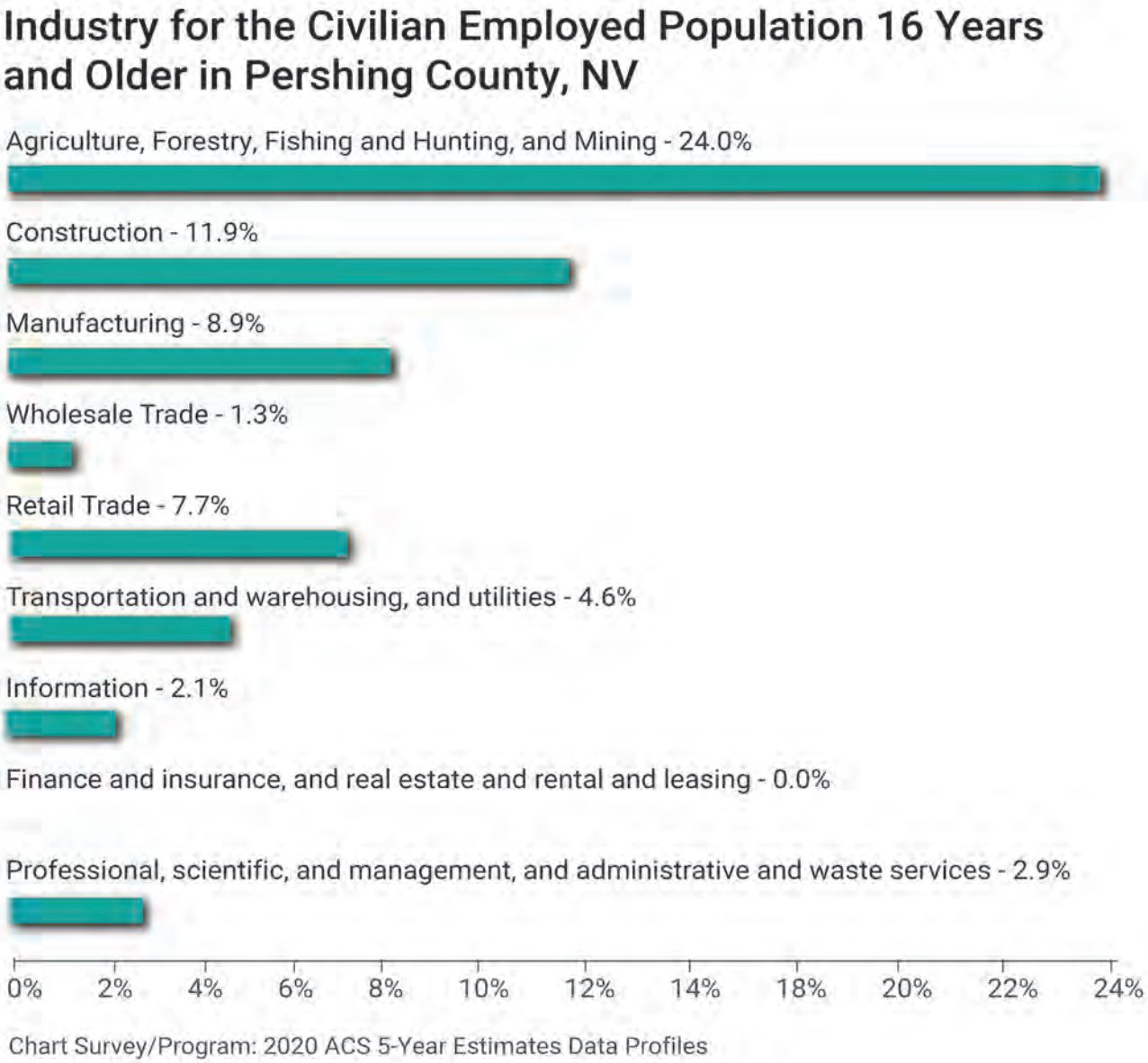


Figure 1.18-1 Pershing County Industry for Civilian Employed Population, 2020

Industry (page 2)

0.0 +/- 40.5% *
Females in Agriculture, Forestry, Fishing, and Hunting in Pershing County

23.2 +/- 4.9%
Females in Agriculture, Forestry, Fishing, and Hunting in Nevada

Table:
S2404

Table Survey/Program:
2020 American Community Survey 5-Year Estimates

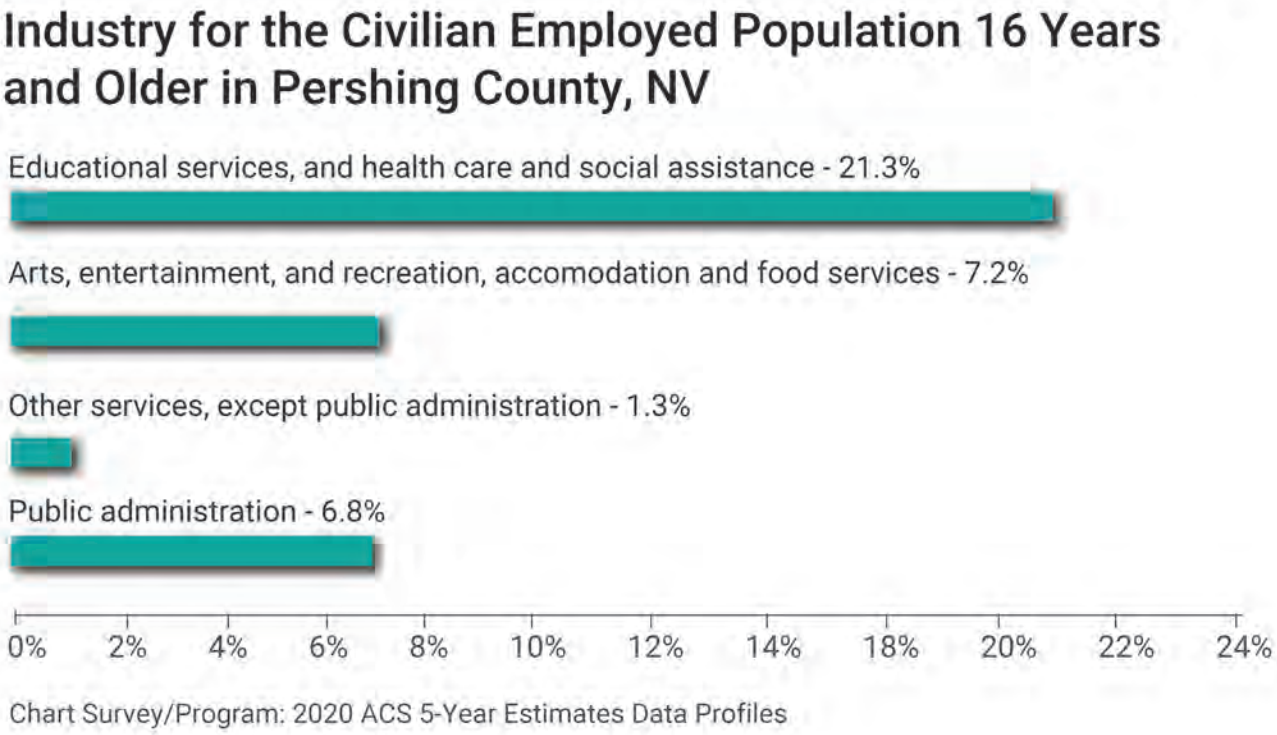


Figure 1.18-2 Pershing County Industry for Civilian Employed Population, 2020

The two predominate industries in Pershing County, Agriculture, Forestry, Fishing and Hunting and Educational Services, and Health Care and Social Assistance combined represent 45.3% of the jobs held by the civilian employed population in 2020. While the Census data reports zero percent females employed in the Agriculture, Forestry and Fishing industries compared to a statewide average of 23.2%, the margin or error is 40.5% and antecdotal infromation from the local population confirms plenty of females gainfully employed in all of these sectors. Due to the low ratio of total employed by other industries, Pershing County should concentrate its efforts on expanding growth in the Manufacturing, Wholesale Trade, Transportation and Warehousing, Information, Finance and Insurance, and Professional Services Industries. With the shift in working from home coupled with technology improvements and and expansion of broadband services, Pershing should promote its low cost of living to areas outside of Nevada in order to attract residents in industries that require less water resources to expand its employer base.

Employment Establishments and Annual Payroll ($millions)

59
Employer establishments
in Pershing County
Annual payroll $96,939,000

70,621
Employer establishments in
Nevada
Annual payroll $56.3B

Table:
CB2000CBP

Table Survey/Program:
2020 Economic Surveys All Sectors
County Business Patterns

Notes: An establishment is a single physical location at which business is conducted or services or industrial operations are performed. An establishment is not necessarily equivalent to a company or enterprise, which may consist of one or more establishments. To comply with disclosure avoidance guidelines, data rows with fewer than three contributing establishments are not presented. The County Business Patterns data excludes data on self-employeed individuals, employees of private households, railroad employees, agricultural production employees, and most government employees. For detailed information about the methods used to collect and produce statistics, including sampling see CBP Methodology.
https://www.census.gov/programs-surveys/cbp/technical-documentation/methodology.html

Number of establishments by NAICS Code in Pershing County, NV

The total does not include numerous sectors, including Agriculture, forestry, fishing and hunting, Utilities, Construction, Information, Arts, entertainment and recreation, and others. See Notes for explanation.

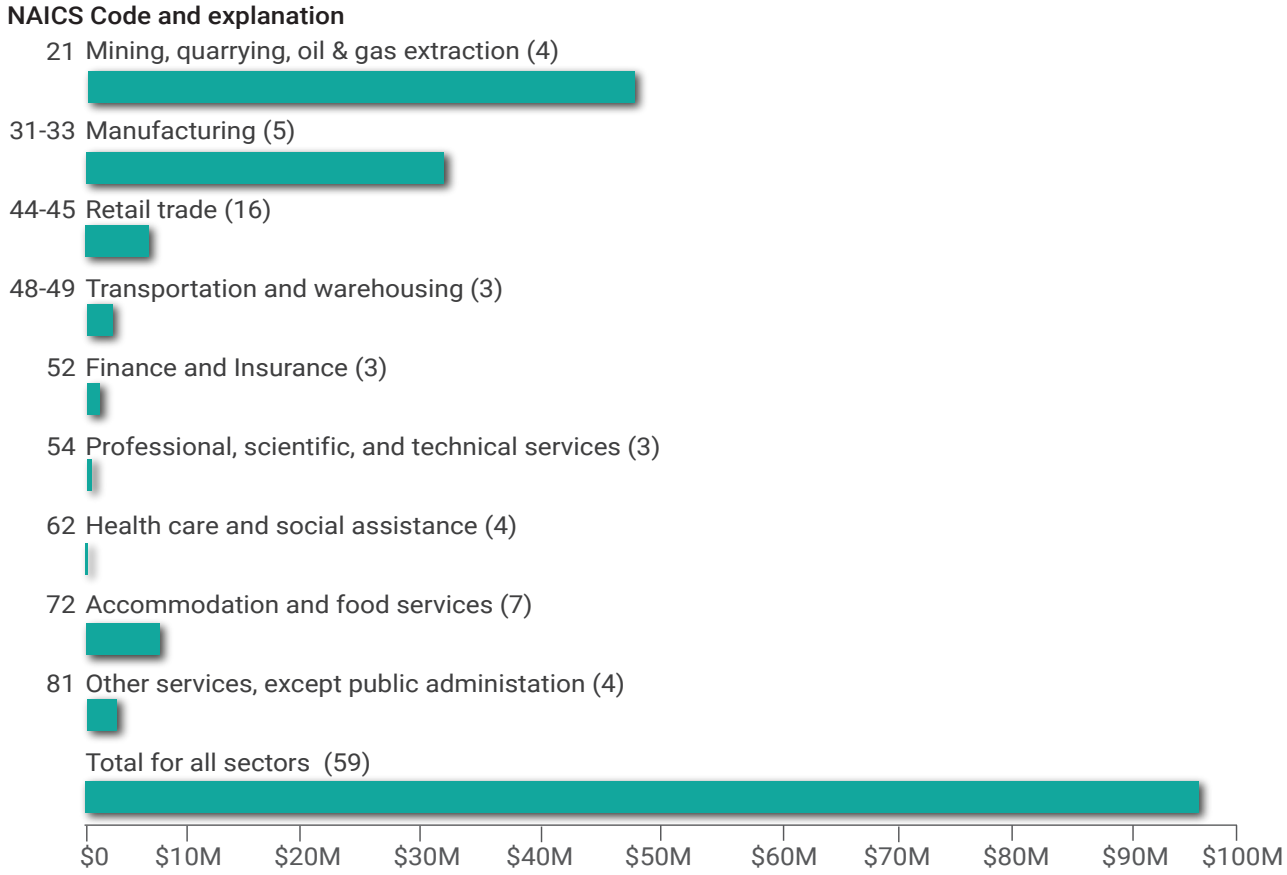


Chart Survey/Program: 2020 ECNSVY Business Patterns

Figure 1.19 Pershing County Pershing Employment Establishments and Annual Payroll, 2020

Occupation

100.0 +/- 99.2%
Females in Computer, Engineering and Science Occupations in Pershing County

23.9 +/- 1.4%
Employment Rate in Nevada

Table:
S2401

Table Survey/Program:
2020 American Community Survey 5-Year Estimates

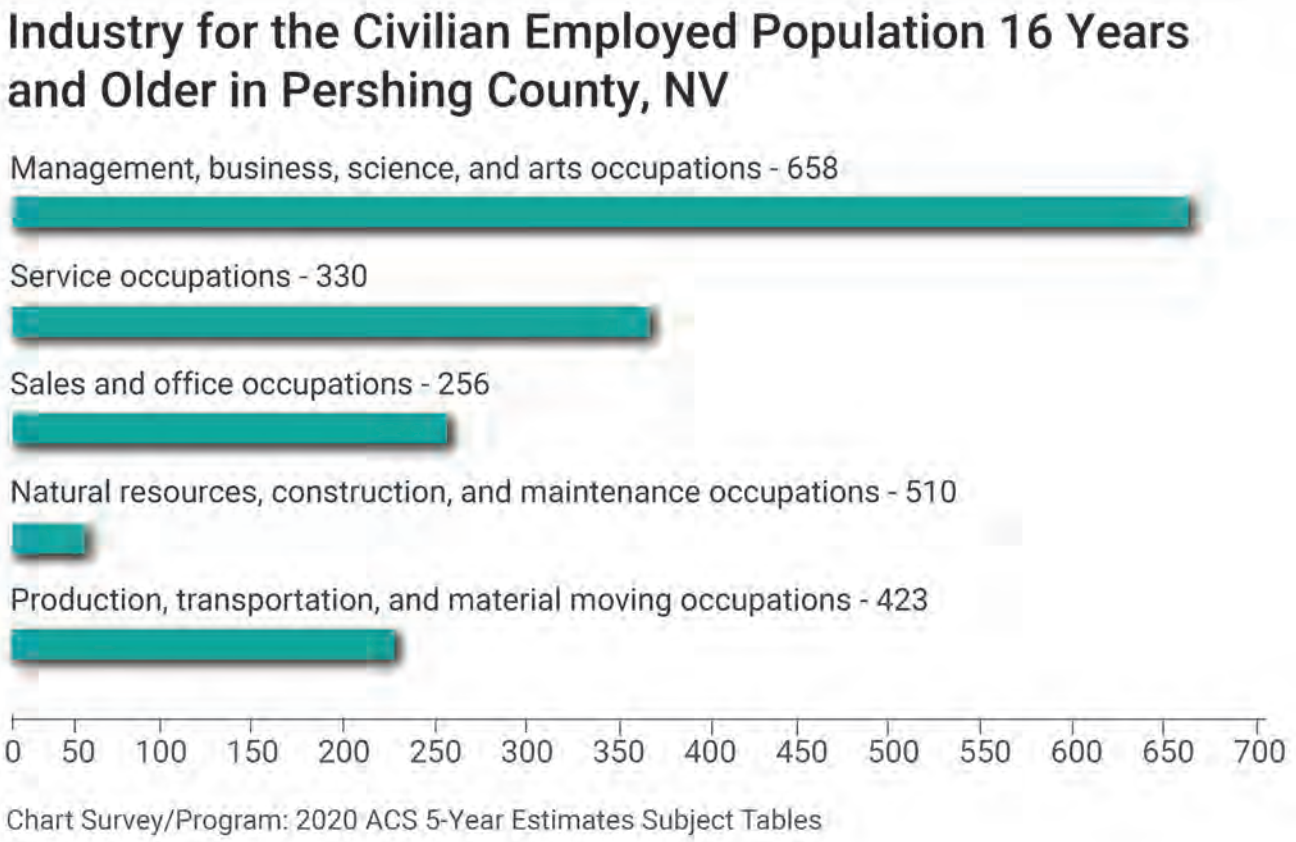


Figure 1.20 Pershing County Occupation for the Civilian Population, 2020

The estimated total civilian employed population 16 years and older is 2,177; approximately 56% or 1,222 are male and 43.9% are female. Looking at consecutive years back to 2015, employed civilians bottomed out in 2018 with 2,022 employed and reached as high as 2,211 in 2017. The ratio of males to females remained consistent with approximately 57% men and 42% women, except for the year 2018 when the total civilian employment reached a six-year low. In that year, the ratio of male workers increased to 60% and decreased to 40% for women.

Table 1.4 provides a list of the top 20 employers in the Pershing County area by number of employees. This list demonstrates a shift from farming to government services and the continued importance of mining.

Table 1.5 identifies the Pershing County Business Patterns by Legal form of Organization and Employment Size for the most recent year, 2019.

Employment and Labor Force Status

38.9% +/- 6.5%
Employment Rate in Pershing County

58.9% +/- 0.2%
Employment Rate in Nevada

Table:
DP03

Table Survey/Program:
2020 American Community Survey 5-Year Estimates

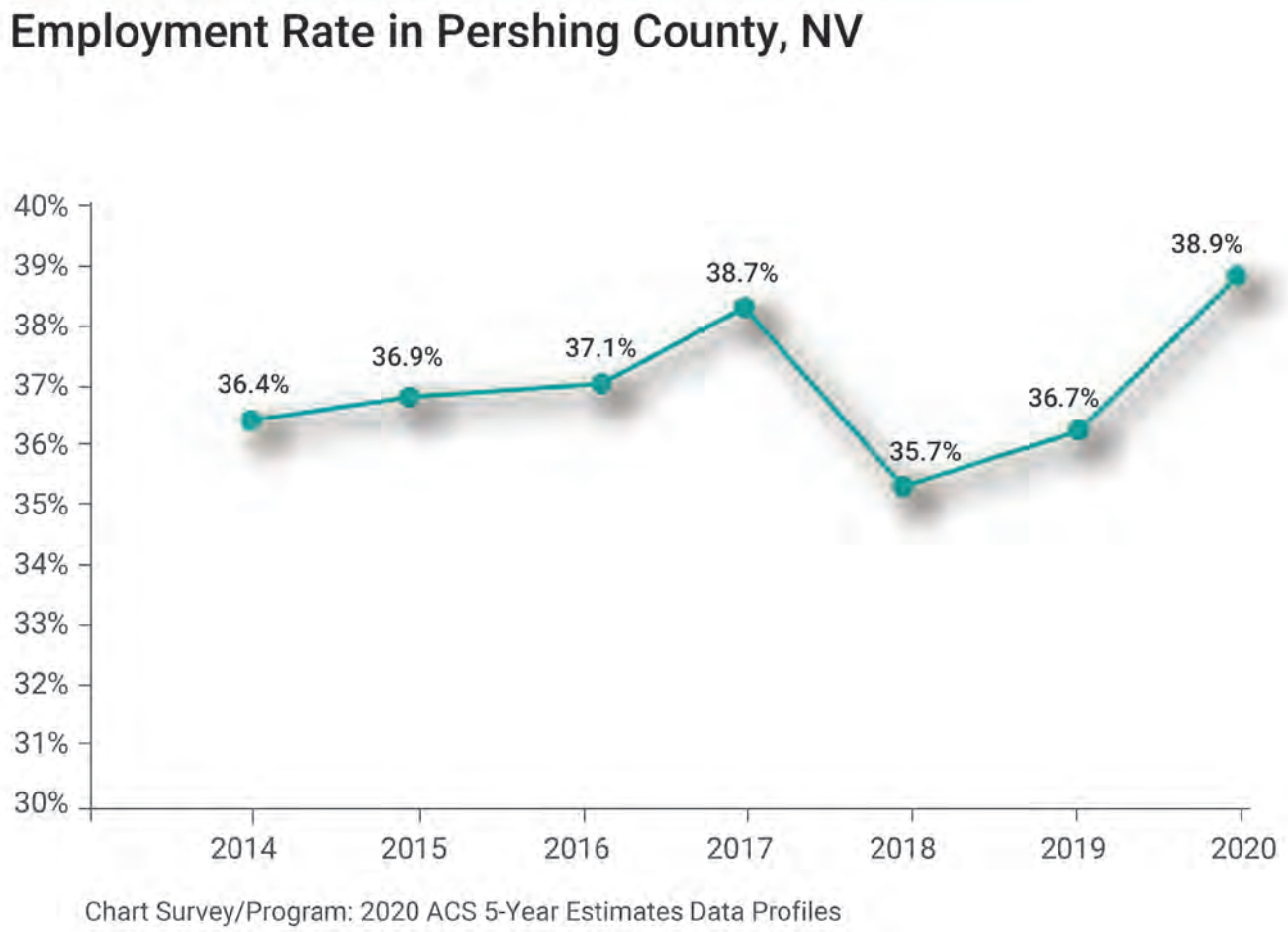


Figure 1.21 Pershing County Employment Rates, 2014-2020

According to the U.S. Census data, approximately 42.6% of the population 16 years and over are classified as 'in the labor force.' Of those, 38.9% are employed and 3.7% unemployed. The employment rate in 2020 is the highest since 2014. The industries that employ the largest percentages of people include Agriculture, Forestry, Fishing, and Mining (24%), Educational services, Health Care and Social Assistance (21.3%), and Construction (11.9%). Manufacturing, Wholesale Trade, Retail, Professional, Public Administration, and the other industries all reported single digit employment rates.

The unemployment rate for the population within the civilian labor force was 8.8%. A total of 57.4% are classified as not in the labor force in 2020.

Table 1.4 Top 20 Employers in Pershing County

Employer Name	City/Community	NAICS Code	NAICS Description	Ownership Type	Employee Range
Lovelock Correctional Center	Lovelock	921120	Government Offices - State	State	250-499
Coeur Rochester Inc.	Lovelock	212222	Silver Ores	Private	100-299
Florida Canyon Mining Inc.	Imlay	212399	Mining Companies	Private	100-299
Pershing General Hospital	Lovelock	622110	Hospitals	Private	50-99
Travel Centers of America	Mill City	447190	Truck Stops & Plaza	Private	50-99
Alamo Casino	Imlay	713210	Casino	Private	20-49
Burns Brothers Inc.	Imlay	441110	Automobile Dealers - New Cars	Private	20-49
C Punch Casino & Restaurant	Lovelock	721110	Casino	Private	20-49
Lovelock Chevron	Lovelock	447190	Service Stations - Gas & Oil	Private	20-49
McDonald's	Lovelock	722513	Limited Service Restaurant	Private	20-49
Pershing County Middle School	Lovelock	611110	Schools	Private	20-49
Pershing County High School	Lovelock	611110	Schools	Private	20-49
Pershing County Fire Department	Lovelock	922160	County Government - Fire Protection	County	20-49
Pershing County Sheriff	Lovelock	922120	Sheriff	Private	20-49
Safeway	Lovelock	445110	Grocers - Retail	Private	20-49
SureStay Hotel by Best Western	Lovelock	713210	Hotels & Motels	Private	20-49
Golden Gate	Lovelock	447190	Truck Stops & Plaza	Private	10-19
La Casita Restaurant	Lovelock	722511	Restaurants	Private	10-19
Paiute Pipeline Co.	Lovelock	486110	Pipeline Companies	Private	10-19
Pershing County Road Dept.	Lovelock	237310	Grading Companies	County	10-19
Port of Subs	Lovelock	722513	Limited Serivce Resraurant	Private	10-19

Source: https://nevadaworkforce.com/_docs/Top-Employers/20211/Top-20-Employers---Pershing-County

Table 1.5 Top 20 Pershing County Business Patterns by Legal form of Organization and Employment Size, 2019

NAICS Code	Description	Employment Size	Year	Total Establishments	Annual Payroll ($1000)	Q1 Payroll ($1000)	Total Employees
00	Total All Sectors	All Establishments	2020	59	$96,939	$26,114	1,438
00	Total All Sectors	Establishments <5	2020	29	N	N	N
00	Total All Sectors	Establishments 5-9	2020	13	N	N	N
00	Total All Sectors	Establishments 10-19	2020	7	N	N	N
00	Total All Sectors	Establishments 20-49	2020	6	N	N	N
21	Mining, Quarrying, oil & gas extraction	All Establishments	2020	4	$48,505	$12,780	563
31-33	Manufacturing	All Establishments	2020	5	$32,226	$9412	436
31-33	Manufacturing	Establishments <5	2020	5	N	N	N
44-45	Retail trade	All Establishments	2020	16	$4,233	$975	155
44-45	Retail trade	Establishments <5	2020	3	N	N	N
44-45	Retail trade	Establishments 5-9	2020	7	N	N	N
44-45	Retail trade	Establishments 10-19	2020	4	N	N	N
48-49	Transportation & warehousing	All Establishments	2020	3	$858	$125	15
52	Finance & insurance	All Establishments	2020	3	$444	$125	12
54	Professional, scientific & tech services	All Establishments	2020	4	$125	$26	4
54	Professional, scientific & tech services	Establishments <5	2020	4	N	N	N
62	Health care & social assistance	All Establishments	2020	4	$5,708	$1,446	113
62	Health care & social assistance	Establishments <5	2020	3	N	N	N
72	Accommodation & food service	All Establishments	2020	7	$1,428	$415	104
72	Accommodation & food service	Establishments 5-9	2020	3	N	N	N
81	Other (except public admin)	All Establishments	2020	4	$444	$108	12
81	Other (except public admin)	Establishments <5	2020	3	N	N	N

Source: https://data.census.gov/cedsci/table?g=0500000US32027&tid=CBP2019.CB1900CBP; https://www.census.gov/programs-surveys/cbp/technical-documentation/methodology.html

Notes: The total number of establishments categorized with a 2-6-digit NAICS code level does not sum to the total for all sectors. There was no explanation for this discrepancy in the information provided with the data from the U.S. Census.

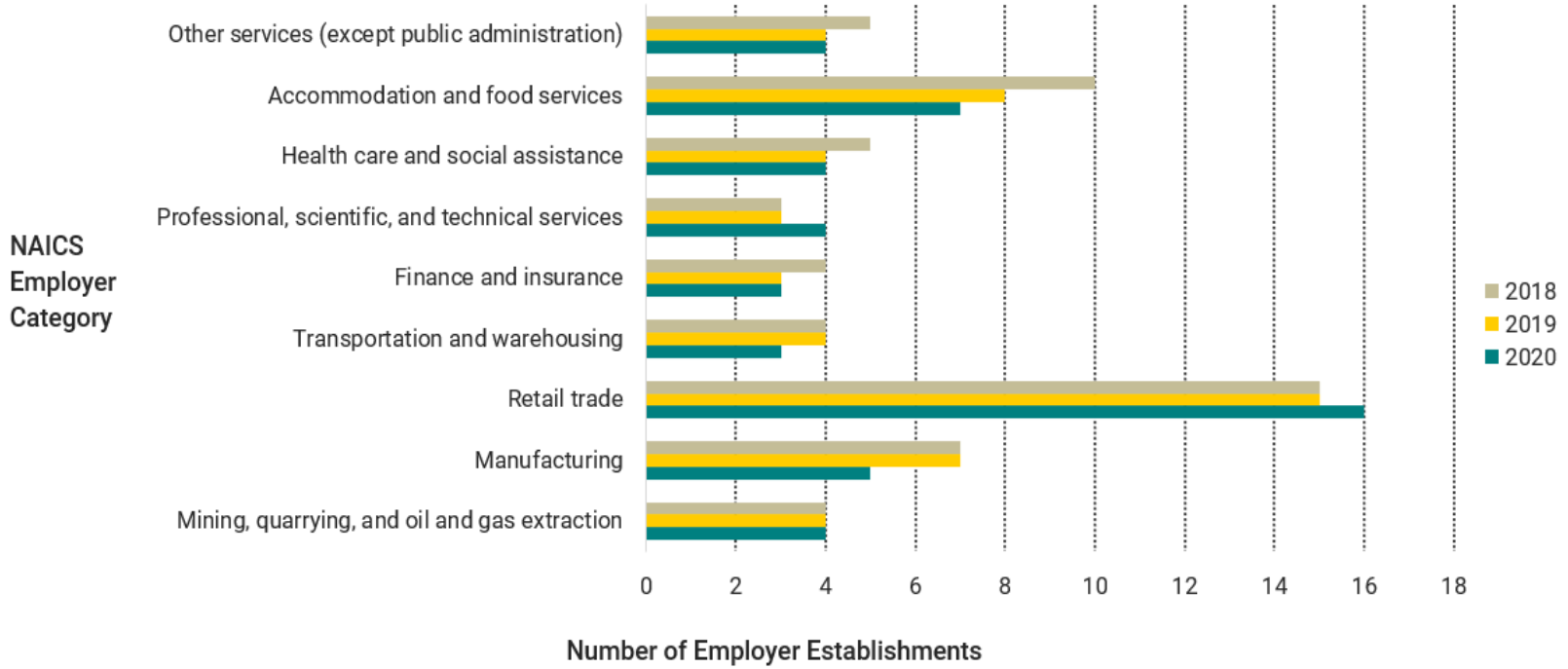
Industries Excluded from County Business Patterns and Undercoverage

County Business Patterns covers most of the country's economic activity. The series excludes data on self-employed individuals, employees of private households, businesses operating without an EIN, and businesses with an EIN but without employees, railroad employees, agricultural production employees, and most government employees to protect confidentiality. The County Business Patterns covers most NAICS industries excluding Crop and Animal Production (NAICS 111,112), Rail Transportation (NAICS 482), Postal Service (NAICS 491), Pension, Health, Welfare, and Vacation Funds (NAICS 525110, 525120, 525190), Trusts, Estates, and Agency Accounts (NAICS 525920), Office of Notaries (NAICS 541120), Private Households (NAICS 814), and Public Administration (NAICS 92).

The Community business pattern data derived from the economic surveys was released in 2019. Looking at the changes over time, only the number of professional and retail trade establishments have increased in Pershing County while the others have all declined.

Figure 1.22 reveals minor changes over the previous three years in the number of employer establishments. The actual numbers are low so that the loss of one or two appears pronounced. The largest change is in the Accommodation and Food Services establishments with a decline of three since 2018. Professional, Scientific and Technical Services grew, as did Retail Trade both by one.

Figure 1.22 Change in Employment Establishments, 2018-2020



Future Projections

According to an investigation of projected county growth statewide, the Nevada Legislative Counsel Bureau determined that counties located in the northwest and southeast (Lyon, Washoe, Storey, Clark, and Nye County), the trends of the preceding two decades should hold true for the immediate future. This finding is based on the state demographer's projections that relied upon the 2019 U.S. Census American Community Survey (ACS) data. The demographer's figures indicate Pershing County's population should increase 0.46% annually from 2019 to 2024. It must be noted this annual growth rate is slightly lower than Census Bureau's national average estimate for the same time period.

However, if Pershing County continues to attract new businesses as it has of late and goes further in its efforts to secure broadband technology, resolve the land holdings issues with Bureau of Land Management, hires additional staff[3] , and amplifies self-promotion of Pershing County's quality lifestyle, housing affordability, and strong sense of community, the population projections for Pershing County could have a very different outcome than the forecast.

[3] Economic Development is the umbrella to Storey County's departments of Building and Planning, Business Licenses, Commercial & Industrial, Finance, Taxes, Resources. Their focus is a strong message of welcoming. The Economic Development Department places a heavy emphasis on forging and maintaining strong partnerships with existing companies to help position their business for continued success. Staff goes so far as to visit companies often to learn about their performance, the opportunities, and any challenges they face. https://www.storeyCounty.org/285/Existing-Businesses

Razaorback Mountain photo by Josiah Roe

02. Land Use & Growth Coordination

Overview

The factors that influence the patterns of land use and growth within an area include available natural resources, established growth patterns, development constraints, and in the case of Sierra Nevada and elsewhere in the West, the interruption of private land by the historical pattern of public lands. The "checkerboard" pattern of land ownership is a legacy of the 19th century federal land policy and a decision by the Union Pacific Railroad to construct a railroad north of Lake Tahoe in 1867. To support the railroad's construction, the federal government granted railway companies a 400' right-of-way and alternating square mile sections of land that met corner-to-corner. The idea that railroads would sell their sections to pay for construction didn't fully transpire and the remnant checkerboard ownership presents a problem for Pershing County as it tries to guide new development in a coordinated, rational, planned way.

Approximately 75% of Pershing County is controlled by the public domain. For the past decade, the county and its citizens sought to resolve several land ownerships issues by submitting a bill to Congress called the Pershing County Economic Development and Conservation Act (the "Public Lands Bill"). Six years have passed without resolution. If the Bill were authorized as requested by Pershing County, exchanges and sales would minimize the checkerboard pattern; land would be conveyed for public purposes; sales to operating mining projects; Wilderness Areas designated; and Wilderness Study Areas released. Growth, in its many facets for employment and new residents, could be planned in a more sustainable method.

The County has several residential communities, with homes on a range of parcel sizes, separated by public open space or agricultural uses. To maximize development efficiency, future expansion of uses should occur in the Lovelock area or an extension of an existing development. To monitor new development of land converted from an agricultural or rural use to one requiring additional infrastructure and natural resources, Pershing County should require that all new proposals be evaluated to demonstrate:

- The existence of adequate public facilities and services
- Compatibility in character and development pattern with the adjacent use(s)

The land use and growth coordination chapter establish a framework for the remaining chapters in this Master Plan. Transportation, Public Facilities & Services, Conservation & Resources arise from the type, intensity and location of opportunistic growth. Consequently, the recommendations of this chapter are closely related to the recommendations of subsequent chapters. Key issues are identified in the context of land use and growth coordination objectives. In addition to establishing a land use plan that provides for the general pattern of

future development and growth, this chapter outlines the County's policies and strategies to recognize the importance of economic and environmental sustainability and the challenges imposed by a limitation of natural resources. The generalized land use types, summarized in **Table 2.1** and described in **Table 2.2** include residential, commercial, industrial, public/semi-public, general rural, and open space.

Key Issues

Coordinate Growth and Public Facilities. To maintain the desired levels of public services, expansion of services may be needed to facilitate growth, depending on the geographic location of proposed development. Fiscal constraints require a cost-effective approach to the provision of adequate public facilities. Hydrological Basin 71 in Grass Valley is presently over appropriated and over pumped, and a moratorium was imposed on the application and approval of parcel maps that create new parcels, subdivisions, and other divisions of property within Basin 71. The County Commissioners require time to conduct an orderly review to protect the current and future users of groundwater within the County to develop policies and enact zoning controls. Existing development resulted in demands for county services over a large geography that strain the general fund resources for expanded or improved services.

Within the City of Lovelock and its surrounding environs, Pershing County and the City must coordinate the phasing of required infrastructure and the timing of new development. The two entities should collaborate on developing funding programs to adequately distribute the cost of expanding needed infrastructure to accommodate growth.

Foster Appropriate Growth and Economic Development. The County can guide the type, location, and timing of public and private development. This Master Plan provides the land use and establishes the parameters for required public services and facilities to support residential and non-residential uses.

Ensure Land Use Compatibility. There is a recognized need for additional housing to attract new business and employers. Development of new housing would be limited to the Lovelock Meadows Water District service area or on larger parcels that meet the state requirements for individual private wells and septic systems. Given the size of Pershing County and the existence of individual communities that are separated in some cases by great distances, it is improbable for the County to provide adequate public services in all communities. At best, the County can support private development as the market warrants for supportive uses and ensure compatibility through its Table of Uses and zoning regulations. This plan encourages a mix of land uses and provides guidance to achieve a measure of compatibility between residential and non-residential. The Agricultural Preservation Overlay District may warrant a reconsideration of its boundary in time if water resources and the interest in farming by property owners' diminish.

Retain the Desired County Character. The Master Plan recognizes the value of the existing agricultural, forestry, fishing and hunting, and mining industries for the civilian employed population. This industry contributes financial resources to the county and to its character as a rural environment and a close-knit community.

Joint Plan and Encourage In-Fill Development. Coordination is necessary to provide for the orderly development and growth within the City of Lovelock and the surrounding County. Addressing infrastructure issues between jurisdictions and other service providers is an objective of this Master Plan.

According to Pershing County Assessor data from June 2022, the county consists of approximately 3,886,331 acres. Equivalent to 7,261 square miles, Pershing County is larger in area than the states of Connecticut, Delaware, Rhode Island, and the District of Columbia. However, the size, ownership and development patterns within the County impacts its ability to efficiently serve its residents since the County is largely undeveloped and checkerboarded with public land holdings by the Bureau of Land Management.

Exploring the data by ownership and development patterns reveals nearly three out of every four acres are owned by a public entity such as the federal government, the USA Indian Colony, a state agency, or Pershing County. The land area under public administration totals approximately 2,981,983 acres. This includes 2.9M acres owned by the Bureau of Land Management, 13,313 acres held by the Bureau of Reclamation, 6,960 acres purchased by the Division of Wildlife, and hundreds of acres bought by the State of Nevada for transportation purposes, the correctional facility, US Indian Colony, and the Lovelock Meadows Water District.

Figures 2.1 illustrates the the summation of and public versus private acreage. While not all public land is vacant and not all private land is developed, the data indicates 83% of Pershing County is vacant and 17% developed.

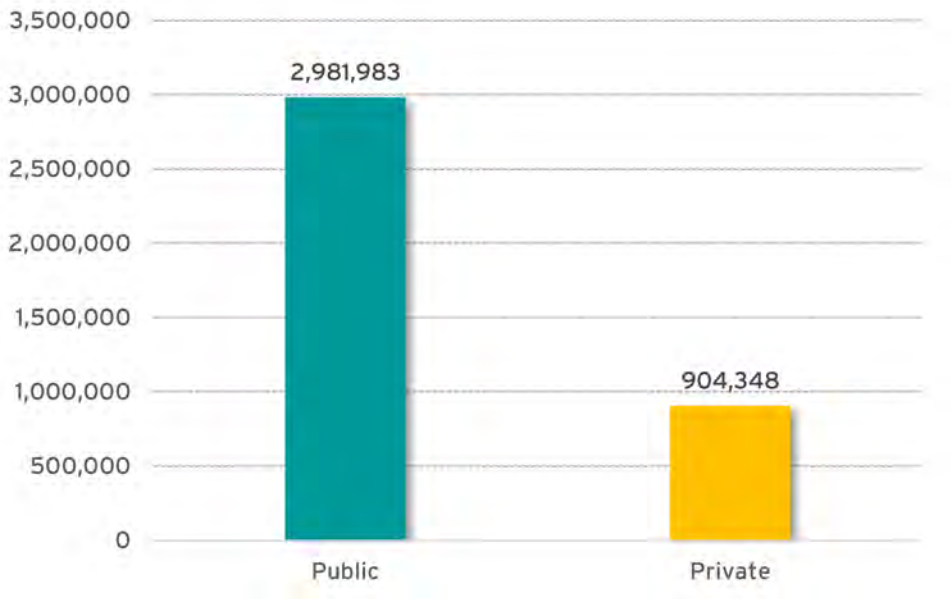
Figures 2.2 and **2.3** reveal the distribution of both vacant and developed land by Assessor Use Type.

Figure 2.4 illustrates the extent of vacant land by Assessed Use Type within the Lovelock Meadows Water District service area. Development on vacant land within the service area is the focus of in-fill development since the infrastructure is in place. Development on AMR at great distances from services is highly discouraged and subject to discretionary permitting.

The Land Use & Growth Coordination Element recommends efficient use of municipal and private resources by encouraging new development in areas proximate to infrastructure and services. In-fill development reduces the need to extend services and public facilities and most efficiently utilizes the existing infrastructure. The analysis of developed land currently indicates approximately 17% or 654,476 acres generate property taxes. This includes the 607,384 acres in Agriculture which is 12 times the number of all developed acres combined, including mining, residential, commercial, industrial, public utilities and special purpose uses for community assets such as libraries and hospitals.

Figure 2.5 identifies land assessed as vacant by use type in Pershing County surrounding the City of Lovelock.

Table 2-1 Total County Acreage by Land Administrator



Source: Pershing County GIS database provided by Farr West Engineering.

Notes: Public land includes Bureau of Land Management, Bureau of Reclamation, Lovelock Meadows Water District, Nevada State Prison, Nevada, State of, Other (parcels without a legal name), Pershing County (includes the courthouse, cemeteries, dumps, equipment yards, fire, hospital, museum, library, recreation et.al.; excludes school district property) , State of Nevada, including the Department of Transportation, State Division of Wildlife, and the U.S. Postal Service.

