MASON VALLEY CONSERVATION DISTRICT

RESOURCE NEEDS ASSESSMENT

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Funded by
Nevada Association of Conservation District

NVACD
Nevada Association of Conservation Districts

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Executive Summary

Purpose

The Mason Valley Conservation District has developed this resource needs assessment with the goal that conservation efforts in the District address the most important local resource needs. This report identifies natural and social resources present and details specific areas of concerns. Local, state and regional entities can use this assessment develop resource management plans or to target conservation assistance needs.

The District recognizes that all who could have provided information may not have had the opportunity. This document is dynamic and will be updated as additional information is available or changes.

Natural Resource Priorities for the District

The Mason Valley Conservation District have identified five natural resource priorities. These priorities receive special emphasis because of their immediate significance in the District.

1. Plants – Noxious and Invasive Weeds. Noxious and invasive weeds pose a continued threat to natural resources in the District.

2. Water – Irrigation Water Efficiency. Improving existing irrigation delivery systems to be more water efficient.

3. Water – Sediment in surface water. Reducing sediment will improve water quality and reduce maintenance in the irrigation delivery systems.

4. Water- Flooding. Managing for flooding can reduce damage to property and crops.

5. Soil Erosion – Stream bank. Soil erosion on river streambanks is contributing to sediment in the river.

General Resource Observations

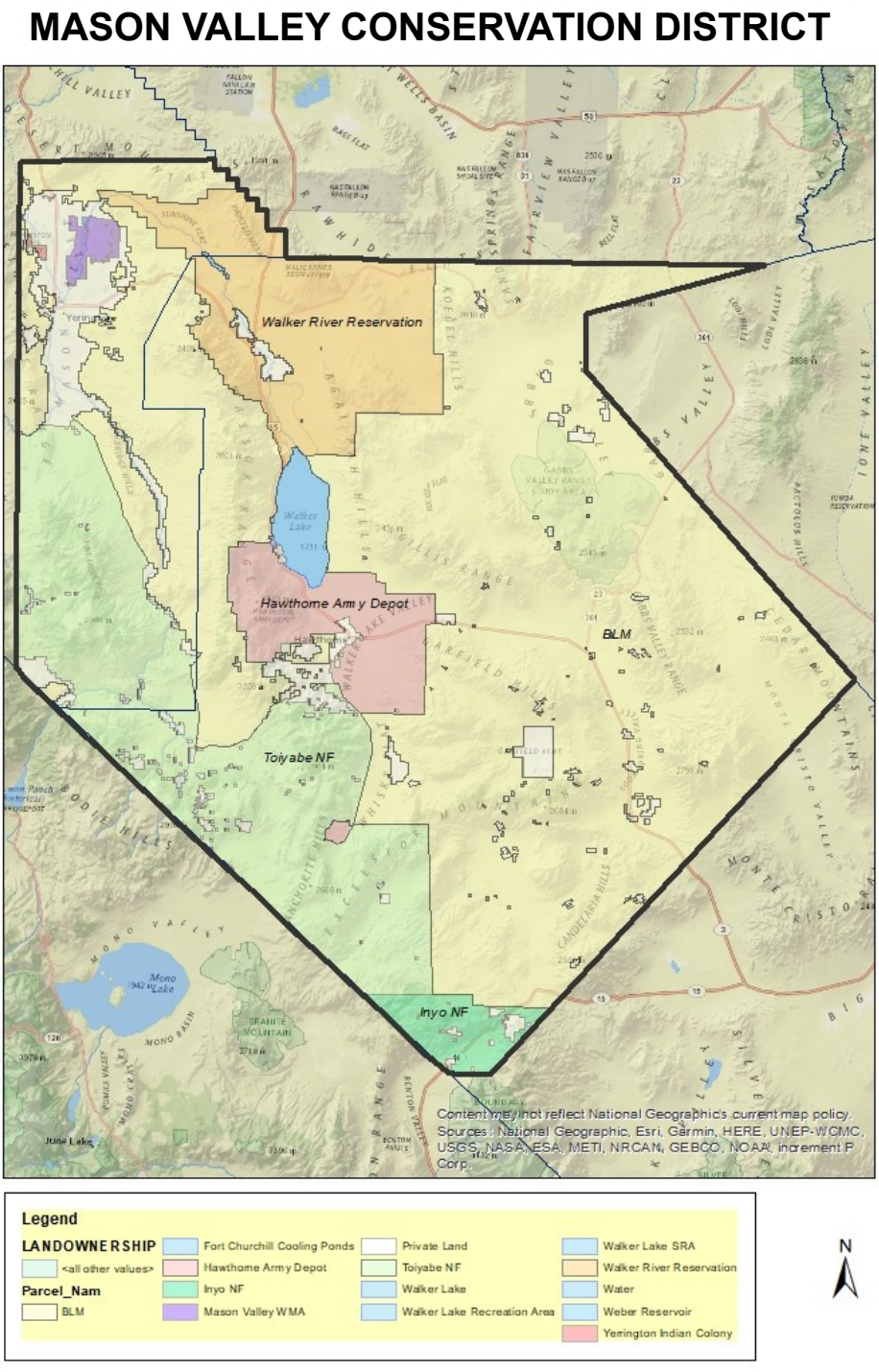
Natural and social resources are categorized as soil, water, air, plants, animals, and humans (SWAPA+H). This assessment describes the general condition of these resources and highlights additional concerns in each category. As opportunities become available to address these issues, and as circumstances change, their emphasis can change.

Soil – erosion along streambanks, erosion by wind
Water – irrigation, ground water use, water quality in West Walker River
Air – none at this time
Plants – noxious and invasive plants, encroachment by trees, wildfire hazards
Animals – habitat for sensitive species, habitat for non sensitive species, forage and water for livestock
Humans – social-economic considerations

1.0 Introduction

The Mason Valley Conservation District boundary covers the southeastern portion of Lyon County and all of Mineral County Nevada. The District is approximately 3,076,913 acres. Elevation ranges from a low of 3,900 feet at Walker Lake to 11,328 feet on Mount Grant in the Wassuk Mount Range. Elevations in Mason Valley on irrigated farmland are around 4300 feet and in Schurz they are around 4100 feet. Conservation assistance is provided by the Mason Valley Conservation District.

Map 1.0 Conservation District Boundary



1.1 Common Resource Area (CRA)

A CRA is defined as a geographical area where resource concerns, problems, or treatment needs are similar. It is considered a subdivision of an existing Major Land Resource Area (MLRA) map delineation or polygon. Landscape conditions, soil, climate, human considerations, and other natural resource information are used to determine the geographic boundaries of a Common Resource Area

Carson Basin and Mountains 26.1

This unit includes the mountains, high fans and intermontane valleys on the east side of the major land resource area. The area is influenced by the nearby Sierra Nevada. Soil temperatures range from mesic to cryic; soil moisture regimes are aridic bordering xeric or xeric. Typical vegetation includes mountain big sagebrush, low sagebrush, Indian ricegrass, antelope bitterbrush and areas of singleleaf pinyon-Utah juniper woodland. Curlleaf mountain mahogany and aspen occur at high elevation.

Carson Basin and Mountains – Eastern Valleys and Uplands 26.2

This unit includes the basins, fan piedmonts and low hills and mountains on the east side of the major land resource area. The area is influenced by the nearby Sierra Nevada range. Soil temperatures range from mesic to frigid; soil moisture regimes are aridic bordering xeric or xeric. Typical vegetation includes Wyoming big sagebrush, basin big sagebrush, low sagebrush, Lahontan sagebrush, Indian ricegrass, antelope bitterbrush and small areas of singleleaf pinyon-Utah juniper woodland.

Fallon Lovelock Area – Lahontan Basins and Low Uplands 27.1

This unit is characterized by irrigated cropland, pastureland, and rapidly growing cities, suburbs, and industries. Many canals, reservoirs, and diversions are present. Aridic soils predominate and require irrigation to grow commercial crops. Surface water quality has been significantly affected by channel alteration, dams, irrigation return flow, and urban, industrial, and agricultural pollution. Crops include wheat, barley, alfalfa, sugar beets, potatoes, and beans. Crop diversity is greater, temperatures are warmer, and the mean frost free season is longer than in other CRA units. Population density is much greater than in nearby, rangeland-dominated units. This unit includes broad basins, fan piedmonts and low hills influenced by Lake Lahontan. Soil temperature regimes are mostly mesic; soil moisture regime is aridic. Typical vegetation consists largely of shadscale, Bailey greasewood, black greasewood and Indian ricegrass. At high elevations, Wyoming big sagebrush and Lahontan sagebrush are common.

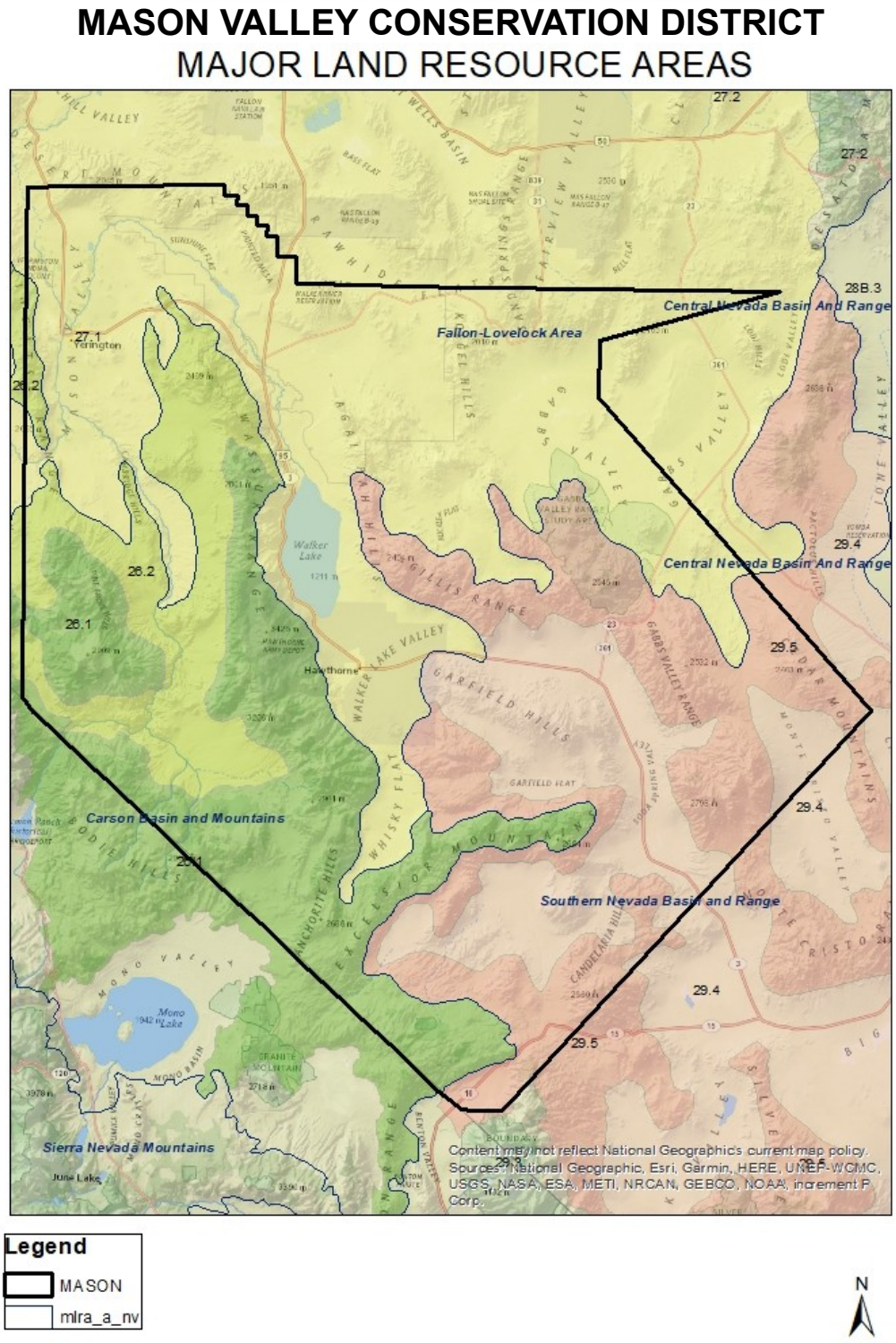
Southern Nevada Basin and Range – Grapevine Mountains 29.4

This unit includes the Grapevine Mountains on the northeast side of Death Valley and the Slate Range and Gold Mountain north of the Grapevine Mountains. Soil temperature regimes are thermic and mesic. Soil moisture regimes are aridic. Common vegetation series include mixed salt bush, shadscale, black brush, big sagebrush and singleleaf pinyon. It drains to Death Valley on the southwest or to Sarcobatus Flat or the Amargosa River on the east.

Southern Nevada Basin and Range – Tonopah Mountains and High Fans.

This unit is dominated by low mountains and hills, and includes high elevation fans and intermontane valleys. Soil temperature regimes are mostly mesic and frigid. Soil moisture regimes are aridic and aridic bordering xeric. Vegetation is commonly Wyoming big sagebrush, black sagebrush, cliffrose and galleta. Shadscale and spiny hopsage are on the drier slopes.

Map 1.1 Common Resource Areas



1.2 General Ownership (See Map 1.1)

Land ownership in the Mason Valley Conservation District boundary is approximately 59 percent public land administered by the Bureau of Land Management (BLM), 19 percent is National Forest (USFS), 6 percent is in private ownership, 9 percent is tribal lands (Walker River Paiute Tribe and Yerington Paiute Tribe), 4 percent is US Army, 1 percent is Nevada State lands, including the Mason Valley Wildlife Management Area and Nevada State Parks (MVWMA, NSP) and approximately 1 percent is water (Weber and Walker Lake). See Table 1.2.

Table 1.2 Land Cover and Land Use

LAND OWNERSHIP													
PVT		NV STATE		TRIBAL		USFS		BLM		US ARMY		WATER	
191,825	6%	23,245	1%	288,508	9%	594,918	19%	1,820,454	59%	131,648	4%	36,883	1%

1.3 Land Use and Land Cover

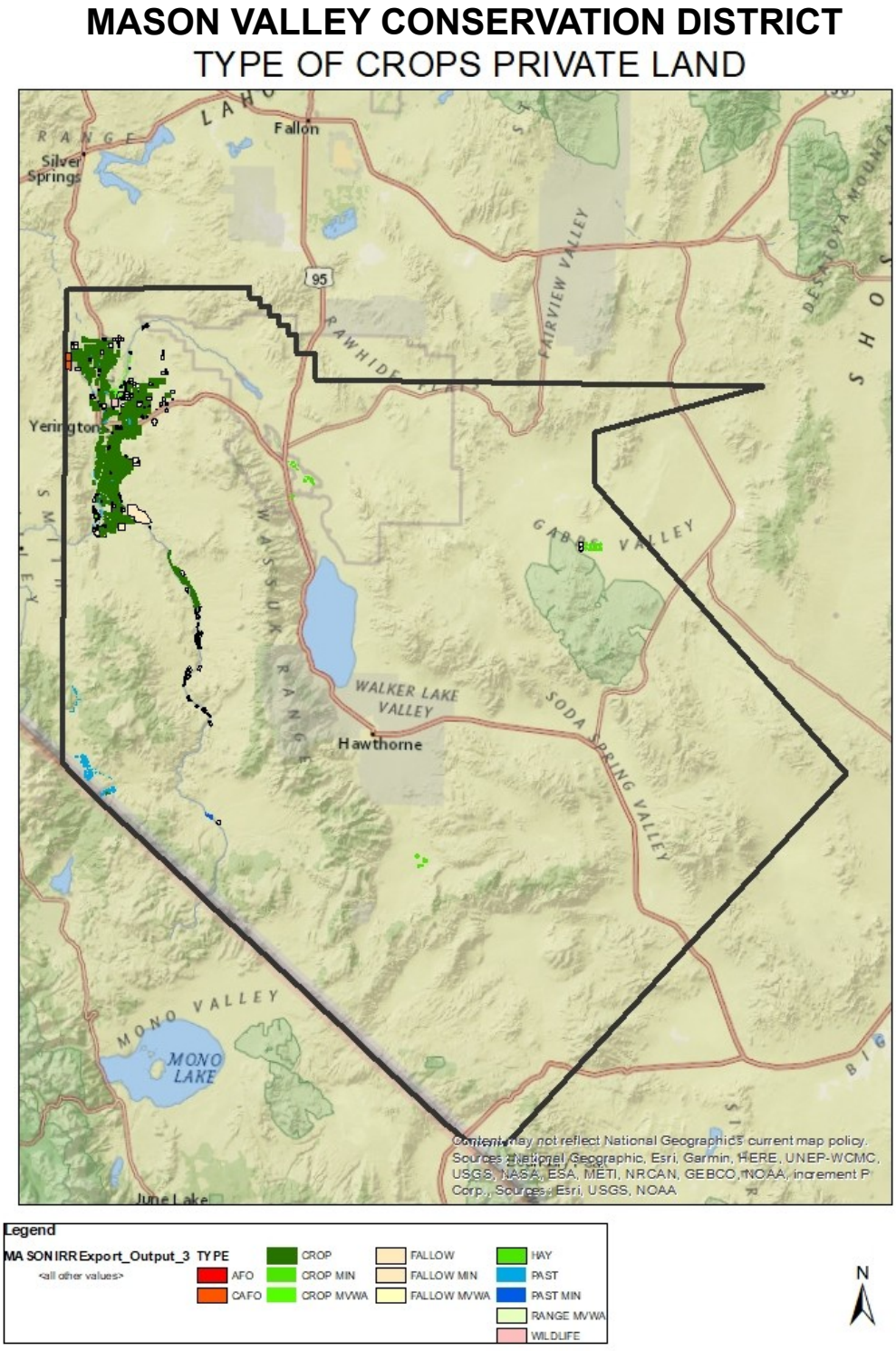
The main land cover in the District is rangelands at 55 percent. Approximately 21 percent is pinyon-juniper forestland, 8 percent is irrigated hayland/cropland (pasture, hayland, grain, silage, onions, vegetables), 12 percent is private residential/farm headquarters/rangeland. The remaining includes playas, river/riparian, ponds, flooded waterfowl habitat, livestock feedlots and dairies (AFO/CAFO) and mining. See Table 1.3. Of the farmland in the District, there is around 46,000 acres in Lyon County and 4,600 acres in Mineral County. The farmland in Mineral County includes the Walker River Paiute Tribal lands, farmland south of Hawthorne and farmland near Gabbs, Nevada. (See Maps 1.30, 1.31, 1.32).

Table 1.3. Land Use and Land Cover

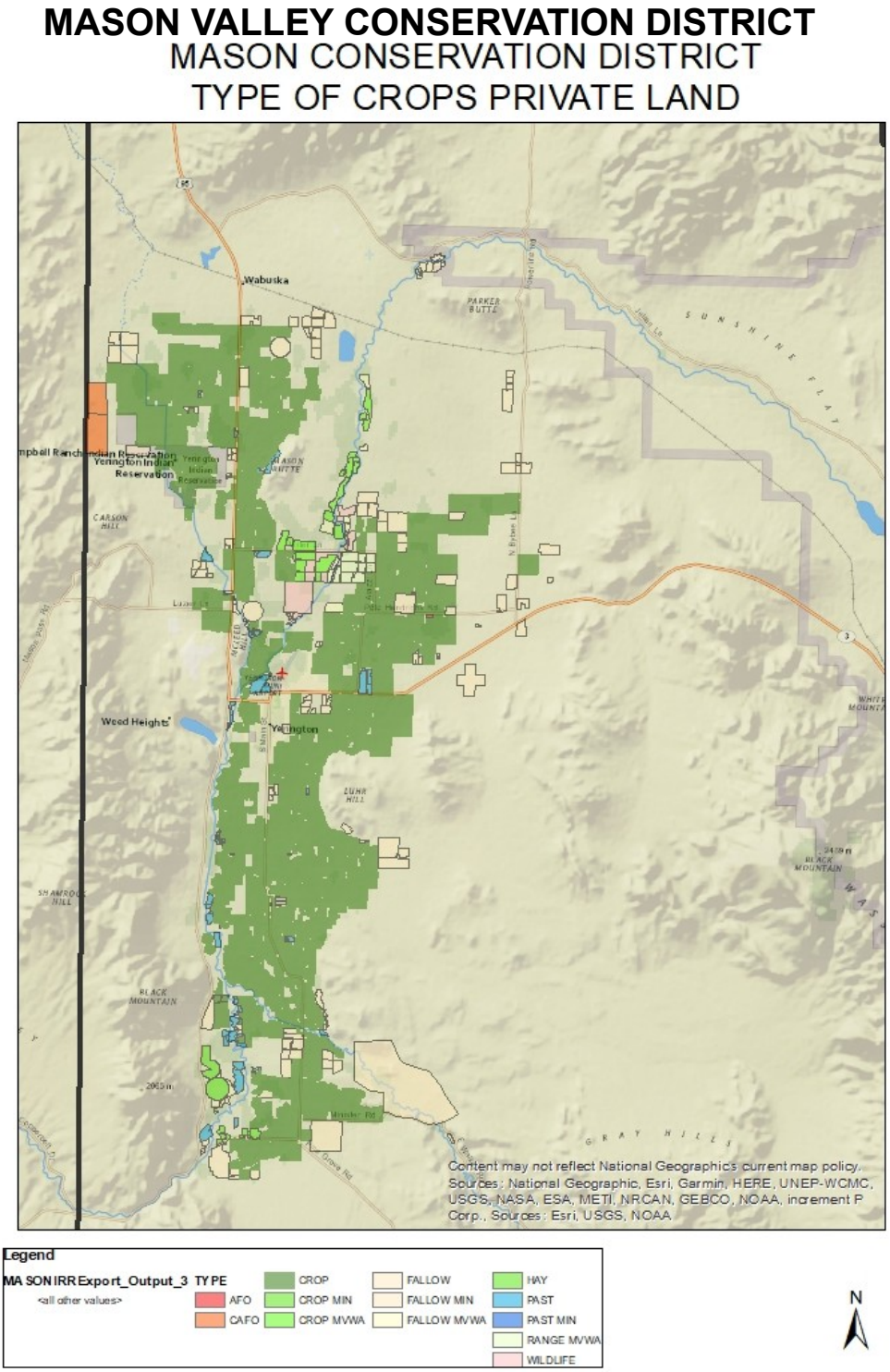
LAND COVER/ LAND USE	OWNERSHIP					
	Private Lyon (includes Tribal)		Private Mineral (Includes Tribal)		Total	
Hayland/Cropland	34,611	74%	2,978	64%	37,589	74%
Pasture	3,392	7%	324	7%	3,716	6%
Fallow	8,701	19%	1,377	29%	10,078	20%
Total	**46,704**	**100%**	**4,679**	**100%**	**51,383**	**100%**
	All Lyon		**All Mineral**		**All**	
All Farmland	46,704	7.0%	4,679	0.2%	51,383	2.0%
Rangeland	465,377	74.0%	2,056,250	84%	2,514,381	82.0%
Forest (Pinyon/Juniper)	50,402	8.0%	269,197	11%	319,599	10.0%
Private – Non Farm	56,083	9.0%	76,413	3%	139,697	4.0%
River/Riparian (100 ft)	2,000	0.3%	500	0%	2,500	0.1%
Wildlife (MVWMA,NSP)	1,793	0.3%	0		1,793	0.1%
AFO/CAFO	500	0.1%	0		500	0.0%
Mining(active, claims) estimate	10,000	1.3%	10,000	0.4%	20,000	0.7%
Water (Weber, Walker Lake)	0	100.0%	36,883	1.5%	36,883	1.0%
Total	**632,859**	**100%**	**2,453,922**	**100%**	**3,086,736**	**100%**

