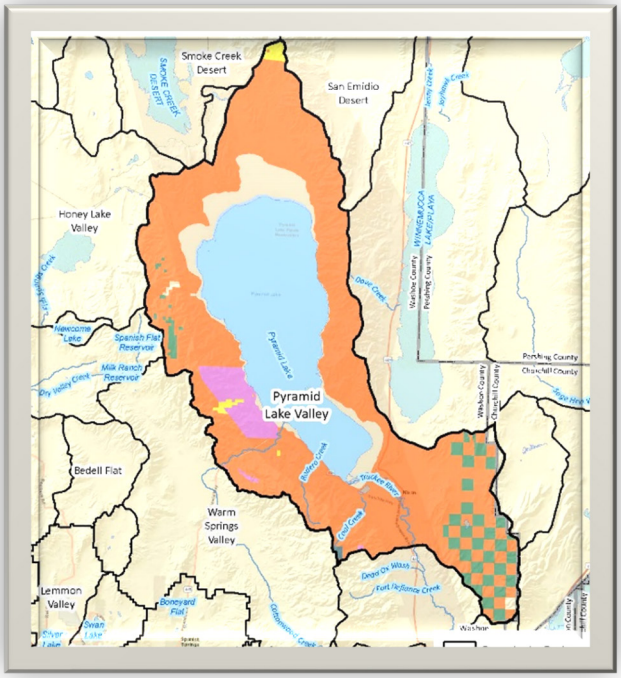
Pyramid Lake Valley

Groundwater Basin #081, Source Water Profile

Click here for the SWPA Map



Contents

Introduction
Summary
Water Quality Standards and Beneficial Uses
Potential and Existing Water Quality Concerns
Strategies to Protect and Improve Water Quality
Stakeholders and Plans
References

Introduction

The Pyramid Lake Valley source water profile is a component of the 2020 Integrated Source Water and 319(h) Watershed Protection Plan for Public Water Systems and the Truckee River in the Truckee Meadows (Plan). This document is a part of the on-line source water mapping tool.

This Source Water Protection Area (SWPA) description is intended to be a guide and resource for organizations working within the basin, and an educational tool for those interested in learning more about the drinking water source in the area where they live. This Plan can be used to support funding for water quality projects in the basin.

Summary

This profile focuses on protecting water quality for the sources of drinking water serving the Pyramid Lake area. This profile includes three public water system wells that are regulated by the Nevada Division of Environmental Protection (NDEP), as well as five other wells that are identified for Pyramid Lake Paiute Tribal communities in the *Well Head Protection Area Delineation and Drinking Source Water Evaluation* (Stetson Engineers Inc., 2001). There are no surface waters used directly to supply public drinking water in this basin. This profile includes potential and existing groundwater quality concerns, types of land uses, management strategies and projects, and the involved stakeholders and their corresponding plans with water quality components.

The Pyramid Lake Valley Basin is a northwest-southeast trending hydrographic area of 670 square miles northeast of Reno. Surface waters include Pyramid Lake in the center of the Pyramid Lake Basin and the Truckee River, which enters at the southeast end. The area is bounded by the Virginia Mountains on the west and the Lake Range on the east. The mountains are composed of granitic, volcanic, and metamorphic rock. A narrow strip of older and younger alluvium, extending from the lake shore to adjacent mountain fronts, surrounds the lake. These deposits of alluvium comprise the aquifer in the valley.

Two public water systems located in Sutcliffe are regulated by NDEP including one well owned by Crosby's Lodge and two wells owned by the Sutcliffe Mobile Home Park. All three wells are within the Hardscrabble Creek-Frontal Pyramid Lake HUC-12. Also within the Pyramid Lake Valley basin, the Pyramid Lake Paiute Tribe has developed well head protection measures for five other wells including two in the Mullen Creek drainage providing water to Sutcliffe, two providing water to the community in Nixon, and one potential future well in the Coal Creek area.

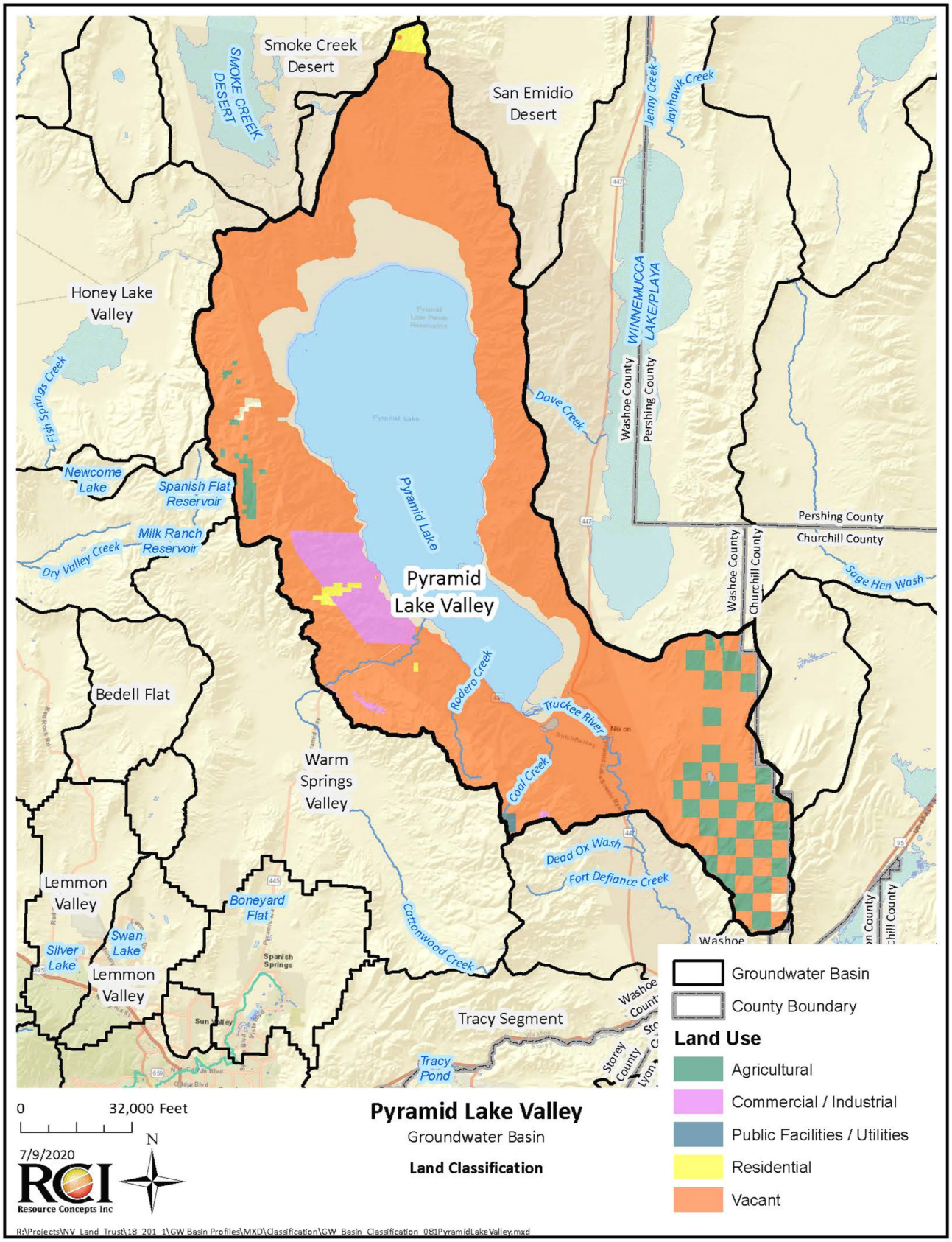
The following table summarizes key aspects of SWPAs and Well Head Protection Areas (WHPAs) in this basin.