Table 2-2 Vacant Acreage by Assessor Use Type

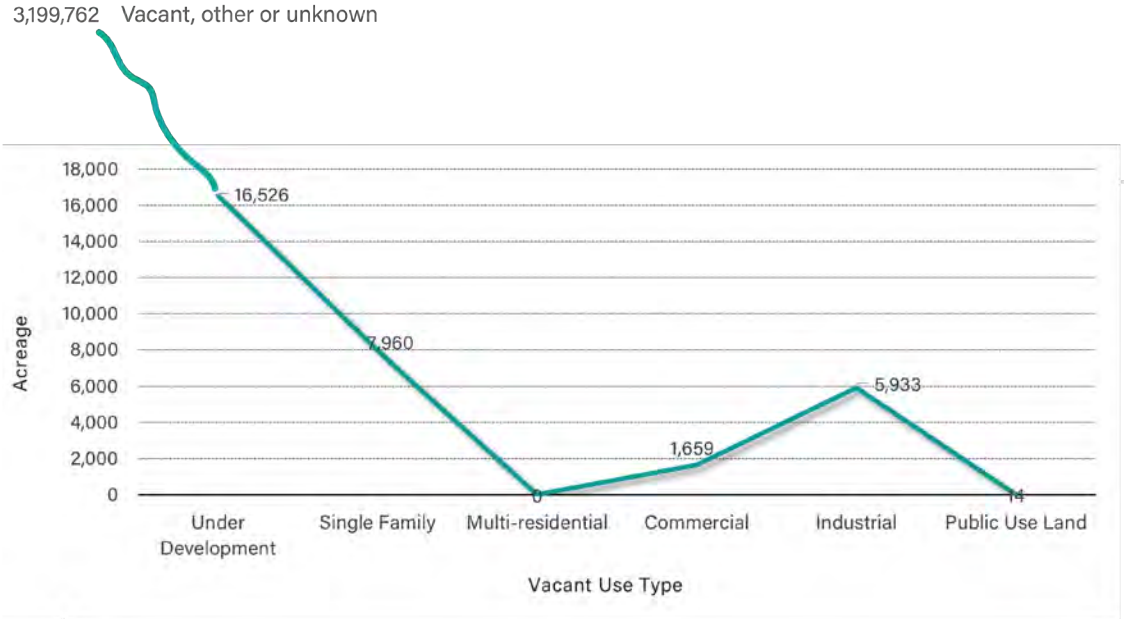
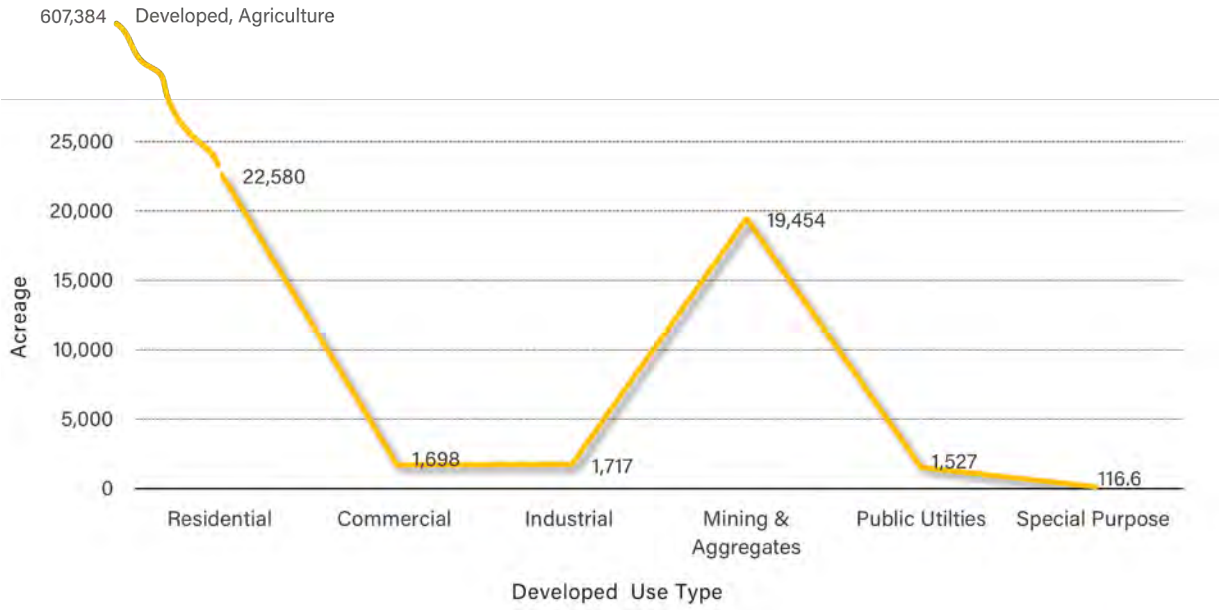
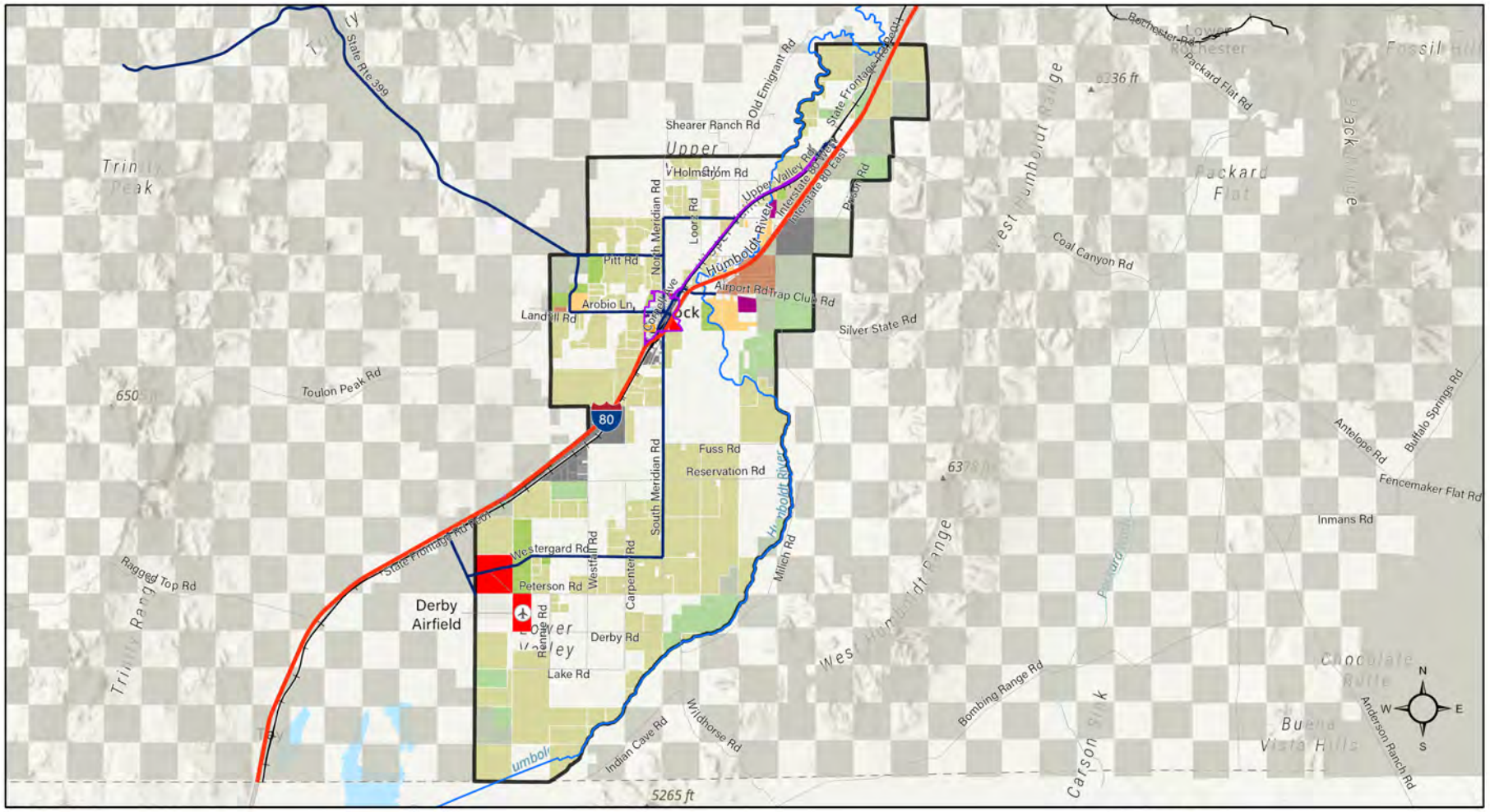


Table 2-3 Developed Acreage by Assessor Use Type



Pershing mile marker photo by CJAlbright



Legend

- Interstate
- State Route
- Local Route
- Railroads
- Humboldt River
- Lovelock Meadows District Service Area
- Lovelock Boundary
- Lovelock Indian Colony
- Public Land
- Agriculture

Zoning

- AMR
- LDR
- MDR
- LDS
- SF
- LLSF
- MDS
- HDS
- MF
- NC
- C, GC

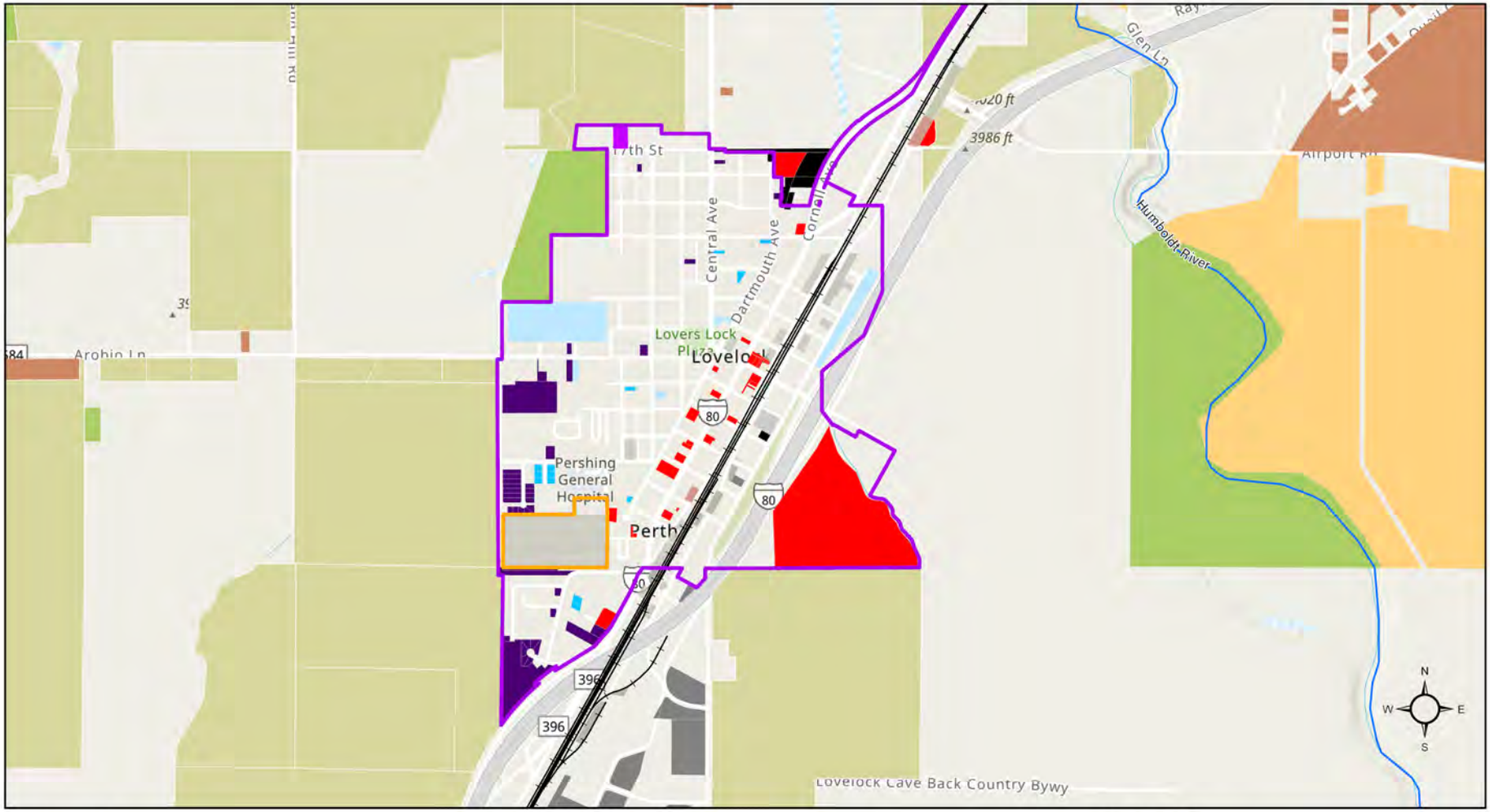
Figure 2.4

Lovelock Meadows Water District Service Area, Assessed Vacant, Agriculture and Public Land

Source: Pershing County; Farr West Consulting digital data release 2021
USGS, ESRI, NASA, NGA, USGS, FEMA
Stantec Consulting; Cynthia Albright, LLC

Projection: State Plane Nevada West Zone, NAD 83, U.S. Survey Foot

Scale: 1 in = 20,000 Feet Date: 12/2/22



Legend

- Interstate
- State Route
- Local Route
- Railroads
- Humboldt River
- Lovelock Meadows District Service Area
- Lovelock Boundary
- Lovelock Indian Colony
- Public Land
- Agriculture

Zoning

- AMR
- LDR
- MDR
- LDS
- SF
- LLSF
- MDS
- HDS
- MF
- NC
- C, GC

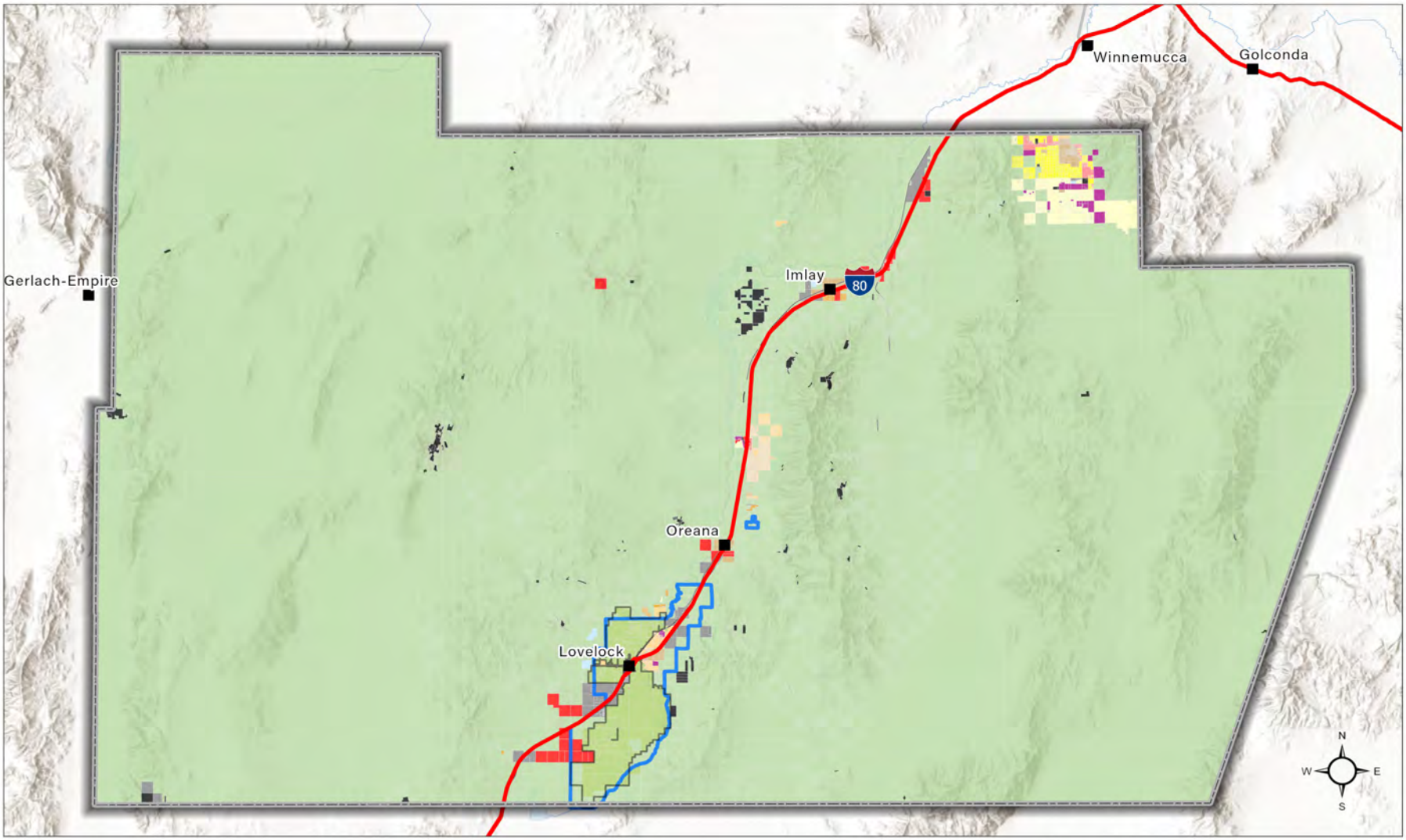
Figure 2.5

City of Lovelock, Assessed Vacant, Agriculture and Public Land

Source: Pershing County; Farr West Consulting digital data release 2021
USGS, ESRI, NASA, NGA, USGS, FEMA
Stantec Consulting; Cynthia Albright, LLC

Projection: State Plane Nevada West Zone, NAD 83, U.S. Survey Foot

Scale: 1 in = 1,800 Feet Date: 12/2/22



Legend

- Cities and Towns
- Pershing County
- Interstate
- Agricultural Preservation Overlay District
- Lovelock Meadows District Service Area

Zoning

- No Zoning
- AMR
- LDR
- MDR
- LDS
- SF
- LLSF
- MDS
- HDS
- MF
- NC
- C, GC
- GR
- I/C
- I

Figure 2.6
Planned Land Use

Source: Pershing County; Farr West Consulting digital data release June 2022
ESRI, US Census, Stantec Consulting Services Inc., Cynthia Albright, LLC

Projection: State Plane Nevada West Zone, NAD 83, U.S. Survey Foot

Scale: 1 in = 12 Miles Date: 12/12/2022

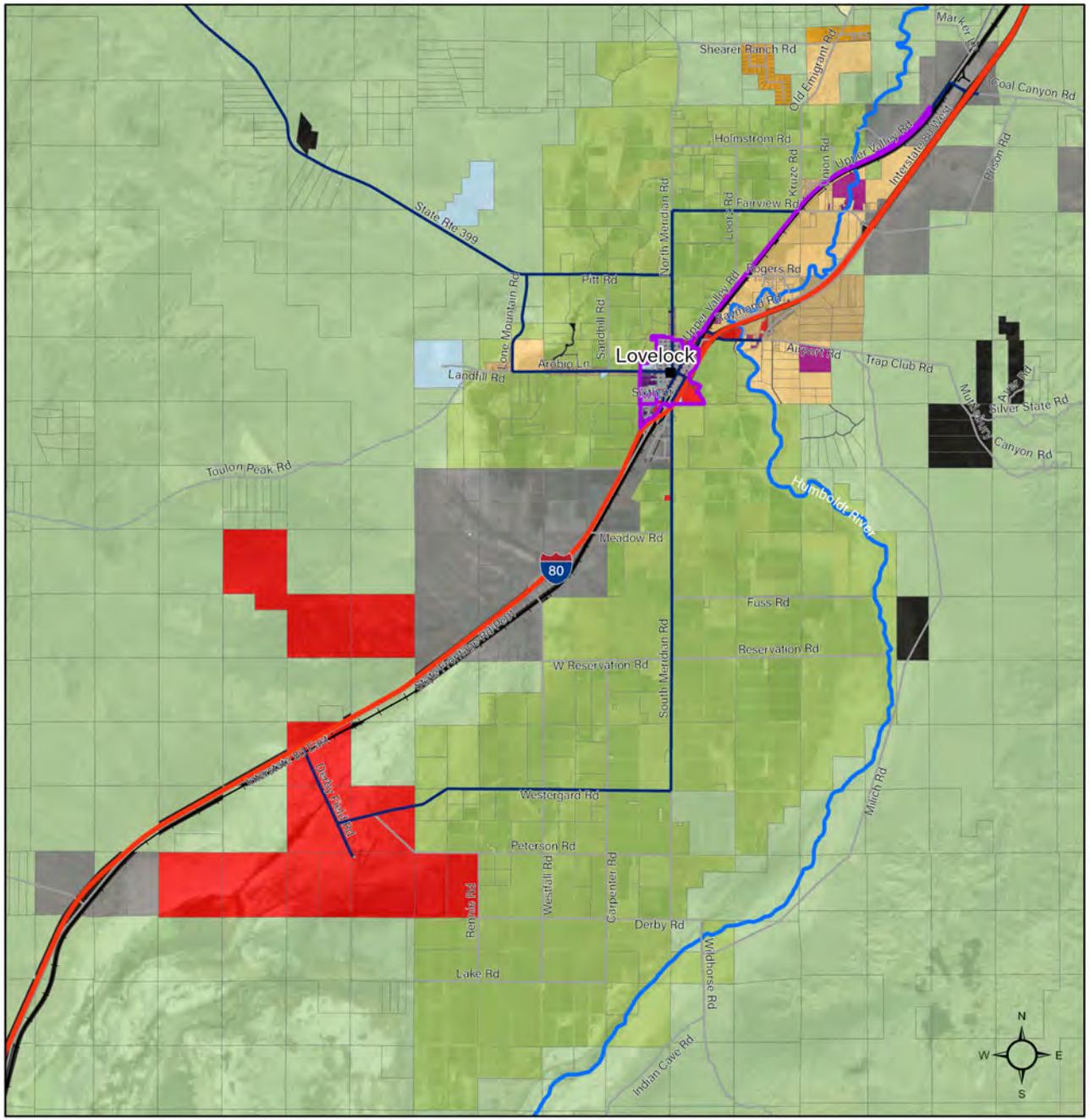


Figure 2.7

Upper and Lower Valleys Near Lovelock Planned Land Use

Legend

- Cities and Towns
- Lovelock Boundary
- Interstate
- State Route
- Local Route
- Railroads
- Humboldt River
- Parcel Boundary

Zoning

- No Zoning
- AMR
- LDR
- LDS
- SF
- LLSF
- MDS
- HDS
- MF
- C, GC
- GR
- I/C
- I
- PSF
- UAC, UAM, UAR, UAR2

Source: Pershing County; Farr West Consulting digital data release June 2022
ESRI, US Census, Stantec Consulting Services Inc., Cynthia Albright, LLC

Projection: State Plane Nevada West Zone, NAD 83, U.S. Survey Foot

Scale: 1 in = 12,000 Feet Date: 12/2/22

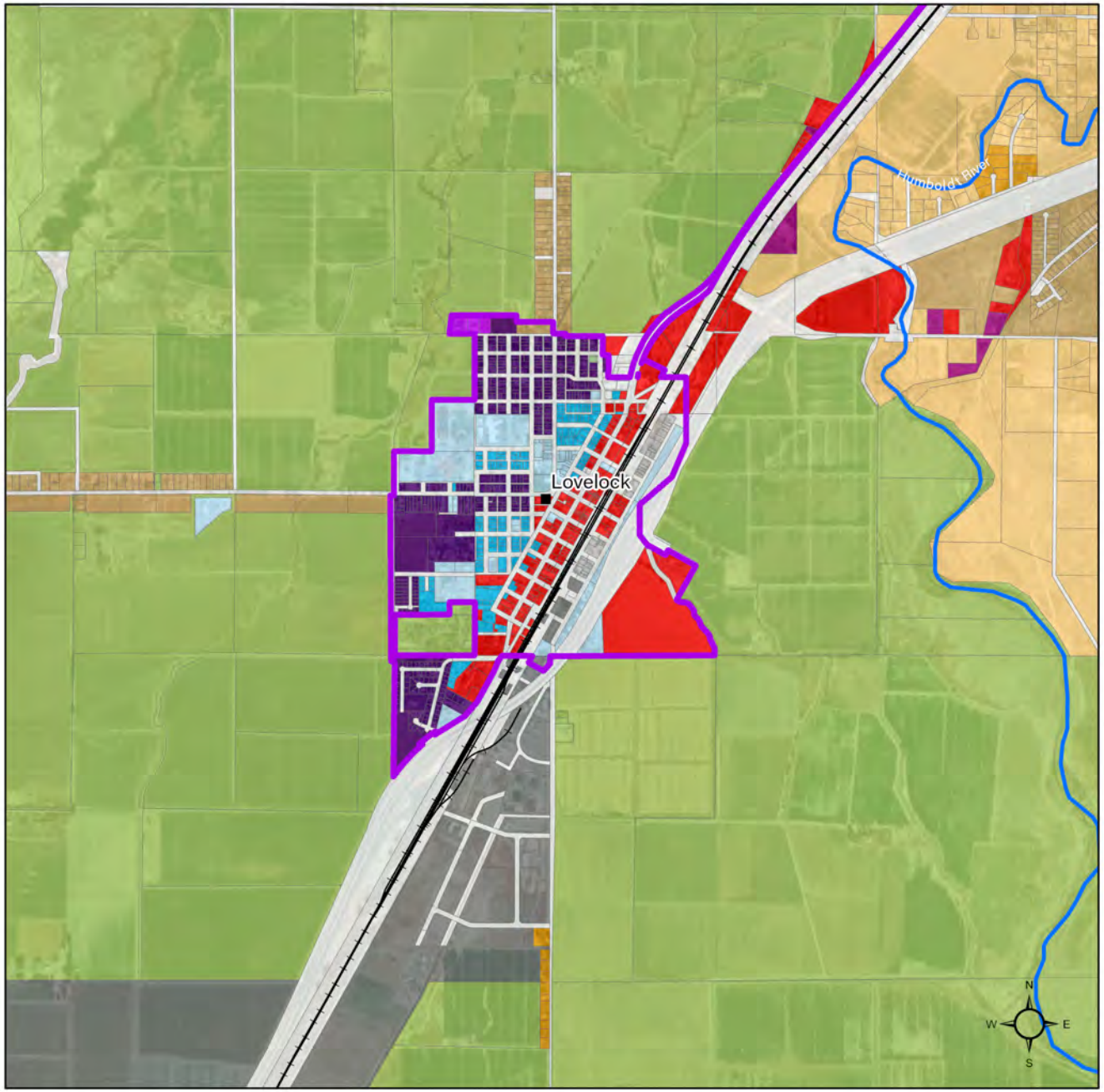


Figure 2.8

City of Lovelock Planned Land Use

Legend

- Cities and Towns
- Lovelock Boundary
- Interstate
- State Route
- Local Route
- Railroads
- Humboldt River
- Parcel Boundary

Zoning

- No Zoning
- AMR
- LDS
- SF
- LLSF
- MDS
- HDS
- MF
- C, GC
- GR
- I/C
- I
- PSF
- UAC, UAM, UAR, UAR2

Source: Pershing County; Farr West Consulting digital data release June 2022
ESRI, US Census, Stantec Consulting Services Inc., Cynthia Albright, LLC

Projection: State Plane Nevada West Zone, NAD 83, U.S. Survey Foot

Scale: 1 in = 2,400 Feet Date: 12/2/22

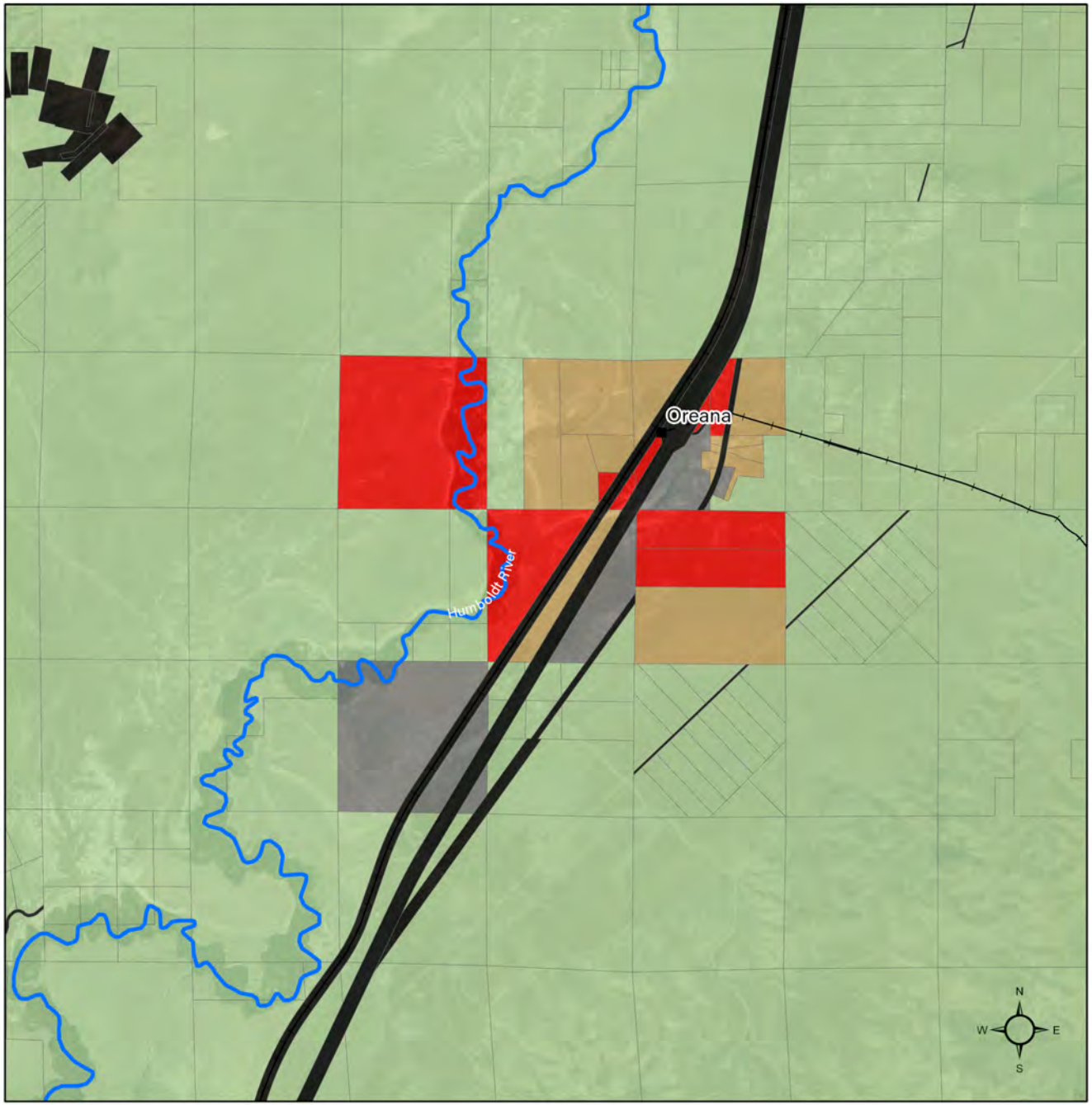


Figure 2.9

Oreana Planned Land Use

Legend

- Cities and Towns
- Interstate
- State Route
- Local Route
- Railroads
- Humboldt River
- Parcel Boundary

Zoning

- No Zoning
- AMR
- LDR
- MDR
- LDS
- SF
- LLSF
- MDS
- HDS
- MF
- NC
- C, GC
- GR
- I/C
- I
- PSF
- UAC, UAM, UAR, UAR2

Source: Pershing County; Farr West Consulting digital data release June 2022
ESRI, US Census, Stantec Consulting Services Inc., Cynthia Albright, LLC

Projection: State Plane Nevada West Zone, NAD 83, U.S. Survey Foot

Scale: 1 in = 5,000 Feet Date: 12/2/22

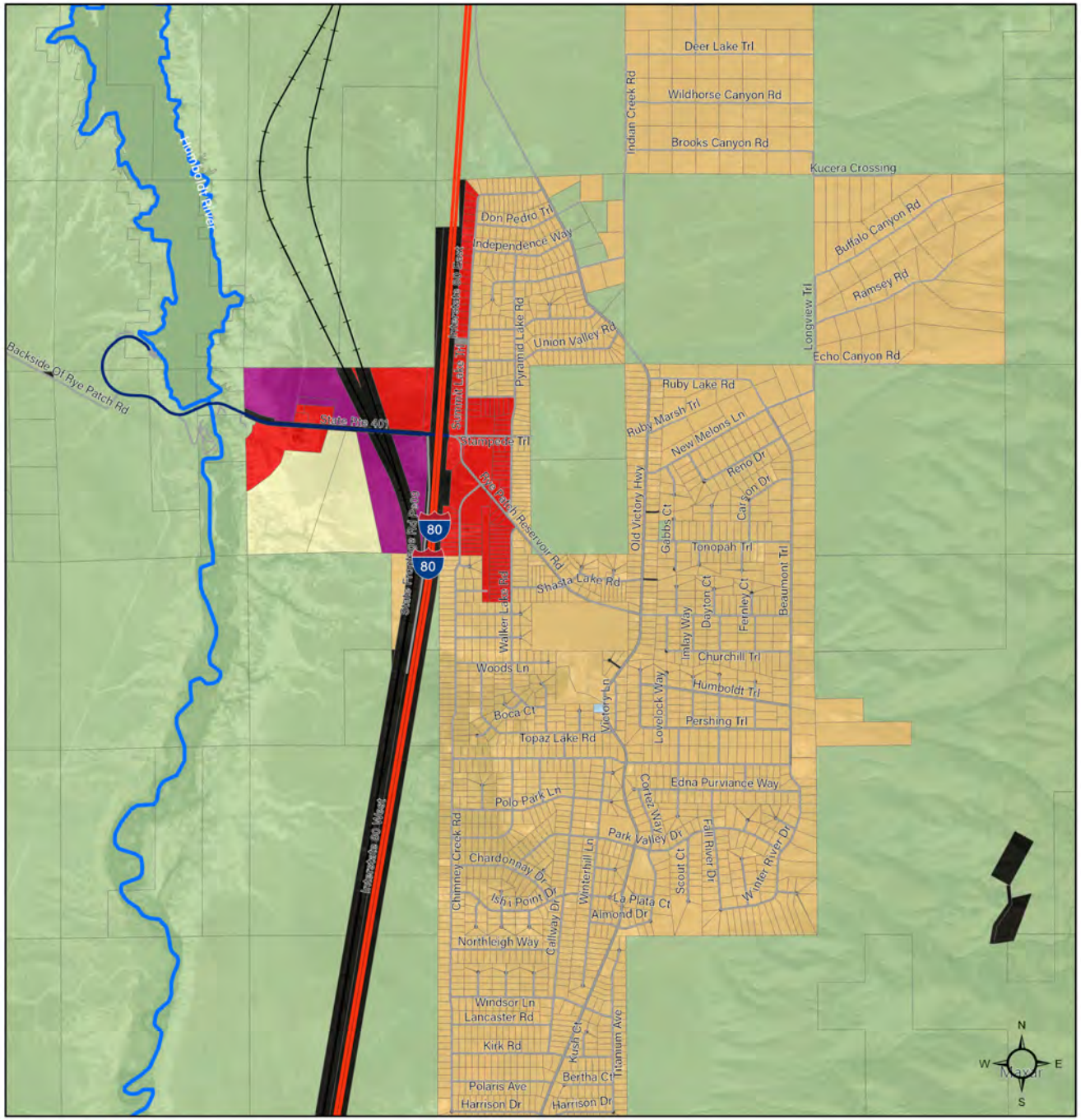


Figure 2.10
Humboldt River Ranch Planned Land Use

Legend
- Cities and Towns
- Interstate
- State Route
- Local Route
- Railroads
- Humboldt River
- Parcel Boundary

Zoning
- No Zoning
- AMR
- LDR
- LDS
- C, GC
- I
- PSF
- UAC, UAM, UAR, UAR2

Source: Pershing County; Farr West Consulting digital data release June 2022
ESRI, US Census, Stantec Consulting Services Inc., Cynthia Albright, LLC

Projection: State Plane Nevada West Zone, NAD 83, U.S. Survey Foot

Scale: 1 in = 4,000 Feet Date:12/2/22

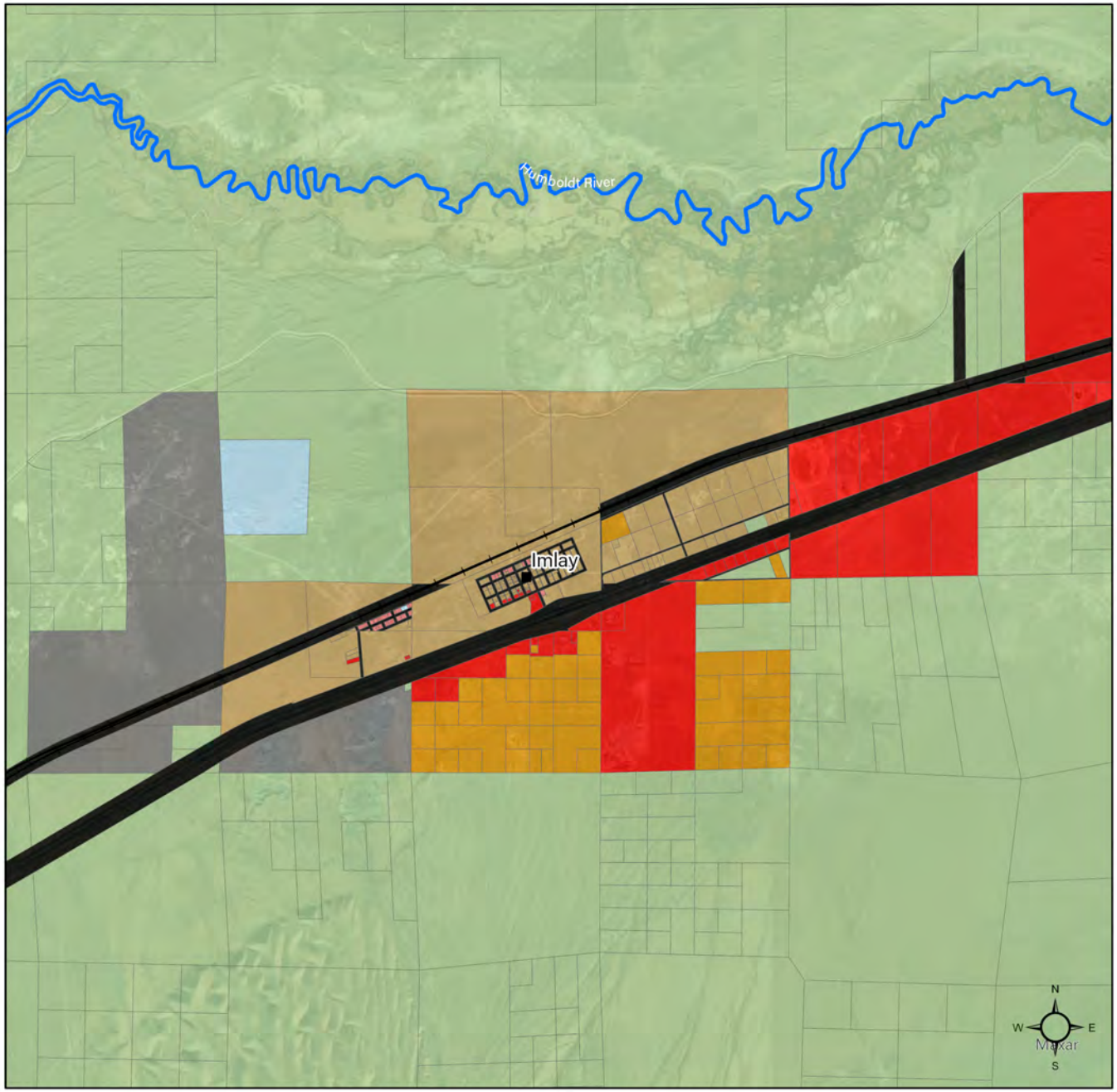


Figure 2.11

Imlay Planned Land Use

Legend

- Cities and Towns
- Interstate
- State Route
- Local Route
- Railroads
- Humboldt River
- Parcel Boundary

Zoning

- No Zoning
- AMR
- MDS
- HDS
- NC
- C, GC
- I
- PSF

Source: Pershing County; Farr West Consulting digital data release June 2022
ESRI, US Census, Stantec Consulting Services Inc., Cynthia Albright, LLC

Projection: State Plane Nevada West Zone, NAD 83, U.S. Survey Foot

Scale: 1 in = 4,000 Feet Date: 12/2/22

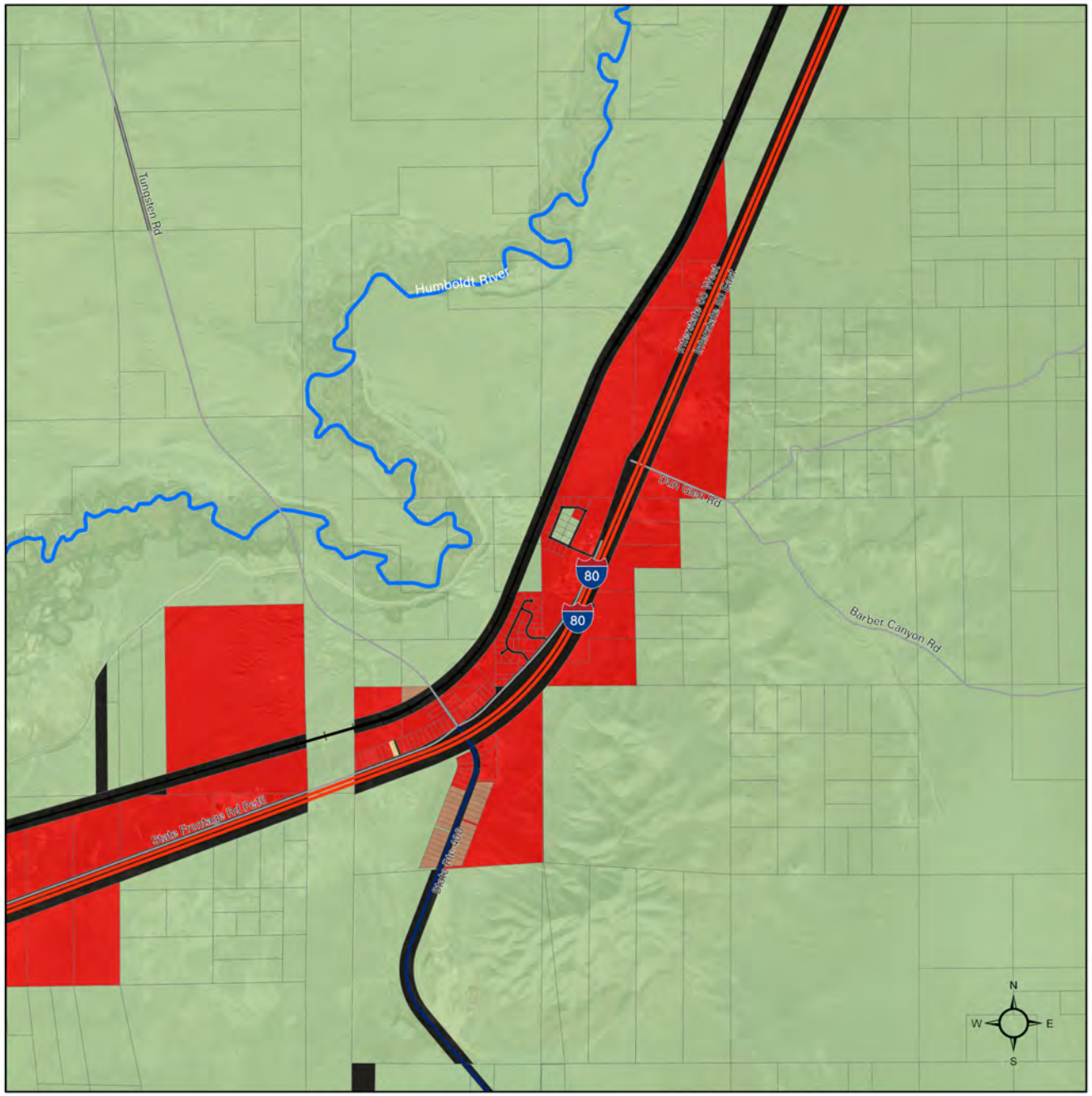


Figure 2.12

Mill City
Planned Land Use

Legend
- Interstate
- State Route
- Local Route
- Railroads
- Humboldt River
- Parcel Boundary

Zoning
- No Zoning
- AMR
- LDS
- HDS
- C, GC

Source: Pershing County; Farr West Consulting digital data release June 2022
ESRI, US Census, Stantec Consulting Services Inc., Cynthia Albright, LLC

Projection: State Plane Nevada West Zone, NAD 83, U.S. Survey Foot

Scale: 1 in = 4,000 Feet Date: 8/22/22

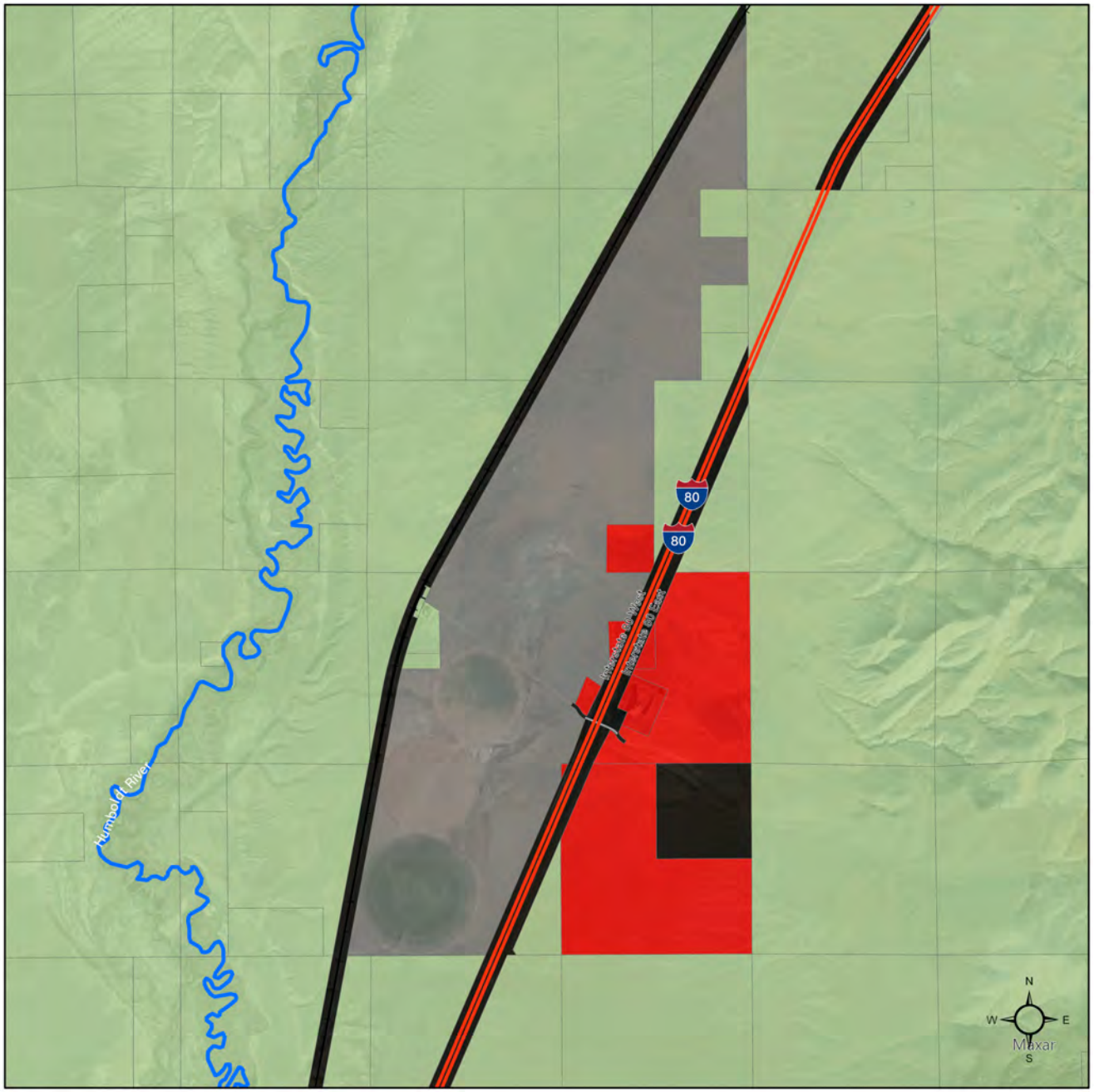


Figure 2.13

Cosgrave Planned Land Use

Legend

- Cities and Towns
- Interstate
- State Route
- Local Route
- Railroads
- Humboldt River
- Parcel Boundary

Zoning

- No Zoning
- AMR
- Commercial
- Industrial

Source: Pershing County; Farr West Consulting digital data release June 2022
ESRI, US Census, Stantec Consulting Services Inc., Cynthia Albright, LLC

Projection: State Plane Nevada West Zone, NAD 83, U.S. Survey Foot

Scale: 1 in = 4,000 Feet Date: 11/11/22

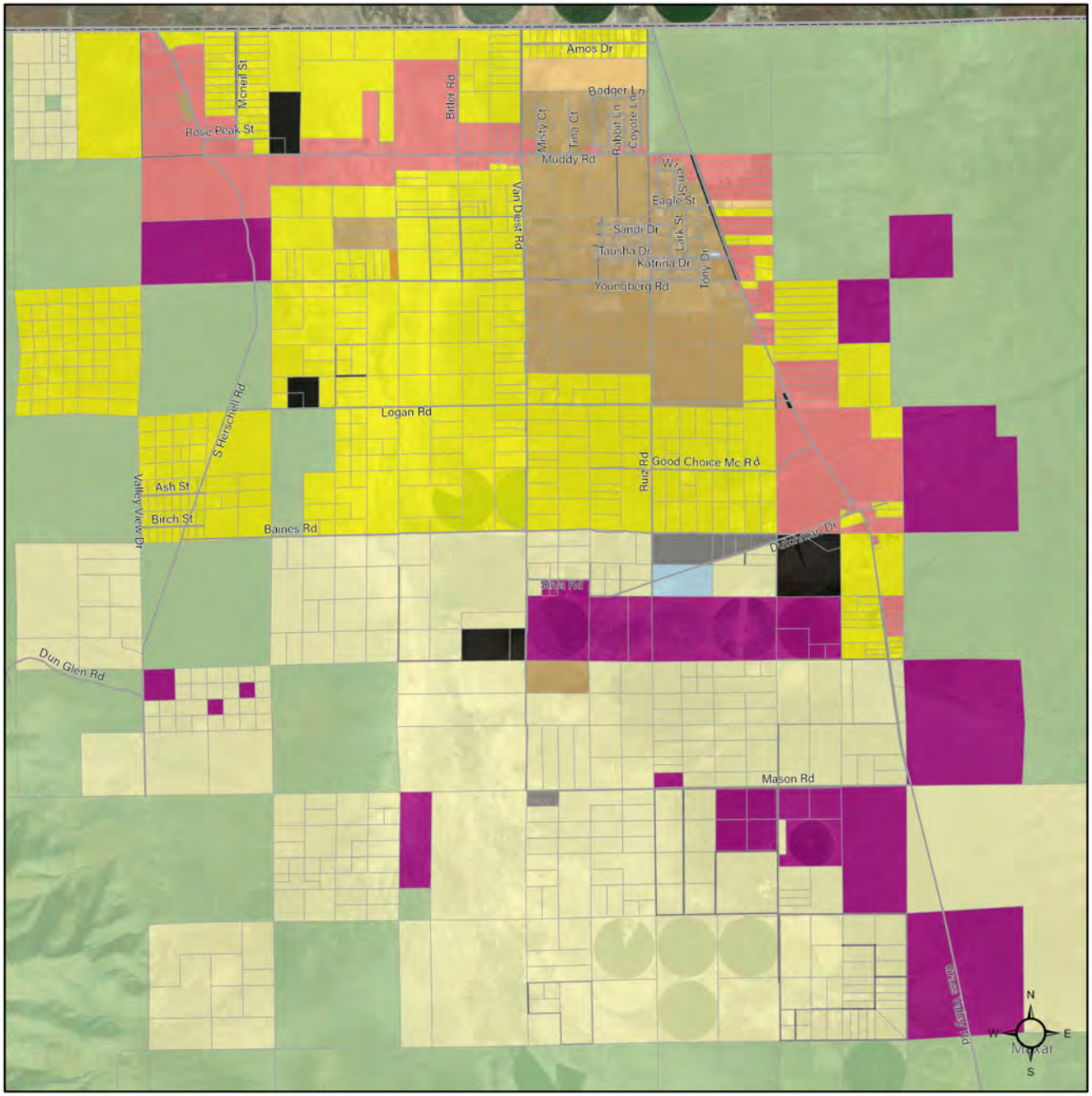


Figure 2.14

Grass Valley Planned Land Use

Legend

- County Boundary
- Local Route
- Parcel Boundary

Zoning

- No Zoning
- AMR
- LDR
- MDR
- LDS
- MDS
- HDS
- NC
- I
- PSF
- UAC, UAM, UAR, UAR2

Source: Pershing County; Farr West Consulting digital data release June 2022
ESRI, US Census, Stantec Consulting Services Inc., Cynthia Albright, LLC

Projection: State Plane Nevada West Zone, NAD 83, U.S. Survey Foot

Date: 11/30/22 Scale: 1 in = 6,000 Feet

TABLE 2.1 Summary of Land Use Designations

Land Use Designation	Maximum Density	Typical Uses (See Pershing County Development Code Title 17)	Location Factors (See Community Facility Requirements)
Agriculture-Mining-Recreation	1 dwelling unit per 640 acres plus proof of water rights	Agriculture production and sales, animal production and slaughtering, feed lots, aggregate and mining operations, and residential uses typically reliant on individual water and sewer with limited access to public services and facilities; may include environmentally sensitive areas	Ranches and open areas primarily outside of the Agriculture Preservation District with limited roadways, water, sewer, public safety (fire and sheriff), commercial services or employment
General Rural (GR)	1 dwelling unit per 40 acres	Rural land allowing for detached and attached residential uses, animal farms, production and slaughtering, crops, and veterinary services related to AG	Land area within the Lovelock Meadows Water Service Area/Agricultural Preservation Overlay District
Low Density Rural (LDR)	1 dwelling unit per 20 acres	Rural land allowing for detached residential uses on parcels with accessory structures in a rural setting. Livestock and agricultural uses are permitted as well as passive recreation and veterinary services related to AG	Land area predominately located in the lower Grass Valley area surrounded by AMR, historic Urban Area Residential zoning, and proximate to neighborhood commercial uses
Medium Density Rural (MDR)	1 dwelling unit per 10 acres	Rural land allowing for large lot single family detached with or without agricultural and live-stock uses, passive recreation, and veterinary services related to AG	Land area predominately located in the upper Grass Valley area amongst residential uses on a variety of minimum lot sizes and abundant neighborhood commercial uses
Low Density Suburban (LDS)	1 dwelling unit per 2.5 acres	Large lot single family detached uses on parcels in a semi-rural setting. Livestock and agricultural production and passive recreation permitted	Land area comprising Humboldt River Ranch or near the population center of Lovelock
Medium Density Suburban (MDS)	1 dwelling unit per 1 acre (43,560 square feet)	Attached and detached residential uses permitted and passive recreation	Areas near the Lovelock and Grass Valley population centers with public services including community water supply; individual septic permitted
High Density Suburban (HDS)	Maximum 4 dwelling units per acre or a minimum lot size of 10,890 square feet	Attached and detached residential uses permitted and passive recreation. Neighborhoods typically connected to community water and sewer	Areas within population centers. For a lot that is part of a tentative map approved before Jan 1, 2000, a minimum area of 1/4 acre (10,890 square feet), including public streets or alleys or other public rights-of-way, is required for the installation of an individual sewage disposal system on a parcel

Land Use Designation	Maximum Density	Typical Uses (See Pershing County Development Code Title 17)	Location Factors (See Community Facility Requirements
			with a community water supply. For a lot that is approved as part of a tentative map on or after January 1, 2000, a minimum area of 1/2 acre (21,780 square feet) including public streets or allies or other public rights-of-way, is required for installation of an individual sewage disposal system on a parcel served by a community water supply. See Pershing County Code and NAC sections 444.783-444.8368, inclusive
Neighborhood Commercial (NC)		Areas that support neighborhood commercial uses and services such as convenience retail, libraries, administrative, medical, postal, passive recreation, pet care, automotive	Located along a roadway constructed with cement treated base[1] proximate to residential uses to support business
General Commercial (GC)		Areas that support neighborhood centers in addition to community centers, veterinary services, entertainment, dining, and shopping centers	Areas within designated population centers
Industrial (I)		Areas that support neighborhood commercial uses and automotive, manufacturing, warehouse, truck stops, wholesaling, storage, and distribution	Areas within or near population centers
Public and Semi-Public Facilities (PSF)		Areas that provide for civic administration, education, religious service, medical treatment, community centers, utilities, recreation, cemeteries	Areas within or near population centers
Open Space (OS)		Areas designated as critical lands and/or for wildlife habitat. Limited or no road access and no public services. Passive recreation is permitted	Areas that generally have limited public services and facilities available

Source: Pershing County Development Code

Note: Population centers include the City of Lovelock and its environs, Grass Valley, and Humboldt Ranch. Rural communities include Oreana, Unionville, Imlay, and Mill City.