Map 1.30 Land Use

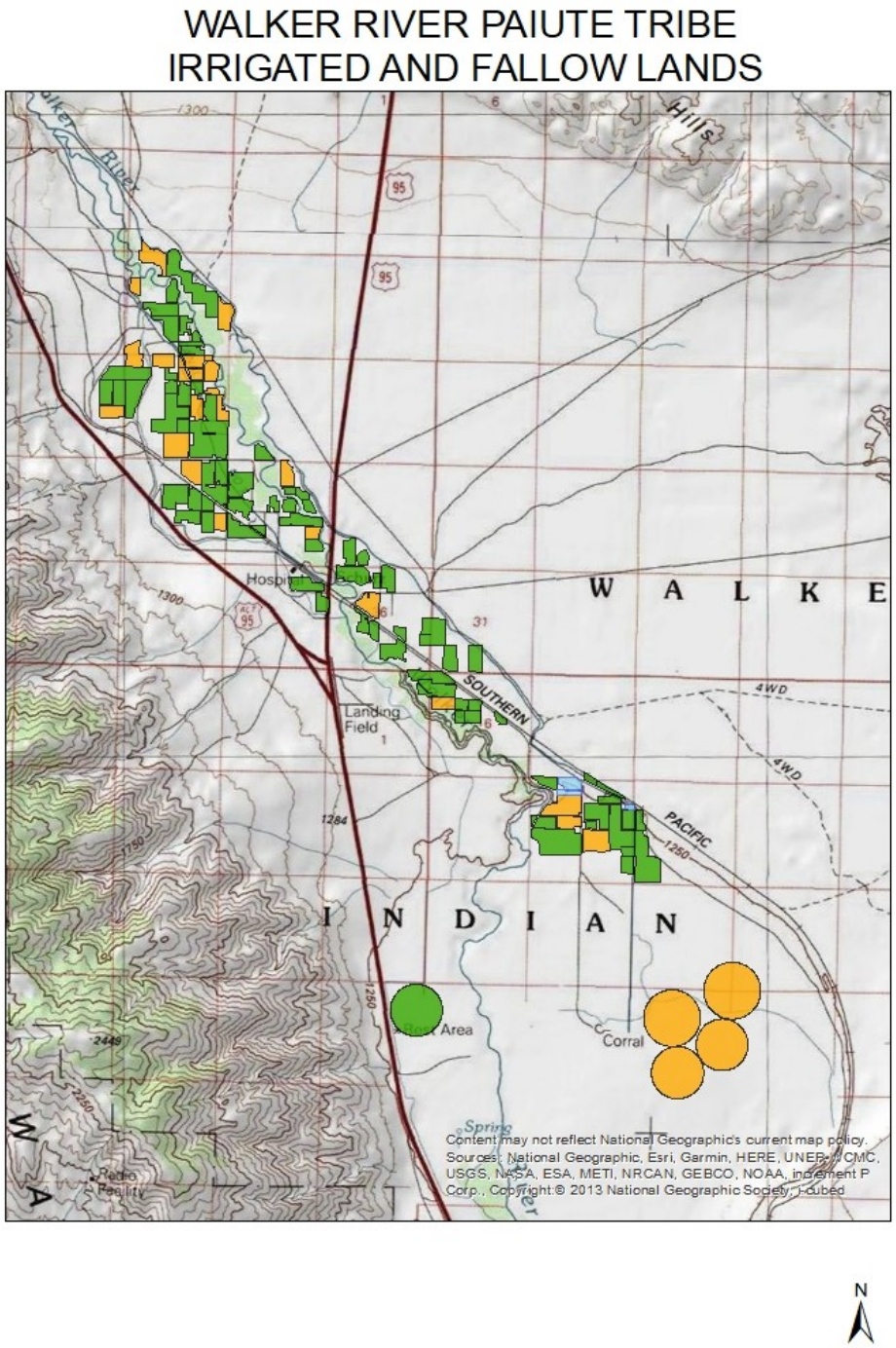
Map



Map 1.31 Type of Crops on Private Land



Map 1.32 Walker River Paiute Tribe Agricultural Lands



2.0 RESOURCE CONCERN – SOILS

Resource Setting

Soils found in the Conservation District are a mix of granitic and igneous parent materials. The valley bottoms are a mix of material that have been transported by water over time. The eastern portions or the valleys in the district are a mix of material that has also been transported by wind. Soils along the rivers have been formed over time by the meandering of the river and deposition of water and soils on the floodplain. These soils are typically deep and have higher organic content and vary from sands, silts and some clay loams.

Irrigated Land Capability Class

Soils are mapped based on land capability limitations to cultivation. Table 2.00 list the percentage of farmland in the district. Most soil have moderate limitations to crops. Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops and the way they respond to management. and the way they they respond to management. In the capability system, soils are generally grouped at three levels-capability class, subclass, and unit. Capability classes are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. Most of the soils that are used for crop production in Mason Valley have a rating of 2-moderate limitation with the main limitation being wetness. Other limitation include dryness and shallow soils. Soils in the Capability classes 3 and 4 include shallow soils and wind erosion problems. Most of the cultivated soils in Lyon County have moderate limitations, while in Mineral County soils have very severe limitations. Limitations in Mineral county include dryness, wind erosion, salts and sodium.

Table 2.00 Percentage of Cultivated Soils in Land Capability Classes.

		LYON	MINERAL
Land Capability Class (For Crop and Pasture Lands)	**1**– slight limitations	0%	0%
	2 – moderate limitations	63%	9%
	3 – severe limitations	27%	0%
	4 – very severe limitations	7%	0%
	5 – no erosion hazard, but other limitations	0%	0%
	6 – severe limitations, unsuited for cultivation, limited to pasture, range, forest	6%	0%
	7 – very severe limitations, unsuited for cultivation, limited to grazing, forest, wildlife	0%	91%
	8– misc areas have limitations, limited to recreation, wildlife, and water supply	0%	0%
	Total Crop & Pasture Lands	**100%**	**100%**

Table 2.01 lists the acres and percentage of irrigated lands that are categorized as *Prime Farmland, Farmland of Statewide Importance* and *Not Prime Farmland.* Prime farmland is of major importance in meeting the Nation's short and long range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland. Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best

combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. Farmland of statewide importance may include tracts of land that have been designated for agriculture by State law. Most of the lands in Lyon County are Prime Farmland if Drained and Irrigated. In Mineral County most the land that is cultivated is Farmland of Statewide Importance. Both counties have acres of farmland that does not meet either Prime Farmland or Farmland of Statewide Importance classification based on soil mapping.

Table 2.01 Percentage of Farmland by Category

		LYON %	MINERAL%
Farmland Classification	Prime Farmland if Irrigated	2%	0%
	Prime Farmland if Drained and Irrigated	36%	0%
	Prime Farmland if Irrigated and reclaimed of excess salts and sodium	9%	0%
	Farmland of Statewide Importance	51%	95%
	Not Prime Farmland	2%	5%
	Total Hay and Pasture Lands	**100%**	**100%**

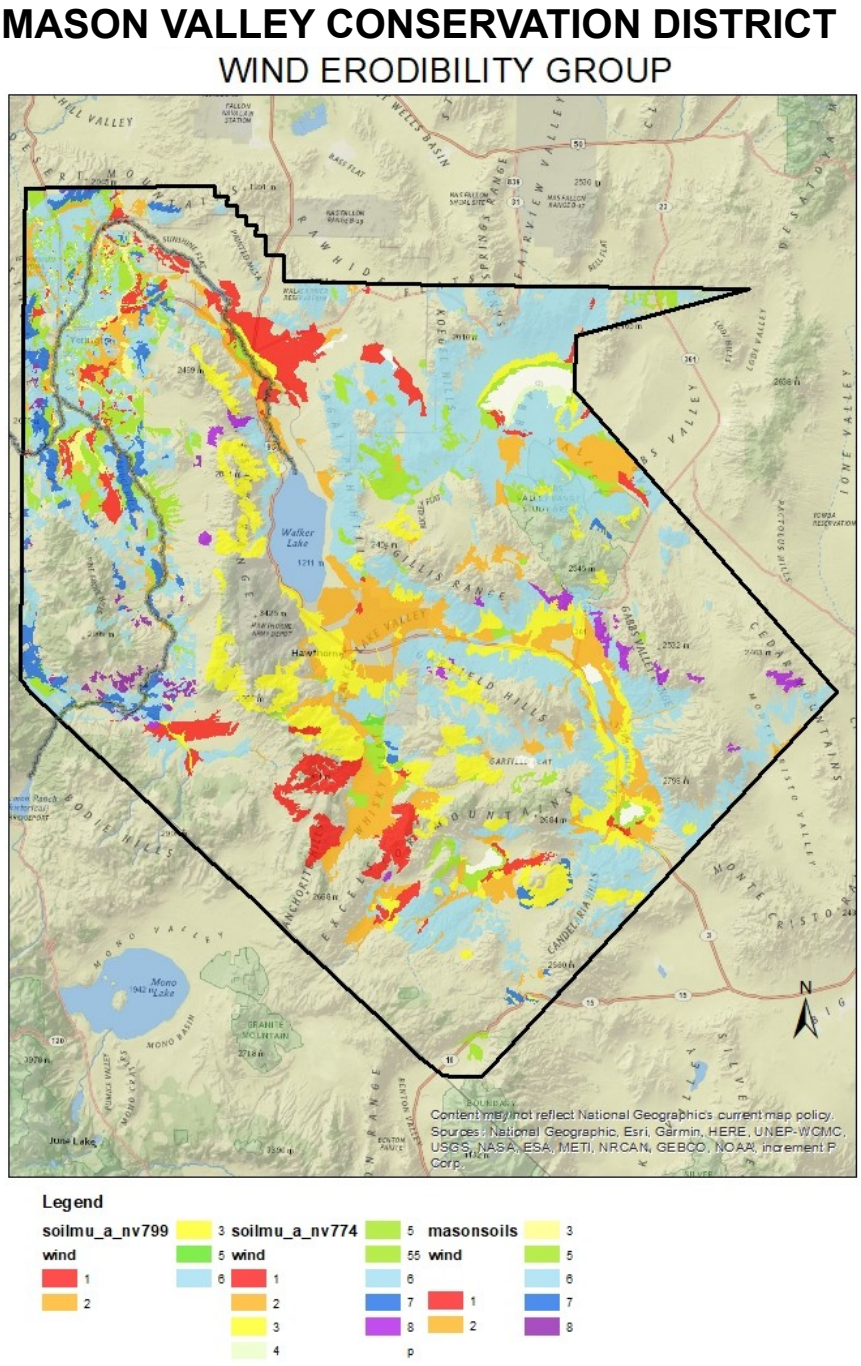
2.1 Soil Erosion – Sheet, Rill and Wind Erosion

Wind or water erosion is the physical wearing of the earth's surface. Erosion is not always readily visible, even when soil loss exceeds unsustainable levels. Symptoms of soil erosion by water may be identified by small rills and channels on the soil surface, soil deposited at the based of slopes, sediment in streams, lakes and reservoirs. Water erosion is most obvious on steep slopes. Symptoms of wind erosion may be identified by dust clouds, soil accumulation along fence lines and a drifted appearance of the soil surface.

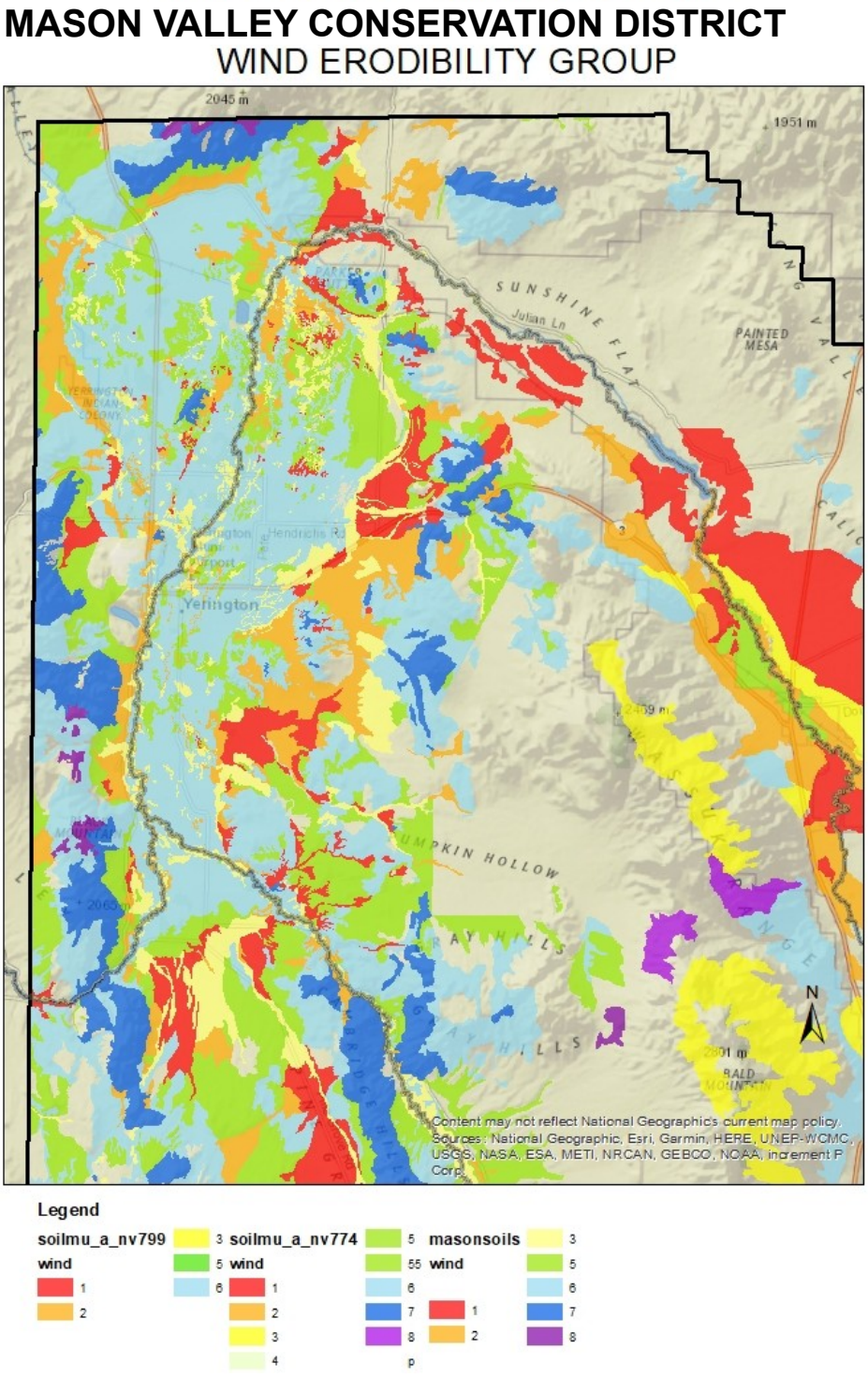
High winds are common in the District. Winds tend to be highest in the spring months and when storm fronts move into the area. Soil erosion by water is less common than wind erosion due to low rainfall amounts that occur. Most erosion by water occurs during summer months with high intensity rainfall events.

Map 2.10 and 2.11 shows the potential of soil erodibilty of irrigated soils based on the wind erodibility group. These groups consists of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion. Typically the most erodible soils are with sandy soil surface textures. Most of Mason Valley irrigated soils are in Group 5 and 6. Portions of Schurz on the irrigated land have soils in Group 5 and 2.

Map 2.10 Wind Erodibility Groups (Includes cultivated and non cultivated lands)



Map 2.11 Wind Erodibility Group Mason Valley (Includes cultivated and non cultivated lands)



Resource Concerns Specific to the Conservation District

Sheet and Rill

Sheet and rill erosion is the detachment and transportation of soil particles caused by rainfall or irrigation runoff. The main concern of sheet and rill erosion is on rangelands that have burned and lack a vegetative cover.

Wind

Cultivation that occurs during high wind months or in sandy soil without adequate vegetation cover is susceptible to erosion by wind. There are at times problems with blowing soil from cultivated fields during high wind events. Some of the problems include soil blowing across roads and loss of visibility on the roadways. Other areas of concern are farm land that is no longer irrigated and is mostly bare ground and weeds. These fields are susceptible to erosion from wind without a good ground cover.

Practices to Solve Resource Concern and Physical Effects

Table 2.1 lists the practices that can be used to solve the resource concern and their environmental effect. Effects range from substantial improvement to non effect to substantial worsening. Practices listed are the common practices used in the area by NRCS.

Table 2.1 Conservation Physical Effects by Practice

Practice	Soil Erosion – Sheet and Rill Erosion	Soil Erosion – Wind Erosion
Access Control	3	1
Amending Soil Properties with Gypsum Products	1	1
Conservation Cover	4	4
Conservation Crop Rotation	4	4
Cover Crop	4	4
Critical Area Planting	5	5
Field Border	4	4
Forage and Biomass Planting	1	1
Heavy Use Area Protection	2	2
Herbaceous Weed Control	4	4
Integrated Pest Management	2	2
Prescribed Burning	2	2
Prescribed Grazing	4	4
Range Planting	4	4
Residue and Tillage Management, No Till	4	5
Riparian Herbaceous Cover	2	2
Sprinkler System	0	2
Surface Roughening	0	3
Tree/Shrub Establishment	5	5
Windbreak/Shelterbelt Establishment	1	5

5 Substantial Improvement, 4 Moderate To Substantial Improvement, 3 Moderate Improvement, 2 Slight To Moderate Improvement, 1 Slight Improvement, 0 No Effect, -1 Slight Worsening, -2 Slight To Moderate Worsening, -3 Moderate Worsening, -4 Moderate To Substantial Worsening, -5 Substantial Worsening

Note: Below is the draft of proposed planning to resolve resource issues. The Mason Valley Conservation District will finalize Goal and Objectives and Actions and Tasks at a later date.

(Draft)

Proposed Goals and Objectives

Reduce soil movement by wind on cultivated lands.
Reduce soil movement by wind and water on rangelands.

Proposed Actions and Tasks

Work with land owners to maintain vegetation cover on cultivated lands year-round to prevent soil loss from wind. Avoid cultivation of soil during high wind months. Provide vegetation on field borders and fence-lines as a barrier to soil movement. Practices include Conservation Cover, Cover Crop, No Till, Tree and Shrub Establishment and Windbreak Establishment.

2.2 Soil Erosion – Concentrated Flow

Concentrated flow erosion is soil erosion created by the concentrated flow of water. Deposition of eroded material can obstruct roadways and fill drainage channels.

Resource Concerns Specific to the Conservation District

There is natural occurring soil movement from high intensity rainfall events in the summer. These storms produce soil and water movement that can cause gully formation and overland flow of mud and rocks that causes flooding in areas. An area of concern is the watershed west of Hawthorne where water comes off the mountains and causes gully washing and localized flooding. Another area of concern is the concentrated flows coming off the upland rangelands and adding sediment into the East Walker River. Overland flow also can add sediment onto cultivated fields, into ditches and canals and into the rivers. Other areas of concern would be recent fires and burn scars where overland flow could occur.

Practices to Solve Resource Concern and Physical Effects

Table 2.2 lists the practices that could be used to solve the resource concern and the effects of that practice.

Table 2.2 Conservation Physical Effects by Practice

Practice	Concentrated Flow (Gully)
Critical Area Planting	4
Grade Stabilization Structure	2
Heavy Use Area Protection	2
Herbaceous Weed Control	2
Integrated Pest Management	2
Irrigation Pipeline	2
Lined Waterway or Outlet	2
Prescribed Grazing	1
Range Planting	2
Sediment Basin	2
Tree/Shrub Establishment	2
Water and Sediment Control Basin	2

5 Substantial Improvement, 4 Moderate To Substantial Improvement, 3 Moderate Improvement, 2 Slight To Moderate Improvement, 1 Slight Improvement, 0 No Effect, -1 Slight Worsening, -2 Slight To Moderate Worsening, -3 Moderate Worsening, -4 Moderate To Substantial Worsening, -5 Substantial Worsening

(Draft)

Proposed Goals and Objectives

Reduce soil movement by water on rangelands.

Proposed Actions and Tasks

Work with federal and state land agencies to re-vegetate burned areas as soon as possible. Practices include Brush Management, Range Planting, Prescribed Grazing, Critical Area Planting.
Install water and sediment basins in critical areas. Practices include Water and Sediment Control Basin and Grade Stabilization Structure.

2.3 Soil Erosion – Shoreline, Bank and Channel Erosion

Stream stability is an active process, and while streambank erosion is a natural part of this process, it is often accelerated by altering the stream system. Streambank erosion is the part of channel erosion in which material is eroded from the streambank and deposited at the base of the slope or in the channel. Streambank erosion is usually associated with erosion of the streambed.

Resource Setting

A brief description of the West, East and Walker Rivers were taken from the *Walker River Basin Assessment 2009* prepared by Otis Bay Ecological Consultants for US Fish and Wildlife Service.

Wilson Canyon

This canyon bisects the Singatse mountains and was formed by a fault line. Within the canyon the river is narrowly confined, being directly constrained by bedrock outcrops in some locations and by the road corridor. The gradient is steep and the stream bed is composed of cobble/boulder size material organized in riffle-pool sequences. Adjacent hillslopes and side canyons deliver colluvium directly to, or very near, the channel in many locations. Sand to cobble size material is deposited on the inside of the bends, and longitudinal bars. A narrow, well vegetated riparian zone and floodplain is set within the confines of the road and canyon walls.

West Walker River in Mason Valley

The river is low-gradient and sinuous in this segment. Abundant oxbows and meander scars are visible on the floodplain, indicating active channel migration in the past. Much of the potential historic floodplain has been developed for agricultural purposes. Some fairly wide floodplain areas are still present, with relatively extensive riparian vegetation. There is one section that has been straightened and fields have been established along the river. For the most part the channel is connected to the floodplain. The majority of the flood-prone area in this segment is in remnant channels, oxbows, and some nearby agricultural fields.

East Walker River

The section of the river from the state line to the Flying M fields is typically high-gradient with a gravel/cobble bed organized into riffle-pool sequences. In general riparian vegetation is dense near the stream throughout most of this river. The river corridor varies from wide to narrow valley widths. Portions of the river are in relatively deep canyons.

The section from the Flying M fields to where it opens up in Mason Valley is typically moderate to low gradient with riffle-pool bed morphology and restricted meander formed as the valley width increases and a wider floodplain develops. Some areas of the river appear to have been channelized. Riparian vegetation is relatively extensive along the river. There are areas where fields have been established along the river.

The section from Mason Valley to the West Walker is typically low-gradient and is freely meandering without lateral restriction through a wide historic floodplain, though recent development has encroached on the channel. The bed composed of sand and organized in riffle-pool sequences. The river is frequently channelized through agricultural fields. The lower portion of the river has a narrow

flood-prone area, i.e. access to floodplain. It appears that the river has incised into its historic floodplain, and a strong channel/floodplain connection is not present.

Walker River
The portion of the river that flows through Mason Valley can generally be described as alluvial with a low-gradient, meandering channel that migrated over a relatively wide historic floodplain. Development of the floodplain for agriculture has reduce the degree of lateral movement across the valley. Portions of the river have been diked through Mason Valley and Yerington. Past Yerington the river has been straightened. Through the Mason Valley Wildlife Management Area the river is low-gradient and sinuous. This section as has significant sand deposition on point bars, alternating bars and in the adjacent floodplains. The floodplain is heavily vegetated and fairly extensive. Wetlands and sloughs are frequent in the floodplain.

The portion of the river that flows through the Walker River Paiute Tribal land to Weber Reservoir is low gradient and sinuous with a well developed and unrestricted meander pattern, generally meandering with locations where the channel becomes indistinct and marshy near the upstream end of Weber Reservoir. The alluvial valley is well vegetated. Bed material is mainly sand.

The portion of the river below the Weber Reservoir is actively incising in response to base level decline at Walker Lake. This section of the river is incised with no floodplain. The channel is generally low gradient and displays an entrenched meander pattern. Banks are actively slumping throughout this section. Riparian vegetation is lacking along the river. Salt cedar is found on adjacent terraces.

Land Ownership
Table 2.30 and Figure 2.30 show that most of the land along the West Walker river is privately owned, the East Walker river is 43 percent federal and state ownership and 47 percent private and the Walker River is 40 percent private and 50 percent Walker River Paiute Tribe. Total river miles is 44 percent private and 29 percent tribal.

