

Lander County Master Plan 2010



Adopted By:

Board of County Commissioners: October 28, 2010

Lander County Planning Commission: August 11, 2010

Table of Contents

Master Plan Elements

1.0	INTRODUCTION	1-1
2.0	CONSERVATION AND NATURAL RESOURCES	2-1
3.0	LAND USE	3-1
4.0	POPULATION, HOUSING AND ECONOMIC DEVELOPMENT	4-1
5.0	PUBLIC FACILITIES AND SERVICES	5-1
6.0	RECREATION	6-1
7.0	TRANSPORTATION	7-1
8.0	WATER RESOURCES	8-1

List of Tables

Table 4-1 Demographic Characteristics Lander County, Nevada	4-2
Table 4-2 Population Projections 2008 – 2015.....	4-3
Table 4-3 School Enrollment in Lander County 1999-00 to 2007-08	4-3
Table 4-4 Housing Forecast in Units by Community.....	4-5
Table 4-5 Industrial Employment and Wages Lander County and the State of Nevada: 2009 .	4-6
Table 4-6 Major Employers, Lander County: 2009	4-7
Table 5-1 Lander County Sewer and Water District #1 Population and Water Demand	5-3
Table 5-2 Austin Sewer and Water District #2 2009 Population and Water Demand	5-3
Table 7-1 Level of Service (LOS) Categories.....	7-3
Table 8-1 Perennial Yield Groundwater Basins in Lander County: 2009	8-17
Table 8-2 Municipal and Industrial Water: 2009	8-23
Table 8-3 Population & Water Demand By Hydrographic Basin Within Lander County.....	8-24

List of Figures

Figure 3-1 Lander County Land Status3-3
 Figure 3-2 Austin Area Land Use Plan3-13
 Figure 3-3 Kingston Area Land Use Plan3-15
 Figure 6-1 Lander County Recreation Sites.....6-5
 Figure 8-1 Lander County Surface Water Features8-3
 Figure 8-2 Ground Basins and subsurface Flows8-6
 Figure 8-3 Groundwater Levels Basins 57 & 588-10
 Figure 8-4 Lander County Flood Prone Areas8-11
 Figure 8-5 Battle Mountain Flood Prone Areas and Flood Zones.....8-12

Appendix A

Figure A-1 Major Geologic Structures and Fault Lines
 Figure A-2 Battle Mountain Town Zoning
 Figure A-3 Battle Mountain Town Land Use Plan
 Figure A-4 Battle Mountain Area Zoning
 Figure A-5 Battle Mountain Area Land Use Plan
 Figure A-6 Public Facilities and Service Plan
 Figure A-7 Battle Mountain Transportation Plan

1.0 INTRODUCTION

Lander County Nevada is valued for historical significance, mountain scenery, rich natural resources, and diverse recreational opportunities. The County's natural resources have attracted residents since the 1800's when prospectors sought the area's gold and silver. Today mining, outdoor recreation and agriculture serve as a basis for the County economy.

The "boom or bust" nature of the mining industry has resulted in periods of rapid growth and corresponding economic declines throughout the County. Both Austin and Battle Mountain have experienced these cyclical growth patterns which have resulted in reactive development to satisfy immediate needs. By establishing long-range planning goals through a master planning effort, the quality of life for all Lander County residents can be improved and protected.

Nevada Revised Statutes (Section 278.150) directs the planning commission to 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. The Master Plan is designed to promote the public health, safety, and general welfare of the County. The Plan is both long-term and comprehensive in nature. It sets forth polices and action programs for the County to follow when making decisions concerning the county's future. The polices and action programs are intended to insure that the County's livability is enhanced, rather than reduced, as the county grows.

A 10-year planning horizon has been formulated for Lander County within this Master Plan. It is an official statement of the County regarding the development needs of the County and how they can best be achieved. These needs cover a spectrum from physical development to public services and transportation concerns.

The Lander County Master Plan:

- Expresses public policy in the form of generalized maps, goals, and policy statements.
- Sets forth polices from the maintenance and improvement of existing County development and for the location, character, and quality of future development.
- Identifies the need for and methods of improving coordination of community development activities among all units of government.
- Serves as a basis for evaluating specific projects prepared by the private sector.

- Assures that all public (agency) actions are consistent and coordinated with the policies of the Master Plan.
- Reviewed and revised as necessary to be consistent with the needs and desires of the community.

The Master Plan attempts to evaluate County resources as to limitations, availability, and how they can best be balanced to guarantee a healthy and viable County environment. Among the various issues considered are proper control of growth and economic development. Growth that will result in significant and social and economic benefits should be considered, while discouraging growth which degrades the environment and results in undesirable changes to the identity and character of the County.

A healthy business community, which provides for the employment of Lander County residents, is essential to the economic health of the County. Economic development directly affects the amount of human services, public services, housing, and the level of environmental quality. The associated economic impacts of land use are analyzed in general terms and addressed within the Master Plan.

Using the Master Plan

Implementation of the Master Plan will be monitored by the Lander County Planning Commission. As a means of furthering the purpose of a master plan, the Commission shall annually make recommendations to the governing body for the implementation of the plan. The plan will be regularly reviewed and revised as new information becomes available and as community needs and values change.

The Lander County Master Plan is to be used by both County Administrators and the general public. The document contains information on the location and types of planned land uses, transportation systems, and public services. Application of the plan is designed for the entire County including the communities of Austin, Battle Mountain, and Kingston.

Specific use of any parcel can be derived from the County and community land use maps. These maps indicate the planned uses for individual parcels. Land use plan maps are included as Appendix A. The land use guidelines which are contained in Section 3.0 of the Master Plan should then be consulted to determine more specific land use information for the parcel.

Each individual element of the Master Plan contains specific polices and action programs regarding that element. The goals and polices indicate the County's position regarding growth,

resource management, and development. The goal and policies, along with the Master Plan maps, provide an overall guide for community development.

The permit process can be initiated once the Master Plan map and the policies and action programs have been consulted. If a proposed project is consistent with the provisions of this plan and the County zoning ordinance, the next step is to determine which review procedures and approvals are required. The determination of plan consistency and approval procedures shall be made by the Lander County Planning Commission and the board of County Commissioners.

Lander County may require planning studies, environmental and alternative analysis, and additional planning documents be prepared as part of the project approval process. The specific procedures for project approval are set forth in county ordinances, as well as state and federal codes.

No master plan can forecast future changes in community values and objectives, or availability of new information and data. Because of this, the Master Plan will require revision from time to time. The Lander County Commissioners, Planning Commission, developers, or citizens desiring changes, can pursue a revision in the Master Plan. The revisions or amendments will be considered in accordance with State law (NRS 278.210).

Adoption and Amendments to the Master Plan

NRS 278.210 sets forth the process for adoption and amendments to the master plan.

1. Before adopting the Master Plan or any part of it, or any substantial amendments thereof, the commission shall hold at least one public hearing thereon, notice of the time and place of which shall be given at least by one publication in a newspaper of general circulation in the city or county, or in the case of a regional planning commission, by one publication in a newspaper in each county within the regional district, at least 10 days before the day of the hearing.
2. The adoption of the master plan, or any amendments, extension, or addition thereof, shall be by resolution of the commission carried by the affirmative votes of not less than two-thirds of the total membership of the commission. The resolution shall refer expressly to the maps, descriptive matter and other matter intended by the commission to constitute the plan or any amendments, addition or extension thereof, and the action

taken shall be recorded on the map and plan descriptive matter by the indentifying signatures of the secretary and chairman of the commission.

3. No plan or map, hereafter, shall have indicated thereon that it is part of the Master Plan until it shall have been adopted as part of the Master Plan by the commission as herein provided for the adoption thereof, whenever changed conditions or further studies by the commission require such amendments, extension, or addition.
4. An attested copy of any part, amendment, extension of or addition to the Master Plan adopted by the planning commission of any city, country or region shall be certified to the governing body of such city, county or region.
5. An attested copy of any part, amendment, extension of or addition to the Master Plan adopted by any regional planning commission shall be certified by the county planning commission and to the board of county commissioners of each county within the regional district.

The Master Plan is a working multi-purpose tool that illustrates Lander County's existing environment, indicates the demands upon public services and resources, and provides direction for the County's future. Revisions and amendments are a necessity to keep the Master Plan in a viable, up-to-date condition.

General History

Lander County is named after Frederick W. Lander, builder of a wagon road across the State for the federal government. The County was formed December 19, 1862 and originally encompassed the eastern third of the State. It was called "The Mother Counties" after it was divided into the Counties of Lander, Eureka, White Pine and Elko. The first County seat was Jacobsville, six miles west of Austin. Voters mandated its move to Austin in September 1863. In May, 1979 the voters approved moving the County seat to Battle Mountain. The Austin Courthouse was built in 1869 and served Lander County for 116 years. It is still used for County offices today.

Battle Mountain

Battle Mountain was home to the Northern Paiute and Shoshone Indian tribes. A fur trader for the Hudson Bay Company, Peter Skeen Ogden, was one of the first to see the junction of the

Humboldt and Reese Rivers in November of 1828. Beginning in 1833 with the Walker Expedition, the Humboldt River was used by trappers and explorers as a pathway west.

By 1845 the emigrant trail along the Humboldt was well established. Beginning in 1851, the overland mail was carried by pack mules along the Humboldt Trail. A stone cabin was built for the mule skimmers at Stonehouse, one of the first built buildings in the region. Sometime during 1850 to 1860, there was a conflict between white settlers and local Indians, and Battle Mountain was born. In 1860 a shorter route was found through Austin and travel shifted south. In 1866 gold and silver was discovered in the hills southwest of town, in Licking Canyon. Two years later the Central Pacific Railroad built its lines along the Humboldt River and the Town of Battle Mountain. Mining and ranching have been the backbone of Battle Mountain's economy. At one time, Battle Mountain was considered the Barite Capital of the World.

By 1880, Battle Mountain had become a regional freight and trade center. In 1917 the Battle Mountain Indian Colony was established on 688 acres west of Battle Mountain. The year 1930 saw the start of the paving of the major highways and the advent of tourism.

Austin

Austin is located almost in the geographic center of Nevada on U.S. Highway 50, 179 miles east of Reno. Austin was founded in 1862 when a Pony Express pony kicked over a rock west of the present town and started a rush for the rich silver ore. By the summer of 1863, Austin and the Reese River Mining District had a population of 10,000 persons. In that year, Austin was made the County seat of Lander County, which at that time included Eureka, White Pine, and Elko Counties.



The Nevada Central Railroad was built in 1880 and aided in mining developments and enhanced Austin's position as a commercial center. When silver production dropped, the area switched to uranium and Apex Minerals Corporation Rundberg Mine was the largest uranium mines in Nevada. Later, Austin became the center of the turquoise mining industry.

Austin today is the center of a vast cattle and sheep ranching area and offers some to the finest fishing and deer hunting areas in the west. Austin's population has diminished and many of the

old buildings have been removed, but the “spirit” of Austin is much the same today as it was in the 1860’s.

Kinston

Kingston Canyon, a historic mining district, is a short 30 mile drive south of Austin. It is named after the Kingston Mine discovered in 1863 and was the location of a number of silver mines in the 1860s. Remnants of these are scattered throughout the canyon and one large stone mill can be seen across from the Kingston Lodge. The Kingston are hosts some of the best varied trout fishing in the state. Some of the most beautiful scenery in Lander County can be seen here, from the Kingston Canyon creek campgrounds to Groves Lake.



2.0 Conservation and Natural Resource

The Conservation and Natural Resource Element of the Master Plan outlines policies and action programs for protecting the County's land, water and air resources as growth and development occurs. The Conservation Element provides guidelines for conserving the County's important natural resources while satisfying the requirement for a conservation plan as outlined by the Nevada Revised Statutes. As defined in the Conservation Element; land resources including soils, topography, agricultural lands, minerals, public lands, and geothermal resources.

Specific Goals of the Conservation and Natural Resources Element

- Protect Important Agricultural Lands which provide:
 - economically productive acreage,
 - important flood management areas,
 - prime or unique farmland or farmlands of statewide importance.
- Limit conflicts and encroachment from developing lands on agricultural lands.
- Promote development of renewable energy projects.
- Protect important environmental resources and open space.

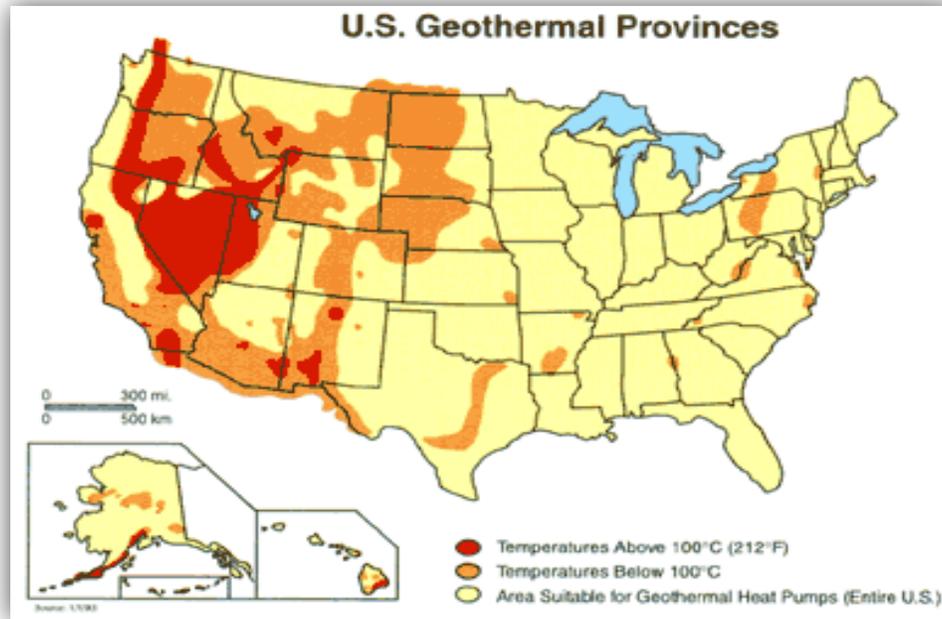
Agricultural Lands

Agriculture in Lander County primarily includes alfalfa hay production, beef cattle, and sheep. There is a limited amount of garlic seed production occurring in Lander County. Important agricultural areas include farm and ranch operations concentrated in the Reese River Valley, Antelope Valley, Humboldt River Basin and Big Smoky Valley. Outside these areas, farm and ranch operations are scatter throughout the County. Public lands and Forest Service lands are used for livestock grazing. The Lander County cattle and calves inventory has increased from 1999 to 2007. In 2007 the inventory stood at 32,000 head up from 20,000 head in 1999. Alfalfa hay and other hay production averaged just over 90,000 tons in 2002 and 2003. By 2008, Lander County had 28,000 acres under cultivation producing 144,000 tons of hay.

Geothermal Resources

Lander County has the potential to develop additional geothermal resources. There are several Known Geothermal Area (KGA) and one operating plant at Beowawe on the Lander line with

Eureka County. In 2008 the Beowawe Plant produced 129,000 Mega Watt Hours. Two additional geothermal plants are planned for construction, one in Grass Valley and the other in Buffalo Valley. These plants are expected to come on line in 2010. In recent years exploration and possible development activity has increased in and around Lander County. Potential project sites include Jersey Valley, Pumpnickel Valley, Reese River, and Grass Valley in Lander County.



Geothermal development has the potential for environmental impacts to such resources as noise, visual, hydrology, and seismic. Remote locations may require the construction of electrical transmission lines. Additionally, construction and site access can have impacts to local transportation facilities. With the increasing emphasis on renewable energy, Lander County needs to carefully evaluate the potential impacts associated with power plant construction and operations. Adequate site monitoring and reclamation procedures need to be defined during permitting activity.

Earthquakes and Seismic Risk

Recorded substantial magnitude earthquakes in eastern Nevada have been associated with surface fault rupture along a north-south trend near the western boundary of Lander County. Many faults occurring in the County displace Quaternary alluvium, making them potentially active. Between 1970 and 1981, approximately 100 earthquakes ranging from Mercalli (M) 3.0

and M 6.0 have occurred within 60 miles of northern Lander County. In 2008 the City of Wells, approximately 100 east of Battle Mountain experienced a 6.0 earthquake with major damage to many historic structures in the downtown. The U.S. Geological Survey (USGS) reports that there is a large, 39-mile-long fault located in this region, known as the Independence Valley Fault Zone; but that this fault was probably not the source of the earthquake as its location is too far southeast of the epicenter of the Well's earthquake.

In the northern Shoshone Range for example, southeast of Battle Mountain, a predicted maximum credible event (largest possible) on a local active fault could produce a M7.0 earthquake. This level of seismic risk should be considered in local development codes. Major fault lines should be located on all parcel and subdivision maps. Lander County should establish adequate setbacks from faults. Figure A-1 shows major geologic structures of Lander County including fault lines.

Noxious Weeds

Hoary cress and Russian Knapweed

Noxious weeds and invasive plants occur throughout Lander County. Two species, Hoary cress and Russian Napweed, are found along gravel and dirt roads in the County. Hoary cress, also called whitetop, is a deep rooted, invasive mustard perennial that poses a threat to both crop and rangelands in the Western U.S. Accidentally introduced to North America from western Asia and eastern Europe as a seed contaminant, hoary cress currently infests more than a quarter million acres of public and private land and is found on the noxious weed lists of 14 states and one Canadian province. They are commonly found on alkaline and disturbed soils and are highly competitive with other plant species. The plants usually bloom in mid-June, with pod development being completed by the third week of July. A single plant established in the absence of competition has been reported to spread over an area 3.7 m in diameter during its first year of development. Other studies show radial increases of 61-76 cm annually. The plants are capable of producing up to 455 shoots in one year.

Russian knapweed is a creeping perennial that reproduces from seed and vegetative root buds. It emerges in early spring, bolts in May to June, and flowers through the summer into fall. Russian knapweed is toxic to horses. The key to Russian knapweed control is to stress the weed and cause it to expend nutrient stores in its root system.

The weed creates several problems:

- It's poisonous to horses. "It causes chewing disease, which is a neurological disorder that attacks the part of the brain that controls fine motor movements, such as those in the mouth, lips and tongue," says Creech. "If horses consume large quantities of Russian knapweed over a month or two, it affects their ability to chew and swallow, so they eventually die from dehydration and/or starvation." Fortunately, the weed is not toxic to other animals and has a bitter taste and unpleasant odor, making it unattractive to animals. But they'll eat Russian knapweed if they're hungry.
- Intake may decline. "Beef and dairy cattle may eat less if the foul-tasting plants are mixed with other forages."
- It's very competitive. "It can crowd out alfalfa and other forages, decreasing their yield and value."
- Large populations may become allelopathic. "It produces compounds in its roots that can suppress the growth of nearby plants."

Tamarisk

As real estate development and recreational land use have expanded in recent years, weed infestations have become common in every county and city in Nevada (especially in Washoe and Clark Counties). One weed in particular, tamarisk (*Tamarix* spp.) also known as salt cedar, is causing significant problems with water resources throughout the state.

Unlike many invasive plants which entered the U.S. accidentally through contaminated seed supplies or in shipping materials, tamarisk was intentionally introduced in the southwestern U.S as a windbreak and shade tree beginning in the late 1800's. Well adapted to Nevada's soil conditions and hot, dry climate, tamarisk soon spread outside the landscape areas where it was originally planted and established itself along river corridors and in riparian areas where it poses a serious threat to native plant species.

Tamarisk is known for its enormous consumption of water, a critical concern in an area like Nevada where water is scarce. It is estimated that a single mature tamarisk plant can consume 200 to 300 gallons of water per day leaving insufficient water to support the native under story plants essential to a healthy riparian environment. In addition, tamarisk exudes salt from its leaves which changes the chemistry of the surrounding soil, making it even more difficult for under story plants to establish, compete, and survive. Ultimately, tamarisk squeezes out other species altogether and creates a plant monoculture in the infested area.

Pinyon-Juniper

Concurrent with and partially due to woodland expansion, the sagebrush ecosystem in western North America has dramatically declined in quality and quantity (Bunting and others 2002, Knick 1999, Miller and Eddleman 2000, Wisdom and others 2005). Sagebrush-associated fauna, such as greater sage-grouse (*Centrocercus urophasianus*), pygmy rabbit (*Brachylagus idahoensis*), and Brewer's sparrow (*Spizella breweri*), are considered species of concern across much of their range (Connelly and others 2004, Dobkin and Sauder 2004, Knick and others 2003, Rowland and others 2005). Moreover, the threat of woodland encroachment was determined to be an extinction risk for greater sage-grouse in the western portion of its range (USDI Fish and Wildlife Service 2005). Connelly and others (2004) also identified pinyon-juniper woodland encroachment as a threat in their range-wide conservation assessment of greater sage-grouse habitats. However, old-growth pinyon-juniper, which should be distinguished from expansion woodlands, provides essential habitat for many woodland-associated species of conservation concern (Miller and others 1999b, Reinkensmeyer and others 2008).

In addition to displacing plant communities such as sagebrush and being implicated in the increasing distribution of invasive plants such as cheatgrass (*Bromus tectorum*),⁵ encroaching woodlands also increase fuel loads, thereby leading to changes in fire regimes (Chambers and others 2005). Pinyon and juniper species are highly flammable and vulnerable to fire (Brown and Smith 2000). The issue of pinyon-juniper expansion is particularly problematic because the phenomenon is geographically widespread and is a potentially divisive issue among public land users (e.g., Nelson and others 1999). Woodland expansion is also considered a threat to effective management of forage resources for livestock (Bates and others 2000, Gholz 1980). In Oregon, pinyon-juniper woodlands comprise a single species, western juniper (*Juniperus occidentalis*) (hereafter referred to as juniper). This species represents the northwestern extension of pinyon-juniper woodlands in the Intermountain West (Miller and others 2005).

Public Lands Plan

The initial Lander County Public Lands Policy Plan (Plan) was developed between 1983 and 1984 as part of a state-wide effort resulting from the passage of Senate Bill 40. Under SB40, the State Land Use Planning Agency section of the Nevada Division of State Lands (SLUPA) was directed by the 1983 State Legislature to:

“Prepare, in cooperation with appropriate state agencies and local governments throughout the state, plans or policy statements concerning the use of lands in Nevada which are under federal management.”

SLUPA, in concert with local governments, developed a public lands policy plan for each of Nevada's 17 counties as well as a statewide element. The Plan was adopted on October 4, 1984 by the Lander County Board of County Commissioners (LCBC). The LCBC working under advisement of the Lander County Public Land Use Advisory Planning Commission (PLUAPC) adopted an update to the Plan on November 8, 1999. The 2005 Plan represents a review of existing and emerging public lands issues that are of importance to Lander County as it works with federal agencies under the National Environmental Policy Act (NEPA) and other public processes.

FLPMA specifically states "To the extent consistent with the laws governing the administration of public lands, coordinate land use inventory planning and management activities of or for such lands with the land use planning and management programs of other Federal departments and agencies and of the States and local governments within which the lands are located" (43 USC 1712(c)(9)). Further, 40 CFR 1502.16 reads "[The environmental consequences section of the EIS] shall include discussions of ...(c) Possible conflicts between the proposed action and the objectives of...local land use plans, policies, and controls for the area concerned."

The 2005 Plan represents a review of existing and emerging public lands issues that are of importance to Lander County as it works with federal agencies under the National Environmental Policy Act (NEPA) and other public purposes. The purpose of the Plan is to:

- Detail Lander County's vision and strong policy voice concerning public lands.
- Define Lander County's public land related issues and needs,
- Provide locally developed land management policies that enable the federal land management agencies to better understand and respond in a positive fashion to the concerns and needs of Lander County in a collaborative process.
- Increase the role of Lander County in determining the management of the federally administered lands.
- Provide an opportunity to positively address federal land use management issues directly and thereby offer a proactive alternative rather than a after the fact response.
- Encourage public comment and involvement on public land actions.

The management of public lands is dynamic. The residents of Lander County continually face new challenges and changes in management of public lands and Forest Service lands which impacts the well being of Lander County communities, its residents and public and Forest Service land users. More recently, issues such as warm weather grazing, proposed national monuments for southern Lander County, sage grouse management, and geothermal development have emerged.