[1] The compressive strength of the cement treated base shall be 650-700 psi and have a minimum thickness of 6 inches. The County Roads Superintendent shall review for appropriate thickness based on surrounding area and uses.

TABLE 2.2 Land Use Designation Descriptions

Agriculture-Mining-Recreation (AMR-160)

Intent: The Agriculture-Mining-Recreation designation allows agricultural, aggregate, and mining operations, animal production and slaughtering, and residential uses with individual water and sewer systems. These open areas throughout the county may have limited paved roads and public services and facilities.

Development Guidelines: Development in the AMR designation is appropriate under the following conditions:

Conservation The environmental character of sensitive or unique natural features must be identified (i.e., moderate, or steep slopes, potential wetlands, and floodplains) and the impacts mitigated according to applicable policies and ordinances.

Land Use and Transportation Residential uses require a minimum of one unit per 160 acres for single-family dwellings, attached accessory dwellings and detached accessory structures to support agriculture and permanent or temporary aggregate and mining operations. Expanded agricultural related uses such as commercial feedlots and game farms are permitted with discretionary permits. Energy production, manufacturing, nurseries, and lodging services also allowed by permit approval. Adjacent land uses shall be compatible. The AMR designation is compatible with all land uses including General Rural, Commercial, Industrial, Public Services and Facilities, Open Space and Residential.

Public Services and Facilities Approval shall be on a case-by-case basis based on proposal and infrastructure requirements.

General Rural (GR-40 acres)

Intent: The GR land use identifies areas that are:

1. Located within the Lovelock Meadows Water Service Area/Agricultural Preservation Overlay District
2. Identifies areas near Lovelock but may not have public infrastructure adjacent to or near the site
3. Minimum one dwelling unit per 40 acres
4. Remote and may have no or very low-density development
5. In transition from agriculture/mining/recreation use and rural residential land use designations
6. Where unique development may occur such destination resorts, bed and breakfast inns, telecommunications, commercial stables, wholesale nursery, mining.

	Property owners encouraged to develop their property at densities and intensities compatible with surrounding development and master plan land uses. Where environmental and/or public infrastructure constraints cannot be effectively eliminated, residential density shall be 1 dwelling unit per 40 acres. Permitted uses specified in the Pershing County Development Code provided proposed development provides an overall benefit to the County (i.e., employment and sustainability opportunities).
Development Guidelines	Development in the GR designation is appropriate under the following conditions:
Conservation	Identified environmental character of sensitive or unique natural features (i.e., moderate, or steep slopes, potential wetlands, and floodplains) and the impacts mitigated according to applicable policies, ordinances, and regulations within the Development Code.
Land Use and Transportation	Adjacent land uses shall be compatible. The GR designation is compatible with uses permitted in the AMR designation excluding aggregate and mining uses, cultural facilities, veterinary services supporting agriculture, and open space.
Public Services and Facilities	Approval shall be on a case-by-case basis based on proposal and infrastructure requirements.

RESIDENTIAL

The following criteria are common to all residential land use designations:

A. The area designated has slope, soil, geology, and other physical conditions that make it suitable for the type and density of development proposed.

B. The average daily noise levels recommended for residential land uses shall not exceed 65 Ldn for outdoor conditions and 50 for indoor. Sound attenuation measures shall be adhered to in areas where these recommended levels are exceeded more than 10 percent of the time.

C. Residential uses are permitted on smaller lots than those allowed within each land use designation provided the overall density is maintained and the provisions of Chapters 517 and 518 of the Development Code are adhered to.

Low Density Rural (LDR - 20 acres)

Intent: The LDR designation is intended to preserve areas where large lot single-family, detached residential, with or without agricultural and livestock uses predominate. These areas generally have limited access to pub-lic services and facilities.

Development Guidelines: Development in the LDR designation is appropriate under the following conditions:

Conservation The natural terrain, groundwater recharge capabilities, scenic qualities, and other natural surroundings shall be preserved to the extent possible.

Land Use and Transportation Minimum lot size is one unit per 20 acres. Adjacent land uses shall be compatible. The LDR designation is compatible with the AMR land uses, Medium Density Rural, High Density Rural, General Rural, and Open Space if the proposed use is low intensity. Transportation facilities should be sized for an average trip generation of 0.5 trips/acre/day and a peak hour trip generation of 0.05 trips/acre/hour.

Public Services and Facilities The site shall be served by facilities that have existing capacity based on the following general guidelines:

a Fire, EMS 30–35-minute response time
b. Sheriff 35–40-minute response time
c. Water 1.12-acre feet/dwelling unit/individual domestic well
d. Sewer Individual sewage disposal systems need to comply with NAC 444.792
e. Schools One way travel times: 15 minutes (elementary), 25 minutes (junior), 35 minutes (high)

Medium Density Rural (MDR - 10 acres)

Intent: The MDR designation is intended to preserve areas where large lot single-family, detached residential, predominate. Attached accessory dwellings and detached accessory structures are permitted. MDR des-ignated areas generally have limited public services and facilities.

Development Guidelines: Development in the MDR designation is appropriate under the following conditions:
Land Use and Transportation

Conservation The natural terrain, groundwater recharge capabilities, scenic qualities, and other natural surroundings shall be preserved to the extent possible

Land Use and Transportation

Residential land use on parcels smaller than 20 acres with a minimum size of 10 acres. Adjacent land uses shall be compatible. MDR is most compatible with AMR, LDR, LDS, General Rural, Neighborhood Com-mercial, and Open Space. Transportation facilities should be sized for an average trip generation of 1 trip/acre/day and a peak hour trip generation of 0.1 trips/acre/hour

Public Services and Facilities

The site shall be served by facilities that have existing capacity based on the following general guidelines:
a. Fire, EMS 30–35-minute response time
b. Sheriff 35–40-minute response time
c. Water Individual sewage disposal systems need to comply with NAC 444.792
d. Sewer
e. SchoolsOne way travel times: 40 minutes (elementary), 55 minutes (junior), 75 minutes (high)

Low Density Suburban (LDS – 2.5 acres)

Intent:

The LDS designation is intended for single family detached residential on a minimum lot size of 2.5 acres in a semi-rural setting. Livestock grazing and agricultural activities are common secondary uses. Small neighborhood commercial uses may be permitted, subject to special review, when they serve the needs of the residents are compatible with the residential character of the area.

Development Guidelines:

Development in the LDS designation is appropriate under the following conditions:

Conservation

The natural terrain, scenic qualities, and other natural surroundings shall be preserved to the extent possible

Land Use and Transportation

Residential land use on parcels smaller than 10 acres with a minimum size of 2.5 acres. Adjacent land uses shall be compatible. LDS is most compatible with AMR, MDR, GR, Medium Density Suburban, High Density Suburban, Commercial, and Open Space. Transportation facilities should be sized for an average trip generation of 5 trip/acre/day and a peak hour trip generation of 0.25 trips/acre/hour.

Public Services and Facilities

The site shall be served by facilities that have existing capacity based on the following general guidelines:
a. Fire, EMS 20–25-minute response time
b. Sheriff 25–30-minute response time
c. Water 1.12-acre feet/dwelling unit/individual domestic well
d. Sewer Individual sewage disposal systems need to comply with NAC 444.792
e. Schools One way travel times: 40 minutes (elementary), 55 minutes (junior), 75 minutes (high)

Medium Density Suburban (MDS – 1.0 acres)

Intent: The MDS designation creates areas of single family attached and detached residential on one-acre parcels.

Development Guidelines: Development in the MDS designation is appropriate under the following conditions:

Conservation The natural terrain, scenic qualities, and other natural surroundings shall be preserved to the extent possible

Land Use and Transportation Residential land use on parcels smaller than 2.5 acres with a minimum size of 1.0 acres. Adjacent land uses shall be compatible. MDS is most compatible with GR, LDS, High Density Suburban, Neighborhood Commercial, General Commercial, and Open Space. Transportation facilities should be sized for an aver-age trip generation of 10 trips/acre/day and a peak hour trip generation of 2.5 trips/acre/hour

Public Services and Facilities The site shall be served by facilities that have existing capacity based on the following general guidelines:

a. Fire, EMS 20–25-minute response time
b. Sheriff 25–30-minute response time
c. Water 1.12-acre feet/dwelling unit/individual domestic well
d. Sewer Individual sewage disposal systems need to comply with NAC 444.792
e. Schools One way travel times: 15 minutes (elementary), 25 minutes (junior), 35 minutes (high)

High Density Suburban (HDS – 0.25 acres)

Intent: The HDS designation creates areas of single family attached and detached residential on parcels with a minimum size of 10,890 square feet.

Development Guidelines: Development in the HDS designation is appropriate under the following conditions:

Conservation The natural terrain, scenic qualities, and other natural surroundings shall be preserved to the extent possible.

Land Use and Transportation Residential land use on parcels smaller than 1.0 acre with a minimum size of 10,890 square feet. Adjacent land uses shall be compatible. MDS is most compatible with GR, LDS, MDS, Neighborhood Commercial, General Commercial, and Open Space. Transportation facilities should be sized for an average trip generation of 40 trips/acre/day and a peak hour trip generation of 4.0 trips/acre/hour

Public Services and Facilities

The site shall be served by facilities that have existing capacity based on the following general guidelines:

a. Fire, EMS 10–15-minute response time

b. Sheriff 15–20-minute response time

c. Water 1.12-acre feet/dwelling unit/individual domestic well

d. Sewer Connection to community sewage disposal system will be required for development with densities greater than 0.5 dwelling units per acre. Individual sewage disposal systems need to comply with NAC 444.792

e. Schools One way travel times: 15 minutes (elementary), 25 minutes (junior), 35 minutes (high)

NONRESIDENTIAL

The following criteria are common to all nonresidential land use designations:

A. The area designated has slope, soil, geology, and other physical conditions that make it suitable for the density and use being proposed.

B. An average daily outdoor noise level of 65 Ldn is recommended for nonresidential land uses adjacent to residential land uses. Sound attenuation measures shall be adhered to in areas where these levels are exceeded more than 10 percent of the time.

C. Average annual water use of .175-acre foot/employee.

D. Average daily wastewater use of 79 gallons/day/employee.

General Commercial (GC)

Intent: The GC designation allows for services and business that address the needs of the community and region market, including administrative, utilities, medical, culture, recreation, retail, hospitality, and automobile services. This transition to more intense non-residential uses or buffer between roadways and residential.

Development Guidelines: Development in the GC designation is appropriate under the following conditions:

Conservation

Groundwater recharge capabilities and scenic qualities shall be conserved.

Land Use and Transportation

Adjacent land uses shall be compatible. The GC designation is compatible with AMR, GR,Public Services & Facilities, Industrial, Neighborhood Commercial, LDS, MDS, and HDS. Commercial uses adjacent to residential should be smaller in scale and encouraged to emulate the design character of the residential environment, architecturally. Pedestrian and vehicular access connectivity should be designed to connect the residential to the commercial without requiring commercial access from the frontage highway. Alternatively, adjoining parcels shall construct a frontage road rather than

multiple access points from a primary roadway. Transportation facilities shall be sized for the number of trips per day and peak trips per hour as determined from thelatest edition of the Institute of Transportation Engineers Trip Generation Report.

Public Services and Facilities

The site shall be served by facilities that have existing capacity based on the following general guidelines:

a. Fire, EMS 10–15-minute response time

b. Sheriff 15–20-minute response time

c. Water Requirement will vary by individual development. For planning purposes, a figure of 1.73 acre/foot/year/acre (9.9 employees/acre) will be used and connection to community water system or state approved well will be required.

d. Sewer Requirement will vary by individual development. For planning purposes, a figure of 780 gallons/day/acre (9.9 employees/acre) will be used and connection to community sewerage disposal system or engineered septic system required. Individual sewage disposal systems must comply with NAC 444.792.

Neighborhood Commercial (NC)

Intent:

The NC designation allows for services and business that address the needs of the neighborhood and local service area. Allowable uses include administrative services and offices, cultural, medical, and postal services, passive recreation, and full service and convenience retail. This designation can provide a transition to more intense non-residential uses or buffer between roadways and residential.

Development Guidelines:

Development in the NC designation is appropriate under the following conditions:

Conservation

Groundwater recharge capabilities and scenic qualities shall be conserved.

Land Use and Transportation

Adjacent land uses shall be compatible. The GC designation is compatible with AMR, GR, Public Services & Facilities, Industrial, General Commercial, LDR, MDR, LDS, MDS, and HDS. The recommended standard is 1 developed acre per 500 population. Pedestrian access should be provided for adjacent residential in a manner that facilitates movement between the commercial and residential uses. Transportation facilities shall be sized for the number of trips per day and peak trips per hour as determined from the latest edition of the Institute of Transportation Engineers Trip Generation Report.

Public Services and Facilities

The site shall be served by facilities that have existing capacity based on the following general guidelines:
a. Fire, EMS 30–35-minute response time
b. Sheriff 35–40-minute response time
c. Water Requirement will vary by individual development. For planning purposes, a figure of 0.69-acre foot/year/acre per day/acre (4 employees/acre) will be used; connection to community water system or state approved well required.
d. Sewer Requirement will vary by individual development. For planning purposes, a figure of 315 gallons/day/acre (4 employees/acre) will be used; connection to community sewerage disposal system or engineered septic system required. Individual sewage disposal systems must comply with NAC 444.792.

Industrial (I)

Intent:

The I designation allows for activities and business including administrative, automotive, neighborhood commercial and retail, construction and sales, nurseries, storage, manufacturing, warehousing, mining, salvage, and passive recreation. The industrial designation is intended to create an environment in which industrial operations may be conducted with minimal impact on the natural environment and surrounding land uses. The natural environment is intended to be reclaimed following mining and aggregate related operations.

Development Guidelines:

Development in the I designation is appropriate under the following conditions:

Conservation

Groundwater recharge capabilities and scenic qualities shall be conserved.

Land Use and Transportation

Adjacent land uses shall be compatible. The I designation is compatible with AMR, GR, Public Services & Facilities, GC, HDS,

Public Services and Facilities

The site shall be served by facilities that have existing capacity based on the following general guidelines:
a. Fire, EMS 20–25-minute response time
b. Sheriff 25–30-minute response time
c. Water Requirement will vary by individual development. For planning purposes, a figure of 1 acre/foot/year/acre (5.8 employees/acre) will be used; connection to community water system or state approved well required.
d. Sewer Requirement will vary by individual development. For planning purposes, a figure of 457 gallons/day/acre (5.8 employees/acre) will be used; connection to community sewerage disposal system or engineered septic system required. Individual sewage disposal systems must comply with NAC 444.792.

Public and Semi-Public Facilities (PSF)

Intent: The PSF designation allows for activities and services such as education, religious, cultural, public safety, medical, community, utilities, and recreation.

Development Guidelines: Development in the PSF designation is appropriate under the following conditions:

Conservation Groundwater recharge capabilities and scenic qualities shall be conserved.

Land Use and Transportation Adjacent land uses shall be compatible. The PSF designation is compatible with AMR, GR, GC, NC, and HDS. Transportation facilities shall be sized for the number of trips per day and peak trips per hour as determined from the latest edition of the Institute of Transportation Engineers Trip Generation Report.

Public Services and Facilities The site shall be served by facilities that have existing capacity based on the following general guidelines:
a. Fire, EMS 30–35-minute response time
b. Sheriff 35–40-minute response time
c. Water Requirement will vary by individual development. For planning purposes, a figure of 1.47-acre foot/year/acre (8.4 employees/acre) will be used; connection to community water system or state approved well required.
d. Sewer Requirement will vary by individual development. For planning purposes, a figure of 664 gallons/day/acre (8.4 employees/acre) will be used; connection to community sewerage disposal system or engineered septic system required. Individual sewage disposal systems must comply with NAC 444.792.

Open Space (OS)

Intent: The OS designation is intended to retain certain important and critical lands in the County. This designation applies to open areas with limited or no road access, water, sewer, or emergency services.

Development Guidelines: Development in the OS designation is appropriate under the following conditions:

Conservation The environmental character of sensitive or unique natural features must be identified (i.e., moderate, or steep slopes, potential wetlands, and floodplains) and the impacts mitigated according to applicable policies and ordinances.

Land Use and Transportation This land use allows for recreation uses only. Communication facilities, agricultural and crop production, forest products, and game farms are permitted subject to special review.

Public Services and Facilities The area typically lacks public services and facilities necessary to support development. Approval of development shall be on a case-by-case basis based on type of development proposed and necessary requirements for public services and facilities.

Planned Unit Development (PUD)

Intent: The PUD designation is intended to create areas where detailed study and planning are required to address the unique conditions of immediate environment, as well as the request of the landowner and concerns of the community. The PUD designation is appropriate for new and redeveloping areas for a mixture of uses. A PUD document is prepared to serve as the regulatory framework for all development within the PUD designation. Adoption by the Pershing County Board of County Commissioners enables implementation of the PUD as a mechanism for systematic execution of the Pershing County Master Plan. Planned unit developments can also be approved in conjunction with a development agreement, when appropriate, to coordinate funding for public services and amenities.

The purpose of a PUD is to establish a mutually agreeable development plan and supporting guidelines and phasing plan in order to streamline the review procedures and permitting time required development. At a minimum, a PUD document must contain plans for land use, circulation, water and sewer, recreation, public safety facilities, if necessary, phasing, and implementation. Design guidelines establish the aesthetic character and list allowable and not allowable uses, if different than the Pershing County Development Code Table 17.302.05. The planned unit development regulations shall incorporate the input from the community, appointed and elected officials as documented during the public input process.

Development Guidelines: Development in the PUD designation is appropriate in accordance with adopted Design Guidelines.

Bluewing Wildnerness Area Photo by Kurt Kuznicki

Goals and Policies

Goal LU 1.0: Promote development in areas where adequate public services and facilities can be provided efficiently.

Policy LU 1.1 Adequate public services and facilities shall be provided by applicants as a condition of approval for development in the event sufficient infrastructure and resources do not exist at the time of the application request.

Policy LU 1.2 Phased developments shall be designed so that the project properly functions independently at the completion of each cumulative phase.

Policy LU 1.3 New development shall provide its proportionate share of improvements to avoid a degradation of services for existing residents. This requirement should be applied regardless of the size of the development to avoid incremental erosion of services.

Policy LU 1.3 Development reviews shall consider availability of water resources, community character, public health and safety, service provision, and environmental impacts.

Policy LU 1.4 A determination of consistency with the policies of the Pershing County Master Plan shall be conducted during an application or permit review.

Policy LU 1.5 Continue to lobby Congress for passage of the Pershing County Lands Bill to facilitate order development of growth and expanded recreation opportunities by eliminating the checkerboard development pattern, the release of Wilderness Study Areas, and the designation of areas as Wildernes as shown on **Figure 1.2**.

Policy LU 1.6 Pursue State of Nevada grant opportunities for a wide range of needs. The Departments of Agriculture, Education, Conservation & Natural Resources, Wildlife, Health & Human Services, Public Safety, and the Nevada Governor's Office of Science, Innovation & Technology provide applications and federal subaward opportunities. See https://grant.nv.gov/Grant_Resources/State_Grant_Opportunities/ and the Nevada Division of Environmental Protection (https://ndep.nv.gov/water/financing-infrastructure/grants/who-what-is-eligible).

Policy LU 1.7 Pursue U.S. Government grant opportunities for broadband transmission for local needs (https://broadbandusa.ntia.doc.gov/resources/federal/federal-funding), (https://www.fcc.gov/emergency-connectivity-fund) for broadband connectivity in schools, and https://ndep.nv.gov/water/financing-infrastructure/grants/who-what-is-eligible.

Goal LU 2.0: Maintain agriculture uses within the Agriculture Preservation Overlay District.

Policy LU 2.1 Support state and federal programs that provide tax advantages or other economic incentives to ensure long-term retention of agricultural lands within the overlay district.

Policy LU 2.3 Protect allowed agricultural production uses in the General Rural and Agriculture-Mining-Recreation land use designated areas from new incompatible land uses as identified in Table 17.302 of the Development Code.

Policy LU 2.3 Within the Agriculture Preservation Overlay District, development regulations shall provide for a range of compatible and complementary uses consistent with the primary agricultural uses.

Policy LU 2.4 Ensure that land use and subdivision approvals consider the value of the agriculture industry while addressing a diverse economy in Pershing County.

Goal LU 3.0: Enhance the aesthetic quality of Pershing County's built and natural environments.

Policy LU 3.1: Enhance development standards addressing foundations, architecture, on-site vehicle parking, minimum landscape requirements, and buffering techniques to improve aesthetics between uses.

Policy LU 3.2: Enforce minimum standards of property maintenance and screening of outdoor storage.

Policy LU 3.3: Limit the location, number, size, and appearance of signs and billboards to avoid visual clutter.

Policy LU 3.4 Minimize the visual impact of telecommunications towers through co-location of antennas and use of designs that conceal antennas.

Policy LU 3.5: Minimize negative visual and safety impacts by limiting development on steep slopes and along ridgelines.

Policy LU.3.6: The placement of temporary or permanent trailers shall not be permitted on AMR zoned parcels without a building permit and certificate of occupancy. Property owners identified by Pershing County Code Enforcement to have such structures without proper documentation shall incur daily fines.

Goal LU 4.0: Encourage the development of a variety of housing types for community residents.

Policy LU 4.1: Maintain a supply of land that is zoned for a variety of housing types and densities. Note: When evaluating needs, the County will consider the housing opportunities in Lovelock and Winnemucca.

Policy LU 4.2: Support the provision of housing for groups with special needs, such as the elderly and handicapped. These homes should be in areas with adequate support facilities, particularly medical, educational, and recreational facilities.

Policy LU 4.3: Allow the use of manufactured homes and modular homes as an alternative to conventionally constructed homes on all parcels where permanent residential uses are allowed, provided these homes are placed on permanent foundations as described in the Uniform Building Code (UBC 2003).

Policy LU 4.4: Permit manufactured home parks in rural communities and urbanizing areas, subject to the density standards according to the Pershing County Development Code (PCDC 17.310)

Policy LU 4.5: Support investment by the private sector in housing with permanent foundations through land use standards that ensure the compatibility with existing adjacent uses.

Policy LU 4.6: Prohibit the long-term use of non-permanent structures and vehicles as residences within subdivisions excluding designated RV and mobile home parks.

Goal LU 5.0: To conserve and rehabilitate the existing housing stock.

Policy LU 5.1: Support local efforts to obtain state and federal funding for housing and conservation and rehabilitation.

Policy LU 5.2: Support the retention and maintenance of existing housing. Ensure that rental units are maintained in safe condition.

Goal LU 6.0: Expand local employment opportunities, particularly jobs that pay "living" wages.

Policy LU 6.1: Designate adequate land for development of increased employment opportunities.

Policy LU 6.2: Support the development of an adequate inventory of developable industrial park land.

Policy LU 6.3: Work cooperatively with the City of Lovelock through the Regional Planning Commission or other forum to encourage the development of new employment uses within the existing utility service areas.

Goal LU 7.0 To retain historic and cultural resources as physical reminders of the County's past and to shape the County's identity now and in the future.

Policy LU 7.1: Consider impacts to historic resources when reviewing development proposals.

Policy LU 7.2: Coordinate with appropriate state and local organizations to identify and preserve historically, archaeologically, and culturally significant structures and sites.

China Mountain West Wildnerness Area Photo by Scott Peterson

03. Transportation

Overview

The Transportation Element identifies the transportation issues facing the community and establishes goals and policies directed to address them. The rural nature coupled with the vast open spaces between residential communities in Pershing County supports its dependence upon the automobile. The typical roadway cross-section in most neighborhoods is wider than necessary considering existing and future traffic volumes. This condition costs the County plenty of extra dollars for roadway maintenance. To promote more active mobility and healthy lifestyles, as streets are upgraded with new overlays, bicycle lanes should be added for designated roadways including the roads within the City of Lovelock to connect subdivisions to community amenities.

Children are often seen riding their bicycles to the community pool on the sidewalks for safety reasons. This creates a potential hazard for pedestrians. To address the mobility needs of residents of all ages, important and well-used pathways should be identified for the and the quality of sidewalks classified and a consideration given to striping travelways for bike lanes and/or sharrows. Sidewalks should be in good repair.

With the passage of the Biden-Harris Administration's Infrastructure bill, over $110 billion is available to rebuild roads and bridges, modernize ports and airports, replace lead pipes to deliver clean water and expand high-speed internet. The Bill's goal of improving infrastructure also has a focus on equity to ensure safe mobility options for all persons. Safe sidewalks on at least one side of each existing and newly constructed street should be required and upgrading existing streets should be incorporated into the County's Capital Improvement Plan.

Key Issues

Establish Appropriate Road Improvement Standards.

One of the most recognizable effects of growth is the increase in traffic. As growth occurs, improvements to the road system may be necessary. Establishing an appropriate set of road improvement standards for the Pershing County lifestyle and land use plan will ensure the transportation system continues to serve residents and visitors safely, adequately, and can be maintained as economically as possible. Roadway cross-sections should be reduced in width in residential neighborhoods.

Fund Road Improvements.

Transportation improvements must be planned with land use decisions and phased with development. Requiring development to pay its fair share and construct improvements proportional to and necessitated by development is important for the County's ability to adequately provide and maintain its circulation system.

Maintain County Roads.

The quality of roads found in the County varies significantly and surfaces range from asphalt to gravel with approximately 894 miles of gravel roads in unincorporated Pershing County, and 105 miles of paved roads. The Nevada Department of Transportation (NDOT)

reported 476.6 miles of maintained roads within County's jurisdictional boundaries. Unpaved roads require significantly more time to keep in a good standard of care compared to paved roads. Communities in the northern portion of the County consists predominately of unpaved county roads and paved state routes. Residents continue to request more of the primary County routes be paved.

However, since many residents in the north either work and/or shop in Humboldt County, the necessary revenue to pave roads and maintain them are spent outside of Pershing County. Standards for maintaining existing roads and constructing new ones should reflect current traffic counts and achieve a level that assures the cost of safe upkeep is reasonable and primary routes for schools and employment are prioritized for maintenance.

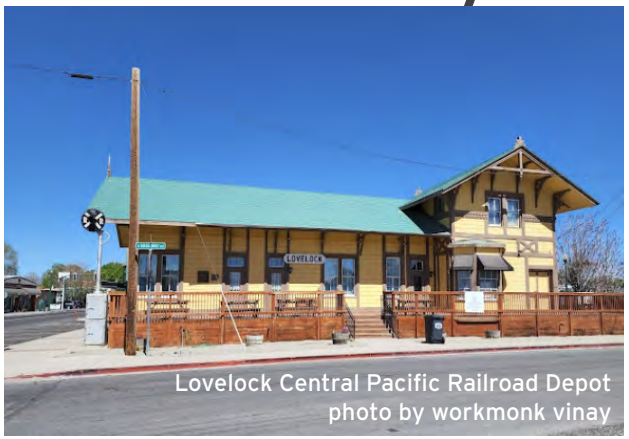
Capitalize on Existing Rail Services.

Union Pacific's operations in northern Nevada link central California with Salt Lake City. Their operations, which span approximately 160 miles in Pershing County, handle an array of important commodities including coal, chemicals, aggregates, lumber, and consumer goods. The number of rail cars originating in Nevada increased by nearly 12% between 2020 and 2021. Opportunities in the growing warehouse industry were made possible by the Freeport Law beginning in 1949.[1] The state's regulatory environment, coupled with these laws, allow Nevada to serve as a more cost-effective freight and logistics hub between California and the rest of the country. Growth in warehousing will certainly continue.

Leverage the existing Central Pacific Railroad Depot.

The historic station, built in 1880, used to be a regular stop for the transcontinental train traffic until 1997. Efforts are underway to repurpose the historic building from a retail destination to a functioning train station with plans to have the Amtrak California Zephyr stop in Lovelock once again. Every opportunity to use the existing transportation system to transport visitors to Pershing County should be implemented.

Future Roadway



Lovelock Central Pacific Railroad Depot
photo by workmonk vinay

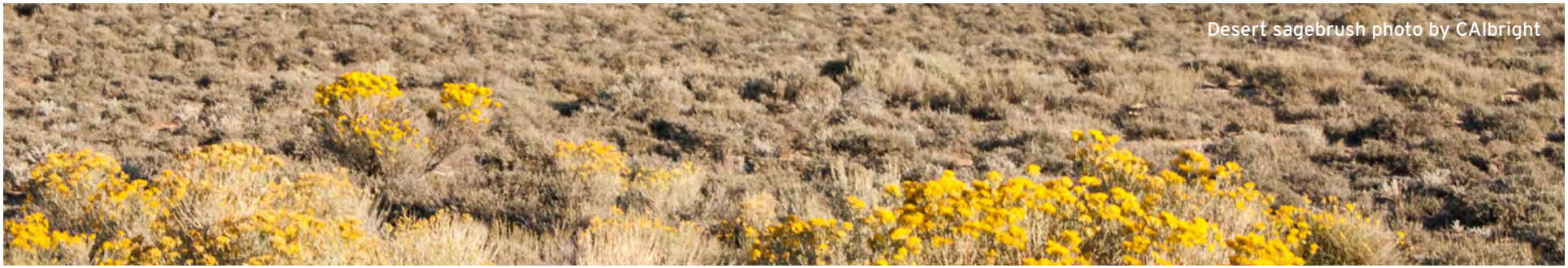
[1] The 1949 Freeport Law allowed the state's warehouses to store goods tax-free if they were going to be shipped or sold outside of Nevada. This 70-year-old law rooted Nevada as a warehousing mecca. Two years after it passed, legislators passed another law allowing goods that were assembled in certain areas of the state and sent out of Nevada to be tax-free as well.

Network

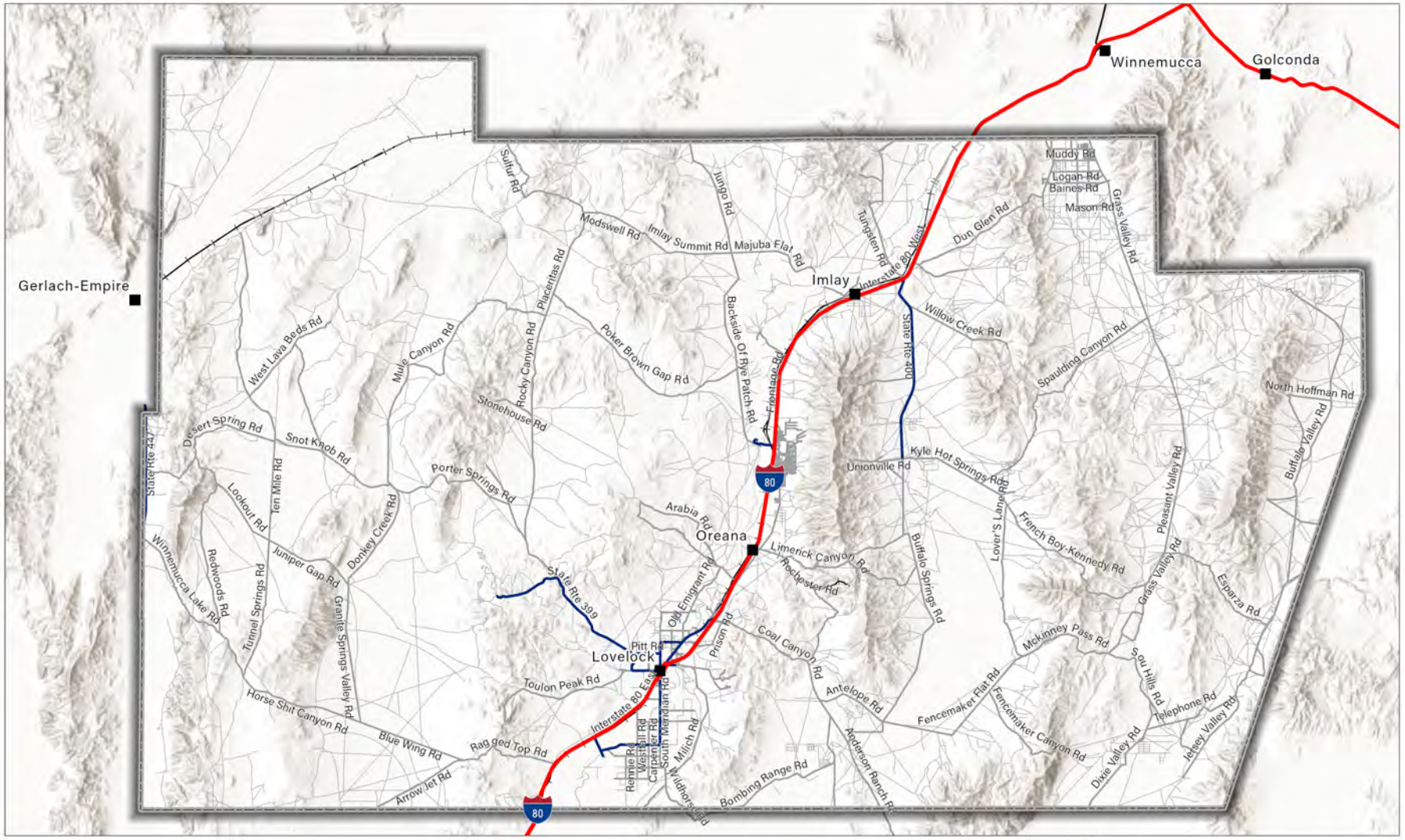
The roadway network established in this plan identifies the approximate alignments and functional classifications of major roadways needed to serve and adopted land use plan. **Figure 3.1** defines the functional classifications of roads in the county. In outlying areas, the densities and locations of collector roadways will depend on the density of development. The design of any new roadways must be a dynamic process the carefully considers the existing development pattern, especially in the rural areas. Similarly, applicants proposing new development will be required to demonstrate the existing transportation network will not be negatively impacted.

Table 3.1 Functional Road Classification System

Classification	Function	Character of Street	Examples
Principal Arterial	Link communities and urban centers; carry high volumes of traffic at relatively high speeds.	Continuous traffic flow with access tightly controlled.	Interstate I-80
Major Collector	Link important uses within the County to each other; carry moderate volumes of traffic at moderate speeds; collect the traffic from local and minor collector roads.	Continuous paved roadway through or between communities; access from individual residential lots is restricted to lots of 10 acres or larger with a minimum of 400 feet of frontage, except where the Board of County Commissioners determines that the collector is within an urban area.	Fairview Road, North and South Meridian, Westergard Road, Westfall Road, Arobio Road, Old Victory Highway, Rye Patch Reservoir Road, and State Routes 396, 397, 399,400, and 401.
Minor Collector	Link local roads with paved road system; carry low volumes of traffic at low speeds; collect traffic from local roads. When traffic exceeds 300 vehicles per day, the County should consider redesignating these roads as major collectors.	Continuous roadway through a single township; designed to carry traffic through townships, but generally not for long distances; access from individual residential lots is restricted to lots of 10 acres or larger with a minimum of 400 ft of frontage. Only paved in urbanizing areas and rural communities, except where the Board of County Commissioners determines that the collector is within an urban area.	Holmstrom Road, Kruze Road, Peterson Road, Reservation Road and Western Avenue/Arobio Lane. Local
Local	Provide access to individual lots; carry low volumes of traffic at low speed.	Discontinuous; designed to discourage use by through traffic; stop signs at most intersections. Only paved in urbanizing areas and rural communities.	All roads not classified as collector are local roads.



Desert sagebrush photo by CAlbright



Legend

- Cities and Towns
- Pershing County
- Principal Arterial
- Major Collector
- Minor Collector
- Local
- Railroads

Figure 3.1

Functional Road Classification System

Source: Pershing County; Farr West Consulting digital data release June 2022
NDOT, Stantec Consulting Services Inc.
Cynthia Albright, LLC

Projection: State Plane Nevada West Zone, NAD 83, U.S. Survey Foot

Scale: 1 in = 12 Miles Date: 12/9/2022

Goals and Policies

Goal T.1.0: Maintain a transportation system that safely and efficiently meets the needs of residents, businesses, and visitors.

Policy T.1.1: Require new development to be consistent with the access right-of-way dedication and improvement standards as required in the Development Code for roads adjacent to and within the proposed project.

Policy T.1.2 All new development shall minimize its direct access to major collectors, whenever practicable.

Policy T.1.3 At a minimum, policies and standards recommended by the Pershing County Roads Department or the American Association of State Highway and Transportation Officials (AASHTO) shall be used as the engineering and design criteria in the construction of new roadways. New signage and markings shall be provided in accordance with the Manual for Uniform Traffic Control Devices (FHWA, 1988).

Policy T.1.4 Coordinate planning and implementation of the County's transportation system with state and federal transportation agencies and the City of Lovelock, and adjacent jurisdictions.

Policy T.1.5 Collaborate with the City of Lovelock to ensure safe and accessible sidewalks in the downtown area as well as safe bike lanes near the Courthouse and adjacent amenities.

Goal T.2.0: To provide adequate rights-of-way and improvements to accommodate growth and maintain acceptable levels of service (LOS).

Policy T.2.1 Adequate roadway facilities will be provided concurrently with development.

Policy T.2.2 Dedication of rights-of-way and other access easements necessary for transportation facilities will be required. Where multiple phases are developed, dedication of right-of-way providing access to future phases shall be required.

Policy T.2.3 Roadway improvements will be constructed to County standards as defined for each roadway classification. If multiple phases are proposed, the County shall require improvement of roadways accessing subsequent phases concurrent with development.

Policy T.2.4 Private roadways shall be permitted as an interim condition between the construction and acceptance/dedication condition. Private driveways may access up to eight (8) dwellings. All shared private drives and roadways shall be constructed to accommodate an emergency access condition.

Policy T.2.5 A perpetual offer of dedication shall be required for all rights-of-way and roads in a manner consistent with Pershing County's roadway classification standards.

Policy T.2.6 Development shall fund its fair share of capital costs attributable to the road system required to serve the project if the facilities required do not exist at the time of approval.

Goal T.3.0: To maintain the County's roadway system consistent with the safe, convenient, and efficient movement of people and goods.

Policy T.3.1 Prioritize maintenance schedules based on traffic demand and the availability of alternate routes.

Policy T.3.2 Pursue additional funding strategies for roadway maintenance, including assessment and/or road utility districts, if grants and other sources of income are unavailable.

Policy T.3.3 Establish minimum maintenance standards for private roads.

Goals T.4.0: Support effective use and development of rail and transportation facilities.

Policy T.4.1 Discuss with the Union Pacific Railroad land sales/swaps to facilitate future development and the cleanup of abandoned properties.

Policy T.4.2 Collaborate with the Nevada Department of Transportation to promote safe and accessible streets in Pershing County.

Lower Valley roadway photo by CJAlbright

04. Public Services and Facilities

Overview

The Public Services & Facilities Element provides information and policy guidance to ensure the provision of services and public facilities supports existing and new development to be consumed by residents, employers, and visitors in Pershing County. Public services are both necessities and conveniences to ensure the health, safety, and quality of life. Policy guidance provides for the logical and timely maintenance as well as expansion to keep facilities in good working order with timely maintenance and to satisfy the demands of new growth. Quality educational opportunities, responsive sheriff and fire services, and maintained roads, parks, and cultural facilities are important to achieve the objectives envisioned by the Pershing County leadership on behalf of it residents, visitors, and employers.

Rural residents cannot practically be provided with the same levels of service County residents receive who live near the City of Lovelock. While Pershing County will continue to do its best as financial resources permit, residents and employers should anticipate:

- Emergency response times are greater than in more populated area of Lovelock and those with a volunteer fire station.
- County road maintenance could be delayed but the County is committed to collaborating with mining operators to ensure primary access roads fulfill their obligatory agreement. Much of the County's road system is unpaved. Heavy equipment and normal residential traffic contribute to the deterioration of road surfaces, particularly in extreme weather conditions. Unpaved roads are not designed to accommodate high speeds nor high volumes, both of which contribute to further deterioration more quickly.
- Residents are responsible for the cost to maintain private roads, including those associated with dust control, surfacing, snow removal and any reconstruction necessary due to wear and tear.
- Property owners are responsible for on-site wells and individual sanitary sewage systems. This includes construction, maintenance, and replacement. In populated areas, connection to centralized systems may be required at the expense of the property owner prior to receipt of a certificate of occupancy.
- The Humboldt River Ranch homeowner's association (HOA) or others formed in the future may provide additional services and facilities. Associated fees and conditions, covenants, and restrictions recorded as part of the HOA could include additional responsibilities of residents above and beyone County regulations.
- The benefits of living in Pershing County include a low cost of living and community atmosphere but these are offset by the inconvenience of long distances to public services, gas stations, grocery stores, etc. Expansive open spaces and generally lower

tax collections prevent the County from expanding these types of services into the rural communities.

Key Issues

During the Master Plan update process, several issues related to the provision of public services and facilities were discussed. This section describes these areas of concern.

Water Availability.

The Lovelock Meadows Water District ("LMWD") controls the available water supplies and the associated distribution and storage infrastructure. Unlike other municipal jurisdictions, Pershing County does not control available groundwater supplies but faces the same diminishing supplies and distribution issues like other rural Nevada counties. With an identifiable estimate of remaining resources available within the LMWD service area, the water purveyor and the County will need to agree on the highest and best uses for remaining resources until the LMWD to secures additional water resources which may take a long time. Outside of the LMWD service area, residents rely on private wells.

Water storage infrastructure.

The Imlay Water Systems is a municipal water system serving the Imlay area. For years, the system lacked a backup storage tank to properly maintain the existing storage system. Pershing County acknowledges the need for significant improvements to the infrastructure serving the Imlay area. A federal grant application was submitted and denied; however, the County intends to resubmit for funding in two separate requests that together will cover the entire cost associated with necessary repairs. The County is diligently working to acquire the funding needed to address these outstanding and pressing issues.

Balance available natural resources with demands to achieve economic sustainability.

Future development approvals will be directly tied to the availability of adequate available public services and facilities. Growth in new areas or expansion within existing subdivisions must consider the provision of services and maintenance costs for water and sanitary sewer services prior to approval of any new application requests.

Distribute costs of service provision equitably. New development relies on existing facilities and services. At present, Pershing County does not impose impact fees on new development to fund additional services. Impact fees should be considered in the future.

Secure grants to reduce emergency service response times.

The public's health, safety, and quality of life are intertwined with the availability of emergency services. Demands on personnel and physical resources within the Sheriff's Department, Fire Department, and emergency medical services must be evaluated in conjunction with future development. The distance between developed areas throughout the County make the provision of timely services challenging. To maintain current levels of services, the County should apply for federal and state grants to acquire necessary facilities, equipment, and personnel to improve response times. Additionally, arrangements with nearby Humboldt County should be explored as a means to maintain existing service levels in areas where growth in both employment and residents occurs.

Distribute community facilities equitably.

The County should conduct an inventory of all public services and facilities and compare the results with counties of similar land area, population, and relative developed density. Investigate how these agencies fund and deliver services. This data will be useful in grant applications for capital investment to fill gaps in essential community facilities.

Prioritize stormwater facility maintenance.

Changing weather patterns and climate change will bring about more uncertainty in the future, particularly from storm events. More safeguards may be necessary; therefore, the County will prioritize the design and inspection of drainage facilities to protect the public as well as existing public facilities and infrastructure.

Secure approval of the Pershing County Economic and Development Act ("public lands bill").

The checkerboard public land ownership inhibits the efficient delivery of public services and orderly growth. Despite the intertwining of the current bill with the expansion of the Fallon Naval Air Station, the County must continue its efforts to secure approval of a form of the Public Lands Bill to consolidate key public parcels for public purposes. The checkerboard land form coupled with the absentee owner issues that arrise from federal land creates an undue burden on Pershing County. The County cannot efficiently grow. Poorly maintained public land makes unwanted neighbors in terms of weed control and blight. The key objective is to facilitate land sales to deveopers and operating mine projects, releasing Wilderness Study Areas, and designating appropriate lands as Wilderness.

Support adequate education facilities.

According to district data, the Pershing County School District has approximately 675 students in grades PK and K-12 with a student teacher ratio of 9 to 1. Compared to other school districts in the state, Pershing County ranks quite favorably for safety, best teachers, and most diversity, #2, #2 and #3, respectively. Elementary, middle, and the County's single high school are all located in Lovelock. Imlay provides a second elementary school. Coordination between the County and the Pershing County School District is necessary to ensure appropriate funding to maintain the delivery of effective education across the County accessible in a timely manner.