Table 2.30 Land Ownership

	River/Creek	Miles	%
Land Ownership	***West Walker River***		
	Private	7	67
	BLM	1	10
	USFS	2.5	23
	Total	10.5	100
	East Walker River		
	Private	29	46
	USFS	16	16
	BLM	3	3
	NV State Parks	15	24
	Total	63	100
	Walker River		
	Private	40	40
	MVWMA	11	10
	WRPT	50	50
	Total	101	
	TOTAL	174.5	100%

Figure 2.30 Total percentage of land ownership West, East and Walker river combined.

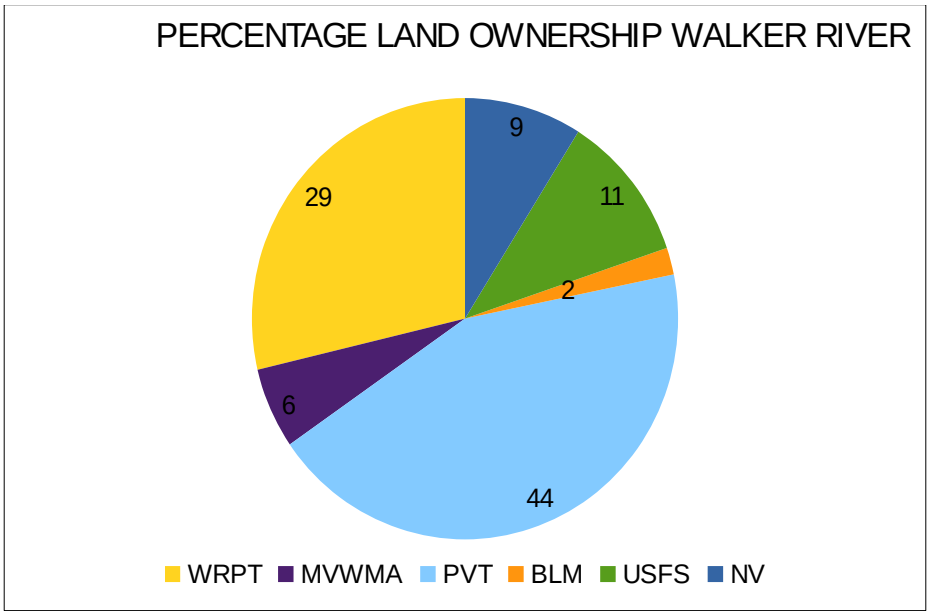


Table 2.31 shows the acres and percentage of acres by vegetation along a 100 foot buffer on the rivers. The table shows that a mix of riparian and rangeland is the main vegetation type along the rivers. The second predominate vegetation type is cropland, which includes pasture, hayland or crops (onions).

Table 2.31. Vegetation type along a 100 foot buffer.

Crop Type	West Walker		East Walker		Walker		Total
	Acre	%	Acre	%	Acre	%	%
Riparian					111	12	3
Riparian Range	68	52	1384	56	364	40	52
Pasture/Hay/ Crop	24	19	562	23	169	18	21
Fallow			510	21	35	4	15
Residential/Other	12	9	19	1	26	3	2
Range/Barren/Road	26	20					1
Salt Cedar/ Barren					157	17	4
Water (Weber)					52	6	1
Total	**130**		**2475**		**915**		

Resource Concerns Specific to the Conservation District

A main concern is sediment in the East and West Walker rivers and the effects on the irrigation systems and downstream flooding in Mason Valley. Locations along the Walker River at the Goldfield bridge and the Weir have problems with sediment being deposited in the channel and the river having a decreased capacity transport the flow. There are portions of the river that have eroding streambanks that are adding sediment to the system that may be in excess of what should be “natural occurring”. Other concerns are where the banks are eroding and the river is cutting into fields and the loss of the farm land. The bank erosion maybe accelerated due to 150 years of irrigation structures and stream channel modifications from irrigation. Some areas of bank erosion are due to the past removal or lack of vegetation that would help stabilize the banks. Other concerns are water quality from increase sediment and temperatures in the river.

Practices to Solve Resource Concern and Physical Effects

Table 2.32 lists the practices that can be used to solve the resource concern and the potential effect of installing the practice.

Table 2.32 Conservation Physical Effects by Practice

Practice	Streambank and Channel Erosion
Access Control	5
Channel Bed Stabilization	2
Clearing & Snagging	2
Critical Area Planting	4
Dam	1
Diversion	1
Grade Stabilization Structure	2

Herbaceous Weed Control	4
Irrigation Reservoir	1
Irrigation System, Tailwater Recovery	1
Pond	1
Prescribed Grazing	3
Range Planting	2
Riparian Forest Buffer	4
Riparian Herbaceous Cover	4
Rock Barrier	1
Stream Crossing	2
Stream Habitat Improvement and Management	5
Streambank and Shoreline Protection (bank protection, revetments)	4
Trails and Walkways	2
Tree/Shrub Establishment	2

5 Substantial Improvement, 4 Moderate To Substantial Improvement, 3 Moderate Improvement, 2 Slight To Moderate Improvement, 1 Slight Improvement, 0 No Effect, -1 Slight Worsening, -2 Slight To Moderate Worsening, -3 Moderate Worsening, -4 Moderate To Substantial Worsening, -5 Substantial Worsening

(Draft)

Proposed Goal/Objectives

Increase knowledge of the functionality of the East, West and Walker River to reduce sediment in the river from bank erosion.

Proposed Actions and Tasks

Conduct a fluvial geomorphology study to determine the condition the East, West and Walker River. Inventory the rivers on bank stability. The study will help determine where problems are and what the possible solutions to reduce sedimentation are. Install practices where needed.

2.4 Soil Quality Degradation – Soil Remission

Loss of volume and depth of organic soils due to oxidation. Not a resource concern in the District.

2.5 Soil Quality Degradation– Compaction

Management induced soil compaction resulting in decreased rooting depth that reduces plant growth. Not a resource concern in the District.

2.6 Soil Quality Degradation – Organic Matter

Soil organic matter is not adequate to provide a suitable medium for plant growth. Not a resource concern in the District.

2.7 Soil Quality Degradation – Salts and Chemicals

Concentration of salts leading to salinity and/or sodicity reducing productivity or limiting desired use. Not a resource concern in the District.

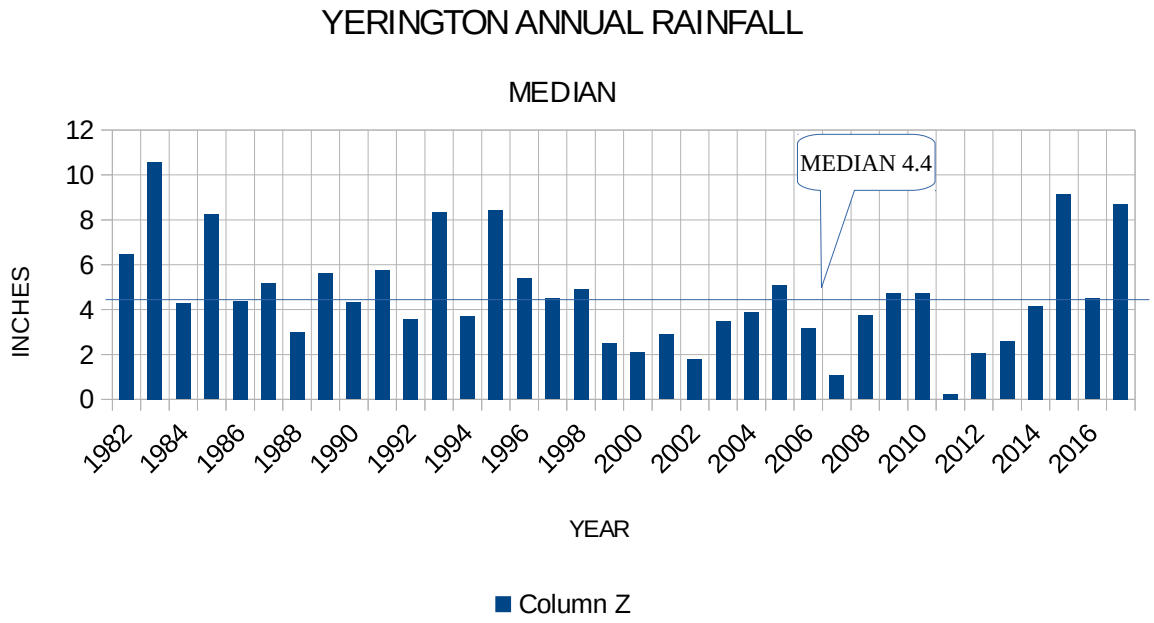
3.0 RESOURCE CONCERN – WATER QUANTITY

Resource Setting

Precipitation

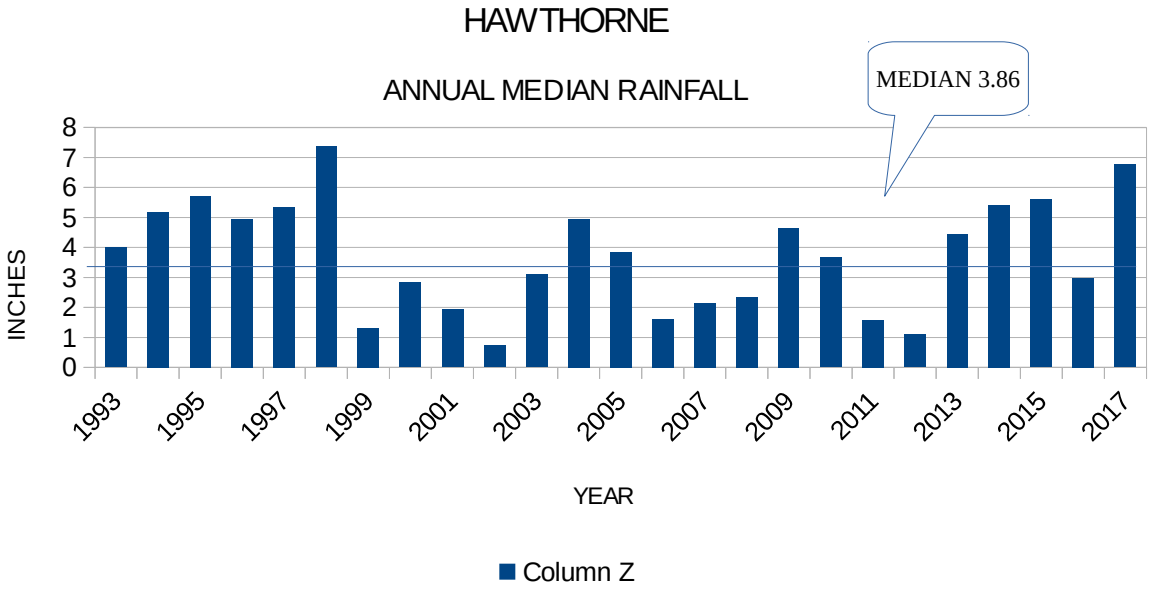
The median annual precipitation (amount that occurs the most often) for Yerington, NV is 4.4 inches. Period of record is 1982 to 2017. Precipitation ranges from a high of 10.5 inches to a low of 1.07 inches over the recorded period.

Figure 3.0 Median Rainfall Yerington

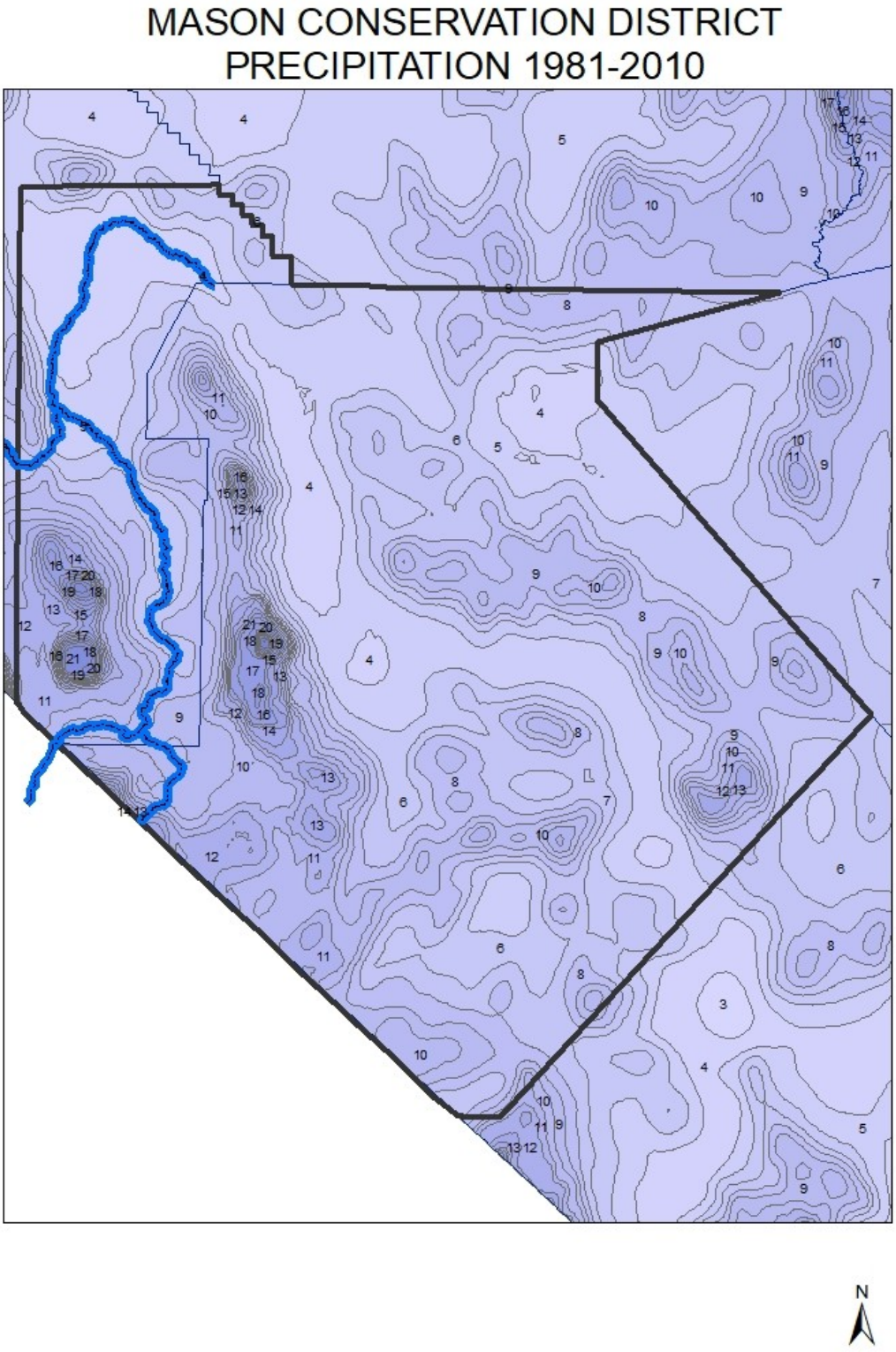


The median annual precipitation for Hawthorne, NV is 3.86. Period of record is 1993 to 2017. Precipitation ranges from a high of 8.76 to a low of 1.09 inches over the recorded period.

Figure 3.01 Median Rainfall Hawthorne



Map 3.0 Average Rainfall by Elevation



Snow and Climate Measuring Stations
There are two automated or manually measured high elevation snow and climatic measuring stations in the East Walker watershed and four in the West Walker watershed and one in the Desert Creek watershed. These stations are automated and part of the USDA NRCS SNOTEL (SNOw TELemetry) network. These SNOTEL stations report hourly climatic data including snow water equivalent, precipitation and air temperature while some stations also report snow depth, soil moisture and soil temperature. All stations are part of the USDA NRCS Snow Survey Data Network operated and maintained by the NRCS.

Streamflow Summary
The East and West Walker watershed straddles the California-Nevada border. The California headwaters have a maximum elevation of about 11,000 feet and drop to about 5,000 feet before emptying into Topaz Reservoir on the California and Nevada state line. The East Walker flows into the Bridgeport Reservoir at an elevation of 6,400 feet.

The main tributaries for the West Walker are the West Walker River, Little West Walker and Mill Creek. The main tributaries for the East Walker River include the Buckeye, Robertson, Green and Virginia creeks above Bridgeport reservoir. Below the reservoir Sweetwater and Rough creeks flow into the East Walker.

The topography of the area is dominated by high elevation mountains and valleys with rivers. Streams and rivers provide recreational activities such as fishing and boating. Other beneficial uses include fisheries, irrigation.

Table 3.00 List the stream gauges on the West, East and Walker rivers. All are operated by the United States Geological Survey.

Table 3.00 West, East and Walker River Gage Summary

Station Name	USGS Station #	Drainage Basin Acres (mi2)	Elevation of Gate Datum (ft)
E WALKER RV NR BRIDGEPORT, CA	10293000	359	6400
E WALKER RV ABV STROSNIDER DITCH NR Mason Valley	10293500	1100	4574
W WALKER R A LEVITT MD NR COLEVILLE CA	10295200	73.4	7111
W WALKER R BLW L WALKER R NR COLEVILLE, CA	10296000	181	6591
W WALKER R AT HOYE BRIDGE NR WELLINGTON, NV	10297500	497	4980
W WALKER R NR HUDSON, NV	10300000	964	4650
WALKER RV NR Mason Valley, NV	10300600	2400	4426
WALKER RV BLW YERINGTON WEIR NR YERINGTON, NV	10301115	-	4390
WALKER RV NR WABUSKA, NV	10301500	2600	4300
WALKER RV ABV WEBER RES NR SCHURZ, NV	10301600	2700	4215
CANAL NO 2 ABV LITTLE DAM NR SCHURZ, NV	10301742	-	4160
WALKER RV AT LATERAL 2-A SIPHON NR SCHURZ, NV	10302002	-	4105
WALKER RV NR MOUTH AT WALKER LAKE	10302025	3134	3940

Table 3.01 shows the average annual flows by station along the river system. Flows are shown for the year and during the irrigation season, which runs from March to the end of October. The highest flow is at the Mason Valley gauge, which is below where the East and Walker rivers meet. Figures 3.02, 3.03 and 3.04 show the monthly flow through the stations.

Table 3.01 List the average annual flows through select stations and the flow during the irrigation season.

Station Name	USGS Station #	Average Annual CFS	March-Oct Average CFS
E WALKER RV NR BRIDGEPORT, CA	10293000	1737	1306
E WALKER RV ABV STROSNIDER DITCH NR Mason Valley	10293500	1783	1265
W WALKER R NR HUDSON, NV	10300000	2327	1722
WALKER RV NR Mason Valley, NV	10300600	3624	2424
WALKER RV NR WABUSKA, NV	10301500	1957	1210
WALKER RV ABV WEBER RES NR SCHURZ, NV	10301600	1709	1064
WALKER RV NR MOUTH AT WALKER LAKE	10302025	1600	1029

Figure 3.02 Average Monthly Streamflow on the East Walker at Bridgeport, Ca and Strosnider Ditch in cubic feet/sec.

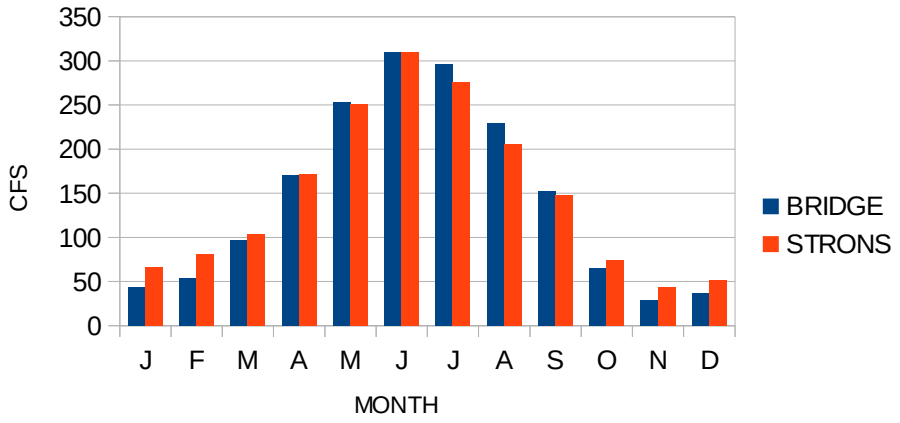


Figure 3.03 Average Monthly Streamflow on the Walker River at Mason Valley and Wabuska in cubic feet/sec.

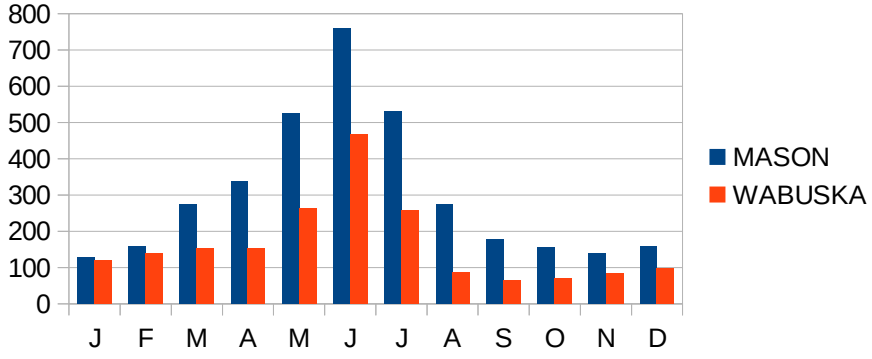
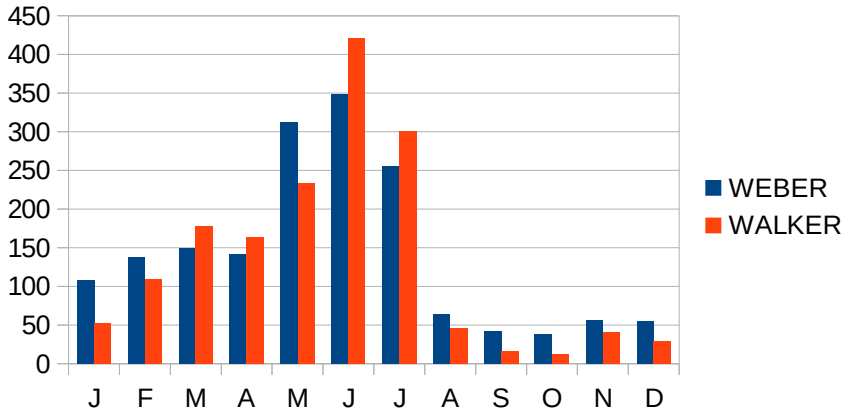


Figure 3.04 Average Monthly Streamflow on the Walker River at Weber Reservoir Walker Lake cubic feet/sec.



3.1 Water Quantity – Ponding, Flooding Excess

Rivers function naturally by periodic high flows that rise above the channel banks and flow out into the floodplains. When water reaches the floodplains, it slows down and drops sediment and recharges the aquifer. Water flow that is above the natural high flow is considered flooding excess. This excess restricts land use and management goals. Water can flood or pond and restrict plant growth and land use. Flooding can cause damage to irrigation structures, crops, farming operations and homes and towns.

Resource Concerns Specific to the Conservation District

There are two concerns, excess flooding and ponding and lack of flooding on the floodplain.
The first concern may be due to increase in sediment in the channel that raises channel bed and increases the chance of the river accessing the floodplain in non-flood events, i.e. high spring run-off flows. Areas of concern include locations where the river is constricted, such as bridges and where the flow is slowed down, such as weirs and other irrigation structures.

The second concern is portions of the rivers do not have access to the normal floodplains to dissipate high flows and recharge the groundwater. The concerns is levees have been installed or the river has been channelized to prevent the river from accessing the floodplain in high water events. This channelization may increase the occurrence and intensity of downstream flooding events.

Practices to Solve Resource Concern and Physical Effects

Table 2.3 lists the practices that can be used to solve the resource concern and the potential effect of installing the practice.

