

Smoke Creek Desert

Groundwater Basin #021, Source Water Profile

[Click here for the SWPA Map](#)



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Introduction

The Smoke Creek 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 Gerlach community. There are no surface waters used directly by water systems in this basin. This profile includes potential and existing water quality concerns, types of land uses, management strategies and projects, and the involved stakeholders and their corresponding plans with water quality components.

The Smoke Creek Desert basin is a northeast trending hydrographic area of 980 square miles, and bounded by unnamed hills to the west, the Fox Range to the east and the Granite Range to the north. The mountains on the east and west sides of the area are composed mostly of volcanic rocks and are granitic rocks of the Granite Range to the northeast. Lowlands of the area are underlain by playa deposits and alluvial fans along basin margins. Water sources are located along the contact between alluvial fan deposits and granitic rocks of the Granite Range, probably along the range-front fault. Water discharging at the springs originates as high-altitude recharge in the Granite Range. The water moves westward through fractured granitic rocks along a gradient that probably is similar to the slope of land surface.

The only sources of public water supply in the Smoke Creek Desert are two springs in the Granite Range. Each spring is located within a HUC-12 Watershed which flows from the west side of the Granite Range: the Dry Creek-Frontal Smoke Creek Desert and the Lower Squaw Creek HUC-12. The springs are operated by one public water system, the Gerlach General Improvement District (GID). The land at both spring collection areas is owned by the Gerlach GID. The SWPAs include a mix of parcels owned by three

entities: the Gerlach GID, a private owner, and the Bureau of Land Management (BLM). SWPAs were developed county-wide by stakeholders to help protect drinking water sources. There are no municipal supply wells in this basin. The two springs in the northeast corner of the basin are the only sources of drinking water.

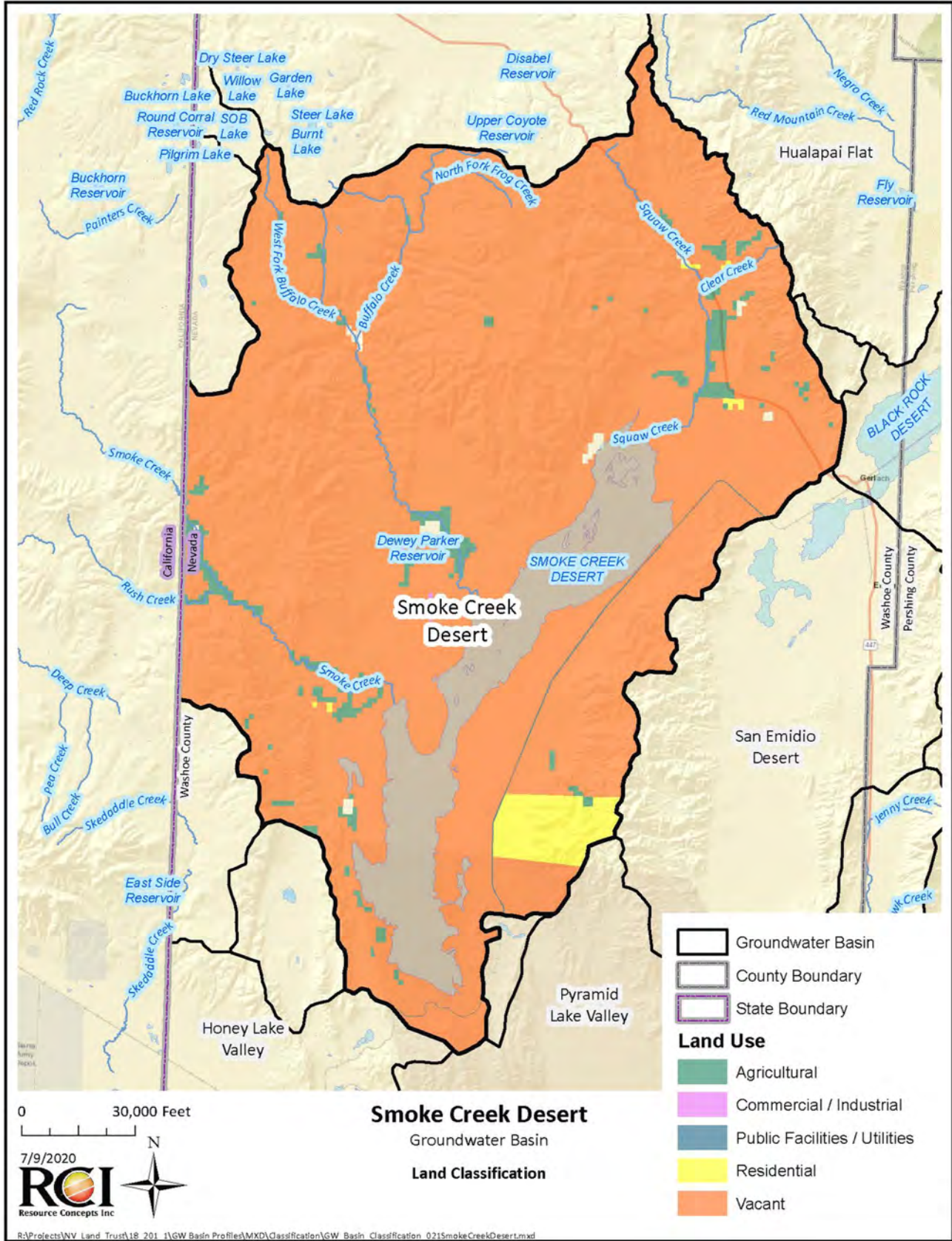
The following table summarizes key water quality aspects of this basin.