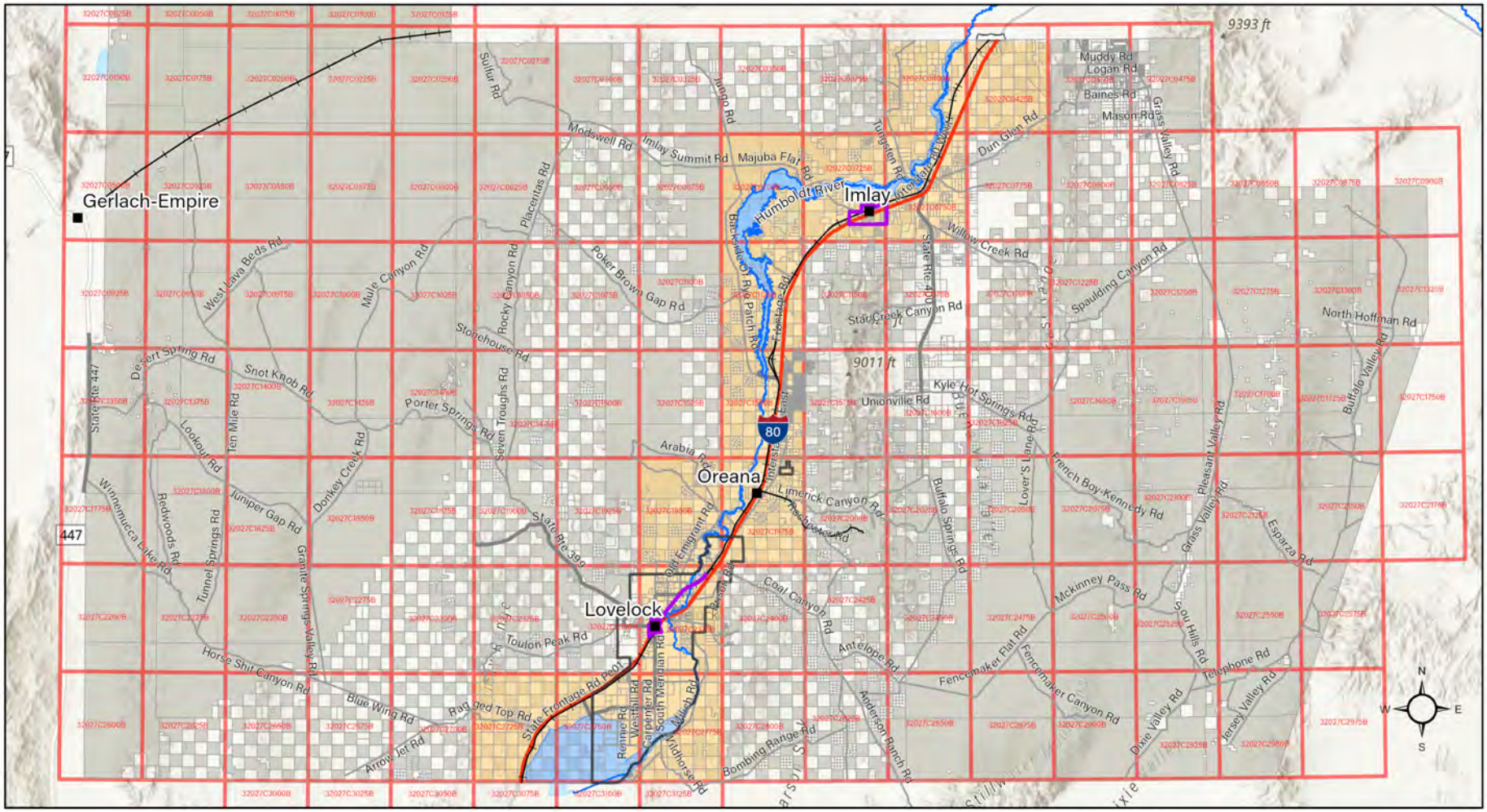
Manage solid waste disposal.

Solid waste handling and disposal have land use implications and are compatible with certain designations. The County will remain cognizant of available area and resources to maintain proper disposal management. If necessary, a plan to address future needs will be developed.

Require new structures in FEMA Flood zone A is constructed above the 100-year flood elevation.

Pershing County participates in the National Flood Insurance Program (NFIP). The Lower Valley area is affected by both Flood Zones A and X where Zone X has a 0.2 percent chance of flooding, or the 500-year flood event. Development within Zone A requires flood insurance due the high potential of flooding (the 100-year flood event). Zone area A receives flow from the Humboldt River and is low-lying. **Figures 4.1** and **4.2** delineate the extent of Flood Zones A and X countywide and in the Lower Valley. **Figure 4.3** illustrates the extent of wildland fires throughout the County according to FEMA.

Mt. Limbo proposed Wilderness Area photo by Kurt Kuznicki



Legend

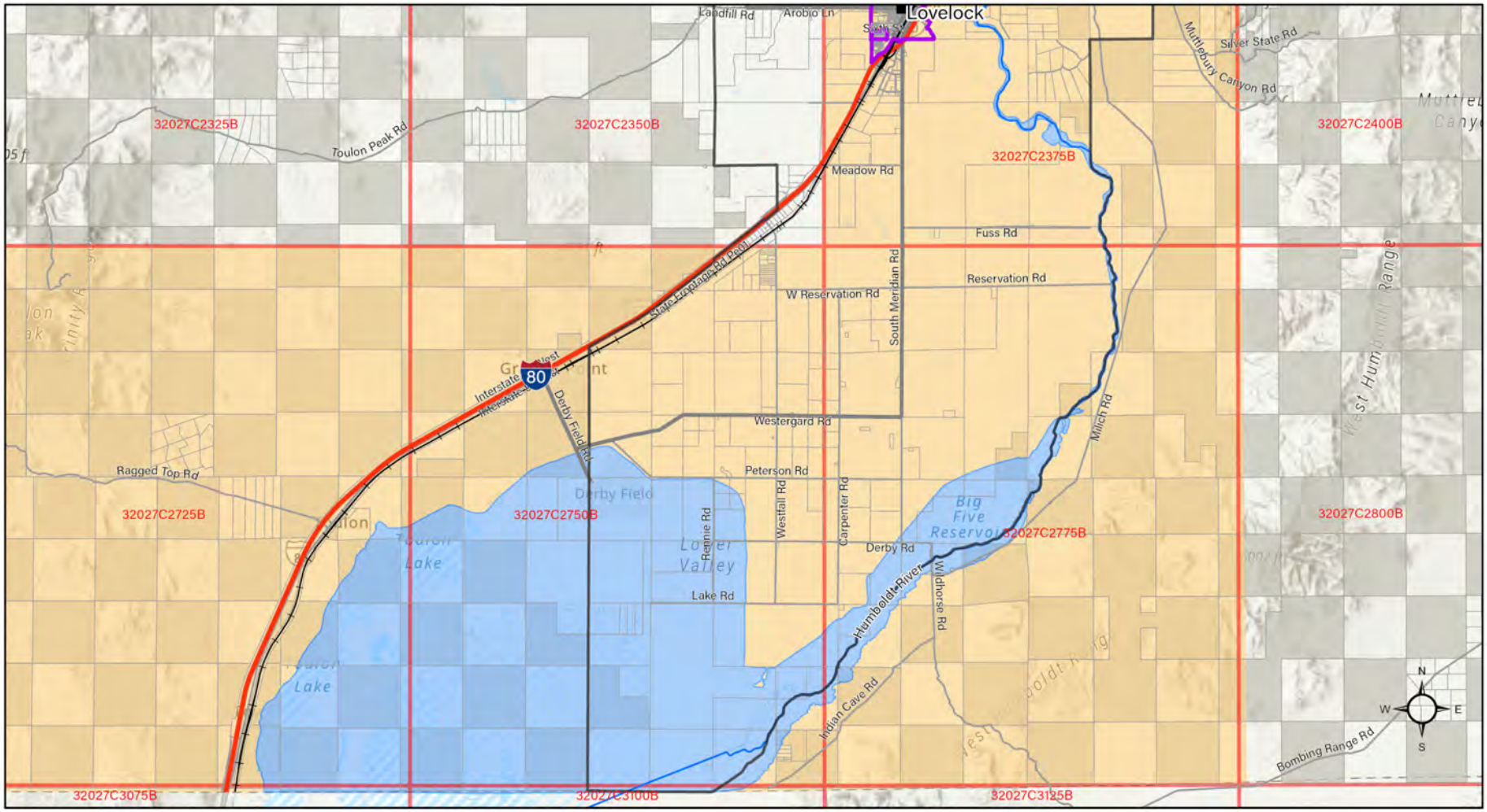
- Lovelock Meadows District Service Area
- Lovelock Boundary
- Parcels
- Public Land
- Railroads
- Interstate
- State Route
- Local Route
- Humboldt River
- FIRM Panel outline and number
- Flood Zone A
- Flood Zone X

Figure 4.1
Countywide FEMA Flood Hazards Delineated

Source: Pershing County; Farr West Consulting digital data release 2021
USGS, ESRI, NASA, NGA, USGS, FEMA
Cynthia Albright, LLC

Projection: State Plane Nevada West Zone, NAD 83, U.S. Survey Foot

Scale: 1 in = 60,000 Feet Date: 12/2/22



Legend

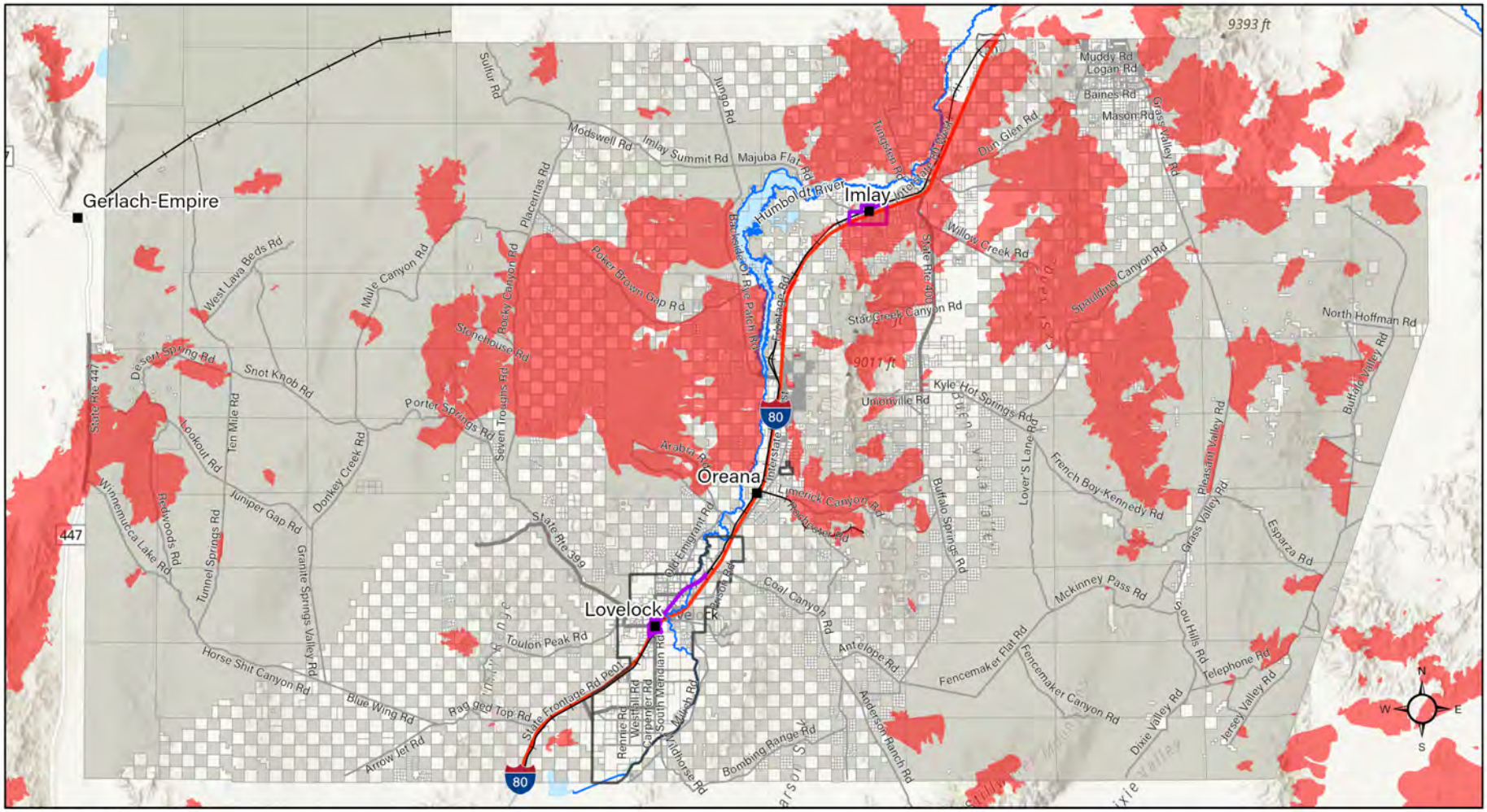
- Lovelock Meadows District Service Area
- Lovelock Boundary
- Parcels
- Public Land
- Railroads
- Interstate
- State Route
- Local Route
- Humboldt River
- FIRM Panel outline and number
- Flood Zone A
- Flood Zone X

Figure 4.2
Lower Valley FEMA Flood Hazards Delineated

Source: Pershing County; Farr West Consulting digital data release 2021
USGS, ESRI, NASA, NGA, USGS, FEMA
Cynthia Albright, LLC

Projection: State Plane Nevada West Zone, NAD 83, U.S. Survey Foot

Scale: 1 in = 12,000 Feet Date: 12/2/22



Legend

- Nevada Wildland Fire Perimeters
- Humboldt River
- Lovelock Meadows District Service Area
- Lovelock Boundary
- Parcels
- Parcel Land
- Railroads
- Interstate
- State Route
- Local Route

Data managed by the Nevada Bureau of Land Management, Fire and Aviation program and represents historic fires dating back to 1992 in Pershing County. Burned acreage totals 2.78 million.
https://nvfireintel-nifc.hub.arcgis.com/pages/data

Figure 4.3
FEMA Historic Wildland Fire Perimeters

Source: Pershing County; Farr West Consulting digital data release 2021
USGS, ESRI, NASA, NGA, USGS, FEMA
Cynthia Albright, LLC

Projection: State Plane Nevada West Zone, NAD 83, U.S. Survey Foot

Scale: 1 in = 60,000 Feet Date: 12/2/22

Goals and Policies

Goal PSF.1.0: Provide public services and facilities at levels which support a quality of life for residents.

Policy PSF.1.1: New development shall be required to provide public services and facilities commensurate with the proposed impacts.

Policy PSF.1.2: Promote cost effective, efficient, and coordinated services and facilities through joint ventures and cooperative agreements with public and private entities.

Policy PSF.1.3: Ensure that public services and facilities are adequate to meet the demands from proposed development. **Table 4.1** establishes the target levels of service for new development in each land use designation, which may be modified by the Board of County Commissioners based on individual site conditions and special circumstances. The County intends to maintain existing levels of service but recognizes fiscal constraints results in lower service levels in some areas.

Notes for Improvements Requirements

1) Along local streets where the minimum lot size is 1/2 acre or more, the County may waive requirements these improvements. If the proposed development is located more than 1/4 mile from the City of Lovelock's jurisdictional boundary in any direction and the lot size is 1/2 acre or more, the County may consider graded gravel walkways.
2) Connection to public electric utility is required if service is available. However, alternative sources of power may be considered.
3) The county may waive centralized service requirements for specific types of development provided the applicant demonstrates the availability of required water for domestic use, and the location is acceptable to the County for the waiver.
4) The County may authorize on-site state approved alternative systems, provided no wastewater facilities are located within 400 feet of the proposed development.
5) Local park dedication requirements are not applicable for residential uses on lot sizes of 1.01 acre or larger. See Pershing County Development Code for required fee-in-lieu dedication requirements for all new development.
6) Fire Protection – Fire Flow. Where centralized systems are inadequate to provide required fire flow, the applicant will be required to construct and dedicate a standpipe or other suitable water source for fire protection as requested and approved by the County.

TABLE 4.1 Typical Improvements for new Development by Land Use

	LAND USE DESIGNATION													
Facility/Improvements	AMR	GR	GRNA	LDR	MDR	HDR	LDS	MDS	HDS	NC	GC*	I*	PSF	OS
Legal Acess	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Grants of ROW & Easements	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Curb, Gutter, Sidewalks									X[1]	X[1]	X[1]	X[1]		
Electricity	X[2]	X[2]		X[2]	X	X	X	X	X	X	X	X	X[2]	X[2]
Water														
Centralized System								X	X	X[3]	X[3]	X[3]	X[3]	
Individualized or State Approved Well	X	X	X	X	X	X	X			X	X			X
Wastewater														
Centralized System									X[4]	X[4]	X[4]	X[4]	X[4]	
Individual or Engineered Septic										X	X	X	X	X
Parks and Recreation							X[5]	X[5]	X[5]					
Fire Protection - Fire Flow[6]						X	X	X	X	X	X	X		

* Standards may be modified

Goal PSF.2.0: Promote coordination between land use planning and public safety

Policy PSF.2.1 Pershing County will strive to improve the efficiency of the public safety personnel (fire and sheriff) and their services through support of equipment and staffing as needed to maintain a high level of services to meet existing and future demands.

Policy PSF.2.2 Fire Department personnel will work with the Planning and Building Department to ensure development proposals incorporate "defensible space" concepts and other safety design concerns into new development.

Policy PSF.2.3 The Sheriff's office will work with the Planning and Building Department during the revision of the Development Code to ensure a variety of safety concerns (fence heights in front yards, requiring off-street parking of vehicles, visibility of the property from the street, and appropriate night lighting) are addressed.

Goal PSF.3.0: Organize planning, funding and construction of infrastructure and facilities.

Policy PSF.3.1 Ensure that adequate public services and facilities are provided or are available concurrent with development and consistent with the County's Capital Improvements Program (CIP).

Policy PSF.3.2 Monitor levels of service and use the information to help maintain CIP priorities.

Policy PSF.3.3 Develop strategies to improve developed or subdivided areas which are under-served by public services and facilities, including restricted additional development to forestall further reductions in service, establishment of districts to fund improvements or the use of private service options.

Policy PSF 3.4 When urban densities are developed in unincorporated areas, ensure that adequate provisions are made to fund long-term capital, maintenance and operations costs of water and wastewater utilities.

Water Service

Goal PSF.4.0: A water system that meets projected demand for all users and seeks ways to reduce demand.

Policy PSF.4.1 Lovelock Meadows Water District (LMWD) will continue to maintain its extensive infrastructure which includes over 100 miles of main lines, two storage tanks, and three wells in good working condition to supply domestic water to users with adequate quantities, flow, and pressure.

Policy PSF.4.2 LMWD will manage water supplies in a way that ensures adequate supplies for existing residents, businesses, and to accommodate new growth, as the water supply allows. Groundwater overdraft, water quality degradation and other adverse environmental impacts shall be avoided.

Policy PSF.4.3 Water system extensions to serve new development shall be funded by the developer. To ensure that sufficient water supply can be provided, applicants will be referred to the LMWD during the initial discussions with Pershing County.

Policy PSF.4.4 LMWD will distribute resources to areas where existing infrastructure is available and where economic growth can be efficiently accommodated.

Policy PSF.4.5 Promote coordination between land use planning decisions and the availability of adequate water supplies, facilities, and service.

Policy PSF.4.6 LMWD water distribution infrastructure will be replaced as needed to improve water delivery and fire flow as well as maintain healthy and safe drinking water for the residents and businesses it serves. Pershing County municipal water distribution infrastructure shall be maintained with the support of federal and state grants as made available.

Policy PSF.4.7 Implement the recommendations in the Water Facility Master plan, located in **Appendix B**.

photo by CJAlbright

Wastewater Service

Goal PSF.5.0: Provide a wastewater system that adequately protects the health and safety of all residents, businesses, and institutions.

Policy PSF.5.1 Installation of wastewater services shall occur concurrently with construction of new roadways to maximize efficiency and minimize impacts from construction activities.

Policy PSF.5.2 Centralized wastewater services should only be extended to lands that do not facilitate leapfrog development.

Policy PSF.5.3 The extension of centralized services shall not facilitate creation of an island consisting of more intense uses in an otherwise rural or agricultural area.

Stormwater Systems

Goal PSF.6.0: Collect, store, and dispose of stormwater in a way that is safe, environmentally acceptable, and minimizes flooding.

Policy PSF.6.1 Maintain stormwater collection infrastructure in good condition and are designed to accommodate runoff from the 25-year and 100-year storm events.

Policy PSF.6.2 New development should handle all stormwater onsite using vegetative swales, detention and infiltration basins, permeable paving, and other techniques.

Policy PSF.6.3 Ensure that any development within the 100-year floodplain is designed in accordance with FEMA guidelines.

Policy PSF.6.4 Parking areas should be designed with permeable pavers whenever possible to minimize runoff.

Policy PSF.6.5 Street maintenance and upgrades should consider installation of innovative stormwater management techniques such as rain gardens built along the street to help reduce overall stormwater rates. Installation could be possible from statewide grants designed to minimize flooding.

Parks and Recreation Facilities

Goal PSF.7.0: Provide for a variety of recreation amenities and open spaces.

Policy PSF.7.1 Continue to operate and develop park and recreation facilities through joint ventures and agreements with other public or private entities.

Policy PSF.7.2 New development is encouraged to incorporate outdoor amenities e.g., walking trail, benches, shade trees, etc. to facilitate healthy lifestyle options.

Policy PSF.7.3 Encourage retention of lands that are not suitable for development (e.g., poor soils, floodplain areas, etc.) as open space areas improved with parking areas and trail systems wherever possible.

Policy PSF.7.4 Focus investment on regional facilities and explore grant opportunities new development to expand tourism and recreation on public lands.

Emergency Services

Goal PSF.8.0: Provide for adequate and cost-effective emergency services, including fire protection, law enforcement and emergency medical services.

Policy PSF.8.1 Promote the coordination and cooperation among all public safety service agencies.

Schools and Educational Facilities

Goal PSF.9.0: Enhance the County with educational services that offers diverse, high-quality opportunities to residents of all ages.

Policy PSF.9.1 Ensure residents have access to high-quality education. Pershing County will work with the School District to address issues of mutual concern.

Policy PSF.9.2 Work with the School District to anticipate potential increases in the County's population and its potential impact on the school enrollment.

Policy PSF.9.3 Promote the use of education facilities for joint-uses and construction of joint use facilities in the future, if necessary, for both education, recreation, and community services (e.g., community meeting rooms, libraries, and other facilities on campuses).

Policy PSF.9.4 Collaborate with the School District to ensure safe walking and cycling routes to schools through its transportation maintenance program. Pursue safe routes to school grant funding.

Policy PSF.9.5 Encourage the development of partnerships with higher learning institutions and educators to advance lifelong learning in the County.

Solid Waste Facilities

Goal PSF.10.0: Provide for safe, cost-effective solid waste management.

Policy PSF.10.1 The Pershing County Landfill manages the solid waste generated in the County. Due to distance and sparse populations, it is difficult to cost effectively provide basic solid waste management services. Therefore, Pershing County will support a coordinated planning effort with neighboring communities, support landfill operator training programs, and facilitate public education regarding waste reduction.

Policy PSF.10.2 Coordinate with Humboldt County to ensure proper transfer of all waste received at the Grass Valley, Imlay, and Unionville Storage Facilities/Transfer Stations to the Humboldt County Regional Landfill in Winnemucca.

Policy PSF.10.3 Encourage a reduction in the volume of solid waste generated by the County.

Policy PSF.10.4 Disposal, salvage, and reuse of construction and demolition materials and debris are required for new construction within the County.

Old Razorback Mountain photo by Josiah Roe

05. Conservation and Natural Resources

Overview

Pershing County's natural resources should be effectively promoted, managed, and conserved to attract visitors to the area and assure access for future generations. Pershing County's water conservation boundary, which duplicates the Lovelock Meadows Water District boundary, guides the use of water resources for agricultural purposes and new development within these boundaries. The exploration of minerals, without policy direction or access to the County's prime agricultural soils, minerals, groundwater sources, and valuable public lands, could be lost. Land use and conservation policies together create a balance between development and resource protection.

Key Issues

Maintain surface water quality.

Surface water supplies in the County are extremely limited. Protecting the quality of Rye Patch Reservoir has long-term benefits for recreation, tourism, and agriculture.

Protect groundwater supplies.

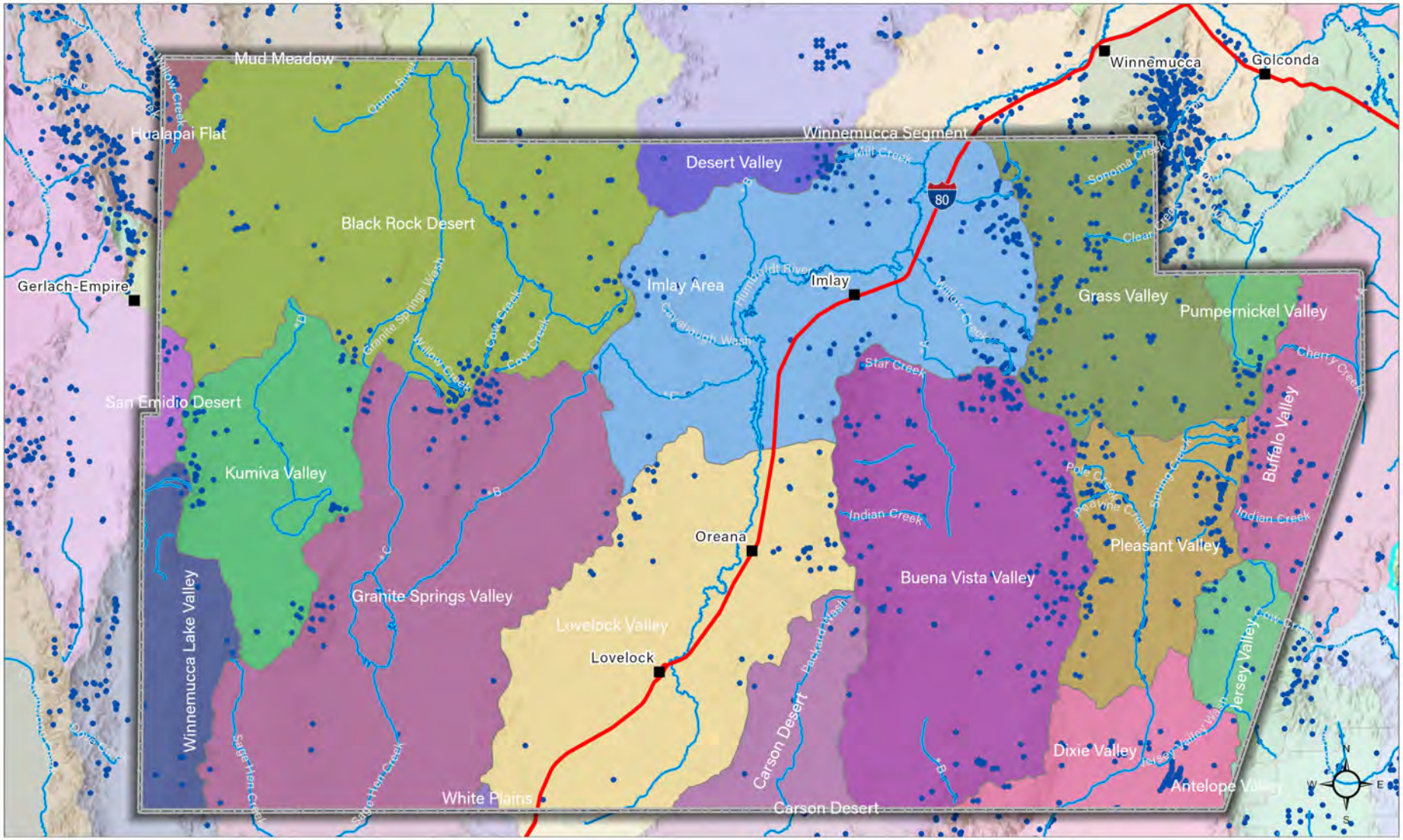
Groundwater is a precious commodity in Pershing County. Since community sewage collection and treatment facilities are not available in the unincorporated portion of the County, the State has taken an active role in preventing groundwater contamination by inadequate septic systems.

Support balanced use of public lands.

Publicly owned land comprises approximately 75.9 percent of Pershing County. These lands provide recreational and economic benefits for the community. The County should participate in the public land planning process to ensure that the land remains a long-term asset.

Maintain dialogue between County residents and elected officials with other state and federal agency staff.

This portion of the Pershing County Master Plan requires consultation prior to decisions that affect public lands within the County's boundaries. Pershing County is desirous of cooperation from the Bureau of Land Management (BLM) and other Federal agencies in being guided by these policies. If at any time, according to the National Environmental Protection Act (NEPA), FLPMA or any other legislation, the U.S. Government (under any agency) intends to change uses or availability of resources on public lands in a way that will impact current, historical, and cultural uses, input from the citizens of the County is required and the Board of County Commissioners will be consulted. In addition, the County Commission should be consulted on any interpretation of these policies.



Legend

- Pershing County
- Cities and Towns
- Interstate
- Rivers and Streams
- Spring Locations

Pershing Sub-Basins

- Antelope Valley
- Black Rock Desert
- Buena Vista Valley
- Buffalo Valley
- Carson Desert
- Desert Valley
- Dixie Valley
- Granite Springs Valley
- Grass Valley
- Hualapai Flat
- Imlay Area
- Jersey Valley
- Kumiva Valley
- Lovelock Valley
- Mud Meadow
- Pleasant Valley
- Pumpernickel Valley
- San Emidio Desert
- White Plains
- Winnemucca Lake Valley
- Winnemucca Segment

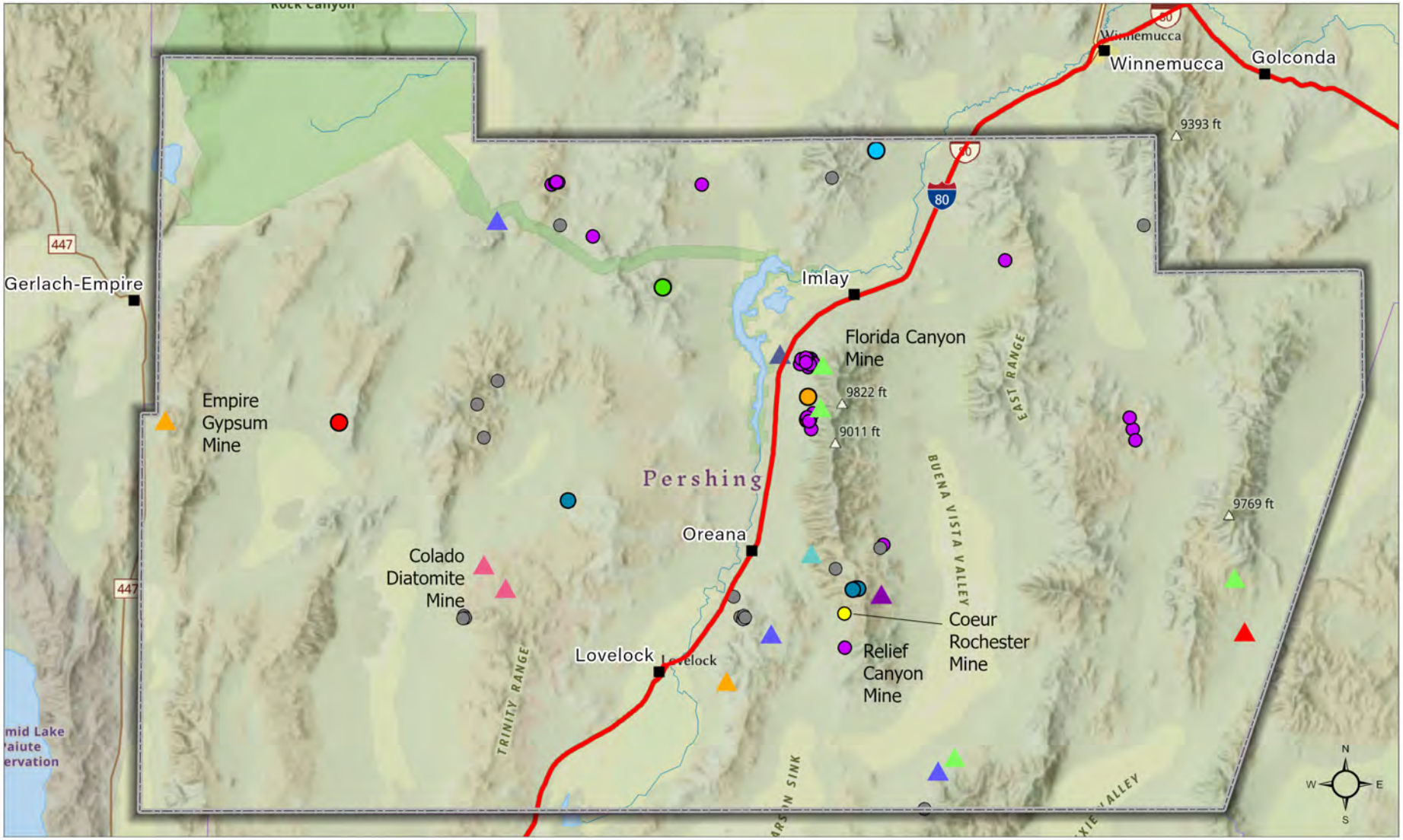
Figure 5.1

Hydrology and Spring Locations

Source: Pershing County; Farr West Consulting digital data release 2010
NDWR, NHD
Stantec Consulting; Cynthia Albright, LLC

Projection: State Plane Nevada West Zone, NAD 83, U.S. Survey Foot

Scale: 1 in = 12 Miles Date: 12/9/2022



Legend

- Cities and Towns
- Interstate

Industrial Minerals

- AM
- Clay
- Diatomite
- Fluorspar
- Gypsum
- Sulfur
- TM
- Zeolite

Precious Metals

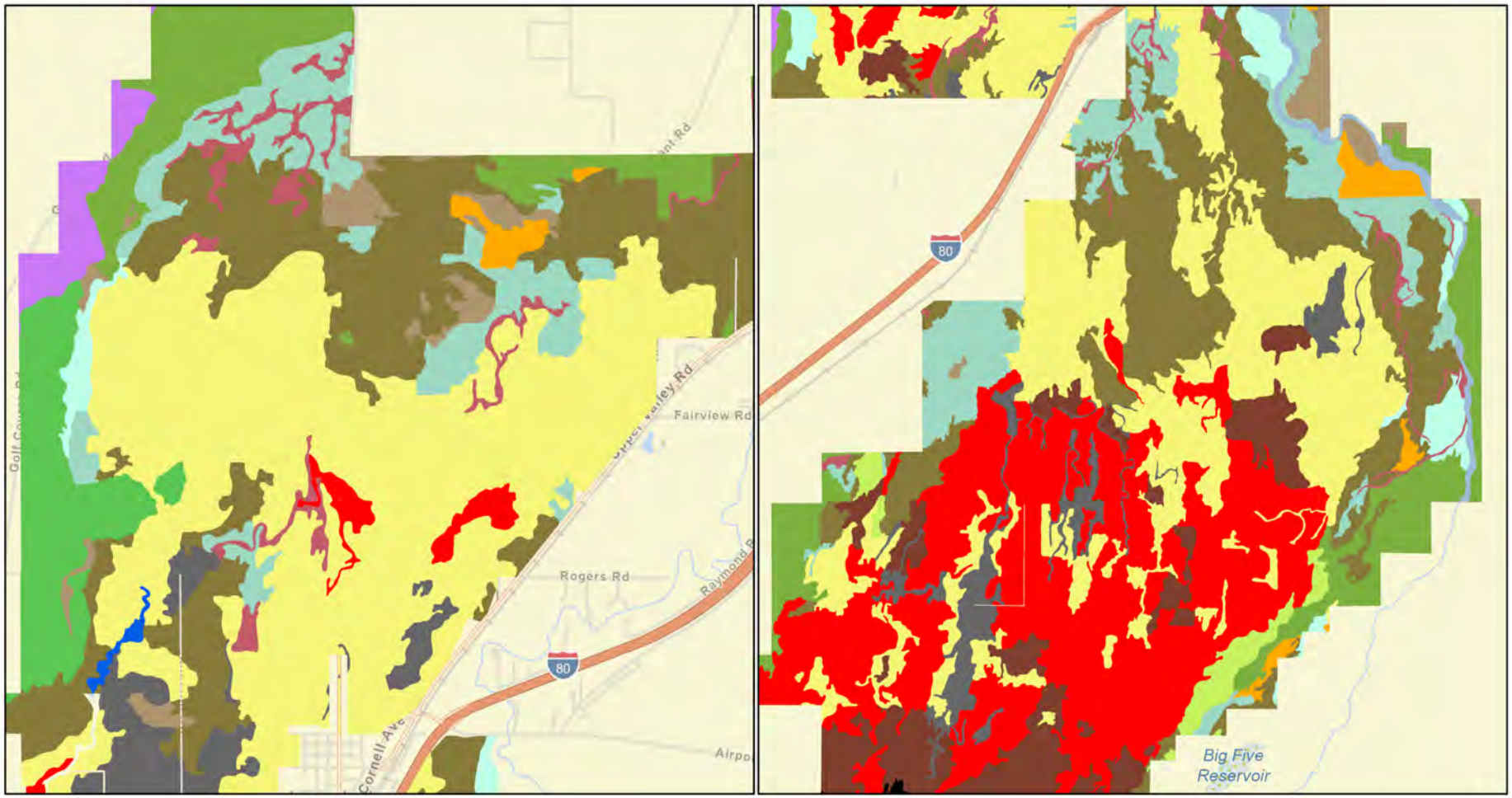
- Silver (Ag)
- Ag, Gold (Au)
- Ag, Au, Copper (Cu), Lead (Pb)
- Au
- Au, Ag
- Au, Ag, Tungsten (W)
- Cu, Ag, Au, Pb, Zinc (Zn)
- Pb, Ag, Au, Cu

Figure 5.2
Mineral Resources

Source: Pershing County; Farr West Consulting digital data release 2020
NBMG
Stantec Consulting; Cynthia Albright, LLC

Projection: State Plane Nevada West Zone, NAD 83, U.S. Survey Foot

Scale: 1 in = 12 Miles Date: 8/21/2022



Legend

- Armydrain silt loam/ strongly saline-sodic
- Bigmeadow silt loam/ strongly saline-sodic
- Bluewing gravelly sandy loam
- Brinker silt loam/strongly saline-sodic
- Colado fine sandy loam
- Humboldt silt loam; Humboldt silt loam, silty clay
- Isolde fine sand
- Kniesley silt loam/strongly saline-sodic
- Lahontan silty clay loam
- Loveboldt-Water
- Lovelock silt loam/trongly saline-sodic
- Mazuma fine sandy loam
- Nevadanile loam/strongly saline-sodic
- Ocala loam
- Placeritos loam, Perwaso
- Ryepatch clay, drained
- Slawha silt loam
- Sondoa silt loam
- Swingler loam/slightly saline-sodic
- Theon-Singatse, gravelly
- Unionville-Rock
- Water

Figure 5.3
Agriculture Preservation District Area Soils

Source: Pershing County; Farr West Consulting digital data received 2021
USGS
Stantec Consulting; Cynthia Albright, LLC

Projection: State Plane Nevada West Zone, NAD 83, U.S. Survey Foot

Scale: 1 in = 1 Miles Date: 8/23/22

Goals and Policies

Goal C.1.0 Implement the recommendations in the Pershing County Water Resources Plan.

Policy C.1.1 Support Nevada Division of Water Resources' (NDWR) efforts to designate hydrographic basins adjacent to other over-appropriated basins and call for filings of Proof of Beneficial Use of existing appropriations

Policy C.1.2 Support NDWR's efforts to obtain Proofs of appropriation on historical surface rights by 2027 and complete adjudications of surface water within the County.

Policy C.1.3 Develop a program to encourage more efficient water use by completing consumptive use studies of current water users.

Policy C.1.4 Establish a water effluent re-use demand and supply program.

Policy C.1.5 The NDWR has identified that all hydrographic basins in the county are currently over appropriated. The NDWR and the county need to identify solutions including support groundwater users for agriculture, and the mining industry to develop groundwater management plans.

Policy C.1.6 Guide flexible and efficient irrigation management practices to ensure adequate water resources remain available during periods of low precipitation.

Policy C.1.7 Facilitate cooperation between the mining industry and state and federal regulatory authorities in the development of water resources and mitigation of past adverse impacts related to mining activities.

Goal C.2.0: Support the development of alternative water supplies while sustainably using available resources.

Policy C.2.1 Collaborate with the Lovelock Meadows Water District to support sustainable development at densities, uses, locations, and practices that meet current and future municipal and domestic demands.

Policy C.2.2 Encourage the use and expansion of existing water systems.

Policy C.2.3 Discourage the proliferation of individual septic systems.

Policy C.2.4 Develop conservation and water reuse plans.

Policy C.2.5 Encourage the development of uses such as energy generation and other low-water consumption industrial uses.

Goal C.3.0 Protect surface and groundwater supplies from potential contamination.

Policy C.3.1 Maintain minimum water supplies to protect spring flows and vegetation that has a direct impact on wildlife, native vegetation, and public health within the County.

Policy C.3.2 Collaborate with the State to investigate areas such as Grass Valley that have a high concentration of domestic wells and septic systems to monitor the effects of groundwater pumping and water quality and take appropriate action.

Policy C.3.3 Support the Pershing County Water Conservation District in its efforts to maintain the 40,000-acre surface water irrigation district infrastructure and delivery network to ensure appropriate and timely delivery of natural resources.

Policy C.3.4 Endorse federal efforts to protect natural and man-made wetlands from any negative impacts to maintain their environmental value for wildlife habitat and water resource regeneration.

Public Lands and Resources

Goal C.3.0 Recognize and maintain the open space character and multiple resource value of public lands.

Policy C.3.1 Coordinate with the Bureau of Land Management, Bureau of Reclamation, and other public landowners to influence land use decisions to benefit residents and the economy.

Wildlife

Goal C.4.0: Conserve wildlife habitat and other resources of significant biological, ecological, and recreational value.

Policy C.4.1 Protect fragile wildlife habitat areas from encroachment or other impacts from development.

Policy C.4.2 Provide opportunities to cluster development where appropriate for habitat conservation.

Flood Protection

Goal C.5.0 Protect residents and developed uses from flood hazards.

Policy C.5.1 Continue participation in the National Flood Insurance Program and application of flood plain regulations.

Policy C.5.2 Discourage development of new structures and prohibit the creation of additional building sites within the 100-year flood plain.

Policy C.5.3 Minimize alteration of natural flood plains, stream channels and natural protective barriers that accommodate or channel floodwaters.

Policy C.5.4 Cooperate with the Pershing County Water Conservation District in establishing flood protection development standards for sites adjacent to irrigation facilities.

Policy C.5.5: Provide flood insurance information to the public through the County Planning and Building Department.

Goal C.6.0: Provide, protect, and utilize adequate drainage systems.

Policy C.6.1 Prohibit projects that significantly increase the volume or velocity of stormwater run-off or change the character or location of discharge unless acceptable off-site drainage systems are provided.

Policy C.6.2 Encourage on-site retention systems where appropriate to allow the percolation of stormwater and to avoid off-site drainage problems.

Policy C.6.3 Prohibit the use of PCWCD drainage systems to accommodate urban run-off unless specifically accepted by PCWCD.

Mineral Extraction

Goal C.7.0: Develop and responsibly conserve Pershing County's significant mineral resources.

Policy C.7.1 Consider the impact of new development on the extraction of mineral resources in land use.

Policy C.7.2 Review proposed mining activities (mineral extraction, sand, and gravel pits, etc.) to ensure that they are compatible with existing and planned development.

Trego Hot Springs photo by Josiah Roe

Stillwater Conservation Area photo by Kurt Kuznicki

06. Implementation

Overview

Pershing County's Master Plan is intended to be dynamic – capable of responding to changing conditions. To assess the Plan's effectiveness, the County will need to monitor periodically the actions taken that affect the Master Plan. Monitoring efforts or requests by the public and further actions taken by the Commission may result in Master Plan amendments. Any proposed amendments should consider the adopted Master Plan's Goals and Policies, or the goals and policy language changed for consistency. This chapter outlines the processes to review, monitor and amend Master Plan text and/or the Master Plan Land Use Map. The amendment process is incorporated in the **Pershing County Development Code**.

Grandfathers' Mt Tobin Wilderness Area photo by Scott Peterson

Periodic Review & Monitoring

The Board of County Commissioners should consider any Master Plan-related actions prior to the budget process. A periodic review should:

1. Identify the County's actions taken to achieve the Plan's larger goals.
2. Propose program(s) that facilitate the implementation of the Plan's goals in accordance with the County budget.
3. Consider alternative trends either in employment, housing, population, transportation, and/or natural resources and discuss the relevancy to the Plan's goals and policies. Take appropriate action.
4. Amend the Master Plan text if warranted due to language that impedes the evolution of a desirable dynamic environment that improves the health, welfare, and sustainability of the County.

Every 2-3 years the Planning Commission should schedule a review of the County's goals identified in this Plan and discuss progress made to date. This review should help develop recommendations for the County Commission's consideration on budgetary priorities.

Land Use Amendments

The Land Use Plan guides land use and decisions where to support or amend either the designation or the language which guides the use of land for new development or redevelopment. Amendment to the Land Use Plan should be considered up to four (4) times per year to support requests that result in new uses, employers, and development in areas not foreseen in the adopted Land Use Map. The County intends to support growth that is sustainable within the purview of this Master Plan.

Policy Review & Amendment

To ensure the Master Plan remains an effective guide for appointed and elected officials, Pershing County may consider periodic evaluations of the goals and policies to consider the following:

1. Progress in implementing the Plan.
2. Changes in community needs and other dynamic conditions this Plan is intended to respond to.
3. Fiscal conditions and the leverage resources and secure grants to implement the plan recommendations.
4. Community support for adopted goals and policies.
5. Changes in state regulations.
6. Decision by federal government on the Public Lands Bill that may necessitate a Plan revision.

Relationship to the Budget

The annual budget adoption process is one of the most important tools for implementing the goals and policies contained within the Master Plan. The budget establishes the Commissioners' priorities for action. However, the ending fund balance in recent years is lower than a level the County officials are comfortable with.

A decline in total population over the previous decade may be a contributing factor in a decline in revenues and all expenditures are being closely monitored. Capital and operational funding decisions should acknowledge the Master Plan. More specifically, the County Commission should target expenditures that are consistent with achieving the goals and policies adopted within this Plan. Unfunded goals and policies may be removed following a periodic evaluation until such time that the County fiscal situation improves.

As part of the Plan implementation process, the County should maintain an accounting of

the costs to deliver public services and finance infrastructure (i.e., road maintenance, public safety, parks and recreation, emergency, and medical services). A financial study is recommended to explore an impact fee program, potential property tax adjustments, tax rates for various funds, abatement considerations, grant availability research, and/or other financing sources investigated and documented.

Capital Improvement Projects/Building Fund Allocation

Pershing County develops its Capital Improvement Project (CIP) list annually. The CIP is an essential document adopted by the County Commission that budgets expenditures for capital projects, repairs, equipment, and infrastructure for three consecutive years. All projects are prioritized with estimated costs. The CIP also serves as a tracking document for projects completed.

Depending on the revenues and obligated expenditures, recommendations in the Master Plan may or may not be addressed from time to time. Costs for public safety and public works, building upgrades, community support and technical equipment continues to climb while the revenues collected from the two primary sources, property taxes and intergovernmental, continues to fluctuate. The steady change in revenues and expenses makes it difficult for Pershing County to maintain consistent progress on the fulfilling its priority goals, including keeping its buildings safely updated and functioning properly. Under these circumstances, it may be difficult to achieve the goals articulated in the Master Plan in a timely manner.

In addition to priority projects with specified budgets, the CIP should include a list of essential projects as requested by residents in each community throughout the County. These projects should be identified and voted on by the County Commissioners and incorporated into the CIP.