Table 2.3 Conservation Physical Effects by Practice

Practice	Excess Water – Runoff, Flooding, or Ponding
Channel Bed Stabilization	2
Clearing & Snagging	2
Constructed Wetland	2
Dam	2
Dam, Diversion	2

Dike	2
Diversion	2
Irrigation Canal or Lateral	2
Irrigation Reservoir	2
Lined Waterway or Outlet	2
Mole Drain	2
Obstruction Removal	0
Open Channel	5
Pond	2
Pumping Plant	2
Sediment Basin	2
Shallow Water Development and Management	2
Structure for Water Control	2
Subsurface Drain	4
Underground Outlet	4
Vertical Drain	4
Water and Sediment Control Basin	2
Wetland Creation	2
Wetland Enhancement	2
Wetland Restoration	2

5 Substantial Improvement, 4 Moderate To Substantial Improvement, 3 Moderate Improvement, 2 Slight To Moderate Improvement, 1 Slight Improvement, 0 No Effect, -1 Slight Worsening, -2 Slight To Moderate Worsening, -3 Moderate Worsening, -4 Moderate To Substantial Worsening, -5 Substantial Worsening

Proposed Goal/Objectives

Increase knowledge of the functionality of the East, West and Walker river to determine areas of excess flooding problems.

Proposed Actions and Tasks

Conduct a fluvial geomorphology study to determine the condition the East, West and Walker rivers.

3.2 Water Quantity – Insufficient Moisture Management

Natural precipitation is not optimally managed to support desired land use goals or ecological process. Not a resource concern in the District.

3.30 Water Quantity Surface– Insufficient Use of Irrigation Water

This resource concern is the inefficient use of irrigation water and impacts on and off-site water quantity and quality. This includes insufficient and inefficient use is irrigation water that is not stored, delivered, scheduled or applied efficiently. Other concern is aquifer or surface water withdrawals that may threaten sustained availability of ground or surface water. Available irrigation water supplies may be reduced due to aquifer depletion.

Agriculture is the main use of water in the Walker River. About 110,000 acre-ft of water is used in Mason Valley. This use constitutes about 43% of the total agricultural water use in the Walker Basin.

Streamflow and Water Rights Summary

Decree right are rights to divert natural river flow. Storage rights are rights allocated by WRID to use water previously stored in upstream reservoirs (Topaz and Bridgeport) and flood water rights are rights to make use of natural river flow when there is excess or surplus water in the rivers. Table 3.30 list the surface water diversions for 1931-1995 categorized by water right type for Mason Valley.

Table 3.30. Surface Water Diversions

Irrigated Adjudicated Water Rights	Mason Valley		EAST WALKER		TUNNEL SECTION (West Walker)		TOTAL
	Acre-Feet/Yr	%	Acre-Feet/Yr	%	Acre-Feet/Yr	%	Acre-Feet/Yr
Surface Water Average Decree Diversion	55,076	81%	40,023	58%	12,663	59%	107,763
Average storage diversion	9,975	15%	22,043	32%	6,426	30%	38,444
Average Flood Water Diversion	3,195	5%	7,422	11%	2,339	11%	12,956
Total Irrigated Adjudicated Water Rights	**68,246**	**59%**	**26,164**	**23%**	**21,428**	**18%**	**115,839**

Walker River Paiute Tribe

BIA diverts water for agricultural purposed out the Walker River at Canals 1 and 2 and delivers this water to 2,100 acres of Indian trust land. The direct flow water right for the project is 26.25 cfs diverted upon or above the Reservation for 180 days during the irrigation season or about 9,400 af/yr.

Table 3.31. Surface water rights diversion rates and acres per decree C-125 (as amended 4/24.1940 from Pahl, 1999).

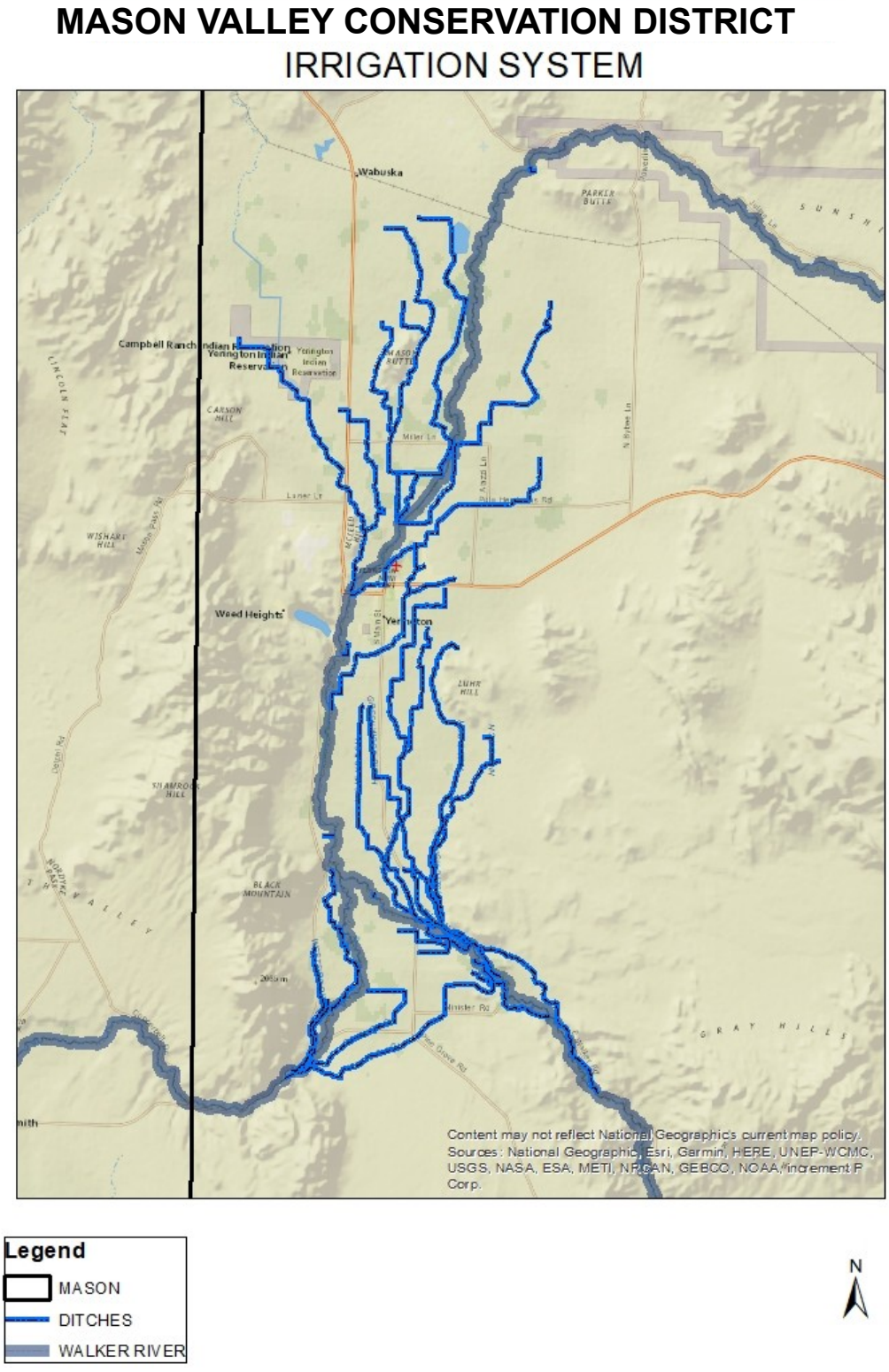
Area Irrigated	Diversion Rate (CFS)	Acres Per Decree
East Walker	64 to 120	11,671
Mason Valley	562	45,120
Walker River Paiute Tribe	26	2,100
Total		**58,891**

Mason Valley and East Walker (See Map 3.30)
There is approximately 150 miles of primary/main ditches and well over 100 miles of secondary ditches within Mason Valley which transports water from the West, East and Walker rivers. The longest primary ditch is the Fox ditch which is 11 miles long, and the second is the SAB(Sprag-Alcorn-Bewley) which is 10 miles long. Most of the primary ditches are dirt-lined with portions of some of the ditches concrete lined or in underground pipe. There is a small percentage of the secondary ditches that have been converted to underground pipelines. There is a higher percent of on farm ditches that have been converted from dirt-lined to underground pipeline.

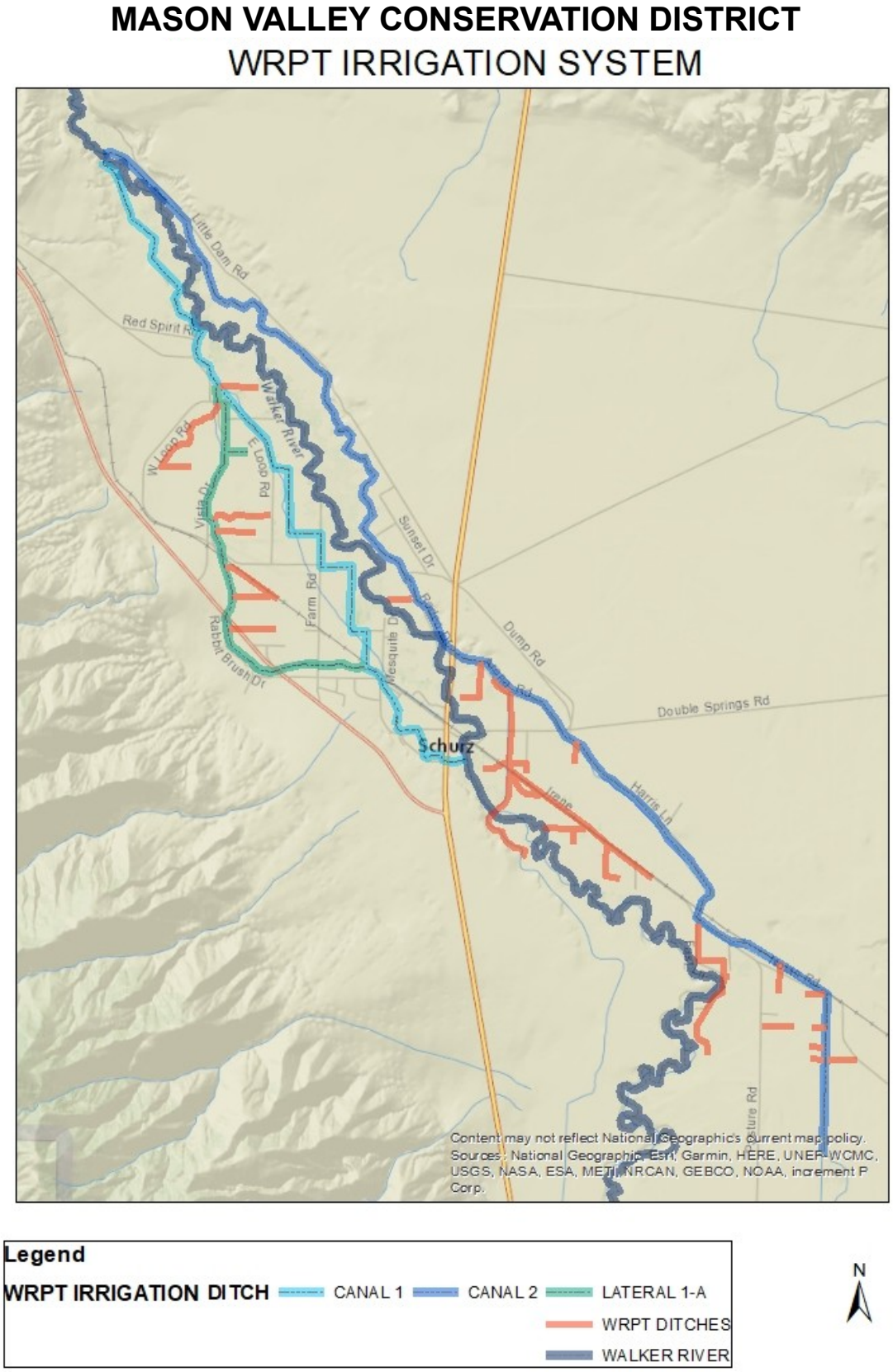
Walker River Paiute Tribal Lands (WRPT) (See Map 3.31)
There is approximately 21 miles of main canals and over 11 miles of secondary ditches within the WRPT lands. Water is transported from the Walker River below the Weber dam in two concrete lined canals. Water is then split into secondary and field ditches. Ditches are a mix of dirt, concrete and underground pipeline.

Other
There is a system of ditches found on irrigated lands on Sweetwater Creek, along the East Walker at the Screine-Fredricks, Rossachi Ranch and Nine-Mile Ranch on the Rough/Bodie creeks.

Map 3.30. Mason Valley Irrigation System Map.



Map 3.31. Walker River Paiute Tribe Irrigation System Map.



Resource Concerns Specific to the Conservation District
Improving irrigation systems to be more water efficient. This includes replacing the dirtlined ditches and canals with ditch lining and pipe. Installing water measuring devices with new irrigation systems would improve water use efficiency.

Another concern is increasing irrigation water storage. With drought years and possible decrease in snowpack over time there is a need to increase water storage. Upstream water storage in Topaz provides irrigation water during the cropping season in normal to wet years. In drought years water is limited. Additional upstream storage in Hoye Canyon has been proposed since the formation of Walker River Irrigation District. Other water storage proposed are regulatory reservoirs that would reduce the fluctuations of river flow during the irrigation season.

Practices to Solve Resource Concern and Physical Effects
Table 3.3 lists the practices that can be used to solve the resource concern and the effect.

Table 3.3 Conservation Physical Effects by Practice

Practice	Insufficient Water – Inefficient Use of Irrigation Water Surface
Dam, Diversion	2
Diversion	2
Herbaceous Weed Control	2
Irrigation Canal or Lateral	5
Irrigation Ditch Lining	5
Irrigation Field Ditch	5
Irrigation Land Leveling	4
Irrigation Pipeline	2
Irrigation Reservoir	2
Irrigation System, Microirrigation	2
Irrigation System, Tailwater Recovery	2
Irrigation Water Management	2
Pond	2
Pond Sealing or Lining, Compacted Soil Treatment	2
Pond Sealing or Lining, Concrete	2
Pond Sealing or Lining, Flexible Membrane	2
Pumping Plant	2
Sprinkler System	5
Structure for Water Control	2
Windbreak/Shelterbelt Establishment	5

5 Substantial Improvement, 4 Moderate To Substantial Improvement, 3 Moderate Improvement, 2 Slight To Moderate Improvement, 1 Slight Improvement, 0 No Effect, -1 Slight Worsening, -2 Slight To Moderate Worsening, -3 Moderate Worsening, -4 Moderate To Substantial Worsening, -5 Substantial Worsening

(Draft)
Proposed Goal/Objectives
Improve irrigation efficiencies in Mason Valley and Schurz.
Proposed Actions and Tasks
Replace dirtlined ditches and canals with linings or pipe to reduce seepage. Install regulatory reservoirs. Install irrigation systems that will improve irrigation efficiency (i.e. flood to pivot sprinkler).

Install tailwater recovery systems. Practices include Pipelines, Pivots, Sprinklers, Pumps, Structures, Irrigation Reservoirs.

3.31 Water Quantity – Ground Water

Hydrogeology

East Walker

The East Walker River Area is located in the drainage basin between the outlet of Bridgeport Reservoir and Mason Valley, where groundwater development is primarily from alluvial aquifers within the basin. An estimated 800,000 acre-feet of water is stored in the top 100 feet of saturated sediment in the East Walker River area (Glancy, 1971). A major source of recharge to alluvial aquifers in the East Walker River area is recharge from East Walker River water. Recharge from precipitation in mountains surrounding alluvial aquifers in the East Walker River area is estimated to be 31,000 acre-feet per year. Groundwater inflow from Bridgeport Valley is estimated to be 200 acre-feet per year, and outflow to Mason Valley is estimated to be 150 acre-feet per year. Glancy also notes that of the estimated 18,000 acre-feet per year of recharge from precipitation to the Rough Creek drainage area alluvial aquifers, only 500 acre-feet per year are removed by evapotranspiration. He suggests that a substantial amount of the remaining 17,500 acre-feet of groundwater may be flowing out of the East Walker River drainage area south toward Mono Valley.

Mason Valley

The perennial yield in Mason Valley is estimated at 72,000 acre-feet/year. Percolation of irrigation water derived primarily from diversions of the Walker River is the main source of recharge to the alluvial aquifers in Mason Valley. Myers (2001) estimated that 70,000 acre-feet of Walker River water annually recharge alluvial aquifers in Mason Valley. Huxel and Harris (1969) estimated recharge to Mason Valley from precipitation in the surrounding mountains to be 2,000 acre-feet per year. Groundwater development in Mason Valley is from alluvial aquifers within the basin. The alluvium in the valley consists of unconsolidated gravel, sand, silt, and clay Surrounding bedrock has low hydraulic conductivity compared to valley-fill deposits, thus the alluvial aquifers may be considered to be an isolated unit within the valley with little groundwater flowing out of the valley in consolidated rock. Assuming an area of approximately 100 square miles for the alluvial aquifers, Mason Valley contains an estimated 1,300,000 acre-feet of water stored in the top 100 feet of saturated alluvium. Groundwater flow out of the basin is estimated to be low.

Walker River Paiute Tribe

Groundwater in the alluvial aquifers is derived primarily from seepage of Walker River water into the aquifers. Additional sources of groundwater in the area include precipitation in the surrounding mountains, subsurface inflow, and recharge from excess irrigation. Schaefer (1980) estimated that between the Wabuska gauge site—where the Walker River enters the Schurz/Walker River Paiute Reservation area—and Walker Lake, an average of 13,800 acre-feet per year seep from the Walker River into underlying alluvial aquifers. Everett and Rush (1967) estimated recharge to the alluvial aquifers from precipitation within the basin to be about 650 acre-feet per year. Huxel and Harris (1969) estimated that inflow to this basin from Mason Valley through Walker and Parker gaps to be a total of 1,400 acre-feet per year (700 acre-feet per year through each gap). An estimated 11,000 acre-feet per year of groundwater are assumed to flow into Walker Lake from the Walker River Paiute Reservation area (Schaefer, 1980).

Groundwater Withdrawals
There are two types of groundwater rights:
1.) Primary groundwater rights.
2.) Supplemental groundwater rights. These rights can be used to supplement water derived from surface water rights.

Groundwater pumping records compiled for Mason Valley for 1994 through 2004 by Nevada Department of Water Resources (NDWR) showed that Mason Valley ranged from 40,000 to 122,000 acre foot with an average of 79,000 acre feet. Estimates are that on average about 50% of all groundwater withdrawals involve supplemental pumping.

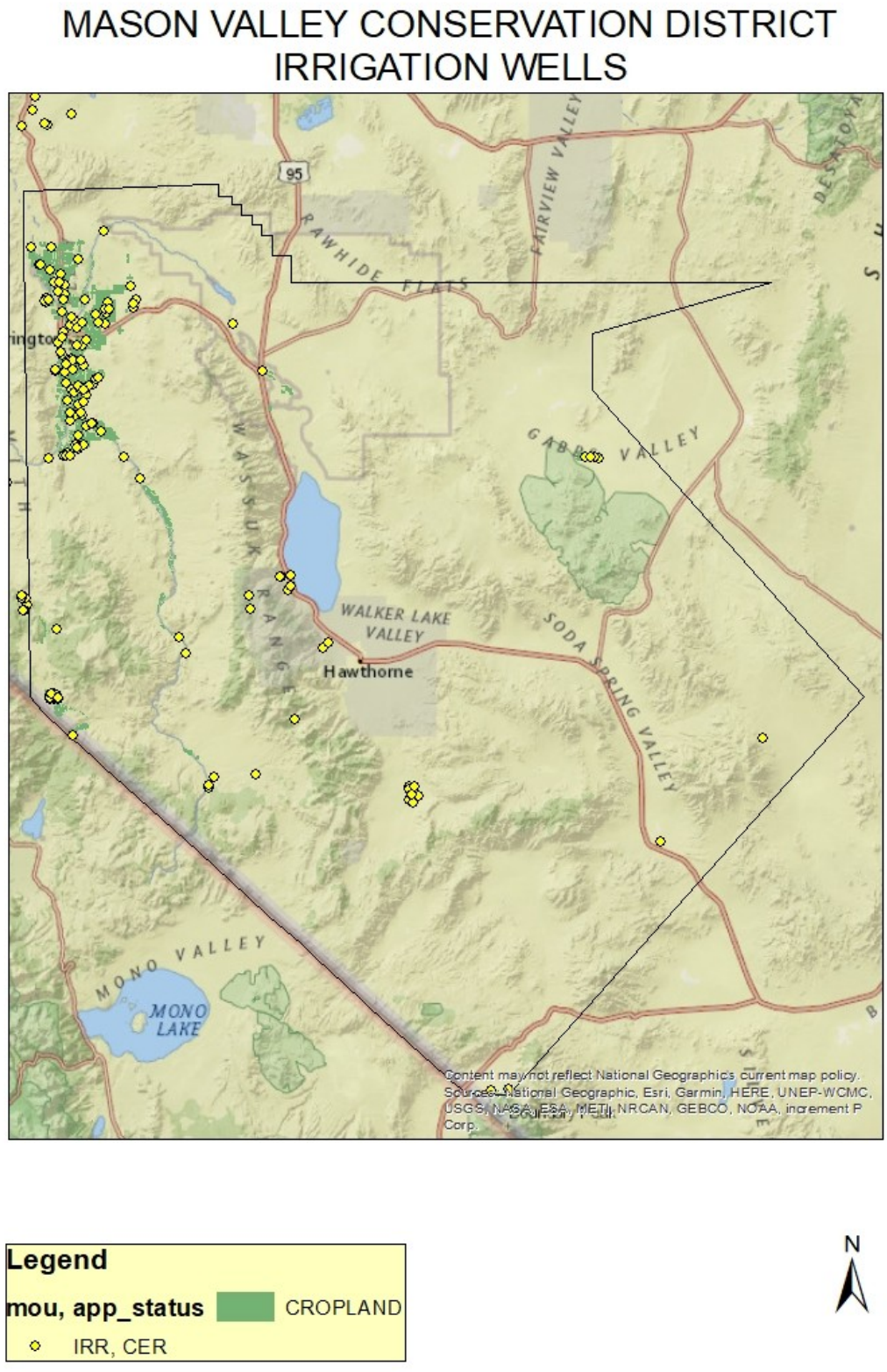
Groundwater Levels
Measurement of groundwater levels over time indicate that ground water levels have generally been dropping. Well data collected over the last 30 years show an average drop of .4 feet/year for Mason Valley. Water levels have been reported in some locations in Mason Valley to have dropped 4 to 8 feet from March 2014 to March 2015 as reported by the Nevada State Water Engineer.

Table 3.32 Mason Valley Groundwater

		Acre-Feet/Year	Net
GROUND WATER	Annual Recharge from Precipitation	2,000	
	Recharge from Walker River and irrigation	70,000	
	Total Perennial Yield	**72,000**	
	Primary Ground Irrigation Water Rights	*57,000*	15,000
	Supplemental Ground Irrigation Water Rights	*91,000*	(76,000)

Figure 3.31 shows water levels from 2008 to 2017 from various uses of ground water and water levels of the Walker river during those years. Figure 3.31 is from the Nevada Division of Water Resources, Mason Valley Ground Water Pumpage Inventory 2017. Figure 3.32 shows the number of new wells, wells that had to be deepen or reconditioned and wells that had to be replaced in Mason Valley. From 2009 to 2015 a number of wells had to be replaced in Mason Valley.