Conservation and Natural Resources: Policies and Action Programs

Geologic Hazards

CNR.2.1 Known fault lines should be located on all parcel and subdivision maps. Adequate setbacks from faults shall be required.

CNR.2.2 Lander County will review areas that possess severe geologic hazards and in which public safety may be jeopardized and, if appropriate, plan these areas for minimal or no development.

CNR.2.3 Prior to the approval of a development proposal, Lander County may require geologic reports that identify potential hazards. In areas where geologic hazards are identified, expansive soil, hydrology, and engineering studies must clearly demonstrate that the proposed development will not result in avoidable public costs and will not pose significant risk of earthquake, landslide, erosion, sedimentation and drainage problems.

Vegetation- Noxious Weeds and Invasive Species

CNR.2.4 Coordinate with BLM, USFS and Soil Conservation Service to minimize the spread of noxious weeds. Coordinate road grading policy for Lander County to minimize noxious weeds.

CNR.2.5 Discourage new road building/grading activities during periods when noxious weeds can spread. New development requiring construction of unpaved roads should occur during periods which minimize the spread of Russian Knapweed and Hoary cress.

CNR.2.6 New development activities will be encouraged to limit total ground clearing activities.

CNR.2.7 Lander County will continue to work with the U.S. Forest Service and/or Bureau of Land Management (BLM) to adopt consistent and complementary road standards for developments within the boundaries of the National Forest and or public lands.

CNR.2.8 During development review, Lander County Building Department will consult with appropriate agencies to determine necessary protection measures. Such measures may include:

- a. Integration of development with the existing topography, soils and vegetation to the degree possible.
- b. Minimization of soil exposure during the heavier runoff period by proper timing of grading and construction.
- c. Retention of natural vegetation whenever feasible.
- d. Vegetation and mulching of denuded areas to protect them from winter precipitation and erosion caused by wind and water.
- e. Provide guidelines for temporary measures to minimize erosion during construction.

CNR.2.9 During development review, Lander County will encourage maximum retention of trees and other vegetation which stabilize steep hillsides, retain moisture, prevent erosion, and enhance the natural scenic beauty, and, where necessary, require additional landscaping and/or revegetation.

Alternative Energy Development

CNR.2.10 Renewable Energy Facility (REF) shall be defined as any facility or combination of facilities which generate energy for private or commercial use, are permitted in the OS district. Such facilities include, but are not limited to, solar, wind, water, wastewater, biofuel (liquid, solid biomass, biogas) and geothermal energy. REF development in A-3 district may be allowed if adequate mitigation measures are in place to protect public health, safety and welfare.

CNR.2.11 All private and commercial REFs shall comply with all applicable Lander County, Nevada State, and Federal codes, regulations, and necessary permits.

CNR.2.12 Commercial REFs shall only be allowed upon granting of a Special Use Permit. Granting of a special use permit is contingent upon the REF demonstrating that no significant impact to the health, safety and well being of Lander County residents is expected to occur and that appropriate mitigation measures have been established to eliminate potential impacts.

CNR.2.13 Minimize Impacts from Alternative Energy and Geothermal Development.

CNR 2.13.1 Geothermal development within 2 miles of residential structures, domestic wells or other wells used for the purpose of providing drinking and or irrigation water shall require a special use permit. The Special Use Permit will consider impacts from geothermal resource development and operations to:

- Groundwater,
- Domestic, irrigation and municipal wells and water sources,
- Noise impacts,
- Visual impacts,
- Road access and transportation impacts,
- Closure and rehabilitation requirements, and
- Other resource impacts as determined by Lander County.

Lander County shall establish adequate monitoring and mitigation measures to offset any potential impacts created by geothermal development and development of other REFs.

CNR.2.14 Lander County will promote geothermal development, except where mitigation measures will not protect the existing environmental standards.

CNR.2.15 Lander County will apply adequate standards for all phases of geothermal exploration and development, including the restoration of all such areas once the resource becomes nonproductive.

CNR.2.16 Lander County will require the developer of geothermal resources to comply with local, state and federal laws and regulations governing the disposal of geothermal fluids. Before approval is given for resource development, a disposal plan must be submitted to and approved by the Lander County Board of County Commissioners.

CNR.2.17 Special use permit requirements will also applied to other alternative energy development projects in Lander County including private facilities. All REF facilities both commercial and private will meet Lander County standards for height, noise, and safety.

CNR.2.18 In addition to impacts to resources, REF development will require adequate bonding to insure site restoration and clean-up be incorporated into special use permit requirements.

Public Lands

CNR.2.19 Lander County shall support policies and programs identified in the Lander County Policy Plan for Federally Administered Lands, 2005 and incorporate such policies into the Master Plan.

CNR.2.20 Lander County opposes the designation of national monuments.

CNR.2.21 Lander County encourages BLM to minimize impacts from land exchanges or sales in the Humboldt River Basin. Due to the checkerboard pattern of ownership, land transactions in the Humboldt River corridor have the potential to impact farm and livestock operations as well as increases to the cost of public services to serve private lands.

CNR.2.22 Require new development proposals in outlying areas to maintain fire access.

CNR.2.23 Development proposals will be encouraged to incorporate the standards contained in “Wildfire Threat Reduction Recommendations for Nevadans” (published by the Living With Fire Program, <http://www.livingwithfire.info/>), where appropriate.

3.0 LAND USE

The policies and action plans established in the Land Use Element are intended to address broad County needs up to the year 2020. These policies and action plans are to be used as a guide for the public, decision makers, and staff as to the ultimate pattern of development in Lander County. Should an initial conflict arise between a policy found within the Land Use Element and a policy within the Kingston and Austin Master Plans, the conflict will initially be resolved in favor of the Kingston and Austin Master Plans where the plans address issues within the town boundaries. However, an analysis and public review of both policies will be conducted to determine which plan should be amended to best serve the public.

The Goals and Policies section and the Land Use plans (Appendix A, Figure 3-2 and Figure 3-3) set forth the primary focus of the element and describe the priority activities needed to meet the vision. The Land Use section addresses conditions and trends that influence growth in Lander County, analyzes the distribution and interrelationships of the various land use types, and contains policies and action plans which establish a development pattern for the year 2020.

Specific Goals of the Land Use Element:

- Facilitate orderly development consistent with available resources and services in Lander County.
- Minimize conflicts among land uses.
- Provide adequate lands to support economic development and population growth.
- Create a development pattern that is cost effective to serve with municipal services.
- Create stable and compatible land uses among residential areas.

Generalized Land Use in Lander County

Almost 93 percent of the land in Lander County is public land managed by the Bureau of Land Management. This land is primarily used for livestock grazing, mining, geothermal energy production and outdoor recreation. The single greatest land use within the County is open space agriculture comprised of a series of grazing allotments. Also interspersed throughout the County are 24 mining districts. Active mining operations can be found primarily in the northern portion of the County near Battle Mountain.

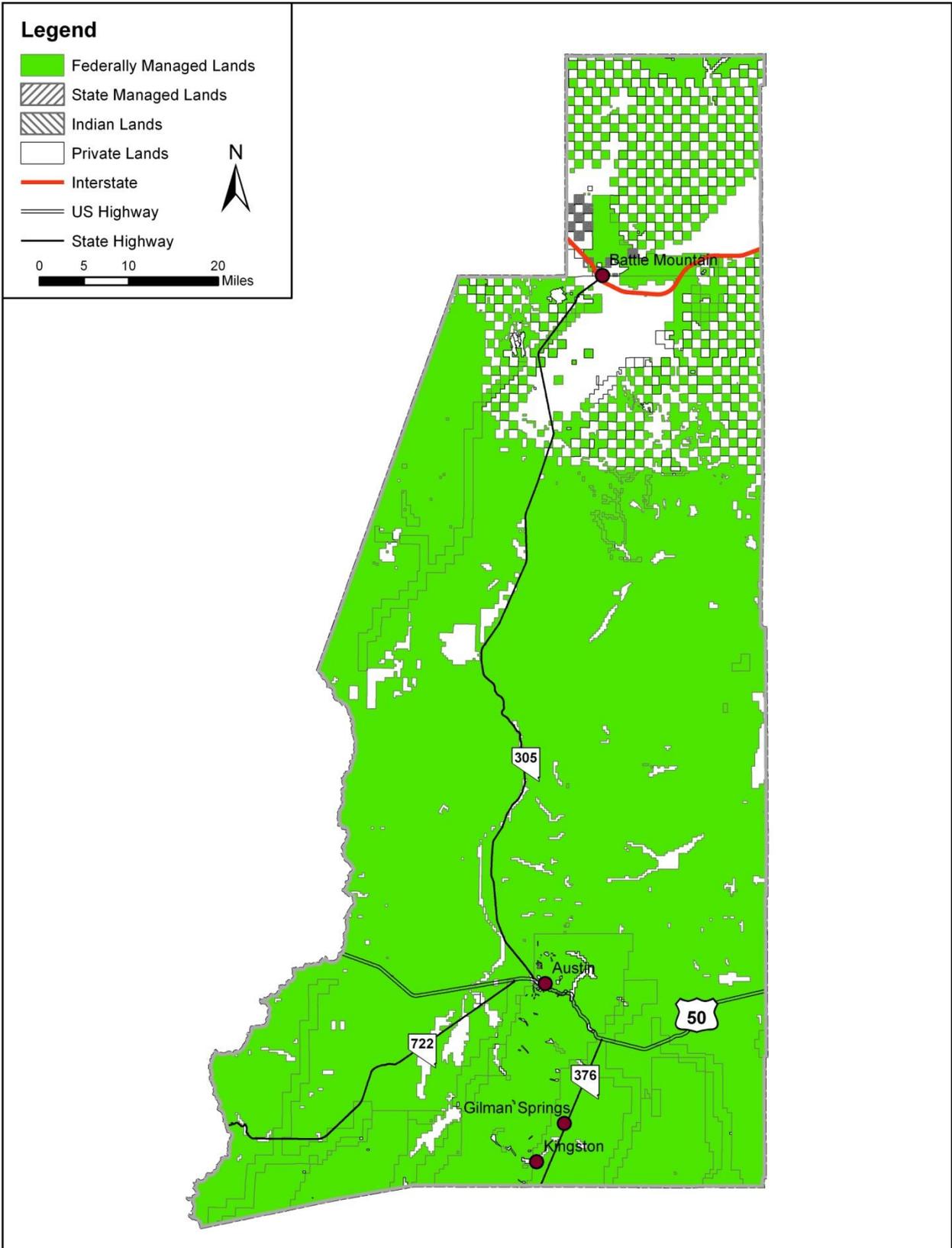
Private lands are generally found in and around the communities of Battle Mountain, Austin and Kingston. Otherwise private lands are scattered throughout the County and are associated with agricultural operations. In the northern portion of the County along the I-80 corridor, there is a checkerboard pattern of private and public land ownership which creates a number of possible constraints and conflicts. Much of the checker boarded private lands along Interstate 80 once formerly owned by the Union Pacific Railroad are now being sold off. In some instances owners of former railroad lands are seeking to subdivide or parcel lands. Additionally, over the last 10 to 15 years a relatively large number of new parcels have been created or developed to the south of Battle Mountain. Higher density residential and commercial development is now extending into areas south of Interstate 80. The Town of Battle Mountain is in the process of developing new municipal wells in an effort to achieve compliance with drinking water standards. The new water source has the potential to provide water service into areas that have historically developed at lower densities.

The community of Battle Mountain has also seen a significant shift away from its original commercial core along Front Street to State Route 305 between Front Street and I-80 which has a north south orientation. This occurred largely due to the development of a new off-ramp near the center of town. Another major concern for this area is that a portion of Battle Mountain Town remains the flood zone. Much of the existing Town north of Interstate 80 remains within a FEMA flood Zone A (See Figure 8-5). The combination of the existing flood zone, new freeway interchange, and development to the south have left a large number of in-fill parcels within the Battle Mountain and in some cases abandoned residential and commercial buildings and sites.

In southern Lander County near Austin, there is a potential for a significant amount of land to become available through the BLM land disposal process. These lands are located to the west of Austin and extend to the airport. The 2008 Austin Master Plan discusses the types of land uses that would be appropriate for future development. Future planning for development in this area must take into account its overall impact to the Austin area, extension of public services and facilities, and unique natural and scenic qualities of the Reese River Valley. Increasing employment and business activity remains a high priority for the community of Austin.

Throughout the Master Plan and specifically in the Land Use Element, reference is made to land use districts A-2(RR-5) and A-1(RR-1). In the future, Lander County may elect to change the labeling of the current land use districts of A-2 to RR-5 and A-1 to RR-1. Typically, A-2 and A-1 lands have limited agricultural uses. A more appropriate designation would be rural residential-five acre (RR-5) and rural residential-one acre (RR-1).

Figure 3-1 Lander County Land Status



Land Use Groups

Land use groups and the Land Use Plans provide the vision for the future development pattern in Lander County. Future land uses throughout most of Lander County are expected to remain unchanged. Land Use Plans for the Battle Mountain area can be found in Appendix A. The information contained in this section, along with information contained in the Austin and Kingston Plans (also See Figures 3-2 and 3-3) should be used as an aid in determining the appropriateness of land use decisions and zone changes in the future.

Land use groups were determined by analyzing the typical intensity, location and distribution of land uses in Lander County. It is expected that these land use groups provide the opportunities for growth that is desired in Lander County and will dominate throughout the scope of this plan. There are five major land use groups in Lander County. They include Rural Lands, Medium Density Lands, High Density Lands, Commercial and Tourist Commercial, and Industrial lands.

Rural Lands Group: Farm and Ranch District (A-3), and Open Space District.

Intent

Rural lands recognize the important contributions that ranching and other rural activities make to Lander County. The rural lands group is intended to preserve areas where agriculture, grazing and/or open space predominate; and to discourage more intensive development found within Lander County's communities of Battle Mountain, Austin and to a lesser extent Kingston. These areas generally lack



essential infrastructure and services for intensification, or they have resource constraints such as steep slopes, flood zones, and other sensitive environmental areas. In limited cases, rural resorts or low intensity commercial or industrial uses may be appropriate when they respect the greater purpose of the rural land designation and uses.

Within the rural lands group are land use designations for rural and open space. These lands have a more specific intent. The Farm and Ranch District (A-3) identifies areas that are: (1) generally remote and will have no or very low density development (i.e. 1 dwelling unit per 20 acres), (2) expected to remain relatively undeveloped or in agricultural use, and (3) remote but where unique developments may occur (e.g. outdoor recreational resorts, renewal energy facilities, agri-business, mining facilities, etc.). This designation identifies areas that may have one or more of the following characteristics:

1. The parcel or area is within the 100-year floodplain identified on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM). The parcel or area is within a "potential wetland area" as identified by the U.S. Army Corps of Engineers (COE).
2. The parcel is located within active mining districts or near active mine sites with potential for development.
3. The parcel or area has moderate slopes (between 15 and 30 percent) or steep slopes (30 percent or steeper) based on interpretation of the topographic information on the United States Geological Survey (USGS) maps for the County.
4. The parcel or area is in agricultural use or directly adjacent to agricultural areas.
5. The parcel or area is in a remote location that does not have public infrastructure adjacent to or near the site and public services are located significant distances from the proposed development and creates a financial burden on local government to serve.

For any parcel(s) where impacts from environmental constraints can be mitigated and public infrastructure can be provided, the maximum development potential is based on the existing zoning district until the plan for the area including the parcel(s) is found in conformance with the Master Plan.

The current, predominant land use pattern within the A-3 and OS zone is open space and agriculture, with less frequent occurrence of mining or other similar uses. Through the A-3 and OS designation, it is the County's intention to encourage more intensive land uses to locate in more suitable areas and/or areas served by existing or planned infrastructure and closer to public facilities and services. Property owners will be encouraged to develop their property at densities and intensities compatible with surrounding existing and planned development. Where environmental and/or public infrastructure constraints cannot be effectively removed, the standard residential density shall be a maximum of 1 dwelling unit per 20 acres. Higher density development shall be permitted upon finding that the constraints associated with the above mentioned characteristics can be mitigated and the plan for the area is amended. Furthermore, other uses not specified here may be appropriate, provided they deal effectively with the limitations and constraints noted, and the development represents an overall benefit to the County (e.g. unique employment opportunity).

Development Guidelines – Rural Lands Group

Development Guidelines-Rural Lands Groups

Development in the rural lands group for land use designations other than Farm and Ranch District A-3 and Open Space OS are appropriate under the following conditions:

A. Housing: Single-family homes are the predominant housing type and may be clustered to retain open spaces for agricultural or ranching use. Multi-family residences are not appropriate except if being used to provide housing to workers whose employment is dependent on a permissible uses.

B. Conservation: The natural terrain, groundwater recharge capabilities, scenic qualities, ranching and agricultural uses, and other natural surroundings shall be conserved.

C. Land Use: The predominant pattern in the unincorporated county shall be dispersed development. Farm and Ranch District (A-3) and Open Space (OS). Five Acre, Agricultural District A-2(RR-5) is appropriate when they function as a buffer between rural lands and adjacent higher density development although larger parcels (5-20 acres) would be more appropriate. Industrial (M) is also an appropriate use in certain areas.

Tourist Commercial (TC) is appropriate in unique locations that present special opportunities and where the development can be self-contained. Commercial (C), Industrial (M), and Government Purpose (GP) may be appropriate in limited capacity. Developments of these types should primarily serve the rural residents and not require a higher level of service than existing.

D. Transportation: Transportation facilities must meet the rural road and drainage standards.

E. Utilities: Development will be served by individual well and septic systems. Appropriate water right dedication requirements Water right dedication is 2.0 acre-feet/dwelling unit/individual wells in a designated basin for newly created parcels.

F. Public Services and Facilities: The site will be served by facilities that have existing capacity based on the following minimum standards:

1. Fire, EMS 15 minute response time
2. Police 20 minute response time
3. Schools:
 - 20-30 minutes one way (elementary)
 - 30-45 minutes one way (junior high school)

45 minutes one way (high school)

In many areas of Lander County, meeting minimum public service and facility standards will be difficult to achieve.

G. Conservation Easements: Clustered development in exchange for a conservation easement shall be encouraged to maintain irrigated agriculture and beneficial use of water rights within Lander County.

Medium Density Lands Group – Single Family Residential and Manufactured Housing

Intent

The intent of the medium density lands group is to provide for a predominantly residential lifestyle with supporting mixed-use nonresidential and residential uses, including commercial, public and semipublic facilities; and parks and open space. This group contains lands zoned R2, R3, A-1(RR-1), and A-2(RR-5). A further goal of this group is to protect the stability of existing unincorporated neighborhoods and to encourage compatible development. Medium density lands adjacent to or near municipal services should develop at higher density with appropriate services. Proposed zone changes which result in the creation of A-1(RR-1) lands should be discouraged unless municipal sewer and water services are extended to the site. Lander County should require a 2.5 acre zoning as the highest residential density allowed without municipal sewer and water services.

Development Guidelines- Medium Density Lands Group

Development in the medium density lands group is appropriate under the following conditions:

- A. Housing: Single-family homes with front porches and garages in the rear of home accessible, detached and attached homes are the predominant housing type.
- B. Conservation: The natural terrain, groundwater recharge capabilities, scenic qualities and other natural surroundings must be conserved.
- C. Land Use:

1. Land Pattern: Conventional cul-de-sac development is discouraged due to lack of connectivity. Traditional and conventional interconnected development patterns are all appropriate for the Medium Density Lands Group.

2. Land Use: A-2(RR-5) is appropriate for transition between Rural Lands and the Medium Density lands group. Commercial (C-1) and Tourist Commercial (TC), Public and Semi-Public Facilities (GP) may be appropriate as a supporting use to the residential uses. A-1(RR-1) zoning shall be discouraged without municipal utility services.

D. Public Services and Facilities: Lands zoned R2, R3 and A-1(RR-1) shall be served by municipal water systems and wastewater. Individual on-site septic treatment may be allowed for lands zoned A-1(RR-1) to the extent septic tank densities do not exceed recommended standards, overall density does not exceed 1 dwelling unit/2.5 acres and the area is currently not planned for service. The following minimum standards should be met:

1. Fire, EMS 10 minute response time
2. Police 15 minute response time

3. Water-2.0 acre feet/dwelling unit/individual well - A-1(RR-1) or lower density; approximately 1.12 acre feet/dwelling unit/connection with community water system for all others.

4. Sewer 325 gpd/dwelling unit, individual sewage disposal system for development with densities lower than 1.0 dwelling units per acre;

300 gpd/dwelling unit, connection with community sewage disposal system for development with densities equal to or greater than 1.0 dwelling units per acre. New development proposing lot sizes of 1 acre or smaller shall be discouraged if it proposes to use on-site sewage treatment and disposal systems.

5. Schools:

- 15 minutes one way (elementary)
- 20 minutes one way (junior high school)
- 30 minutes one way (high school)

High Density Lands Group – Single Family Residential (6,000 sqft) and Multi-Family, MRC, and Mobile Home Park

Intent

The intent of the urban land group is to provide an overall mix, intensity and connection of uses that is much greater than the suburban form. A full range of urban services, such as public water and sewer, an extensive interconnected road incorporated in all new developments, safety and emergency response services, parks, and schools. Development proposals for this land use group should encompass a mix of connected uses including a wide range of housing choices and densities, commercial and employment uses with public and semi-public facilities. Typically, design standards that encompass a minimum of setbacks, building heights, landscaping, lighting, parking and noise to minimize any conflict that may occur in compact form. Pedestrian needs are important. Lands in this group are zoned R-1, R-4, MP, and MRC.

Development Guidelines- High Density Lands

Development in the urban lands group is appropriate under the following conditions:

A. Housing: Detached and attached single-family homes with front porches and garages in the rear of the home accessible via alleyway and multi-family residences. Certain areas may be appropriate for temporary or short-term housing options when they do not disrupt existing neighbors or detract from areas providing tourist-commercial activity.

B. Land Pattern: Higher density and redevelopment of vacant parcels is encouraged. Development should be compatible to existing neighbors. MS zoning is discouraged as permanent housing option and should only be allowed with appropriate development standards for high density residential developments.

C. Land Use:

1. Higher density residential areas including MRC may be appropriate for short-term or temporary employer sponsored workforce housing opportunities:

Gravel drive-ways and parking areas.

Municipal sewer and water service to the site.

One unit per lot or site.

Limitations on outdoor accessory buildings and storage units.

Licensed and functional RV's, trailers and mobile homes.

Bonding requirements for site clean up or reclamation are established and enforced.

Adequate separation between existing residential neighborhoods. Landscaping and screening may be required.

For workforce housing proposals, Lander County will evaluate the need to modify applicable development standards.

The character of existing residential areas shall be maintained. Commercial (C-1), Tourist Commercial (TC), and Public and Government Purpose (GP) may be appropriate stand-alone uses and as supporting uses to the neighborhoods. General Commercial (C-2) is strongly discouraged near high density residential areas. MRC zoning shall be discouraged and limited to existing MRC zoned lands. Development proposals within the MRC zoning should be compatible to adjacent lands, particularly where such lands are in residential uses.

D. Public Services and Facilities: The site shall be served by municipal sewer and water. The site shall be served by facilities that have existing capacity based on the following minimum standards:

1. Fire, EMS 5 minute response time
2. Police 5 minute response time
3. Water: shall require 1.12 acre feet/dwelling unit, for single family; 1.0 acre feet/dwelling unit, for mobile home parks; connection to a community water system required;
4. Sewer: higher residential development shall require 300 gpd/dwelling unit, connection with community sewage disposal system; mobile home parks; 250 gpd/dwelling unit, for multi-family; connection with community sewage disposal system;
5. Schools walk-in, one mile or less (elementary) walk-in, two miles or less (junior high) walk-in, three miles or less (high school)

Commercial and Tourist Commercial Group

Intent

The intent of the Commercial Lands Group is to create and preserve areas for businesses that provide a variety of wholesale and retail goods and services, which serve a neighborhood or community market and are created in conjunction with residential uses and tourist commercial

activity associated with travelers on major transportation routes through Lander County. Accommodating tourist and visitors is best suited for areas adjacent to major highway and interstates. Broad Street, Front Street, Muleshoe Road, and areas adjacent to Interstate 80 as well as U.S. 50 and State Route 305 support tourist commercial activity.