Development Code

The Master Plan is the policy document that expresses the County's intent. Pershing County's plan policies are realized through its zoning authority per the Nevada Revised Statutes. The Development Code regulations are the most important tool to facilitate implementation of the Master Plan. The Development Code (referred to as the Zoning Code) carries the force of law with penalties and consequences for not following it. The Development Code clearly establishes the zone districts, permitted uses, use regulations, development standards, and development procedures. Modifications to Development Code regulations should consider the Master Plan goals and policies and if amendments are necessary to ensure consistency between both guiding documents.

Plan Implementation Program

The Master Plan requires on-going consideration to achieve its stated goals. **Table 6.1**, Plan Implementation Matrix, lists the tasks necessary to fulfill the Plan's goals and policies. This matrix should be updated as necessary to remove completed tasks or augmented to add new tasks. The Plan Implementation Matrix helps establish budgetary priorities. Through regular updates, the County can ensure that the Plan Implementation Program continues to serve its needs effectively.

Table 6.1 Plan Implementation Matrix

Item	Task	Strategy
1	Land Use & Growth Coordination - Continue the use of cluster development as a design approach to preserve valuable natural resources.	Development Code
2	Land Use & Growth Coordination - Provide the City of Lovelock the opportunity to review and comment on development applications located within a one (1) mile radius of the city limits.	Intergovernmental coordination
3	Land Use & Growth Coordination - Ensure agricultural operations are allowed a range of compatible and complementary secondary uses to support the industry and minimize land use conflicts.	Development Code
4	Land Use & Growth Coordination - Adopt standards to regulate the aesthetics of new development. Provisions may include limitations on slopes over 15%, requirements for the placement of manufactured homes to include solid skirting of the pier and beam system in a material and complimentary color to the home itself, solid screening of outdoor storage, undulations in the building plane every 100' in length to avoid solid blank wall architecutre, and sign ordinance revisions limiting the number and size of temporary, on and off-premises signs.	Development Code
5	Land Use & Growth Coordination - Encourage the development of housing for populations of all incomes and abilities.	Development Code
6	Land Use & Growth Coordination - Support rehabilitation and conservation of existing hous-ing by collaborating with the state for grants to expand the economy through a broader community effort.	State of Nevada grant pursuit
7	Land Use & Growth Coordination - Continue efforts coordinating with the Pershing County Economic Development Authority (PCEDA) to diversify the economy with a focus on the existing service area boundary.	Intergovernmental coordination
8	Land Use & Growth Coordination - Ensure regulations pertaining to home occupations are consistent with allowable uses in each land use category.	Development Code
9	Land Use & Growth Coordination - Protect historical, architectural, and culturally significant structures and sites. (See **Appendix A**).	Development Code
10	Land Use & Growth Coordination – Manage new development proposed within the	Development Code

Item	Task	Strategy
	agricultural preservation boundary or near mining and industrial uses to ensure compatibility.	
11	Transportation - Ensure roadways maintained by the private sector, such as mining and aggregate operations, are in good standing to protect the health, safety, and welfare of residents.	Roadway Construction Standards
12	Transportation - Evaluate the adoption of countywide roadway impact fees. All new subdivisions shall be required to form a homeowners association for the collection of fees for roadway maintenance. Private roads not accepted by the county shall have a mechanism in place, such as a bond, prior to receiving a certificate of occupancy that guarantees the developer and homeowners are responsible for roadway maintenance.	Development Code, CIP Improvement Agreements, Impact Fees and/or special assessment on Privileged Development
13	Transportation - Coordinate all transportation related capital improvements and mainte-nance with other jurisdictions.	Intergovernmental coordination
14	Public Services & Facilities - Coordinate the implementation of capital improvements pro-jects with service providers to ensure efficient delivery of services.	Intergovernmental coordination
15	Public Services & Facilities - Coordinate with the City of Lovelock and the Pershing County School District to ensure adequate education facilities and joint use of the facilities to include recreation usage.	Intergovernmental coordination
16	Public Services & Facilities – Pursue grant opportunities to enhance local and regional recreation facilities, including trailheads, signage, parking, and marketing of these destinations.	Intergovernmental coordination
17	Public Services & Facilities – Pursue grant opportunities to reduce emergency service re-sponse times by funding more volunteer facilities and needed infrastructure.	Intergovernmental coordination
18	Public Services & Facilities – Continue to improve quality, cost effectiveness, and equitable service provision and ensure levels of service are being met.	Intergovernmental coordination
19	Public Services & Facilities – Identify and prioritize the maintenance of stormwater facilities to minimize flooding.	Development Code
20	Conservation & Natural Resources – All hydrographic basins within Pershing County are overapprorpriated as of the date of this master plan update. Support NDWR's efforts to designate hydrographic basins adjacent to over-appropriated basins and call	Intergovernmental coordination

Item	Task	Strategy
	for filings of Proof of Beneficial Use of existing appropriations.	
21	Conservation & Natural Resources – Develop a program to encourage more efficient water use in agricultural and industry by completing consumptive use studies of current water users.	Intergovernmental coordination
22	Conservation & Natural Resources – Guide flexible and efficient irrigation management practices to ensure adequate water resources remain available during periods of low pre-ipitation.	Intergovernmental coordination
23	Conservation & Natural Resources – Establish a water effluent re-use demand and supply program.	Intergovernmental coordination
24	Conservation & Natural Resources - Protect natural and man-made wetlands and wildlife habitats from encroachment of incompatible land uses and impacts from agricultural prac-tices and mineral extraction activities.	Intergovernmental coordination
25	Conservation & Natural Resources – Encourage the public to conserve water resources and new development to design with conservation of water and natural resources front of mind.	Intergovernmental coordination
26	Conservation & Natural Resources – Support NDEP's efforts monitoring wells and septic systems to determine the effects and potential limitations on new individual infrastructure.	Intergovernmental coordination
27	Conservation & Natural Resources - Collaborate with property owners and service providers in the Grass Valley area to ensure individual wastewater treatment systems protect groundwater quality.	Utility Service Coordination
28	Conservation & Natural Resources - Coordinate with the BLM to ensure the Public Lands Bill gets approved. Work with these same agencies and the state to coordinate access to public lands.	Intergovernmental coordination

Old Razorback Mountain photo by Josiah Roe

Pershing County Master Plan

APPENDIX A
LIST OF HISTORIC SITES

Appendix A
Pershing County Historic Sites

Overview

Pershing County's Master Plan includes specific historic sites to continue to record significant areas within Pershing County.

A

Arabia (Site) 14 miles north-northeast of Lovelock, NV (See Jersey mine)
T29N, R32E, Sec 21

Ascalon (Site)
Approximately 5 miles east of Gerlach, NV.
T33N, R24E, Section 31

B

Badger Mine Tobin Range. T28N, R39E, Sec 1

Black Rock Desert
Northwest corner of Pershing County.
T33-35N, R24-28E, Most sections

Bloody Canyon Mine East side of Humboldt Range, south of Star Peak. T31N, R34E, Sec 35

Bluebird Mine
Spring Valley area of Humboldt Range approximately 10 miles south of Unionville, NV. T29N, R34E, Sec 15

Bonanza King Mine
Spring Valley east side of Humboldt Range (See Fitting Site)
T29N, R34E, Sec 36

C

Camera MineTobin Range
T28N, R39E, Sec 21

Cinnabar City Mine
Humboldt Range approximately 15 miles south of Unionville, NV
T28N, R34E, Sec 1

D

Double O Mine
Kamma Mountains approximately 6 miles from the county line.
T34N, R29E, Sec 22, 23, 27 ,28

Dun Glen (Site) later known as Chafey
East Range approximately 9 miles northeast of Mill City, NV
T33N, R36E, Sec 16, 17

E

Eagle Picher Mine
State Route 399 Northwest of Lovelock approximately 25 miles from Lovelock
T28N, R29E, multiple sections

Eureka MineTobin Range
T28N, R39E, Sec 29

Evening Star Mine
Approximately 11 miles west of Oreana, NV
T29N, R31E, Sec 26, 27

F

Farrel (Site)
East side of Trinity Range, 27 miles northwest of Lovelock, NV
T31N, R29E, Sec 32

Fitting (Site) Previously known as Spring Valley
Spring Valley area on the east side of the Humboldt Range
T29N, R34E, Sec 36

Florida Canyon Mine
Off Interstate 80 Exit 138
T31N, R33E, Sec 1, 2, 3, 10, 11, 12

Fossil Hill
East of Humboldt Range near South American Canyon in the Buena Vista Valley area.
T28N, R35E, Sec 19, 20

Four Sisters MineEast Range
T33N, R37E, Sec 30

G

Gilberts Mine
East of Stillwater Range off Dixie Valley Road
T25N, R37E, Sec 9

Green Gold Mine
West of the Stillwater Range in the Buena Vista Valley area. South of Antelope Road. T25N, R35E, Sec 2, 11

Goldbanks (Site)
West off Grass Valley Road, approximately 30 miles down Grass Valley Road portion in PershingCounty, (39 Miles from Winnemucca). T30N, R39E, Sec 21

H

Haystack Mine
Off Jungo Cut-off Road approximately 8 miles from the County line. T34N, R32E, Sec 17, 20

Hollywood Mine
South end of Humboldt Range in the Buena Vista valley area.
T26N, R34E, Sec 2

Humboldt House (Site)
Exit 138 off Interstate 80 on the west side. Founded by the Central Pacific Railroad in 1868 as an eating station.
T32N, R30E, Sec 34

Humboldt City (Site)
Approximately 4 miles east of Exit 138 off Interstate 80 on the west side of the Humboldt Range.
T31N, R33E, Sec 1

I

Imlay (Site)
Off Interstate 80 (exit 145) founded in 1908 as a new terminal where a roundhouse and other facilities were built.
T32N, R34E, Sec 4, 9

Imlay Mine
North end of Humboldt Range up Imlay Canyon,
T32N, R34E, Sec 30

J

Jacobs Well
Six miles east of Mill City, off exit 149 on Interstate 80. Known as a whiskey stop in 1860's and a watering hole for animals. T32N, R35E, Sec 11

Jersey Mine
Approximately 10 miles west of Oreana, NV
T29N, R32E, Sec 21

Johnson-Heizer Mine
West of Humboldt Range between Oreana and Coal Canyon Road
T28N, R33E, Sec 19

K

Kennedy (Site)
Stillwater Range, 51 miles south of Winnemucca, NV
T28N, R38E, Sec 30

Keystone Mine
East of Eugene Mountains near county line
T34N, R34E, Sec 01

L

Last Chance Mine
West of Rye Patch Reservoir
T32N, R31E, Sec 2

Little Tungsten Mine
West of Rocky Canyon near Rye Patch Exit 119 off Interstate 80
T29N, R33E, Sec 3, 10

Long Mine
West Humboldt Range approximately 10 miles east of Lovelock
T26N, R32E, Sec 34

Looney Mine
Near Old Rochester Mine site off the Oreana Exit 119 (I-80)
T28N, R33E, Sec 13 & T28N, R34E, Sec 18

Lower Rochester (Site) near Looney Mine
Approximately 12 miles from Oreana Exit 119 off Interstate 80
T28N, R33E, Sec 13 & T28N, R34E, Sec 18

M

Marigold Mine
Humboldt Range top of Unionville Canyon
T30N, R34E, Sec 27, 28

Mazuma (Site)
East side of Trinity Range about 24 miles northwest of Lovelock
T30N, R29E, Sec 19

Mill City, NV
North of Interstate 80 at the Mill City exit 149, about 41 miles north-northeast of Lovelock
T32N, R35E, Sec 5

MGL Mine Nightingale Mountains
Approximately 5 miles from the southwest corner of Pershing County near Washoe County.
T25N, R24E, Sec 9

Moonlight mine
East side of Humboldt Range approximately 10 miles south of Unionville, NV
T29N, R34E, Sec 14

Monroe Mine
East Range approximately 15 miles from Mill City
T33N, R36E, Sec 11

Montezuma Mine
Approximately 10 miles west of Oreana, NV
T29N, R32E, Sec 21

Morning Star Mine
Approximately 11 miles west of Oreana, NV
T29N, R31E, Sec 22

Mount Tobin MineTobin Range
T28N, R39E, Sec 1

Muttlebury Mine
West Humboldt Range approximately 12 miles east of Lovelock
T27N, R32E, Sec 27, 28

N

Nevada Packard Mine
North end of Packard Flat off Coal Canyon Road
T27N, R34E, Sec 18

Nevada Quicksilver Mine
Southern end of Humboldt Range off Coal Canyon Road approximately 20 miles from Coal CanyonExit off I-80
T27N, R34E, Sec 32, 33

Nightingale (Site)
Approximately one mile from Nache Peak (6558 Ft) near the Churchill, Washoe/Pershing County line, east of the Nightingale Mountains
T25N, R24E, Sec 25

O

Oreana (Site)
Exit 119 Interstate 80 approximately 13 miles north of Lovelock
T29N, R33E, Sec 31

P

Pacific Matchless Mine Humboldt Range
T28N, R34E, Sec 14

Packard (Site) Currently part of Coeur Rochester Mine
North end of Packard Flat off Interstate 80 (exit 112) Coal Canyon Road travel east for approximately 8 miles
T28N, R34E, Sec 32

Pershing Quicksilver Mine
South of Humboldt Range approximately 20 miles east of the Coal Canyon Exit 112 off Interstate 80
T26N, R34E, Sec 9

Pflum Mine
East side of Humboldt Range north of Star Peak
T31N, R34E, Sec 22

Phlueger Mine
Humboldt Range approximately 5 miles south of Unionville, NV
T29N, R34E, Sec 10, 11

Pinite Mine
East side of Humboldt Range
T28N, R35E, Sec 19, 30

Placerites (Site)
Between The Kamma Mountains, Seven Troughs Range, and Majuba Mountains. Approximately 41miles north of Lovelock
T32N, R29E, Sec 1

Plainview Group Mine Humboldt Range
T28N, R34E, Sec 4

Poker Brown (Site)
10 miles from Rye Patch Dam (between Majuba Mountains and Trinity Range)
T31N, R32E, Sec 21

Pronto Plata MineEast Range
T30N, R38E, Sec 3

R

Rabbit hole (Site)
Kamma Mountains (known as one of the last stops for water before crossing the Black Rock Desert.) Located in the Black Rock Desert High Rock Canyon Emigrant Trails National Conservation Area. T33N, R29E, Sec 5

Rochester (Site)
Approximately 10 miles southeast of Interstate 80 off the Oreana exit 119
T28N, R34E, Sec 10, 15, 16, 21, 22, 28, 32, 33

Rosal Mine
West side of Humboldt Range between Coal Canyon Road and Oreana, NV
T28N, R32E, Sec 23, 26

Ryepatch Mine
Rye Patch Canyon area near Exit 119 off Interstate 80
T30N, R33E, Sec 14

S

Scossa (Site)
Northern end of Mujuba Mountains, (east of Kamma Mountains) approximately 46 miles north of Lovelock.
T33N, R30E, Sec 10

Seven Troughs (Site)
Trinity Range
T30N, R29E, Sec 13

Standard Mine
West side of Humboldt Range between Exit 129 and 138 I-80
T31N, R33E, Sec 35

Star City
Humboldt Range 10 miles south of the Interstate 80 (exit 149) on State Route 400, turn west approximately 4.5 miles towards Star Creek and Star Peak in the Humboldt Range. Silver ore discovered in 1861 and had 1200 residences within two years.
T31N, R34, Sec 22

Star Peak (elevation 9834feet)
Humboldt Range highest point in Pershing County
T31N, R 34E, Sec 27, 28

Steiner Mine
Approximately 15 miles west of Oreana, NV
T28N, R31E, Sec 3

Sutherland Mine
Approximately 11 miles east on Coal Canyon Road, Exit 112 off Interstate 80 in the Humboldt Range
T27N, R33E, sec 15

T

Temple Group Mines
Southern Eugene Mountains, north of Rye Patch Reservoir
T33N, R33E, Sec 11

Ten Mile (Site)
Approximately12 miles southeast of Gerlach, NV
T32N, R24E, Sec 21 &22

Thunder Mountain (Site)
Exit 145 off Interstate 80, then east on the frontage road along the interstate about one mile
T32N, R34E, Sec 3

Toulon (Site)
Exit 93 off Interstate 80
T25N, R30E, Sec 5

Tip Top MineTobin Range
T28N, R39E, Sec 28

Tungsten (Site)
East of Eugene Mountains, 8 miles north of I-80 at Mill City (exit 149) Tungsten ore discovered in 1916 in the area
T34N, R34E, Sec 35

Twin Dome Mine
West of the East Range approximately 12 miles from Mill City
T33N, R36E, Sec 26

U

Unionville, NV
Humboldt Range (former County Seat of Humboldt County before Pershing County was created out of Humboldt County 1919). 13 miles south on State Route 400 from the Mill City exit (exit 149) then 5 miles west on Unionville Road. The camp was briefly called Dixie in 1961 until federal partisans won a local political fight and named the camp Unionville and was selected as the county seat for the newly created Humboldt County
T30N, R34E, Sec 26, 27

V

Velvet Mine
Off State Route 399 approximately 4 miles from Eagle Picher Mine. Approximately 25 miles from Lovelock in the Trinity Range
T27N, R29E, Sec 6

Vernon (Site)
Southeast area of the Trinity Range on SR 48 about 26 miles northwest of Lovelock, NV
T30N, R28E, Sec 36

W

Wadley Mine East Range. T31N, R36E, Sec 11

Willard (Site) Later known as Loring
Approximately 3 miles east of Coal Canyon Exit off Interstate 80 (Exit 112)
T28N, R32E, Sec 35

Woolsey (Site)
Approx. 5 miles north of the Coal Canyon Exit 112 off I-80.
T28N, R32E, Sec 27

XYZ

Pershing County Master Plan

APPENDIX B

AGRICULTURE AND AGRICULTURE RELATED SECTORS TOTAL EMPLOYMENT, OUTPUT, INPUT, VALUE ADDED

Appendix B Agriculture and Agriculture Related Sectors (1 of 5) Total Employment, Total Output, Total Intermediate Inputs, Total Value Added, Labor Income Pershing County, 2021					
Industry Description	Total Employment	Total Output	Total Intermediate Inputs	Total Value Added	Labor Income
Oilseed farming	0	$0.00	$0.00	$0.00	$0.00
Grain farming	11	$6,969,689.51	$7,349,147.43	-$379,457.92	$2,228,031.49
Vegetable and melon farming	0	$0.00	$0.00	$0.00	$0.00
Fruit farming	0	$25,114.13	$10,330.75	$14,783.38	$7,344.08
Tree nut farming	0	$0.00	$0.00	$0.00	$0.00
Greenhouse, nursery, and floriculture production	0	$0.00	$0.00	$0.00	$0.00
Tobacco farming	0	$0.00	$0.00	$0.00	$0.00
Cotton farming	0	$0.00	$0.00	$0.00	$0.00
Sugarcane and sugar beet farming	0	$0.00	$0.00	$0.00	$0.00
All other crop farming	217	$19,539,843.58	$9,826,228.03	$9,713,615.55	$10,766,660.97
Beef cattle ranching and farming, including feedlots and dual-purpose ranching and farming	17	$15,909,963.86	$10,641,471.33	$5,268,492.52	$3,467,599.09
Dairy cattle and milk production	0	$0.00	$0.00	$0.00	$0.00
Poultry/egg production	0	$492,707.48	$440,429.57	$52,277.91	$21,254.46
Animal production, except cattle and poultry and eggs	3	$1,587,842.43	$198,522.65	$1,389,319.78	$929,868.94

Notes: Total Intermediate Output is the economic value of upstream supply chain and value network connections to other sectors; Total Value Added is the economic value of the downstream supply chain and value network connections or valued added production; Labor Income is the total wages paid. The data may include reported zeros in the total employment column but reported labor income.

Source: University Center for Economic Development, IMPLAN, Industry Summary

Appendix B Agriculture and Agriculture Related Sectors (1 of 5) Total Employment, Total Output, Total Intermediate Inputs, Total Value Added, Labor Income Pershing County, 2021					
Industry Description	Total Employment	Total Output	Total Intermediate Inputs	Total Value Added	Labor Income
Forestry, products, and timber tract production	0	$48,500.87	$8,958.26	$39,542.61	$33,745.20
Commercial logging	0	$59,224.42	$16,799.22	$42,425.20	$35,179.80
Commercial fishing	0	$0.00	$0.00	$0.00	$0.00
Commercial hunting and trapping	0	$6,191.44	$3,494.38	$2,697.06	$1,767.43
Support activities for agriculture and forestry	2	$33,735.26	$43,668.80	-$9,933.54	-$11,448.28
Dog and cat food manufacturing	0	$0.00	$0.00	$0.00	$0.00
Other animal food manufacturing	0	$0.00	$0.00	$0.00	$0.00
Flour milling	0	$0.00	$0.00	$0.00	$0.00
Rice milling	0	$0.00	$0.00	$0.00	$0.00
Malt manufacturing	0	$0.00	$0.00	$0.00	$0.00
Wet corn milling	0	$0.00	$0.00	$0.00	$0.00
Soybean and other oilseed processing	0	$0.00	$0.00	$0.00	$0.00
Fats and oils refining and blending	0	$0.00	$0.00	$0.00	$0.00
Breakfast cereal manufacturing	0	$0.00	$0.00	$0.00	$0.00

Notes: Total Intermediate Output is the economic value of upstream supply chain and value network connections to other sectors; Total Value Added is the economic value of the downstream supply chain and value network connections or valued added production; Labor Income is the total wages paid. The data may include reported zeros in the total employment column but reported labor income.

Source: University Center for Economic Development, IMPLAN, Industry Summary

Appendix B Agriculture and Agriculture Related Sectors (1 of 5) Total Employment, Total Output, Total Intermediate Inputs, Total Value Added, Labor Income Pershing County, 2021					
Industry Description	Total Employment	Total Output	Total Intermediate Inputs	Total Value Added	Labor Income
Beet sugar manufacturing	0	$0.00	$0.00	$0.00	$0.00
Sugar cane mills and refining	0	$0.00	$0.00	$0.00	$0.00
Nonchocolate confectionery manufacturing	0	$0.00	$0.00	$0.00	$0.00
Chocolate & confection manufacturing from cacao beans	0	$0.00	$0.00	$0.00	$0.00
Confectionery manufacturing from purchased chocolate	0	$0.00	$0.00	$0.00	$0.00
Frozen fruits, juices and vegetables manufacturing	0	$0.00	$0.00	$0.00	$0.00
Frozen specialties manufacturing	0	$0.00	$0.00	$0.00	$0.00
Canned fruits and vegetables manufacturing	0	$0.00	$0.00	$0.00	$0.00
Canned specialties	0	$0.00	$0.00	$0.00	$0.00
Dehydrated food products manufacturing	0	$0.00	$0.00	$0.00	$0.00
Cheese manufacturing	0	$0.00	$0.00	$0.00	$0.00
Dry, condensed, and evaporated dairy product manufacturing	0	$0.00	$0.00	$0.00	$0.00
Fluid milk manufacturing	0	$0.00	$0.00	$0.00	$0.00
Creamery butter manufacturing	0	$0.00	$0.00	$0.00	$0.00

Notes: Total Intermediate Output is the economic value of upstream supply chain and value network connections to other sectors; Total Value Added is the economic value of the downstream supply chain and value network connections or valued added production; Labor Income is the total wages paid. The data may include reported zeros in the total employment column but reported labor income.

Source: University Center for Economic Development, IMPLAN, Industry Summary

Appendix B Agriculture and Agriculture Related Sectors (1 of 5) Total Employment, Total Output, Total Intermediate Inputs, Total Value Added, Labor Income Pershing County, 2021					
Industry Description	Total Employment	Total Output	Total Intermediate Inputs	Total Value Added	Labor Income
Ice cream and frozen dessert manufacturing	0	$0.00	$0.00	$0.00	$0.00
Frozen cakes and other pastries manufacturing	1	$74,458.90	$33,392.37	$41,066.52	$23,938.49
Poultry processing	0	$0.00	$0.00	$0.00	$0.00
Animal, except poultry, slaughtering	0	$0.00	$0.00	$0.00	$0.00
Meat processed from carcasses	0	$0.00	$0.00	$0.00	$0.00
Rendering and meat byproduct processing	0	$0.00	$0.00	$0.00	$0.00
Seafood product preparation and packaging	0	$0.00	$0.00	$0.00	$0.00
Bread and bakery product, except frozen, manufacturing	1	$108,913.06	$65,918.61	$42,994.45	$23,938.49
Cookie and cracker manufacturing	0	$0.00	$0.00	$0.00	$0.00
Dry pasta, mixes, and dough manufacturing	0	$0.00	$0.00	$0.00	$0.00
Tortilla manufacturing	0	$0.00	$0.00	$0.00	$0.00
Roasted nuts and peanut butter manufacturing	0	$208,608.75	$165,954.83	$42,653.92	$34,774.05
Other snack food manufacturing	0	$242,127.88	$169,947.33	$72,180.55	$35,430.13
Coffee and tea manufacturing	0	$0.00	$0.00	$0.00	$0.00

Notes: Total Intermediate Output is the economic value of upstream supply chain and value network connections to other sectors; Total Value Added is the economic value of the downstream supply chain and value network connections or valued added production; Labor Income is the total wages paid. The data may include reported zeros in the total employment column but reported labor income.

Source: University Center for Economic Development, IMPLAN, Industry Summary

Appendix B Agriculture and Agriculture Related Sectors (1 of 5) Total Employment, Total Output, Total Intermediate Inputs, Total Value Added, Labor Income Pershing County, 2021					
Industry Description	Total Employment	Total Output	Total Intermediate Inputs	Total Value Added	Labor Income
Flavoring syrup and concentrate manufacturing	0	$0.00	$0.00	$0.00	$0.00
Mayonnaise, dressing, and sauce manufacturing	0	$0.00	$0.00	$0.00	$0.00
Spice and extract manufacturing	0	$0.00	$0.00	$0.00	$0.00
All other food manufacturing	0	$0.00	$0.00	$0.00	$0.00
Farm machinery and equipment manufacturing	0	$0.00	$0.00	$0.00	$0.00
TOTAL Agriculture and Ag-Related Sectors	**252**	**$45,306,921**	**$28,974,263**	**$16,332,657**	**$17,598,084**
TOTAL ALL SECTORS	2,486	$773,377,855	$369,777,924	$403,599,930	$190,294,974
Percentage Agriculture All Sectors	**10.1%**	**5.9%**	**7.8%**	**4.0%**	**9.2%**

Note: IMPLAN data is derived from various local, state and federal sources including US Bureau of Economic Analysis (BEA), the US Bureau of Labor Statistics (BLS), and the Census of Employment and Wages (CEW).

For more information on IMPLAN and its sources of the data to compile this agriculture sector data, see https://support.implan.com/hc/en-us/articles/115009674448-IMPLAN-Data-Sources.

Notes: Total Intermediate Output is the economic value of upstream supply chain and value network connections to other sectors; Total Value Added is the economic value of the downstream supply chain and value network connections or valued added production; Labor Income is the total wages paid. The data may include reported zeros in the total employment column but reported labor income.

Source: University Center for Economic Development, IMPLAN, Industry Summary

Pershing County Master Plan

APPENDIX C
PERSHING COUNTY WATER RESOURCES PLAN
APPROVED 2018

APPENDIX C

Character | Stewardship | Excellence

FARR WEST ENGINEERING

5510 Longley Lane • Reno, Nevada 89511 • (775) 851-4788

Pershing County Water Resource Plan

June 2018

Prepared by:

FARR WEST
ENGINEERING

EXECUTIVE SUMMARY

Water resources that Pershing County, its residents, and economy depend on are over appropriated and must be managed and conserved to provide assurance that sufficient water resources are available for future generations. The Pershing County (County) Water Resource Plan (WRP, or Plan) was developed as part of the Pershing County Master Plan to establish policies and strategies for management and conservation of water resources. Proposed policies are presented by topic, including water rights, water planning, development, economic, resource protection and conservation, and long-term planning and monitoring. Proposed polices are incorporated into this executive summary by topic.

Goals related to water resources identified in the 2012 Master Plan are incorporated by reference and included in the Appendices. This Plan should be regularly updated at a minimum of five-year intervals, or when significant changes occur to the demand for the water resources within the County. The Plan was initiated by the Pershing County Board of Commissioners.

Pershing County includes nineteen (19) administrative hydrographic groundwater basins, fifteen (15) of which have been designated by the State Engineer as needing additional administrative regulation to effectively protect and manage the water resources. The designated basin status allowed for additional management options including greater documentation of water withdrawals and water levels. (NRS §534.030)

This Plan compiles water resource data from existing studies and databases. County's WRP quantifies groundwater resources from records of the Nevada Division of Water Resources (NDWR). The annual groundwater withdrawal within the County is approximately 53,400 AFA according to the NDWR Statewide Groundwater Pumpage Inventory, Calendar Year 2015. This amount of groundwater pumping has resulted in removal of groundwater from storage in the most populated basins in the County. The impact on decreased storage water levels is shown by continued decline of the water table over several years.

The importance of water quality for the Lovelock area is paramount. Lovelock Meadows Water District (LMWD) is the largest public water system in Pershing County. The annual groundwater withdrawal in basin 73A, since 1945, has removed groundwater from storage shown by lowering of the water table in that basin. The well field has experienced an annual water level decline of 0.7 feet per year resulting in greater than 40 feet of cumulative drawdown. Water level declines at current rates are resulting in:

- Deepening of wells and the need to drill new deeper replacement wells
- Installation of higher lift pumps and additional pump column
- Increases in pumping costs from greater pumping lift requirements
- Irreversible land subsidence and collapse of aquifer storage
- Degradation of the groundwater water quality

The impacts of water level declines will decrease the economic efficiency of agriculture, mining, industry, and residential water production resulting in unsustainable economic conditions for the beneficial use of water. In addition, environmental impacts from over withdrawals will degrade spring flows and vegetation which will impact the wildlife, native vegetation and public health within the County. This Plan provides proposed policies that will enable the County to promote using water resources in a sustainable manner.

Many of the groundwater basins within Pershing County are over-appropriated, therefore policies must be implemented by the County that limit new appropriations, to ensure adequate water resources exist in the future. In Basins where pumpage exceeds the perennial yield, proposed policies to facilitate bringing groundwater basins back into balance within Pershing County include supporting NDWR efforts to: designate hydrographic basins adjacent to other over-appropriated basins, call for filings of Proof of Beneficial Use of existing appropriations, obtain Proofs of Appropriation on historical surface rights by the sunset date, and complete adjudications of surface water within the County. Non-regulatory policies are also proposed encouraging more efficient water use in agriculture and industry, completion of consumptive use studies of current water users, and establishing water effluent re-use demand and supply. Pershing County must support groundwater users who choose to establish Groundwater Management Plans in hydrographic basins with over-appropriation or threatened by over-pumpage.

Data presented in this WRP indicates water use in Pershing County could exceed availability of water on an annual basis if all appropriated groundwater rights are exercised on annually. Water rights in Pershing County are allocated for various uses including municipal, domestic, power and irrigation. These activities require sufficient water resources for success. The major economic drivers in Pershing County are agriculture and mining. The County must support flexible and efficient irrigation management practices to ensure adequate water resources remain available during periods of low precipitation, administrative curtailment, conjunctive use management changes and creation of groundwater management plans. County must continue to work with the mining industry to facilitate cooperation between the mining industry and state and federal regulatory authorities in the development of water resources and the mitigation of any past adverse impacts related to mining activities. Due to the challenges the area faces in providing adequate water resources of sufficient quality, County must adopt policies that support sustainable development in population centers to meet current and future municipal and domestic demands, encourage the use and expansion of existing water systems and discourage the proliferation of individual septic systems.

> Water conservation and reuse are key components to future water resource planning. New users of water will require existing users to implement water conservation measures. The greatest potential for the change in manner of use could be in energy generation and other industrial ventures. Additional uses to track in the future may include solar and geothermal energy generation and industrial uses that provide economic development for the community. Another important use to develop in the County will be secondary effluent for irrigation and industrial purposes.

Proposed Policies relating to conservation of water resources in Pershing County include working with, and supporting, the Bureau of Land Management, Bureau of Reclamation, Pershing County Water Conservation District, the Central Nevada Regional Water Authority, Big Meadow Conservation District and other regional groups, to establish conservation and best management practices for a regional water resource. The County

shall encourage protection of water sources for potential recreation by the County and other water users, particularly within designated basins. Voluntary reductions of outside water usage during times of prolonged drought, or reduced precipitation must be encouraged. The County should consider establishing a budget for water conservation and education materials. Whether or not a budget can be established, the County should consider supporting a conservation education program, development of water watchers' procedures, and continue to re-evaluate landscape codes to maximize water conservation.

Water resource planning and monitoring for communities within Pershing County has been ongoing and must continue. Pershing County must support existing water resource planning and monitoring to ensure adequate water resources are available for the community in the future. The potential for growth and development in County over the next 50 years must consider water resource planning issues. Long term planning goals and requirements will assist County in guiding future development and ensuring sufficient water resources for the future. Long-term planning topics include groundwater management planning in the Lovelock Valley and Oreana Subarea, monitoring Federal water use policies, encouraging surface water protection, participating in Humboldt River Basin planning and establishing conjunctive use management policies, addressing expansion of existing water systems and system infrastructure, establishing water reuse and effluent planning in water systems, encouraging the creation of groundwater management plans.

Data collection and recording is one of the most important aspects of Water Resource Management for the County. The data collected must include water level, water production, water quality and other water resource related data. Pershing County will best utilize its limited resources to advocate for the collection and recording of data and refrain from being the primary agency by utilizing existing agencies that can store and retrieve defensible accurate data.

One of the greatest challenges to the success of this Water Resource Plan will be Pershing County's ability to identify resources to implement the proposed polices. Pershing County Commissioners have limited staff resources to devote to monitoring water rights throughout the County. In addition, Commissioners change over time which highlights the importance of providing a mechanism to ensure continuity in long term water monitoring, data gathering and resource planning. Exploring cooperative agreements with existing agencies and water managers throughout County to complete water right monitoring and data gathering tasks is of paramount importance.

TABLE OF CONTENTS

LIST OF TABLES (As the plan is revised additional tables can be added to the report)

LIST OF FIGURES (As the plan is revised additional figures can be added to the report)

LIST OF ABBREVIATIONS

AFA	Acre-Feet Annually
BLM	Bureau of Land Management
BSDW	Bureau of Safe Drinking Water
CMA	Critical Management Area
EPA	Environmental Protection Agency
GMP	Groundwater Management Plan
IRP	Indirect Potable Reuse
LMWD	Lovelock Meadows Water District
MCL	Maximum Contaminant Levels
NAC	Nevada Administrative Code
NDEP	Nevada Department of Environmental Protection
NDWR/DWR	Nevada Division of Water Resources
NRS	Nevada Revised Statutes
PY	Perennial Yield
PCDC	Pershing County Development Code
PCWCD	Pershing County Water Conservation District
SSA	Sole Source Aquifer
SWPA	Source Water Protection Areas
SE	State Engineer
TDS	Total Dissolved Solids
WRP	Water Resource Plan
WHPA	Wellhead Protection Area

LIST OF APPENDICES

As the plan is revised the tables or figures in the appendices can be finalized and incorporated into the text.

Appendix 1. Pershing County Master Plan, Chapter 5 Conservation and Resources, Goals, 2012 Appendix 2. Groundwater Basin Hydrographic Summaries:

Hydrographic Area Summary 22
Hydrographic Area Summary 24
Hydrographic Area Summary 28
Hydrographic Area Summary 31
Hydrographic Area Summary 65
Hydrographic Area Summary 71
Hydrographic Area Summary 72
Hydrographic Area Summary 73
Hydrographic Area Summary 73A
Hydrographic Area Summary 78
Hydrographic Area Summary 79
Hydrographic Area Summary 80
Hydrographic Area Summary 101A
Hydrographic Area Summary 128
Hydrographic Area Summary 129
Hydrographic Area Summary 130
Hydrographic Area Summary 131
Hydrographic Area Summary 132

Appendix 3. Pershing County Development Code (Bill No. 251, Ordinance No. 251)

Appendix 4. Water Right Inventories

Appendix 5. 79th Legislative Session overview

Appendix 6. State Engineers Order 6299

1.0 INTRODUCTION

Water resources within Pershing County include groundwater and surface water sources including the Humboldt River and Rye Patch Reservoir. The water resources that Pershing County, its residents and economy depend on are over appropriated and must be managed and conserved to provide assurance that existing water resources of sufficient quantity and quality water will be available for future generations. Pershing County contains nineteen (19) hydrographic groundwater basins, many of which span across borders of surrounding Counties.

The Pershing County (County) Water Resource Plan (WRP or Plan) was developed as part of the Pershing County Master Plan to establish policies and strategies for management and conservation of water resources. Goals related to water resources identified in the 2012 Master Plan are incorporated by reference and included in the Appendices. This Plan should be regularly updated at a minimum of five year intervals, or when significant changes occur to the demand for the water resources within the County. The Plan was initiated by the Pershing County Board of Commissioners.

The purpose of this WRP is twofold: to provide Pershing County Commissioners, residents, developers and stakeholders with background and assessment of the County's water resources and recommend policies for the County to implement to ensure adequate water resources are available into the future. Proposed policies are presented by topic, including water rights, water planning, development, economic, conservation and resource protection and long-term planning and monitoring.

This Water Resource Plan compiles water resource data from existing studies and databases. Quantified water resources include precipitation, surface water, groundwater, beneficial use and environmental requirements. The quantified beneficial use of surface and groundwater resources exceeds the perennial yield in many basins within the County and is not sustainable. Solutions and suggested policies for the County to promote sustainable water use and development with full cooperation of existing regional groups and water systems including the Humboldt River Basin Water Authority and Pershing County Water Conservation District, Lovelock Meadows Water District and others.

1.0 PROPOSED POLICIES

Water management Policies must be implemented to allow Pershing County to continue to protect and ensure available water resources for all stakeholders into the future.

The policies provided below will contribute to sustainable water usage and protection of the water resource in and adjacent to Pershing County. Periodic review of this Plan (5-year minimum) is required to ensure that the plan continues to meet the needs of the County.

1.1 WATER RIGHT POLICIES

WR.1 The County shall maintain the good standing of water rights held by the County including meeting NDWR due dates and monitoring water usage and shall work diligently to put water rights to maximum beneficial use.

a. The County shall continue to request extensions of time for the County's existing water rights and support the acquisition of new water rights, as required by law under NRS and NAC, to support anticipated growth within the community.

b. The County shall identify groundwater basins in most significant need of monitoring and management and identify potential departments within existing County resources to manage County's water rights and resources.

c. The County shall monitor, and protest if necessary, inter-basin transfers that propose to remove water resources from basins within Pershing County to basins outside the County's boundaries. Protest(s) filed on Applications for inter-basin transfers may be withdrawn prior to the State approving or denying a water right application. Protesting an application allows the County the opportunity to present evidence to the State at the time the water rights are evaluated by the State.

d. The County shall develop procedures to be triggered by an inter-basin transfer which may include but are not limited to remuneration to the County under N.R.S. 533.438, additional mitigation or planning requirements and regulation under N.R.S. 533.4385

WR.2 The County shall coordinate with existing City, municipal and quasi municipal water entities, major water users and water resource groups within the County to:

a. Monitor new appropriations filed within the County

b. File protests on water right appropriations in over appropriated hydrographic basins within the County.

c. Monitor and collect water use data within the County.

WR.3 The County shall identify staff time or establish cooperative relationships to conduct water right monitoring.

WR.4 Pershing County shall support and encourage NDWR to achieve maximum sustainable beneficial use of water rights within each basin and the County by:

a. Designating hydrographic basins adjacent to designated hydrographic basins, where appropriate. This will provide the NDWR more options for monitoring and managing water resources.

b. Supporting the adjudication of surface waters in basins within the County to better manage groundwater pumping for supplemental irrigation within the Humboldt River Regional Basin.

c. Encouraging all water users within the County to file Proofs of Appropriation on historical surface water sources prior to the 2027 sunset date for filing of proofs established by SB270.

WR. 5 The County shall review all water right applications within the County to assure that Proposed Withdrawals:

a. Do not adversely or substantially affect ground water levels within the basin of the application.

b. Are not for the purpose of exporting water from the County, except where water use would stay within the Basin of withdrawal.

c. Are consistent with Water Resource Plan and general development code requirements.

1.2 WATER PLANNING POLICIES

WP1. The County shall support water users and NDWR in developing Groundwater Management Plans (GMP) for hydrographic Basins within the County.

WP2. The County shall support establishment of conjunctive use management of the water resource including conjunctive management of the Humboldt River Decreed Water Rights.

WP3. The County shall support and work with entities within the Humboldt River Watershed including the Humboldt River Basin Water Authority, the Nevada Farm Bureau, Central Nevada Regional Water Authority, University of Nevada Cooperative Extension, municipalities and others to develop regional water resource planning to promote responsible water usage and long-term water system stability including but not limited to conjunctive use management, and other means and methods that will eliminate detrimental impacts on Humboldt River flows by ground water withdrawals.

WP4. The County shall continue to support and evaluate Pershing County Development Codes to prevent degradation of the water resources that the County relies on for water supply.

WP5. The County shall support LMWD evaluation of all projects that have not been in operation for the previous two years or show increased water use based on a five-year running average in basins 72, 73 and 73A. An undertaking that involves the use of permitted water rights as administered under NRS 533 is defined as a project and would not be limited to agriculture, mining, residential, quasi-municipal, power generation or industrial use. The policy is to be enacted as an ordinance and include the following:

Approval by the Pershing County Commissioners of a project requiring water use, as defined above by the Lovelock Meadows Water District Board, requires a finding that subsections (1) through (4) are true:

(1) Consistency. The proposed use is consistent with the action programs, policies, standards and maps of the Master Plan and the applicable area plan;

(2) Improvements. Adequate utilities, roadway improvements, sanitation, water resources, water distribution, drainage, and other necessary facilities have been provided, the proposed improvements are properly related to existing and proposed roadways, and an adequate public facilities determination has been made;

(3) Site Suitability. The site is physically suitable for the type of development and for the intensity of development; and

(4) Issuance Not Detrimental. Issuance of the permit will not be significantly detrimental to the public health, safety or welfare; injurious to the property or improvements of adjacent properties; or detrimental to the character of the surrounding area.

WP6. The County and the public water systems within County shall create a Community Source Water Protection Plan under the Source Water Protection Program.

WP7. The County shall support restrictions that will prevent high density septic systems by following policies for septic system density that result in septic density less than the Bureau of Water Pollution Controls policies of 72 systems per square mile for the Lovelock basin. The County shall recommend connection to a wastewater system as the preferred option and if that connection to a wastewater system is not feasible that a denitrifying septic system will be required.

WP8. The County shall determine whether additional study is needed to confirm or support the new Perennial Yield determination made by State Engineer Ruling 6299 for groundwater basin 73, Lovelock Valley.

WP9. The County may create a Pershing County Water Board or identify another entity or group to assist with Humboldt River management, conservation programs, special use permitting, creation of Groundwater Management Plans, or other programs in groundwater basins within the County.

1.3 DEVELOPMENT POLICIES

D.1 The County shall not allow development that could affect water quality or quantity of Source Water Protection Areas (SWPA) for municipal water supplies and other critical wetland and riparian areas.

D.2 The County shall require, to the maximum extent practical, new residential water facilities be integrated into existing water systems and meet all Development Codes for water supply standards (see Pershing County Code 17.516).

D.3 The County shall discourage the expansion of LMWD's current water system boundaries in efforts to support extensive infrastructure already constructed.

D.4 The County shall encourage development only where infrastructure exists, or where funding is available for proposed new infrastructure to deliver water from an existing centralized water supply system, to provide greater source water protection.

a. Development guidance may include establishing preferred annexation areas or other regulatory methods decided by the County and incorporated by the County Development Code.

D.5 The County shall require that all land use plans include projections of water demand to support future land use and economic development need, and in compliance with County Development Codes.

D.6 The County shall support and encourage technologies that make the most efficient use of available water by the County and other water users within the County.

D.7 County shall require water rights be dedicated to a water service provider, by the developer, prior to issuance of a will-serve letter by a water provider, and in conjunction with the County Development Code (17.516.25).

a. County shall require water rights be Relinquished for domestic well drilling.

b. A Relinquishment process requires these water rights be reviewed by NDWR to determine their standing, financial encumbrance, and other factors before approval.

D.8 Developers shall pay for and construct water facilities to serve their developments, and the facilities may be dedicated to the County or water system to own and operate. The water rights for the development shall be provided by the developer and dedicated to the County or municipal water system.

D.9 The County shall require proposals for development or land use (e.g., a subdivision or energy generation) to include accurate projections of water demand, identify the proposed source of supply, and include the process, action, and compensation to mitigate current or future detrimental effects. The developer should bear the cost of preparing these plans.

D.10 The County shall encourage water supply planning and development that does not adversely impact adjacent water users or other existing uses of water.

D.11 The County may develop special use permitting for water uses which address potential future effects on water quality, quantity, and existing users.

1.4 ECONOMIC POLICIES:

E.3 The County may develop special use permitting for mining operations, in conjunction with zoning or otherwise, requiring additional water dedications or relinquishments, mitigation or reclamation plans, or limiting dewatering activities.

E.4 The County may establish preferred or best practices and encourage efficient use of water resources in mining operations.

E.5 The County shall encourage flexibility in agricultural uses such as efficient irrigation management practices and augmentation plans.

E.6 The County shall continue to support the agricultural history and nature of the area though the Agriculture Preservation District and may establish other water resource related protection through zoning and development code establishment.

Conservation and Resource Protection Policies:

CP.1 The County shall work with and support Bureau of Land Management, Bureau of Reclamation, Pershing County Water Conservation District, the Central Nevada Regional Water Authority, Big Meadow Conservation District and other regional groups to establish conservation and best management practices for a regional water resource.

CP.2 The County shall encourage protection of water sources, e.g., springs, streams, for potential recreation by the County and other water users particularly within designated basins and specifically basins 72, 73 and 73A.

CP.3 The County shall support development of a voluntary reduction (i.e. 10%, 20%) of outside water usage during times of prolonged drought, or reduced precipitation.

CP.4 The County shall establish a budget for water conservation programs including incentive and mitigation programs and education materials.

CP.5 The County shall support a conservation education program, development of water watchers' procedures, and landscape codes for water conservation.

Long Term Planning and Monitoring:

LP.1 The County shall encourage action to address over-appropriation by:

a. Support water right exchanges and leasing programs within the County to provide greater flexibility of water usage during times of reduced precipitation. This may be limited to water rights filed prior to designation orders in each Basin.

b. Encourage and support consumptive use studies for all water systems within the County to effectively maximize usage of existing water right Permits.

LP.2 The County shall monitor federal water use policies which may affect the Humboldt River Basin and Rye Patch Reservoir.

LP.3 The County shall encourage surface water protection.

LP.4 The County shall participate in Humboldt River Basin Planning and support establishing conjunctive use management policies.

LP.5 The County shall address expansion of existing water systems and system infrastructure.

LP.6 The County shall support the creation of water reuse and effluent planning in water systems by:

a. Encouraging the development of treated effluent water re-use capacity and demand including obtaining secondary water rights, and

b. Supporting establishing infrastructure and secondary water uses within the County.

LP.7 The County shall encourage groundwater users to create GMPs to promote participation and input from stakeholders in the County.

2.0 REGULATORY FRAMEWORK

The County must take an active role regarding competing water rights so that sufficient water resources are available to the community. A Water Resource Plan assists the State Engineer's office with understanding the needs and concerns of the County.

The legal and regulatory framework governing water resource use and development the relationship between this plan and other planning documents are summarized herein. The major local, County, State and Federal laws that must be taken into consideration are briefly identified and discussed. A more comprehensive overview of the regulatory framework governing issues related to water resources is provided in the Nevada State Water Plan, Part 1, Section 7.