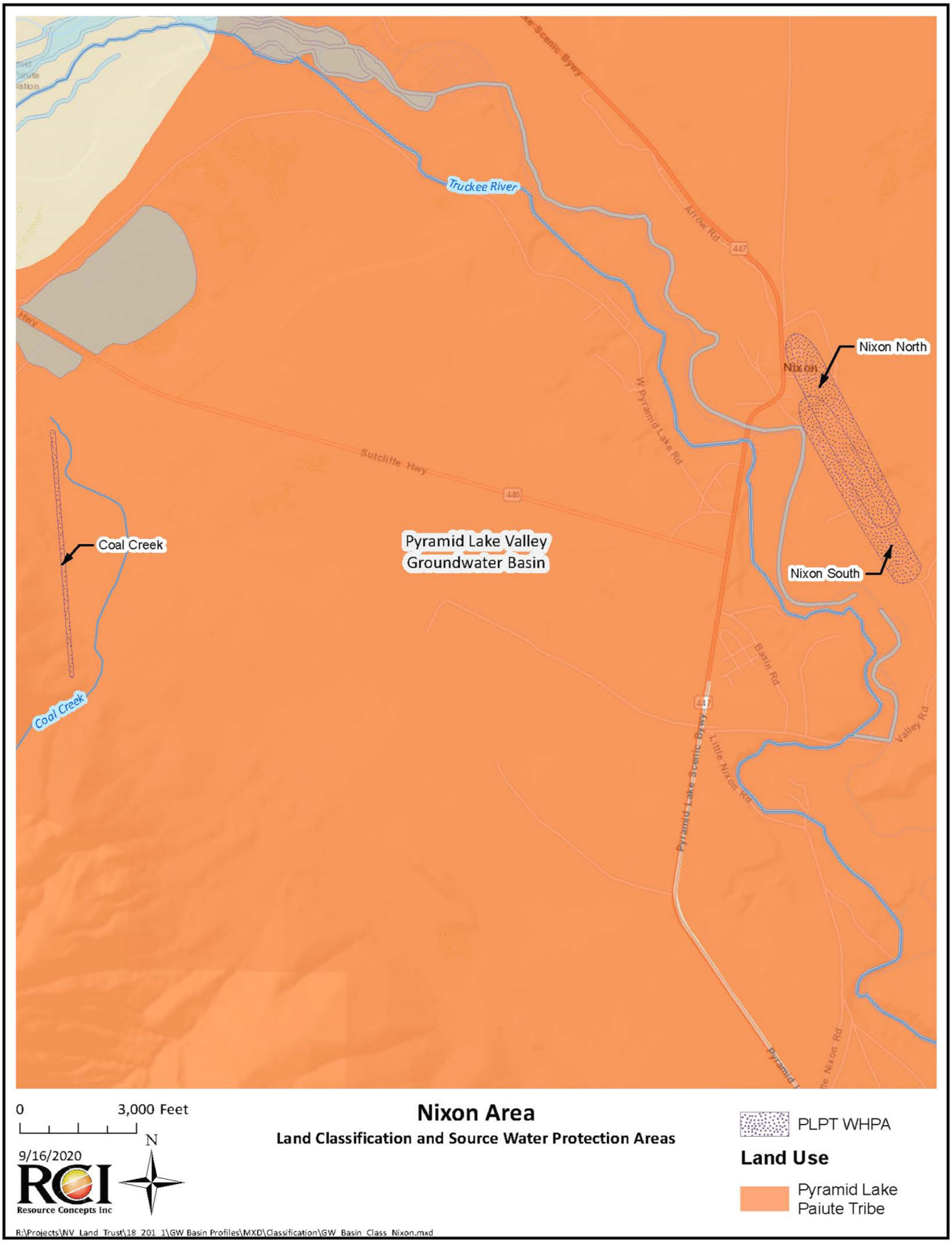
Basin Summary	
Basins	• Groundwater Basins: Pyramid Lake Valley #081 • HUC-12 Watersheds Coal Creek-Truckee River #160501030304 Hardscrabble Creek HUC-12 #160501030600 Lower Mullen Creek HUC-12 #160501030600
Source Water Protection Areas	• A SWPA provides a buffer around public water system wells, and it represents a precautionary indicator to safeguard the drinking water sources. • Three wells, regulated by NDEP, are managed by two individual public water systems that provide drinking water to Crosby's Lodge and the Sutcliffe Mobile Home Park. Together these public water systems provide service to 85 people. • There are five wells identified by the Pyramid Lake Paiute Tribe, two that support Sutcliffe and are included in the Mullen Pass Wellhead Protection Area and three that support Nixon, which are included in the Nixon and Coal Creek Wellhead Protection Areas.
Special Considerations & Issues	• No surface waters are used directly for public water supply. • The Pyramid Lake Paiute Tribe has a Water Quality Control Plan (2015) for surface waters. • All SWPAs and WHPAs are within the Pyramid Lake Paiute Reservation. • The Pyramid Lake Paiute Tribe has developed the *Well Head Protection Area Delineation and Drinking Source Water Evaluation* (Stetson Engineers Inc., 2001) to protect source water for tribal communities. The Pyramid Lake Public Utilities is dedicated to providing clean, safe drinking water for the communities of Sutcliffe, Nixon, and Wadsworth.