Commercial uses may include wholesale and retail stores, shopping centers, specialty shops, personal services, and automobile services. Tourist commercial uses such as motels, fueling stations, RV parks, and other traveler related services should not conflict with existing residential neighborhoods. Other uses include offices, restaurants, theaters and other compatible activities that serve the area. Business parks containing professional, medical, educational, financial and insurance services and supportive commercial activities are also appropriate under this classification. Lands in this group are zoned C-1, C-2, and TC. Commercial and tourist commercial activity proposing 24 hour operations should not encroach upon established residential areas.

Development Guidelines-Commercial and Tourist Commercial

Development in the commercial group is appropriate under the following conditions:

A. Land Use:

1. Adjacent land uses shall be compatible. General commercial or neighborhood commercial uses, MRC, GP and R4 may serve as acceptable transition zones between this lands group and residential areas.
2. Tourist Commercial uses are strongly encouraged in areas that support other urban and commercial uses that are associated with Lander County communities of Battle Mountain, Austin and Kingston.
3. Pedestrian access and connection to adjoining residential areas should be encouraged.
4. Parking areas should have adequate landscaping to discourage expansive hardscapes and paved areas in C-1 and TC zoning. At least 1 tree per 10 parking spaces should be required with no more than 12 parking spaces between trees.
5. Transportation and circulation systems shall allow for direct access by adjoining neighborhoods while discouraging cut through traffic.

6. General Commercial (C-2) is most appropriate and compatible with industrial (M) uses.

B. Public Services and Facilities: The site shall be served by facilities that have existing capacity based on the following minimum standards:

1. Fire, EMS 5 minute response time
2. Police 10-minute response time
3. Water requirement will vary by individual development; connection to a community water system may be required.
4. Sewer requirement will vary by individual development; connection with community disposal system is required.

Industrial Lands Group

Intent

The intent of the industrial group is to provide for activities such as manufacturing, warehousing, mining and construction. The industrial designation is intended to create an environment in which industrial operations may be conducted with minimal impact on the surrounding land uses. Employment and job creation opportunities are the priority for the industrial group.

Development Guidelines

Development in the industrial group is appropriate under the following conditions:

A. Housing: Housing is limited to caretaker use. Temporary camping, other overnight uses and temporary housing options may be allowed but are not recognized as a permanent housing use. Such uses to the extent practicable must be served by municipal sewer and water systems.

B. Land Use and Transportation:

Industrial property owners shall use the following access guidelines:

1. Each parcel will be allowed only one access point and adjoining properties will share a common access, which shall be constructed on or near the property line. Additionally, alternative access will be from the less impacted of the two streets.

2. The proposal should not have access to a local street that primarily serves residential uses.

3. The proposal shall have direct access to an existing or planned arterial road. However, when 60 percent or more of a proposal's transport needs are served by rail, access to an existing or planned collector is acceptable.

C. Public Services and Facilities: The site shall be served by facilities that have existing capacity based on the following minimum standards:

1. Fire, EMS 5-10 minute response time
2. Police 10-15 minute response time
3. Water Requirement will vary by individual development.
4. Sewer Requirement will vary by individual development.

D. Appropriate transition zones for industrial uses are C2, A-3, OS, and MRC. In limited circumstances A-2 (RR-5) may be an appropriate transition zone.

Austin Area (Lands Outside the Town Boundaries)

In 2009 the Town of Austin prepared its own Master Plan. The plan covers land uses in the Town of Austin. Additionally, the plan sets forth recommendations for land use outside the Town boundaries in Reese River Valley and areas north of Austin. Several land use designations that reflect public input are used in the Austin Plan (Figure 3-2). Those designations as they correspond to the County zoning ordinance to lands outside the Town of Austin are as follows:

Residential (R) – corresponds to higher density residential zoning designations as long as appropriate infrastructure is available to support residential densities of 1 unit per 20 acre or higher. The Residential (R) designation generally corresponds to the medium and high density land use groups described above with the exception of the MRC and MS zoning districts. The use of A-1 (RR-1) is strongly discouraged unless municipal sewer and water utilities are provided to the site.



The use of individual domestic wells and septic systems should be reserved for residential lands with a density of 1 unit per 5 acres or lower. Development proposals in the Austin area require:

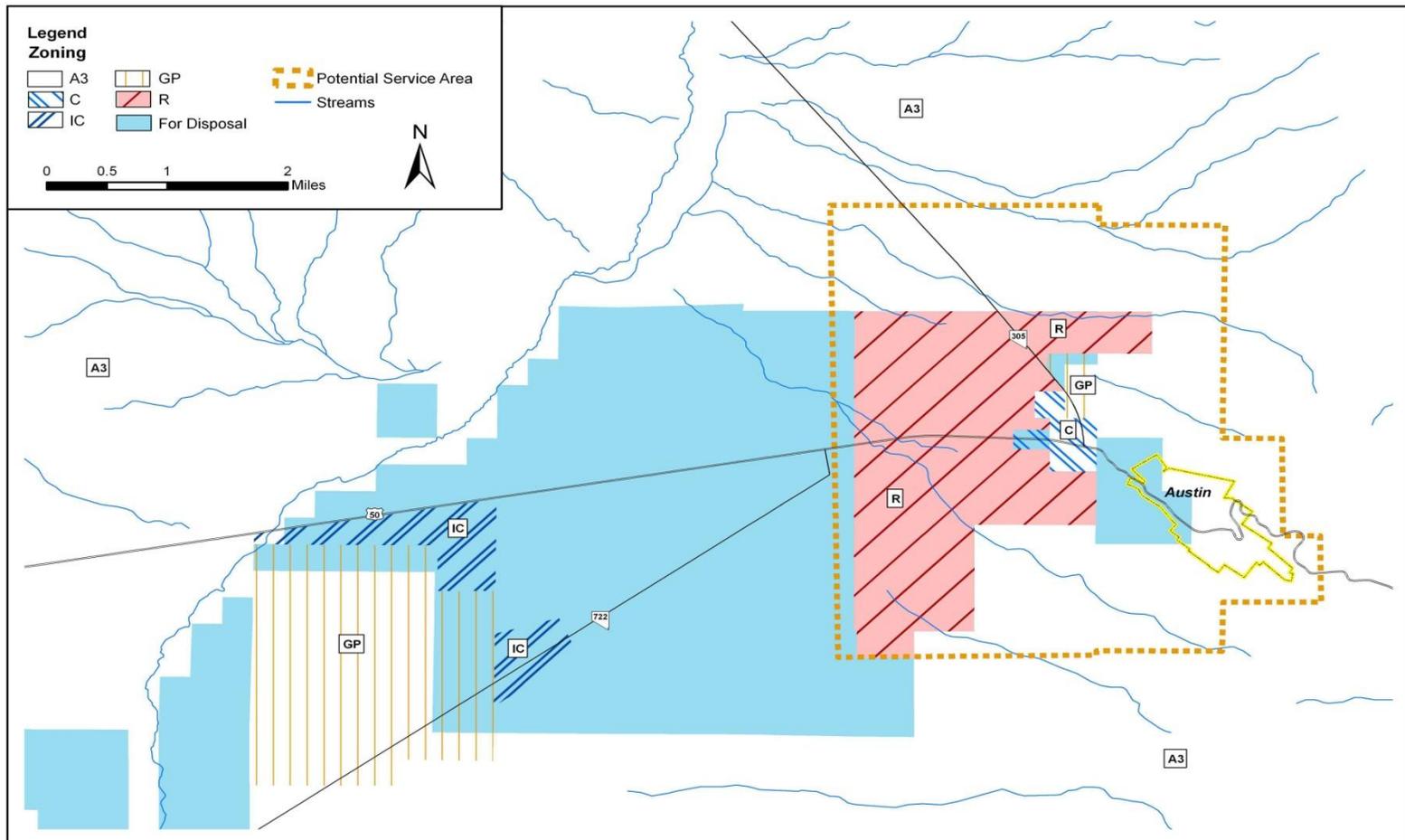
- Lander County Sewer and Water District II shall review development proposals in this area to determine need for municipal sewer and water services for the site.
- Development guidelines for medium density and high density lands group apply.
- A special use permit may be appropriate for non-residential development proposals.

Agriculture and Open Space (A) – corresponds to the A-3 County zoning designation and the development guidelines in the Rural Lands Group. The A-2 (RR-5) zoning designation would also be appropriate for areas which function as transition from predominately low density (1 unit per 20 acres) and agricultural uses to higher density development.

Industrial Commercial (IC) – corresponds to Lander County zoning designations of Industrial (M), Commercial (C-1, and C-2), and Tourist Commercial (TC). C-2 and M are the most compatible zoning for the IC designation.

Public (P) – corresponds to the County GP zoning district.

Figure 3-2 -- Town of Austin Land Use Plan
Lander County Master Plan



Specific Plan Regulatory Zone. The Specific Plan (SP) Regulatory Zone is intended to identify areas where detailed study and planning are required to address the unique conditions of an area, and the needs of landowners and the community. The Specific Plan designation is appropriate for redeveloping existing suburban and/or urban areas, replanning areas that have already begun to develop in an unplanned or uncoordinated manner, planning environmentally sensitive areas, planning for a mixture of land uses and planning new communities and areas.

The specific plan document serves as the regulatory framework for development within the Specific Plan designation by identifying the appropriate land uses and associated infrastructure necessary to support development. When adopted by the Lander County Planning Commission, the specific plan is used as a mechanism for systematic execution of the Master Plan. Specific plans can also provide a tool to implement development agreements when it is appropriate and desirable to coordinate private funding (or cooperative public/private funding) of public services. The use of a specific plan is strongly encouraged in areas west of Austin if new relatively large scale development is proposed.

Kingston Area (Land Outside the Town Boundaries)

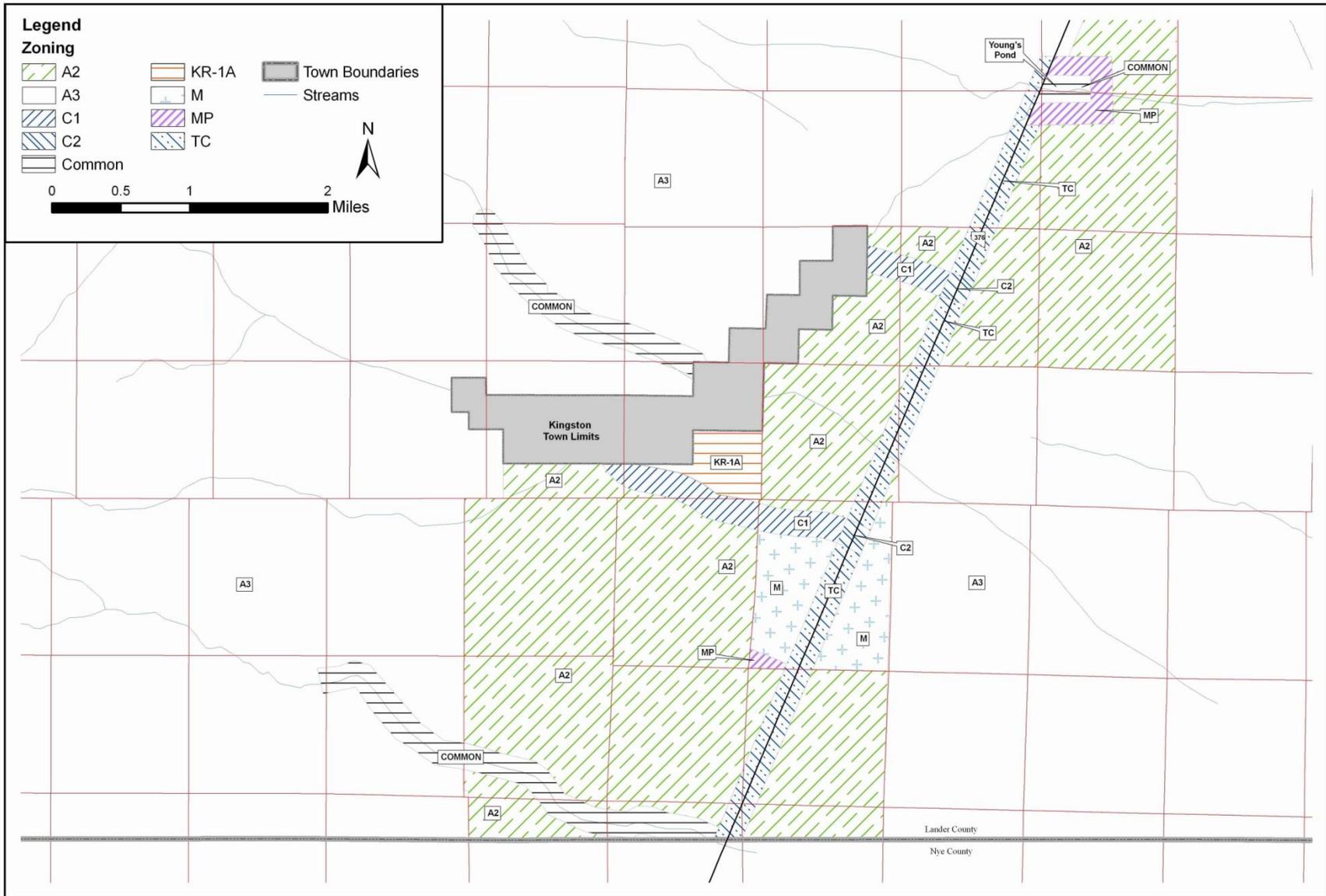
The Town of Kingston prepared the 2008 Area Plan, The Town of Kingston Master Plan Proposal. The plan covers the Town of Kingston. Additionally, the plan sets forth recommendations for land use outside the Town boundaries (Figure 3-3). In general, the Kingston Plan utilizes County zoning districts with a few noted exceptions:

- SFR Airport Overlay 1 acre minimum- Lander County has adopted a new zoning district for this use. Hangers must be construction for aircraft storage. Lands adjacent to the airport shall be required to have a density of 1 unit per acre or less.
- R-1-5 Residential 5 acre – corresponds to County zoning district A-2(RR-5), 5 Acre Rural Residential.
- R-1-20 Residential 20 acre – corresponds to County zoning district A-3 Farm and Ranch District.

Land Use Policies and Action Programs

LU.3.1 Future land uses shall be consistent with the adopted land use plans for the Battle Mountain area (See Appendix A) and the Austin (Figure 3-2) and Kingston Plans (Figure 3-3) to the extent practical.

Figure 3-3 Kingston Area Land Use Plan



LU.3.2 Curb, gutters and sidewalks shall only be required on residential housing developments with densities greater than 3 units per acre.

LU.3.3 Minimize conflicts between A-3 and lower density zoning. Lands with a density higher than A-2(RR-5) shall generally not be allowed adjacent to active farm and ranch operations and areas suitable for agricultural operations.

LU.3.4 Maintain irrigated agriculture on lands outside Community areas of Battle Mountain, Kingston and Austin. Cluster development maintaining the overall allowed density can be utilized in order to maintain the balance of lands in agricultural production.

LU.3.5 For lands proposed for development and within close proximity of municipal water and sewer services, Lander County will evaluate requirements for service line extension to the site.

LU.3.6 Tourist commercial and general commercial land uses should be encouraged along main transportation routes. General commercial (C-2) should not be allowed adjacent to residential neighborhoods.

LU.3.7 Lands located in remote areas without deeded access shall not be parceled or subdivided. Subdivision or parceling of lands where slopes are more than 15 percent shall be discouraged. Access to remote lands shall meet the rural road standards and provide adequate drainage. New rural roads and drainage must be reviewed by the County Engineer.

LU.3.8 Prevent new residential subdivisions from locating directly adjacent to Highway and Railroad easements without adequate landscape buffering with the exception of lands zone MRC.

LU.3.9 No structure shall be erected, constructed, altered or maintained, and no tree shall be allowed to grow to height in excess of the applicable height limit established by Federal Aviation Regulation (FAR) Part 77 - "Objects Affecting Navigable Airspace" unless the Federal Aviation Administration (FAA) issues a determination of "No Hazard to Air Navigation" and Lander County determines that the structure does not place restrictions on airport operations or have the potential to limit future operations.

LU.3.10 Combining Lots. If two (2) or more lots must be combined to meet the minimum lot area or lot width requirements of this article, the lots shall be legally merged into one (1) lot before a building permit will be issued.

LU.3.11 Establish a Specific Plan Area for lands west of Austin that may become available for disposal and development. Areas subject to land disposal provide a variety of development opportunities. Such development should not detract from those currently offered in the Town of Austin. Appropriate development might include:

- Residential development providing a variety of housing opportunities including second home and vacation home opportunities.
- Industrial development and tourist commercial which provide employment opportunities for local residents.
- General Government and Public Uses.

LU.3.12 Development of lands within critical flood zones and floodways shall not negatively impact their hydrologic function. Critical flood zones include the Reese River near the confluence of the Humboldt River and Lands within the Humboldt River Corridor. Lander County will consult appropriate flood maps to determine location of other critical flood zones and floodways in Lander County.

LU.3.13 Maintain low density development within areas subject to floodways and flood zones.

LU.3.14 Lander County will support important redevelopment areas within Battle Mountain.

LU.3.15 Lander County needs to ensure availability of lands, public services and facilities to support industrial development and job creation.

LU.3.16 Lander County shall prepare land use plans for selected Hydrographic Basins.

LU.3.17 Development proposals within the MRC zone shall be compatible to adjacent lands, particularly where such lands are currently in residential uses and are not contained within the MRC designation.

LU.3.18 For workforce and employer sponsor housing associated with a major bond a fide business expansion or new operations in Lander County requiring at least 25 new residential structures, Lander County may allow the employer under a special use permit to establish temporary and short-term housing units under a special use permit or PUD. The development may include a variety of housing units to meet the unique needs of short-term or temporary workers and to adjust development standards to reflect the employer housing needs.

4.0 POPULATION, HOUSING AND ECONOMIC DEVELOPMENT

Population

The purpose of this element is to provide a method for entities to identify the projected growth in population and to set forth plans, policies and action programs through which the needs of the projected population will be met. The Lander County Master Plan Population Element examines the population in terms of past and projected growth, employment, income and land uses supported by the adopted land use plan through the year 2020.

The impacts associated with projected growth patterns are related to the various subject areas of the Master Plan. Population growth of a community has an influence on other master plan elements such as the provisions for public facilities and services, public safety, transportation, and water resources.

Over the past 20 years, the mining industry has had an influence on the population and demographics of northern Nevada creating periods of population increases and declines. More recent trends in Lander County are:

- Battle Mountain has provided short-term housing demand associated with construction crews and unaccompanied mining employees.
- The number of working family households relocating to Battle Mountain for mining jobs has been limited even though mining employment in the County has increased.
- Current mining operations could be relatively long-term depending upon the price of underlying commodity.
- The southern portion of the County is seeing more population but fewer school age children. The area is attracting retirees and older adults. It's a growth scenario which appears consistent with availability of jobs.

Population Forecast Background

Developing a population forecast is difficult due to mining's historic influence on Lander County communities. In recent years, the northern portion of the County has seen the greatest fluctuations in population. The communities in southern Lander County have not been directly affected by cyclical changes in the mining industry. In fact southern Lander County has

experienced a more stable population growth scenario with moderate increases over the last several years. Table 4-1 shows historic population growth in Lander County and the communities of Battle Mountain, Austin and Kingston. The Battle Mountain area encompasses

Table 4-1 Demographic Characteristics Lander County, Nevada

Population	1990	2000	2007	2008	2009	2000-2009% Chg.
Lander County	6,266	5,794	5,747	5,891	6,003	3.6
Battle Mountain	3,542	3,453	2,845	2,920	2,967	-16.2
Austin		305	275	309	304	-
Kingston		219	309	320	331	51.1

the Town of Battle Mountain and surrounding areas such as Hilltop.

Source: Nevada State Demographer and 1990/2000 Census

Table 4-2 shows population forecasts for Lander County, the Town of Battle Mountain, Austin and Kingston. Three population scenarios are provided including the State Demographers, a trend forecast, and a 1 percent growth forecast. The trend forecast captures the recent population increases and uses those changes to project future population.

Although the population has continued to grow, the population of school aged children has declined (See Table 4-3). A number of factors could account for this trend in northern Lander County. Although mining employment in Lander County has increased in recent years, corresponding increases in mining households has not occurred. Many employees working at Lander County mines live outside the area in Winnemucca, Elko and Carlin. This has occurred for two primary reasons: (1) employer provided transportation to and from Lander County mine sites and, (2) the closure of nearby mines sites in Humboldt County and reassignment of employees to Lander County mines.

In southern Lander County, population has increased while school populations continue to decline most likely meaning that older retirees are moving to the area. Furthermore, the lack of employment opportunities in southern Lander County will continue to limit the number of working age people moving to the area. These trends in population growth have implications for Lander County housing needs, services and public facilities.

Total County population is expected to rise between 225 and 860 by 2015 representing a projected 3.8% to 14.5% increase. The majority of the population increase will likely occur in northern Lander County consistent with historical trends. It is difficult to make projections accurate projections beyond 5 years. However, the total County population could rise to 7,530

by 2020 under the trend forecast with Battle Mountain reaching 3,730, Austin 380, and Kingston 450.

Population	2008	2009	2010	2011	2012	2013	2014	2015
Lander County-State Demographer	5,891	6,022	6,031	6,047	6,065	6,084	6,109	6,116
Town of Battle Mountain	2,92	2,987	2,991	2,999	3,008	3,018	3,030	3,034
Battle Mountain Area	4,817	4,926	4,933	4,946	4,961	4,977	4,997	5,003
Austin	309	316	316	317	318	319	320	320
Kingston	320	328	328	329	330	331	332	333
Lander County-Trend Forecast								
Lander County-Trend Forecast	5,89	6,014	6,137	6,260	6,383	6,506	6,629	6,752
Town of Battle Mountain	2,92	2,983	3,044	3,105	3,166	3,227	3,288	3,349
Battle Mountain Area	4,817	4,919	5,020	5,121	5,221	5,322	5,423	5,523
Austin	309	315	322	328	334	341	347	354
Kingston	320	327	334	341	347	354	361	367
Lander County - 1 Percent Growth								
Lander County - 1 Percent Growth	5,891	5,950	6,009	6,070	6,130	6,192	6,253	6,316
Town of Battle Mountain	2,922	2,951	2,981	3,010	3,041	3,071	3,102	3,133
Battle Mountain Area	4,817	4,867	4,916	4,965	5,015	5,065	5,115	5,166
Austin	309	312	315	318	321	324	328	331
Kingston	320	324	327	330	333	337	340	344

	1999-00	2004-05	2005-06	2006-07	2007-08
District	1545	1250	1288	1257	1274
Austin (K-12)	62	63	56	56	45
Battle Mountain HS (9-12)	370	369	403	410	436
Battle Mountain JHS (7-8)	217	220	210	200	187
Lemaire ES (4-6)	345	255	256	251	253
Black ES (2-3)	268	158	159	141	149
Pierce ES (K-1)	274	185	204	199	204

Source: 2000-2008 Lander County School District – 2nd month enrollment for each year

Housing

In Lander County, manufactured housing has become the dominant structure used for relatively short-term housing option for workers. Much of the existing stick-built residential structures are older, although some new construction of conventional housing has occurred. Manufactured housing and mobile homes not converted to real property create significant

strains on local government financing in that the amount of property tax derived from such structures contributes little to meeting the expenditures of providing service.

The southern portion of Lander County has not seen the type of mineral development activity as experienced in the northern portion of the County. The communities of Austin and Kingston Nevada have relied more on tourism and outdoor recreation to fuel new growth. There is some interest for second home development which has driven growth in the Kingston area. The limited availability of private lands makes it difficult for large scale development to occur in southern Lander County. There is a sizeable inventory of vacant undeveloped lots in the Kingston area. Additionally, large tracts of public lands are designated for disposal west of Austin.

Only 30 percent of the housing units in Lander County are single-family detached structures. The majority of housing (62.5 percent) were mobile homes. Only Nye County has a higher percentage of its housing stock comprised of mobile homes.