2.1 NEVADA STATUTORY REQUIREMENTS

Nevada law governs the administration of the waters of the State of Nevada. Nevada water law is rooted in the doctrines of prior appropriation and beneficial use. Beneficial use is the basis, the measure and the limit of the right to the use of the water. Prior appropriation, or "first in time, first in right" grants priority standing to senior water rights in times of shortage. This concept aims to protect senior water users, while allowing the possible allocation of water for new uses.

The Nevada Department of Conservation and Natural Resources is the branch of State government responsible for management of water resources and the Division of Water Resources, directed by the Nevada State Engineer, is responsible for the allocation of the public waters of the State, administrating the law, and resolving disputes. The State Engineer's actions and decisions are bound by law and it's implementing regulations as shown in Table 1 of this Plan.

All waters in Nevada belong to the public and are managed by the State of Nevada in accordance with the provisions of Nevada's water law (NRS Chapters 533 and 534). The Nevada State Engineer determines the limit and extent of water rights including the quantity of appropriative right and any conditions that must be met for the water to be placed to a beneficial use.

In approving or denying a water right application, the State Engineer must consider the following six criteria (NRS §533.370):

1) Whether unappropriated water is available from the proposed source of supply

2) Whether the proposed use or change will conflict with existing water rights or with protectable interest in existing domestic wells as set forth in NRS §533.024

3) If the proposed water use threatens to prove detrimental to public interest

4) Whether the proposed use or change, if within an irrigation district, not adversely affect the cost of water for other holders of water rights in the district or lessen the efficiency of the district in its delivery or use of water

5) Whether the applicant provides proof satisfactory to the State Engineer of the applicant's intention, in good faith to construct any work necessary to apply the water to the intended beneficial use with reasonable diligence

6) Whether the proposed project is feasible and not filed for speculative purposes, and where the applicant has the financial ability and reasonable expectation to construct the work and apply the water to the intended beneficial use with reasonable diligence.

In determining whether an application for an interbasin transfer of ground water must be rejected pursuant to the section, the state engineer shall consider: NRS §533.370:

a) Whether the applicant has justified the need to import the water from another basin;

b) If the State Engineer determines that a plan for conservation of water is advisable for the basin into which the water is to be imported, whether the applicant has demonstrated that such a plan has been adopted and is being effectively carried out;

c) Whether the proposed action is environmentally sound as it relates to the basin from which the water is exported;

d) Whether the proposed action is an appropriate long-term use which will not unduly limit the future growth and development in the basin from which the water is exported; and

e) Any other factor the state engineer determines to be relevant.

If a water right Permit is granted by the State Engineer, one of the conditions of the permit's approval, is a requirement that a Proof of Completion of the work be filed. This affidavit provides information on the well construction, metering and other information as requested by the State Engineer. A water right permit can be further perfected by Certification. To Certificate a Permitted water right, Proof of Beneficial use must be shown. A water permit issued by the State Engineer is limited to the amount that can be applied to beneficial use. The Proof of Beneficial Use indicates the amount of water placed to beneficial use. Once the Proof of Beneficial Use application has been filed and accepted, additional water cannot be used unless additional water rights are appropriated or purchased. These requirements must be met to keep water rights in good standing.

2.1.1 Legislative Update

The 79th Legislative Session was an active year for the Nevada Legislature. Over 10 bills related to water resources were passed. Several changes directly impact all water right owners, including Pershing County. Senate Bill 47 included various additions as well as amendments to existing law. This Bill declared it a policy of the State to conjunctively manage the appropriation, use and administration of all waters in the State, regardless of the water source. Assembly Bill 138 makes it allowable to capture precipitation from rooftops of single family homes for non-potable domestic use, with no volume limit. Senate Bill 270 created a sunset date for the filing of all historical, or vested proofs of surface water rights, by December 31, 2027. As Pershing County includes Humboldt River Decree Water, it is important to note that Senate Bill 513, a budget bill, increased the assessment cap on Humboldt River Decree water users. A summary of the water related bills passed in the 79th Session is attached in the appendices and full versions are available at https://www.leg.state.nv.us.

2.2 WATER RIGHTS

Water rights are the mechanism for use and ownership of water resources in Nevada. The water rights appropriated within Pershing County are wide ranging in manner of use, source and volume. A snapshot of selected water right holders in the County at the time of this Plan is presented below to provide background on the current and future water use within the County. Domestic and commercial uses within Imlay, Lovelock and Humboldt River Ranches are discussed, as well as surface water held by the Pershing County Water Conservation District. See the table of Water Right Inventories in the Appendix 4.

2.2.1 Pershing County

Pershing County owns water rights in Hydrographic Basins 71, 72, 73A and 129. Water rights are for various purposes including municipal, domestic, power and irrigation, and include both surface water and ground water sources.

Pershing County also owns the water rights that support the town of Imlay. Water rights in basin 72, the Imlay Area, are surface water rights that support a near surface infiltration well which serves as the water source for the town of Imlay. Permit related due dates with the Division of Water Resources must be met to maintain the good standing of these water rights.

Other water rights owned by Pershing County include a vested surface water rights for industrial use, and a Decreed stream right for irrigation at the County Youth Center. These Water rights are in good standing at the time of this Plan version. Pershing County also owns two permits in Basin 73A, the Oreana Subarea, for quasi-municipal use for a total of 40 acre-feet annually. These Permits have not yet been Certificated, and as such, their good standing must be maintained by filing extensions of time with DWR for Proof of Completion and Proof of Beneficial Use.

2.2.2 Pershing County Water Conservation District

In addition to managing Decreed water rights in Rye Patch Reservoir, Pershing County Water Conservation District (PCWCD) owns surface water Permits for use of the flood waters of the Humboldt River. Two of the Permits support Rye Patch reservoir and the third permit is for use of existing waters for power generation.

2.2.3 Lovelock Meadows Water District (LMWD)

Lovelock Meadows Water District owns water rights in basins 73 and 73A. Over-pumpage in hydrographic basin 73 will eventually impact basin 73A, thus it is critical that the LMWD prioritize protecting water sources that meet Maximum Contaminant Levels (MCLs) and have sources of recharge, to supply sufficient good-quality water for the community into the future.

2.2.4 Humboldt River Ranches

The Humboldt River Ranch Subdivision relinquished water rights in Basin 73A for the creation of the subdivision. If full development is realized, the Subdivision has domestic well relinquishments to support 2,144 domestic wells.

2.3 WATER PLANNING

The Division of Water Planning was created by legislation in 1977 and, after completion of the mandated State Water Plan in 1999, was incorporated into the Division of Water Resources in 2000. With the creation of the Water Planning Section as part of the Division of Water Resources by the legislature in 2005, the NDWR is now responsible for water management and planning, conservation plans, and planning assistance to local governments. Prior to 2000 the State Water Planner administered community assistance and flood mitigation assistance under the national Flood Insurance Program and the Small Community Grant Program.

In 1999, the Nevada Division of Water Planning issued the Nevada State Water Plan. The State Water Plan provides information on the water resources and their use in the County. Thus, the State Water Plan serves as a useful framework for the more detailed information presented in this plan. The State Water Plan specifically addresses the need for local water planning and encourages that this planning be done at the basin and watershed level. The State Water Plan was developed over a five-year period to serve as a guide to the development, management and use of Nevada's water resources. The State Water Plan made many recommendations concerning water resource issues. Many of the issues identified in the State Water Plan are reiterated in the appropriate sections of this plan.

Many local and state entities have statutory authorities related to water use, management, protection and development. Some of the authorities are summarized in Tables 1 and 2. These tables are from the Nevada State Water Plan (1999).

It is the policy of County to comply fully with Nevada water law and its implementing regulations, to encourage business and industry to comply fully with applicable regulations, and to foster a spirit of cooperation between the regulatory agencies and all the stakeholders in the County, active water resources and proposed future water resources. Sound long-term planning and management of the development and use of water resources is in the best interest of Pershing County and the State.

2.3.1 Department of Environmental Protection and Bureau of Safe Drinking Water

The Bureau of Safe Drinking Water (BSDW), within the Nevada Department Environmental Protection (NDEP), provides policies and enforces regulations which affect Public Drinking Water Systems. The Integrated Source Water Protection Program falls under the NDEP and BSDW. Elements of the Source Water Protection Program include delineating the wellhead protection area (WHPA), identifying potential pollution sources within the WHPA, defining constraints on setting of new wells, contingency planning and emergency response, and defining roles of state and local governments and water purveyors are administered by the BSDW. Pershing County and the public water systems within County are encouraged to create a Community Source Water Protection Plan under the Source Water Protection Program.

2.3.2 Bureau of Water Pollution Control

The Bureau of Water Pollution Control within the State Department Environmental Protection provides policies and enforces regulations which include policies for septic systems. The Bureau policy for Pershing County is for no more than 72 septic systems per square mile (1 septic systems / 9 acres) within hydrographic basin 73. The Bureau Memorandum dated January 28, 1991 and Attachment 1 provides the rational for the septic density determination. Pollution and significant degradation of water quality from residential septic systems has become an increasingly important problem throughout Nevada. Since the Bureau Policy was established the effects of other pollutants from septic systems including pharmaceutical

have been documented. In addition, the methodology for calculating septic density may overestimate septic density. Therefore, the Bureau Policy should not be considered adequate and limiting/eliminating septic system impacts should be pursued by the County.

Table 1. State Authority

Category	Agency	Program	Authority (NRS)
Water Supply and Allocation	State Engineer's Office (Division of Water Resources)	Water Right Adjudication and Appropriation	533
		Groundwater Regulation	534
		Geothermal Resources	534A
	Water Planning Section	Small Community Grant Program	540
		Conservation Plans	540.121 - 540.151
	Division of Environmental Protection	Small Community Grant Program	349.980 - 349.987
	Public Utilities Commission	Regulation of Public Utilities	704.001 - 704.960
		Utility Environmental Protection Act	704.001 - 704.960
		Conservation Plans	704.662 - 704.6624
Water Quality	Division of Environmental Protection	Water Pollution Control	445A.300 - 445.730 519A.010 - 519A.280
		Clean Water Act	
		State Groundwater Permit	
		Safe Drinking Water Act	
		Mining Reclamation	
	Division of Agriculture	Control of Pesticides	586.010 - 586.520
	Bureau of Health Protection Services, Health Division	Safe Drinking Water Act	445A.800 - 445A.955
		Control of Septic Systems	444.65
Environment and Recreation	Division of Wildlife	Boating Safety	488, 501.243
		Wildlife Management and Propagation	504.140 - 504.490
		Protection of Threatened Species	503.584
	Natural Heritage Program	Threatened and Endangered Species Database	527.260 - 527.300
	Division of Parks	Park Facilities	407.011 - 407.250
	Division of Forestry	Protection and Preservation of Timbered Lands, Trees and Flora	527.010 - 527.330
		Forest Practice and Reforestation	528.010 - 528.120
Flood Management	Water Planning Section	National Flood Insurance Program	540
Navigation	Division of Water Resources	Dam Safety	535.005 - 535.110

Interstate Waters		Ditches,	536
Compacts		Navigable	537
Other		Interstate	538
		Channel Clearance	532.220 - 532.230
	Emergency Management	Hazard Mitigation Grant	414
	Division of Forestry	Forest/Vegetative Cover for Flood Prevention	472.043
	Department of Conservation and Natural Resources	Flood Control Loans	543.090 - 543.140
Water Planning and Management	Water Planning Section	State Water Plan	540.101
		Planning Assistance	540.011 - 540.151

Table 2. Local Authority

Category	Agency	Program	Authority (NRS)
Water Supply	Cities	Water Facilities	266.285
	Counties	Water Facilities	244.366
	General Improvement SSMWCs	Water Facilities	318.144
	Irrigation SSMWCs	Irrigation	539.010 - 539.783
	Water Conservancy SSMWCs	Water Supply	541.010 - 541.420
Water Quality	Cities	Sewer Facilities	266.285
	Counties	Sewer Facilities	244.366
	General Improvement SSMWCs	Sewer Facilities	318.14
Environmental Uses	Conservation SSMWCs	Conservation of Natural Resources	548.010 - 548.550
Flood Management	Flood Control SSMWCs	Flood Control	543.170 - 543.830
	Water Conservancy SSMWCs	Flood Control and Drainage	541.010 - 541.420
Water Planning and Management	Cities	Master Plan	278.150 - 278.230
	Counties	Regional Plan	278.0272 - 278.029

2.4 FEDERAL ACTS AND PLANS

Federal law and policy establish the standards for clean water, controlling growth in flood plains, and protecting the environment. While each of these goals is beneficial and consistent with long- term goals and values held by Pershing County, the immediate impact of regulation can be limiting. The *Safe Drinking Water Act* and its amendments require certain protections for sources of drinking water and the *Clean Water Act* establishes standards for surface and ground water protection.

The *National Environmental Policy Act* and *Federal Land Policy Management Act* determine how federal land management agencies can allow the lands they administer to be used. The *Endangered Species Act* protects certain species of plants, insects, fish, and birds that are native to Pershing County. Some of the provisions of these acts impose mandates that can be costly for the County to implement, often requiring reductions or eliminating other non-mandated programs that benefit the citizens of the area. Other provisions may hinder development by imposing costly controls on private industry wishing to use federal lands for mining exploration, mining activity, or other business or industrial uses.

2.4.1 Clean Water Act

The Clean Water Act is the primary federal law enacted to prevent pollution to surface waters. The act was established to "restore the chemical, physical, and biological integrity of the Nation's waters." It requires that states establish standards for surface water quality, provides federal funding for sewage treatment plants, and sets goals of zero toxic discharges to, and realization of "fishable" and "swimmable," surface waters. The Clean Water Act also mandates a regulatory system for reporting of hazardous spills to surface waters, and a wetlands preservation program. The Nevada Division of Environmental Protection (NDEP) has been delegated the authority to implement programs of the Clean Water Act. Enforceable provisions of the Clean Water Act include permitting programs (National Pollution Discharge Elimination System), technology-based effluent standards for point sources of pollution, and water quality standards. NDEP also implements federally mandated programs for the management of non-point sources of pollution, and a construction grants program to build or upgrade sewage systems. The State Environmental Commission is responsible for developing water quality standards for specific water bodies within the State, and for developing a handbook of best management practices to control pollution from diffuse sources.

The State of Nevada has adopted regulations that define State programs to implement the provisions of the Clean Water Act and Nevada Water Pollution Control laws. Nevada's Water Pollution Control laws, contained in Chapter 445A of the Nevada Revised Statutes, establish several non-federal water pollution control programs. These programs, implemented by the NDEP, include programs for issuing Water Pollution Control Permits with zero-discharge performance standards, and State Ground Water Permits for infiltration basins, land application of treated effluents, large septic systems, and industrial facilities.

It is the policy of County to cooperate and comply fully with state and federal regulatory programs of the Clean Water Act and the Nevada Water Pollution Control Laws, to encourage business and industry to comply fully with applicable regulations, and to ensure that the County 's source water protection areas are clean and free from pollution. Additionally, the County supports the use of the State Environmental Commission's Handbook of Best Management Practices for all activities that have the potential to degrade source water areas.

2.4.2 Safe Drinking Water Act

The *Safe Drinking Water Act*, an amendment to the *Public Health Service Act*, is the primary federal law enacted to protect underground sources of drinking water from pollution, and to ensure the quality of drinking water delivered at the tap. *The Safe Drinking Water Act* established a program for setting primary and secondary standards for drinking water; a permit program for injection wells, and also mandated a program of wellhead protection practices. The *Nevada Water Pollution Control Act* authorizes the Bureau of Safe Drinking Water to promulgate standards for tap and bottled drinking water.

Authority to implement the various programs of the *Safe Drinking Water Act* has been granted by the EPA to the Nevada Bureau of Safe Drinking Water (BSDW) of the NDEP. The Bureau of Safe Drinking Water has promulgated standards for over 100 contaminants in drinking water, consistent with federal standards. BSDW implements permitting programs for public suppliers of tap and bottled water, which include routine sampling and monitoring of public water supplies to demonstrate compliance with drinking water standards. NDEP also implements a permit program for domestic septic systems regulated through the County to ensure underground water supplies are adequately protected. Industrial wastewater treatment systems, and enhanced mineral and hydrocarbon recovery injection wells, are permitted through the NDEP.

Integrated Source Water Protection Program, a wellhead protection program, is implemented by NDEP in cooperation with local water supply systems. Local governments are encouraged to support and participate in source water and wellhead protection programs. Pershing County shall evaluate participation in this voluntary and State-funded assessment program on the County level, and support water systems in the area that participate.

2.4.3 Sole Source Aquifer Protection Program

EPA defines a sole or principal source aquifer as an aquifer that supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer. These areas may have no alternative drinking water source(s) that could physically, legally and economically supply all those who depend on the aquifer for drinking water. For convenience, all designated sole or principal source aquifers are referred to as "sole source aquifers" (SSAs).

SSA designation is one tool to protect drinking water supplies in areas where there are few or no alternative sources to the ground water resource and where, if contamination occurred, using an alternative source would be extremely expensive. The designation protects an area's ground water resource by requiring EPA to review certain proposed projects within the designated area. All proposed projects receiving federal funds are subject to review to ensure that they do not endanger the water source.

The SSA protection program is authorized by section 1424(e) of the Safe Drinking Water Act of 1974 (Public Law 93-523, 42 U.S.C. 300 et seq.). It states the following:

"If the Administrator determines, on his own initiative or upon petition, that an area has an aquifer which is the sole or principal drinking water source for the area and which, if contaminated, would create a significant hazard to public health, he shall publish notice of that determination in the Federal Register. After the publication of any such notice, no commitment for federal financial assistance (through a grant, contract, loan

guarantee, or otherwise) may be entered into for any project which the Administrator determines may contaminate such aquifer through a recharge zone so as to create a significant hazard to public health, but a commitment for federal assistance may, if authorized under another provision of law, be entered into plan or design the project to assure that it will not so contaminate the aquifer."

It is the policy of County to cooperate and comply fully with state and federal regulatory programs of the Safe Drinking Water Act as implemented through the Nevada Water Pollution Control Laws. County encourages business and industry to comply fully with applicable regulations, to ensure that the County's public drinking water supplies are clean and free from contamination.

2.4.4 Endangered Species Act

The purpose of the *Endangered Species Act* is to ensure that any action, administrative or real, does not unduly jeopardize the continued existence of an endangered or threatened species or cause the destruction or adverse modification of a critical habitat. With respect to the water resources of Pershing County the *Endangered Species Act* provides protection not only to threatened or endangered species, but also to the water resources that support the habitat for these, and other sensitive species. There are several threatened and endangered bird species, and a fish species that has been relocated to protect it from extinction, as well as sensitive species and species of concern. The State of Nevada has several statutes governing the protection of imperiled species that are administrated by the Division of Wildlife. The State has a listing of sensitive plant and wildlife species that have been designated as State-protected species.

It is the policy of County to cooperate and comply fully with the Endangered Species Act and all State laws and regulations governing wildlife. Pershing County encourages all its citizens, visitors, and businesses to comply fully with these laws and regulations.

2.4.5 Regional Plans

Land overlying Pershing County and LMWD's ground water resources and recharge areas are under the stewardship of federal and state agencies; these agencies documents were important in formulating the issues and management practices contained in this Plan. The federal agencies that have stewardship over the areas overlying water resources and recharge areas for the water resources have prepared several plans that must be taken into consideration in water resources planning. Federal agencies include:

- U.S. Forest Service
- Bureau of Land Management
- Bureau of Reclamation
- U.S. Department of Agriculture

Regional plans are also being developed by local organizations including the Humboldt River Basin Water Authority. Pershing County's engagement, participation and cooperation with regional efforts will be paramount to regional water planning and conjunctive use management particularly related to the Humboldt River Corridor.

2.4.6 County Development Requirements

Pershing County has stewardship over areas overlying water resources and recharge areas for water resources. County management of these areas is of critical importance to prevent overuse or degradation of limited water resources. Due to the lack of code development or enforcement in developed areas and the rural nature of Pershing County, the County's policies and regulations become even more important to sustainable development. The Pershing County Master Plan and Pershing County Development Code are existing documents that can be used as a mechanism for management, conservation, protection and use of water resources.

Pershing County Development Code

Pershing County has incorporated into the County Development Code ordinances and provisions to protect and manage water resources including land use planning, a moratorium on land use changes, an agricultural preservation district, special use permitting for specific activities and water supply standards.

An example of a provision in the development code affecting water resources is the County moratorium on land use changes has allowed one amendment for the development of Humboldt River Ranches. The moratorium remains in place with provisions for reassessment. The moratorium on land use changes was incorporated though Pershing County Bill No. 251, Ordinance No. 251 amended Pershing County Development Code Chapter 17.712 "Moratorium on land use designation changes for certain areas of County" and relates to the division of large parcels in certain areas of Pershing County; Bill No. 251 is an amendment to Ordinance 223. Selected provisions and text from the Code are provided in the Appendices.

3.0 ASSESSMENT

Many factors affect water resources and must be considered in evaluating water resources. The elevation of mountain ranges, rock type and faulting are important for the recharge of groundwater. Based on these three criteria the Humboldt Range provides the only viable source for groundwater recharge in Pershing County due to snow melt and permeable materials with the ability to store and transmit water without degrading water quality.

This chapter contains a summary of the surface and ground water resources of Pershing County and information on the topography, climate, surface water and ground water characteristics.

3.1 TOPOGRAPHY

The Pershing County Master Plan Document includes an overview of topographic information for the County. One of the most important basins in the County in terms of residential water resources and potential population growth is the Lovelock Valley Hydrographic Basin 73.

The Lovelock Hydrographic Basin lies in a complex zone of geologic faults between the northeast trending Humboldt Range in the northeast portion of hydrographic basin 73and the northeast trending Trinity Range on the western side of the basin. Total relief in the basin is more than 5,000 feet, ranging from greater than 9,000 feet above mean sea level to approximately 3,900 feet at the Humboldt Sink.

3.2 CLIMATE

The general climate of the water resources within the County is arid to semi-arid. In the upper portions of the mountain ranges, sub humid continental conditions occur, characterized by cold winters and moderate precipitation. The intervening valleys in the region exhibit mid-latitude steppe and mid-latitude desert conditions characterized by cold winters, warm summers, and semiarid to arid conditions. The lowest valley floors include dry lake playas and have a desert climate with warm summers with typically arid conditions except during years with above average precipitation.

Precipitation during a year typically has a bi-modal distribution with most precipitation occurring during either a winter rainy season or during the late summer months. During the winter months, high pressure conditions predominate resulting in west-to-east trending winds and precipitation patterns. During the summer months, low pressure conditions predominate, resulting in southwest-to-northeast trending precipitation patterns. Winter storm events tend to last longer and produce more precipitation than the summer events which tend to produce widely scattered showers of short duration. Greater than 100 days between precipitation events is common within the area.

The average potential evaporation rate exceeds the average annual precipitation. On an annual basis, as much as 99% of the total annual precipitation in the service and water resource areas is lost through evaporation and transpiration; less than 1 percent recharges the groundwater regime.

3.3 SURFACE WATER

Within Pershing County, reservoirs and surface water with significant annual flows exist. These surface water flows are important sources of irrigation water in agricultural areas, and domestic water for the town of Imlay which obtains residential water through a near-surface infiltration well. Ground water that discharges to the surface at springs is also an important surface water resource. Springs in the area have been developed for wildlife. Wildlife depend on the surface water flows and springs in the County. There are multiple creeks that drain the upland areas. These streams derive their flow from three main sources: spring discharges, groundwater discharge along the stream channel, and snow melt.

Streams in the area provide limited aquatic habitat for several types of fishes. The streams also support isolated riparian and wetland areas. The riparian areas of basin water resource areas provide not only habitat for fish or other aquatic species, they provide nesting for many bird species.

The source water quality of surface water is presumably in compliance with the 1972 Clean Water Act based on limited potential impact to source water areas. Discharges that result in surface water flows locally exceed Maximum Contaminant Levels (MCLs) for contaminants as defined by federal and state authorities. As surface water is subject to natural processes and impacts from human activities the water quality degrades with contaminant concentrations that exceed MCLs. Surface water contamination within the basin could affect groundwater quality including impacts from irrigation, grazing, mining transportation and residential and commercial activities.

3.4 SPRINGS

The area has many springs that could support ranching and wildlife management. Water resources derived from springs are minor when compared to the entire water budget for a basin and result in significantly less than 0.1% of the total water budget. Springs occur wherever groundwater

intercepts the land surface and discharges water to the surface water regime. Springs may discharge from perched aquifers and are not representative of the regional groundwater.

3.5 GROUNDWATER

Pershing County's groundwater resources have been developed primarily for irrigation, mining and milling, and municipal purposes. Demand on groundwater resources has increased, in part reflecting the growth of the mining and agriculture economic sectors of the County. Concern over exporting water out of Pershing County through large-scale inter-basin transfers of water has been expressed. However, no significant sources of unutilized water of acceptable quality exist within or adjacent to the County or existing and proposed water resources. Because most of the surface and ground water resources within the County have already been over appropriated and over utilized the only remaining source of water that is available to support the future well-being of Communities within Pershing County, are the existing and utilized sources.

In this section, an overview of the groundwater resources of County is presented. This overview includes a description of the hydrology and sources of water, the quantity of water that is present, the quality of that water, the committed groundwater resources, and the issues associated with development and use of the groundwater resources.

3.5.1 Hydrogeology

With respect to their significance to groundwater, the hydrogeology that could be considered resource areas for the County may be grouped into three categories: 1) valley-fill deposits, comprising mixtures of gravel, sand, silt and clay that include the alluvial and playa deposits; 2) rocks units with low secondary permeability and poorer water quality; and 3) rocks units with secondary permeability and favorable water for municipal water supply. A summary of the geologic units present within the County is provided on the Nevada Bureau of Mines and Geology Bulletin 89, Geology and Mineral Resources of Pershing County, Nevada (see appendix). In general, the most significant bedrock aquifers are comprised of siliciclastic carbonates that can store and transport groundwater but are not regionally connected to other aquifers with sources of recharge.

The ability of the aquifer systems to store and transmit groundwater, and to yield water to wells, depends upon the type of aquifer and its characteristics. Typically, the alluvial deposits are more productive where they comprise coarse-grained gravels and sand deposits but exhibit low well yields in the playa areas where clay predominates. The bedrock aquifers generally depend on the degree of faulting and fracturing. The limestone and dolomite units, where fractured can provide significant production. Some geologic units have little or no productivity because of their fine-grained nature. These units include shale, quartzite, and granite. Where fractured, these units can produce low to moderate well yields but generally act as aquitards (units that tend to retard the movement of water horizontally and vertically between aquifers).

The distribution of geologic units and the relationships between aquifers and aquitards is quite variable because of the past geologic history of the area. The carbonate and other sedimentary rock units that were originally deposited as flat lying sediments on the ocean floor have since been faulted, folded, fractured, and in some instances, intruded by granitic rocks. Low-angle faults have resulted in older rocks being thrust over younger rocks while high-angle basin and range faults have resulted in significant offsets in geologic units. The intrusion of plutons has further disturbed the rocks and aquifers. The net result of this deformation is that the aquifers are not continuous and are broken into discrete compartments that are usually bounded either by fault zones or contacts between rocks with contrasting hydraulic properties. This compartmentalization is an important,

but poorly understood, aspect of the regional hydrologic conditions. The volcanic and siliciclastic carbonate aquifers are broken up both horizontally and vertically into individual compartments with significant potentiometric head differences.

Within the Lovelock Basin, the general quality of the groundwater in the Lovelock Meadows Water District service area is not suitable for municipal use without treatment. The total dissolved solids concentrations of groundwater throughout the Lovelock Valley typically exceed primary and secondary Maximum Contaminant Levels (MCLs). The total dissolved solids are elevated because of the natural process of salt buildup by evaporation in areas of shallow groundwater. Groundwater within the area of Lovelock would probably require treatment for arsenic and total dissolved solids (TDS) because the groundwater exceeds the MCL.

In summary, Pershing County and the Lovelock area has significant precipitation in the Humboldt Range that recharges the carbonate and alluvial aquifers. Demand for water would exceed the available resources if management structures do not prevent over use of the water resources.

3.5.2 Potential Future Water Resources for the Lovelock Area of Pershing County

The importance of water quality for the Lovelock area is paramount. The annual groundwater withdrawal in basin 73A since 1945 has removed groundwater from storage as is evidenced by the lowering of the water table. The well field has experienced an annual water level decline of 0.7 feet per year resulting in greater than 40 feet of cumulative drawdown. Water system improvements including reducing waterline leaks throughout the District's water system has resulted in stabilization of the water level in the Oreana well field aquifer because of the reduced production rates. As demand increases resume, the decline in water levels will resume without additional wells distributed in basin 73A. Without a greater distribution of the wells in the well field water level declines at the District's existing wells will result in:

- the need to drill new, deeper replacement wells;
- the installation of pumps and columns to pump from greater depths;
- increased pumping costs from increasing pumping requirements from lower water tables;
- irreversible land subsidence and collapse of aquifer storage; and
- degradation of the groundwater water quality.

These results will decrease the economic efficiency of the municipal water supply. In addition, local environmental impacts from over withdrawals will degrade spring flows and limit the ground water available to vegetation that will impact wildlife and indigenous vegetation within the hydrographic basin.

Oreana Subarea continues to be the most viable groundwater resource for further development and exploitation followed by basin 72 directly to the north of the Oreana Subarea. This is simply because the Humboldt Range provides sufficient elevation to receive annual recharge to the aquifer and the carbonate source rocks in the range contribute less chemical constituents, for example arsenic) to the groundwater that can exceed the MCL than the other adjacent mountain ranges and alluvial aquifers that contain greater chemical constituents. Development of an interim poor-quality water resource will remove funds that could have been used for further development of the Oreana Subarea well field and potentially jeopardize the existing water rights in the Oreana Subarea well field which are not certificated at this time.

Efforts to establish a redundant waterline or procedures to allow for an emergency repair of the Oreana Subarea water line should be considered, rather than connection of a poor-quality water resource for emergencies. The Bureau of Safe Drinking Water may not allow such a use of a well even if the annual average concentration such as arsenic to all connections remains below the MCL because of the potential to provide relatively high concentration of arsenic to the public.

Other potential water sources in the Lovelock area have been investigated and sampled and are either under the influence of high TDS water from the evaporative nature of the alluvial basin or the volcanic rocks generally associated with higher arsenic concentrations. Efforts have not identified a closer source of water that complies with MCLs. Although previous efforts did not identify a source, a source may still exist. However, the source would not have a recharge area of sufficient elevation to provide long term recharge. Therefore, future evaluations should focus on identifying water resources with significant recharge potential and establishing redundancy of the waterline from Oreana Area to Lovelock. The rock underlying the Humboldt Range provides significant storage capacity and the ability to transmit water because of the carbonate (limestone rock type) materials.

Due to the challenges the area faces in providing adequate water resources of sufficient quality, County should adopt policies that support sustainable development in population centers to meet current and future municipal and domestic demands, encourage the use and expansion of existing water systems and discourage the proliferation of individual septic systems.

3.5.3 Groundwater Basins

Water resources are managed by the Nevada Division of Water Resources (DWR) within defined hydrographic basins referred to as Administrative Groundwater Basins. Pershing County includes 19 (nineteen) hydrographic groundwater basins, either fully or in-part. This Plan quantifies water resources from previous studies and existing data from the Division of Water Resources. This Plan also addresses the quality of the groundwater resource.

Hydrographic basins are the basis for determining the amount of appropriated, available, and total groundwater resources in Nevada. The Perennial Yield of a basin is the amount of usable water of a groundwater reservoir that can be withdrawn and consumed economically each year for an indefinite period of time. NDWR has identified a Perennial Yield for each groundwater basin based on USGS studies and investigation. (State of Nevada, 1966) Perennial yield of a groundwater basin cannot exceed the natural recharge of the groundwater reserve. Many of the basins within Pershing County are over appropriated.

An overview of the Hydrographic Basins within Pershing County is presented in Table 3. Data tables for all basins within Pershing County obtained from DWR's website are in the appendices of this report. These tables are updated regularly by the Division of Water Resources.

Pershing County includes 19 (nineteen) hydrographic groundwater basins, 15 (fifteen) of which have been designated by the State Engineer as needing additional administrative regulation to effectively protect and manage the water resources. (NRS §534.030) The designated basin status allowed for additional management options including greater documentation of water withdrawals and water levels. Administrative regulations imposed in groundwater basins in Pershing County have included restrictions on new appropriations, available or preferred water uses available for appropriation, and curtailment orders restricting permitted water use. Additional regulatory steps available to NDWR include

designating a Critical Management Area (CMA) and requiring Groundwater Management Plans for a basin. More in-depth discussion of selected basins is presented below.

The borders of the administrative groundwater basins do not coincide with County, or even State borders. See Figure 1. Thirteen (13) of the 19 basins lying within Pershing County also cross into other counties. Desert Valley, Basin 31 lies in Pershing and Humboldt Counties. Buffalo Valley, Basin 131, lies in Pershing, Humboldt and Lander Counties. Both basins 31 and 131 are over-appropriated and have been designated by State Engineer as needing further regulation. Hydrographic Basin 24, the Hualapai Flat, is situated across Pershing, Washoe and Humboldt County borders. On August 29, 2003, the basin was designated, and new appropriations for irrigation uses were declared summarily denied by State Engineer Order 1170. The Perennial Yield of Hualapai Flat is 6,700 AFA and existing groundwater appropriations total 25,546.47 AFA, indicating over-appropriation by more than 18,000 AFA. The cross-border nature of the groundwater basins and their over appropriation underscores the importance of monitoring potential inter-basin transfers and determining their effect on Pershing County's water resources.

Another example of an over appropriated, cross-border basin is Grass Valley, Basin 71. Grass Valley basin is shared with Humboldt County and was designated as needing additional administrative regulation by the State Engineer in 1972. Basin 71 includes the town of Winnemucca, one of the population centers of Humboldt County. The perennial yield of Grass Valley basin is 13,000 AFA, and current appropriations total 38,215.09 AFA, showing over-appropriation by more than 25,000 AFA. In 2003, the basin was further restricted by State Engineer's Order 1171 summarily denying any new appropriations for irrigation use. Most of the water appropriated in Grass Valley basin is for irrigation use, with mining and milling and industrial uses coming in at a fraction of the total usage. In addition to groundwater quantity, consideration must be given to surface and groundwater water interactions, or conjunctive use, in Grass Valley and other basins within the Humboldt River Drainage area.

Basins 73, the Lovelock Valley and 73A, the Oreana Subarea are of paramount importance to Pershing County as the source of water resources for the Lovelock Meadows Water District. Lovelock is the largest population center in Pershing County. Both basins 73 and 73A have been designated by the State Engineer as needing further regulation.

Lovelock Valley Basin 73 has a perennial yield of 2,200 AFA. In 2014, State Engineer Ruling 6299 reduced the perennial yield of Basin 73 from 43,000 AFA to 2,200 AFA. Existing groundwater appropriations in Lovelock Valley total 11,265.69 AFA, showing over-appropriation by 9,065.69 AFA. More than 8,000 AFA has been appropriated for irrigation uses, and 464 AFA for municipal purposes. State Engineer Order 1253 on April 29, 2015, required totalizing meters on underground sources, with limited exceptions. The remaining water supplying the Lovelock area is sourced in basin 73, the Oreana Subarea.

Oreana Subarea, Basin 73A has a perennial yield of 2,000 AFA. Existing groundwater appropriations total 4,967.88 AFA, of which a full 3,928.31 AFA is for municipal and quasi-municipal purposes. Basin 73 was designated by State Engineer Order 369 on February 25, 1969. The State Engineer has issued additional curtailment orders declaring municipal use a preferred use and summarily denying all new appropriations for irrigation use. (SE Orders 370, and 1079)

Considering the over-appropriation of the groundwater basins within Pershing County, policies must be implemented by County that ensure adequate water resources exist in the future. Where groundwater pumpage is found to negatively impact the health of a hydrographic basin, policies the County should implement to encourage bringing groundwater basins back into balance include supporting NDWR efforts to: designate hydrographic basins adjacent to other over-appropriated basins, call for filings of Proof of Beneficial Use of existing appropriations, obtain Proofs

of Appropriation on historical surface rights by the sunset date and complete adjudications of surface waters within the County. County should also adopt non-regulatory policies encouraging more efficient water use in agriculture and industry, completion of consumptive use studies of current water users, and establishing water effluent re-use supply and demand. County should also support groundwater users to establish Groundwater Management Plans.

Basin No.	Basin Name	Designated Basin	Designation Order	Perennial Yield (AFA)	Committed AFA (9-18-17)
22	San Emidio Desert	Y	746	4600	7297.04
24	Hualapai Flat	Y	1172	6700	25,546.47
28	Black Rock Desert	Y	1229	30000	32,696.58
31	Desert Valley	Y	535	9000	38,352.22
65	Pumpernickel Valley	Y	1241	*72000	6,237.47
71	Grass Valley	Y	1171	13000	38,215.09
72	Imlay Area	Y	702	3000	6840.43
73	Lovelock Valley	Y	1253	2200	10,944.24
73A	Oreana Subarea	Y	1079	2000	4,967.88
78	Granite Springs Valley	N	N/A	4500	4,673.08
79	Kumiva Valley	N	N/A	500	1.5
80	Winnemucca Lake Valley	N	N/A	3300	305.85
101A	Carson Desert-Packard Valley	Y	716	710	1,021.64
128	Dixie Valley	Y	715	15000	15,594.45
129	Buena Vista Valley	Y	732	10000	23,961.37
130	Pleasant Valley	Y	715	2600	2,931.19

131	Buffalo Valley	Y	1281	8000	22,195.13
132	Jersey Valley	Y	715	250	279.87

*Basin 65 Perennial Yield total is combined: Basins 64, 65, 66

Table 3. Hydrographic Groundwater Basins within Pershing County

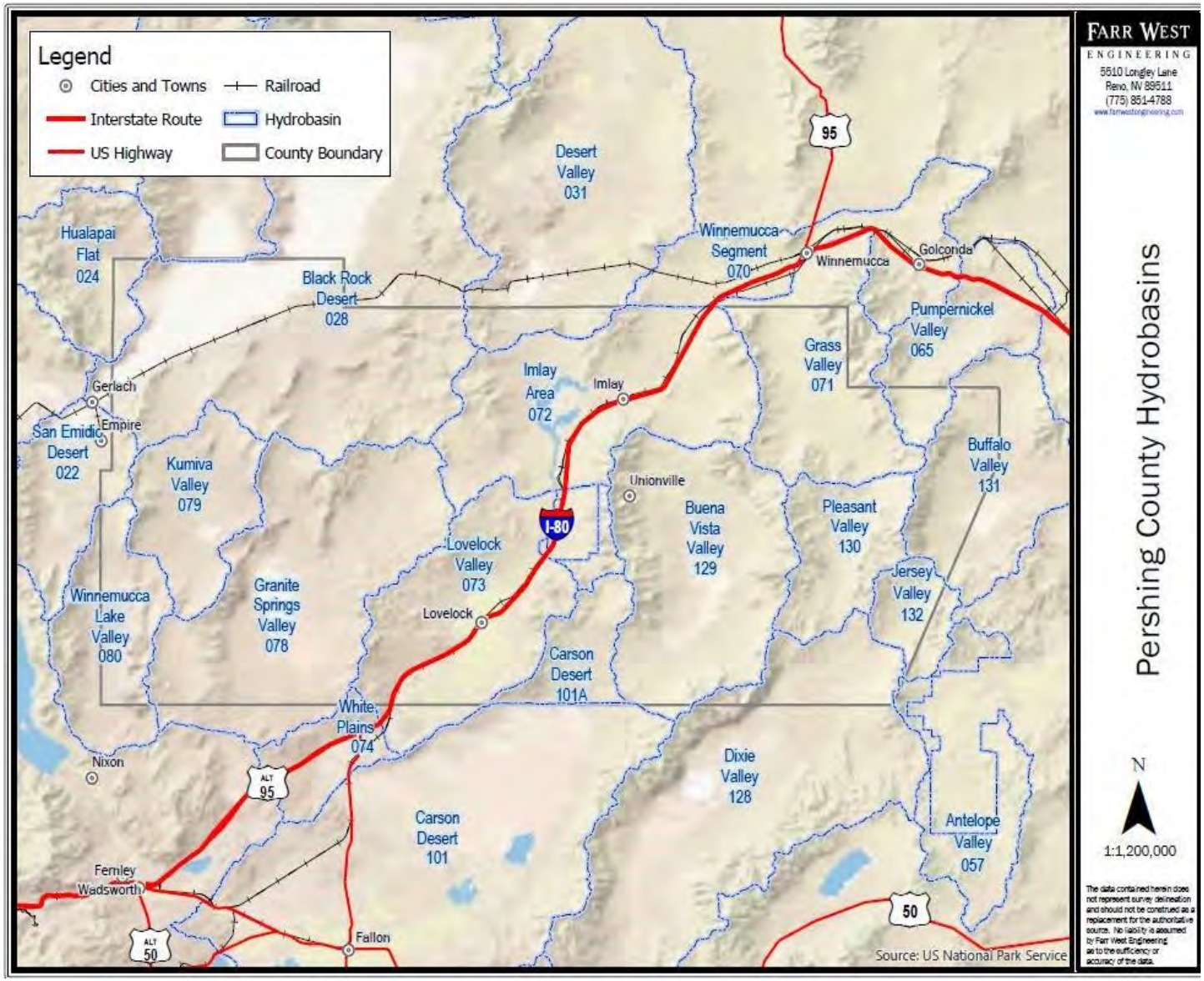


Figure 1. Hydrographic Basins within Pershing County

4.0 USE AND FORECASTED DEMAND

The major economic drivers in Pershing County are agriculture and mining. These activities require sufficient water resources for success. Water resources are also required to support municipal use and growth. Pershing County includes multiple smaller water systems and diverse stakeholders who may have conflicting economic interests. Beneficial uses for agriculture, mining, residential and federal lands is briefly discussed in this section.

Lovelock Meadows Water District is the largest public water system in Pershing County. LMWD has greater than 3,100 AFA of water rights in the Oreana Subarea basin and a current annual production of 1,275 AFA. Therefore, the water rights are sufficient to meet demand until 2050. However, maintain water rights with senior priority is key to long term water right management. Additional water resources are available to the County to meet a several factor increase in demand with minimal treatment by acquiring agricultural surface water rights and utilizing an induction well for production.

This section presents water use and historic production within the County and forecasts future demand to 2050. The data presented indicates that the water use in Pershing County could exceed the availability of water on an annual basis.

4.1 BENEFICIAL USES AND ECONOMIC DRIVERS

Water rights in Pershing County are allocated for various uses including municipal, domestic, power and irrigation. These activities require sufficient water resources for success. The major economic drivers in Pershing County are agriculture and mining. Figure 2 shows the permitted point of diversion of groundwater on file with the Division of Water Resources.

4.1.1 Agriculture

Agriculture is an important economic driver in Pershing County. Pershing County is one of the most important agricultural producing areas in the State. In 2016, The County is home to 154 farms for a total of 299,290 acres in farming production. The main crops are Alfalfa hay, alfalfa seed, and small grains. During Winter months sheep and cattle commonly graze dormant fields. The 2012 Nevada Census of Agriculture reports the market value of agricultural products sold from Pershing County that year was $62,751,000.00. The economic impact on the County is even greater. For the purposes of this plan, it is assumed that agricultural activities and their associated water use will continue at relatively constant levels through the year 2050.

Sufficient water resource availability is essential to maintain the agricultural economy in Pershing County. The Nevada Statewide Assessment of Groundwater Pumpage (2013) shows 46,564 acre-feet pumped in Pershing County for agricultural uses. Irrigation alone accounted for 86.7% of all groundwater pumpage in Pershing County in 2013. Stock watering accounted for another 1% of groundwater use in the County. Water resources for agriculture uses are applied at various rates and quantities depending on crop type, soil composition and evapotranspiration rates.

Water supplies for irrigation needs in the future are limited. Administrative and regulatory actions will continue to be implemented with the goal of bringing over-appropriated basins back into sustainable use levels. Administrative decisions by the Division of Water Resources in several basins within the County have declared that any new appropriations for irrigation uses will be denied.

Additional consideration must be made for surface water resources. Pershing County includes a large area of the Humboldt River Basin area which is the focus of community groups, regulators and conservation groups alike. Management of the Humboldt River region is moving toward conjunctive use to address groundwater and surface water interactions. Pershing County must consider the needs of its agricultural stakeholders in its policies and in this Plan.

The County shall support flexible and efficient irrigation management practices to ensure adequate water resources remain available during period of low precipitation, administrative curtailment, consideration of conjunctive use management and the creation of groundwater management plans. The County shall enact policies that encourage the creation of markets and demand for effluent reuse by irrigation and other uses. Water from mine dewatering operations could be used thereafter for irrigation purposes. The County shall continue to support its agricultural history and economy through zoning and Development Codes like creation of the Agricultural Preservation District.

4.1.2 Mining

For the purposes of this plan, it is assumed that mining activities and their associated water use will continue at relatively constant levels through the year 2050. Mining has been a volatile sector of the local economy. Fluctuations in limestone, lithium, gold, silver, copper and other minerals and material prices could create wide swings in population and employment. Over the next half-century, the pattern of population, employment, economic fortunes, and water use will likely change. While much uncertainty surrounds the political and technological forces that shape the mining industry, one important fact is certain; the area and adjoining areas has mineral resources, metal and non-metal, available to be mined. When market conditions, policy, and technology converge to produce a favorable climate for mining, the mineral resources in the area could be developed and mined.

Water supplies are used throughout mining and post-mining reclamation operations. The quantities of water required depend primarily on the type of operation, whether milling and a town sites are included, and the requirements for dewatering and reclamation. Mining operations may require hundreds to thousands of acre feet per year. Water supplies for a given mining project are usually required for temporary periods ranging from a few years to a few decades.

Water supplies in the area are limited in meeting the demand of future mining activities. As such activities are usually in remote locales and water development for mining operations involves the installation of water supply wells. The availability of water within the vicinity of any given mining property varies depending upon the local hydrologic conditions, water chemistry, and environmental constraint. As most new mining activities are expected to occur on federal lands, the appropriate environmental assessments and evaluations will be performed under the National Environmental Policy Act.

Historically, water availability has not been a binding constraint on the mining industry. In many areas of Nevada where reliable water supplies are absent, water has been conveyed via pipelines considerable distances to support mining and milling activities. Therefore, more abundant non-potable sources of water potentially could be utilized to support mining. Dewatering is still largely a technical issue although requirements for monitoring, treatment, and environmental mitigation now impose somewhat larger costs on these types of operations. The feasibility of the various alternatives for developing water for any given mining property can only be evaluated on a case-by-case basis.

The County shall continue to work with the mining industry in the management of the water resources in the area and facilitate cooperation between the mining industry and state and federal regulatory authorities in the development of water resources and the mitigation of any past adverse impacts related to mining activities. This strategy will result in benefits the growth and development from mining activities while protecting and improving the water in the area.

4.1.3 Domestic Requirements

Except for the Oreana Subarea domestic wells, residents are served by public water supply systems.
Nevada water law allows for up to 2-acre feet per year for domestic use as provided in NRS 534.013 and 534.180. The NDWR estimates a total self-supplied domestic water use allowance of 2 AFA per domestic well. A rate of 2-acre foot per year per domestic well assumes an equivalent of 1,780 gallons per day is used. Generally, a single domestic well will pump about one-acre foot of water per year for an average household. Domestic wells present a threat to growth in the region because the high allocation of water resources per residence and the potential for degradation of the groundwater resources.

Conversion of the individual residential water wells to a system where the residences are served by a public water supply system will eventually be necessary to allow for growth and provide protection of the water resources in the area. Various Nevada laws and regulations govern public water supply systems. Any new public water supply systems will have to do design work, permitting, and compliance monitoring in accordance with the prevailing regulations. Expanding the service area of the existing water systems would be a preferable solution for County and State regulatory agencies.