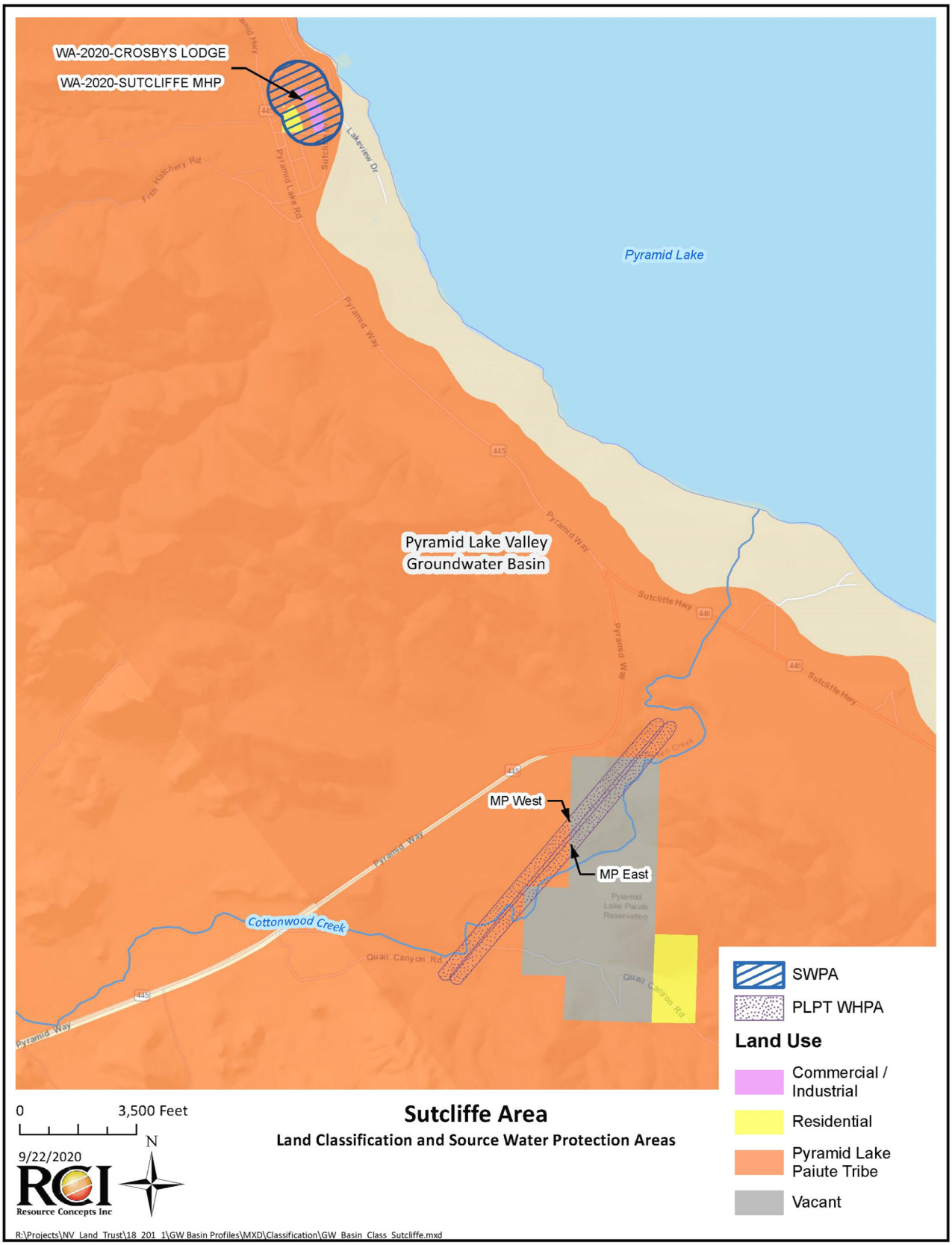
SWPA Acreage	Type	Acres
Land Jurisdiction	Pyramid Lake Paiute Tribe: Washoe County Non- Federal: Water:	354 81 25
Land Use	Pyramid Lake Paiute Tribe: Commercial/Industrial: Residential: Vacant: Water:	354 12 9 60 25

Land uses and jurisdictions in the SWPAs and existing WHPAs are summarized in the adjacent table and illustrated by the Land Classification Figure. Generally, the lands are privately owned or designated as Bureau of Indian Affairs (BIA). The entire SWPA is within the Pyramid Lake Paiute Tribe Reservation.

The SWPAs and WHPAs are in the vicinity of the towns of Sutcliffe and Nixon where commercial/industrial and residential uses occur. Potential water quality concerns include chemical/fuel leaks or spills and septic systems that could lead to nitrate contamination.