Most conventional housing structures in Lander County sell for less than \$200,000. There were only 31 reported sales of stick built and real property mobile homes over the last year. The median sales price was \$104,000 in 2009 increasing from \$60,000 in 2004, and \$75,000 in 2005. Sales in 2009 generally ranged from \$75,000 to \$250,000 (Lander County, Assessor-2009). The average price of a single-family home or real property mobile home was \$112,700

The availability of rental housing is also limited. The Nevada State Demographer only identifies 129 multi-family units. There are two small apartment complexes in Battle Mountain. Both are subsidized family apartments. Recently, the Rural Nevada Development Corporation completed a 16 unit elderly housing project in Battle Mountain.

Mobile homes and single family structures provide other types of rental opportunities. In 2000, rental vacancy rates were relatively high. At that time most rental units had a gross rent of less than \$750 per month.

Affordability measures for single-family home prices suggest that Lander County remains very affordable, particularly compared to western Nevada communities. Affordability is not the problem in Lander County but more the availability of adequate housing. The ratio of median

home values to median household income in 2005 was 1.23 as compared to 1.55 in 2009. This ratio makes Lander County one of the most affordable communities in rural Nevada.

Table 4-4 shows projected housing demand through 2015. The total increase in new housing demand is expected to range from 80 to 320 units. Total housing demand through 2020 under the trend forecast could reach 2,790 units.

Economic Development

Table 4-5 shows the 2009 industrial employment and wages for Lander County. Natural resources and mining dominates economic activity in Lander County. Wages in Lander County reflect the influence of mining. There are also a number of services and industries in the Battle Mountain area that supports mining activity. With the strong influence and dominance by a cyclical industry, Lander County needs to take steps to create and support economic diversification.

Occupied Housing	2008	2009	2010	2011	2012	2013	2014	2015
Lander County-State Demographer	2,182	2,230	2,234	2,240	2,246	2,253	2,263	2,265
Town of Battle Mountain	1,044	1,067	1,068	1,071	1,074	1,078	1,082	1,083
Battle Mountain Area	1,720	1,759	1,762	1,767	1,772	1,777	1,785	1,787
Austin	134	137	137	138	138	139	139	139
Kingston	139	142	143	143	143	144	144	145
Lander County-Trend Forecast	2,182	2,227	2,273	2,319	2,364	2,410	2,455	2,501
Town of Battle Mountain	1,044	1,065	1,087	1,109	1,131	1,152	1,174	1,196
Battle Mountain Area	1,720	1,757	1,793	1,829	1,865	1,901	1,937	1,973
Austin	134	137	140	143	145	148	151	154
Kingston	139	142	145	148	151	154	157	160
Lander County - 1 Percent Growth	2,182	2,204	2,226	2,248	2,270	2,293	2,316	2,339
Town of Battle Mountain	1,044	1,054	1,065	1,075	1,086	1,097	1,108	1,119
Battle Mountain Area	1,720	1,738	1,756	1,773	1,791	1,809	1,827	1,845
Austin	134	136	137	138	140	141	142	144
Kingston	139	141	142	144	145	146	148	149

Lander County has always relied upon natural resources for economic activity. Traditionally, mining and agricultural have provided sources of income and wages for the county. More recently, outdoor recreation in the surrounding areas have provided some limited economic opportunities. Table 4-6 shows the major employers in Lander County as of 2009. The largest employers are mining companies followed by government and other mining support services. In addition to industrial employment, agriculture in Lander County remains a consistent economic output. The two largest agricultural products are cattle and hay production. The Lander County cattle and calves inventory has increased from 1999 to 2007. In 2007, the inventory stood at 32,000 head up from 20,000 head in 1999. Alfalfa hay and other hay production averaged just over 90,000 tons in 2002 and 2003. By 2008, Lander County had 28,000 acres under cultivation producing 144,000 tons of hay.

Industry	Lander County			State of Nevada		
	Avg Emp	% of Total	Wages	Avg Emp	% of Total	Wages
Total	2,950	100.0%	\$1,043	1,144,935	100.0%	\$798
Nat. Resources and Mining	1,541	52.2%	\$1,438	13,872	1.2%	\$1,342
Construction	27.9	.9%	\$1,064	83,088	7.3%	\$1,103
Manufacturing	*	*	*	40,253	3.5%	\$955
Trade, Transportation, Information	550	18.6%	\$637	218,500	19.1%	\$700
Financial Activities	5	.2%	933	14,176	1.2%	\$1,013
Professional Services	18	0.68%	\$463	56,267	4.9%	\$899
Education/Health Services	23	0.8%	\$479	135,563	11.8%	\$941
Leisure and Hospitality	306	10.4%	\$769	177,231	15.5%	\$889
Other Services	200	6.8%	\$257	313,030	27.3%	\$547
Government	33	1.1%	1,513	27,632	2.4%	\$595
	247	8.4%	\$802	64,555	5.6%	\$1,149

Source: Nevada Employment Security Dept., 2009 *limited data, less than 10.

In 2009, Lander County updated its comprehensive economic development strategy (CEDs). The plan for implementation of a development strategy is divided into six elements including organizational development, intergovernmental relations, access to public/private capital, community infrastructure development, targeted marketing and project development/management. Accessing public and private capital through grantsmanship and other fundraising initiatives will enable public investments in community infrastructure as well as investments in existing, relocating and expanding business and industry. Another important

priority, community infrastructure development will position Lander County communities to better compete for business and industry looking to relocate or expand to northern Nevada.

Company	Sector	No. of Employees
Cortez Gold Mines	Mining	800-899
Newmont Mines	Mining	400-499
Lander County Schools	Government	100-199
Lander County	Government	100-199
John Davis Trucking	Transportation	100-199
M-I Holdings	Mining/Chemical	90-99
Battle Mtn. General Hospital	General Medical	70-79
Etcheverry Food Town	Supermarkets	60-69
Bureau of Land Management	Government	50-59
Colt Broadway Flying J.	Gasoline Station/Restaurant	50-59
Halliburton Energy Services	Chemical/Fertilizer	30-39
Dyno Nobel	Nitrogenous Fertilizer Manufacturing	30-39

Source: Nevada Department of Employment Security, 2009

Finally, having established a well organized and funded local economic/community development initiative which enjoys state and federal political support, has access to required capital and has resulted in enhancements to community infrastructure, marketing of Lander County communities as a place where targeted business and industry will flourish can be initiated.

The CEDS identifies a number of important initiatives required to implement the plan. Additionally, the CEDS identifies the economic development opportunities for each of the communities in Lander County. Encouraging and supporting those development activities in the master plan is an important step to implementing the CEDS.

Population, Housing and Economic Development Policies and Action Programs

PHE.4.1 Enhance, and Protect Existing non-cyclical Economic Activity or sectors. Such sectors include:

- Tourist Commercial Relationship to Interstate 80
- Hotel/Motels and Traveler Services
- Interstate Truck and Vehicle Traffic
- Rail Operations
- Government Functions
- Ranching and Agricultural Operations

Outdoor Recreation/Tourism
Basic Services and Trade
Power Plant Operations

PHE.4.2 Conduct industrial site inventory/evaluation for Lander County communities.

PHE.4.3 Lander County shall initiate a capital planning effort that addresses the improvements needed to support economic development and expansion of business activity.

PHE.4.4 Continue to support efforts to enhance and develop outdoor recreational opportunities on public lands that increase visitors and tourists to Lander County. The recreation element identifies specific development efforts.

PHE.4.4.1 Provide recreational development recommendations to public land management agencies for resource management plan and forest service plan updates.

PHE.4.4.2 Recreation development should minimize conflicts with existing public land users such as livestock operators, mining, other commodity based users, and establish outdoor recreational use areas which minimize conflicts with traditional users.

PHE.4.4.3 Development of public lands for tourism based recreation should be consistent with the Lander County Plan for Public Lands.

PHE.4.5 Support Development of Industrial Sites in Lander County.

PHE.4.5.1 Identify sites that are located within close proximity to municipal services. Infrastructure support expansion to sites where adequate lands and infrastructure is available.

PHE.4.5.2 Rail served industrial development is particularly important in northern Lander County. Lander County needs to identify site where additional rail use and development can occur.

PHE.4.6 Alternative energy development will be encouraged where such development does not encroach upon community areas or existing residential and commercial/business establishments. Impacts from such development shall be minimized.

PHE.4.7 Support redevelopment efforts in central Battle Mountain which meet a variety of housing needs, both temporary and long-term.

PHE.4.8 Maintain the integrity of established residential neighborhoods.

PHE.4.8.1 Adjacent and infill residential housing shall be consistent with existing development in terms of improvements, and design.

PHE.4.8.2 Mobile Homes, modular homes and manufactured housing not contained within a mobile home park shall comply with the same standards as site built homes including density, lot standards, building placement standards, parking, and foundations. Exterior siding and roof structure will not be made of non-reflective material.

PHE.4.9 Support economic development opportunities identified in the Comprehensive Economic Development Strategy.

5.0 PUBLIC FACILITIES AND SERVICES

As growth continues to occur, the demand for public services and facilities will increase. The intent of this section is to provide a guide for orderly and planned extension of the public services and facilities needed for the present and future residents of Lander County.

The section includes information on water services, sanitary sewer service, other utilities, fire and police protection. Other public facilities such as recreation, and transportation, are contained in separate sections of the Master Plan. Existing and proposed land uses, existing services and facilities, and service standards are used to determine future services and facilities needs in Lander County.

Public services and facilities policies and action programs are presented within this section. These policies and action programs along with those contained in other parts of the Lander County Master Plan serve as a guideline for providing public services and facilities necessary for growth to occur as anticipated in the Land Use Plan. The Lander County Master Plan also seeks to reinforce specific goals for current and future public facilities and services needs.



Specific Goals of the Public Facilities and Services Element

- Provide adequate public services and facilities commensurate with future needs in Lander County in a manner that is cost effective and efficient to construct and operate.
- Provide adequate public services and facilities that support development and improve the overall quality of life in Lander County.
- Identify future major public facility and service improvements required in Lander County.
- Minimize the creation of new domestic wells and septic systems within urbanizing areas where groundwater recharge occurs and where the existing density of individual well and septic systems at or nearing state recommended standards.

Battle Mountain Water System-Lander County Sewer and Water District #1

The service area for Water District #1 (Battle Mountain) has a population of about 2,967 (Nevada State Demographer, 2009) not including the Battle Mountain Indian Colony, which serves approximately 200 residents and a few small commercial customers. The Battle Mountain system operates three main groundwater wells that produce approximately 1,000,000 gallons per day. The current service area could build-out to a population of 5,000 to 6,000 based upon existing available lands within the existing service boundary. The District is organized as an enterprise operation of Lander County.

Of the three ground water wells in Battle Mountain, producing 1 million gallons per day, the largest and main production well is capable of producing 2,000 gallons per minute. The other two wells are older and produce about 1,000 gallons per minute. There are odor problems associated with Well #3. The town has a fourth well, but it has not been operable for at least ten years. The Town also maintains two storage tanks, the largest holding 2.0 million gallons of water. The other is an elevated tank that has a capacity of about 300,000 gallons.

In 2010 the District will development new water sources south of Battle Mountain in an effort to comply with drinking water standards, most notably arsenic. As part of this project, the District will development additional storage with pump station and extend its main service line (See Figure A-6). With the development of a new water source and tank storage, the water system will be better able to serve new development to the south of Battle Mountain. The project will also replace the existing Battle Mountain wells and tank storage. The existing storage tanks will be abandoned and or possibly moved to a new locations for reuse. Battle Mountain will construct two new 1.0 million gallon storage tanks. The new wells are expected to have a maximum capacity of 2,200 gallons per minute per well. Secondary feeds are also needed in the 26th and 22nd street area. The secondary feeds are needed to add redundancy in the event of line breaks or maintenance requirements.

With the new water system, Battle Mountain will have the capability to extend service to new areas, particularly areas where water systems are not currently in compliance for arsenic. Lander County operates a small water system at the Battle Mountain airport and the golf course. The Battle Mountain Indian Colony maintains a water system which is not in compliance for arsenic. It is possible that the District could wholesale water to the Indian Colony in the near future. The District will also consider alternatives to providing more than one main service line connection between areas south and north of Interstate 80 in the event of a line break and to equalize pressure to areas north of the freeway.

Table 5-1 summarizes water demand and usage for the District. There are 1,183 residential customers. There are several instances where more than one residential unit is connected to a meter. The 1016 residential customers represent approximately 1,216 residential housing units.

Table 5-1 Lander County Sewer and Water District #1 2010 Population and Water Demand		
Users	2009/2010	2015 (Projected)
Active Customers	1,183	1,330
Residential	1,016 (1,216 units)	1,142
Commercial	167	187
Water Pumped*	337.90MGD	379.89MGD
Water Sold	211.48MGD	237.76MGD

Source: Sewer and Water District #1. * the amount pumped includes normal losses associated with system operations and line losses from breaks and line leaks.

The District currently holds about 2,895 acre-feet of underground water rights. Over the next 5 year period, the District will see an increase in water demand. To meet increased demands, a third well south of Battle Mountain and additional storage may be needed depending upon the capacity and output of the two proposed wells.

Austin Water System-Lander County Sewer and Water District #2

The Austin Water System (Lander County Sewer and Water District #2) currently serves approximately 126 residential and 40 commercial customers within the 560 acre area of the Town of Austin. The total population of Austin was approximately 304 in 2009 (Nevada State Demographer). In addition to the 166 active services, there are approximately 93 inactive services and 20 system obligation fees. Based upon the total amount of available land, the existing service area could accommodate perhaps as many as 600 individual users at full build-out, assuming residential development occurs at about 1 home per acre. Presently there are nearly 340 parcels in the Town not including patented mining claims. Parcels in Austin are generally small, ranging in size from about 5,000 square feet to several acres in some cases. Table 5-2 summarizes current water demands based upon existing residential use and potential service area demands.

Table 5-2 Austin Sewer and Water District #2 2009 Population and Water Demand				
Users	Customers	Annual Water Users	Per Capita Use	Total Water Use (AF)
Active Users	168	166 48 Million gal.	432 gal.	147
Active & Inactive	258	258 76 Million gal.	432 gal.	233
Total Build-out	600	150 Million gal	432 gal.	460

Source: Sewer and Water District #2

The current capacity of the Austin system including two underground water wells and springs is up to 700 gallons per minute. Under permit #52440, the District is allowed 2.0 cubic feet per second and 102.492 million gallons annually (314.5 acre feet), which was the amount of water permitted for the District's first well. The District filed an application for permission to change the point of diversion (partial) for 1.44 second-feet and 79.794 million gallons. The water is to be used for a second underground water well to supply the Town of Austin and surrounding areas. The District is undertaking efforts to comply with the arsenic rule.

In addition to ground water wells, the District holds water rights at several surrounding springs located in Marshall and upper Pony Springs Canyon under permits 20157 and 20158 for a total of 338 million gallons annually. Total available water from the springs is approximately 1,040 acre feet annually.

The Austin treatment, storage and distribution systems are mostly new with the majority of it being replaced in the last couple of years. In 1998, a new well and tank were put into service. The total water storage capacity includes three above ground storage tanks and two underground tanks with a total capacity of 500,000 gallons.

Austin water is generally high quality with limited treatment requirements. However, the arsenic levels exceed minimum contaminant levels. The District will consider drilling a new well west of Town. The development of a new water source west of Town will improve the ability of the District to serve new and higher density development along U.S. 50. Depending upon the location of new wells, the District could extend municipal water service to the Austin Airport. Additional storage may be required for system expansion west of Austin.

Kingston Water System

The Town of Kingston is served by its own community water system. The service area had a population of approximately 331 in 2009. There are another 214 property owners in the area paying a standby fee for undeveloped parcels that could connect to the system in the future. The system's two main groundwater wells produce approximately 350 gallons per minute. As a result, the current per capita daily demand ranges from 150 to 200 gallons. However, per capita usage is probably somewhat less due to the amount of leakage from the system. Total water delivered to customers could be as little as one-third (current estimates) of the total amount pumped each year.

In a five year period, the Town of Kingston nearly doubled in size based upon utility hook-ups. In 1995 there were approximately 66 users compared to 115 users in December of 2000 and

144 users in 2010. The level of growth between 1995 and 2010 has been substantial. Commercial development in the Kingston area is somewhat limited. There are several parcels in the Town's service area that are currently used for tourist commercial and general commercial related activities such as a store, restaurant, lodging, real estate office, and a church.

Table 5-3 summarizes current water demands based upon existing residential use and potential service area demands. As shown in this table, the total number of active (144) and inactive (115) water customers would utilize approximately 68 percent of the water currently under permit for two groundwater wells.

The Kingston Water storage system has one new 225,000 gallon storage tank. The distribution system is currently in good condition with some leakage among old meters. In the past, breaks in the distribution system accounted for the relatively high pumping rates. The main line in the core community area was replaced in 2001. In the past several years approximately 50,000 feet of water distributions line has been replaced and new fire hydrants installed.

Users	Customers	Annual Water Users	Per Capita Use	Total Water Use (AF)
Active Users	144	18 Million gal.	150-200 gal	110
Total Build-out	1,000	364.8 Million gal.	200 gal	1,064

Source: Kingston Town Water System

There are no treatment requirements for the system at this time. The Town's water quality is generally characterized as good and meets primary and secondary drinking water standards. It is important to note that the Town operates an induction well that receives infiltration from Kingston Creek. The current permit allows for diversion of 1.35 cubic feet per second or 605 gallons per minute and a total withdrawal of 231.8 acre feet per year. The Town is currently permitted to pump 2,500 gallons per minute for a total of 268.2 acre feet annually from a second groundwater well. Both wells are located at a depth of approximately 80 feet. The Town has rights to two springs that have a total diversion rate of .0259 cfs or 11.6 gallons per minute. The Town's 2 wells are capable of pumping approximately 350 gallons per minute. A new water source may be needed in the future.

Wastewater Treatment and Collection

Battle Mountain Sewer System

According to the *Battle Mountain Water and Sewer Master Plan*, (Shaw Engineering 2002), existing water and sewer systems in Battle Mountain are identified as a major constraint to development. Conclusions of this report indicate Battle Mountain has sufficient sewer capacity but the collection systems are aged, deteriorated and in need of replacement. The sewer collection system currently contains 19,500 linear feet (LF) of vitrified clay pipe and 5,500 LF of asbestos cement pipe. Shaw Engineering has videoed approximately 1,600 LF of pipe with 16 camera runs attempted and 15 of those abandoned due to blockage. Most of the blockage was due to moderate to severe bell crack and root intrusion. Proposed improvements to sewer infrastructure include replacement of aged and deteriorated piping, the elimination of lift stations.

The current treatment capacity of the sewer plant is rated at .8 million gallons per day with the capability of expanding the plant to 1.2 million gallons per day. There is sufficient capacity to manage treated effluent. In 2010, the plant treated approximately 290,000 to 300,000 gallons of wastewater per day utilizing about 35 to 40 percent of the plant's treatment capacity. Expanding the capacity to 1.2 million gallons, would allow the service area to more than triple its current population of 3,000.

With the development of areas to the south of I-80, the District will need to expand its collection system including the possibility of adding an additional lift station and collection lines. The expansion of the sewer collection system will likely coincide with planned land uses associated with higher density residential development, commercial and industrial activity. Depending upon the increased demands from areas south of Battle Mountain, the District may need to utilize a second I-80 which is located east of State Route 305 (Figure A-6).

Future capital improvements for the sewer system south of Battle Mountain include the following:

- Upgrades to the existing Echo Bay lift station to increase flow and standardize pumps and controls.
- New lift stations will be needed to accommodate future growth. Proposed lift station locations include south of SR 305 near Sheep Creek Road and a location north of the existing Echo Bay Subdivision (See Figure A-6).
- Expansion of sewer collection system to the Battle Mountain airport. Alternatively, Lander County should evaluate the potential to establish a package plant system.

- Developing an additional undercrossing to provide increased flow capacity from areas to the south of I-80.
- Upgrades and minor improvements to the existing collection system.

The last facilities plan was completed in 2002. The Districts needs to prepare a new facilities plan and complete mapping of all facilities.

Austin Sewer System

The Austin Sewer District (Lander County Sewer and Water District #2) serves approximately 166 customers (commercial and residential) with a build-out capacity of 800, which leaves the community with ample room to expand services. Recently, the District relocated existing settling ponds approximately two miles further to the west to accommodate further anticipated growth in the area west of the town of Austin. The current system is capable of treating approximately 240,000 gallons per day. Effluent management occurs through the use of evaporation ponds. With the relocation of the sewer ponds, additional areas west of Austin can be developed utilizing municipal wastewater collection and treatment. Expansion of the system to the west of the treatment ponds will likely require construction of new collection facilities including pumping facilities. Development in the area down gradient requires close coordination with the District in order to plan and finance required improvements.

Landfills

The Lander County landfill is classified as Expansion Class II with 5 tons per day allowed. It is located south of Battle Mountain on a 260 acre site. The disposal area is approximately 83 acres. Total disposal capacity is 251,562 cubic yards. The Lander County facility accepts waste from all portions of Lander County as well as Crescent Valley in Eureka County. The disposal rate is estimated to be a maximum of 16 tons per day on an annual average. Including Crescent Valley, the current population base is 6,200. Both Austin and Kingston are served by transfer bins. The remaining useful site of the landfill is approximately 50 years.

Cemetery

The Battle Mountain cemetery has just over 4 empty sections. Each section contains approximately 140 plots. It takes approximately 5 years to fill one section. As a result the cemetery has just over 20 years before it is filled. Because the facility is land locked it is important to obtain additional lands to meet future capacity needs or Lander County will need to develop another site. Each section requires approximately 7,600 square feet. An additional 6

section would require 45,600 square feet and provide expand the total remaining capacity to approximately 50 years. Because the site is currently undeveloped, expanding the cemetery to the south onto the Newmont property would appear to be the most reasonable approach.

General Government and Public Safety

General Government

Lander County general government functions are located in the Austin Courthouse, the Battle Mountain Courthouse and Administrative Offices in Battle Mountain. If the courts and District Attorney's Office were to be relocated from the Battle Mountain Courthouse, additional administrative space could become available.

Public Safety

Sheriff's Department

The Lander County Sheriff's Office is located in Battle Mountain with a substation in Austin. Response times to outer lying areas of Lander County can be significant. The public safety complex was designed and constructed in 2000. The Sheriff's Department does not anticipate the construction of expansion of facilities in the near future. Expansion or construction of new facilities in the southern portion of the county is not anticipated over the next 5 year period without significant population gains.

Fire Protection/EMS

Fire protection for private property in Lander County is provided primarily through local fire departments and fire districts in Austin and Battle Mountain. Kingston maintains a volunteer fire department. Response times outside the communities of Austin, Battle Mountain, and Kingston can be significant.

Wildland fires are common throughout Lander County. The proximity of Kingston and Austin to wildland areas requires careful management of surrounding fuels and vegetation. Most wildfires in Lander County are caused by lightning strikes. Increasing use of public lands increases the threat from human caused fires. The Bureau of Land Management and the Nevada Division of Forestry have primary responsibility for wildfires in the area. Mutual aid agreements exist with the BLM and USFS.

Austin

The Austin all volunteer fire department/EMS is composed of 8-11 members. Austin has 1 EMT. Response times to remote regions of the District can be as long as 2 hours – usually in cases of mutual aid involving BLM or USFS requests for help. For all practical purposes the District serves the southern portions of Lander County. Five major pieces of firefighting equipment (1 type 2 engine, 1 type 3 engine, and 3 type 1 water tenders) are sufficient to provide reasonably good fire protection for the area. Several of the current volunteers have been trained by the State Fire Marshal’s Office or in-house programs. Austin has the following community plans in effect; Emergency Hazardous Materials Plan, Pre-Attack Plan for Austin, All Risk County-Wide Disaster Plan, and Fuels Reductions Plan. The Austin Volunteer Fire Department is funded by the Town of Austin through their General Fund.