4.1.4 Federal Lands Requirements

Pershing County includes land managed by federal agencies. There is a demand for water resources to meet the mission of each agency with stewardship over an area. As such, the water resource requirements for the continued management of federal lands in the area must be considered as part of the planning process.

The demand for water to meet federal needs in the area has not been well defined. Federal water uses include preservation, conservation, wildlife management, construction and fire control. The direct demand for water to meet the infrastructure requirements for federal facilities in the area is not great. However, the demands placed on the water resources for environmental purposes are large, and in some areas, may pose a binding constraint of future water development.

The water to meet federal environmental water demands comes from numerous springs, streams, reservoirs, and wells. In recent years, an increased emphasis has been placed on the management and restoration of the water resources of springs, streams, and riparian areas. The U.S. Forest Service's policy is to file for water rights (in the name of the United States) for all water needed to support the proper use and management of National Forest administered lands.

The Bureau of Land Management (BLM) is responsible for public lands, their management, use, and disposition. Any lands that are designated for disposal (privatization) will have an associated, but undefined demand for water that is proportionate to the subsequent use of the land. Any developments on lands disposed by the BLM will have to obtain water rights in accordance with Nevada water law.

The U.S. Fish and Wildlife Service is responsible for the management of lands and has regulatory authority over activities and developments on other federal lands. The interests of the Fish and Wildlife Service with respect to water resources management are shared with the County.

Actions in the management of federal lands are subject to periodic review under the National Environmental Policy Act. These reviews determine the feasibility and impacts associated with changes in management practices for the land under the stewardship of the various federal agencies. The federal agencies have implemented practices aimed at improving water quantity and quality; alternative practices have been evaluated and preferred actions established. These, and new alternatives are considered during the regular reviews of management plans.

Given the many shared interests between the residents and the federal agencies with stewardship over the federal lands, a policy of cooperation aimed at implementing sound water management practices should serve as the framework for interactions with the federal government. Such interactions cannot succeed without the participation and cooperation of the state agencies with regulatory authority over the water resources of the area.

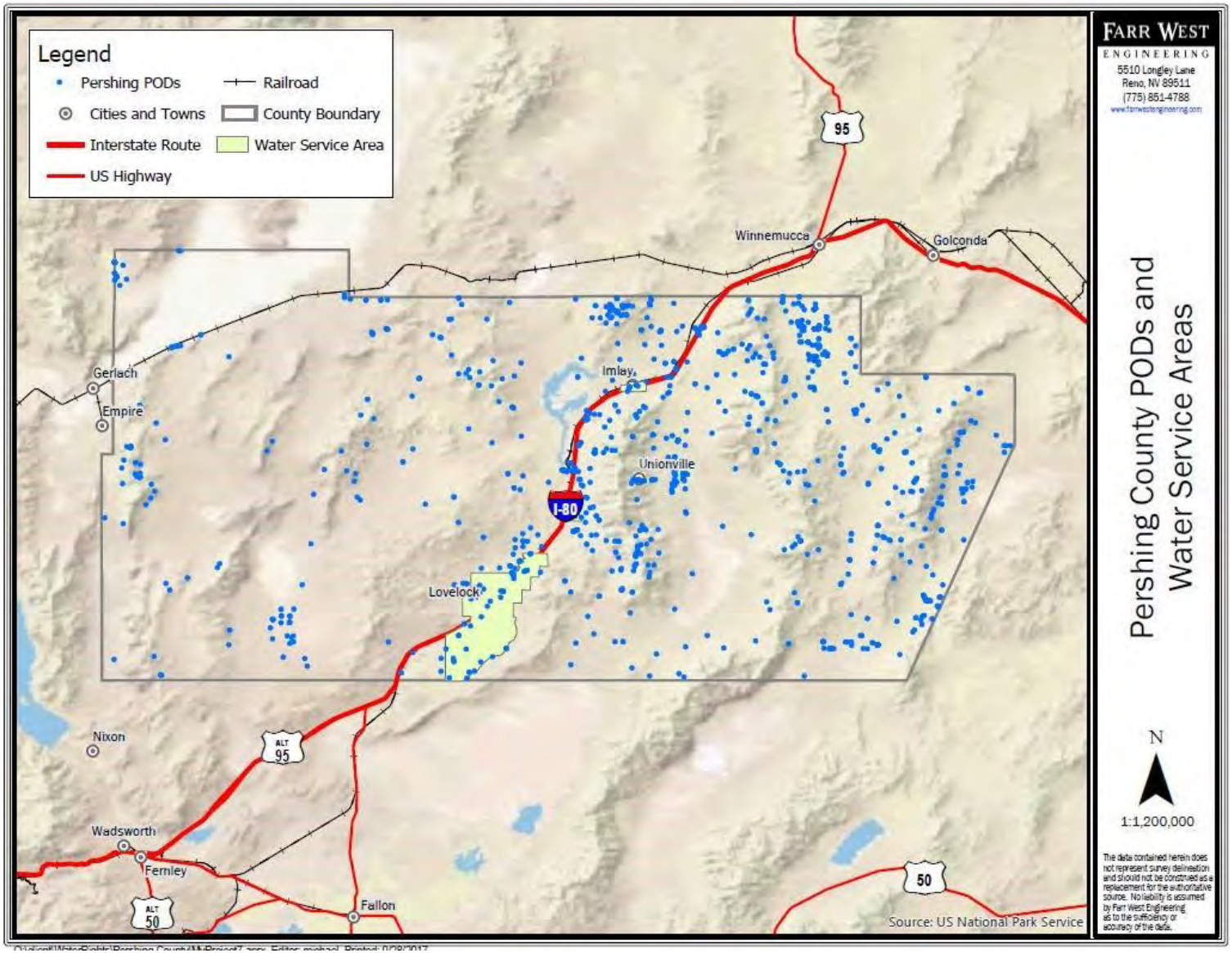


Figure 2. Permitted Points of Diversion in Pershing County

4.2 DEMAND

4.2.1 Historical Demand

Demand for this water plan is taken as the historic demand as documented by Nevada Statewide Assessment of Groundwater Pumpage (2015, 2017) Therefore, demand is simply determined as a factor of current use for increasing populations. LMWD is concerned that the area could develop at the same rate as neighboring communities during periods of economic growth. This is also a concern for Pershing County, and the Board of Commissioners when planning for future growth.

4.2.2 Current Demand

The current demand in Pershing County based on the Nevada Statewide Groundwater Pumpage Inventory (2017) is approximately 53,400 acre-feet annually (AFA). This is the total estimated groundwater pumped in the County including LMWD, irrigation, and domestic uses. It does not include the amount of water used in mine dewatering and then reinjected. The total pumpage does include domestic wells and water used in mine dewatering and subsequently used for irrigation.

The current demand for water in Lovelock Meadows Water District (LMWD) is estimated based on flow meter recordings. Based on flow meter readings for 2015, the current demand of LMWD is 1324.14 AFA. Most of water use is for municipal purposes. The State does not complete pumpage reports for the hydrographic basins. The LMWD is classified as community public water supply system. This system provides most of the domestic water in the local community. The remaining non-community systems include one non-transient system in the area operated by Coeur Rochester. Basin 72 to the north has several small public water systems. Domestic water use in the hydrographic basin is limited to a few outlying residences and residences associated with the Humboldt River Ranch Association.

4.2.3 Forecasted Demand and Conservation Measures

The forecasted demand for 2050 assumes that water resources within Imlay Area, Lovelock Valley, the Oreana Subarea Hydrographic Basins on average are fully utilized and will require conservation and reuse in the future. Therefore, new uses of water will require that existing uses implement water conservation. The greatest potential for the change in use could be in energy generation and other industrial ventures. Additional uses to track in the future may include solar and geothermal energy generation and industrial uses that provide economic development for the community.

Additional conservation measures the County could consider implementing include working with and supporting the Bureau of Land Management, Bureau of Reclamation, Pershing County Water Conservation District, the Central Nevada Regional Water Authority and other regional groups to establish conservation and best management practices for a regional water resource. The County shall encourage protection of water sources for potential recreation by the County and other water users particularly within designated basins. Voluntary reductions of outside water usage during times of prolonged drought, or reduced precipitation could be encouraged. The County should consider establishing a budget for water conservation programs including incentive and mitigation programs and education materials. Whether or not a budget can be established, the County shall support a conservation education program, development of water watchers' procedures, and landscape codes to maximize water conservation.

5.0 PLANNING AND MONITORING

Water Resource planning and monitoring for communities within Pershing County has been ongoing and must continue. Pershing County must support existing water resource planning and monitoring to ensure adequate water resources are available for the community in the future.

The potential for growth and development in County over the next 50 years must take into regard water resource planning. All sectors of the local economy are subject to changes in market conditions, policies, and technology that are decided and controlled on a regional, national, and/or global level. These factors could change the economic outlook, population, employment patterns, and water use anticipated by the year 2050. However, without notable change in employment opportunities within the County, continued population stagnation is also possible. There is a myriad of issues associated with planning, development, and management of the water resources that exist. This section provides an overview of issues that must be considered in developing a long-term resource management strategy for the County.

5.1 LONG TERM PLANNING

Long term planning goals and requirements will assist County in guiding future development and ensuring sufficient water resources for the future. A discussion of several key water resource planning issues is included here. The County should assign priority to the long-term planning issues that can effectively and efficiently be addressed by County level actions.

1. Encouraging action to address over appropriation.

Existing over appropriation in the Oreana Subarea and Lovelock basins are greatest in the Lovelock Meadows Water District on resources that are below the drinking water maximum contaminant levels (MCL's) for public water systems. Water supplies are inadequate to meet existing demands in the County, particularly in the Lovelock and Oreana Subarea Basin related to agricultural and subdivision demands.

Water rights within Hydrographic basins surrounding the County are in high demand because of proximity to the communities of Fallon, Fernley and Reno. Monitoring groundwater basins adjacent to the County and the County's water resources is important, including monitoring for potential inter-basin transfers and water exportation projects. Working with existing water users to collect analyze data from monitoring wells across the County.

2. Monitoring Federal water use policies

Federal water and land use policies can have significant impact to the goals of the County that are closely tied to the ability to manage water resources within the County. Federal policy on the management of the Waters of the United States under the Clean Water Act is of importance to the management of surface waters of Pershing County including the Humboldt River and Rye Patch Reservoir.

3. Encouraging Surface Water Protection

Protection of springs, the management and use of riparian areas, and the maintenance of surface water quality are all critical issues. Spring discharges in Pershing County may be reduced by diversions for beneficial use (a permitted activity), drought (a natural condition), or the effects of groundwater pumping. Several issues raised in the Nevada State Water Plan are relevant to surface water resources in County. (Nevada Division

of Water Planning, 1999) Surface water accounts for most of the total water use in hydrographic basins within Pershing County. The majority of surface water in the County is used for agriculture irrigation and is critical to the health of the local economy.

4. Participating in Humboldt River Basin Planning and establishing Conjunctive Use Management policies

The Humboldt River Basin includes the surface water drainage basin of the Humboldt River. Humboldt River Basin lies partially within Pershing County, and surface waters in Pershing County flow into the basin. Some of the most affected areas in the County include the Lovelock Valley and Oreana Subarea. NDWR has drafted preliminary rules for the conjunctive use and management of Humboldt River Decree water, including a proposed mitigation program. Modeling of the Humboldt River Corridor is also underway developed through a study by the U.S. Geological Survey and the Desert Research Institute. As regional planning goes forward Pershing County must stay informed and active in the process to ensure all the water needs of the County are net into the future. Work and cooperation with other groups throughout the region will be paramount to the success of water planning and water resources in Pershing County.

5. Addressing expansion of existing water systems and system infrastructure

Planning for future residential growth in the County will require the expansion of existing water systems and system infrastructure. Allowing increases in residential growth through individual domestic wells and septic systems will be detrimental to water resources in Pershing County, and may contradict state policy. The Bureau of Water Pollution Control within the Nevada Department of Environmental Protection has established policy for Pershing County for no more than 72 septic systems per square mile (1 septic systems / 9 acres) within Hydrographic Basins 73 and 73A, Lovelock Valley and Oreana Subarea. To comply with this policy and allow for future growth, existing water systems may be expanded and investments into system infrastructure be made.

Pershing County can also use County Development Codes under Chapter 516, Water Supply Standards, to require developers to connect to existing infrastructure. The County Development Code could be amended, or additional provisions added to address future growth.

6. Encouraging the creation of water reuse and effluent planning in water systems

Wastewater reuse and markets for effluent reuse will be essential to develop to maximize water resources and protect water quality. Future development will exceed the capacity of the existing groundwater supply. Increased development and water use will also increase the volume of wastewater, providing a substantial water resource which could be used in a variety of ways. Regional planning to maximize wastewater and effluent management is ongoing and advanced water treatment technologies are being developed. Pershing County's long-term planning shall include evaluation of potential uses and demand for effluent re-use. Pershing County shall encourage existing waster systems to obtain water right Permits for use of wastewater for secondary effluent.

Non-potable reuse of treated effluent from a treatment facility for land or surface application is the most common type of reuse employed today in Northern Nevada. This non-potable water can be used for irrigating parks, common areas or for agricultural uses; dust control and fire suppression activities; wildlife habitat enhancement; or industrial processes in the area. An important use for treated effluent in Perishing County is secondary irrigation. To supply water for these uses without restriction, investment in significant treatment processes would be needed to treat effluent.

Utilizing treated effluent to enhance the potable water supply is an alternative for water systems with limited or dwindling water resources. Local agencies have been active in developing regulations which allow for indirect potable reuse (IPR) in Nevada. IPR is defined as being the release of treated wastewater into groundwater or surface water sources with the intent of future extraction and treatment prior to being placed into the public potable water system. A project of this magnitude would likely be a joint venture between local agencies and would require substantial public outreach and pilot testing programs prior to its approval. An IPR project would provide the ability to increase groundwater storage and uses, potentially reducing dependence on water imported from another basin.

7. Encouraging the creation of Groundwater Management Plans in basins within Pershing County.

As stated herein, many basins within Pershing County are over appropriated, and the Humboldt River Basin is undergoing mitigation and conjunctive use planning. Basins that are over-appropriated can be designated by the State Engineer as a Critical Management Area (CMA) if over-pumpage on an annual basis is shown to impact the overall health of the basin. This designation makes additional regulatory tools available to the State Engineer to bring a groundwater basin's water use back under the Perennial Yield, including requiring the basin implement a Ground Water Management Plan. NRS 534.037 When a basin is designated as a CMA, the groundwater users in the basin have 10 years to bring water use under the perennial yield, after which the State Engineer must regulate water use by strict priority, including domestic wells. NRS 534.110(7)(b).

Groundwater users are free to develop and submit a GMP to the State Engineer at any time, to bring groundwater pumping in a basin back to sustainable levels. Doing so prior to a CMA designation allows more time and flexibility for successful plan development. Pershing county shall encourage groundwater users to create GMPs prior to Critical Management Area designations to promote participation and input from all stakeholders in the County.

5.2 MONITORING

Data collection and recording is one of the most important aspects of Water Resource Management for the County. The data collected must include water level, water production, water quality and other water resource related data. County should utilize its limited resources to advocate for the collection and recording of data and refrain from being the primary agency by utilizing existing agencies that could store and retrieve defensible accurate data. A brief description of water resource related data and the agencies collecting the data is provided below.

5.2.1 Water Level

Monitoring of water levels, quality and production is necessary for management of water resources in County. In addition to the County, water level monitoring is being conducted by the following agencies:

United States Geological Survey

State of Nevada Division of Water Resources

Central Nevada Regional Water Authority

Additional efforts to fill in water level data gaps should be coordinated with these existing agencies. Maintaining defensible databases is costly and establishment of additional data sets should be avoided. Regardless of the agency, water level monitoring must be conducted to provide the greatest quality assurance to the data set.

Investigation of poorly constrained water resources is important for the County to properly understand and manage the resources within the County. Since water resource management has been developed at the basin level, understanding a basins subsurface discharge from each hydrographic basin within or adjacent to the County is important for groundwater management. Therefore, future data collection should have the goal of determining groundwater gradients between basins within the County so that subsurface flows between hydrographic basins can be estimated with greater confidence.

5.2.2 Water Production

Monitoring of production is necessary for management of water resources in County so that the impacts of water withdrawals can be correlated to water production. Water production data is collected by:

State of Nevada Division of Water Resources

Additional efforts to fill in water production data gaps should be coordinated with Division of Water Resource. These gaps include requiring water right holders to provide greater accuracy to pumpage quantities. This could require all groundwater production to utilize flow meters.

5.2.3 Water Quality

Monitoring of water quality is critical for effective management of water resources in the hydrographic basins. Water quality monitoring is being conducted by the following agencies:

United States Geological Survey

Bureau of Safe Drinking Water

Bureau of Water Pollution Control

Bureau of Mining Regulation and Reclamation

The Bureau of Safe Drinking Waters database of water quality data is limited to those areas within the State with population great enough to require a public water system. Although the Bureau of Water Pollution Control requires sampling, the results are not entered in a digital data base for retrieval. In addition, water quality results are typically in areas of prospective or ongoing private projects. Water wells should be selected for long-term monitoring and water levels should be monitored on at least a biannual basis at these wells.

Monitoring of groundwater quality is important so that County can utilize protect and optimize resources of good water quality. This could include utilizing water resource that exceed maximum contaminant levels for uses that can utilize poorer water quality and utilizing the best water quality within the hydrographic basin for drinking water demand.

In addition to utilizing available data, supplementary water quality data should be pursued by the County. Because of the significant expense of sampling and laboratory work for the analysis the County will need to work with other agencies to assure that laboratory work can be funded. Obtaining water quality data in critical areas will require strategic planning to assure that existing water users assist with paying for data collection and recording and that the most important and critical data is collected and placed in a digital database.

5.2.4 Related Data

Monitoring of other parameters not directly related to water resources is necessary for management of water resources in the area. The County needs to advocate for the collection of data within the County and proper recording of the data so that the data is retrievable.

These parameters may include but are not limited to meteorological, botanical and remote sensing data. The relationship between meteorological data to recharge and evapotranspiration is well understood although local data is often limited. Botanical relationships for predicting recharge in the State have been utilized since the first reconnaissance reports. Remote sensing is still evolving and can facilitate other sciences in water management including the ability to measure ground subsidence resulting from overdraft condition.

6.0 RECOMMENDATIONS

Recommendations are included in Section 2 in the form of Policies. Once the Policies are approved by the County board more detailed recommendations can be formulated and provided in this Section of the report.

7.0 RELATED STUDIES

Many studies, reports and data sources regarding water resources and related information have been completed in the area surrounding the County service area and water resources. This report represents a compilation of these studies and reports. In addition, Water Resource Plans from other counties and planning documents from Pershing County were incorporated into this informal planning document. The documents cited below are considered to have significant information and data regarding the water resources in the surrounding areas. The data sources and related studies listed below are not complete and should be expanded with new, updated and previously un-cited references during the regularly scheduled updates to the Plan.

Geology

Nevada Bureau of Mines and Geology (NBMG)

Nevada Bureau of Mines and Geology (NBMG), 1964. Bulletin 65 Mineral and Water Resources of Nevada. University of Nevada, Reno. http://www.nbmg.unr.edu/dox/b65.pdf

Nevada Bureau of Mines and Geology (NBMG), 1977. Bulletin 89 Geology and Mineral Deposits of Pershing County, Nevada. University of Nevada, Reno. Hard copy available from NBMG.

Hydrology

Nevada Division of Water Planning (Nevada Division of Water Resources), 1999. Nevada State Water Plan. Carson City, Nevada. http://water.nv.gov/programs/planning/stateplan/documents/NV_State_Water_Plan-complete.pdf.

State of Nevada – Drought Plan July, 2003. http://water.nv.gov/programs/planning/July2003DroughtPlan.pdf

Water-Resources Appraisal of Lovelock Valley, Pershing County, Nevada: Nevada Division of Water Resources Reconnaissance Report, 1965, Resource 32.

Nevada Division of Water Resources (NDWR), 1989. Summary of Ground Water

Nevada Division of Water Resources (NDWR), 2013. Statewide Assessment of Groundwater Pumpage.

Nevada Division of Water Resources (NDWR), Statewide Groundwater Pumpage Inventory, Calendar Year 2015, November, 2017.

United States Geological Survey (USGS): A ground-water-quality monitoring program for Nevada, 1986 USGS OFR 78-768. http://pubs.er.usgs.gov/#search:basic/query=78-768/page=1/page_size=100:0

T. E. Eakin and R.D. Lamke, hydrologic Reconnaissance of the Humboldt River Basin, Nevada, Water Resource Bulletin No. 32 (State of Nevada, Office of the State Engineer and United States Geological Survey), 1966

Plans – Master/Geothermal/Solar/Wind Resources

Pershing County Master Plan, Pershing County, Nevada – Adopted by the Pershing County Commission April 5, 2002.

Agriculture

Nevada Agricultural Statistics Annual Bulletin 2016 Crop year, USDA in cooperation with Nevada Department of Agriculture, 2016 https://www.nass.usda.gov/Statistics_by_State/Nevada/Publications/Annual_Statistical_Bulletin/2010s/20 1710NVCropYr2016.pdf

8.0 APPENDICIES

The appendices include tables and figures that may eventually be added to the Water Resource Plan as the Plan is updated and revised.

8.1 APPENDIX 1. EXCERPT FROM PERSHING COUNTY MASTER PLAN, CHAPTER 5 CONSERVATION AND RESOURCES, GOALS:

Goal C.1.0: Protect surface and groundwater quality from the effects of growth and development.

Policy C.1.1: Coordinate with the Lovelock Meadows Water District, other agencies and the public to protect water resources from over-use or contamination from inappropriate development.

Policy C.1.2: Encourage the State to monitor areas with a concentration of domestic wells and septic systems to determine the effects and limitations of development.

Policy C.1.3: Work with the Pershing County Water Conservation District, other agencies and the public to protect irrigation systems and drainage channels from inappropriate development.

Policy C.1.4: Support federal efforts to protect natural and man-made wetlands from development impacts and to maintain their value for wildlife habitat and water purification.

Goal C.2.0: Reduce the need for developing new water sources by efficiently using available ones.
Policy C.2.1 Work with Lovelock Meadows Water District, other agencies and the public to encourage development patterns and practices which conserve water.

Policy C.2.2: Coordinate with the City of Lovelock to expand sewer service and develop opportunities for the use of reclaimed water.

Public Lands and Resources

Goal C.3.0 Recognize and maintain the open space character and multiple resource value of public lands.
Policy C.3.1: Coordinate with the Bureau of Land Management, Bureau of Reclamation and other public land owners to influence land use decisions in order to benefit local residents and the economy.

Wildlife

Goal C.4.0: Conserve wildlife habitat and other resources of significant biological, ecological and recreational value.
Policy C.4.1: Protect fragile wildlife habitat areas from encroachment or other impacts from development.

Policy C.4.2: Provide opportunities to cluster development where appropriate for habitat conservation.

Flood Protection

Goal C.5.0 Protect residents and developed uses from flood hazards.
Policy C.5.1: Continue participation in the National Flood Insurance Program and application of flood plain regulations.

Policy C.5.2: Discourage development of new structures and prohibit the creation of additional building sites within the 100-year flood plain.

Policy C.5.3: Minimize alteration of natural flood plains, stream channels and natural protective barriers that accommodate or channel floodwaters.

Policy C.5.4: Cooperate with the Pershing County Water Conservation District in establishing flood protection development standards for sites adjacent to irrigation facilities.

Policy C.5.5: Provide flood insurance information to the public through the County Planning and Building Department.

Goal C.6.0: Provide, protect and utilize adequate drainage systems.
Policy C.6.1: Prohibit development projects that significantly increase the volume or velocity of storm water run-off or change the character or location of discharge unless acceptable off-site drainage systems are provided.

Policy C.6.2: Encourage on-site retention systems where appropriate to allow the percolation of storm water and to avoid off-site drainage problems.

Policy C.6.3: Prohibit the use of PCWCD drainage systems to accommodate urban run-off unless specifically accepted by PCWCD.

Mineral Extraction

Goal C.7.0: Develop and responsibly conserve Pershing County's significant mineral resources.

Policy C.7.1: Consider the impact of new development on the extraction of mineral resources in land use.

Policy C.7.2: Review proposed mining activities (mineral extraction, sand and gravel pits, etc.) to ensure that they are compatible with existing and planned development.

8.2 APPENDIX 2. GROUNDWATER BASIN HYDROGRAPHIC SUMMARIES

Nevada Division of Water Resources

Hydrographic Area Summary

Hydrographic Area No	022	**Hydrographic Area Name**	SAN EMIDIO DESERT
Subarea Name			
Hydrographic Region No.	02	**Hydrographic Region Name**	BLACK ROCK DESERT
Area (sq. mi.)	305		
Counties within the hydrographic area	Washoe, Pershing		
Nearest Communities to Hydrographic Area	Empire, Gerlach		
Designated (Y/N, Order No.)	Y, O-746	**For All or Portion of Basin**	All
Preferred Use	None	**For All or Portion of Basin**	All
State Engineer's Orders		**For All or Portion of Basin**	All
State Engineer's Rulings:			
Pumpage Inventory Status	None	**Crop Inventory Status**	None
Water Level Measurement	Y		
Yield Values			
Perennial Yield (AFY)	4600		
System Yield (AFY)			
Yield Reference(s)	State Engineering Ruling 3569		
Yield Remarks			
Source of Committee data	NDWR Database	**Supplementally Adjusted?**	Y

Manner of Use Table, next page

Related Reports			
USGS Reconnaissance	44	**USGS Bulletin**	None
Other References			
Comments			

SAN EMIDIO DESERT **Manner of Use**	**Underground**	**Geothermal**	**Other Ground Water**
Commercial	0.00	0.00	0.00
Construction	0.00	0.00	0.00
Domestic	0.00	0.00	0.00
Environmental	0.00	0.00	0.00
Industrial	1,304.18	0.00	0.00
Irrigation (Carey Act)	0.00	0.00	0.00
Irrigation (DLE)	4,630.00	0.00	0.00
Irrigation	1,251.39	0.00	0.00
Mining and Milling	0.00	0.00	0.00
Municipal	86.00	0.00	0.00
Power	0.00	1,303.14	0.00
Quasi-Municipal	25.47	0.00	0.00
Recreation	0.00	0.00	0.00
Stockwater	0.00	0.00	0.00
Storage	0.00	0.00	0.00
Wildlife	0.00	0.00	0.00
Other	0.00	0.00	0.00
	7,297.04	1,303.14	0.00

Nevada Division of Water Resources

Hydrographic Area Summary

Hydrographic Area No	024	**Hydrographic Area Name**	HUALAPAI FLAT
Subarea Name			
Hydrographic Region No.	02	**Hydrographic Region Name**	BLACK ROCK DESERT
Area (sq. mi.)	315		
Counties within the hydrographic area	Washoe, Humboldt, Pershing		
Nearest Communities to Hydrographic Area	Gerlach		
Designated (Y/N, Order No.)	Y, O-1172	**For All or Portion of Basin**	All
Preferred Use	O-1172 IRR Denied; Any other use<=4,000 gpd (exe	**For All or Portion of Basin**	All
State Engineer's Orders		**For All or Portion of Basin**	All
State Engineer's Rulings:			
Pumpage Inventory Status	None	**Crop Inventory Status**	Ongoing
Water Level Measurement	Y		
Yield Values			
Perennial Yield (AFY)	6700		
System Yield (AFY)			
Yield Reference(s)	USGS Open File Report 79-768		
Yield Remarks			
Source of Committee data	NDWR Database	**Supplementally Adjusted?**	Y

Manner of Use Table, next page

Related Reports			
USGS Reconnaissance	11	**USGS Bulletin**	None
Other References			
Comments			

HUALAPAI FLAT **Manner of Use**	**Underground**	**Geothermal**	**Other Ground Water**
Commercial	4.48	0.00	0.00
Construction	0.00	0.00	0.00
Domestic	0.00	0.00	0.00
Environmental	0.00	0.00	0.00
Industrial	0.00	0.00	0.00
Irrigation (Carey Act)	0.00	0.00	0.00
Irrigation (DLE)	4,431.60	0.00	0.00
Irrigation	21,040.55	0.00	0.00
Mining and Milling	0.00	0.00	0.00
Municipal	0.00	0.00	0.00
Power	0.00	0.00	0.00
Quasi-Municipal	4.48	0.00	0.00
Recreation	0.00	0.00	0.00
Stockwater	65.36	0.00	0.00
Storage	0.00	0.00	0.00
Wildlife	0.00	0.00	0.00
Other	0.00	0.00	0.00
	25,546.47	0.00	0.00

Nevada Division of Water Resources

Hydrographic Area Summary

Hydrographic Area No	028	**Hydrographic Area Name**	BLACK ROCK DESERT
Subarea Name			
Hydrographic Region No.	02	**Hydrographic Region Name**	BLACK ROCK DESERT
Area (sq. mi.)	2179		
Counties within the hydrographic area	Washoe, Humboldt, Pershing		
Nearest Communities to Hydrographic Area	Sulfur, Jungo, Summit Lake		
Designated (Y/N, Order No.)	Y, O-1229	**For All or Portion of Basin**	All
Preferred Use	None	**For All or Portion of Basin**	All
State Engineer's Orders		**For All or Portion of Basin**	All
State Engineer's Rulings:			
Pumpage Inventory Status	None	**Crop Inventory Status**	None
Water Level Measurement	Y		
Yield Values			
Perennial Yield (AFY)	30000		
System Yield (AFY)			
Yield Reference(s)	USGS Open File Report 78-768		
Yield Remarks			
Source of Committee data	NDWR Database	**Supplementally Adjusted?**	Y

Manner of Use Table, next page

Related Reports			
USGS Reconnaissance	20	**USGS Bulletin**	None
Other References			
Comments			

BLACK ROCK DESERT **Manner of Use**	**Underground**	**Geothermal**	**Other Ground Water**
Commercial	0.00	0.00	0.00
Construction	0.00	0.00	0.00
Domestic	0.00	0.00	0.00
Environmental	0.00	0.00	0.00
Industrial	0.00	0.00	0.00
Irrigation (Carey Act)	0.00	0.00	0.00
Irrigation (DLE)	484.00	0.00	0.00
Irrigation	11,518.43	0.00	0.00
Mining and Milling	20,616.33	0.00	7.24
Municipal	0.00	0.00	0.00
Power	6.14	0.00	0.00
Quasi-Municipal	0.00	0.00	0.00
Recreation	71.68	0.00	0.00
Stockwater	0.00	0.00	0.00
Storage	0.00	0.00	0.00
Wildlife	0.00	0.00	0.00
Other	0.00	0.00	0.00
	32,696.58	0.00	7.24

Nevada Division of Water Resources

Hydrographic Area Summary

Hydrographic Area No	031	**Hydrographic Area Name**	DESERT VALLEY
Subarea Name			
Hydrographic Region No.	02	**Hydrographic Region Name**	BLACK ROCK DESERT
Area (sq. mi.)	1052		
Counties within the hydrographic area	Humboldt, Pershing		
Nearest Communities to Hydrographic Area	Jungo, Winnemucca		
Designated (Y/N, Order No.)	Y, O-535	**For All or Portion of Basin**	All
Preferred Use	None	**For All or Portion of Basin**	All
State Engineer's Orders		**For All or Portion of Basin**	All
State Engineer's Rulings:			
Pumpage Inventory Status	None	**Crop Inventory Status**	Ongoing
Water Level Measurement	Y		
Yield Values			
Perennial Yield (AFY)	9000		
System Yield (AFY)			
Yield Reference(s)	USGS Open File Report 78-768		
Yield Remarks			
Source of Committee data	NDWR Database	**Supplementally Adjusted?**	Y

Manner of Use Table, next page

Related Reports			
USGS Reconnaissance	20	**USGS Bulletin**	None
Other References			
Comments			

DESERT VALLEY **Manner of Use**	**Underground**	**Geothermal**	**Other Ground Water**
Commercial	1.81	0.00	0.00
Construction	5.21	0.00	0.00
Domestic	0.00	0.00	0.00
Environmental	0.00	0.00	0.00
Industrial	3,011.59	0.00	0.00
Irrigation (Carey Act)	0.00	0.00	0.00
Irrigation (DLE)	27,518.12	0.00	0.00
Irrigation	6,807.46	0.00	0.00
Mining and Milling	0.00	0.00	0.00
Municipal	0.00	0.00	0.00
Power	1.75	0.00	0.00
Quasi-Municipal	772.20	0.00	0.00
Recreation	168.92	0.00	0.00
Stockwater	0.00	0.00	0.00
Storage	0.00	0.00	0.00
Wildlife	0.00	0.00	0.00
Other	65.15	0.00	0.00
	38,352.22	0.00	0.00

Nevada Division of Water Resources

Hydrographic Area Summary

Hydrographic Area No	065	**Hydrographic Area Name**	PUMPERNICKEL VALLEY
Subarea Name			
Hydrographic Region No.	04	**Hydrographic Region Name**	HUMBOLDT RIVER BASIN
Area (sq. mi.)	299		
Counties within the hydrographic area	Humboldt, Pershing		
Nearest Communities to Hydrographic Area	Golconda, Valmy		
Designated (Y/N, Order No.)	Y, O-1241	**For All or Portion of Basin**	All
Preferred Use	None	**For All or Portion of Basin**	All
State Engineer's Orders		**For All or Portion of Basin**	All
State Engineer's Rulings:			
Pumpage Inventory Status	None	**Crop Inventory Status**	Ongoing
Water Level Measurement	Y		
Yield Values			
Perennial Yield (AFY)	72000		
System Yield (AFY)			
Yield Reference(s)	USGS Bulletin 32, Report 3		
Yield Remarks	72,000 combined yield for Basins 64, 65, & 66		
Source of Committee data	NDWR Database	**Supplementally Adjusted?**	Y

Manner of Use Table, next page

Related Reports

USGS Reconnaissance	None	**USGS Bulletin**	32
Other References			

Comments

PUMPERNICKEL VALLEY **Manner of Use**	**Underground**	**Geothermal**	**Other Ground Water**
Commercial	0.00	0.00	0.00
Construction	0.00	0.00	0.00
Domestic	0.00	0.00	0.00
Environmental	0.00	0.00	0.00
Industrial	0.00	0.00	0.00
Irrigation (Carey Act)	0.00	0.00	0.00
Irrigation (DLE)	1,220.80	0.00	0.00
Irrigation	3,215.28	0.00	0.00
Mining and Milling	1,688.15	0.00	0.00
Municipal	0.00	0.00	0.00
Power	0.00	0.00	0.00
Quasi-Municipal	0.00	0.00	0.00
Recreation	113.24	0.00	0.00
Stockwater	0.00	0.00	0.00
Storage	0.00	0.00	0.00
Wildlife	0.00	0.00	0.00
Other	0.00	0.00	0.00
	6,237.47	0.00	0.00

Nevada Division of Water Resources

Hydrographic Area Summary

Hydrographic Area No	071	**Hydrographic Area Name**	GRASS VALLEY
Subarea Name			
Hydrographic Region No.	04	**Hydrographic Region Name**	HUMBOLDT RIVER BASIN
Area (sq. mi.)	520		
Counties within the hydrographic area	Pershing, Humboldt		
Nearest Communities to Hydrographic Area	Winnemucca		
Designated (Y/N, Order No.)	Y, O-464	**For All or Portion of Basin**	All
Preferred Use	O-1171 IRR Denied; Preferred Uses Only Com/Ind/St	**For All or Portion of Basin**	All
State Engineer's Orders		**For All or Portion of Basin**	All
State Engineer's Rulings:			
Pumpage Inventory Status	None	**Crop Inventory Status**	Ongoing
Water Level Measurement	Y		
Yield Values			
Perennial Yield (AFY)	13000		
System Yield (AFY)	20000		
Yield Reference(s)	USGS Recon, 37		
Yield Remarks			
Source of Committee data	NDWR Database	**Supplementally Adjusted?**	

Manner of Use Table, next page

Related Reports			
USGS Reconnaissance	29	**USGS Bulletin**	None
Other References			
Comments	Supplemental adjustment in process since 10/1/2011		

GRASS VALLEY **Manner of Use**	**Underground**	**Geothermal**	**Other Ground Water**
Commercial	29.66	0.00	0.00
Construction	0.00	0.00	0.00
Domestic	1,376.43	0.00	0.00
Environmental	0.00	0.00	0.00
Industrial	1,122.48	0.00	0.00
Irrigation (Carey Act)	810.90	0.00	0.00
Irrigation (DLE)	27,435.83	0.00	0.00
Irrigation	1,447.94	0.00	0.00
Mining and Milling	5,539.53	0.00	0.00
Municipal	0.00	0.00	0.00
Power	380.62	0.00	0.00
Quasi-Municipal	0.00	0.00	0.00
Recreation	71.70	0.00	0.00
Stockwater	0.00	0.00	0.00
Storage	0.00	0.00	0.00
Wildlife	0.00	0.00	0.00
Other	29.66	0.00	0.00
	38,215.09	0.00	0.00

Nevada Division of Water Resources

Hydrographic Area Summary

Hydrographic Area No	072	**Hydrographic Area Name**	IMLAY AREA
Subarea Name			
Hydrographic Region No.	04	**Hydrographic Region Name**	HUMBOLDT RIVER BASIN
Area (sq. mi.)	771		
Counties within the hydrographic area	Pershing		
Nearest Communities to Hydrographic Area	Imlay, Humboldt, Mill City		
Designated (Y/N, Order No.)	Y, O-702	**For All or Portion of Basin**	All
Preferred Use	Nonet	**For All or Portion of Basin**	All
State Engineer's Orders		**For All or Portion of Basin**	All
State Engineer's Rulings:			
Pumpage Inventory Status	Ongoing	**Crop Inventory Status**	None
Water Level Measurement	Yes		
Yield Values			
Perennial Yield (AFY)	3000		
System Yield (AFY)	160000		
Yield Reference(s)	USGS Recon, 5		
Yield Remarks			
Source of Committee data	NDWR Database	**Supplementally Adjusted?**	Y

Manner of Use Table, next page

Related Reports			
USGS Reconnaissance	5	**USGS Bulletin**	None
Other References			
Comments	Supplemental adjustment in process since 10/1/2011		

IMLAY AREA **Manner of Use**	**Underground**	**Geothermal**	**Other Ground Water**
Commercial	127.81	0.00	0.00
Construction	7.50	0.00	0.00
Domestic	0.00	0.00	0.00
Environmental	0.00	0.00	0.00
Industrial	0.00	5,068.00	0.00
Irrigation (Carey Act)	0.00	0.00	0.00
Irrigation (DLE)	0.00	0.00	0.00
Irrigation	1,746.60	0.00	0.00
Mining and Milling	0.00	0.00	0.00
Municipal	0.00	0.00	0.00
Power	1.08	0.00	0.00
Quasi-Municipal	0.00	0.00	0.00
Recreation	66.87	0.00	0.00
Stockwater	0.00	0.00	0.00
Storage	0.00	0.00	0.00
Wildlife	0.00	0.00	0.00
Other	127.81	0.00	0.00
	6,840.43	5,068.00	0.00

Nevada Division of Water Resources

Hydrographic Area Summary

Hydrographic Area No	073	**Hydrographic Area Name**	LOVELOCK VALLEY
Subarea Name			
Hydrographic Region No.	04	**Hydrographic Region Name**	HUMBOLDT RIVER BASIN
Area (sq. mi.)	636		
Counties within the hydrographic area	Pershing, Churchill		
Nearest Communities to Hydrographic Area	Rye Patch, Lovelock		
Designated (Y/N, Order No.)	Y, O-1253	**For All or Portion of Basin**	All
Preferred Use	Nonet	**For All or Portion of Basin**	All
State Engineer's Orders		**For All or Portion of Basin**	All
State Engineer's Rulings:			
Pumpage Inventory Status	None	**Crop Inventory Status**	None
Water Level Measurement	Yes		
Yield Values			
Perennial Yield (AFY)	2200		
System Yield (AFY)	140000		
Yield Reference(s)	State Engineer Ruling 6299		
Yield Remarks			
Source of Committee data	NDWR Database	**Supplementally Adjusted?**	Y

Manner of Use Table, next page

Related Reports

USGS Reconnaissance	32	**USGS Bulletin**	2,21,32
Other References			

Comments

LOVELOCK VALLEY **Manner of Use**	**Underground**	**Geothermal**	**Other Ground Water**
Commercial	272.88	0.00	0.00
Construction	0.00	0.00	0.00
Domestic	0.00	0.00	0.00
Environmental	0.00	0.00	0.00
Industrial	0.00	0.00	0.00
Irrigation (Carey Act)	0.00	0.00	0.00
Irrigation (DLE)	0.00	0.00	0.00
Irrigation	8,327.13	0.00	0.00
Mining and Milling	1,815.65	0.00	0.00
Municipal	464.45	0.00	0.00
Power	0.00	0.00	0.00
Quasi-Municipal	0.00	0.00	0.00
Recreation	1.75	0.00	0.00
Stockwater	62.38	0.00	0.00
Storage	0.00	0.00	0.00
Wildlife	0.00	0.00	0.00
Other	0.00	0.00	0.00
	10,944.24	0.00	0.00

Nevada Division of Water Resources

Hydrographic Area Summary

Hydrographic Area No	073A	**Hydrographic Area Name**	LOVELOCK VALLEY-OREANA SUBAREA
Subarea Name			
Hydrographic Region No.	04	**Hydrographic Region Name**	HUMBOLDT RIVER BASIN
Area (sq. mi.)	98		
Counties within the hydrographic area	Pershing		
Nearest Communities to Hydrographic Area	Lovelock, Toulon		
Designated (Y/N, Order No.)	Y, O-369	**For All or Portion of Basin**	All
Preferred Use	O-1079 Portion of Basin IRR Denied, Preferred Uses	**For All or Portion of Basin**	All
State Engineer's Orders		**For All or Portion of Basin**	All
State Engineer's Rulings:			
Pumpage Inventory Status	None	**Crop Inventory Status**	None
Water Level Measurement	Yes		
Yield Values			
Perennial Yield (AFY)	2000		
System Yield (AFY)			
Yield Reference(s)	USGS Recon, 32		
Yield Remarks			
Source of Committee data	NDWR Database	**Supplementally Adjusted?**	Y

Manner of Use table, next page

Related Reports			
USGS Reconnaissance	32	**USGS Bulletin**	2,21,32
Other References			
Comments			

Manner of Use	Underground	Geothermal	Other Ground Water
Commercial	37.92	0.00	0.00
Construction	0.00	0.00	0.00
Domestic	679.37	0.00	0.00
Environmental	0.00	0.00	0.00
Industrial	0.00	0.00	0.00
Irrigation (Carey Act)	0.00	0.00	0.00
Irrigation (DLE)	0.00	0.00	0.00
Irrigation	316.52	0.00	0.00
Mining and Milling	0.00	0.00	0.00
Municipal	3,100.00	0.00	0.00
Power	0.00	0.00	0.00
Quasi-Municipal	828.31	0.00	0.00
Recreation	2.58	0.00	0.00
Stockwater	3.18	0.00	0.00
Storage	0.00	0.00	0.00
Wildlife	0.00	0.00	0.00
Other	0.00	0.00	0.00
	4,967.88	0.00	0.00

Nevada Division of Water Resources

Hydrographic Area Summary

Hydrographic Area No	078	**Hydrographic Area Name**	GRANITE SPRINGS VALLEY
Subarea Name			
Hydrographic Region No.	05	**Hydrographic Region Name**	HUMBOLDT RIVER BASIN
Area (sq. mi.)	967		
Counties within the hydrographic area	Pershing, Churchill		
Nearest Communities to Hydrographic Area	Lovelock, Gerlach		
Designated (Y/N, Order No.)	N	**For All or Portion of Basin**	All
Preferred Use	None	**For All or Portion of Basin**	All
State Engineer's Orders		**For All or Portion of Basin**	All
State Engineer's Rulings:			
Pumpage Inventory Status	None	**Crop Inventory Status**	None
Water Level Measurement	Yes		
Yield Values			
Perennial Yield (AFY)	4500		
System Yield (AFY)			
Yield Reference(s)	USGS Recon, 55		
Yield Remarks			
Source of Committee data	NDWR Database	**Supplementally Adjusted?**	Y

Manner of Use table, next page

Related Reports			
USGS Reconnaissance	55	**USGS Bulletin**	None
Other References			
Comments			

GRANITE SPRINGS VALLEY **Manner of Use**	**Underground**	**Geothermal**	**Other Ground Water**
Commercial	0.00	0.00	0.00
Construction	0.00	0.00	0.00
Domestic	3.91	0.00	0.00
Environmental	0.00	0.00	0.00
Industrial	0.00	0.00	0.00
Irrigation (Carey Act)	0.00	0.00	0.00
Irrigation (DLE)	0.00	0.00	0.00
Irrigation	4,480.00	0.00	0.00
Mining and Milling	100.20	0.00	0.00
Municipal	0.00	0.00	0.00
Power	0.00	0.00	0.00
Quasi-Municipal	0.00	0.00	0.00
Recreation	0.00	0.00	0.00
Stockwater	82.00	0.00	0.00
Storage	0.00	0.00	0.00
Wildlife	6.97	0.00	0.00
Other	0.00	0.00	0.00
	4,673.08	0.00	0.00

Nevada Division of Water Resources

Hydrographic Area Summary

Hydrographic Area No	079	**Hydrographic Area Name**	KUMIVA VALLEY
Subarea Name			
Hydrographic Region No.	05	**Hydrographic Region Name**	WEST CENTRAL
Area (sq. mi.)	333		
Counties within the hydrographic area	Pershing		
Nearest Communities to Hydrographic Area	Gerlach		
Designated (Y/N, Order No.)	N	**For All or Portion of Basin**	All
Preferred Use	None	**For All or Portion of Basin**	All
State Engineer's Orders		**For All or Portion of Basin**	All
State Engineer's Rulings:			
Pumpage Inventory Status	None	**Crop Inventory Status**	None
Water Level Measurement	None		
Yield Values			
Perennial Yield (AFY)	500		
System Yield (AFY)			
Yield Reference(s)	USGS Recon, 55		
Yield Remarks			
Source of Committee data	NDWR Database	**Supplementally Adjusted?**	Y

Manner of Use table, next page

Related Reports			
USGS Reconnaissance	55	**USGS Bulletin**	None
Other References			
Comments			

KUMIVA VALLEY **Manner of Use**	**Underground**	**Geothermal**	**Other Ground Water**
Commercial	0.00	0.00	0.00
Construction	0.00	0.00	0.00
Domestic	3.91	0.00	0.00
Environmental	0.00	0.00	0.00
Industrial	0.00	0.00	0.00
Irrigation (Carey Act)	0.00	0.00	0.00
Irrigation (DLE)	0.00	0.00	0.00
Irrigation	0.00	0.00	0.00
Mining and Milling	0.00	0.00	0.00
Municipal	0.00	0.00	0.00
Power	0.00	0.00	0.00
Quasi-Municipal	0.00	0.00	0.00
Recreation	0.00	0.00	0.00
Stockwater	1.12	0.00	0.00
Storage	0.00	0.00	0.00
Wildlife	6.97	0.00	0.00
Other	0.00	0.00	0.00
	1.12	0.00	0.00

Nevada Division of Water Resources

Hydrographic Area Summary

Hydrographic Area No	080	**Hydrographic Area Name**	WINNEMUCCA LAKE VALLEY
Subarea Name			
Hydrographic Region No.	06	**Hydrographic Region Name**	WEST CENTRAL
Area (sq. mi.)	371		
Counties within the hydrographic area	Pershing, Washoe, Churchill		
Nearest Communities to Hydrographic Area	Nixon, Gerlach		
Designated (Y/N, Order No.)	N	**For All or Portion of Basin**	All
Preferred Use	None	**For All or Portion of Basin**	All
State Engineer's Orders		**For All or Portion of Basin**	All
State Engineer's Rulings:			
Pumpage Inventory Status	None	**Crop Inventory Status**	None
Water Level Measurement	None		
Yield Values			
Perennial Yield (AFY)	3300		
System Yield (AFY)			
Yield Reference(s)	USGS Open File Report 78-768		
Yield Remarks			
Source of Committee data	NDWR Database	**Supplementally Adjusted?**	Y