Map 3.31 Map of Irrigation Wells in the Mason Valley District



Map 3.32 Map of Irrigation Wells in Mason Valley

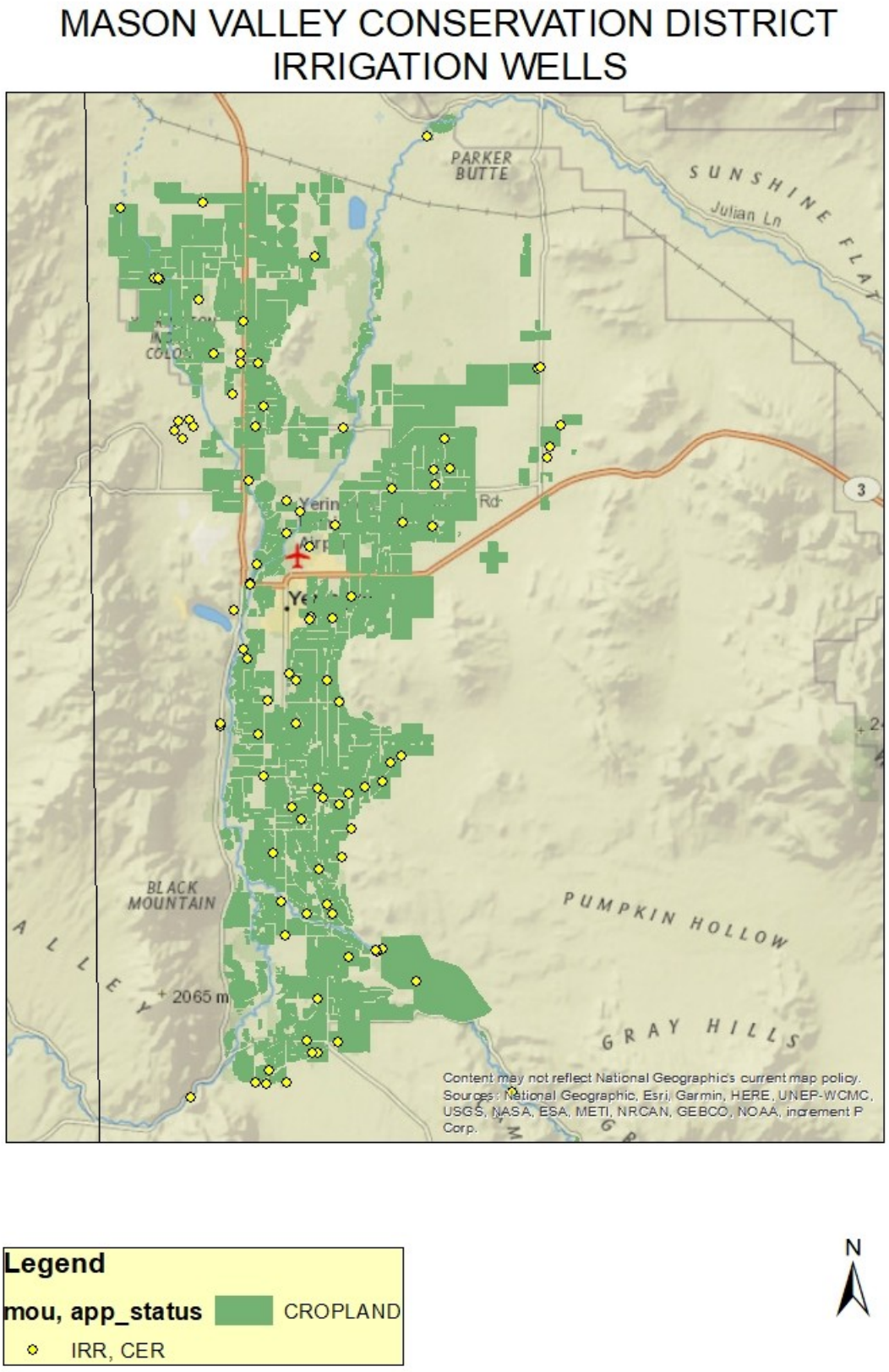


Figure 3.31 Mason Valley pumpage by manner of use compared to Walker River streamflow.

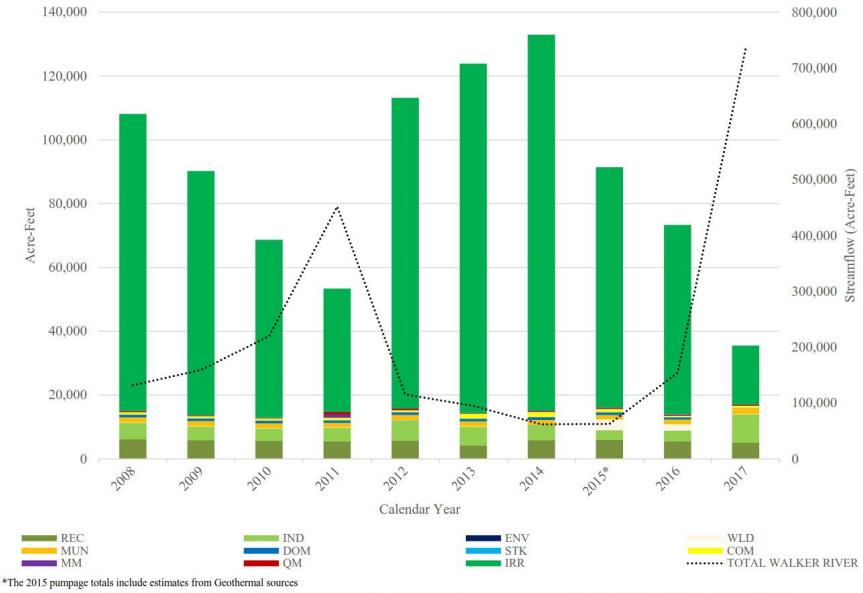


Figure 4. Mason Valley historical groundwater pumpage by manner of use as compared with Walker River streamflow.

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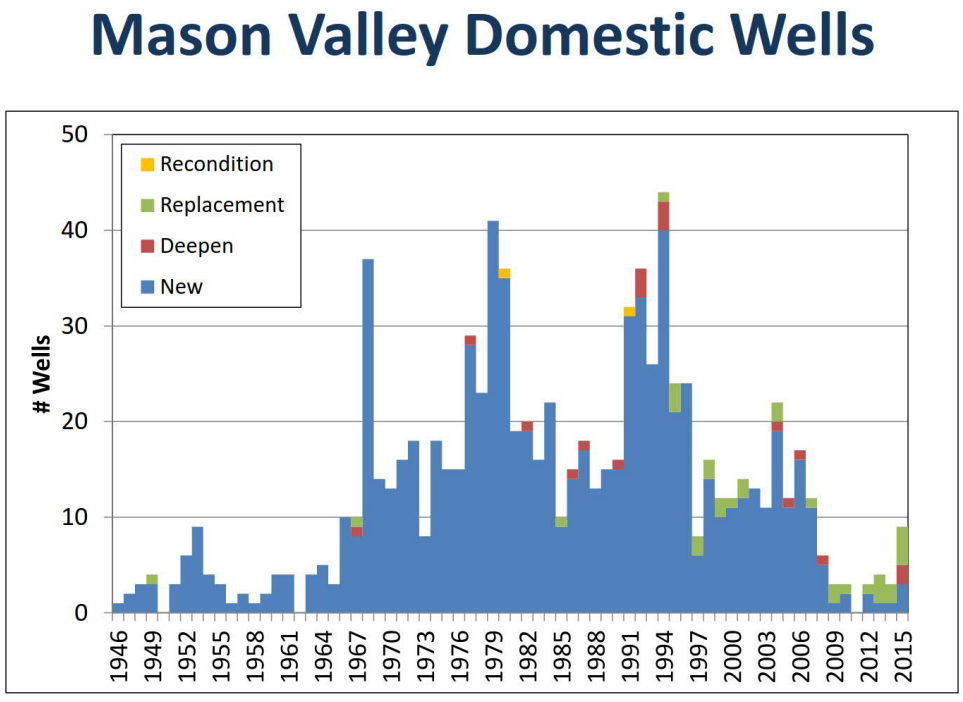
Figure 3.32 Record of Domestic Wells in Mason Valley



Resource Concerns Specific to the Conservation District
Aquifer withdrawals that are greater than recharge is a concern. Concern is shared by agriculture and domestic water users. Agriculture wells are now monitored by the Nevada Division of Water Resources for water table drop and pumping amount. One concern with aquifer recharge is the reduction of seepage of water from ditches and canals and irrigated fields with improved irrigation systems (i.e. dirtlined ditches to pipe and flood irrigation to pivot sprinklers). Another concern is irrigated land being taken out of production.

Practices to Solve Resource Concern and Physical Effects
Table 3.33 lists the practices that can be used to solve the resource concern and the effect.

Table 3.33 Conservation Physical Effects by Practice

Practice	Insufficient Water – Inefficient Use of Irrigation Water Ground Water
Irrigation System, Microirrigation	2
Irrigation System, Tailwater Recovery	2
Irrigation Water Management	2
Pumping Plant	2
Sprinkler System	5
Structure for Water Control	2

5 Substantial Improvement, 4 Moderate To Substantial Improvement, 3 Moderate Improvement, 2 Slight To Moderate Improvement, 1 Slight Improvement, 0 No Effect, -1 Slight Worsening, -2 Slight To Moderate Worsening, -3 Moderate Worsening, -4 Moderate To Substantial Worsening, -5 Substantial Worsening

(Draft)
Proposed Goals/Objectives
Long term sustainable aquifer withdrawls for agriculture and domestic use.

Proposed Actions and Tasks
Install irrigation systems that will improve irrigation efficiency of irrigation ground water (side-roll sprinklers to low pressure pivot sprinkler).
Improve irrigation efficiencies in Mason Valley and Walker River Paiute tribal lands.
Increase ground water recharge during wet years.

4.0 RESOURCE CONCERN – WATER QUALITY

4.1 Water Quality Degradation – Nutrients

Nutrients are transported to receiving water through surface runoff and/or leaching into shallow ground waters in quantities that degrade water quality and limit use for intended purposes. Not a resource concern in the District.

4.2 Water Quality Degradation – Pathogens

Chemicals are carried by soil amendments that are applied to the land and are transported to waters in quantities that degrade water quality. Not a resource concern in the District.

4.3 Water Quality Degradation – Pesticides

Pest control chemicals are transported to waters in quantities that degrade water quality and limit use for intended purposes. Not a resource concern in the District.

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4.4 Water Quality Degradation – Salts

Irrigation or rainfall runoff transports salts to receiving waters in quantities that degrade water quality. Not a resource concern in the District.

4.5 Water Quality Degradation – Petroleum and Heavy Metals

Pollutants are transported to water sources in quantities that degrade water quality. Not a resource concern in the District.

4.6 Water Quality Degradation – Sediments

Off-site transport of sediment from sheet, rill, gully and wind erosion into surface water that threatens to degrade surface water quality. Not a resource concern in the District.

4.7 Water Quality Degradation – Elevated Temperatures

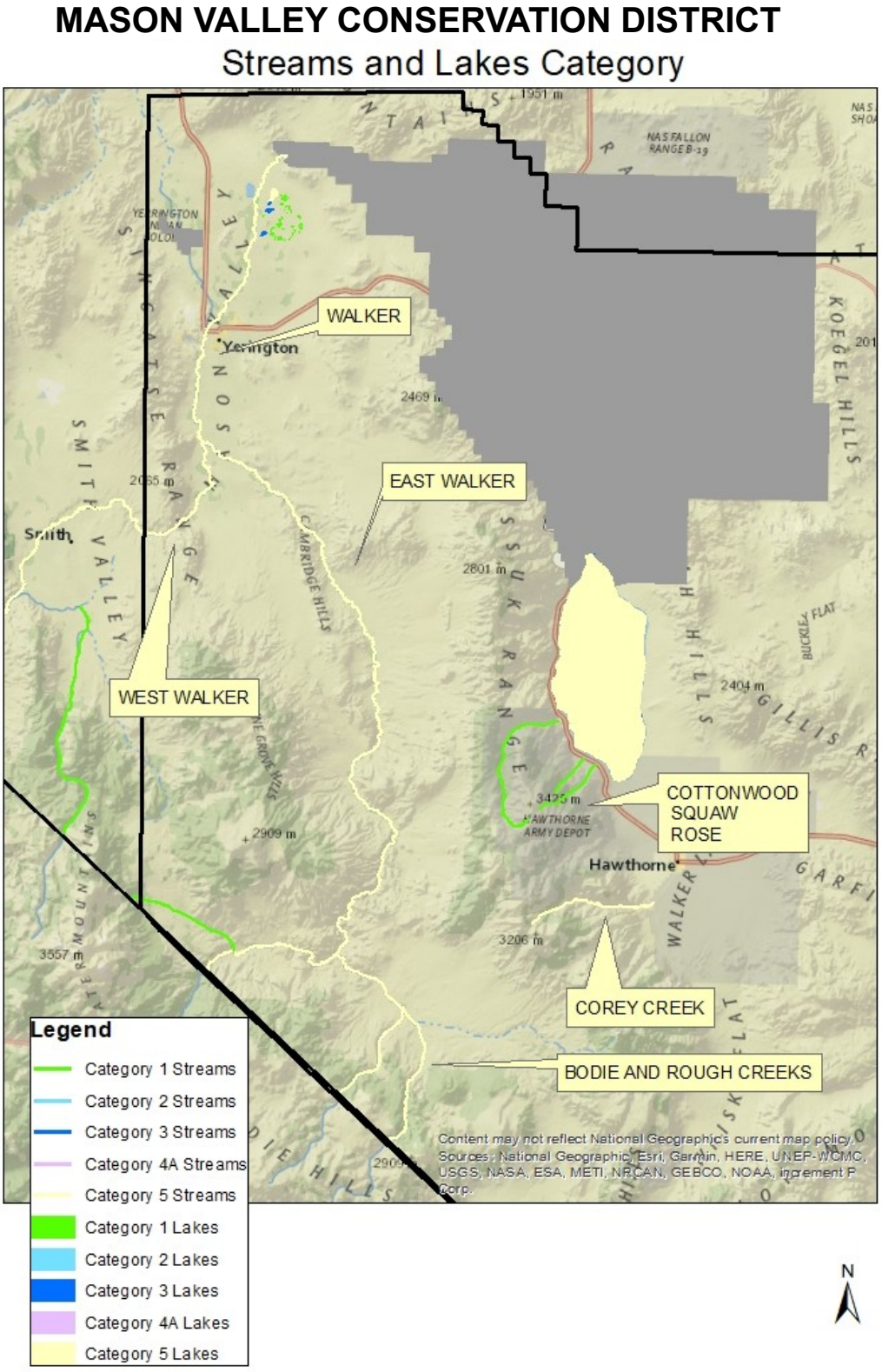
This resource concern is where surface water temperatures exceed State and Federal standards and/or limit use for intended purposes.

Table 4.7 lists the portions of streams in the Conservation District that are listed as impaired by the Nevada Division of Environmental Protection. Listing is due to causes that vary from water temperature to heavy metals. Some of the heavy metal concentrations could be the results of past mining operations in the watersheds. The West, East and Walker rivers are all 303d listed streams. Water temperatures are one of the main causes for not meeting water quality criteria. Map 4.7 shows the locations of 303d listed streams.

Table 4.7. The West, East and Walker Rivers are 303d listed stream.

	Water Quality Impaired Streams			
	Water Body	**Cat.**	**Not Supporting**	**Cause**
Nevada 2014 Integrated Report Water Quality	Bodie Creek	5 (303d)	Aquatic, Fish Consumption	Iron
	Rough Creek	5 (303d)	Aquatic, Rec Contact	Iron, Phosphorus
	Sweetwater Creek	1		
	East Walker- Upper	5 (303d)	Aquatic	Phosphorus, mercury in fish, temp
	East Walker – Lower	5 (303d)	Aquatic, recreation	Phosphorus, temp
	West Walker River (Wellington to confluence East Walker)	5 (303d)	Aquatic Life	Water Temperature
	Walker	5 (303d)	Aquatic Life	Temperature
	Cottonwood	1		
	Squaw Creek	1		
	Rose Creek	1		
	Corey Creek	5 (303d)	Aquatic Life, Domestic	Phosphorous
	Walker Lake	5 (303d)	Aquatic	Total Dissolved Solids

Map 4.7 303d Streams



Resource Concerns Specific to the Conservation District
Water temperature is a main concern for the East, West and Walker rivers. Water temperature affects fish and other aquatic life. Warm water also has the potential to increase the presence of dissolved toxic substances that may restrict the suitability of water for human use. The other creeks in the District that are listed have concerns with chemicals, such as phosphorus and iron.

Walker Lake is a main concern with water quality. The Total Dissolved Solids (TDS) is such that the lake can no longer support a fishery of Lahontan cutthroat trout and tui chub.

Practices to Solve Resource Concern and Physical Effects
Table 4.71 lists the practices that can be used to solve the resource concern and the effect.

Table 4.71 Conservation Physical Effects by Practice

Practice	Water Quality Degradation – Elevated Water Temperature
Aquatic Organism Passage	2
Channel Bed Stabilization	1
Clearing & Snagging	-1
Dam	0
Dam, Diversion	-2
Prescribed Grazing	1
Riparian Forest Buffer	5
Riparian Herbaceous Cover	2
Stream Habitat Improvement and Management	2
Streambank and Shoreline Protection	1
Structure for Water Control	1
Tree/Shrub Establishment	1
Water and Sediment Control Basin	-2
Watering Facility	1
Wetland Wildlife Habitat Management	0

5 Substantial Improvement, 4 Moderate To Substantial Improvement, 3 Moderate Improvement, 2 Slight To Moderate Improvement, 1 Slight Improvement, 0 No Effect, -1 Slight Worsening, -2 Slight To Moderate Worsening, -3 Moderate Worsening, -4 Moderate To Substantial Worsening, -5 Substantial Worsening

(Draft)
Proposed Goals and Objectives
Decrease the water temperatures for the East, West and Walker rivers.
Decrease TDS in Walker Lake.

Proposed Actions and Tasks
Increase riparian vegetation. Reduce sediment into the river. Practices include Riparian Herbaceous Cover, Tree/Shrub Establishment, Streambank and Shoreline Protection.

5.0 Resource Concern – Air Quality Impacts

5.1 Air Quality Impacts – Greenhouse Gas

Emissions that increase atmospheric concentrations of greenhouse gases. Not a resource concern in the District.

5.2 Air Quality Impacts – Odors

Emissions of odorous compounds causes nuisance conditions. Not a resource concern in the District.

5.3 Air Quality Impacts – Ozone Precursors

Emissions of ozone precursors that cause negative impacts to plants and animals. Not a resource concern in the District.

5.4 Air Quality Impacts – Particulate Matter

Direct emissions of particulate matter, such as dust and smoke, chemicals, animal operations. Not a resource concern in the District.

6.0 Resource Concern – Plants

6.1 Degraded Plant Condition – Productivity and Health

Plant productivity does not meet yield potential due to improper fertility, management or plants not adapted to site. Resource concern for crop production is not a resource concern in the District.

6.2 Degraded Plant Condition – Structure and Composition

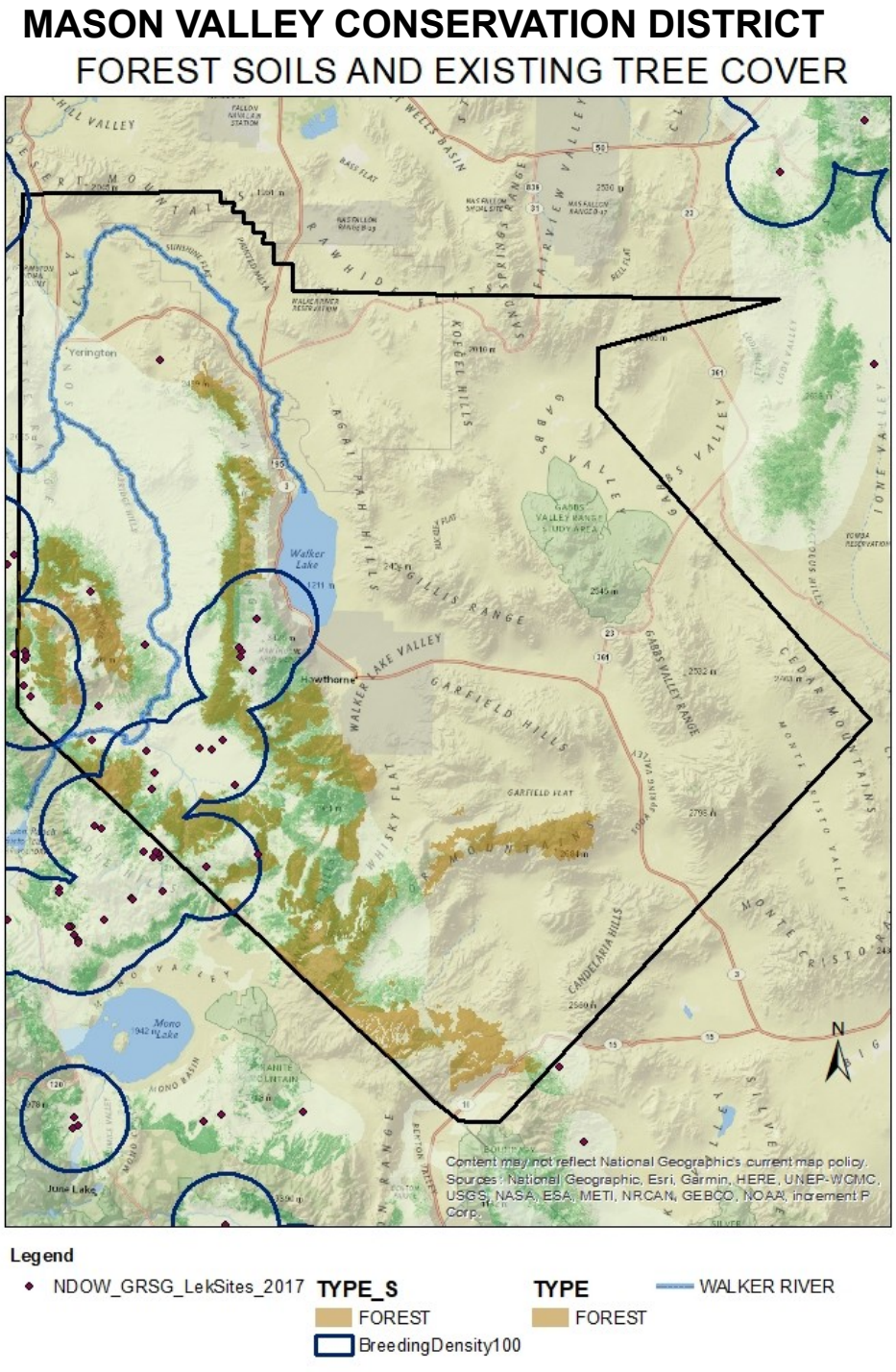
Plant communities does not achieve ecological functions and management objectives.

Resource Setting

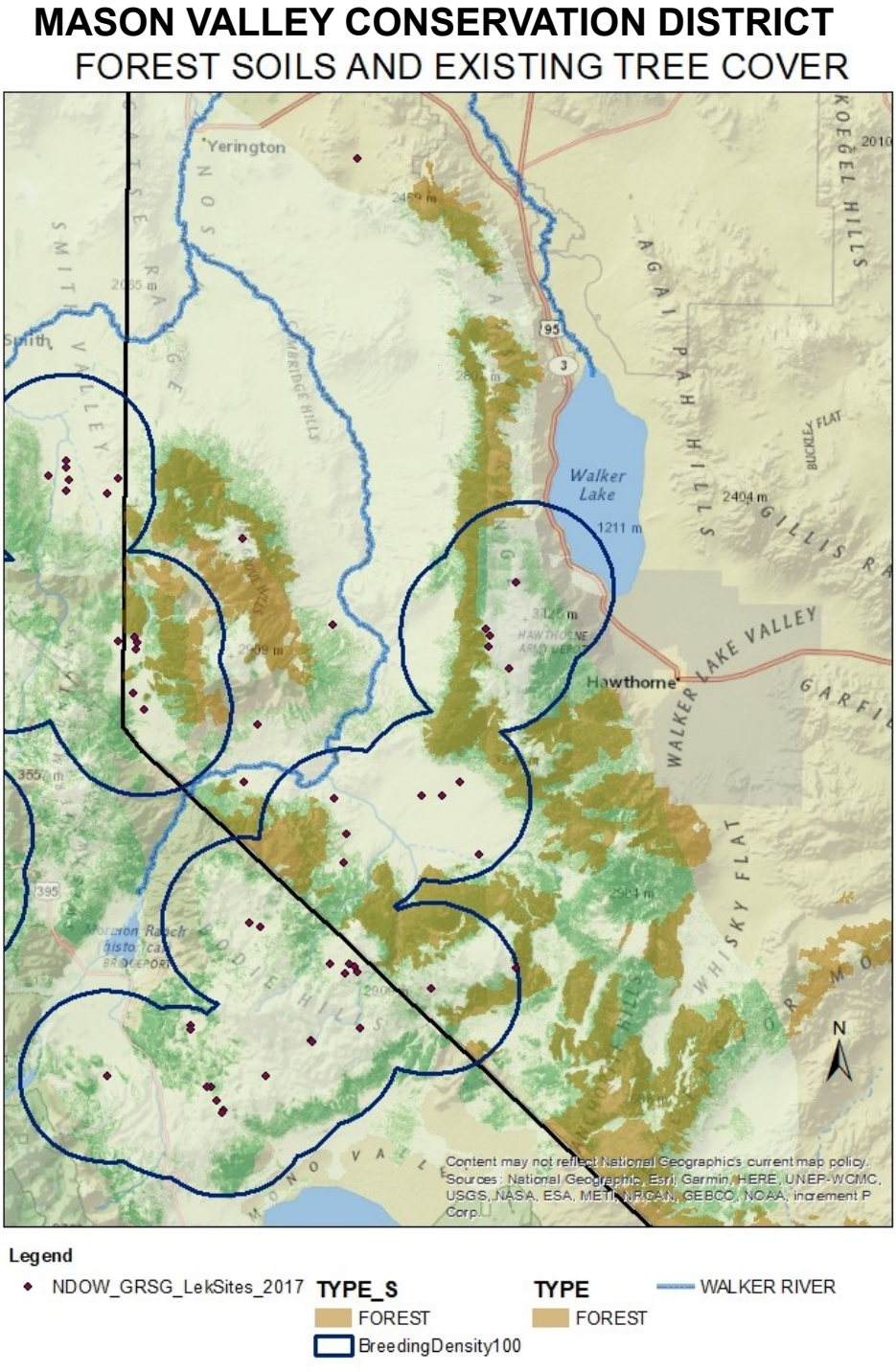
Pinyon Juniper Trees

Naturally occurring pinyon and juniper tree forests are found along
g the slopes and to the top of the lower elevation mountains in the district. This includes the Sweetwater, Pine Grove, Wassuk, Bodie Hills, Excelsior, and Pilot Mountains. Portions of these mountains also have areas of sagebrush rangeland that are encroached with trees. Encroachment by trees is due to several factors, the main being lack of wildfire. In areas of important sage-grouse habitat, trees are being cut to maintain or improve the sagebrush habitat. The amount of treatment on encroached rangelands is minor compared to the acres that contain trees. Most of the habitat work being done is in the Bi-State sage-grouse area including the Sweetwater Mountains and the Bodie Hills. Map 6.20 and 6.21 shows forest soils (brown) and locations of existing tree cover (green color). Areas where there is tree cover, but is not mapped as forest soils are areas of possible tree encroachment.