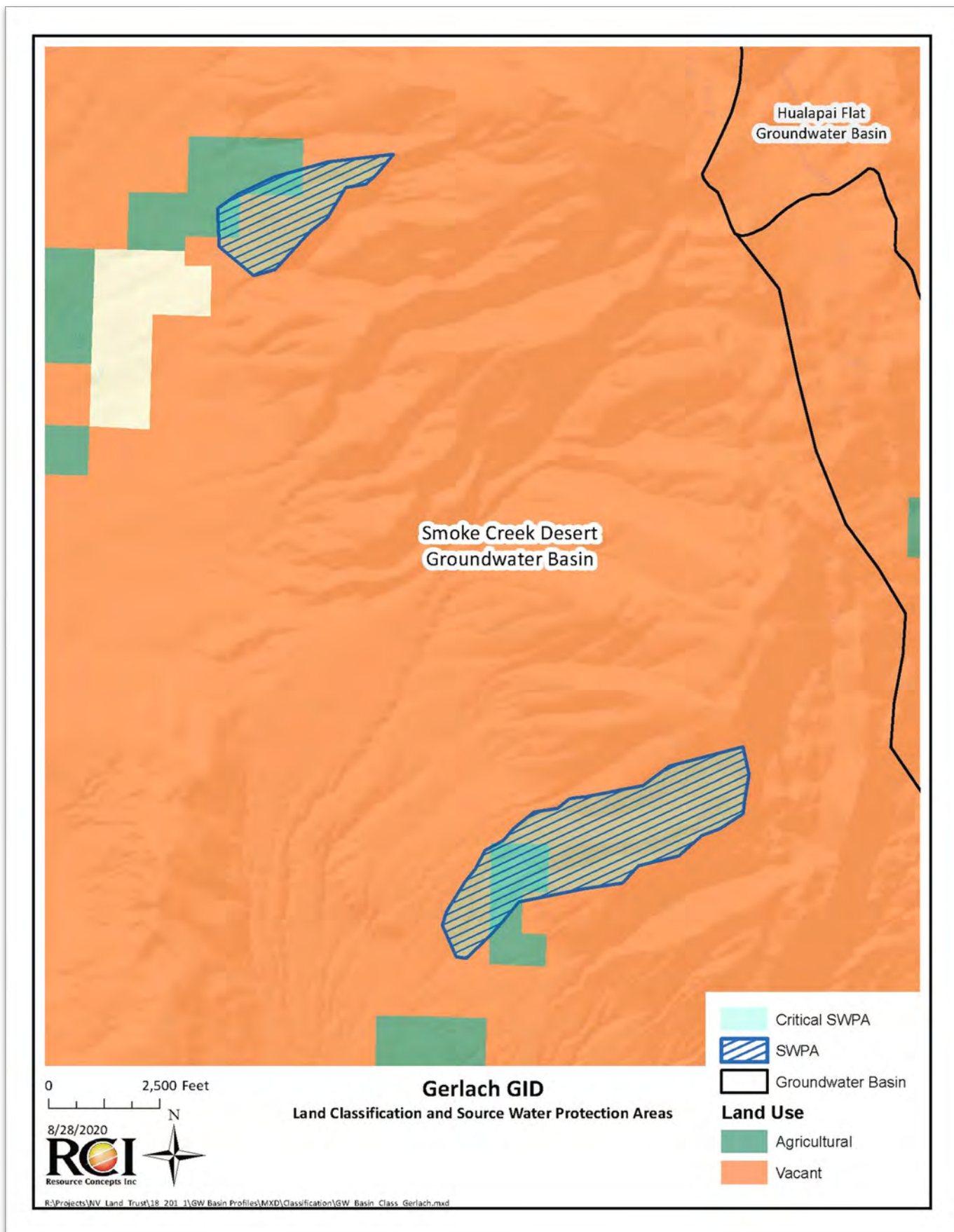
Basin Summary	
Basins	<ul style="list-style-type: none"> • Groundwater Basins: Smoke Creek Desert #021 • HUC-12 Watershed: Dry Creek-Frontal Smoke Creek Desert #160402030603 Lower Squaw Creek #160402030704
Source Water Protection Areas	<ul style="list-style-type: none"> • A SWPA provides a buffer around natural springs, and it represents a precautionary indicator to safeguard the drinking water sources. • Two springs are managed by one public water system that provides drinking water to the town of Gerlach. The Gerlach GID serves 180 people. • 403 acres make up the SWPA in this basin.
Special Considerations & Issues	<ul style="list-style-type: none"> • No surface waters or wells are used for public water supply. • There are no surface waters with “designated” Beneficial Uses or water quality standards in the Dry Creek-Frontal Smoke Creek Desert or Lower Squaw Creek HUC-12 watersheds.