Smoke Creek Desert
SMOKE CREEK DESERT
San Emidio Desert
Jenny Creek
Jayhawk Creek
Honey Lake Valley
Fish Springs Creek
WINNEMUCCA LAKE/PLAYA
Washoe County
Pershing County
Dove Creek
Newcome Lake
Spanish Flat Reservoir
Milk Ranch Reservoir
Dry Valley Creek
Pyramid Lake
Pyramid Lake Valley
Pershing County
Churchill County
Washoe County
Churchill County
Sage Hen Wash
Bedell Flat
Rodero Creek
Truckee River
Nixon
Warm Springs Valley
Coal Creek
Dead Ox Wash
Fort Defiance Creek
Lemmon Valley
Boneyard Flat
Cottonwood Creek
Swan Lake
Silver Lake
Spanish Springs
Lemmon Valley
Tracy Segment
Tracy Pond
Washoe
Groundwater Basin
County Boundary
Land Use
Agricultural
Commercial / Industrial
Public Facilities / Utilities
Residential
Vacant
0
32,000 Feet
N
7/9/2020
RCI
Resource Concepts Inc
Pyramid Lake Valley
Groundwater Basin
Land Classification
R:\Projects\NV_Land_Trust\18_201_1\GW Basin Profiles\MXD\Classification\GW_Basin_Classification_081PyramidLakeValley.mxd


Truckee River
Arrow Rd
447
Nixon
Nixon North
W Pyramid Lake Rd
Sutcliffe Hwy
446
Coal Creek
Pyramid Lake Valley
Groundwater Basin
Nixon South
Basin Rd
Valley Rd
Little Nixon Rd
Pyramid Lake Scenic Byway
Coal Creek
0
3,000 Feet
N
9/16/2020
RCI
Resource Concepts Inc
Nixon Area
Land Classification and Source Water Protection Areas
PLPT WHPA
Land Use
Pyramid Lake
Paiute Tribe
R:\Projects\NV_Land_Trust\18_201_1\GW Basin Profiles\MXD\Classification\GW_Basin_Class_Nixon.mxd



Sutcliffe Area

Land Classification and Source Water Protection Areas

Water Quality Standards and Beneficial Uses

Water quality standards for surface water in the state of Nevada are established by Nevada Administrative Code (NAC) NAC 445A.11704 through NAC 445A.2234. The Pyramid Lake Valley is located within the "Truckee River Basin". The Pyramid Lake Paiute Tribe developed a Water Quality Control Plan (2015) designating beneficial uses and water quality standards for the lake and the Truckee River within the reservation boundaries.

Within the Pyramid Lake Paiute Tribe reservation Tribal communities evaluate drinking water quality with respect to compliance with EPA drinking water standards and other water quality criteria (Stetson Engineers, 2001). For groundwater, The State of Nevada's policy is to protect all groundwater against deterioration in quality in order to maintain supplies that are suitable for beneficial use.

Potential and Existing Water Quality Concerns

There are three wells used by two small individual public water systems in Sutcliffe regulated by NDEP in the Pyramid Lake Valley groundwater basin. There are five other public water system wells identified by the Pyramid Lake Paiute Tribe; these include two public wells in Sutcliffe: Mullen Pass East and West, two public wells in Nixon: Nixon North and Nixon South, and the potential future Coal Creek Well for Nixon (Stetson Engineers, 2001). These wells are highly valued because they are isolated water systems providing drinking water to the public in the communities of Sutcliffe and Nixon.

The primary potential and existing water quality concerns in this basin are listed below and described in the following paragraphs:

- Flooding in in 2017 damaged drinking water infrastructure for the community at Sutcliffe.
- In the Sutcliffe SWPA, Crosby's Lodge provides a combination of mixed services including a grocery and gift store, bar and restaurant, motel, and RV camping. The Sutcliffe Mobile Home Park is residential. There are limited commercial and industrial uses surrounding this SWPA, however improper storage or use of chemicals, fertilizers or fuel could have the potential to result in accidental leaks and spills. Areas are served by septic systems have been known to result in nitrate contamination of groundwater.
- The Mullen Pass WHPA includes Mullen Pass East and West wells which are within the Mullen Creek drainage. Activities around these water systems include nearby rangeland, a mining district, and Hwy 445. All mining activity is upgradient from the wells. Potential contaminant sources are accidental spills from the nearby transportation route Highway 445.
- The Nixon WHPA includes Nixon North and Nixon South. Activities around these wells include rangeland, septic systems, a maintenance yard, oil changing area, cemetery, an abandoned Railroad Bed, and an unused Gypsum processing plant. Potential contaminant sources include septic systems, leaks/spills from storage and use of chemicals or fuel.
- The Coal Creek well site is approximately 3.5 miles west of Nixon. The area near the well site and upgradient Coal Creek watershed are relatively undeveloped.

Strategies to Protect and Improve Water Quality

The water quality concerns identified in this basin can be addressed through management strategies. Management strategies discussed in this section have been developed through a variety of efforts:

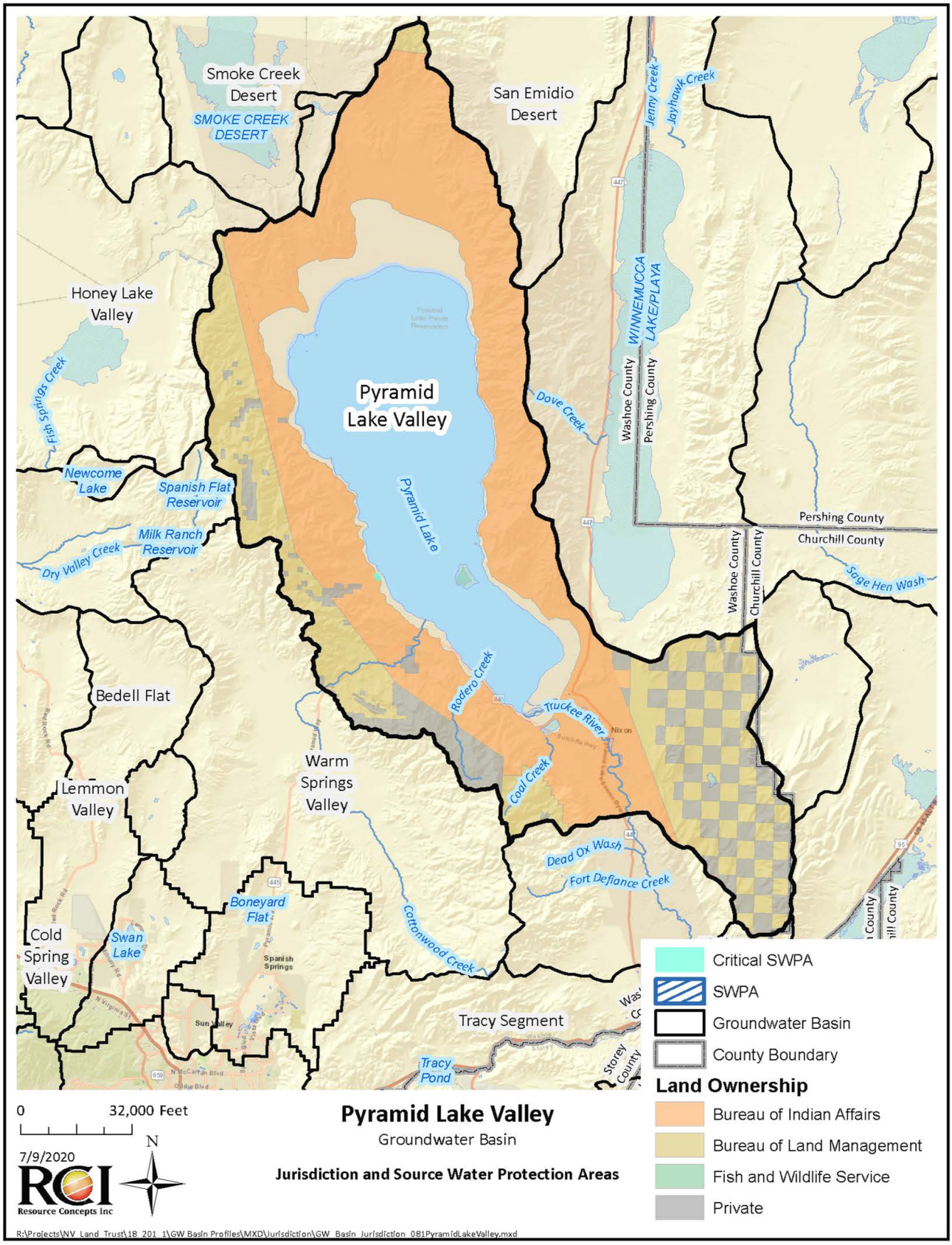
- county-wide source water protection efforts for public water systems,
- the proposed projects detailed in the Project Profiles of the planning effort,
- on-going water quality projects and programs described under Stakeholders and Plans, and
- Well Head Protection Area Delineation and Drinking Water Source Evaluation for the Pyramid Lake Paiute Reservation.

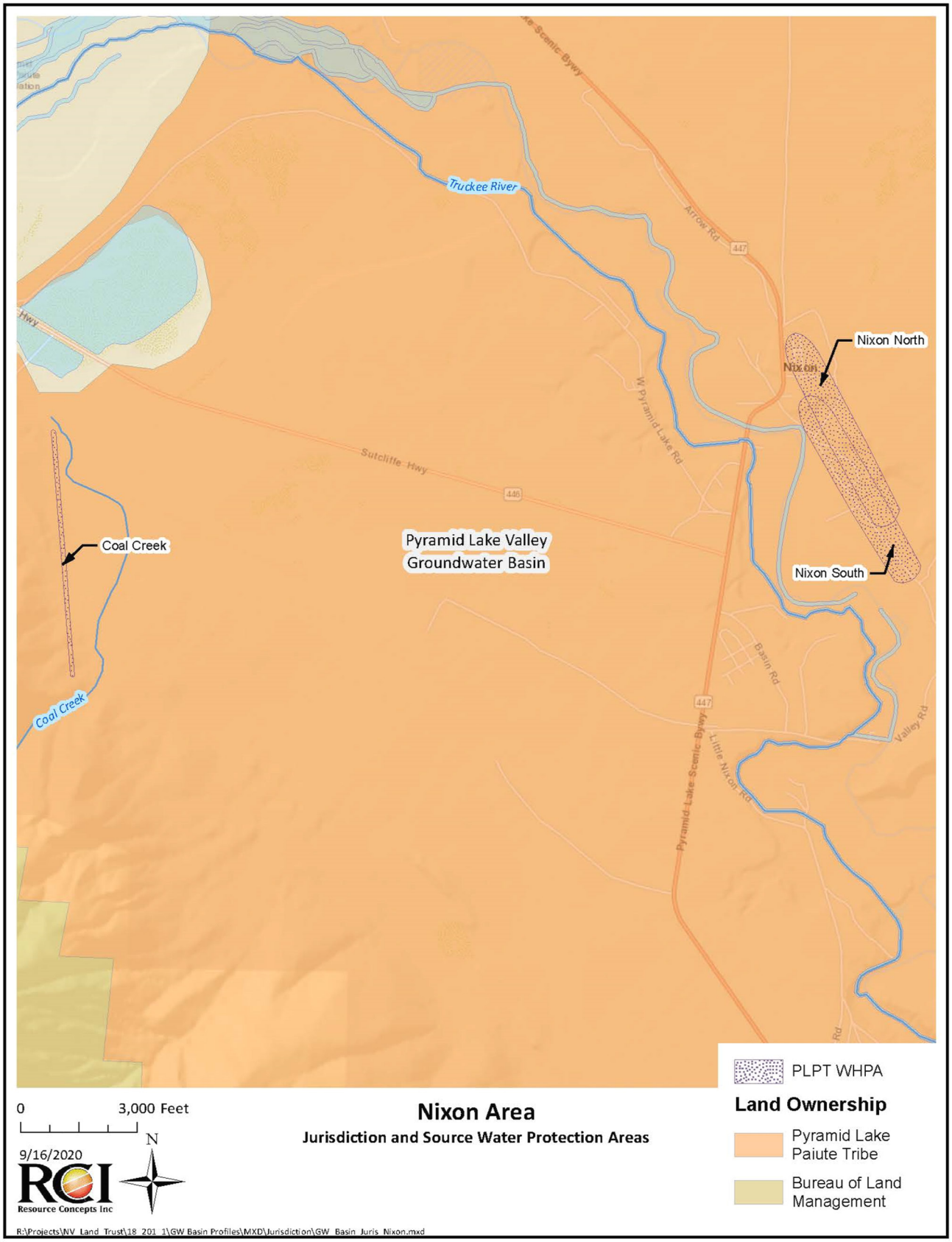
Source Water Protection Area Identification and Management