Map 6.20 Forest Soils and Existing Tree Cover and Sage-Grouse Habitat.



Map 6.21 Southern Portion of District Tree Cover and Forest Soils and Sage-Grouse Habitat



Resource Concerns Specific to the Conservation District
Encroachment of pinyon and juniper trees into rangeland habitat is a concern. Currently the BLM, USFS, NDOW and private land owners have been removing trees to improve rangeland and to benefit sage grouse habitat. There is more rangeland that would benefit from tree removal. There is also a need for maintenance on those acres where trees were removed in the past. Small trees need to be removed from the treated acres every several years.

Practices to Solve Resource Concern and Physical Effects
Table 6.2 lists the practices that can be used to solve the resource concern and the effect. Practices listed are the common practices used in the area by NRCS.

Table 6.2 Conservation Physical Effects by Practice

Practice	Degraded Plant Condition – Inadequate Structure and Composition
Access Control	4
Brush Management (Tree cutting)	4
Grazing Land Mechanical Treatment	2
Herbaceous Weed Control	4
Prescribed Burning	4
Prescribed Grazing	4
Range Planting	5
Tree/Shrub Establishment	5

5 Substantial Improvement, 4 Moderate To Substantial Improvement, 3 Moderate Improvement, 2 Slight To Moderate Improvement, 1 Slight Improvement, 0 No Effect, -1 Slight Worsening, -2 Slight To Moderate Worsening, -3 Moderate Worsening, -4 Moderate To Substantial Worsening, -5 Substantial Worsening

(Draft)
Proposed Goal and Objectives
Improve the structure and composition of rangelands that are encroached by pinyon and juniper trees.

Proposed Actions and Tasks
Remove trees under the Brush Management practice or Prescribed Burning.

6.3 Degraded Plant Condition – Pests

Resource Setting
There are numerous plant pests within the District boundary. Most of the plant pest and noxious weeds are found associated with the rivers and moist soil conditions.

Noxious and Invasive Weeds
As in many areas throughout the state, noxious and invasive weeds pose a significant threat to natural resources. The impacts of noxious weeds is occurring across ownership and jurisdictional boundaries. The District has been working over the years to control and treat weeds, but continued monitoring and treatment is needed. Management favoring desired vegetation will reduce the weed's influence and spread to new areas, as well as maintain or improve the desired use often site. While eradication is unlikely, these weeds must be controlled or their impact will continue to expand.

Resource Concerns Specific to the Conservation District
Many of the weeds species found in the District are associated with the river, ditches and irrigated land. Weeds include Perennial pepperweed, salt-cedar and several thistle species. Weeds found on the drier sites and fallowed farmland include Russian knapweed and kochia. On the rangeland sites cheatgrass (*Bromus tectorum*) is common through the District. There is a cooperative weed management area but is not active at this time. There is concern that weeds are not being treated as they should be on private lands. Some of the concerns include residential property and farms and ranches where irrigation water rights are being removed and the land is going fallow.

Weeds the District are currently treating or are of concern are listed below.

Perennial Pepperweed/Tall Whitetop *(Lepidium latifolium)*
Hoary Cress *(Cardaria drabe)*
Musk Thistle *(Carduus mutans)*
Canada Thistle *(Cirsium arvense)*
Scotch Thistle *(Onopordum acanthium)*
Yellow Star Thistle *(Centaurea solstitialis)*
Russian Knapweed *(Centaurea repens)*
Poison and Water Hemlock *(Conium maculatum,*
African rue *(Peganum harmala)*
Salt Cedar/Tamarix *(Tamarix spp.)*
Russian Olive *(Elaeagnus angustifolia)*

Practices to Solve Resource Concern and Physical Effects
Table 6.3 lists the practices that can be used to solve the resource concern and the effect.

Table 6.3 Conservation Physical Effects by Practice

Practice	Degraded Plant Condition - Excessive Plant Pest Pressure
Access Control	5
Brush Management	4
Conservation Cover	4
Conservation Crop Rotation	2
Cover Crop	4
Critical Area Planting	4
Firebreak	-1

Fuel Break	-1
Grazing Land Mechanical Treatment	-1
Herbaceous Weed Control	4
Integrated Pest Management	0
Irrigation Land Leveling	1
Irrigation Water Management	1
Prescribed Burning	4
Prescribed Grazing	1
Range Planting	4
Riparian Herbaceous Cover	4
Streambank and Shoreline Protection	4
Tree/Shrub Establishment	5

5 Substantial Improvement, 4 Moderate To Substantial Improvement, 3 Moderate Improvement, 2 Slight To Moderate Improvement, 1 Slight Improvement, 0 No Effect, -1 Slight Worsening, -2 Slight To Moderate Worsening, -3 Moderate Worsening, -4 Moderate To Substantial Worsening, -5 Substantial Worsening

(Draft)

Proposed Goals and Objective

Reduce the occurrence of noxious weeds in the District.

Proposed Strategies

Increase funding opportunities for noxious weeds and invasive species
Increase participation in the Cooperative Weed Management Area
Increase early detection and rapid response mechanisms to identify and respond to small infestations
Increase coordination between agencies and private citizens to improve county inventory of noxious weeds

Proposed Actions and Tasks

Develop funding proposals for Coordinated Weed Management District
Work with the State of Nevada to report weeds mapping efforts.
Coordinate efforts with private land owners to mitigate Russian olive.
Look for funding proposal to remove Russian olive and replace with Silver buffaloberry.
Continue to treat weeds with existing funding. Work to increase weed treatment capacity.
Support Targeted Grazing to treat weeds and reduce fuel loads.

6.4 Degraded Plant Condition – Wildfire Hazard

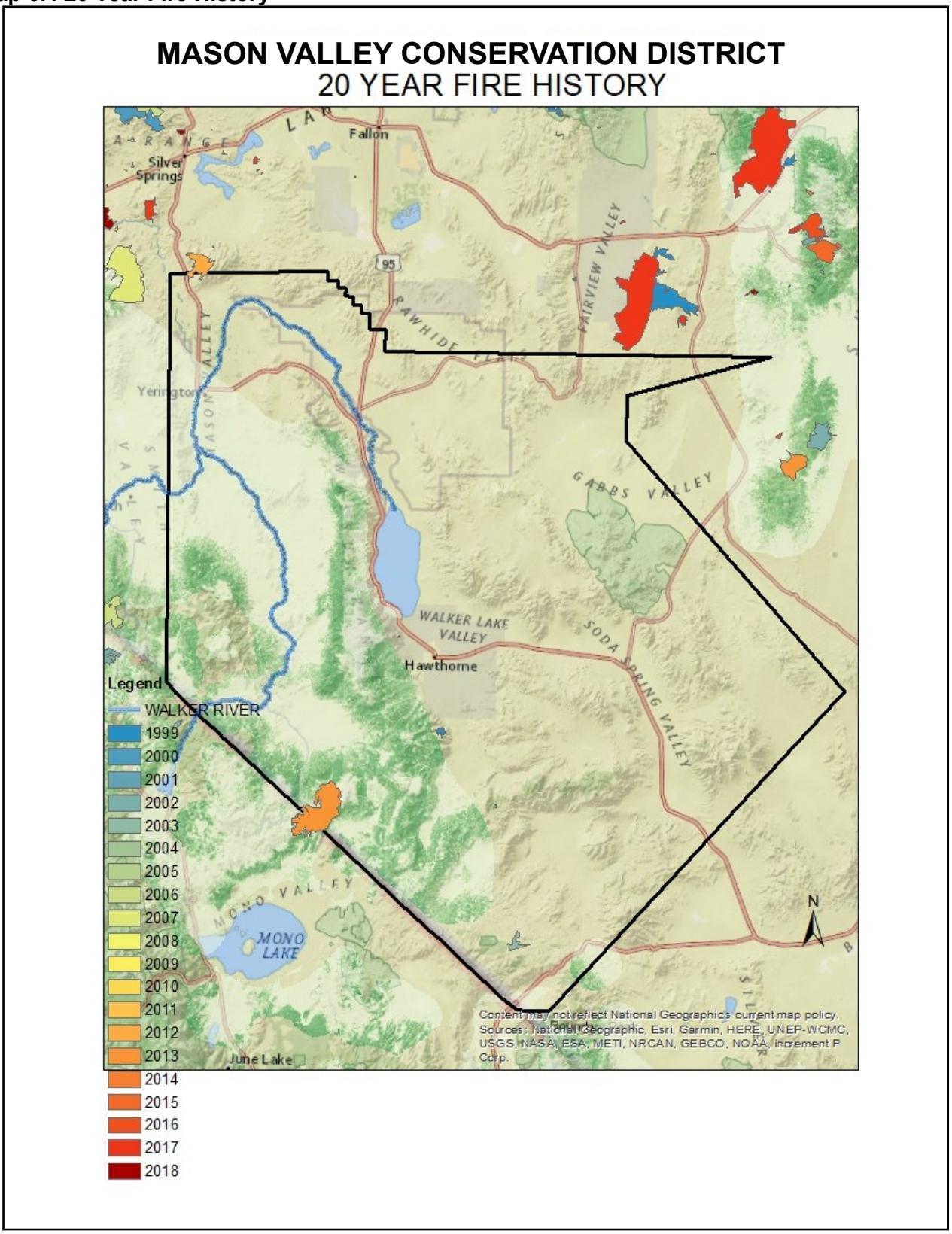
Resource Setting

Within the conservation district boundary there are several main vegetation types. This includes at the lower elevation the salt-desert plant community. At the mid elevations and higher precipitation is the Wyoming sagebrush and low sagebrush communities. At a high elevation is the mountain sagebrush community. Also the pinyon and juniper woodland is found along the mid-slopes of the mountains. These community types have different natural burn intervals. The intervals are listed below: Salt-desert shrub: 100-300+ years, Wyoming sagebrush: 30-120 years, Low sagebrush: 75-150 years, Mountain sagebrush: 15-100 years, Pinyon-Juniper Forest: 100-1000 years

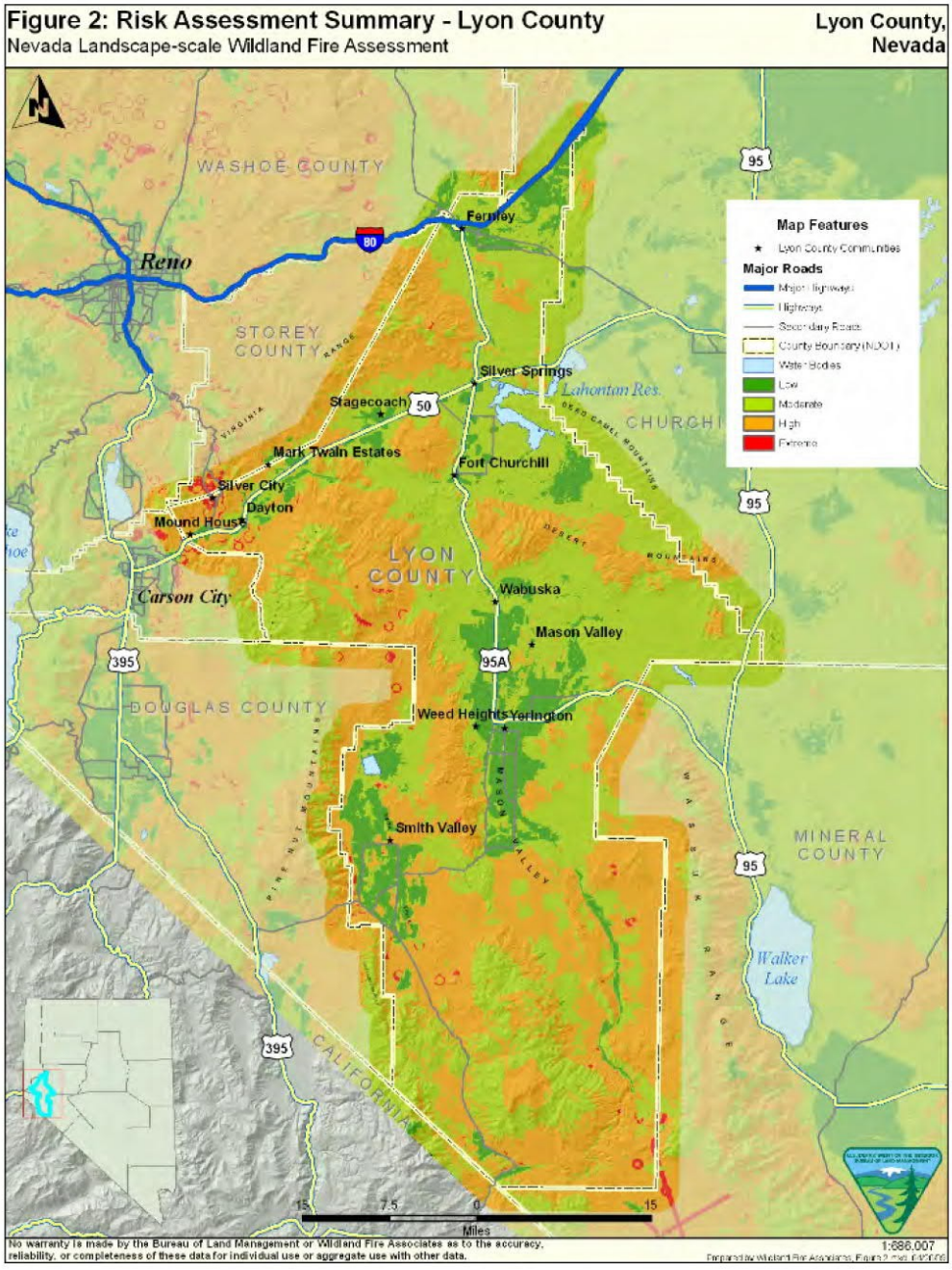
The current fire intervals have changed due numerous factors. But the most significant change has been the occurrence of cheatgrass in the understory of these plant communities. Cheatgrass has decreased the fire interval by increasing the fuel load after good precipitation years. Map 6.4 Shows the 20 year fire history in and adjacent to the district boundary. Fires include both natural and man caused. The map shows that there have been very few fires in the district. The largest fire, in the Bodie Hills was natural caused and burned in a mix of mountain sagebrush and pinyon woodlands.

In 2009 a Landscape-Scale Wildland Fire Risk/Hazard Assessment for Lyon County and Mineral County was prepared for the Nevada Fire Board. Below is a map of the summary findings of the report. This map indicates that rangeland and pinyon-juniper areas have the highest risk of large wildland fires in the counties.

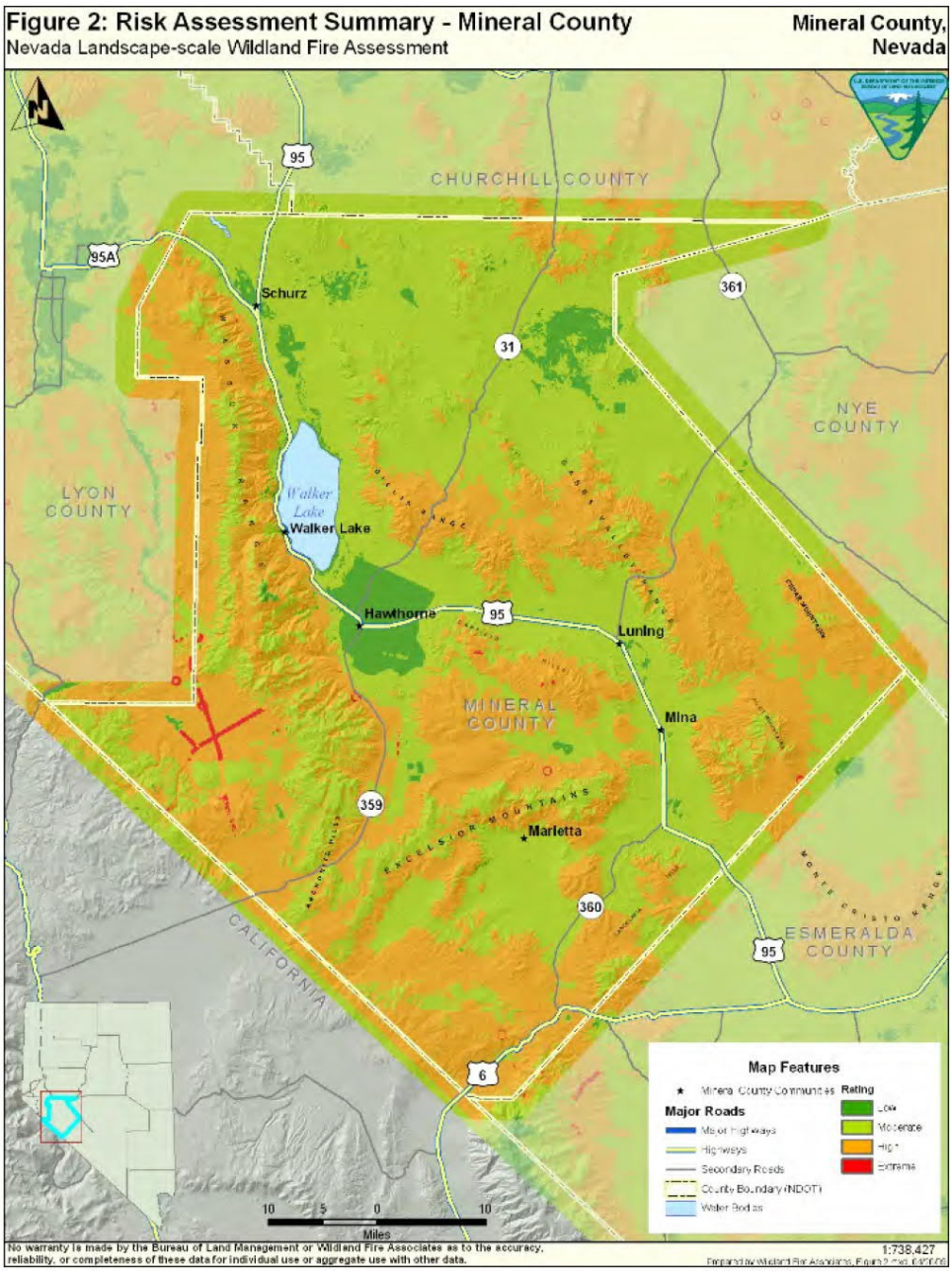
Map 6.4 20 Year Fire History



Map 6.41 Risk Assessment Summary – Lyon County



Map 6.42 Risk Assessment Summary – Mineral County



Resource Concerns Specific to the Conservation District
Wildfires are a concern to residents adjacent to the wildlife interface. Additional concerns are fallow/abandoned farmland that now have a cover of weeds that are fine fuels and private land that have a high amount of brush and fine fuels.

Practices to Solve Resource Concern and Physical Effects
Table 6.4 lists the practices that can be used to solve the resource concern and the effect. Practices listed are the common practices used in the area by NRCS.

Table 6.4 Conservation Physical Effects by Practice

Practice	Degraded Plant Condition - Wildfire Hazard, Excessive Biomass Accumulation
Access Control	3
Brush Management	4
Critical Area Planting	0
Firebreak	5
Fuel Break	5
Herbaceous Weed Control	1
Prescribed Burning	5
Prescribed Grazing	2
Range Planting	0
Tree/Shrub Establishment	0
Tree/Shrub Pruning	3
Woody Residue Treatment	3

5 Substantial Improvement, 4 Moderate To Substantial Improvement, 3 Moderate Improvement, 2 Slight To Moderate Improvement, 1 Slight Improvement, 0 No Effect, -1 Slight Worsening, -2 Slight To Moderate Worsening, -3 Moderate Worsening, -4 Moderate To Substantial Worsening, -5 Substantial Worsening

(Draft)
Proposed Goals and Objective
Reduce wildfire hazards that pose risks to human safety, structures, plants, animals and air resources.

Proposed Actions and Tasks
Treat or remove vegetation that poses a hazard for residential areas.
Reduce fuels on non irrigated farmland by mowing.

Resource Concern – Animals

7.0 Inadequate Habitat for Fish and Wildlife – Habitat Degradation
Habitat is inadequate in quantity, quality or connectivity of food, cover, space, shelter and or water to meet the requirements of identified fish, wildlife or invertebrate species.

Resource Setting
Mason Valley
Mason Valley is a mix of agriculture fields, irrigated pasture and rangeland, the rivers and riparian corridors, upland rangeland and residential areas. Also included in the valley is the Mason Valley Wildlife Management Area (MVWMA) which is approximately 17,000 acres. The MVWMA main goal is wetland wildlife habitat. Hunting and fishing occurs on the management area.

Resource Concern
A concern in the District is the reduction of wildlife habitat associated with farmland. There has been a decrease of vegetation along field borders. With new crops and larger fields much of the vegetation that provided wildlife habitat adjacent to fields has been removed. There has also been a decrease in cottonwood trees along ditches and in fields. In some areas native trees and shrubs have been removed out of the riparian corridor for the purpose of growing irrigated pastures and hayland.

Walker River Paiute Tribal Lands
The tribal lands consist of irrigated alfalfa and pastureland, the Walker River and riparian corridor, Weber Reservoir and upland rangelands. Fishing and hunting occurs on tribal lands.

Resource Concern
The WRPT is working on improving habitat for Bighorn sheep. The main concern with Bighorn sheep habitat is lack of water. Most of the potential sheep habitat has very little year-round water.

Mineral County (Not including WRPT)
Mineral county is mainly rangelands with some pinyon and juniper forest on the upper slopes of the mountains. Mineral county also includes Walker Lake. There is very little irrigated farm land in the county.

Resource Concern
The main concern is lack of suitable habitat in Walker Lake for fish and migrating birds.

Major Animal Species Found in the Mason Valley Conservation District and Resource Concerns

Bi-State Sage Grouse (See Map 7.0)
The Bi-State sage grouse can be found in southern portion of the district. Important habitat areas include the Sweetwater, Pine Grove, Bodie Hills and Mount Grant mountains. Most of the habitat is on US Forest Service and BLM lands with late brooding habitat found on private pasture and haylands. There is an on-going effort to improve habitat for sage-grouse through the Bi-State Local Area Work Group Action Plan.