Battle Mountain

Battle Mountain’s fire protection needs are served by a 25 member all-volunteer department organized under NRS 266.310. Its jurisdiction is principally the Town of Battle Mountain and area 5 miles around it. The Town supports the department financially through the General Fund. There is one fire station with two type three engines, one type 1 engine, one water tender and a command officer vehicle. Some members of the department have had State Fire Marshal’s Firefighter I and II training along with BLM wildfire training. Ambulance service is not provided by the volunteer fire department. Battle Mountain has the following community plans in effect; Emergency Hazardous Materials Plan, Pre-Attack Plan for Battle Mountain, All Risk County-Wide Disaster Plan, and Fuels Reductions Plan. Battle Mountain Ambulance Service maintains 11 EMTs and two new ambulance units.

Kingston

The Kingston all volunteer fire department is composed of 7 members. Response times to immediate areas is usually short, however in cases of mutual aid involving BLM or USFS requests for help response time can be 1-2 hours. Three major pieces of firefighting equipment (1 type 1 engine, 1 type 3 engine, and 1 water tender) are sufficient to provide reasonably good fire protection for the area. Kingston Volunteer Fire Department is funded by the Town of Kingston through their General Fund. Growth in the community may require additional financial support to maintain and improve capabilities.

Public Facilities and Services Policies and Action Programs

PSF.5.1 Lander County will ensure that development requiring public utilities occurs in a compact form that is cost effective to serve with municipal water and wastewater services. Where appropriate higher density development should be allowed in order to maximize the cost effective delivery of utility and other public services.

PSF.5.2 For proposed or existing development to be served by utilities in Lander County, adequate land and or rights-of-way shall be dedicated for public facilities. During the development review process; necessary easements, rights-of-way and lands shall be made available for the installation, construction and operation of public facilities and utilities.

PSF.5.3 The following standards apply to all water delivery and sanitary sewer collection facilities:

(a) Design. The facilities offered for dedication or subject to a dedication agreement must be designed and constructed in accordance with standards and other requirements established by ordinance or recommended by utility providers and County Engineer. As a condition of either project approval or the issuance of a building permit, standards and other requirements may include plan checking, design review, inspections, systems testing and other matters to be determined by the utility providers.

(b) Required Dedication and Acceptance. The facilities required to be dedicated shall be determined by Lander County. Lander County will accept a dedication if the facilities conform to the requirements established by the service provider of this section and perform as designed.

(c) Issuance of Permits. Except for permits issued for the construction of facilities to be dedicated, no building permit or special use permit may be issued and no other administrative approval may be granted until the dedication is accepted or an agreement acceptable to the utility provider has been executed.

PSF.5.4 Public utilities in Lander County shall proposed areas for future service expansion that are consistent with the adopted land use pattern, growth demands, and incorporates requirements to address potential health and safety needs of the service area.

PSF.5.5 Parcel and subdivision maps will be reviewed and signed by the appropriate agencies which have responsibility for provide sewer and water services.

Municipal Water Service

PSF.5.6 Lander County shall have planning, design, construction, plus operation and maintenance responsibility for all water supply facilities outside the existing or proposed Austin and Kingston water service areas.

PSF.5.7 Lander County and municipal water service providers will ensure that all capital improvements programming, funding, and construction for municipal water facilities shall be consistent with the goals, objectives and policies contained in the Lander County Master Plan, the Austin and Kingston Master Plans, and appropriate service and facility plans.

PSF.5.8 Prohibit the creation of new private water and wastewater utility companies in Lander County. Water services to be provided by local government agencies in Lander County.

PSF.5.9 Require the use of water meters in Lander County. Water meters are essential to provide for water conservation, equity in billing for water use and effective management of water resources.

PSF.5.10 Water meters will be required on all new residential, commercial and industrial construction, to the extent allowed by law.

PSF.5.11 Ensure that a safe and dependable water supply is available.

PSF.5.11.1 Areas planned for urban or suburban development (residential densities greater than one unit per 2.5 acres or more units or comparable nonresidential development) will be served by a community water supply system in accordance with adopted and existing County policies and ordinances. All new systems and facilities shall be dedicated to Lander County or the appropriate water service provider.

PSF.5.11.2 Ensure that sufficient water rights are dedicated to Lander County or appropriate water service provider when new parcels are created. Water rights will be of the type and quantity required by water service providers in Lander County.

PSF.5.12 Lander County shall have planning, design, construction, plus operation and maintenance responsibility for all water supply facilities in Lander County outside Austin and Kingston.

PSF.5.13 Municipal Water service shall be required in all existing service areas and areas planned for future service expansion as shown in the Figure A-6.

PSF.5.14 Development proposals within designated well head protection areas shall not create the potential for groundwater contamination. Lander County will establish well head protection areas for municipal wells.

PSF.5.15 Lander County will review applicable wellhead protection plans and consult with the water purveyors when reviewing development proposals to determine if there is a conflict between the proposed development and a wellhead protection zone that poses a risk that cannot be reasonably mitigated or addressed in the development process. Water purveyors are encouraged to develop wellhead protection programs that can be integrated with local government new business or development review processes.

PSF.5.16 Proposed water facilities to be installed by developers shall be reviewed and approved by the County Engineer prior to dedication. All new water facilities must meet county standards as determined by the County Engineer.

PSF.5.17 The County Engineer shall review plans for proposed facility improvements to ensure that such facilities meet Lander County standards.

PSF.5.18 The County Engineer or a Nevada licensed engineer designated by Lander County shall provide construction management services for facilities to be constructed by parties other than Lander County.

PSF.5.19 Lander County will ensure that the costs to provide water services are paid by those receiving services.

PSF.5.19.1 Lander County shall ensure that development requiring water service shall pay for the cost associated with facilities, capacity utilization, and treatment requirements.

PSF.5.19.2 Off-site improvements including water line extensions to serve new development created as a result of a parcel map or subdivision map or an existing parcel or parcels shall be paid for by those requiring such service and at the actual cost to construct the improvement.

PSF.5.19.3 The cost to expand or improve storage, pumping or water treatment to serve new development created as a result of a parcel or subdivision map or an existing parcel or parcels shall be properly accounted for and allocated to those requiring such improvements.

PSF.5.19.4 Lander County shall review utility operating policies and ordinances to ensure that accurate cost recovery methods exist. Appropriate changes to policies and ordinances shall occur.

PSF.5.20 Well-Head Protection Areas shall be established for municipal water supply wells.

PSF.5.21 All development proposals requiring municipal water services shall be reviewed by the water service provider.

PSF.5.22 Water purveyors in Lander County need to maintain updated facility plans for future capital improvements.

Wastewater Treatment

PSF.5.23 Coordinate all wastewater management facilities in Lander County outside the communities of Austin and Kingston.

PSF.5.24 Public utility system operators in Lander County shall have planning, design, construction, plus operation and maintenance responsibility for all wastewater treatment and collection facilities. Lander County is responsible for wastewater treatment and collection in unincorporated areas.

PSF.5.25 Wastewater treatment and collection facilities shall be developed in accordance with a capital improvements program and with Figure A-6. Lander County Sewer and Water District #1 and #2 to update and or maintain current facility plans for wastewater treatment and sewer collection facilities.

PSF.5.26 Construct sewage treatment and collection facilities concurrent with development of land uses generating demand for those facilities. Providing sewer collection to commercial and industrial zoned areas east of State Route 305 toward the airport could increase the prospects for additional economic development.

PSF.5.27 All planned urban and suburban development with residential densities of more than one unit per 2.5 acres shall be included in the service area of a community sewage treatment facility. Sewage treatment facility service areas shall not overlap. Centralized/community sewage treatment facilities shall not be provided to areas planned for rural development (density less than one unit per 5.0 acres or a density equal to or less than A-2(RR-5).

PSF.5.28 The provision of sewage treatment services shall not be used to alter the adopted pattern or timing of development in Lander County.

PSF.5.29 Lander County shall establish programs for the provision of centralized service to those areas with failing septic tanks or other service inadequacies to meet existing needs, and areas with the potential to pollute the water supply if developed on septic systems.

PSF.5.30 Lander County shall monitor the performance of individual septic systems. Areas identified which have a history of failing systems shall be considered for municipal wastewater collection and treatment.

PSF.5.31 Update sewer and water master plans for community areas in Lander County. The expansion of the water system to south Battle Mountain will create a need for major improvements to the existing collection and pumping facilities.

PSF.5.32 New development proposing lot sizes where a gross density exceeds 2.5 acres per unit or smaller shall not be approved if it proposes to use on-site sewage treatment and disposal systems, unless it qualifies for one of the following exceptions:

- a. The development combines or reconfigures existing parcels, which have the legal right to use individual on-site sewage treatment systems, and the new or recombined lots are equal to or larger than the existing parcels.
- b. The proposed developed is on land already zoned A-1 (RR-1) and contains 3 or fewer lots where sewer service in not available.
- c. The development is designated for R3 (.5 Acre) or less dense development by the appropriate Lander County Land Use Plan map and:

(1a) The area is scheduled to be sewerred within the next five years as shown in the Capital improvements Program; and

(1b) The development is served by a community water system and will have minimum 1/2 acre lot sizes; and

(1c) The project includes dry sewer lines and is designed for future connection to a community sewer system. Requirements for dry sewer lines shall be reviewed by the County engineer; and

(1d) The conditions of project approval require the creation of a financing mechanism, such as an improvement district for sewers, so that lot or homeowners will make regular payments toward future sewer connection and construction costs; and

PSF.5.33 All new projects within or adjacent to the existing or proposed service areas may be required to connect to a sub-regional or regional wastewater treatment plant, to provide dry sewers in anticipation of being connected to such a facility, or to design the project so that the residences can be served by sewers installed in the public rights-of-way.

PSF.5.34 Ensure future and proposed development is consistent with wastewater disposal facilities and the ability of the environment to assimilate effluent without violating applicable water quality standards.

PSF.5.35 Lander County shall prepare a preliminary engineering report to determine expansion of service areas for the next 5-10 period, additional facility needs by location including upgrades and expansion of existing facilities. Such a report will address alternatives for the expansion of services municipal sewer and water to residential, commercial and industrial areas not currently served by Lander County or other municipal service providers.

PSF.5.36 The Lander County Engineer shall prepare a stormwater drainage Master plan for the Battle Mountain area.

PSF.5.37 Lander County Sewer and Water District #2 will review all development proposals in areas west of Austin to determine the ability to serve and requirements the district may need to extend water distribution and sewer collection facilities to areas proposed for development.

General Government and Public Safety Facilities

PSF.5.38 Lander County shall evaluate relocation of court functions and District Attorney's office to an area near the public safety complex.

PSF.5.39 Additional lands shall be acquired for expansion of Battle Mountain cemetery. Lander County shall work with adjacent landowners to secure additional sites for expansion. If land is not available for the expansion of the existing site, a new location shall be selected and secured for future development.

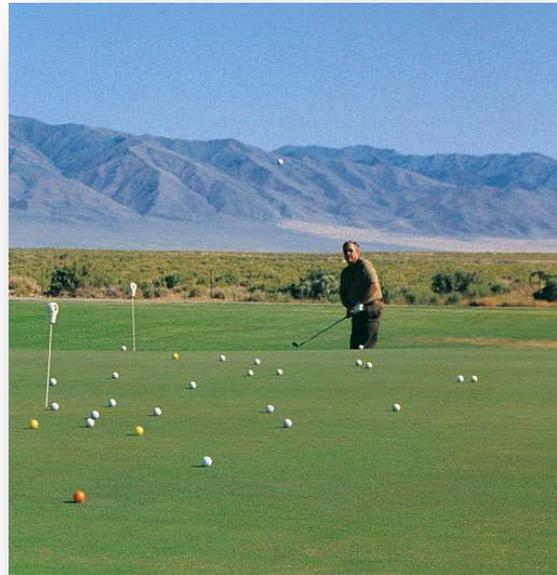
PSF.5.40 Maintain wildland fire prevention activities in Lander County communities.

PSF.5.40.1 Fuel management programs should be maintained for communities with agencies such as the Nevada Division of Forestry, Bureau of Land Management and U.S. Forest Service.

PSF.5.40.2 Support fire management policies established in the Lander County Policy Plan for Federally Administered Lands.

6.0 RECREATION

Providing adequate and ample parks and recreation opportunities to Lander County is challenging given the dispersed population base that is spread throughout northern and southern Lander County. These amenities are an invaluable part of the County's lifestyle and significantly contribute to the quality of life in Lander County. Lander County offers numerous unstructured recreational opportunities for citizens available through surrounding public and forest service lands.



There are a variety of recreational opportunities available in Lander County and its communities. The primary recreation use outside Austin, Kingston, and Battle Mountain is dispersed recreational activity including hunting, hiking, fishing, camping, and off-road vehicle use. Lander County also has excellent big game hunting and abundant water recreational resources. There are 31 rivers and streams totaling 390 miles in length.

The southern portion of the County and the Toiyabe Range offer some of the most scenic mountainous areas in the State. Efforts are underway to develop hiking, mountain bike, and OHV trails. Developed campsites in Lander County are limited. The Forest Service maintains a seasonal campsite in Kingston Canyon and Bob Scott Summit, and BLM has campsites at Mill Creek, and Hickison Summit (Lander/Eureka County Border). The Hickison Petroglyph Recreation area recently underwent major improvements.

Increasingly, Lander County is experiencing greater demands for off-road recreational vehicle use, particularly in southern Lander County where increasingly Sand Mountain visitors are moving further east. Although the increase in recreational use brings more visitors to the area and tourism supported economic activity, conflicts can and do occur with other public land users. Additionally, the increased vehicle use on public lands brings the potential for stronger management initiatives and increased regulation by land management agencies.

Communities in Lander County offer a variety of locally supported structured recreational facilities, sites, and services. Because the demands for recreation facilities and services are often driven by population, careful consideration must be made as to the ability to maintain the

improvements. The success with which Lander County balances the demand for parks, recreation areas, and open space with the fiscal constraints of acquiring and maintaining these facilities will have a significant effect on the County's quality of life.

The Lander County Recreation Plan addresses a number of specific issues including but not limited to community based parks, other recreational facilities, and unstructured outdoor recreational opportunities on public lands. With respect to public and Forest Service Lands, the plan sets forth general policies for future development and needs related to recreation. Additionally, it incorporates citizen's views and the needs for future recreational amenities.

Specific Goals of the Recreation Element

- Develop recreation facilities and sites which improve the quality and variety of recreation available to Lander County and its residents.
- Establish recreation needs and standards based upon those commonly used for Rural and Small Towns.
- Support development of recreation facilities and sites in Lander County consistent with the goals of the Lander County Plan for the Management of Public Lands.
- Identify future demands for recreational facilities in Lander County.
- Hunting, fishing, OHV use, horseback riding, camping shooting sports are important recreational uses for Lander County residents. Enhancing and maintaining such opportunities are critical elements of recreation in Lander County.

Community Recreation Standards

Developing standards and criteria for parks and special use facilities is an important element in the initial planning process. Standards for recreation facilities are a subject of much discussion and controversy, especially formulas relating to ratios of land-to-population. This standard should be balanced with a facilities plan that identifies all public lands and recreational opportunities. As part of the planning effort, the location, access, overall distribution, and/or lack of regional facilities must be considered.

Another important factor for Lander County to consider is the fluctuations in population and ability to fund and maintain recreational improvements. Development and maintenance must

balance the fiscal realities and population fluctuations which occur in northeastern Nevada. As a result, on-going maintenance and operational costs are an important consideration for recreation planning.

The following table shows small community recreation standards. The table is useful to evaluate the current recreation assets in terms of meeting minimum standards and to determine new recreation facilities that might be needed.

Small Community Recreation Standards

Facility Category	Parks System facility types	Total Population Served by 1 facility	# of Facilities Needed per 1000 Residents
Sports Fields	Soccer/Multi-Use Field	1,050	0.95
	Ball Field (Baseball/Softball)	1,640	0.61
Courts	Tennis Court	1,030	0.97
	Basketball Court	1,100	0.91
	Volleyball Court	7,540	0.13
Outdoor Recreation	Small Skatepark (7000 sq. ft. footprint)	6,410	0.16
	Full-Sized Skatepark (17,000+ sq. ftprint)	15,560	0.06
	BMX Track (Standard ABA Certified)	6,250	0.16
	Paved Multi-Use Trail (per mile)	960	1.04
	Dirt/Gravel Multi-Use Trail (per mile)	430	2.33
	Fishing Accessible Shoreline (per mile)	3,150	0.32
Leisure	River Put-In/Take-Out with Boat Ramp/ac)	13,650	0.07
	Playgrounds (per 3200 sq. ft. of fully developed area)	6,270	0.16
	Family Picnic Area	160	6.25
	Group Picnic Area (with shelter)	2,780	0.36
	Park Bench	130	7.69
Other	Swimming Pool (outdoor)	8,250	0.12
	Ice Hockey Rink (full-sized, refrigerated, covered)	9,690	0.1
	Facilities Outdoor Events Venue (per acre)	2,380	0.42

Source: State of Colorado, Small Community Park & Recreation Planning Standards, 2003.

There are a variety of recreational opportunities available in Lander County. In this element recreational resources will be divided into two general categories: 1) outdoor recreation and

facilities available on federally administered lands in Lander County, and 2) recreational facilities provided by Lander County.

Existing Recreation Sites and Facilities-Lander County

Battle Mountain Area

- Nine Hole Golf Course with driving range
- Race Track and Motorcross Course
- Shooting Range
- Rodeo Arena and Grounds
- Elquist Park, High School Ballfields and Swimming Pool
- Adult Ballfields
- Sport Complex LeMaire School (Ball fields/soccer, skate park, 2 tennis courts)
- Neighborhood Parks Lion Park, Bryson Park, Echo Park

Austin Area Recreation Sites and Facilities

- Roping Arena
- Swimming Pool
- Community Park (ball fields, picnic area, playground)
- Tennis Courts
- Outside exercise circuit
- Youth Center

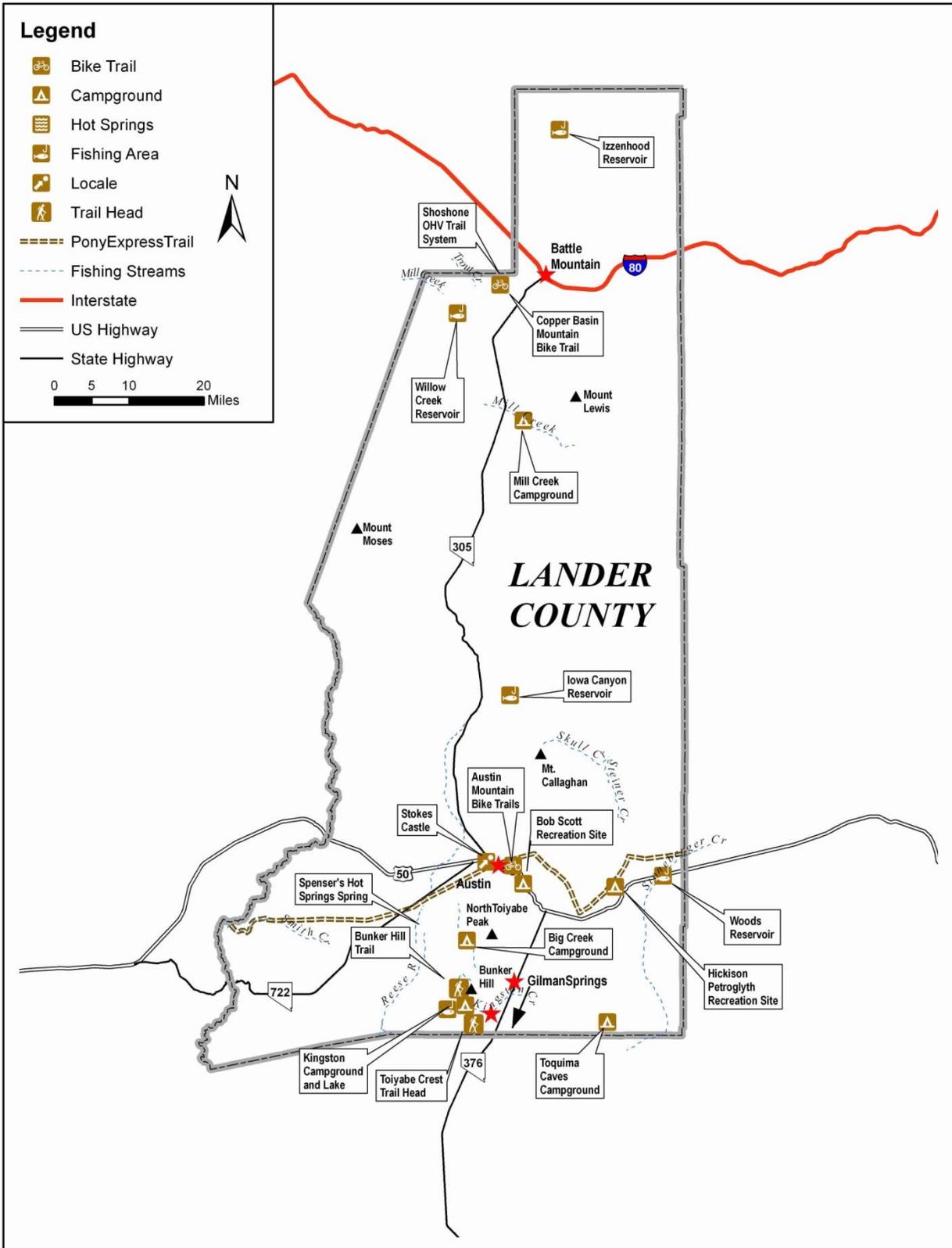
Kingston Recreation Sites and Facilities

- Park and Bellfield
- Restoration of Fishing Pond

Outdoor Recreation Sites and Facilities on Public and Forest Service Lands

There are a number of recreation sites and facilities on public and Forest Service lands in Lander County. The County has many outstanding recreation opportunities which meet the demands of local residents and can that can draw visitors to the area. Figure 6-1 shows the location of major outdoor recreation recreational sites and facilities in Lander County. These facilities and sites are primarily on public lands, forest service withdrawn lands and state owned lands.

Figure 6-1 – Lander County Recreation Sites



Major Recreation Improvements desired by Lander County include, but not limited, to the following:

- Winter sports activities and sites
- Increasing overnight campsites and day use.
- Southern Lander County OHV Trails and Trail Connections
- Improvements to Kingston Canyon Recreation Area including the US Forest Service Admin. Site.
- Improvements to Spencer's Hot Springs

Recreation Policies and Action Programs:

Rec.6.1 Facilitate development of recreational improvements on Public and Forest Service Lands

Rec.6.1.1 Board of County Commissioners, the Lander County Public Land Use Advisory Planning Commission and the Planning Commission should have the opportunity to review and comment on improvements and management initiatives proposed for Lander County.

Rec.6.1.2 Recreational improvements should limit conflicts with traditional users such as grazing, mining, and hunting/fishing interests.

Rec.6.1.3 Recreational improvements should provide direct benefits to local residents and the quality of life in Lander County.

Rec.6.1.4 Maintaining access to and use of Forest Service and public lands is very important for Lander County residents.

Rec.6.1.5 Encourage federal and state agencies to develop/update improvement plans for Big Creek and Kingston Canyon Recreation Areas. Additional winter recreational opportunities such as snowshoeing, cross country skiing, backcountry accommodations, and snowmobiling should be encouraged.

Rec.6.1.6 Protect and enhance recreation activities on public lands enjoyed by Lander County residents.

Rec.6.2 Lander County needs to integrate recreation improvements to a general county capital improvements plan.

Rec.6.3 Pedestrian safe access and trails should be available from residential development to park and recreation sites as well as school sites.

Rec.6.4 Support efforts to develop more indoor/winter structured recreational opportunities in Lander County.

Rec.6.5 During development review, land for additional recreational site(s) and improvements should be identified as well as needed access for recreational purposes such as OHV, equestrian use, and hiking and biking to and from surrounding undeveloped lands.

Rec.6.6 Work with local school districts to coordinate development of recreational facilities that have mutual benefit to schools and Lander County residents.

Rec. 6.7 Evaluate the feasibility to develop Spencer's Hot Springs and trail system.

Rec.6.8 Continue to work with US Forest Service to rehabilitate Kingston Administrative site for use and rental by the general public.