SWPA Acreage		Type	Acres
Land Jurisdiction	Washoe County Non- Federal:		109
	BLM:		294
Land Use	Agriculture:		63
	Vacant:		340

Land uses and jurisdictions in the SWPAs are summarized in the adjacent table and illustrated by the [Land Classification Figure](#).

The only three entities that share ownership and management in these SWPAs are the Gerlach GID, the Courtney Family Trust, and the BLM.





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](#). Smoke Creek Desert Basin is located within the “Black Rock Desert Region”. There are no designated beneficial uses ([NAC 445A.1282](#)) or water quality standards ([NAC 445A.1284](#)) for surface water bodies in the Dry Creek-Frontal Smoke Creek Desert and Lower Squaw Creek HUC-12s. For groundwater, 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

The springs used by the Gerlach GID are highly valued because they are isolated and are the only sources of water for the town of Gerlach.

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

- Sediment and/or erosion due to wildfire.
- Potential pollution from bacteria related to livestock or wildlife.

The primary causes of erosion and sedimentation in this watershed include wildland fire and noxious weeds. High-severity wildfires alter the overall structure of the ecosystem through the removal of vegetation, leaving limited ground cover. Severe fires also create a waxy, water-repellant layer over the soil which increases water and soil runoff (NDF, 2011). Areas invaded by noxious weeds are more susceptible to erosion and sedimentation in several ways. Noxious weeds do not have a root structure to retain soil and resist wind or water erosion. The fire risk is increased because noxious weeds are more flammable than native species. Wildfire could destabilize the watersheds above the springs and/or damage the water system facilities.

Groundwater can be contaminated through seepage from animal waste which could carry bacteria, viruses, and nutrients (EPA, 2005). Managing grazing and keeping wildlife out of the spring SWPA can help to prevent contaminants from entering these drinking water sources.

Overall, according to the Nevada Vulnerability Assessment Program Water System Report prepared by Nevada Division of Environmental Protection (NDEP) for the Gerlach GID, the two springs have low vulnerability to surface water contamination (NDEP, 2017).

Strategies to Protect and Improve Water Quality

The water quality concerns identified in this basin can be addressed through management strategies described in this section, the proposed projects detailed in the Project Profiles, as well as applicable on-going water quality projects and programs described under Stakeholders and Plans. These strategies pertain to the entire basin but may be prioritized in SWPAs.

The SWPA buffers in this groundwater basin are based on a 20-year time of travel for groundwater. 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:

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. Activities in these buffer areas can affect the quality of water downstream or underground. These management strategies acknowledge the value of these SWPAs to prevent future contamination of sources of drinking water.