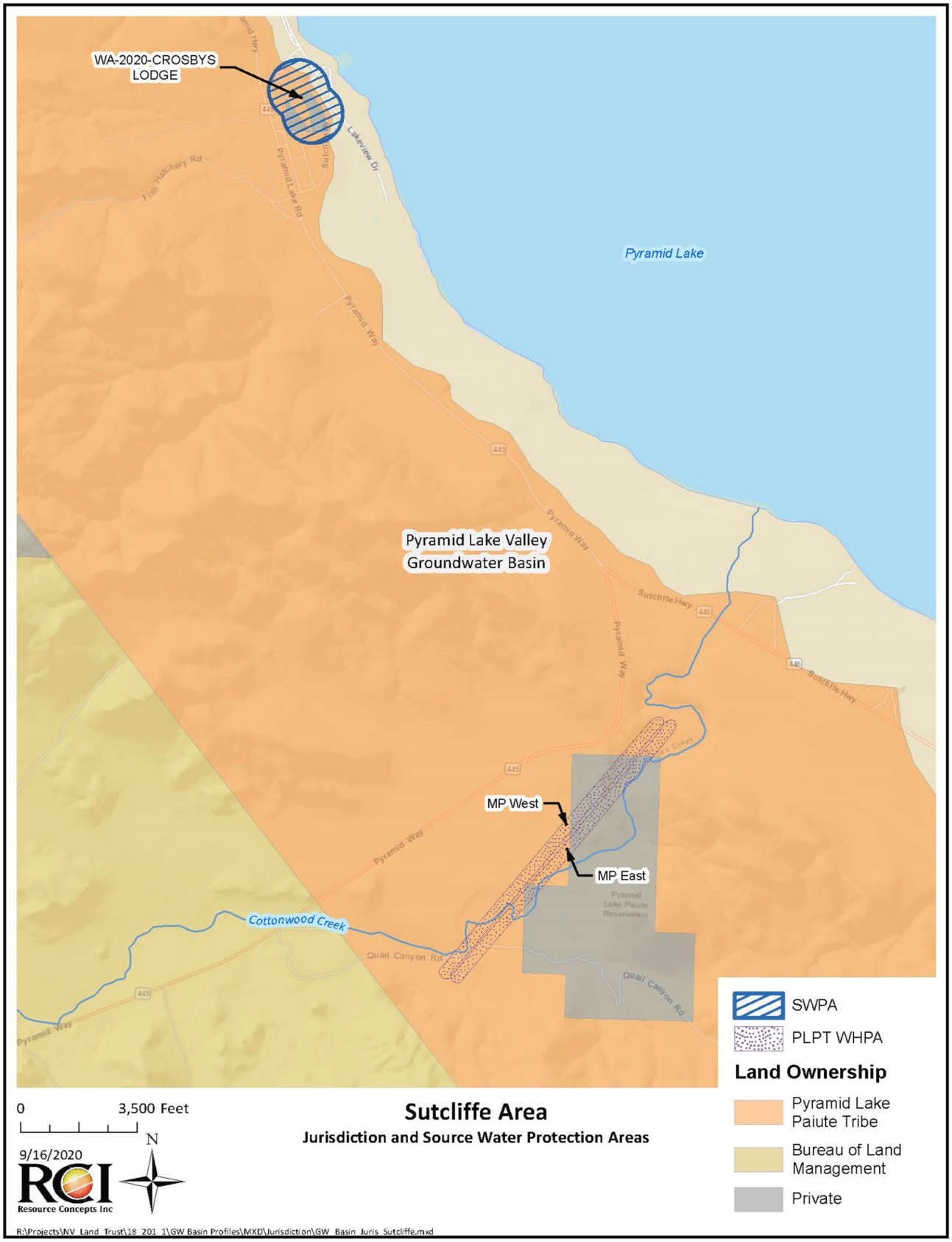
A SWPA is a management area surrounding a surface water or groundwater resource that supplies water for public consumption. A Wellhead Protection Area (WHPA) is specific to the area surrounding a groundwater well. Activities in these buffer areas can affect the quality of water downstream or underground. These management strategies acknowledge the value of these management areas to prevent future contamination of sources of drinking water.

The buffers in this groundwater basin are based on the following groundwater time of travel methods: 20-year calculated fixed radius method for Public Water Supply (PWS) wells regulated by NDEP, and 10-year WHPA Model evaluations for wells identified by the existing 2001 Well Head Protection Plan . These areas are illustrated on the Jurisdiction and Source Water Protection Areas Figure. The following objectives are significant in both future and on-going SWPA management:

- Inform landowners in SWPAs about their proximity to a valuable drinking water source and how they can help protect their water quality.