7.0 Transportation

A safe and efficient transportation system is an important indicator of the vitality and health of an area. Transportation needs are directly related to land use choices. Issues such as the growth, distribution and timing of land development determine the effectiveness of the transportation network. The transportation plan identifies issues that affect policies that, along with other elements of the Master Plan, further define the County's vision for physical development.



Transportation facilities and services are vital to Lander County. The area is served by U.S. Highway 50 to the south and Interstate 80 in the north. State Highways 305 and 376 traverse the County from north to south. The Union Pacific mainline passes through the Battle Mountain area. Additionally, northern and southern Lander County is served by municipal airports.

As growth continues to occur in and around Lander County communities, the investment of limited local funding will be critical to a safe and efficient transportation network. Because a number of roads in Lander County are and will likely remain unpaved, future development standards are important to limit the costs of maintenance and upgrades. Additionally, significant upgrades and improvements will be necessary in areas of increasing residential and commercial development. Developing access to the rail network for economic development and limiting encroachment upon local airports are also important transportation issues considered in this element.

The section includes information on highways, local streets and roadway network, and rail and airport service. Additionally, this element will give consideration to future land use decisions and their impacts on transportation needs, and roadway enhancements to improve safety and the aesthetic associated with critical commercial and tourism access in Battle Mountain.

Specific Goals for Transportation

- Establish and enforce County street and road standards for future development.
- Maintain a transportation network which supports economic development, and growth in Lander County.

- Coordinate transportation facility needs with planned future growth in Lander County. Such facilities need to be developed in a manner that minimizes the fiscal impact to Lander County for future maintenance and required improvements.
- Identify transportation system facility needs which serves to improve traffic flow, pedestrian safety and community aesthetics.

Access Management- State Route 305

Access management strives to ensure mobility of traffic in a safe and efficient manner while allowing access to surrounding developments. This is accomplished by controlling the amount of traffic interruptions caused by vehicles entering or exiting the roadway. The type of land use and volume of traffic are the key components in determining how the access will be managed. Although vehicles need access to the roadway, they do interrupt the flow of traffic. The greater the number of these interruptions, the more impact they have on flow. Access management controls the amount of these interruptions and is a tradeoff between the need for access and the maintenance of traffic flow. Improved coordination of traffic light signals can diminish the interruptions of automobiles entering and exiting the road network. The need for access management in Lander County is limited to State Route 305 in Battle Mountain. Other streets and roads in Lander County do not have enough traffic to warrant management initiatives.

SR 305 should be managed for moderate access near Battle Mountain. Moderate access control is characterized by less than three signals or controlled intersections per mile. Medians may be appropriate with raised or painted turn pockets. Medians can be designed to provide additional pedestrian safety features which are warranted on sections of SR 305 due to children accessing local schools. As traffic increases, the use of right deceleration lanes may be necessary for new access. Under moderate access management, driveway spacing should be a minimum of 200 to 300 feet and left turns will continued to be allowed. There are a number offset intersections along SR 305 that should be corrected overtime.

Streetscape

Streets serve a number of functions, including providing the primary means of surface transportation routes for pedestrians, bicyclists, transit, automobiles and emergency providers; connecting the neighborhood and community; providing access to destinations; and uniting people through the common public space.

Front Street and State Route 305 are two important streets in Battle Mountain. They encompass the commercial core of the Battle Mountain. Streetscape improvements have

occurred in recent years improving both the aesthetics and pedestrian access along Broad Street/SR 305. There are several problems, however, with the current street configuration in the Front Street/State Route 305 area. The current street pattern tends to concentrate pedestrians and traffic both north and south of Interstate 80. Although, portions of the street accommodate pedestrians, school age children must cross State Route 305 in order to walk to and from school. This is particularly evident in the morning hours prior to the start of school when a large number of children use the I-80 overpass to walk to the high school and middle school. In terms of overall use, the downtown Battle Mountain off-ramp handles two to three times the amount of daily traffic as compared to the east and west ramps at Battle Mountain. Streetscape improvements in Battle Mountain along 305/Broad Street can unify the commercial areas, improve safety for pedestrians and enhance the aesthetics of the community.

Level of Service

Level of Service (LOS) is not a problem in Lander County communities. Most street and roadway networks are relatively free flowing with no restrictions to maneuverability or speed with slight delays. However, the intersection of Broyles Ranch Road and State Route 305 and 8th Street probably functions below a level of service A. During peak commuting periods, this intersection currently experiences waiting lines on Broyles Ranch Road and 8th Street for left turns onto State Route 305. Additionally, this location serves as pedestrian access for school children walking to the high school, and middle school. Table 7-1 shows level of service categories. Based on Table 7-1, the Broyles Ranch Road and State Route 305 operate at or near an LOS C/D during morning and evening commute hours.

Table 7-1: Level of Service (LOS) Categories

Level of Service Description	
A	Relative free-flow. No restrictions to vehicle maneuverability or speed. Very slight delay
B	Stable flow. Some slight reduction in maneuverability and speed. Slight delay.
C	Stable flow operation. Higher volumes. More restrictions on maneuverability and speed. Acceptable delay.
D	Approaching unstable flow operation. Lines develop. Little freedom to maneuver. Tolerable delays for short periods.
E	Unstable flow or operation. Low operating speed; momentary stoppages. This condition is not uncommon in peak hours. Congestion and lengthy delays.
F	Forced flow or operation. Gridlock occurs.

Streets and Road System Plan

Lander County maintains an extensive street and roadway network including paved streets serving the communities of Battle Mountain, Austin and Kingston. In areas south and east of Battle Mountain, a paved roadway network serves relatively low density neighborhoods (less than 1 home per 10 acres) . An extensive system of unpaved rural roads also exists. Resources to maintain this system are extremely limited. Lander County uses a majority of its Regional Transportation Commission (RTC) funds for maintenance projects. Expansion of the current street and roadway system will become an increasing financial burden as the level of gasoline tax revenues does not keep pace with needs. Managing the street and roadway network will require additional measures to address:

- Stormwater drainage requirements for new and existing streets and roads,
- Requirements for paved streets and roads for new lower density development,
- Maintaining or increasing standards for new rural roads.
- A land use pattern that creates a compact form minimizing the amount of new streets and roads to serve new development, and;
- Carefully planned and programmed improvements.
- Financing major improvements and providing on-going maintenance.

Rail Operations

There are two Union Pacific Railroad (UPRR) lines traversing northern Lander County. The westbound track, referred to as Track No. 1, is generally parallel to Interstate 80 (I-80) and goes through Battle Mountain bisecting the Town. Track No. 2 is located north of Track No. 1 and carries eastbound trains.

Both rail lines have a Federal Railroad Administration (FRA) classification of Class 4, which allows for heavy haul trains with speeds over 50 miles per hour (mph). Typical speeds on the westbound track are 49 mph for freight and 59 mph for passenger trains, both are supposed to be slowed to 45 mph through Battle Mountain. Speeds on the eastbound track are 70 mph for freight and 79 mph for passenger trains. There are approximately 15 eastbound and westbound freight trains per day. There is also a limited amount of local service, typically five trains per day. Under normal operating conditions all eastbound trains use Track No. 2 and all westbound trains use Track No. 1. However, due to local traffic serving industrial uses in the area, trains could occasionally travel in either direction on either track.

UPRR- Track No.2 Eastward

The Union Pacific Railroad track charts for Track No. 2 identify five sidings and spur tracks. The heavily used industrial areas in North Battle Mountain generate substantial local freight activities. These spurs are located such that each turnout is in the trailing movement. Inventories in this area include the following:

- 1) Russell's siding.
- 2) FMC Distribution industrial spur. This spur has a turnout at approximately MP 477.4
- 3) Rennox is just east of FMC with a turnout at MP 478.3. This spur branches to another track with both tracks stub ending at approximately MP 477.5.
- 4) Jenkins is a two track siding. The main branch track has a turnout at MP 478.8 and again branches to another track. Both tracks end at approximately MP 478.4. This siding is used extensively by Dyno Nobel.
- 5) Kampos is a two-track siding with turnout at MP 491.2. The main branches split into another track and both stub end at approximately MP 490.6.

UPRR- Track No.1 Westward

The UPRR track charts for Track No. 1 within Lander County identify sidings and spur tracks occurring around Battle Mountain. Except for the double ended siding at MI Battle Mountain facility, all of the turnouts are in the trailing movement. Inventories in this area include the following: (all Milepost references are for Track No.1, per the UPRR track charts),

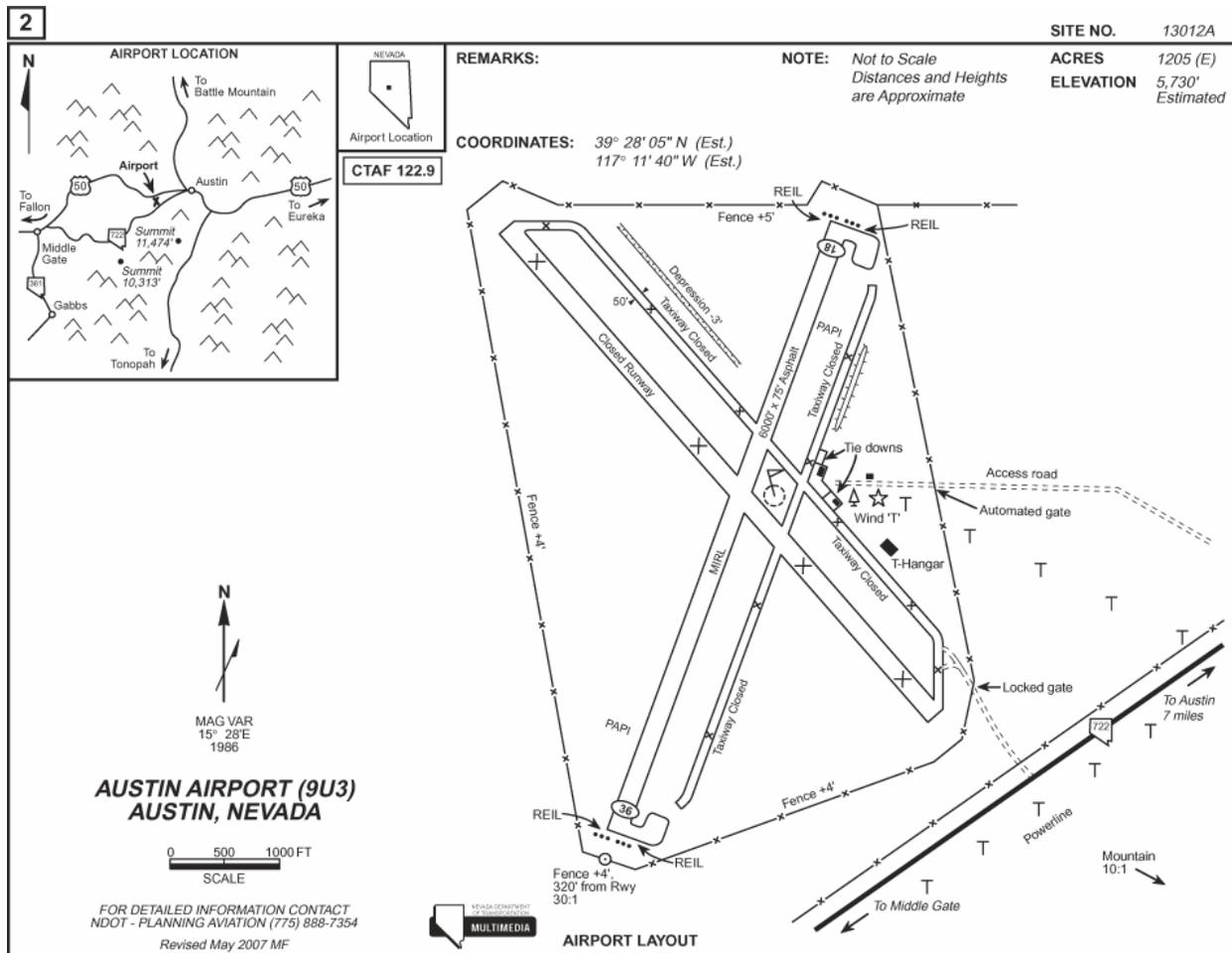
- 1) Piute siding.
- 2) MI Battle Mountain Plant industrial spur. This spur has a No. 14 turnout at approximately MP 474.46. This is a multiple track siding with industrial spur accessible from both ends with No. 14 turnouts. MI ships barite by rail on a daily basis.
- 3) Chevron Oil Products industrial spur, which handles ethanol and diesel fuel.
- 4) East of Reese Street is a two mile siding with a No. 10 turnout at MP 475.95.
- 5) A spur with a turnout at Muleshoe Road.
- 6) Rosny siding.
- 7) Baker Hughes INTEQ with a turnout at MP 498.2. This siding serves the Argenta Mine and handles barite and drilling fluids.
- 8) Mosel Siding with a No. 10 turnout at MP 491.9.

Lander County Airports

There are three airports in Lander County. Airports in Battle Mountain and Austin offer excellent development potential with sizeable lands available adjacent to surrounding the airports.

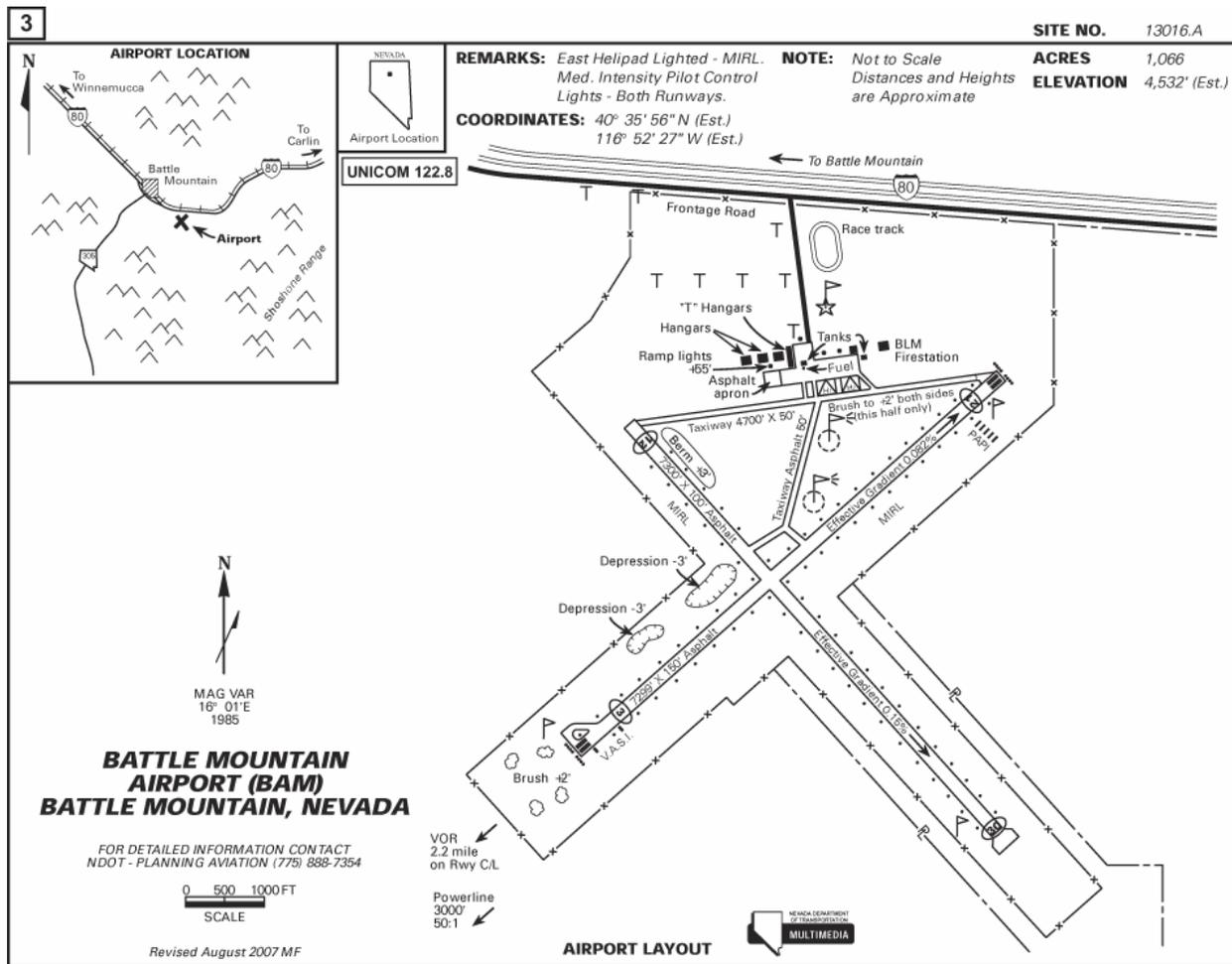
Austin Airport

The Austin Airport contains approximately 1,205 acres. The primary runway is asphalt approximately 6,000 feet in length and 75 feet wide. Visual approach aids include REIL, PAPI, and Beacon. In 2007 there were 7 aircraft based at the airport and approximately 1,400 aircraft operations. Lighting is MIRL. The Austin Airport is located about 9 miles west of the Town of Austin in the Reese River Valley. The airport has 3 phase power available and in the process of developing fuel storage.



Battle Mountain Airport

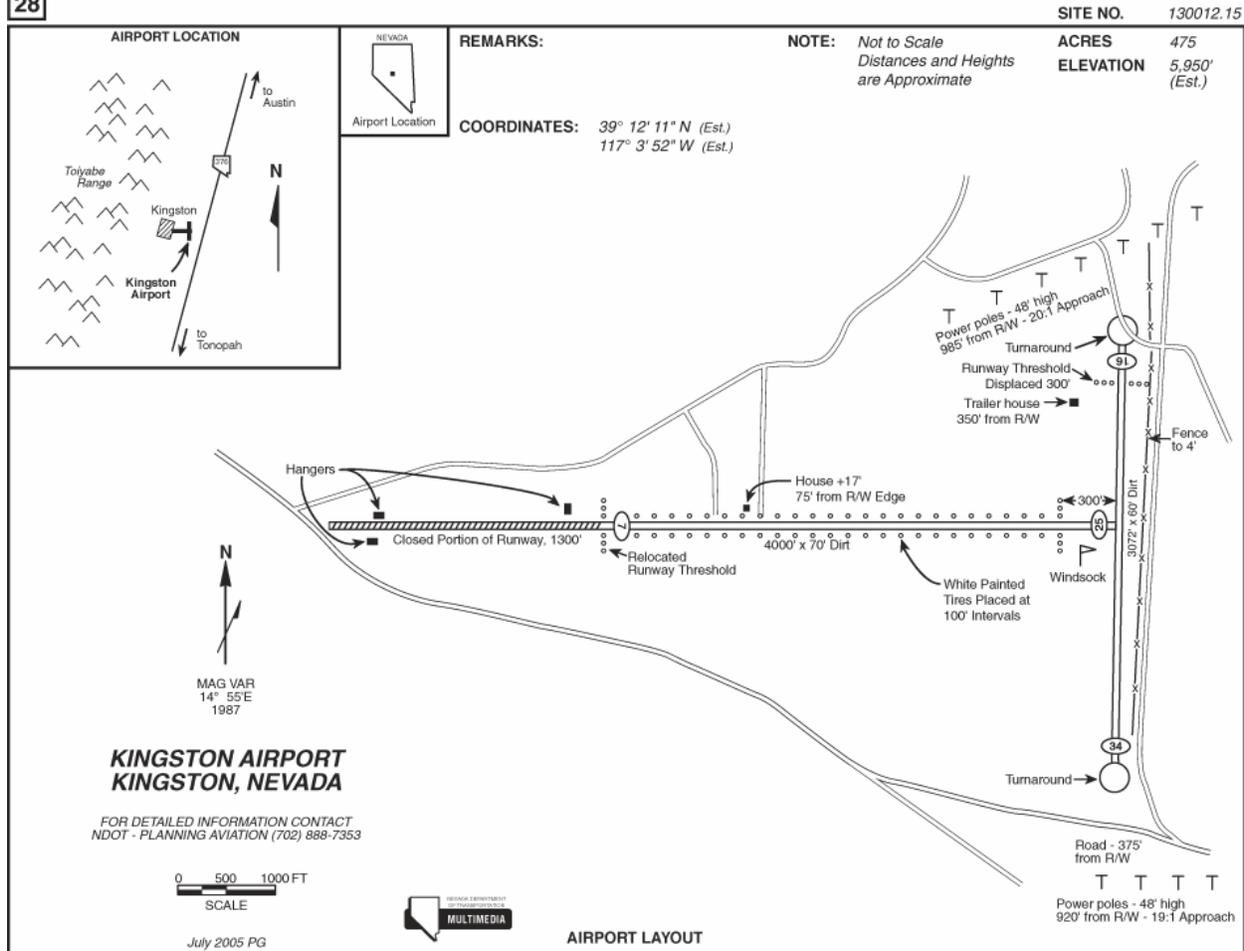
The Battle Mountain Airport contains approximately 1,066 acres. The primary runway is asphalt approximately 7,299 feet in length and 150 feet wide. The secondary runway is 7,300 feet in length and 100 feet wide. Visual approach aids includes VASI-2, PAPI-4, and Beacon. Approach and landing aids include VOR and GPS. The East Helipad is also lighted. In 2007 there were 6 aircraft based at the airport and approximately 11,940 aircraft operations. Lighting is MIRL. Fuel availability is Jet A and 100LL. The Battle Mountain Airport is located approximately 4 miles southeast of the Town of Battle Mountain. The airport is adjacent to Interstate 80 and the Union Pacific Railroad. There is a small water system serving the airport. Tank storage maybe required to increase the capabilities to serve commercial and industrial development in the future.



Kingston Airport

The Kingston Airport contains approximately 144 acres. The primary and secondary runway is dirt/gravel 3,700 feet in length and 80 feet wide. The secondary runway is 3,100 feet in length and 60 feet wide. There are no visual approach or landing aids. In 2007 there was 1 aircraft based at the airport and approximately 250 aircraft operations. Fuel is not available.

28



Transportation: Policies and Action Programs

T. 7. 1 Pedestrian Enhancements

T.7.1.1 New local street within two blocks of a school site that would be on a walking route to school—sidewalk and curb and gutter shall be required.

T.7.1.2 Sidewalks may be omitted on one side of a new street where that side clearly cannot be developed and where there are no existing or anticipated uses that would generate pedestrian trips on that side.

T.7.1.3 Where there are service roads, the sidewalk adjacent to the main road may be eliminated and replaced by a sidewalk adjacent to the service road on the side away from the main road.

T.7.2 For rural roads not likely to serve development, a shoulder of at least 4 feet in width, preferably 8 feet on primary highways, should be provided. Surface material should provide a stable, mud-free walking surface.

T.7.3 Lander County shall develop a transportation capital improvements plan that addresses priority street and roadway improvements. Such improvements might include:

- Alignment of Sheep Creek Road, Pleasant Hill Drive and SR 305 to eliminate offset intersections.
- Extension of Bastian/Sheep Creek Road to Allen Road
- Community Information Center on SR305 north of Interstate 80.
- Pedestrian Safety Improvements at Broyles Ranch Road and SR 305.
- Extension of street enhancements south along SR305 to Lamaire Rd. Enhancement will include landscaping, appropriate signage and decorative lighting.
- Streetscape enhancements tying SR305 to Front St drawing circulation through Battle Mountain commercial areas. Streetscape improvements should be extended to Broyles Ranch Road and SR305 south of Interstate 80.
- Construction of a connector road between SR 8A and Hilltop road.

Major street and highway transportation improvements are included in Figure A-7 (Transportation Plan).

T.7.4 Lander County supports streetscape improvements along U.S. Highway 50 through Austin.

T.7.5 Ensure that adequate drainage and road standards are provided for new county roads. The County engineer shall approve any new roads prior to dedication and acceptance by Lander County.

T.7.6 Discourage the creation of offset intersection when such intersections are 200 feet or less apart.

T.7.7 Lot sizes of .33 acres or greater may be designed to use open drainage systems. All designs must be reviewed and approved by the County Engineer. Cost of review will be paid by

applicant. Curb, gutter and sidewalk requirements will remain in place for development within 300 feet of schools.