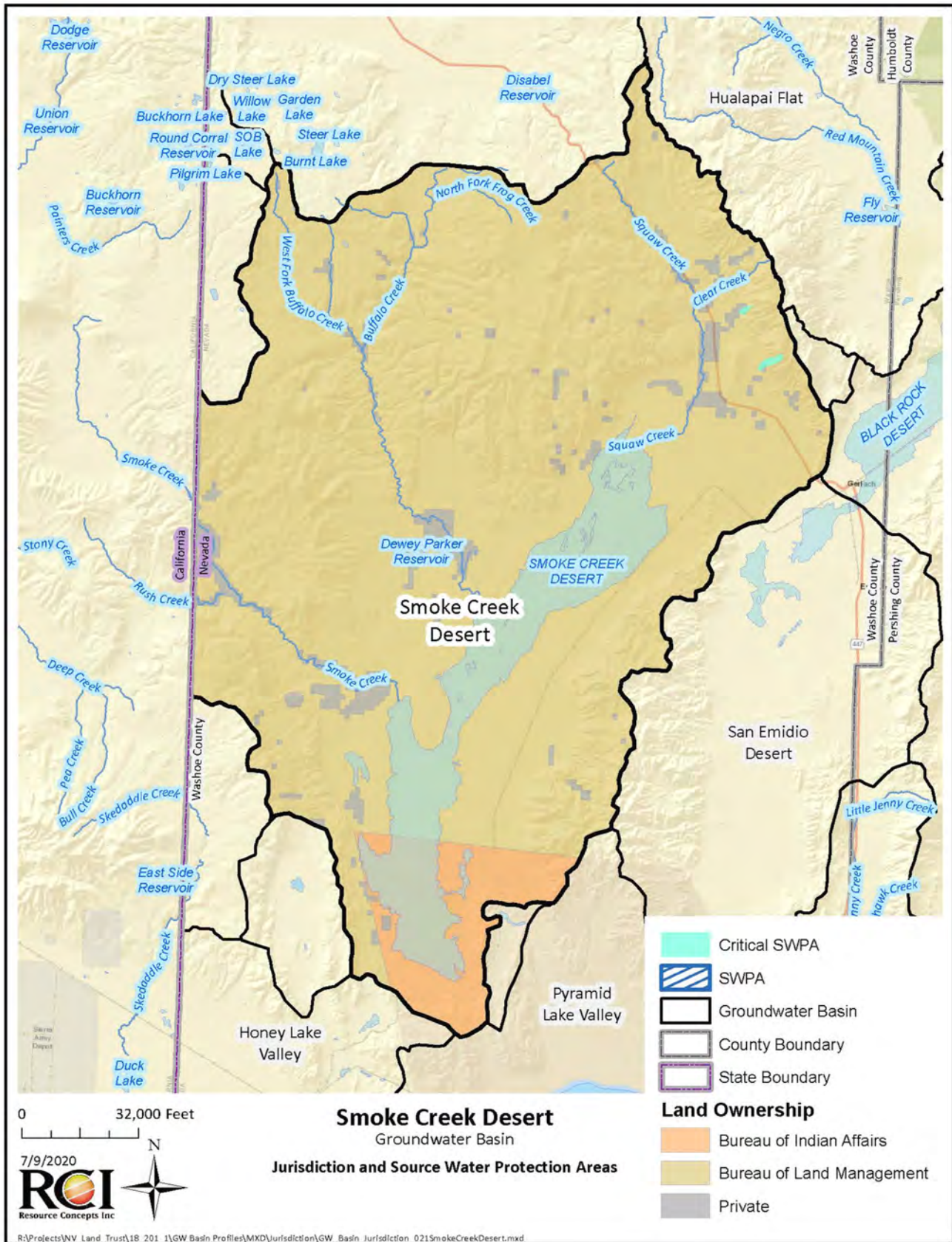
The following objectives are significant in both future and on-going SWPA management:

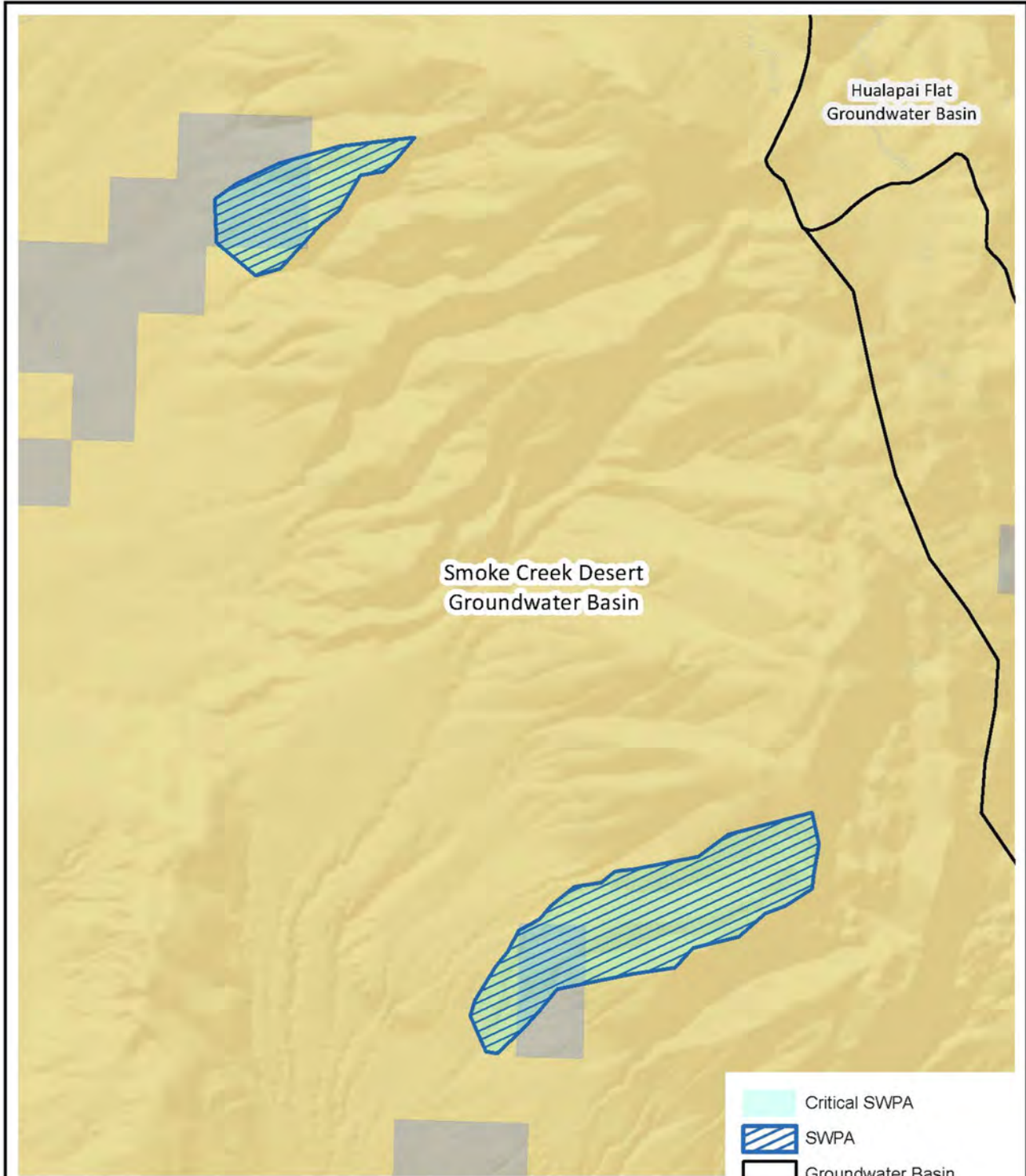
- Inform landowners in SWPAs about their proximity to a valuable drinking water source and how they can help protect their water quality.
- Encourage coordination between Public Water Systems, landowners, and City or County planners to consider the importance of SWPAs in project reviews.
- Explore collaborative 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 objective is intended to help effectuate positive actions to protect water quality:

- Inform landowners and developers within SWPAs about the importance of avoiding contamination and their proximity to a valuable drinking water source.





0 2,500 Feet

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Gerlach GID Jurisdiction and Source Water Protection Areas

- Critical SWPA
- SWPA
- Groundwater Basin
- Land Ownership**
 - Bureau of Land Management
 - Private

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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:

- Support communication and coordination between the three local land managers: the Gerlach GID, BLM, and the private landowner.
- Collaborate with the local weed management authority to support their efforts in noxious weed management ([WSCWMA Website](#)).

Wildfire and Fuel Management

Wildland fire is a threat to water quality and coordinated fuel management on wildlands can help reduce risks to water quality. Stakeholders and partners may consider the following objective as it pertains to wildfire and fuel management:

- Support and collaborate with the Nevada Cohesive Strategy effort and the Shared Stewardship Agreement, the blueprint to address Nevada’s wildland fire issues.

Resource Investigation and Planning

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

- Explore and engage funding sources available for the Gerlach GID to expand monitoring, implement improvements, and develop contingency plans.

Water Quality Best Management Practices

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

- Water quality improvement projects.
- 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	
<ul style="list-style-type: none"> • Bureau of Land Management • Nevada Division of Environmental Protection • Nevada Division of Forestry 	<ul style="list-style-type: none"> • 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 (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.

Nevada Division of Forestry

The Nevada Division of Forestry (NDF) is a State agency that uses a collaborative process to deliver science based natural resource management and protection to promote resilient landscapes, fire adapted communities, and safe, effective wildfire response provided by employees that embrace the core values of duty, respect, and integrity.

NDF provides professional natural resource and wildland fire management services to Nevada citizens and visitors to enhance, conserve and protect forest, rangeland and watershed values, endangered plants and other native flora. [Protection of these resources helps to improve water quality](#):

- Community Wildfire Protection Plans:
 - Community Wildfire Protection Plans (CWPPs) are authorized and defined in Title I of the Healthy Forests Restoration Act of 2003 (HFRA). CWPPs represent the best opportunity for communities to address the challenges of the Wildland-Urban Interface. A CWPP helps communities define their priorities for the protection of life, property, and shared assets-at-risk from wildfires. Developing a CWPP encourages community members and leaders to have valuable discussions about wildfire preparedness, evacuation planning, and local fire district capabilities. The CWPP increases grant funding opportunities by prioritizing fuel reduction projects around and within the community.
- Nevada Wildland Fire Cohesive Strategy:
 - The Nevada Fire Board Oversight Body is the custodian of the 2015 Nevada Wildland Fire Cohesive Strategy Summit's Action Plan to ensure goal achievement and identify emerging topics. This oversight body acts as an "advisory" body and is charged with taking the Nevada Cohesive Strategy Summit report and its Action Steps, ensuring that goal achievement is accomplished and monitoring emerging topics through the Nevada Fire Board. This body monitors progress, develops issue resolution, and addresses emerging issues such as protecting water quality.

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

Activities in Washoe County are reviewed according to the Master Plan Planning Areas. The Smoke Creek Desert area is included in the Gerlach/Empire planning area. The County has Citizen Advisory Boards (CABs) which provide important community perspective on local issues to the Washoe County Board of Commissioners. The Smoke Creek Desert area is within the Gerlach/Empire CAB ([CAB Boundaries](#)).