Smoke Creek Desert
SMOKE CREEK DESERT
San Emidio Desert
Jenny Creek
Jayhawk Creek
Honey Lake Valley
Fish Springs Creek
WINNEMUCCA LAKE/PLAYA
Pyramid Lake Valley
Pyramid Lake
Dove Creek
Washoe County
Pershing County
Newcome Lake
Spanish Flat Reservoir
Milk Ranch Reservoir
Dry Valley Creek
Pershing County
Churchill County
Washoe County
Churchill County
Sage Hen Wash
Bedell Flat
Rodera Creek
Truckee River
Nixon
Warm Springs Valley
Lemmon Valley
Coal Creek
Dead Ox Wash
Fort Defiance Creek
Boneyard Flat
Cottonwood Creek
Cold Spring Valley
Swan Lake
Spanish Springs
Sun Valley
Tracy Segment
Tracy Pond
Storey County
Critical SWPA
SWPA
Groundwater Basin
County Boundary
Land Ownership
Bureau of Indian Affairs
Bureau of Land Management
Fish and Wildlife Service
Private
0
32,000 Feet
N
7/9/2020
RCI
Resource Concepts Inc
Pyramid Lake Valley
Groundwater Basin
Jurisdiction and Source Water Protection Areas
R:\Projects\NV_Land_Trust\18_201_1\GW Basin Profiles\MXD\Jurisdiction\GW_Basin_Jurisdiction_081PyramidLakeValley.mxd


Truckee River
Arrow Rd
447
Nixon North
Nixon
W Pyramid Lake Rd
Sutcliffe Hwy
446
Coal Creek
Pyramid Lake Valley
Groundwater Basin
Nixon South
Basin Rd
Valley Rd
Coal Creek
447
Pyramid Lake Scenic Byway
Little Nixon Rd
PLPT WHPA
Land Ownership
Pyramid Lake Paiute Tribe
Bureau of Land Management
0
3,000 Feet
N
9/16/2020
RCI
Resource Concepts Inc
Nixon Area
Jurisdiction and Source Water Protection Areas
R:\Projects\NV_Land_Trust\18_201_1\GW Basin Profiles\MXD\Jurisdiction\GW_Basin_Juris_Nixon.mxd



Sutcliffe Area

Jurisdiction and Source Water Protection Areas

- Encourage coordination between Public Water Systems, landowners, land managers, and local planners to consider the importance of SWPAs in project reviews.
- Explore collaborative funding for water quality improvements and support the resource investigations needed to develop viable projects.
- Prioritize physical improvements in SWPAs to protect and improve source water quality.

Education and Outreach

The following education and outreach objectives are intended to help effectuate positive actions to protect water quality:

- Increase knowledge about household and commercial chemical use, storage, and disposal through local outreach efforts.
- Inform landowners within SWPAs about the importance of avoiding contamination and their proximity to a valuable drinking water source. Display Well Head Protection Program (WHPP) information in public locations on the Reservation (Stetson Engineers, 2001).

Interagency Communication

The following interagency communication objectives are important tools to both reinvigorate and invest additional resources in water quality, as well as utilize existing resources and programs:

- Each agency may evaluate how to improve lines of communication within and between jurisdictions regarding water
- quality issues; i.e. Washoe County, NDEP, Washoe County Health District, Pyramid Lake Paiute Tribe, BIA, BLM, and private landowners.
- Evaluate how to collaborate with Tribal council members and members of the Utility Board (Stetson Engineers, 2001).
- Utility personnel will ensure automotive fluids from auto salvage yards are contained (Stetson Engineers, 2001).

Resource Investigation and Planning

Stakeholders may consider supporting the following resource investigations and planning, which can help fill data gaps, inform implementation designs, and prioritize projects:

- Research to identify non-point pollutant sources of pollution and watershed management planning strategies for water quality improvement in the Truckee River between the Truckee Meadows and Pyramid Lake.
- Consider expanding groundwater quality monitoring.
- Research how to identify private wells that present a groundwater contamination risk, and that might need to be repaired or abandoned.
- Explore and engage funding sources available for the two public water systems to expand monitoring, implement improvements, and develop contingency plans.
- Inventory and register underground storage tanks that require testing and monitoring (Stetson Engineers, 2001).

Water Quality Best Management Practices

Stakeholders may consider supporting the following Water Quality Best Management Practices, or BMPs, that may improve and prevent degradation to water quality resources:

- Water quality improvement projects.
- Proper abandonment of wells.
- Physical improvements prioritized in SWPAs for water quality improvement and protection.

Proposed Implementation Projects

Proposed implementation actions are generally described under the Strategies to Protect and Improve Water Quality. Specific implementation actions have been developed into proposed projects by local stakeholders and are described in Project Profiles. These Project Profiles include the information needed, as identified in the Environmental Protection Agency (EPA) guidance for nine critical elements for an endorsable watershed management plan or the Nevada Integrated Source Water Protection Program. Future projects could also be brought forward to funding agencies through:

- Demonstrating advancement of the strategies identified for this watershed in the Source Water and Watershed Protection Plan.
- Using the Project Profile format to establish consistency with the nine critical elements of an EPA endorsed plan.

As discussed in the following Stakeholders and Plans section, municipality and agency projects are also incorporated by reference.

Stakeholders and Plans

Stakeholder information and existing plans were used extensively in development of this Plan for Washoe County. These municipalities and agencies each have unique strategies and capital improvement plans that include water quality protection or improvement projects. These are updated regularly at differing timeframes (i.e. annually, every five years, etc.) according to their specific budgeting and planning processes. The applicable planning documents are briefly described and referenced in this section. Those projects pertaining to water quality protection and improvement are incorporated by reference.