T.7.8 Design and install Battle Mountain and Austin signage information kiosks.

T.7.9 Ensure that new development requiring public streets are adequately funded and that adequate funding is also available to maintain a new system of streets and roads.

T.7.10 New parcels created within the Town of Battle Mountain will be required to meet existing standards which are consistent with the surrounding areas/neighborhoods.

T.7.11 Lander County shall limit encroachment and development on lands adjacent to public airports.

T.7.12 Railroads are important assets for industrial development. Lander County should evaluate how best to utilize railroads and sidings to promote industrial development and job creation.

T.7.13 Streetscape Improvements should be undertaken in Battle Mountain to achieve the following outcomes:

- a. Improve the aesthetic for residents and visitors to the area through the use of landscaping and lighting.
- b. Increase pedestrian safety particularly school age children walking to and from schools in Battle Mountain.
- c. Unify and connect commercial areas in Battle Mountain.

T.7.14 Update County-Wide Road Plan.

T.7.15 Support transportation goals and policies in the Lander County Plan for Public Lands.

T.7.16 Develop a county-wide road map which designates all transportation related facilities, rights-of-way, and roads which are included in the county system.

8.0 WATER RESOURCES

The development and use of water in Lander County is critical to current and future development of the region. Water resources play a key role in the major economic activity for the county including mining, agriculture, and tourism and recreational activity. Even with the relatively small population base, competing uses of water resources are particularly evident in a number of areas throughout Lander County.



The master plan by reference draws upon the policies and action programs put forth by a number of local government agencies as well as the County's own Water Resources Plan. Plans and policies of the following entities include:

- **Revised Policy Plan for Federally Administered Lands**

The Board authorized an update to the Interim Plan and subsequently adopted the Revised Lander County Policy Plan for Federally Administered Lands in 2005. The plan is a set of policies and measures designed to increase the role Lander County residents have in determining the management of federally administered lands.

- **Humboldt River Basin Authority**

The Elko, Eureka, Lander, Humboldt, and Pershing County Commissions pursuant to NRS 277.080 and 277.140 inclusive of the interlocal Cooperation Act organized the Humboldt River Basin Water Authority (Authority). The Authority is governed by a fifteen-member board of directors with three directors appointed by each of the five member counties, one county commissioner from each member county serves on the Authority's board.

- **Central Nevada Water Authority**

The Central Nevada Regional Water Authority is a unit of local government that collaboratively and proactively addresses water resource issues common to communities in Nevada's rural interior. The Authority exists under Nevada's Interlocal Cooperation Act (NRS Chapter 277) and

has delegated authorities separate and apart from its member counties. The region is the largest of Nevada's 14 Hydrographic Regions, encompassing much of central, eastern and southern Nevada. Member counties include Churchill, Nye, Lander, White Pine, Esmeralda, Eureka and Elko. The members share a common interest in the protection, enhancement and beneficial use of surface water and ground water originating within the unique hydrographic region serving the greater community of the members.

Specific Goals of the Water Resources Element

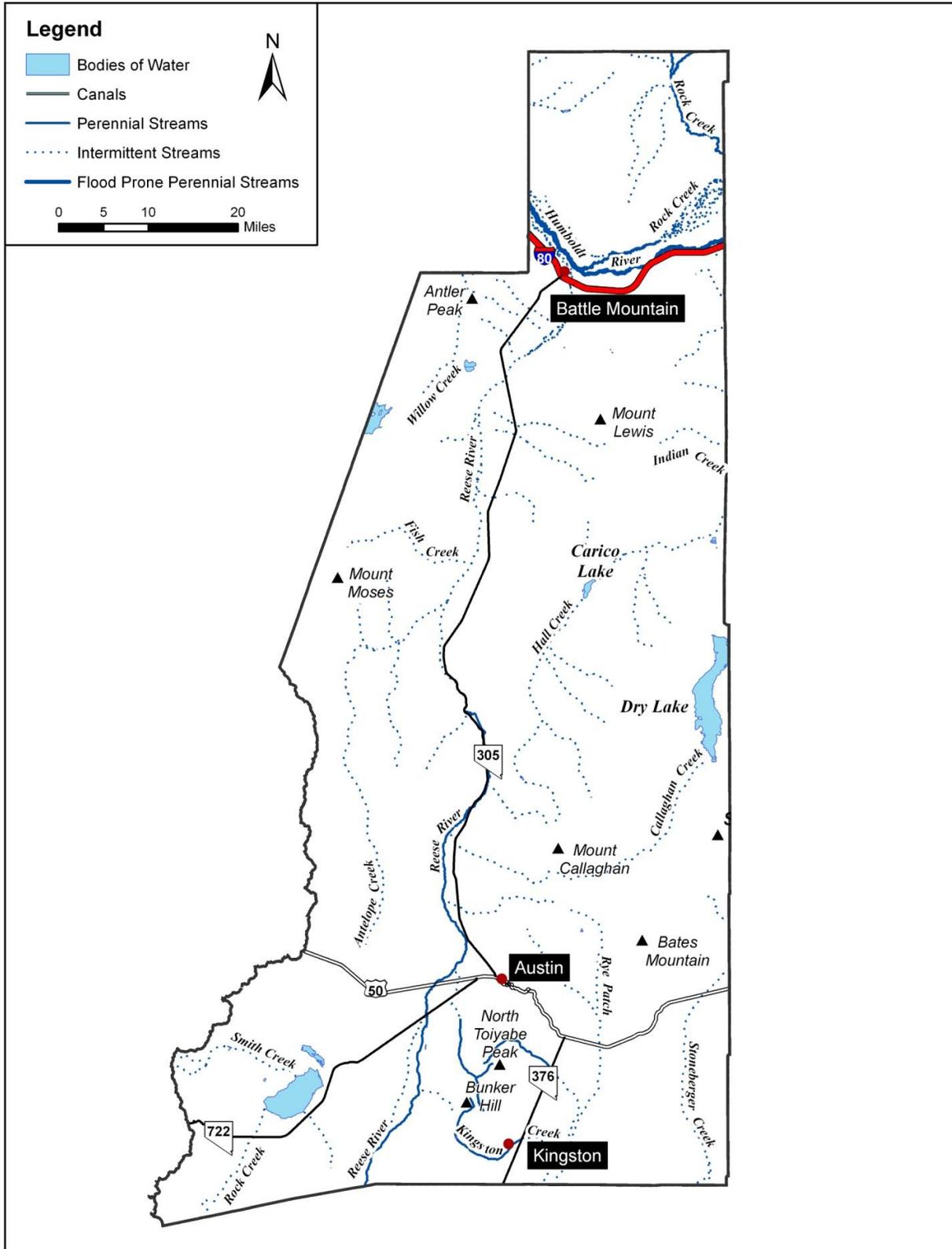
- Protect and preserve water rights, water supply, and water resources in Lander County. Such resources are critical to the local economy, and the health and well-being of the community.
- Implement and support water resource policies and goals of the Humboldt River Basin Authority and Central Nevada Water Authority.
- Protect or minimize critical flood zones from encroachment and development.
- Identify and describe surface and groundwater in Lander County and important uses that rely upon those resources.

Surface Water

The hydrology of Lander County is typical of the basin and range environment. Precipitation is seasonal with rain or snow in the winter and thunderstorms in the summer. Stream flows are seasonal with the peak flows typically occurring in the spring. Major surface water features in Lander County are shown in Figure 8-1. There are three major streams in Lander County. They include the Humboldt River, the Reese River, and Rock Creek.

The dominant hydrologic feature in the region is the Humboldt River, which has had a significant impact on the history of the development of Battle Mountain. Water records kept sporadically for flow in the River since 1896, show an average discharge of 302 cubic feet per second (cfs), or 218,600 acre-feet per year. The drainage area above Battle Mountain is an impressive 8,870 square miles, which can cause serious flooding during unusual conditions. Several irrigation diversions exist upstream which have some impact on flow in the Humboldt River during the growing season. During the 1990s, the highest peak flow occurred on June 13, 1995 when the Humboldt River reached a flow of 4,010 cfs. High flows in the River begin to build in February and March, with the onset of spring snowmelt. Peak flows historically occur in June and rapidly decrease in July, to base flow conditions by August. Base flows continue until February of the following year.

Figure 8-1 – Lander County Surface Water Features



The Reese River in contrast, has a drainage area of 2,330 square miles at Battle Mountain, and an average discharge of 10.4 cfs or 7,530 acre-feet (measured at Lone, upriver). Peak flow on the Reese River during the 1962 flood was estimated at 4,760 cfs, compared to 167 cfs at Lone. It has a similar hydrograph as the Humboldt River with peak flows occurring in June in most years. Periods of no flow are recorded in some years. The Reese River is fed by several tributaries draining the west slopes of the Toiyabe Mountains including Cottonwood Creek, Big Creek, Italian Creek, Silver Creek and Boone Creek (See Figure 8-1). During intense or unusual storm events surface flows from Antelope Valley can reach the Reese River.

Rock Creek and its tributaries drain much the area west of the Tuscarora Mountains. The headwaters of Rock Creek are in the unnamed mountain range on the northern side of Willow Creek Valley in Elko County. Rock Creek is joined by Willow Creek and flows southward in a rugged canyon to Rock Creek Valley. Flows of each stream are influenced by irrigation diversions and releases from Willow Creek Reservoir. Rock Creek is then joined by Antelope Creek, cuts through the Sheep Creek Range by way of another rugged canyon, and enters Boulder Flat. Rock Creek at the gaging station where it enters Boulder Flat discharges about 29,000 acre-feet/year. Flow of the stream probably enters Humboldt River in years of above-normal runoff. Rock Creek is joined by Boulder Creek in the lowlands between the Sheep Creek Range and the Argenta Rim and then enters the Humboldt River about 2 miles east of Battle Mountain. Rock Creek has no baseflow near the Humboldt River.

Other significant surface water features include a number of smaller streams located throughout the County most of which are perennial in the upper reaches then becoming ephemeral near the valley floors. There are no major lakes or reservoirs in the County with the exception of Groves Lake which is approximately 10 acres in size. There are a host of smaller reservoirs associated with local ranching operations. Two of the largest are located at Iowa Creek Ranch and Smith Creek Ranch. Specific information on surface water features in Lander County can be found in County Water Resource Plan 2010.

Surface water quality is generally good in Lander County. Surface water have variable amounts of total dissolved solids (TDS), but generally have less than 325 milligrams per liter (mg/l) making them suitable for all uses. Specific conductance, a good measure of water quality typically ranges from 300-500 micromhs. The pH of local surface water is in the mildly alkaline range around 8.0 with dissolved calcium, sodium, and sulfate. Suspended sediments can be very high at times during runoff events.

Groundwater

Ground water occurs in porous alluvial basins adjacent to the Humboldt and Reese Rivers, as well as Rock Creek and other water courses in the region. Ground water also occurs associated with fractures in the bedrock of upland mountain ranges. Recharge occurs primarily from precipitation, and infiltration in the case of the Humboldt River. Ground water discharge from the Humboldt River Basin is estimated to be about 30,000 acre-feet per year (Rush et al, 1971). There are two major hydrographic basins/regions (Humboldt River Basin and the Central Region) in Lander County. Figure 8-2 shows groundwater basins contained in whole or in part within Lander County.

There are a total of 18 groundwater basins in Lander County. Only three of the groundwater basins in Lander County are hydrologically closed units. Figure 8-2 also shows which basins are closed and the amount of subsurface flow moving between each groundwater basin. As seen in Figure 8-2 subsurface flow from Upper Reese River, Antelope Valley and Middle Reese River ultimately contributes to groundwater recharge in the lower Reese River Valley basin. Each year the lower Reese River Valley receives approximately 9,000 acre-feet of subsurface flow from the Middle Reese River Valley. The majority of Lander County's population currently lives within four major groundwater sub-basins. Three basins bisect the Battle Mountain area, they are 64 Clovers Area, 61-Boulder Flat, and 59 Lower Reese River Valley. All three sub-basins are currently designated. The Austin area is located in basin 56-Upper Reese River Valley and Kingston/Gilman Springs is located in 137B-Big Smoky Valley.

Certain areas of Lander County have been "designated" by the State of Nevada. This designation means that permits to pump water are not being issued, being issued with limitations, or issued for preferred uses only. Possible appropriations are allowed for industrial, municipal, domestic mining, and stock watering, but are restricted for irrigation purposes. The depth of water in the valleys of Lander County varies tremendously. On average, ground water is as shallow as 10 feet and as deep as 460 feet. The depth of domestic water wells reported to the Nevada Division of Health Protection Services is generally less than 200 feet.

Lander County includes all or part of 18 hydrologic ground water basins. The amount of water that can be removed from a basin without causing the depletion of the resource is defined by the perennial yield. Estimates for the perennial yield of several basins in Lander County are shown in Table 8-1. Seven basins are open to additional groundwater appropriations for all uses. Eight basins are designated preferred use designations (domestic, municipal, and quasi-municipal) and are closed to further irrigation permits. The fifteen remaining basins are partially closed to further irrigation permits.

Figure 8-2 Groundwater Basins and Subsurface Flows

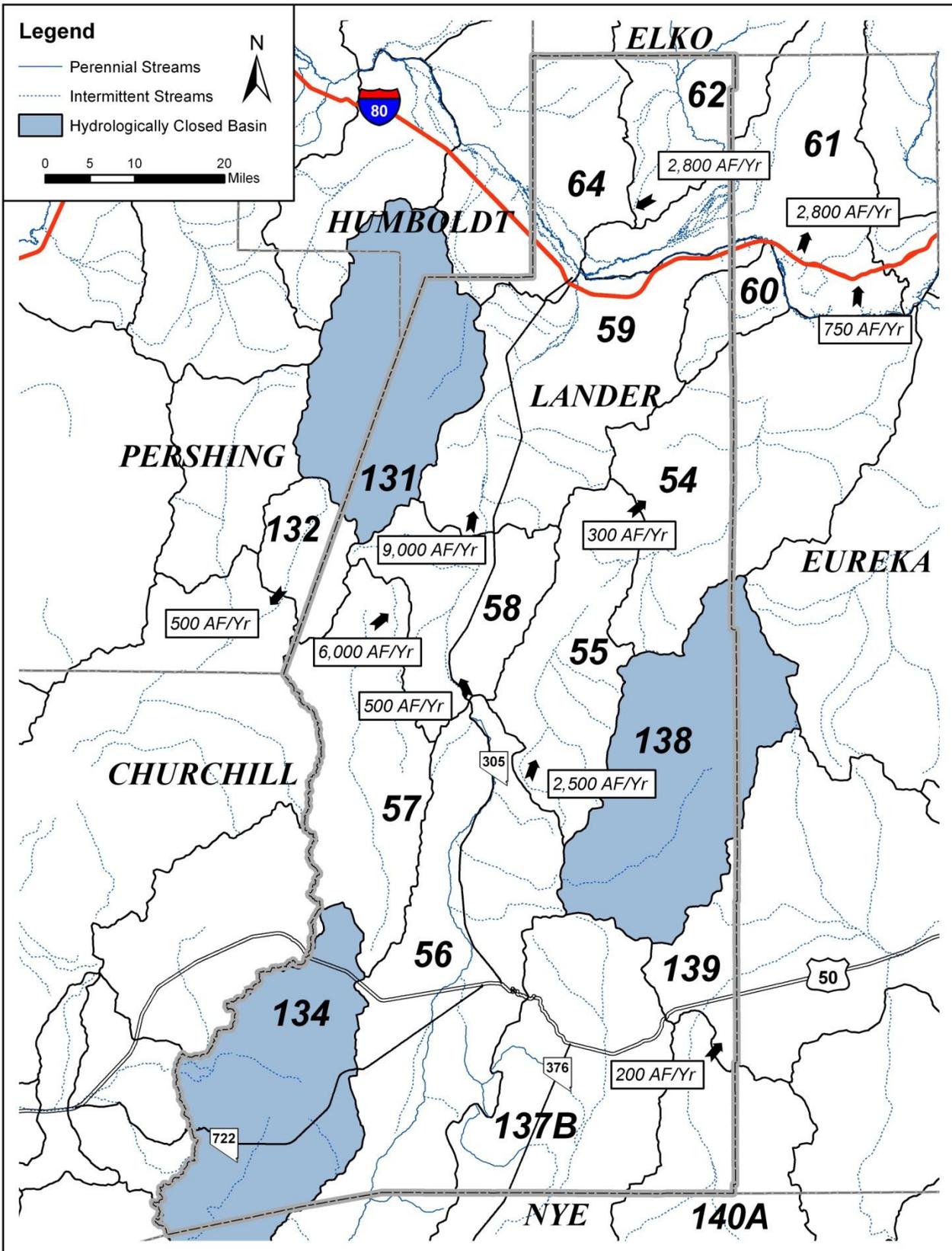


Table 8-1 Perennial Yield Groundwater Basins in Lander County: 2009

Basin	Region	Name	Perennial Yield	Designated, Engineers Order
54	Humboldt River	Crescent Valley	16,000	Y-All, O-755
55		Carico Lake	4,000	N
56		Upper Reese River V.	37,000	N
57		Antelope Valley	9,000	Y-Portion, O-276
58		Middle Reese River V.	14,000	Y-Portion, O-276
59		Lower Reese River V.	17,000	Y-All, O-739
60		Whirlwind Valley	3,000	Y-All, O-799
61		Boulder Flat	30,000	Y-Preference, O-799
62		Rock Creek Valley	2,800	N
64		Clovers Area	40,000	Y-All, O-700
128	Central Region	Dixie Valley	15,000	Y-All,
131		Buffalo Valley	8,000	N
132		Jersey Valley	250	Y-All, O-715
134		Smith Creek	10,000	N
137B		Big Smoky NP	65,000	Y-All, O-852
138		Grass Valley	13,000	N
139		Kobeh Valley	16,000	Y-All, O-816
140A		Monitor Valley	8,000	N

Source: Nevada Division of Water Resources, 2009

Groundwater Levels

Groundwater levels vary from location to location based upon uses impacting groundwater basins. Important to the continued health of water resources is the trends in groundwater depths as a result of withdrawals and use. Short-term changes in groundwater levels can occur with fluctuations in annual precipitation which in turn affects available recharge. Mining water use can have temporary and dramatic impacts on local groundwater aquifers.

The State Engineer's Office maintains well records and groundwater depths for hydrographic basins. An extensive review of the well data for basins contained within Lander County shows that water levels remain relatively unchanged in a number of basins. Such basins include 138, 137B, 55, 60, 140a and 134. Water use and development in these areas is relatively limited or well data does not exist.

Mining operations impact groundwater in several basins. Such basins include 59, 60, 61, 62, 64, and 54. Basins 59 to 64 include areas influenced by the Humboldt River. Because mine dewater directly or indirectly influences the amount of recharge in the Humboldt River Basin,

groundwater levels in basins 59, 60, 61, 62, and 64 have remained unchanged and in some instances have actually increased.

Basin 54 contains Cortez mines and the Town of Crescent Valley. Pit dewatering has reduced groundwater depths in the southwest region of the basin near the Lander County line. Lower elevations of Crescent Valley to the north are experiencing increases in groundwater levels. Once mining operations stop changes to groundwater levels will likely revert back to pre-dewatering conditions and levels.

Basins 56, 58 and 59 encompass the Reese River Valley. Basin 57 is the Antelope Valley. Overall, few changes in groundwater levels are occurring in Basin 56. Substantial groundwater declines have occurred in Basins 57 and 58 where agricultural water use and groundwater pumping have resulted in significant declines over the last 20 years (See Figure 8-3). Groundwater pumping in Basin 57 has probably eliminated or reduced groundwater flow between the two basins. A similar situation may exist in Basin 58. Underflow from Antelope Valley to Middle Reese River Valley and Middle Reese River Valley to Lower Reese River Valley is estimated to be 6,000 and 9,000 acre-feet per year, respectively (NDCNR 1963). Data from the State Engineer's Water Level Data base shows that a number of wells in Basin 59 have experienced declines of 20 to 30 feet since 1999. This decline may be attributed to mine dewatering and reductions in underflow from Basin 58.

Flood Hazards

Figure 8-4 shows flood prone areas in Lander County. Figure 8-4 is for orientation purposes only and should not be used as an authoritative source for determining whether specific streets, properties, or buildings are within a flood hazard area. The appropriate Flood Insurance Rate Map panel must be consulted for these purposes. The greatest flood potential exists along the Humboldt River. The townsite of Battle Mountain is located very near the confluence of the Humboldt and Reese Rivers. There is limited historical data documenting flooding in the area, it is likely that periodic flooding has occurred. Flow in these rivers is highly variable. Peak flows for the Humboldt on May 3,4 1952 were 5,800 cfs, and for the Reese River on June 26, 1963 peak flow was 2,140 cfs. No flow was recorded in September and October 1948, September 1949, and September 1959. During a wet year, like 1962, annual discharge was 331,000 acre-feet on the Humboldt River.

Severe flooding last occurred at Battle Mountain in May 1984, when a sudden warming trend melted the snow pack. This flow was estimated between the stations at Elko and Imlay by the US Geological Survey (USGS) to be about 7,500 cfs. This is close to the 100-year peak flow for

the Humboldt River (FEMA, 1990). The resulting 100-year flood plain (See Figure 8-5) as defined by the Federal Environmental Management Agency covers most of the Battle Mountain townsite, and all of the Humboldt and Reese River Valleys (FEMA, 1990).

In 2000, a request was submitted by the Army Corps of Engineers (ACE) to the Federal Emergency Management Agency (FEMA), for an evaluation of the effects that modifications to an existing levee (from State Route 18 [SR 18] to just downstream of Interstate Highway 80 [I-80]) and construction of a new levee along the Reese River (from just upstream to approximately 7,000 feet upstream of I-80) would have on the flood hazard information shown on the effective FIRM and FIS report. The modifications to the existing levee will include raising it to meet the minimum freeboard requirement of 3.0 feet.

As a result of the proposed project, a Special Flood Hazard Area (SFHA) would be inundated by the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood), shown on effective FIRM panels along the land side of the levees from approximately 8,500 feet upstream of I-80 to approximately 2,000 feet upstream of SH18 will be removed, and the area will be re-designated Zone X, an area protected by levees from the base flood. The width of the SFHA along the river side of the levees will increase from approximately 1,000 feet downstream of Interstate Highway 40 to approximately 3,800 feet upstream of I-80. The maximum increase on SFHA width, approximately 1,000 feet will occur just downstream of the Southern Pacific Railroad (SPRR). The base flood elevations (BFEs) will increase and decrease along the revised reach. The maximum increase in BFE, 3.5 feet, will occur just upstream of the SPRR. The maximum decrease in BFE, 2.5 feet, will occur approximately 100 feet downstream of the SPRR.

This proposed project will have a major impact not only on the reclassification of the flood plain and flood insurance of residents of Battle Mountain, but will provide a positive impact for recruiting future businesses and prospective industries to the area. Currently, Lander County is obtaining easements and has secured funding for the local share of the project. State representatives in Congress are being encouraged to move the ACE to follow through with their previous commitment to fund the project.

The major wetlands in Lander County follow the flow of the Humboldt River through a meandering path across the northern part of the County from east to west. Historically this area has been a source of irrigation water for the ranching interests along both sides of the river and is dependent primarily on the climatic changes in rainfall and winter snow pack of the mountain tributaries.