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, 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.

Western Regional Water Commission and the Northern Nevada Water Planning Commission

The Western Regional Water Commission (WRWC) focuses on improving water resource planning at the regional level and facilitating coordinated resource management among City of Reno, City of Sparks, Washoe County, Truckee Meadows Water Authority (TMWA), Truckee Meadows Water Reclamation Facility (TMWRF), South Truckee Meadows GID and Sun Valley GID.

The Northern Nevada Water Planning Commission (NNWPC) is a technical advisory panel that reports to the WRWC. The NNWPC develops and updates a Comprehensive Regional Water Management Plan (RWMP) and makes recommendations to the WRWC for adoption. In addition, the NNWPC develops priorities and an annual budget for the Regional Water Management Fund, also for recommendations to the WRWC.

The Comprehensive Regional Water Management Plan includes several applicable objectives:

- [Objective 1.2](#) Provide for a Sustainable Water Supply and an Acceptable Level of Service to the Community (including protecting groundwater recharge areas).
- [Objective 1.3](#) Implement measures to protect and enhance water quality for a sustainable water supply (including source water protection).
- [Objective 2.1](#) Promote Efficient Use of Resources (Reduction of Non-Point Source Pollution for TMWRF Pollutant Credit).
- [Objective 2.2](#) Manage wastewater for protection and enhancement of water quality.
- [Objective 3.1](#) Effective and integrated watershed management (protection of human health, property, and water quality, including storm water).

References

- EPA, 2005. Environmental Protection Agency. Protecting Water Quality from Agricultural Runoff. Protecting Water Quality from Agricultural Runoff
- NDEP BSDW, Vulnerability Assessment Program (VAP) Public Water System Report, 2017.
- 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](#)
- NDF, Nevada Division of Forestry. Nevada Natural Resources and Fire Information Portal Area of Interest Summary Report. U.S. Forest Service Forests to Faucets project, 2011. Weidner, 2011. Retrieved February 2019 from [Forests to Faucets Weidner 2011, NV Natural Resources and Fire Information Portal](#)
- Washoe County Master Plan, 2008. [Washoe County 2008 Master Plan](#), [Washoe County Health District](#)
- Washoe/Storey Cooperative Weed Management Area. [WSCWMA Website](#)
- Water Research Foundation, Environmental Protection Agency. Effects of Wildfire on Drinking Water Utilities and Best Practices for Wildfire Risk Reduction and Mitigation, 2013. [Effects of Wildfire on Drinking Water Utilities](#)
- WRWC, Western Regional Water Commission, Comprehensive Regional Water Management Plan 2016-2035 Update, 2017. [WRWC Comprehensive Regional Water Management Plan 2016-2035](#)

San Emidio Desert

Groundwater Basin #022, Source Water Profile

[Click here for the SWPA Map](#)



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Introduction

The San Emidio Desert 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 town of Empire and the Empire Mining Company. There are no surface waters used directly by water systems in this basin. This profile includes potential and existing water quality concerns, types of land uses, management strategies and projects, and the involved stakeholders and their corresponding plans with water quality components.

The San Emidio Desert is a north-south oriented hydrographic area of 305 square miles and bounded by the Fox Range on the west and the Selenite Range on the east. The mountains are composed mostly of Tertiary volcanic rocks and Cretaceous granitic rocks. The lowlands also are underlain by playas at the north and south ends of the area. The aquifer is composed mostly of alluvial fan deposits and volcanic rocks. Ground water is believed to move from the high-altitude recharge area in the Selenite Range westward to the basin lowlands. The groundwater gradient is believed to be similar to the slope of land surface.