Lahontan Cutthroat Trout (LTC)
LCT is a federally listed species. It occurred historically in the West and East Walker Rivers to Walker Lake. The West, East and Walker rivers through Mason Valley are not considered suitable habitat. There are several populations in the headwaters of the East and West Walker rivers in California and in Cottonwood Creek in Mineral County.

Mule Deer (See Map 7.01)
The Walker / Mono Interstate Deer Herd is found in parts of the District. The Nevada Department of Wildlife (NDOW) reports that there appears to be a declining population trend based on past fawn to adult ratios. Habitat water is limited in certain parts of this unit group. Future water developments may aid in the establishment of a viable resident deer herd. Pinyon and juniper encroachment is a continuing problem for the Bodie interstate herd. Future management plans have identified potential project areas for the benefit of sage-grouse. These same areas will aid in restoring the brush communities which in turn will benefit the mule deer herd. The Mason Valley Wildlife Management Area has the largest amount of habitat for deer and serves as a sanctuary to the habitat fragmentation that surrounds it in the valley. The highest concentrations of deer exist in and around the Walker River corridor which provides thick stands of willows and buffaloberry creating shelter and escape cover.

Resource Concerns Specific to the Conservation District
Mule deer habitat within Mason Valley consists of alfalfa fields surrounded by salt desert shrub communities. Mule deer can be problem with hay growers where they are grazing in high numbers on the fields. Many of the fences in the District are not constructed to allow safe passage of mule deer. There are problems with deer being hit by vehicles in certain areas.

Desert Bighorn Sheep (See Map 7.02)
Bighorn sheep are found in Mineral County in the Wassuk Range. There is an estimate of 170 animals with a stable population. The higher elevation pinyon woodland zones of the Wassuk Range are limiting bighorn sheep occupation. Areas like Cat Canyon have adequate sheep habitat at the bottom and mid-slope elevations but need prescribed fires to open up habitat for sheep use. Providing a water source in open terrain will reduce predation and possibly allow for increased distribution of the bighorn herd. This herd also have conflict with vehicles along highway 95.

In the Gabbs Valley, Gillis and Pilot mountains there is an estimated 750 animals with a steady growth rate. Habitat lacking in water and NDOW and BLM working on improving available water from springs and guzzlers.

In the Excelsior, Candelaria, Garfield and Miller mountains, there is an estimated 208 animals with good production rates and animals are spreading out and occupy new terrain, especially the recently established herd in the Candelaria Hills and its seasonal use on the adjacent Miller Mountain. There is an on going study on sheep with several introductions into the Garfield Hills.

Along the East Walker River in Lyon County the estimated population is 21 animals with a stable population.

Pronghorn Antelope (See Map 7.03)
In south Lyon and Mineral counties the 2017 fawn ratio indicates a stable population trend. Estimated number is slightly more than 100 animals. In 2013, the Spring Peak Fire (Bodie Hills) burned over 14,000 acres in Nevada and California. The Nevada Department of Wildlife seeded about 1,552 acres within the Spring Peak Fire area. Post-fire observations indicate an abundance of native grasses and forbs as well as crown sprouted bitterbrush. This area is recovering nicely and should provide new areas for the antelope to occupy. Future projects that remove pinyon and juniper will allow for some expansion. Creating corridors between California and Nevada will enable the herd to migrate easier from summer range to winter range.

In Lyon and Douglas counties the population is stable with low fawn ratios in recent years. Population estimated at slightly less than 200 animals. Habitat includes feral horses within the Pine Nut Herd Management Area (HMA) that are increasing and will have a negative effect on the antelope

population. Future water development projects are needed in the Singatse, Buckskin, and Pine Nut Mountain Ranges which would enable the herd to occupy new and varying terrain.

In eastern Mineral county the population has remained stable for the last 4 years. Estimated animals in 2017 is 180. The habitat has been experiencing a prolonged drought period. Many water developments in Hunt Unit 207 went dry in late summer and early fall last year. Normal monsoonal moisture patterns have been absent for the last 2 years. The lack of summer thunderstorms and precipitation during late fall and early winter left the range in less than desirable conditions. Between 2013 and 2015, 7 new water developments were built in the Candalaria Hills, Miller Mountain, Garfield Hills, and Eastside Mine area. These new water holes will be vital to establishing new populations of antelope in a very water-limited resource area. Small subgroups of antelope occupy a large geographic area in and around limited water sources. Interspecific competition exists between horses and antelope. Water developments provide the needed space and availability of resources that many perennial water sources do not provide.

Black Bear (See Map 7.04)
Black bear can be found along the west side of Nevada in the mountains and foothills. It is estimated that there are 300-400 black bears in the Nevada/California boundary.

Other – Wild Horses and Burros (See Map 7.05)
Within the district boundary there are four wild horse Herd Management Areas and one burro Herd Management Area. Current animal numbers are over the Appropriate Management Level (AML) set for each herd.

Resource Concerns Specific to the Conservation District
Wild horses can also be found outside the designated herd areas. Overpopulation of wild horses can affect wildlife habitat and livestock grazing permits.

Threatened and Endangered and Species At Risk
There is one bird that is listed as Endangered and a bird and fish that is listed as Threatened in Lyon and/or Mineral counties. All species are associated with water and riparian areas. See Table 7.

Table 7.0 Species Listed as Threatened or Endangered in the District.

Common Name	***Scientific Name***	**Status**
Willow Flycatcher	*Empidonax traillii extimus*	Listed Endangered
Yellow-billed Cuckoo	*Coccyzus americanus*	Listed Threatened
Lahontan cutthroat trout	*Oncorhynchus clarkii henshawi*	Listed Threatened

Table 7.01 and 7.02 lists At-Risk Species in Lyon and Mineral County from the Nevada Natural Heritage list. The attached Plant and Animal Watch List outlines taxa that could be declining in Nevada or across much of their range and/or are less common than currently thought and, as a result, could become at risk in the future.

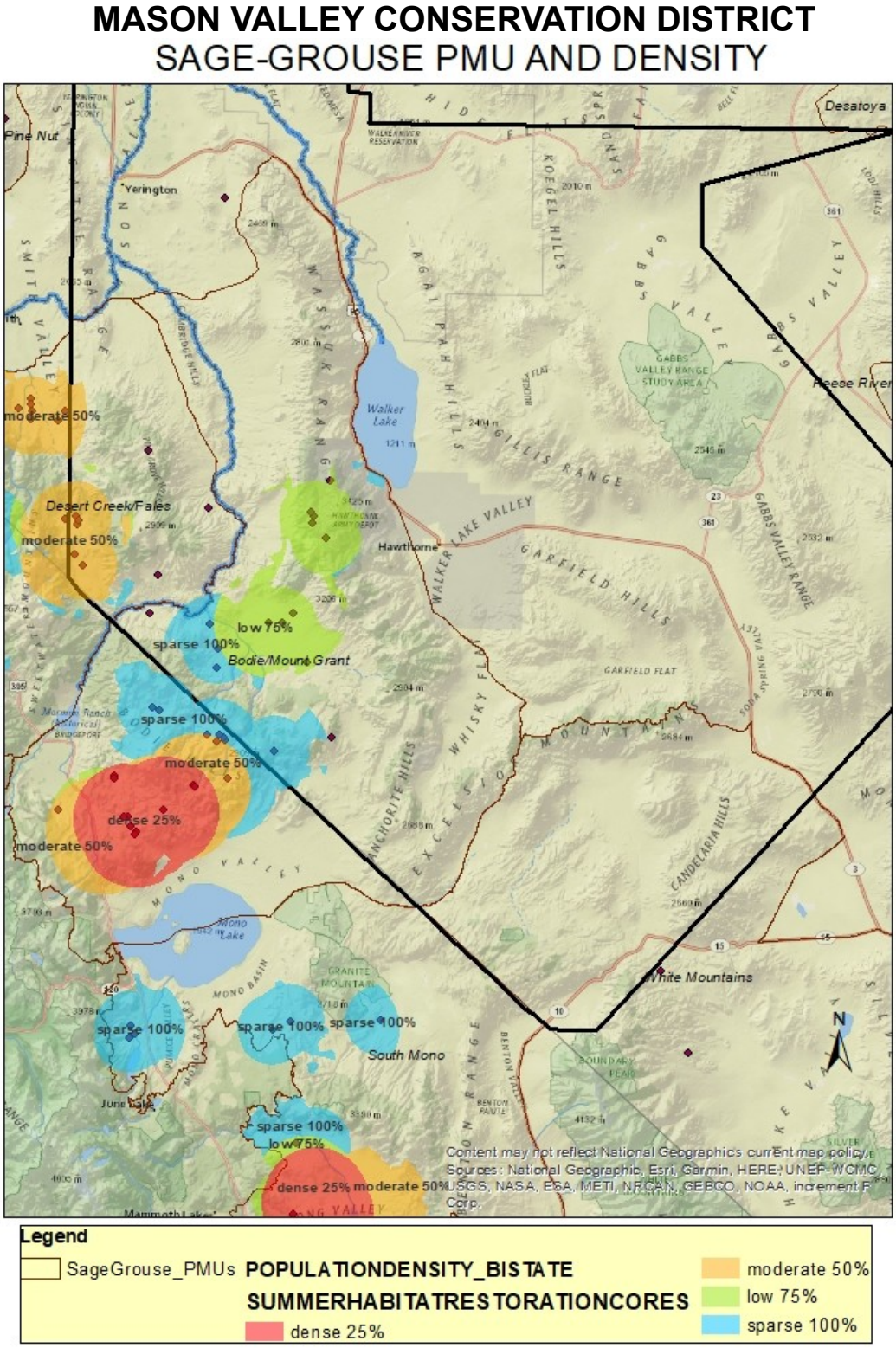
Table 7.01 Species At-Risk in Lyon and Mineral County

Common Name	Scientific	Common Name	Scientific
Mono checkerspot	*Euphydryas editha monoensis*	California Spotted Owl	*Strix occidentalis occidentalis*
Nevada viceroy	*Limenitis archippus lahontani*	pallid bat	*Antrozous pallidus*
Great Basin small blue	*Philotiella speciosa septentrionalis*	pygmy rabbit	*Brachylagus idahoensis*
Nevada alkali skipperling	*Pseudocopaeodes eunus flavus*	Townsend's big-eared bat	*Corynorhinus townsendii*
Apache silverspot butterfly	*Speyeria nokomis apacheana*	desert kangaroo rat	*Dipodomys deserti*
turban pebblesnail	*Fluminicola turbiniformis*	big brown bat	*Eptesicus fuscus*
northern leopard frog	*Lithobates pipiens*	spotted bat	*Euderma maculatum*
Northern Goshawk	*Accipiter gentilis*	silver-haired bat	*Lasionycteris noctivagans*
Tricolored Blackbird	*Agelaius tricolor*	hoary bat	*Lasiurus cinereus*
American Pipit	*Anthus rubescens*	sagebrush vole	*Lemmiscus curtatus*
Golden Eagle	*Aquila chrysaetos*	pale kangaroo mouse	*Microdipodops pallidus*
Short-eared Owl	*Asio flammeus*	California myotis	*Myotis californicus*
Long-eared Owl	*Asio otus*	western small-footed myotis	*Myotis ciliolabrum*
W. Burrowing Owl	*Athene cunicularia hypugaea*	long-eared myotis	*Myotis evotis*
Ferruginous Hawk	*Buteo regalis*	little brown myotis	*Myotis lucifugus*
Swainson's Hawk	*Buteo swainsoni*	fringed myotis	*Myotis thysanodes*
Bi-State Sage-Grouse	*Centrocercus urophasianus*	long-legged myotis	*Myotis volans*
W. Snowy Plover	*Charadrius nivosus nivosus*	Yuma myotis	*Myotis yumanensis*
Black Tern	*Chlidonias niger*	American pika	*Ochotona princeps*
Olive-sided Flycatcher	*Contopus cooperi*	American water shrew	*Sorex palustris*
Peregrine Falcon	*Falco peregrinus*	Inyo shrew	*Sorex tenellus*
Pinyon Jay	*Gymnorhinus cyanocephalus*	Mexican free-tailed bat	*Tadarida brasiliensis*
Bald Eagle	*Haliaeetus leucocephalus*	Douglas's squirrel	*Tamiasciurus douglasii*
Loggerhead Shrike	*Lanius ludovicianus*	kit fox	*Vulpes macrotis*
Lewis's Woodpecker	*Melanerpes lewis*	western pond turtle	*Actinemys marmorata*
Long-billed Curlew	*Numenius americanus*	northern rubber boa	*Charina bottae*
Am White Pelican	*Pelecanus erythrorhynchos*	Great Basin collared lizard	*Crotaphytus bicinctores*
White-faced Ibis	*Plegadis chihi*	Sierra alligator lizard	*Elgaria coerulea palmeri*
Flammulated Owl	*Psiloscops flammeolus*	long-nosed leopard lizard	*Gambelia wislizenii*
Bank Swallow	*Riparia riparia*	desert horned lizard	*Phrynosoma platyrhinos*
Pine Siskin	*Spinus pinus*	Sierra gartersnake	*Thamnophis couchii*
Brewer's Sparrow	*Spizella breweri*	common gartersnake	*Thamnophis sirtalis*

Table 7.02 Species At Risk in Mineral County Only

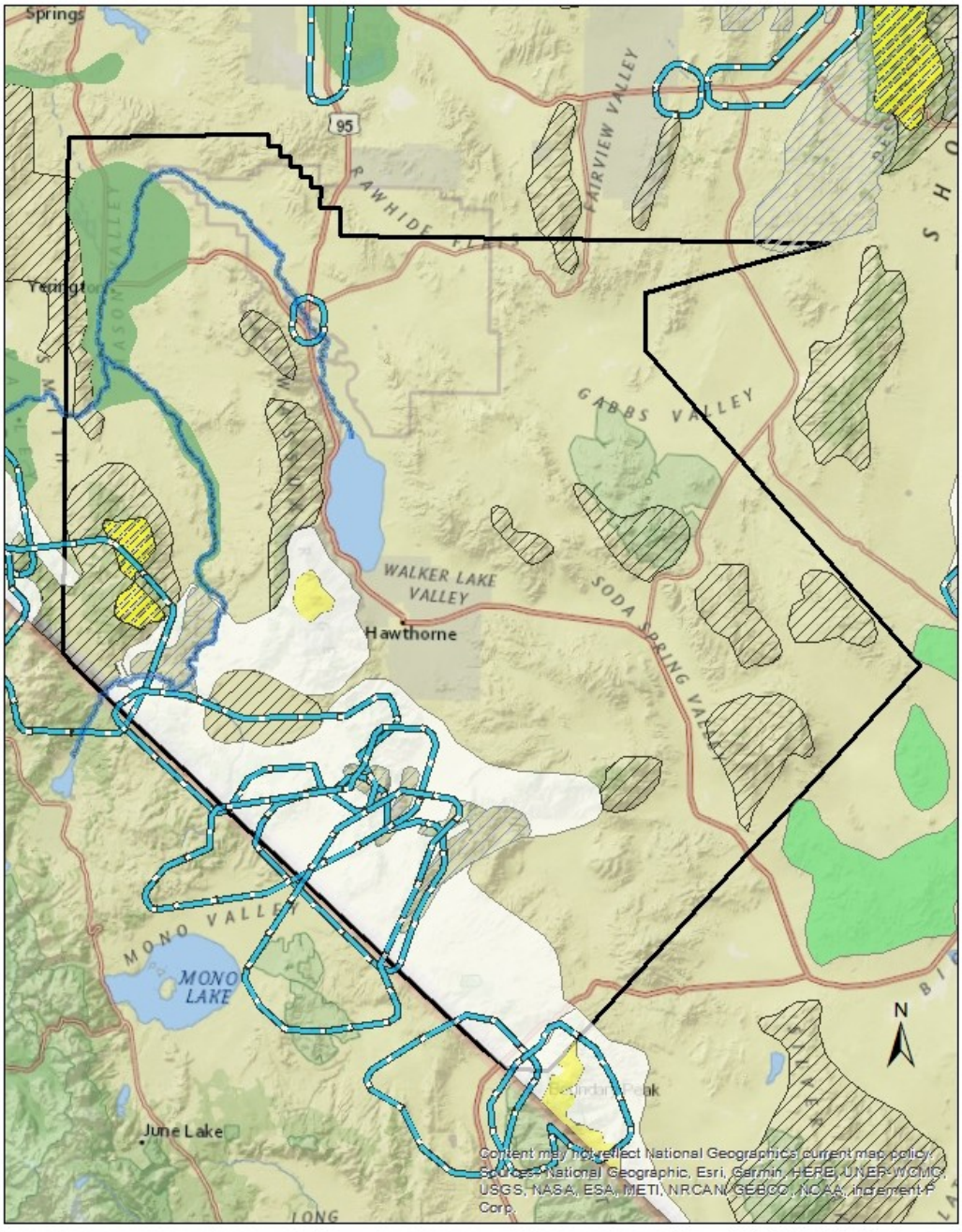
Common Name	Scientific
White Mountains icarioides blue	*Plebejus icarioides albihalos*
White Mountains cloudy wing	*Thorybes mexicana blanca*
Wong's springsnail	*Pyrgulopsis wongi*
Evening Grosbeak	*Coccothraustes vespertinus*
Yellow-billed Cuckoo	*Coccyzus americanus*
Common Loon	*Gavia immer*
Gray-crowned Rosy-Finch	*Leucosticte tephrocotis*
Hiko White River springfish	*Crenichthys baileyi grandis*
Railroad Valley Springfish	*Crenichthys nevadae*
Lahontan cutthroat trout	*Oncorhynchus clarkii henshawi*
Fletcher dark kangaroo mouse	*Microdipodops megacephalus nasutus*
canyon bat	*Parastrellus hesperus*

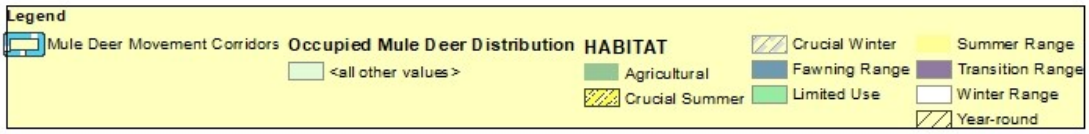
Map 7.0 Bi-State Sage-Grouse Population Management Units (PMU)



Map 7.01 Mule Deer

MASON VALLEY CONSERVATION DISTRICT
MULE DEER

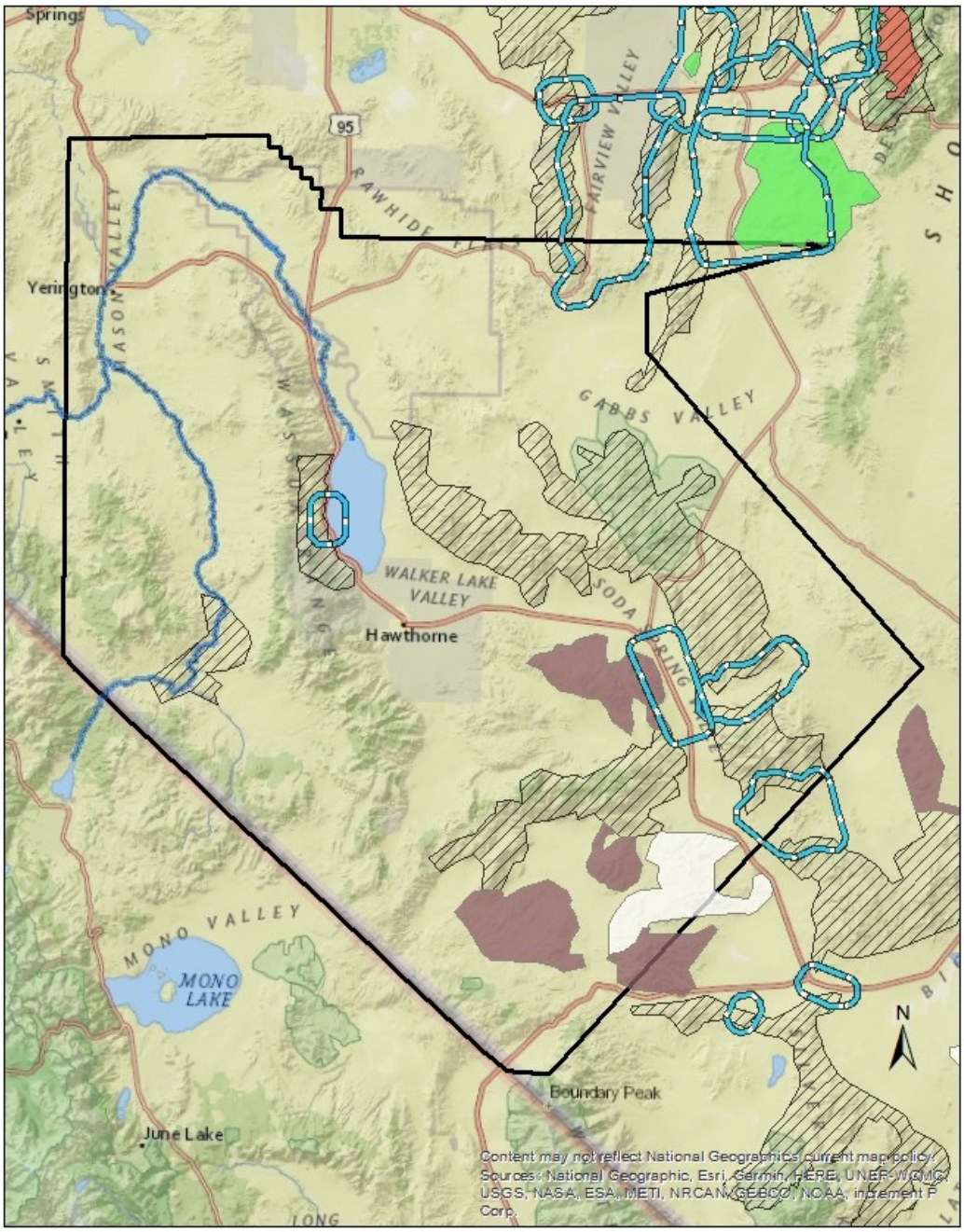




Map 7.02 Desert Bighorn Sheep

MASON VALLEY CONSERVATION DISTRICT

DESERT BIGHORN SHEEP



Legend

Bighorn Sheep Movement Corridors

Occupied Bighorn Sheep Distribution

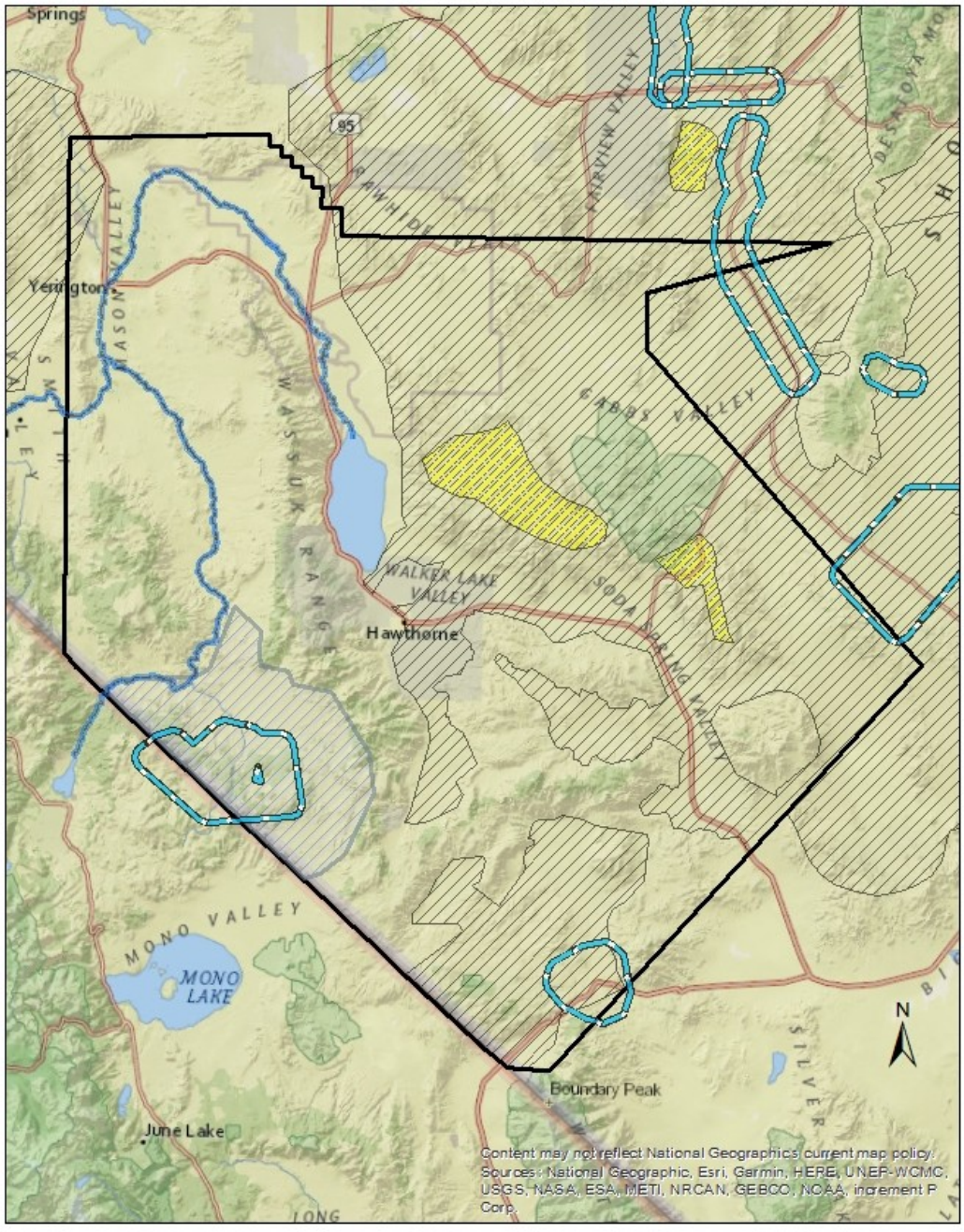
Habitat

- Agricultural
- Crucial Summer
- Crucial Winter
- Lambing
- Limited Use
- Summer Range
- Winter Range
- Year-round