Figure 8-3 Groundwater Level - Basins 57 and 58 (1989 – 2009)

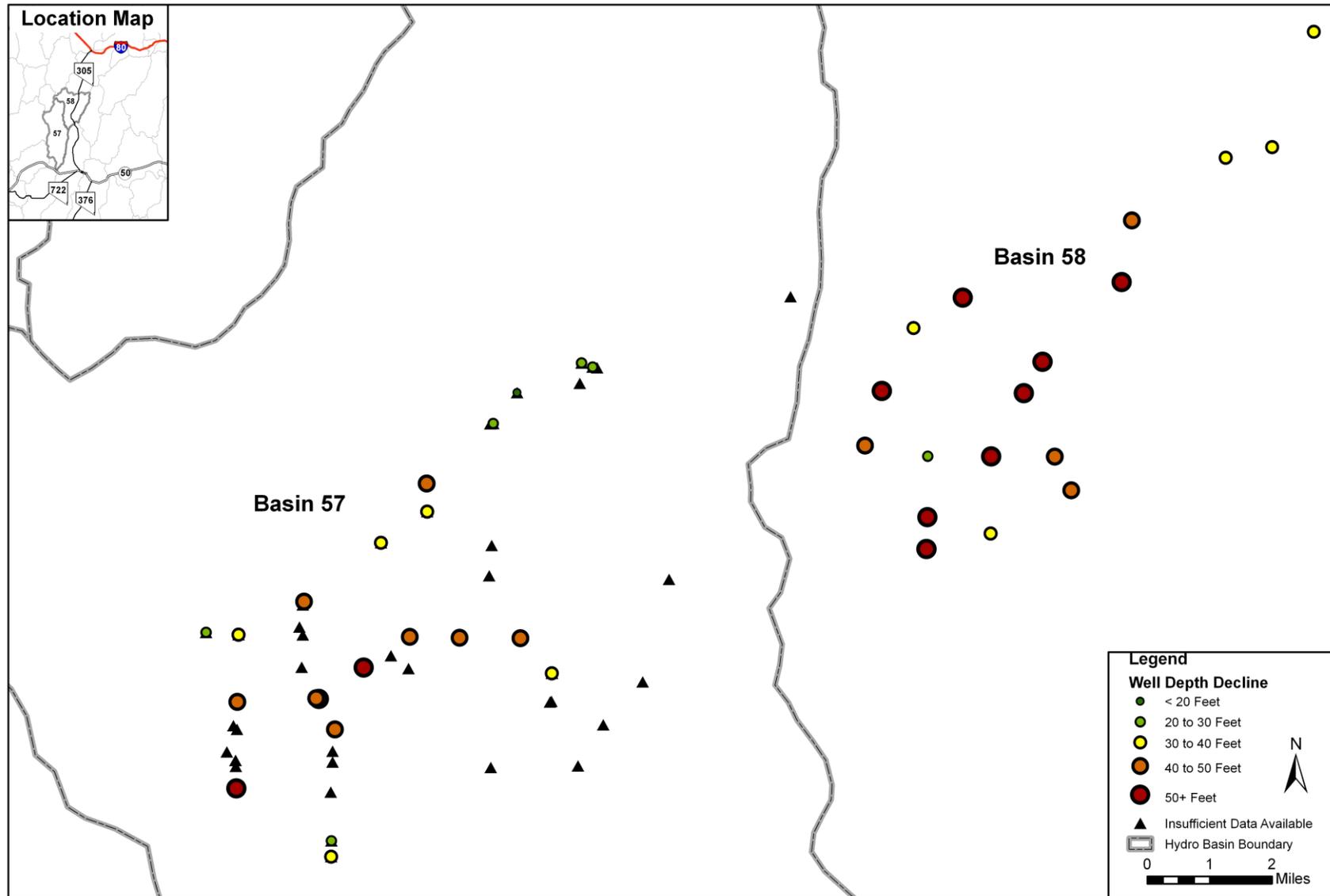


Figure 8-4 Lander County Flood Prone Areas

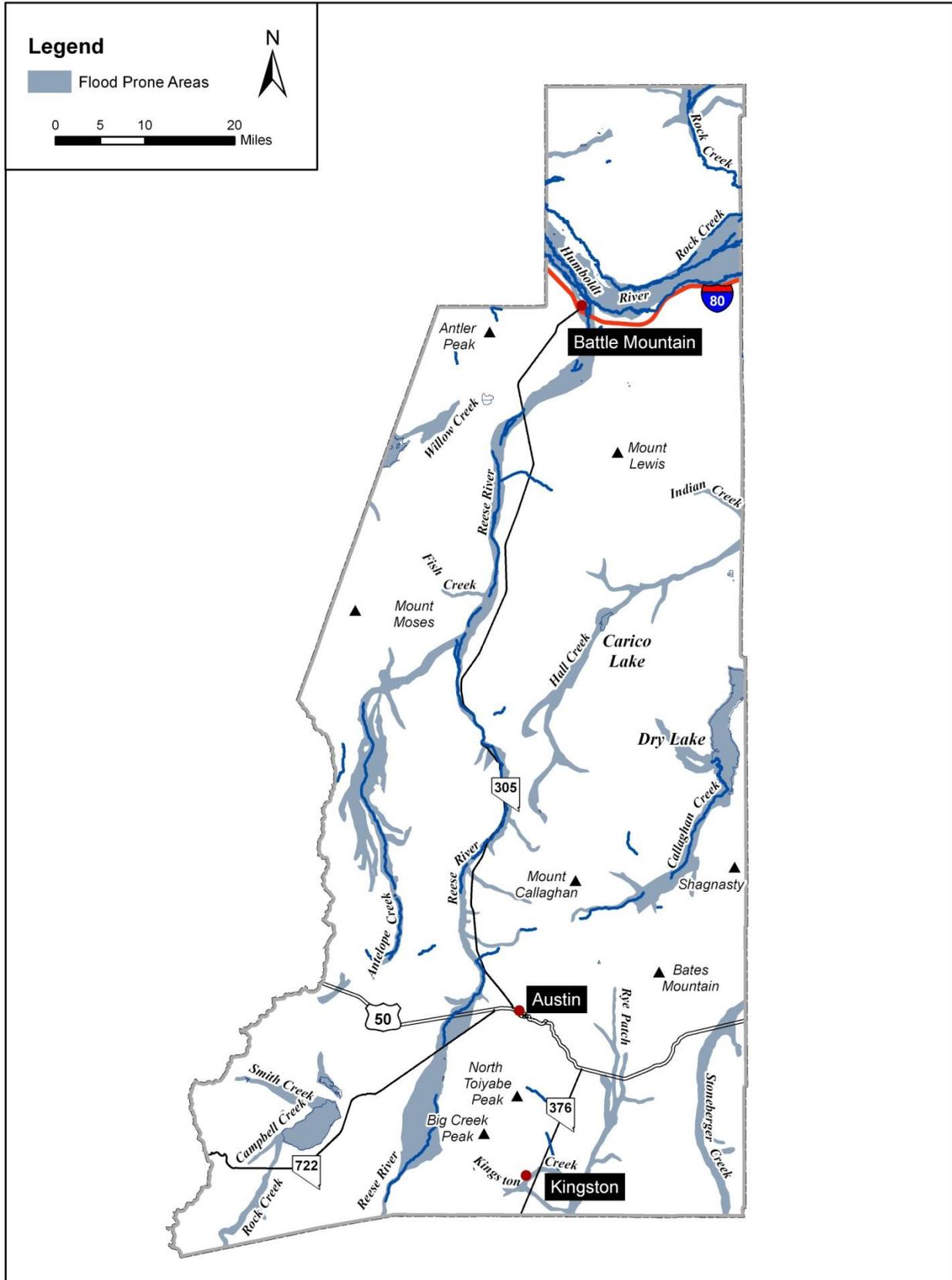
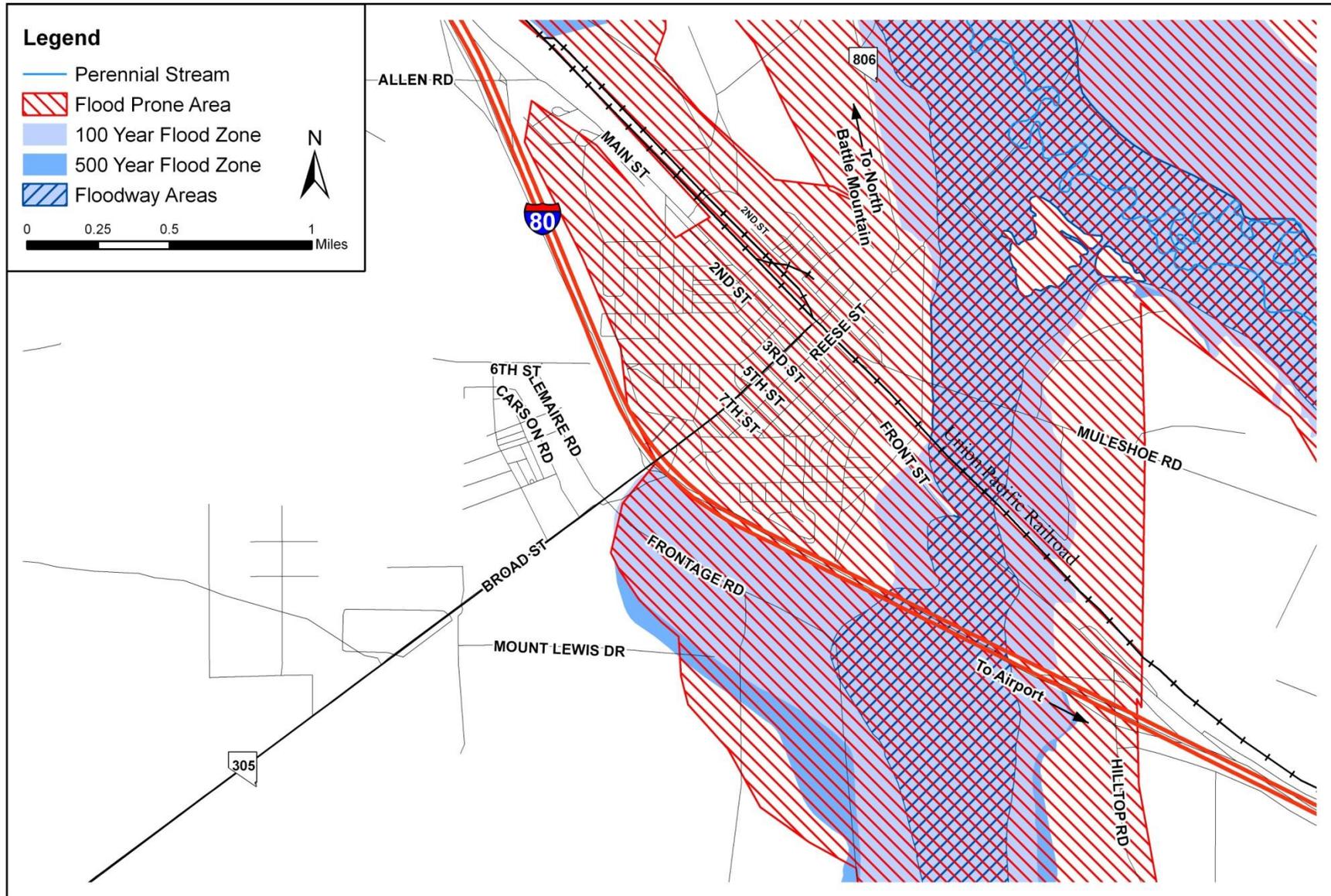


Figure 8-5 Battle Mountain Flood Prone Areas and Flood Zones



Extensive flooding occurred at Battle Mountain in February 1962, before construction of the US Army Corps of Engineers (COE) levee (FEMA, 1990). Flood waters were impounded by the southern Pacific Railroad line, and the embankment had to be breached. The levee now extends along the western bank of the Reese River from Interstate 80 to State Highway 305. It is important to note, however, that the levee does not meet the current FEMA evaluation criteria for the no Special Flood Hazard Area. The levee does not provide 3 feet of minimum freeboard during the 100-year flood. As a result, growth is hampered because of the high cost of insurance and businesses are reluctant to locate in a floodplain. Resolution to the flood plain issue in Battle Mountain is not expected to be resolved for several years. The current flood zone designations remain in place for the foreseeable future.

Peak flow in Kingston Creek during May of 1984, was 221 cfs. Some roads were washed out in this area. A maximum of 385 cfs was measured a year earlier on May 28, 1983. Kingston Canyon reservoir has a moderating effect on peak flows in this watershed (FEMA, 1990). Proper spillway functioning has always been a concern for Groves Lake.

Water Use

Municipal and Industrial Water Use

Table 8-2 shows usage rates for Lander County under various types of use. Municipal and industrial water use includes public supplied domestic, commercial, industrial, and thermoelectric water withdrawals. Recently, municipal and industrial water use per person per day was estimated for Lander County Sewer and Water District No. 1, (Battle Mountain area), Lander County Sewer and Water District No. 2 (Town of Austin), and the Town of Kingston (See Table 8-2). Table 8-2 does not include water use on the Temoak Tribe.

Area	Withdrawals	Population	Per Capita Use/Day
Lander Co. Sewer & Water Dist. No. 1	337,900,000	2,967	310 gallons
Lander Co. Sewer & Water Dist. No. 2	48,000,000 gallons	304	350 gallons
Town of Kingston	18,000,000 gallons	331	150 gallons
Total	403,900,000 gallons	3,602	307 gallons

Source: Lander County Sewer and Water District # 1 and # 2, and the Town of Kingston

Domestic Wells

In 2009 Lander County's total population was 6,003. Approximately 3,800 people in 1,753 households were served by public water systems in Lander County. The balance, approximately 2,200 people in 850 households use domestic wells as their primary source of water. Total water withdrawals associated with domestic wells is difficult to estimate. Currently, these unpermitted domestic wells may be pumped at a rate not to exceed 1,800 gallons per day as set forth by the State Engineer (NRS 534.180). Assuming maximum water usage, existing domestic well owners could use as much as 1,800 gallons per day or about 2.016 acre-feet of water resulting in a total withdrawal of approximately 1,714 acre-feet, annually.

Most of the domestic wells are concentrated in areas around Battle Mountain. Of the estimated 850 domestic wells in Lander County, approximately 514 are located in and around Battle Mountain. Remaining wells are distributed throughout the County and concentrated in areas such as Reese River Valley, Antelope Valley, and Big Smoky Valley.

Population and Water Demand In Selected Groundwater Basins

Approximately 90 percent of Lander County's population lives in three groundwater basins. The Battle Mountain area is bisected by basins 59 and 64, the Town of Austin is located in Basin 56, and Kingston Gilman Springs is located in Basin 137B. Table 8-3 shows current population estimates by hydrographic basin and population forecasts for 2030.

**Table 8-3 Population and Domestic Water Demand
By Hydrographic Basin Within Lander County: 2010**

	Battle Mountain Hydrographic Basin 59-64	Austin Area Hydrographic Basin 56	Kingston/Gilman Spr. Hydrographic Basin 137B
Water System Pop.	2,967, *(192)	306	331
Domestic Wells	514	5	40
Dom. Well Population	1,250	15	100
Total Population	4,410	321	431
Dom. Water Demand	2,148 afa.	197 afa.	188 afa.

*(192) population of Indian Colony

Mining Water Use

Mining has and continues to be a substantial economic activity in Lander County. There are 31 mining districts in the County. Of the 31 mining districts located in Lander County, the Battle Mountain district has yielded the largest value. Production from this district together with the

Reese River, Cortez, McCoy, and Bullion Districts accounts for most of the total metals production. Most of the community areas currently have or have had recent mining activity near them. Today, major mining activity is centered in the North around Battle Mountain (Battle Mountain District/Buffalo Valley) and Crescent Valley (Cortez) with gold, silver, and barite production. However, recent exploration and drilling activity will likely lead to renewed mining activity in an around Austin.

South of the Fortitude Complex near Buffalo Valley Road, elevated concentrations of chloride, sodium, and sulfate in the groundwater are present. The elevated concentrations are a result of a solute plume originating from a gold tailings facility. This plume is a result of an unlined disposal area that was used for copper and gold tailings intermittently from 1966 to 1993. The chlorine plum is currently being managed under the State of Nevada Water Pollution Control Permit.

Proposed mining operations in the Battle Mountain and Cortez District are projected to continue into the future. Battle Mountain Gold Company a wholly owned subsidiary of Newmont Gold Corporation proposes to expand its current operations approximately 12 miles southwest of Battle Mountain. The Phoenix open pit gold and copper mine, located in the high desert, began production in 2006. Phoenix was part of the Battle Mountain Gold acquisition in January 2001 and has one of the largest milling operations in North America. Upon commissioning in 2006, the operation had an estimated life of 20 years, but exploration could reveal deposits that would extend the mine's life (Newmont Mining Corporation, 2010).

Mining water use will fluctuate with the boom and bust cycle of the mineral industry. The most recent estimates of mining water use show that nearly 145,000 acre-feet of water were used in 2009 as compared to 35,598 afa/year. in 1995. Current active groundwater permits for mining in projects in Lander County estimated to be just over 24,000 acre-feet. As with most mining projects, only a small portion of the water is used for consumptive purposes associated with the mining operation.

Geothermal Resources

Hot Springs and wells are scattered over the entire State, with at least 300 thermal wells, springs, and spring clusters. Almost all of these waters have been appropriated for some beneficial use under Nevada water laws. Within Lander County, several significant geothermal resources areas exist. An area of high heat flow, compared to the rest of the State, is the "Battle Mountain High". This area, of which the boundaries have not fully been determined, may be the result of fairly recent intrusion by magma into the earth's crust. Temperatures indicate an

average flow of about three heat flow units compared to two heat flow units for the rest of the State. The Beowawe Geysers located in Lander and Eureka Counties, have some of the highest reported subsurface temperatures of all geothermal areas within Lander County. Other geothermal areas are found at Smith Creek Valley, Buffalo Valley, Hot Springs Ranch south of Battle Mountain, and Spencer Hot Springs.

Lander County has the potential to develop additional geothermal resources. There are several Known Geothermal Area (KGA) and one operating plant at Beowawe on the Lander line with Eureka County. In 2008 the Beowawe Plant produced 129,000 Mega Watt Hours. Two additional geothermal plants are planned for construction, one in Grass Valley and the other in Buffalo Valley. These plants are expected to come on line in 2011. There is also the potential for another plant to be developed in the Reese River Valley north of Austin.

Agricultural Water Use

The majority of irrigation water in Lander County is used to produce alfalfa, other hay products and irrigated pasture. Current active groundwater rights for irrigation stands at just over 237,600 acre-feet annually (Division of Water Resources, 2010). Future irrigation demands are projected to increase modestly as more lands are placed in production. Alfalfa hay and other hay production averaged just over 90,000 tons in 2002 and 2003. By 2008, Lander County had 28,000 acres under cultivation producing 144,000 tons of hay. Alfalfa production has shown strong gains in the last 8 years. In 2000 and 2001 Alfalfa production ranged between 62,000 and 67,000 tons. By 2008 all hay production exceeded 150,000 tons with approximately 35,000 acres harvested.

Stock water use is influenced by herd size. Future stock water use is expected to remain relatively constant. Modest increases in alfalfa and irrigated crop production are likely to occur. The Lander County cattle and calves inventory has increased from 1999 to 2007. In 2009 the inventory stood at 32,000 head up from 20,000 head in 1999. Slight declines were reported in 2009 with 30,000 head of cattle.

Over the past several years, desert land entries have been successful bringing into production approximately 2,000 acres of irrigated crop land with a total water demand of approximately 8,800 acre-feet. Another source of irrigation demand is lands that are available for disposal by the BLM. Currently, there may be as much as 20,000 acres of public land available for disposal. Large tracts are available in the upper and middle Reese River Valley. Agricultural development in Antelope Valley has, in a large part, been the result of desert land entries and the disposal of public lands.

The Battle Mountain area overlaps two hydrobasins (59 and 64). Agricultural demand in the Battle Mountain area is expected to remain relatively constant with no projected increases or decreases in the Lower Reese River Valley. Basin 59 has approximately 20,000 acre-feet annually of perennial yield. Currently, just over 15,550 acre-feet are used for irrigation. The Clovers area including Basins (64, 65 and 66) could see an expansion of agricultural. Currently the Basin has a perennial yield of 72,000 and committed resources are approximately 89,590 acre-feet with 40,813 committed to mining.

Irrigated agriculture occurs in most Lander County groundwater basins. Relatively high use for agricultural can be found in basins 56, 57, 58, 59, 61, 64, 137B and 139.

Water Resources: Policies and Action Programs

WR.8.1 Implement and Policies and Action Programs of 2010 Lander County Water Resources Plan.

WR.8.1 Natural groundwater recharge areas shall be defined, identified and protected for aquifer recharge. Proposed projects and proposed land use changes in areas with good recharge potential shall be required to include project features or adequate land for passive recharge.

WR.8.2 When adverse surface or groundwater impacts occur as a result of a concentration of septic systems, alternative sewage disposal, groundwater treatment, or other techniques shall be implemented. The selection of techniques to achieve this performance standard shall be based on cost, longevity of the solution, and existence of a credible entity to be responsible for the continuing performance of the selected system. Future individual septic systems shall not be allowed when ground or surface water contamination will result from their use.

WR.8.3 Water conservation programs shall be considered to the extent that they are shown to be cost effective when water, wastewater, and environmental benefits are weighed against implementation costs.

WR.8.4 New water resources, including imported water, may be developed provided they further the goals of the Master Plan and Water Resources Plan. Imported water includes water from basins which have origins within Lander County.

WR.8.5 Subject to existing state and local regulatory review, new water supply commitments, including utility will-serve letters and the creation of domestic well lots and parcels, may be limited when a water resource or combination of resources exceed the perennial yield.

WR.8.6 The use of reclaimed wastewater for irrigation, recharge or other permitted uses shall be pursued to the extent that such use is an efficient use of water resources and water rights. To the extent that reuse water is available to meet a new proposed non-potable water demand that is consistent with the use of reclaimed water, potable water shall not be supplied to meet the demand.

WR.8.7 Protect water quality, minimize erosion and sedimentation, and preserve natural drainage functions, riparian habitat and aesthetic values. Lander County shall review development proposals and implement appropriate mitigation measures, if necessary.

WR.8.8 Adequate water resources should be available to maintain the variety of important uses in Lander County such as agriculture, mining, municipal and industrial, and geothermal development. Projects which reduce or eliminate water resources available to support uses in Lander County shall be opposed.

WR.8.9 Lander County shall monitor and track any changes which diminish the groundwater recharge and relationship among groundwater aquifers in Basins 56, 57, 58, and 59. Lander County should consider a watershed management plan which examines the hydrologic relationships between groundwater aquifers.

WR.8.10 Lander County shall prepare land use plans for selected hydrographic basins. The land use plans will consider current uses of water and resources needed to maintain healthy and viable basins. Once prepared, the land use plans will be incorporated into the Master Plan.

Flood Management

WR.8.11 Prohibit/Minimize Uses and Structures within Floodways.

WR.8.11.1 Prohibited Floodway Encroachments. Every new encroachment, including fill, new construction, substantial improvement and other development, is prohibited in a designated floodway, except as provided in WR. 8.11.2.

WR.8.11.2 Exceptions. Improvements may be allowed in the floodway if it is demonstrated through hydrologic and hydraulic analysis and certified by a Nevada

registered engineer that the proposed improvements will not result in any increase in flood levels during the occurrence of the base flood discharge, and that the improvements meet County standards.

WR.8.11.3 Variances shall not be issued within any designated floodway if any increase in flood levels during the base flood discharge would result.

WR.8.11.4 Restrict development in floodplains that would constrict or otherwise result in higher floodwater levels or peak flows, or impact to floodplain functions.

WR.8.11.5 Lander County shall use the Federal Emergency Management Agency (FEMA) Flood Insurance maps as the basis for delineation of floodplains and floodways, unless more recent research and surveys are presented which establish a more accurate delineation.

Water Conservation Measures

WR.8.12 Lander County shall develop and implement water conservation measures.

WR.8.13 Minimize the use of high water demand vegetation for decorative uses on public and private project landscaping.

WR.8.14 The Lander County Board of County Commissioners shall adopt landscaping ordinances requiring that people pay for the full cost of the water they use and providing for drought resistant, low water consuming vegetation and efficient irrigation systems in all developments.

WR.8.15 Encourage new public and private development to use water conservation landscaping and fixtures.

WR.8.15.1 The Lander County Planning Department shall include xeriscaping provisions in the Lander County Development Code. The provisions will provide economic incentives to developers by adjusting the water rights dedication requirements to reflect the reduced water demand of water conservation landscaping and fixtures.

WR.8.15.2 The Lander County Planning Department will develop and adopt standards for water conservation devices.

WR.8.15.3 Lander County shall establish requirements for water conservation programs.

WR.8.15.4 The Lander County Planning Department will attach conditions to all subdivision approvals mandating installation of conservation devices such as low flow fixtures.