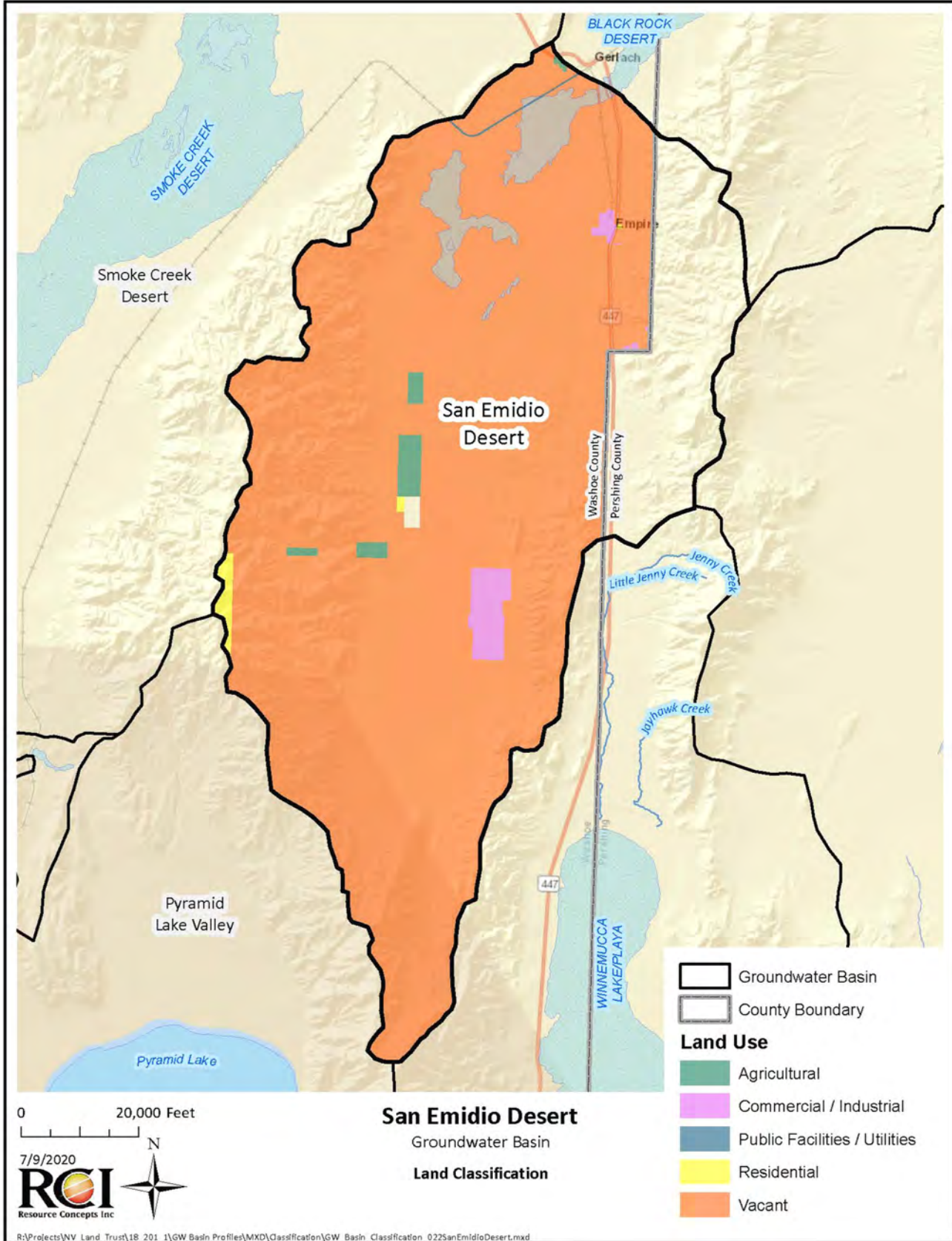
The only sources of public water supply in the San Emidio Desert are two active wells located on upper parts of the alluvial fan near the Selenite Range front in the northeastern part of the hydrographic area. Both wells are in the Town of Empire HUC12 watershed. The wells are operated by one public water system, the Empire Mining Company. Land at the wells is owned by the Empire Mining Company and the BLM manages portions of the SWPA. SWPAs were developed county-wide by stakeholders to help protect drinking water sources. The following table summarizes key water quality aspects in this basin.