Project Stakeholders	
• Bureau of Land Management • Nevada Division of Environmental Protection • Pyramid Lake Paiute Tribe	• Washoe County • Washoe County Health District • Western Regional Water Commission

Bureau of Land Management

The Nevada BLM has Resource Advisory Councils (RACs) which allow community members to be involved in natural resource planning and management issues on BLM managed public land. Washoe County is a part of the Sierra Front-Northwestern Great Basin RAC which is administered through the BLM-Carson City and Winnemucca District offices. BLM Resource Advisory Councils-Nevada

The BLM also has specific Resource Management Plans, or RMPs, that apply to this basin. These plans generally outline the way that the BLM currently manages and intends to manage the multiple resources on public land. Within this basin, the following plans and sections are applicable:

- Carson City Consolidated Resource Management Plan (2001):

  RIP-1: Riparian Management discusses how riparian areas on BLM land should be managed, monitored, and maintained. The desired outcome in this section is to protect and maintain existing and potential fisheries and riparian areas in good or better condition.

  SWA-1: Soils, Watershed and Air Quality describes specific techniques and goals for all watersheds within the planning area, such as reducing soil loss, flood damage, and sediment damage from human activities.

  WAT-1: Water Resources discusses management for good water quality on public lands, such as watershed management plans as an important administrative action.

- Carson City Fire Management Plan (2016):

  The Fire Management Plan (FMP) goal is to restore sagebrush ecosystems throughout the planning area. In doing so, the risk of wildfire and its negative effects should eventually decrease. Since wildfire is an issue in this basin, management to reduce its risk is a key planning component.

Nevada Division of Environmental Protection

The NDEP has a goal to preserve and enhance the environment of the State to protect public health, sustain healthy ecosystems, and contribute to a vibrant economy. Specifically, the Integrated Source Water Protection Program under the Safe Drinking Water Bureau works to help protect source water quality. This program offers technical assistance for source water protection projects. The program coordinates source water protection activities at the local, state, and federal levels, and encourages community-based protection and preventive management strategies to ensure all public drinking water resources are kept safe from future contamination. The 2010 Nevada Integrated Source Water Protection Program guidance document details the program components as well as the requirements for a State-endorsed Community Source Water Protection Plan.

Pyramid Lake Paiute Tribe

The Pyramid Lake Paiute Tribe is governed by ten Tribal Council members who are elected bi-annually in December and on staggered two-year terms. The Tribe operates under the Indian Reorganization Act Constitution and By-Laws approved on January 26, 1936 by the Department of Interior. The Pyramid Lake Paiute Tribe has a Government to Government Relationship with the Federal Government. Therefore, the Tribe contracts with or receives grants directly from federal agencies or the State of Nevada, to provide services to the Tribal members and residents of the Reservation. The revenue generated by the Tribe is used to support local Tribal government activities and to supplement the programs that provide direct services to the Tribal members or residents. Pyramid Lake Paiute Tribe Website

The Public Utilities District (PUD) includes the Solid Waste Program and the Water & Sewer Program. The Pyramid Lake Public Utilities is dedicated to providing clean, safe drinking water for the communities of Sutcliffe, Nixon, and Wadsworth. Pyramid Lake Paiute Tribe Website

Washoe County Health District

The Washoe County Health District has regulatory authority over a wide variety of programs and services in the Truckee Meadows including underground storage tanks, septic systems, all public water systems, domestic wells, water projects and community development, grading permits, solid waste management, and emergency preparedness. The Health District regulations are provided in several documents as listed below:

- Regulations of the Washoe County District Board of Health Governing Sewage, Wastewater and Sanitation. These regulations provide the minimum requirements to be followed by any person developing property served by an on-site sewage disposal system. These requirements are promulgated to prevent the spread of disease, protect the water quality of this County, and ensure the on-site sewage disposal systems function properly.
- Regulations of the Washoe County District Board of Health Governing Well Construction. These regulations provide minimum requirements to be followed by any person when drilling and plugging specific kinds of wells. A well construction permit is required to drill a well for consumptive use or monitoring wells. These requirements are primarily promulgated to protect the quantity and quality of the waters of this County from waste and contamination, and to provide public protection by enforcing proper construction and plugging of wells.
- Regulations of the Washoe County District Board of Health Governing Solid Waste Management. These regulations protect water quality through the regulation of municipal solid waste landfills.

Washoe County

The Washoe County Master Plan (2008) has Goals and Policies for Public Services and Facilities, and Open Space and Natural Resource Management. Applicable sections include:

- Article 418, Significant Hydrologic Resources, which regulates development activity within and adjacent to perennial streams to ensure that these resources are protected and enhanced. (Note: this does not apply to the Truckee River).
- Article 420, Storm Drainage Standards, which sets forth standards for ensuring that both private and public development provides adequate protection for citizens and property. Therefore, it minimizes and controls erosion and pollution impacts on the natural environment, and additionally, minimizes maintenance costs for drainage and flood control systems.
- Article 421, the Storm Water Discharge Program, which protects and enhances the water quality of watercourses, water bodies, groundwater, and wetlands in a manner pursuant to and consistent with the Clean Water Act.
- Article 810, Special Use Permits, which provides a method of reviewing certain uses to determine if they have the potential to adversely affect public facilities in the vicinity.

Washoe County also provides comprehensive services for construction and maintenance roads, landscaping, and drainage facilities, county-wide planning and code compliance, and emergency response services for fire and hazardous materials. All of these roles contribute to preserving and improving water quality.

References

NDEP BWQP, Nevada Division of Environmental Protection, 2016-2018. Nevada 2016-2018 Water Quality Integrated Report

NDEP, Nevada Integrated Source Water Protection Program, 2010. Nevada Integrated Source Water Protection Program

Pyramid Lake Paiute Tribe, 2015. Pyramid Lake Paiute Tribe Water Quality Control Plan

Pyramid Lake Paiute Tribe, 2020. Pyramid Lake Paiute Tribe Website

Stetson Engineers Inc., Well Head Protection Area Delineation and Drinking Water Source Evaluation. Pyramid Lake Paiute Indian Reservation. 2001.

Washoe County Master Plan, 2008. Washoe County 2008 Master Plan, Washoe County Health District

WRWC, Western Regional Water Commission, Comprehensive Regional Water Management Plan 2016-2035 Update, 2017. WRWC Comprehensive Regional Water Management Plan 2016-2035