Map 7.03 Pronghorn Antelope

MASON VALLEY CONSERVATION DISTRICT

PRONGHORN



Legend

Pronghorn Movement Corridors

Occupied Pronghorn Distribution

HABITAT

Agricultural

Crucial Summer

Crucial Winter

Crucial Year-round

Limited Use

Summer Range

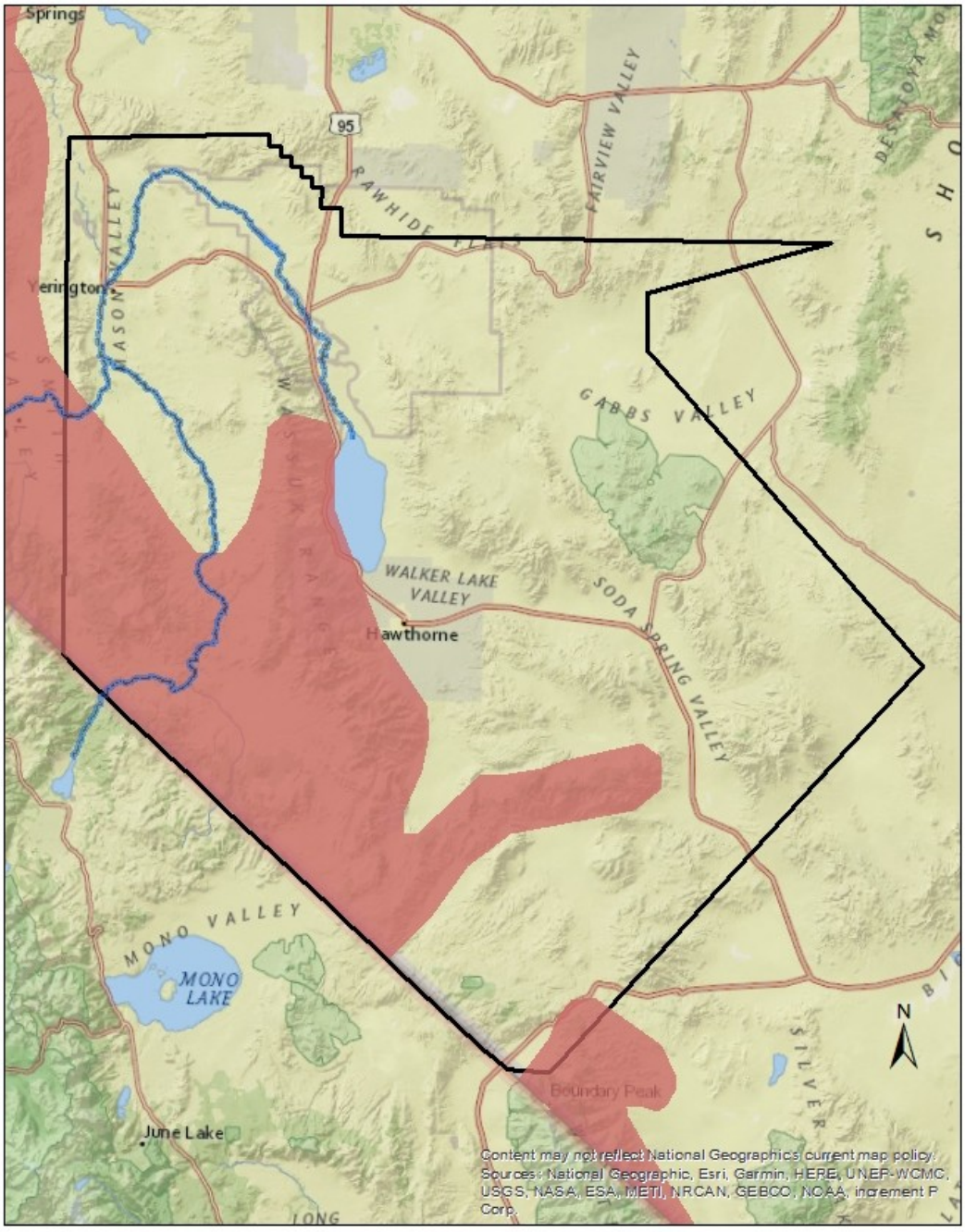
Winter Range

Year-round

Map 7.04 Black Bear

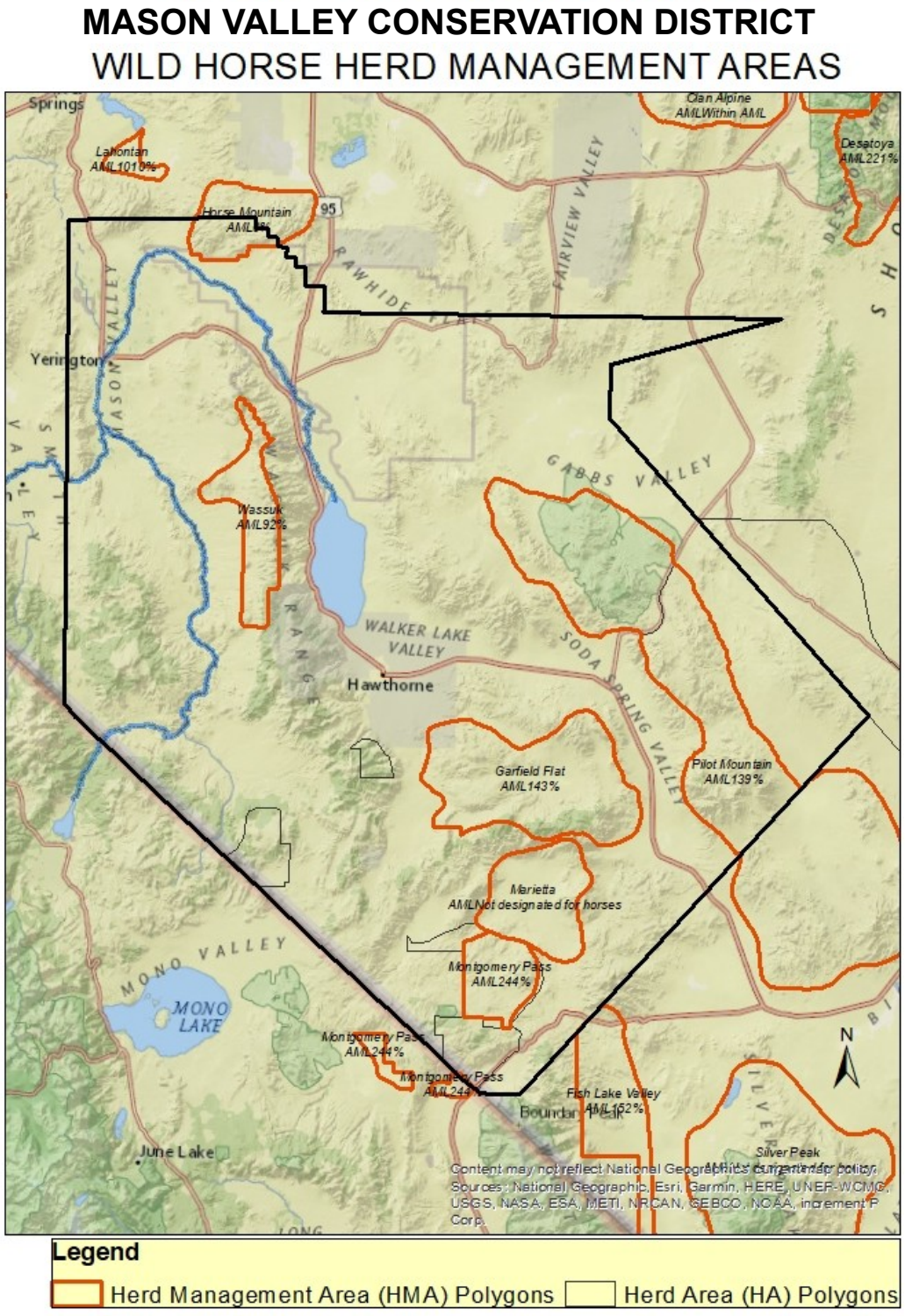
MASON VALLEY CONSERVATION DISTRICT

BLACK BEAR



Legend
Occupied Black Bear Distribution

Map 7.05 Wild Horses and Burros



Practices to Solve Resource Concern and Physical Effects
Table 7.03 lists the practices that can be used to solve the resource concern and the effect. Practices listed are the common practices used in the area by NRCS.

Table 7.03 Conservation Physical Effects by Practice

Practice	Food	Inadequate Cover /Shelter	Water	Habitat Continuity (Space)
Access Control	3	3	1	1
Aquatic Organism Passage	0	2	1	5
Brush Management	2	2	0	1
Cover Crop	2	2	0	2
Critical Area Planting	2	2	0	2
Firebreak	0	0	0	-1
Forage and Biomass Planting	1	1	0	0
Forage Harvest Management	1	1	0	0
Fuel Break	1	-1	0	0
Grade Stabilization Structure	2	2	1	0
Herbaceous Weed Control	2	2	0	1
Integrated Pest Management	2	0	2	0
Pond	2	2	4	2
Prescribed Burning	2	2	0	4
Prescribed Grazing	2	2	0	4
Range Planting	2	2	0	4
Riparian Herbaceous Cover	4	4	2	4
Spring Development	0	0	4	2
Stream Habitat Improvement and Management	2	3	3	4
Streambank and Shoreline Protection	2	2	0	2
Tree/Shrub Establishment	1	3	0	3
Upland Wildlife Habitat Management	5	5	0	5
Water Harvesting Catchment	0	0	4	2
Water Well	0	0	2	0
Watering Facility	0	0	5	3

5 Substantial Improvement, 4 Moderate To Substantial Improvement, 3 Moderate Improvement, 2 Slight To Moderate Improvement, 1 Slight Improvement, 0 No Effect, -1 Slight Worsening, -2 Slight To Moderate Worsening, -3 Moderate Worsening, -4 Moderate To Substantial Worsening, -5 Substantial Worsening

(Draft)
Proposed Goals and Objectives
Maintain or improve habitat for wildlife species in the District.

Proposed Actions and Tasks
Encourage practices that increase habitat for wildlife adjacent to cultivated lands. This could include tree and shrub planting on field borders, river banks and abandoned farmland.
Increase pollinator habitat in Mason Valley by planting flowering plants on field borders and field corners.

Bi-State Sage-grouse - See Bi-State Sage-Grouse Action Plan.
Lahontan Cutthroat Trout – See LCT Recovery Plan
Mule Deer – Work with NDOW on hunting seasons and type of hunt to help reduce problems with mule deer and crops in Mason Valley.
Pronghorn Antelope – Work with NDOW and volunteer groups to install water projects for antelope.
Bighorn Sheep – Work with NDOW and WRPT to install water projects for sheep.
Black Bear – Work with NDOW on bear awareness programs for residents in Mason Valley.
Wild Horses – Support BLM on maintaining wild horses at AML and within the herd management areas.

7.1 Livestock Production Limitation – Feed and Forage

Resource Setting

The main livestock production in the district is cattle and sheep. Based on the 2012 Agricultural Census there was 46,000 head of cattle and 27,000 head of sheep in Lyon County and 2,200 head of cattle in Mineral County.

Many of the ranches in the area utilize federal grazing permits during part of the year and graze private land the other portion. Federal grazing permits include year-round grazing, winter grazing and summer grazing. Forage production is limited to available irrigation on private land, hayland stubble in the winter and annual rainfall/snow on the federal lands. Map 7.1 shows location of federal grazing permits. There are 20 permits on BLM land and 21 permits on National Forest lands within the conservation district boundary. The majority of the permits are cattle grazing in the winter.

On the Walker River Paiute Tribal lands grazing by cattle occurs. Grazing is year-round with cattle being rotated between large pastures and use areas based on forage and water. Some grazing occurs in the winter on hay stubble.

Resource Concerns Specific to the Conservation District

Forage production for grazing is dependent on moisture, either from rainfall on rangelands or irrigation water on pastures. When forage production is low on rangelands, there is a concern with conflict between livestock grazing and wild horse use. Other concerns include lack of forage plants and increase in brush and trees.

On pastureland there could be a concern with improving irrigation efficiency for production. Other concerns include weeds in pastures. On some private rangeland there is a concern with overuse of forages and increase soil erosion from wind.

Practices to Solve Resource Concern and Physical Effects

Table 7.1 lists the practices that can be used to solve the resource concern and the effect. Practices listed are the common practices used in the area by NRCS.

Table 7.1 Conservation Physical Effects by Practice

Practices	Inadequate Feed and Forage
Access Control	3
Brush Management	4
Fence	3
Forage and Biomass Planting	5
Forage Harvest Management	2
Fuel Break	1
Grassed Waterway	1
Grazing Land Mechanical Treatment	1
Herbaceous Weed Control	4
Irrigation Water Management	4
Nutrient Management	4
Prescribed Burning	5
Prescribed Grazing	5

Range Planting	5
Spring Development	2
Stream Crossing	2
Streambank and Shoreline Protection	1
Upland Wildlife Habitat Management	2
Water Well	2
Watering Facility	2

Substantial Improvement, 4 Moderate To Substantial Improvement, 3 Moderate Improvement, 2 Slight To Moderate Improvement, 1 Slight Improvement, 0 No Effect, -1 Slight Worsening, -2 Slight To Moderate Worsening, -3 Moderate Worsening, -4 Moderate To Substantial Worsening, -5 Substantial Worsening

(Draft)
Proposed Goals and Objectives
Proper grazing management on pastures and rangelands.

Proposed Actions and Tasks
Reduce trees on encroached rangelands.
Plant adapted forage species (Forage and Biomass Planting, Range Planting) and implement Prescribed Grazing on private rangelands

7.2 Livestock Production Limitation – Shelter
Livestock lack adequate shelter from climatic conditions to maintain health or production goals. Not a concern in the District.

7.3 Livestock Production Limitation – Water
This resource concern includes quantity, quality and/or distribution of drinking water that is insufficient to maintain health or production goals for the kinds and classes of livestock.

Resource Setting
Grazing permits on federal lands include developed water sources. Water sources include livestock wells, spring developments, livestock pipelines and water haul sites. Livestock also access water found in streams, rivers and ponds. On private land water sources include wells, livestock pipelines, river water and ditch water. On the Walker River Paiute Tribal lands water on the rangeland includes wells, a few springs and the Walker River and Weber Reservoir.

Resource Concerns Specific to the Conservation District
Many livestock water developments found on federal land are in need of repair. Many developments are old and are not functioning adequately. Some water developments need to be retrofitted for wildlife use. Most of the livestock wells on the Walker River Paiute Tribal lands are not functioning.

Practices to Solve Resource Concern and Physical Effects
Table 7.3 lists the practices that can be used to solve the resource concern and the effect. Practices listed are the common practices used in the area by NRCS.

Table 7.3 Conservation Physical Effects by Practice

Practices	Inadequate Water
Irrigation Reservoir	4
Livestock Pipeline	5
Pond	5
Spring Development	5

Stream Crossing	2
Structure for Water Control	1
Water Harvesting Catchment	5
Water Well	5
Watering Facility	5

5 Substantial Improvement, 4 Moderate To Substantial Improvement, 3 Moderate Improvement, 2 Slight To Moderate Improvement, 1 Slight Improvement, 0 No Effect, -1 Slight Worsening, -2 Slight To Moderate Worsening, -3 Moderate Worsening, -4 Moderate To Substantial Worsening, -5 Substantial Worsening

(Draft)

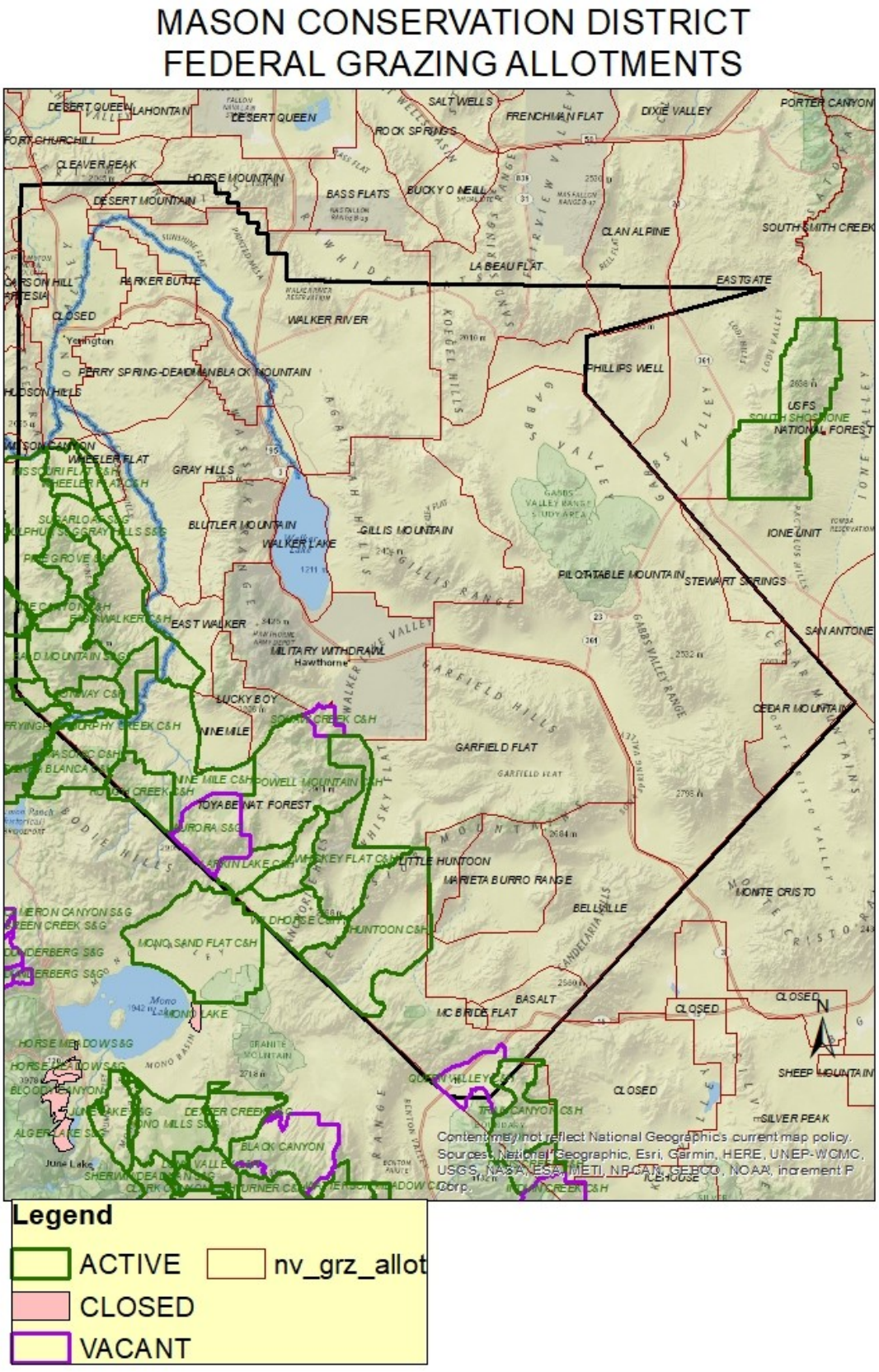
Proposed Goals and Objectives

Improve availability of water for livestock.

Proposed Actions and Tasks

Install practices such as Livestock Pipeline, Spring development, Water Well, and Watering Facility.

Map 7.1 Federal Grazing Permits



8.0 Resource Concern – Energy

8.1 Inefficient Energy Use – Equipment and Facilities

This resource concern is the inefficient use of energy increases costs and dependence on non-renewable energy sources. Not a District resource concern.

8.2 Inefficient Energy Use – Field Operations

This resource concern is the inefficient use of energy increases costs and dependence on non-renewable energy sources. Not a District resource concern.

9.0 Humans: Social and Economic Considerations

Social and Economic Setting

The Mason Valley Conservation District can be divided into three main areas based on difference in resources and geographic location.

Mason Valley

Within the Mason Valley Conservation District the community of residents consists of farmers, ranchers, agriculture labors, retirees, residents that commute to jobs, and a few commercial and professional workers. Many of the farms and ranches are owned and managed by older family members. Several farms in the District have sold either their water-rights or their land and water-rights for the purpose of water transfer to Walker Lake.

There is a state recreational facility along the East Walker River that offers camping, fishing and hiking. Dispersed camping, fishing, hunting, horse riding and off-road vehicle use is popular in the area.

Walker River Paiute Indian Reservation

Residents of the reservation and Schurz area include farmers and ranchers, residents that commute to jobs, government and retirees. Along with growing hay and pasture the other activity is livestock grazing on tribal lands. Some recreation occurs at Weber Reservoir.

Mineral County

The population of Mineral County is low with most of the population found in Hawthorne. The community of residents consists of government, commercial, professional workers and retirees. Activities in the county include livestock grazing on rangelands, off-road use, hunting and mining.

Social and Economic Concerns Specific to the Conservation District

Non agriculture residents lack knowledge/experience with agriculture practices in the District. This may at times lead to conflict over cultural practices and land use.

There is a lack of young farmers and ranchers. There are financial barriers to young people getting into farming and ranching.

There is a concern about irrigation water rights being transferred to Walker Lake and land in Mason Valley becoming fallow.

There is a concern by Tribal members (Yerington Paiute Tribe and Walker River Paiute Tribe) with removal of pinyon trees in traditional pine nut gathering areas.

There is a lack equipment and farmers to harvest crops on the Walker River Paiute Tribe reservation.

There maybe vacant grazing allotment on BLM and US Forest Service lands that could be made available to grazing.

(Draft)

Proposed Actions and Tasks

Provide information/education on agricultural practices for non-agriculture residents.

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Web Sites and Map Data Sources

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State of Nevada. Heritage http://heritage.nv.gov/species_info

State of Nevada. Division of Water Resources http://water.nv.gov/mapping.aspx

USDI. BLM https://www.blm.gov/services/geospatial/GISData

USDI. Fish and Wildlife Service. IpaC (Information for Planning and Consultation). https://ecos.fws.gov/ipac/

USGS https://waterdata.usgs.gov/nv/nwis/rt

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