Manner of Use table, next page

Related Reports			
USGS Reconnaissance	57,43	**USGS Bulletin**	None
Other References			
Comments			

WINNEMUCCA LAKE VALLEY **Manner of Use**	**Underground**	**Geothermal**	**Other Ground Water**
Commercial	0.00	0.00	0.00
Construction	0.00	0.00	0.00
Domestic	3.91	0.00	0.00
Environmental	0.00	0.00	0.00
Industrial	0.00	0.00	0.00
Irrigation (Carey Act)	0.00	0.00	0.00
Irrigation (DLE)	0.00	0.00	0.00
Irrigation	304.16	0.00	0.00
Mining and Milling	1.69	0.00	0.00
Municipal	0.00	0.00	0.00
Power	0.00	0.00	0.00
Quasi-Municipal	0.00	0.00	0.00
Recreation	0.00	0.00	0.00
Stockwater	1.12	0.00	0.00
Storage	0.00	0.00	0.00
Wildlife	6.97	0.00	0.00
Other	0.00	0.00	0.00
	305.85	0.00	0.00

Nevada Division of Water Resources

Hydrographic Area Summary

Hydrographic Area No	101A	**Hydrographic Area Name**	CARSON DESERT-PACKARD VALLEY
Subarea Name	Packard Valley		
Hydrographic Region No.	08	**Hydrographic Region Name**	CARSON RIVER BASIN
Area (sq. mi.)	160		
Counties within the hydrographic area	Pershing		
Nearest Communities to Hydrographic Area	Lovelock		
Designated (Y/N, Order No.)	Y, O-716	**For All or Portion of Basin**	All
Preferred Use	None	**For All or Portion of Basin**	All
State Engineer's Orders		**For All or Portion of Basin**	All
State Engineer's Rulings:			
Pumpage Inventory Status	None	**Crop Inventory Status**	None
Water Level Measurement	None		
Yield Values			
Perennial Yield (AFY)	710		
System Yield (AFY)			
Yield Reference(s)	USGS Recon, 59		
Yield Remarks	Recharge		
Source of Committee data	NDWR Database	**Supplementally Adjusted?**	Y

Manner of Use table, next page

Related Reports

USGS Reconnaissance	59	**USGS Bulletin**	None
Other References			

Comments

CARSON DESERT-PACKARD VALLEY **Manner of Use**	**Underground**	**Geothermal**	**Other Ground Water**
Commercial	0.00	0.00	0.00
Construction	0.00	0.00	0.00
Domestic	0.00	0.00	0.00
Environmental	0.00	0.00	0.00
Industrial	0.00	0.00	0.00
Irrigation (Carey Act)	0.00	0.00	0.00
Irrigation (DLE)	0.00	0.00	0.00
Irrigation	80.00	0.00	0.00
Mining and Milling	929.66	0.00	0.00
Municipal	0.00	0.00	0.00
Power	0.00	0.00	0.00
Quasi-Municipal	0.00	0.00	0.00
Recreation	0.00	0.00	0.00
Stockwater	11.98	0.00	0.00
Storage	0.00	0.00	0.00
Wildlife	0.00	0.00	0.00
Other	0.00	0.00	0.00
	1,021.64	0.00	0.00

Nevada Division of Water Resources

Hydrographic Area Summary

Hydrographic Area No	128	**Hydrographic Area Name**	DIXIE VALLEY
Subarea Name			
Hydrographic Region No.	10	**Hydrographic Region Name**	CENTRAL
Area (sq. mi.)	1303		
Counties within the hydrographic area	Churchill, Pershing, Lander		
Nearest Communities to Hydrographic Area	Dixie Valley, Fallon		
Designated (Y/N, Order No.)	Y, O-715	**For All or Portion of Basin**	All
Preferred Use	None	**For All or Portion of Basin**	All
State Engineer's Orders		**For All or Portion of Basin**	All
State Engineer's Rulings:			
Pumpage Inventory Status	None	**Crop Inventory Status**	None
Water Level Measurement	None		
Yield Values			
Perennial Yield (AFY)	15000		
System Yield (AFY)			
Yield Reference(s)	USGS Open File Report 79-768		
Yield Remarks			
Source of Committee data	NDWR Database	**Supplementally Adjusted?**	Y

Manner of Use table, next page

Related Reports			
USGS Reconnaissance	59	**USGS Bulletin**	None
Other References			
Comments			

DIXIE VALLEY **Manner of Use**	**Underground**	**Geothermal**	**Other Ground Water**
Commercial	0.00	0.00	0.00
Construction	0.00	0.00	0.00
Domestic	0.00	0.00	0.00
Environmental	0.00	0.00	0.00
Industrial	6,220.68	12,704.00	0.00
Irrigation (Carey Act)	0.00	0.00	0.00
Irrigation (DLE)	8,770.38	0.00	0.00
Irrigation	0.00	0.00	0.00
Mining and Milling	0.00	0.00	0.00
Municipal	0.00	0.00	0.00
Power	218.00	0.00	0.00
Quasi-Municipal	0.00	0.00	0.00
Recreation	123.79	0.00	0.00
Stockwater	0.00	0.00	0.00
Storage	261.60	0.00	0.00
Wildlife	0.00	0.00	0.00
Other	0.00	0.00	0.00
	15,594.45	12,704.00	0.00

Nevada Division of Water Resources

Hydrographic Area Summary

Hydrographic Area No	129	**Hydrographic Area Name**	BUENA VISTA VALLEY
Subarea Name			
Hydrographic Region No.	10	**Hydrographic Region Name**	CENTRAL
Area (sq. mi.)	742		
Counties within the hydrographic area	Pershing, Churchill		
Nearest Communities to Hydrographic Area	Unionville, Lovelock		
Designated (Y/N, Order No.)	Y, O-732	**For All or Portion of Basin**	All
Preferred Use	None	**For All or Portion of Basin**	All
State Engineer's Orders		**For All or Portion of Basin**	All
State Engineer's Rulings:			
Pumpage Inventory Status	None	**Crop Inventory Status**	Ongoing
Water Level Measurement	Y		
Yield Values			
Perennial Yield (AFY)	10000		
System Yield (AFY)			
Yield Reference(s)	USGS Bulletin 13		
Yield Remarks			
Source of Committee data	NDWR Database	**Supplementally Adjusted?**	Y

Manner of Use table, next page

Related Reports

USGS Reconnaissance	None	**USGS Bulletin**	13
Other References			

Comments

BUENA VISTA VALLEY **Manner of Use**	**Underground**	**Geothermal**	**Other Ground Water**
Commercial	7.84	0.00	0.00
Construction	0.00	0.00	0.00
Domestic	2.03	0.00	0.00
Environmental	0.00	0.00	0.00
Industrial	550.00	0.00	0.00
Irrigation (Carey Act)	0.00	0.00	0.00
Irrigation (DLE)	0.00	0.00	0.00
Irrigation	21,310.67	0.00	0.00
Mining and Milling	2,027.27	0.00	0.00
Municipal	0.00	0.00	0.00
Power	0.00	0.00	0.00
Quasi-Municipal	0.00	0.00	0.00
Recreation	0.00	0.00	0.00
Stockwater	63.56	0.00	0.00
Storage	0.00	0.00	0.00
Wildlife	0.00	0.00	0.00
Other	0.00	0.00	0.00
	23,961.37	0.00	0.00

Nevada Division of Water Resources

Hydrographic Area Summary

Hydrographic Area No	130	**Hydrographic Area Name**	PLEASANT VALLEY
Subarea Name			
Hydrographic Region No.	10	**Hydrographic Region Name**	CENTRAL
Area (sq. mi.)	284		
Counties within the hydrographic area	Pershing		
Nearest Communities to Hydrographic Area	Dixie Valley, Winnemucca		
Designated (Y/N, Order No.)	Y, O-715	**For All or Portion of Basin**	All
Preferred Use	None	**For All or Portion of Basin**	All
State Engineer's Orders		**For All or Portion of Basin**	All
State Engineer's Rulings:			
Pumpage Inventory Status	None	**Crop Inventory Status**	None
Water Level Measurement	Y		
Yield Values			
Perennial Yield (AFY)	2600		
System Yield (AFY)			
Yield Reference(s)	USGS Open file Report 78-768		
Yield Remarks			
Source of Committee data	NDWR Database	**Supplementally Adjusted?**	Y

Manner of Use table, next page

Related Reports			
USGS Reconnaissance	23	**USGS Bulletin**	None
Other References			
Comments			

PLEASANT VALLEY **Manner of Use**	**Underground**	**Geothermal**	**Other Ground Water**
Commercial	0.00	0.00	0.00
Construction	0.00	0.00	0.00
Domestic	0.00	0.00	0.00
Environmental	0.00	0.00	0.00
Industrial	0.00	0.00	0.00
Irrigation (Carey Act)	0.00	0.00	0.00
Irrigation (DLE)	0.00	0.00	0.00
Irrigation	2,240.00	0.00	0.00
Mining and Milling	672.00	0.00	0.00
Municipal	0.00	0.00	0.00
Power	0.00	0.00	0.00
Quasi-Municipal	0.00	0.00	0.00
Recreation	0.00	0.00	0.00
Stockwater	19.19	0.00	23.54
Storage	0.00	0.00	0.00
Wildlife	0.00	0.00	0.00
Other	0.00	0.00	0.00
	2,931.19	0.00	23.54

Nevada Division of Water Resources

Hydrographic Area Summary

Hydrographic Area No	131	**Hydrographic Area Name**	BUFFALO VALLEY
Subarea Name			
Hydrographic Region No.	10	**Hydrographic Region Name**	CENTRAL
Area (sq. mi.)	504		
Counties within the hydrographic area	Pershing, Lander, Humboldt		
Nearest Communities to Hydrographic Area	Battle Mountain, Winnemucca		
Designated (Y/N, Order No.)	N	**For All or Portion of Basin**	All
Preferred Use	None	**For All or Portion of Basin**	All
State Engineer's Orders		**For All or Portion of Basin**	All
State Engineer's Rulings:			
Pumpage Inventory Status	None	**Crop Inventory Status**	None
Water Level Measurement	Y		
Yield Values			
Perennial Yield (AFY)	8000		
System Yield (AFY)			
Yield Reference(s)	USGS Open file Report 78-768		
Yield Remarks			
Source of Committee data	NDWR Database	**Supplementally Adjusted?**	Y

Manner of Use table, next page

Related Reports

USGS Reconnaissance	None	**USGS Bulletin**	None
Other References			

Comments

BUFFALO VALLEY **Manner of Use**	**Underground**	**Geothermal**	**Other Ground Water**
Commercial	0.00	0.00	0.00
Construction	0.00	0.00	0.00
Domestic	3.62	0.00	0.00
Environmental	0.00	0.00	0.00
Industrial	0.00	0.00	0.00
Irrigation (Carey Act)	0.00	0.00	0.00
Irrigation (DLE)	4,947.88	0.00	0.00
Irrigation	2,560.00	0.00	0.00
Mining and Milling	14,616.39	0.00	0.00
Municipal	0.00	0.00	0.00
Power	0.00	0.00	0.00
Quasi-Municipal	0.00	0.00	0.00
Recreation	0.00	0.00	0.00
Stockwater	67.24	0.00	0.00
Storage	0.00	0.00	0.00
Wildlife	0.00	0.00	0.00
Other	0.00	0.00	0.00
	22,195.13	0.00	0.00

Nevada Division of Water Resources

Hydrographic Area Summary

Hydrographic Area No	132	**Hydrographic Area Name**	JERSEY VALLEY
Subarea Name			
Hydrographic Region No.	10	**Hydrographic Region Name**	CENTRAL
Area (sq. mi.)	142		
Counties within the hydrographic area	Pershing, Lander		
Nearest Communities to Hydrographic Area	Dixie Valley, Battle Mountain		
Designated (Y/N, Order No.)	Y, O-715	**For All or Portion of Basin**	All
Preferred Use	None	**For All or Portion of Basin**	All
State Engineer's Orders		**For All or Portion of Basin**	All
State Engineer's Rulings:			
Pumpage Inventory Status	None	**Crop Inventory Status**	None
Water Level Measurement	Y		
Yield Values			
Perennial Yield (AFY)	250		
System Yield (AFY)			
Yield Reference(s)	USGS Open file Report 78-768		
Yield Remarks			
Source of Committee data	NDWR Database	**Supplementally Adjusted?**	Y

Manner of Use table, next page

Related Reports			
USGS Reconnaissance	23	**USGS Bulletin**	None
Other References			
Comments			

JERSEY VALLEY **Manner of Use**	**Underground**	**Geothermal**	**Other Ground Water**
Commercial	0.00	0.00	0.00
Construction	0.00	0.00	0.00
Domestic	0.00	0.00	0.00
Environmental	0.00	0.00	0.00
Industrial	0.00	0.00	0.00
Irrigation (Carey Act)	0.00	0.00	0.00
Irrigation (DLE)	0.00	0.00	0.00
Irrigation	240.00	0.00	0.00
Mining and Milling	0.00	0.00	0.00
Municipal	0.00	0.00	0.00
Power	0.00	0.00	0.00
Quasi-Municipal	0.00	0.00	0.00
Recreation	0.00	0.00	0.00
Stockwater	39.87	0.00	0.00
Storage	0.00	0.00	0.00
Wildlife	0.00	0.00	0.00
Other	0.00	0.00	0.00
	279.87	0.00	0.00

8.3 APPENDIX 3. PERSHING COUNTY DEVELOPMENT CODE (BILL NO. 251, ORDINANCE NO. 251)

Excerpts of Pershing County Development Code Section 17-712 and 812

Section 17.712.010 Purpose. The board of Pershing County Commissioners has determined that due to problems in the Pershing County Code with respect to Division into large Parcels in the AMR Land Use areas in certain areas of Pershing County and a need to make a more detailed plan on growth patterns in the AMR Land Use areas in certain areas of Pershing County a moratorium should be placed while the Board of Pershing County Commissioners have hearings and develop a plan to address these issues. The Division into large parcels in AMR Land Use areas has created forty-acre parcels that have no residential building rights. The Board of Pershing County Commissioners (herein after the "Board") has also noted that there have been increased requests to change the land use designation in AMR parcels to residential lots. The Board specifically finds that the Pershing County Master Plan provides for a limited availability of land use changes and reaffirms the propositions contained in the Pershing County Master Plan. The Board also specifically finds that the Pershing County Development Code allows for less than 160 acre parcels in the AMR Land Use areas, but does not allow, with certain limited exceptions, for the construction of residential dwellings on parcels in the AMR Land Use areas where the parcels are less than 160 acres. Accordingly, a moratorium is appropriate so that public hearings can be held before the Pershing County Regional Planning Commission and the public can provide into how the issues should be addressed.

Section 17.712.05 Moratorium on Requests to Amend Master Plan in Certain AMR Land Use Areas. The following is hereby implemented:

A Moratorium is hereby placed on all requests for Master Plan Amendments on land in the AMR Land Use Areas in the following area:

The area east of Interstate 80 in the Oreana Groundwater Basin in the Curtailment of Water Appropriation and Designation of Preferred Use of Ground Water Map….

Section 17.812.10 Board of County Commissioners to Evaluate Continued Need for Moratorium: The Board of County Commissioners should evaluate the continued need for the moratorium established by Section 17.712.05 every six years after the adoption of Bill No. 251, Ordinance No. 251. Failure to have a hearing shall not be construed in a negative manner.

PERSHING COUNTY																		
									Point of Diversion									
Basin	App	Cert	Status	Priority	Source	Type of Use	Source Desig.	Well Design.	QQ	Qtr	Sec	Twn	Rng	Div Rate (CFS)	Primary Duty	Units	County	Remarks
72	V04877		VST	1/1/1870	OSW	IND	Prince Royal Pipeline				33	32N	34E	1.2	0	AFA	PE	Railroad use
129	V02594		DEC		STR	IRR	Unionville Creek and Tributaries		NW	NW	27	30N	34E	0.043	5.14	AFA	PE	Youth center
073A	65329		PER	3/14/1961	UG	QM			SE	SE	28	30N	33E	0.106	30	AFA	PE	School District
073A	65330		PER	3/14/1961	UG	QM			NW	NW	27	30N	33E	0.035	10	AFA	PE	Pershing
PERSHING WATER CONSERVATION DISTRICT																		
72	1098	2130	CER	8/21/1908	OSW	OTH	Humboldt River			NW	29	33N	35E	300	20200	AFA	PE	PCWCD: Flood waters
72	1948	2131	CER	2/10/1911	OSW	OTH	Humboldt River			NW	29	33N	35E	450	29570	AFA	PE	PCWCD
72	80638		PER	3/2/2011	SRT	PWR	Humboldt River			NE	18	30N	33E	129	0	AFA	PE	PCWCD
Total Combined Duty Surface Flood Waters: Permits 1098,1948: 49,770 AFA																		
IMLAY (IN THE NAME OF PERSHING COUNTY)																		
72	64063		PER	7/5/1906	SPR	MUN	Prince Royal Canyon		NE	SE	8	32N	34E	1.2	560.01	AFA	PE	Near surface infiltration well to pipeline for Town of Imlay
72	64064		PER	3/13/2013	SPR	MUN	Prince Royal Canyon		NE	SE	8	32N	34E	2.5	560.01	AFA	PE	Same as above
Total Combined Duty: Permits 64063, 64064: 560.01 AFA																		

LOVELOCK MEADOWS WATER DISTRICT																		
									Point of Diversion									
Basin	App	Cert	Status	Priority	Source	Type of Use	Source Desig.	Well Design.	QQ	Qtr	Sec	Twn	Rng	Div Rate (CFS)	Primary Duty	Units	County	Remarks
73	59252		PER	11/10/1998	UG	MUN		Golf course	NW	NE	17	27N	31E	3.000	64.45	AFA	PE	LMWD
73	60684		PER	11/30/1994	UG	MUN		Golf course	NW	NE	17	27N	31E	3.000	400.00	AFA	PE	LMWD
73A	26828	8150	CER	1/21/1965	STR	IRR	Wrights Canyon Creek		SW	NW	22	29N	33E	3.000	368.00	AFA	PE	LMWD
73A	3774		PER	1/8/1916	STR	MUN	Wrights Canyon Creek	Well 05	SE	SE	10	29N	33E	2.000		AFA	PE	LMWD
73A	37989	10383	CER	10/8/1929	UG	MUN		Well 05	SW	NE	33	29N	33E	1.340	1.98	AFA	PE	LMWD
73A	37991	10385	CER	4/23/1979	UG	MUN		Well 05	SW	NE	33	29N	33E	1.000	1.99	AFA	PE	LMWD
73A	39712	10387	CER	1/5/1982	UG	MUN		Well 05	SW	NE	33	29N	33E	1.000	1.99	AFA	PE	LMWD
73A	39714	10389	CER	11/19/1979	UG	MUN		Well 05	SW	NE	33	29N	33E	2.720	841.15	AFA	PE	LMWD
73A	45578		PER	4/23/1982	UG	MUN		Well 05	SW	NE	33	29N	33E	2.000	804.26	AFA	PE	LMWD
73A	60215		PER	11/21/1956	UG	MUN		Well 07	SW	NE	33	29N	33E	1.500	455.10	AFA	PE	LMWD
73A	37987	10382	CER	2/2/1946	UG	MUN		Well 07	NW	SW	33	29N	33E	0.015	10.86	AFA	PE	LMWD
73A	37990	10384	CER	10/13/1949	UG	MUN		Well 07	NW	SW	33	29N	33E	0.023	167.25	AFA	PE	LMWD
73A	37992	10386	CER	4/23/1979	UG	MUN		Well 07	NW	SW	33	29N	33E	1.000	635.30	AFA	PE	LMWD
73A	39713	10388	CER	11/19/1979	UG	MUN		Well 07	NW	SW	33	29N	33E	1.433	635.30	AFA	PE	LMWD
73A	45577		PER	4/23/1982	UG	MUN		Well 07	NW	SW	33	29N	33E	2.000	804.26	AFA	PE	LMWD
73A	7715		PER	2/22/1957	UG	MUN		Well 08	SE	NW	33	29N	33E	0.500	362.00	AFA	PE	LMWD
73A	84828		PER	2/10/2015	UG	MUN		Well 08	SE	NW	33	29N	33E	2.000	1447.93	AFA	PE	LMWD

LOVELOCK MEADOWS WATER DISTRICT																		
									Point of Diversion									
Basin	App	Cert	Status	Priority	Source	Type of Use	Source Desig.	Well Design.	QQ	Qtr	Sec	Twn	Rng	Div Rate (CFS)	Primary Duty	Units	County	Remarks
73A	86495		PER	3/14/1961	UG	QM		Kirkbride	SW	NE	21	29N	33E	2.11	600	AFA	PE	LMWD
Total combined Duties:																		
464.45	AFA	TCD	Golf course well															
3744.43	AFA	TCD	37987,37989,37990, 37991, 37992, 37912, 37913, 37914, 45577, 45578, 60215, 77715, 84828, 86595															

8.5 APPENDIX 5. 79TH LEGISLATIVE SESSION OVERVIEW

The 79th Legislative Session (2017) included passage of ten (10) major Bills relating to water which are mentioned here. Seven (7) of the Bills are summarized below and the three remaining budget Bills are listed for reference. We urge you to review the full drafts of these Bills at https://www.leg.state.nv.us.

Assembly Bill 52 (AB52): Dissolved Mineral Resources • Changes regulations for dissolved mineral exploration.

- Defines "dissolved mineral resource," "dissolved mineral resource exploration borehole" and "dissolved mineral resource exploration well"
- Establishes appropriation procedures from NRS Chapters 533 and 534 apply to reasonable loss of more than 5 acre-feet of water in a dissolved mineral resource exploration project.
- Requires the Commission on Mineral Resources to work with the Division of Water Resources and other agencies to adopt regulations for dissolved mineral resource exploration projects.
- Effective January 1, 2018, for regulatory purposes

Senate Bill 47 (SB47): Water Budgets, Conjunctive Use Policy and more:

Senate Bill 47 amended NRS Chapters 532, 533 and 534 including:

- Requiring the State Engineer to prepare a water budget and maintain an inventory of groundwater for each basin located in whole, or in part, in the State, including:
  - Groundwater appropriated in a basin by decree, certificate, and permit, including temporary uses and domestic wells.
  - Quantifying the total amount of groundwater available in a basin.
- Declaring a policy of the State to conjunctively manage the appropriation, use and administration of all waters in the State, regardless of the water source.
- Allowing the State to grant an Extension of Time for up to 5 years, on any Permit, when perfecting a water right for Proof of Beneficial Use.
- Clarifying subsistence livestock watering rights as pre-statutory vested rights. • Amending notice requirements of the forfeiture process by:
  - Requiring the State Engineer to send a 4-year non-use letter providing one year to put the water to use, or file an extension.

- If, after one year, neither of those conditions are satisfied, that State Engineer must provide a final notice letter by certified or registered mail that the water right is held for forfeiture.
- The owner of the water right must show the water has been put back to beneficial use or filed an extension of time, within 30 days of the date of the final notice, or the State shall declare the right or the portion of the right not put to beneficial use forfeited.
- The State is required to send a notice of the declaration of forfeiture to the water right owner after the expiration of the 30-day final notice period.
    - The failure to receive a notice pursuant to section 2 or 3 does not nullify the forfeiture or extend the time necessary to work a forfeiture of a water right.

- Authorizes the Southern Nevada Water Authority to create an Advisory Committee for the Management of Groundwater in the Las Vegas Valley Groundwater Basin and includes terms of members, compensation and appointing procedures.

Senate Bill 51 (SB51): Adjudication Procedure for Surface Water Rights Senate Bill 51 amended NRS 533:

- Giving discretion to the State Engineer to enter orders granting petitions for the determination of stream system water rights in unadjudicated systems on factors other than the importance of irrigation.
- Requiring the State Engineer to send notice to a water right holder 30 days prior to the date set for the commencement of taking proofs, and setting the time for proofs to be accepted not less than 60 days.
- Changing procedural requirements for timing to file proofs, mapping, fees and period of inspection, hearings, objections and notice and publication requirements.
- Allowing the State Engineer to provide preliminary orders of determination and proofs on their website when noticing, by registered or certified mail, a person who has filed a proof.

Senate Bill 74 (SB74): Water Plans

Senate Bill 74 stems from the Nevada Drought Forum and amends NRS 531, 540 by:

- Allowing 120 days for the Section to review a water plan, as opposed to the previous 30-day requirement.
- Requiring a water plan submitted for review to include: a plan for installing meters, standards for water efficiency, tiered rate structures, watering restrictions, and additional provisions for suppliers of water for 500 connections or more.
- Changing the voting membership of the Water Planning Commission.

Assembly Bill 209 (AB209): Forfeiture Extensions Assembly Bill 209 amended sections of NRS 534.090:

- Omitting the requirement of the State Engineer to consider whether a groundwater management plan has been approved for a basin when evaluating a request for an extension on a forfeiture.
- Adding factors the State may consider when granting extension to work a forfeiture including: a declaration of drought in the County, whether efforts to conserve water have resulted in a reduction in consumption, and whether the water right is located in a designated critical management area or in a groundwater basin where withdraws in consistently exceed the perennial yield.
- Allowing the State to grant any number of extensions to work a forfeiture of groundwater in a basin where withdraws exceed perennial yield, or that has been designated a critical management area. No single extension may be for more than 3 years.

Senate Bill 270 (SB270) Vested Proof Sunset Senate Bill 270 amended sections of NRS 533:

- Requiring any claim of vested water right proof be filed to the State Engineer by December 31, 2027, or it be deemed abandoned.
- Requiring notice to the public annually, for 4 consecutive weeks in at least one newspaper of general circulation within the boundaries of each groundwater basin throughout the State; and posted on the State Engineer website. o Notice must also be made that Federal agencies claiming reserved water rights in the waters of a stream system are required to make proofs of their claims.

Assembly Bill 138 (AB138) Rain Barrels and Guzzlers for Wildlife Assembly Bill 138 amended NRS 533:

- Capture of precipitation from rooftops of single-family homes for non-potable domestic use, with no limit on volume.
- Allowing non-conflicting collection of water by guzzlers with capacity of 20,000 gallons or less, with a capture area of 1 acre or less, and pipe length less than ¼ mile. To provide water for wildlife in conjunction w/State and Federal agencies and in consultation with, and approval by NDOW.

Senate Bill 503 Channel Clearance Replenishment
Senate Bill 513 Humboldt Assessment Cap
Senate Bill 514 General Fund and South Fork

8.6 APPENDIX 6. STATE ENGINEER ORDER 6299

IN THE OFFICE OF THE STATE ENGINEER
OF THE STATE OF NEVADA

IN THE MATTER OF APPLICATIONS 67152, 67195,)
67205, 67206, 67243, 71220, AND 72276 FILED TO)
APPROPRIATE GROUNDWATER WITHIN THE)
LOVELOCK VALLEY HYDROGRAPHIC BASIN)
(73), PERSHING COUNTY, NEVADA.)

RULING
#6299

GENERAL

I.

Application 67152 was filed on January 22, 2001, by Nevada Land & Resource Company, LLC, later assigned to New Nevada Lands, LLC, to appropriate 10.0 cubic feet per second (cfs) of groundwater for industrial purposes. The proposed point of diversion is described as being located within the NW¼ NE¼ of Section 9, T.28N., R.32E., M.D.B.&M. The proposed place of use is described as being located within Section 11, T.28N., R.32E., M.D.B.&M. Item 12, the remarks section of the application, indicates that the water is to be used for an 800 megawatt power generation facility and its ancillary uses with consumptive use estimated at 6,000 acre-feet annually.[1]

II.

Application 67195 was filed on February 6, 2001, by Nevada Land & Resource Company, LLC, later assigned to New Nevada Lands, LLC, to appropriate 10.0 cfs of groundwater for industrial purposes. The proposed point of diversion is described as being located within the NW¼ NW¼ of Section 17, T.28N., R.32E., M.D.B.&M. The proposed place of use is described as being located within Section 11, T.28N., R.32E., M.D.B.&M. Item 12, the remarks section of the application, indicates that the water is to be used for an 800 megawatt power generation facility and its ancillary uses with consumptive use estimated at 6,000 acre-feet annually.[2]

---

[1] File No. 67152, official records in the Office of the State Engineer.
[2] File No. 67195, official records in the Office of the State Engineer.

III.

Application 67195 was timely protested by the Pershing County Water Conservation District on the grounds that granting the application will affect the water table and drainage and adversely affect the decreed waters of the Humboldt River.[2]

IV.

Application 67205 was filed on February 8, 2001, by Nevada Land & Resource Company, LLC, later assigned to New Nevada Lands, LLC, to appropriate 10.0 cfs of groundwater for irrigation purposes. The proposed point of diversion is described as being located within the NE¼ NE¼ of Section 19, T.28N., R.32E., M.D.B.&M. The proposed place of use is described as being located within all of Sections 17 and 19, T.28N., R.32E., M.D.B.&M. (1,200 acres).[3]

V.

Application 67206 was filed on February 8, 2001, by Nevada Land & Resource Company, LLC, later assigned to New Nevada Lands, LLC, to appropriate 10.0 cfs of groundwater for irrigation purposes. The proposed point of diversion is described as being located within the NE¼ NE¼ of Section 3, T.28N., R.32E., M.D.B.&M. The proposed place of use is described as being located within the W½ of Section 35, T.29N., R.32E., M.D.B.&M. and the E½ of Section 3, T.28N., R.32E., M.D.B.&M. (640 acres).[4]

VI.

Application 67243 was filed on February 28, 2001, by Nevada Land & Resource Company, LLC, later assigned to New Nevada Lands, LLC, to appropriate 10.0 cfs of groundwater for industrial purposes (power generation). The proposed point of diversion is described as being located within the NW¼ NW¼ of Section 9, T.28N., R.32E., M.D.B.&M. The proposed place of use is described as being located within Section 11, T.28N., R.32E., M.D.B.&M. Item 12, the remarks section of the application, indicates that the water is to be used for an 800 megawatt power generation facility and its ancillary uses with consumptive use estimated at 6,000 acre-feet annually.[5]

[3] File No. 67205, official records in the Office of the State Engineer.
[4] File No. 67206, official records in the Office of the State Engineer.
[5] File No. 67243, official records in the Office of the State Engineer.

VII.

Application 71220 was filed on May 13, 2004, by Nevada Land & Resource Company, LLC, later assigned to New Nevada Lands, LLC, to change the point of diversion of the water applied for under Application 67195. The proposed point of diversion is described as being located within the SW¼ SW¼ of Section 5, T.28N., R.32E., M.D.B.&M. Item 12, the remarks section of the application, indicates that the water is to be used for an 800 megawatt power generation facility and its ancillary uses with consumptive use estimated at 6,000 acre-feet annually.[6]

VIII.

Application 72276 was filed on February 25, 2005, by Nevada Land & Resource Company, LLC, later assigned to New Nevada Lands, LLC, to change the point of diversion of the water applied for under Application 71220. The proposed point of diversion is described as being located within the SE¼ SW¼ of Section 11, T.28N., R.32E., M.D.B.&M. Item 12, the remarks section of the application, indicates that the water is to be used for an 800 megawatt power generation facility and its ancillary uses with consumptive use estimated at 6,000 acre-feet annually.[7]

IX.

Application 72276 was timely protested by the Pershing County Water Conservation District on the grounds that granting the application will affect the water table and drainage and adversely affect the decreed waters of the Humboldt River.[7]

FINDINGS OF FACT

I.

Nevada Revised Statute § 533.365(4) provides that it is within the State Engineer's discretion to determine whether a public administrative hearing is necessary to address the merits of a protest to an application to appropriate the public waters of Nevada. The State Engineer finds that in the case of Applications 67195 and 72276 there is sufficient information contained within the records of the Office of the State Engineer to gain a full understanding of the issues and a hearing on this matter is not required.

---

[6] File No. 71220, official records in the Office of the State Engineer.
[7] File No. 72276, official records in the Office of the State Engineer.

II.

Applications 67152, 67195, and 67243, which are for an industrial power plant purpose, were first filed in 2001, followed by Applications 71220 and 72276 to change the point of diversion of Application 67195. Since that time the State Engineer has on several occasions requested the Applicant to provide information on the specifics of a power plant project. By letter dated February 14, 2008, the Applicant indicated this project was being pursued as a coal fired power facility and asked for additional time for developing a project. By letter dated October 5, 2009, the Applicant indicated that it was continuing to pursue energy generation project and in February 2008 entered into a geothermal lease with Vulcan Power Company, which includes a project on property adjacent to the point of diversion and place of use under its applications. In said letter dated October 5, 2009, the Applicant also indicated that through its affiliate Fish Springs Ranch, LLC, it submitted a proposal regarding a solar project that could be located on Section 11, T.28N., R.32E., M.D.B.&M. because both of these projects were only in the development stage it could not provide any specific information on actual water use.[1]

By letter dated August 30, 2011, the Applicant indicated that it continues to pursue an energy generation project, it restates the information about a lease with Vulcan Power Company, which became Gradient Resources, Inc. in August 2010, and indicates that Gradient received a permit from the Nevada Division of Minerals for the Colado Project Area to drill production, injection and observation wells. By letter dated August 8, 2012, the Applicant indicated that since 2008 Gradient Resources has been conducting exploration on the lease and determined that it could support up to a 200 megawatt power generation facility; however, the project would be developed in phases of 30 megawatts. The Applicant requested that Application 67152 be permitted in the amount of 10 cfs, and that it would withdraw Applications 67195, 67243, 71220 and 72276.[1]

The State Engineer finds that over thirteen years have passed since the filing of the applications and there is no information that indicates there is any specific project that would utilize any water that may be granted under these applications is ready to proceed.

III.

Perennial Yield Oreana Subarea

The Lovelock Valley-Oreana Subarea Hydrographic Basin (Basin 073A), was designated as an area of concern by the State Engineer by Order No. 369, issued on February 25, 1969, due to issues relating to water quantity and water quality.

Pursuant to State Engineer's Order No. 370, issued on February 25, 1969, the State Engineer curtailed the issuance of any additional permits for irrigation purposes within a portion of the Oreana Subarea and declared municipal use a preferred use of groundwater within the designated area. The remaining portion of the Lovelock Valley Basin has not been designated.

Pursuant to State Engineer's Order No. 1079, issued on May 17, 1993, the State Engineer expanded the area of preferred use, municipal and irrigation to be denied, into other portions of the Oreana Subarea. The purpose of these designation orders was to preserve the limited fresh groundwater resources in the basin for municipal use, rather than for irrigation. The State Engineer recognized that most of the recharge from precipitation in the valley was derived from precipitation in the Humboldt Range and, by designating the Oreana Subarea, he was preserving that limited supply for municipal use. South and west of the Oreana Subarea in Lovelock Valley the water quality was less favorable for municipal use, and in locations further south is not potable.

Groundwater recharge in the Oreana Subarea is estimated to be 2,000 acre-feet per year.[8] The perennial yield of the Oreana Subarea is currently established as 2,000 acre-feet, equal to local recharge from precipitation. Existing groundwater rights in the Lovelock Valley - Oreana Subarea currently approximate 4,975 acre-feet annually.[9] The State Engineer finds that the existing water rights exceed the perennial yield of the Oreana Subarea.

Lovelock Valley

Lovelock Valley is located at the terminus of the Humboldt River flow system. It extends from Rye Patch Dam to the end of the Humboldt Sink. Groundwater recharge from

---

[8] D.E. Everett and F. Eugene Rush, *Water Resources Appraisal of Lovelock Valley, Pershing County, Nevada*, Water Resources-Reconnaissance Series Report 32, (Department of Conservation and Natural Resources and United States Geological Survey), April 1965.

[9] Nevada Division of Water Resources' Water Rights Database, Hydrographic Basin Summary, Lovelock Valley – Oreana Subarea (073A), October 24, 2014, official records in the Office of the State Engineer.

precipitation within the basin, excluding the Oreana Subarea, is estimated to be approximately 1,200 acre-feet per year. An additional 1,000 acre-feet annually enters the basin as subsurface inflow from the Imlay Area Hydrographic Basin. Groundwater recharge also occurs through river and canal seepage, and from deep percolation from irrigated lands. Discharge of groundwater from Lovelock Valley occurs by evapotranspiration (ET) from phreatophytic plants around the perimeter of the valley floor, seepage to irrigation drains and subsequent ET from the Humboldt Sink, subsurface flow to the Carson Desert, or by pumpage.

The perennial yield of Lovelock Valley is currently established as 43,000 afa. This figure was first published by the Nevada State Engineer in 1971,[10] citing two reconnaissance analyses prepared by the USGS in the 1960s. One was Reconnaissance Series Report 32 (Recon 32),[11] which was specific to Lovelock Valley and evaluated individual components of the Lovelock basin water budget, including an appraisal of water quality and a discussion on perennial yield. The other was Bulletin 32,[12] which provided a hydrologic assessment of the entire Humboldt River basin.

The authors of Recon 32 and Bulletin 32 did not explicitly calculate a perennial yield, but they did evaluate individual components of the Lovelock water budget from which perennial yield can be derived. Recon 32 estimated groundwater discharge by phreatophyte evapotranspiration to be 22,500 afa in Lovelock Valley excluding the Humboldt Sink and the Oreana subarea. Recon 32 also estimated that 21,000 afa of infiltrated irrigation water is discharged to drains and conveyed to the Humboldt Sink, where it is ultimately lost through ET. In Bulletin 32, the authors estimated total groundwater evapotranspiration in the Lovelock Valley, including the Oreana Subarea and the Humboldt Sink, to be 31,100 afa; however, the authors do not provide supporting information such as ET areas or rates.

The fact that the authors of Recon 32 did not calculate a perennial yield is notable because this was one of their stated objectives. The authors instead concluded that perennial

[10] Office of the State Engineer, *Water for Nevada, State of Nevada Water Planning Report No. 3*, 1971.
[11] D.E. Everett and F. Eugene Rush, *Water Resources Appraisal of Lovelock Valley, Pershing County, Nevada*, Water Resources-Reconnaissance Series Report 32, (Department of Conservation and Natural Resources and United States Geological Survey), April 1965.
[12] T. E. Eakin and R. D. Lamke, *Hydrologic Reconnaissance of the Humboldt River Basin, Nevada*, Water Resources Bulletin No. 32, (State of Nevada, Office of the State Engineer and United States Geological Survey), 1966.

yield was indeterminate, because pumpage near the Humboldt River can induce recharge from the River. They also concluded that groundwater development potential was limited because groundwater of suitable quality for most uses only occurs in the northern portion of the basin, and the bulk of the groundwater in the basin was too highly mineralized for agriculture and most other purposes. When the State Engineer interpreted the information in Recon 32 and Bulletin 32 to assign a perennial yield of 43,000 afa, he did not qualify this estimate at the time to account for the limitations outlined in those reports.

In many Nevada groundwater basins, including Lovelock Valley, the State Engineer has determined that the perennial yield of the basin is equal to the natural ET, assuming that the water consumed by phreatophytic plants can be captured by pumping and placed to beneficial use. In other basins, including many basins with through-flowing rivers or basins that have no natural groundwater ET, the State Engineer has determined that the perennial yield is equal to recharge from precipitation in the valley. Often the State Engineer has used a combination of factors to determine the perennial yield. The 43,000 afa perennial yield assigned to the Lovelock Basin appears to be the sum of the ET lost to phreatophytes (22,500 afa) plus the water lost to the drains and evaporated in the Humboldt Sink (21,000 afa), rounded down from 43,500 to 43,000.

The State Engineer finds it necessary to reexamine and revise the perennial yield of groundwater in Lovelock Valley, because current data on groundwater sources, movement, and quality shows that there are significant limitations to the development potential of the groundwater in the basin. Consideration of these limitations is essential in evaluating new water right applications to ensure sustainable use of the limited fresh water supply in the basin and to prevent conflicts with existing water rights.

In the northern portion of Lovelock Valley, upgradient of most irrigation in the basin, groundwater originates as recharge from precipitation in the local drainage basin, subsurface groundwater inflow from the Imlay area, or as seepage from the Humboldt River, and is of generally good chemical quality. Recon 32 estimated local recharge at 1,200 afa, excluding the Oreana Subarea. Subsurface groundwater inflow from the Imlay area was estimated to be 1,000 afa.[13] Groundwater pumping in this part of the valley that exceeds local recharge and subsurface

[13] T.E. Eakin, *Ground-water appraisal of the Imlay area, Humboldt River Basin, Pershing County, Nevada*, Water Resources-Reconnaissance Series Report 5, (Department of Conservation and Natural Resources and United States Geological Survey), February 1962.

inflow may ultimately induce additional recharge from the River, which could conflict with existing rights.

The chemical quality of groundwater decreases from north to south. In the agricultural portion of Lovelock Valley, surface water is diverted from the river and distributed throughout the valley for irrigation. Groundwater recharge occurs through river and canal seepage, and irrigation in excess of the field capacity of the soil. Because the farm area and the Humboldt Sink are at the end of the river, salts are concentrated there through the evapotranspiration process. Salts are leached from the soil by irrigation water, but are still present in the groundwater. Some of this infiltrated water discharges to drains and makes its way to the Humboldt Sink, but much of it also supplies water for phreatophyte ET in areas adjacent to irrigated agriculture. Water lost to ET in areas distal from the Humboldt River can generally be captured by pumping, but in most of Lovelock Valley, the water lost to phreatophytic ET is of poor chemical quality. Water lost to ET along the margins of the River is of better quality, but this ET generally cannot be captured by pumping because drawdown near the River induces recharge from the River which maintains a supply of water for phreatophytes.

Groundwater of degraded chemical quality in the southern portion of the basin constitutes the bulk of the perennially available groundwater supply in Lovelock Valley. Capture of this groundwater that would otherwise be discharged naturally by evapotranspiration might be achieved without unreasonable impacts to existing rights, but its development potential is substantially limited by poor water quality.

Existing groundwater appropriations in Lovelock Valley are approximately 10,000 afa,[14] which, on its face, suggests that there is a large surplus of groundwater available to appropriate. However, nearly all of the existing appropriations are concentrated in the northern portion of the basin where groundwater quality is generally suitable for most uses. There is virtually no groundwater development in the downgradient portion of Lovelock Valley, including the Humboldt Sink, where the bulk of the perennially available groundwater occurs.

The subject applications propose to pump groundwater near the Humboldt River and upgradient of the existing irrigated farm land. The State Engineer finds that the proposed groundwater pumpage in this location would either induce recharge from the Humboldt River,

[14] Nevada Division of Water Resources' Water Rights Database, Hydrographic Basin Summary, Lovelock Valley (073), October 24, 2014, official records in the Office of the State Engineer.

and thereby conflict with existing surface-water rights, or would pump from the limited fresh water aquifers, a fully-appropriated source.

The State Engineer finds that the existing perennial yield in Lovelock Valley must be limited to the amount of groundwater of suitable chemical quality that is replenished on an annual basis.[15] The revised perennial yield is determined to be 2,200 afa, which is the mean annual rate of recharge from precipitation in the Lovelock hydrographic basin and groundwater inflow from the Imlay hydrographic basin. Existing appropriations of approximately 10,000 afa exceed the revised perennial yield. The State Engineer finds that there is no unappropriated groundwater available in the Lovelock Valley Hydrographic Basin.

IV.

Conflicts with Existing Rights

As discussed in the perennial yield section above, the annual recharge in the basin is approximately 2,200 acre-feet. If these applications were granted, the pumped water could capture this recharge, which is already appropriated, and would therefore conflict with existing rights. Alternatively, pumping under the applications could induce recharge from the Humboldt River, thereby conflicting with senior surface-water rights. The State Engineer finds that development of groundwater under these applications would conflict with existing rights.

CONCLUSIONS OF LAW

I.

The State Engineer has jurisdiction over the parties and the subject matter of this action and determination.[16]

II.

The State Engineer is prohibited by law from granting a permit under an application to appropriate the public water where:[17]

A. there is no unappropriated water at the proposed source;
B. the proposed use or change conflicts with existing rights;

---

[15] D.E. Everett and F. Eugene Rush, *Water Resources Appraisal of Lovelock Valley, Pershing County, Nevada*, Water Resources-Reconnaissance Series Report 32, (Department of Conservation and Natural Resources and United States Geological Survey), April 1965. p. 23.
[16] NRS Chapters 533 and 534.
[17] NRS § 533.370(2).

C. the proposed use or change conflicts with protectable interests in existing domestic wells as set forth in NRS § 533.024; or

D. the proposed use or change threatens to prove detrimental to the public interest.

III.

Applications 67152, 67195, 67243, 71220, and 72276 were filed for industrial power plant purposes with the first applications being filed in 2001. To date, the Applicant has not demonstrated that any specific project is ready to proceed.

Nevada Revised Statute § 533.030 provides that water may only be appropriated for a beneficial use and not otherwise. Nevada Revised Statute § 533.370(1)(c) provides that when approving or rejecting an application the applicant must provide proof satisfactory of his intention in good faith to construct any work necessary to apply water to the intended beneficial use with reasonable diligence and his financial ability and reasonable expectation actually to construct the work and apply the water to the intended beneficial use with reasonable diligence. Additionally, NRS § 533.375 allows for the State Engineer to require the applicant to submit additional information to enable him to properly guard the public interest.

The State Engineer finds that the beneficial use requirement provides that the Applicant must demonstrate an actual beneficial use for the water applied for and does not allow for an applicant to tie up water for some project it might find in the future. The State Engineer finds the Nevada legislature has demonstrated its concern with speculating in water rights by enacting NRS § 533.370(1)(c), which requires that an applicant provide proof satisfactory of a good faith intention to actually construct the project with reasonable diligence and that it has the financial ability and reasonable expectation actually to construct the project.

The State Engineer finds that it threatens to prove detrimental to the public interest to allow an applicant to hold on to a water right application when it is unable to demonstrate an actual project for which the water will be used or has failed to provide information required under Nevada water law. The State Engineer finds that the Applicant did not provide any evidence of the actual beneficial use to be made, and did not provide any evidence that specifically supports the quantity of water applied for under these applications. The State Engineer finds that the Applicant has no discernible project at this time and the applications are filed for speculative purposes.

Ruling
Page 11

IV.

Nevada Revised Statute § 533.370(2) states that "...where there is no unappropriated water in the proposed source of supply, or where the proposed use or change conflicts with existing rights... the State Engineer shall reject the application and refuse to issue the requested permit." As discussed in the sections above, the annually replenished potable water supply in the northern half of Lovelock Valley is fully appropriated, and therefore there is no unappropriated water at the proposed source of supply. Furthermore, to grant these applications would conflict with existing groundwater rights in the area by capturing the limited amount of annually-recharged fresh water. If granted, the additional pumping would cause an increase in the infiltration of the surface water of the Humboldt River into the groundwater aquifer, thereby potentially reducing river flow to the extent that it could conflict with existing decreed Humboldt River water rights. The State Engineer finds that there is no unappropriated water at the proposed source of supply and the proposed use of this water would conflict with existing rights.

RULING

The protests to Applications 67195 and 72276 are upheld. Applications 67152, 67195, 67243, 71220 and 72276 are hereby denied on the grounds that no water is available for appropriation, the use of the water would conflict with existing rights and applications cannot be granted for speculative purposes. Applications 67205 and 67206 are hereby denied on the grounds that no water is available for appropriation and the use of the water would conflict with existing rights.

Respectfully submitted,

P.E.

JASON KING, P.E.
State Engineer

Dated this 24th day of
December, 2014.