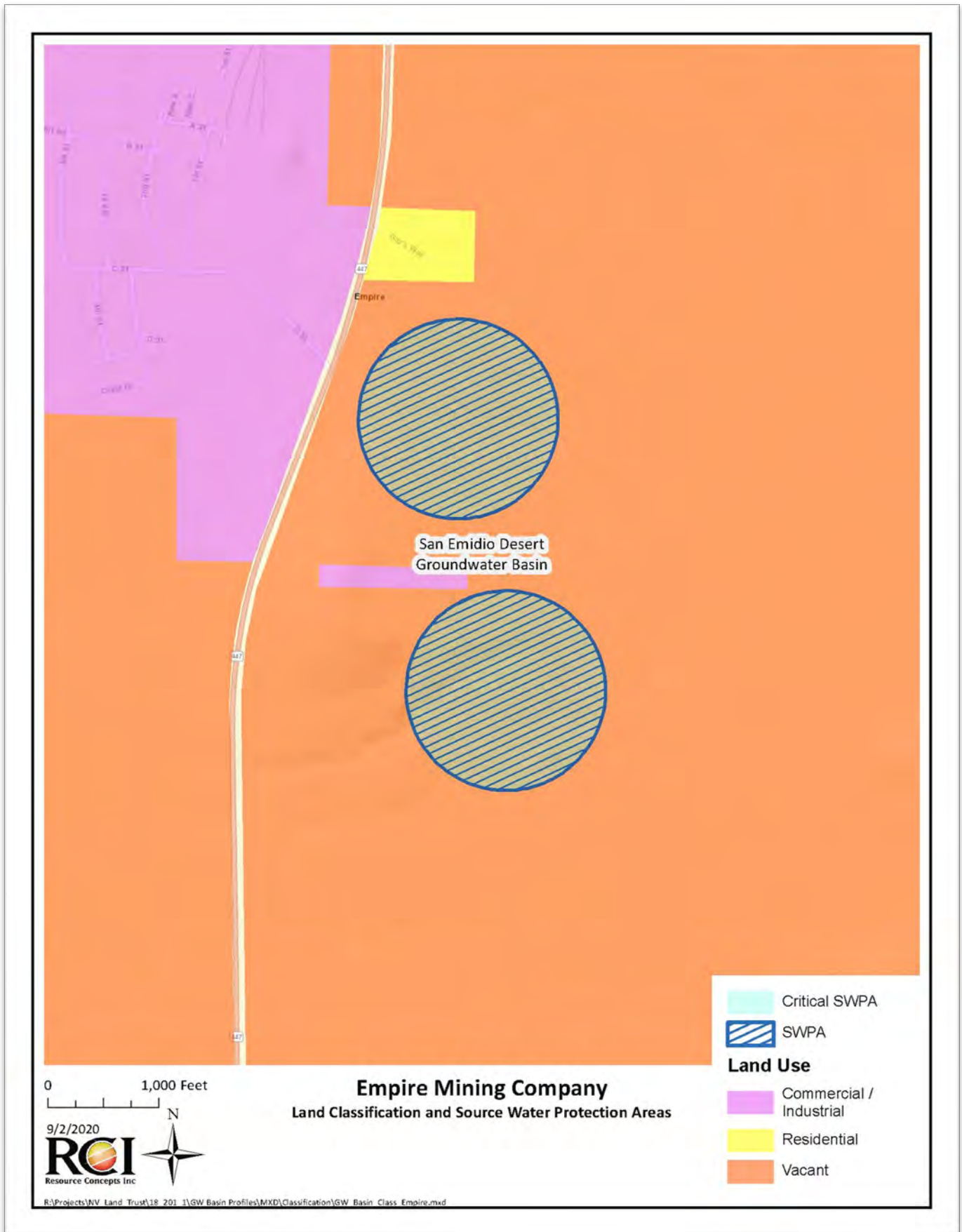
Basin Summary	
Basins	<ul style="list-style-type: none"> • Groundwater Basins: San Emidio Desert #022 • HUC-12 Watershed: Town of Empire #160402030500
Source Water Protection Areas	<ul style="list-style-type: none"> • A SWPA provides a buffer around public water system wells, and it represents a precautionary indicator to safeguard the drinking water sources. • Two wells are managed by one public water system that provides drinking water to the town of Empire and Empire Mining Company. This water system serves 350 people. • 117 acres make up the SWPA in this Basin.
Special Considerations & Issues	<ul style="list-style-type: none"> • No surface waters are used for public water supply. • There are no surface waters with “designated” Beneficial Uses or water quality standards in the Town of Empire HUC-12 watershed.

SWPA Acreage		Type	Acres
Land Jurisdiction	Washoe County Non- Federal:		33
	BLM:		83
Land Use		Vacant:	117

Land uses and jurisdictions in the SWPAs are summarized in the adjacent table and illustrated by the [Land Classification Figure](#).

The only two entities that share ownership and management in these SWPAs are the Empire Mining Company and the BLM.





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 San Emidio Desert Basin is located within the “Black Rock Desert Region”. There are no designated beneficial uses ([NAC 445A.1282](#)) or water quality standards ([NAC 445A.1284](#)) for surface water bodies in the Town of Empire HUC-12. For groundwater, 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

The wells used by the Empire Mining Company are highly valued because they are isolated and the only sources of water for the town of Empire and the mining company.

At this time, there is development in the vicinity of the wells and all mining activity appears to be down gradient of the SWPAs. Overall, according to the Nevada Vulnerability Assessment Program Water System Report prepared by Nevada Division of Environmental Protection (NDEP) for the Empire Mining Company, the aquifer that provides water to the SWPAs has low vulnerability to surface water contamination (NDEP, 2017).

Strategies to Protect and Improve Water Quality

The water quality concerns identified in this basin can be addressed through management strategies described in this section, the proposed projects detailed in the Project Profiles, as well as applicable on-going water quality projects and programs described under Stakeholders and Plans. These strategies pertain to the entire basin but may be prioritized in SWPAs.

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. Activities in these buffer areas can affect the quality of water downstream or underground. These management strategies acknowledge the value of these SWPAs to prevent future contamination of sources of drinking water.

The SWPA buffers in this groundwater basin are based on a 20-year time of travel for groundwater. 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.
- Encourage coordination between Public Water Systems, landowners, and City or County 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 objective is intended to help effectuate positive actions to protect water quality:

- Inform landowners and developers within SWPAs about the importance of avoiding contamination and their proximity to a valuable drinking water source.

Interagency Communication

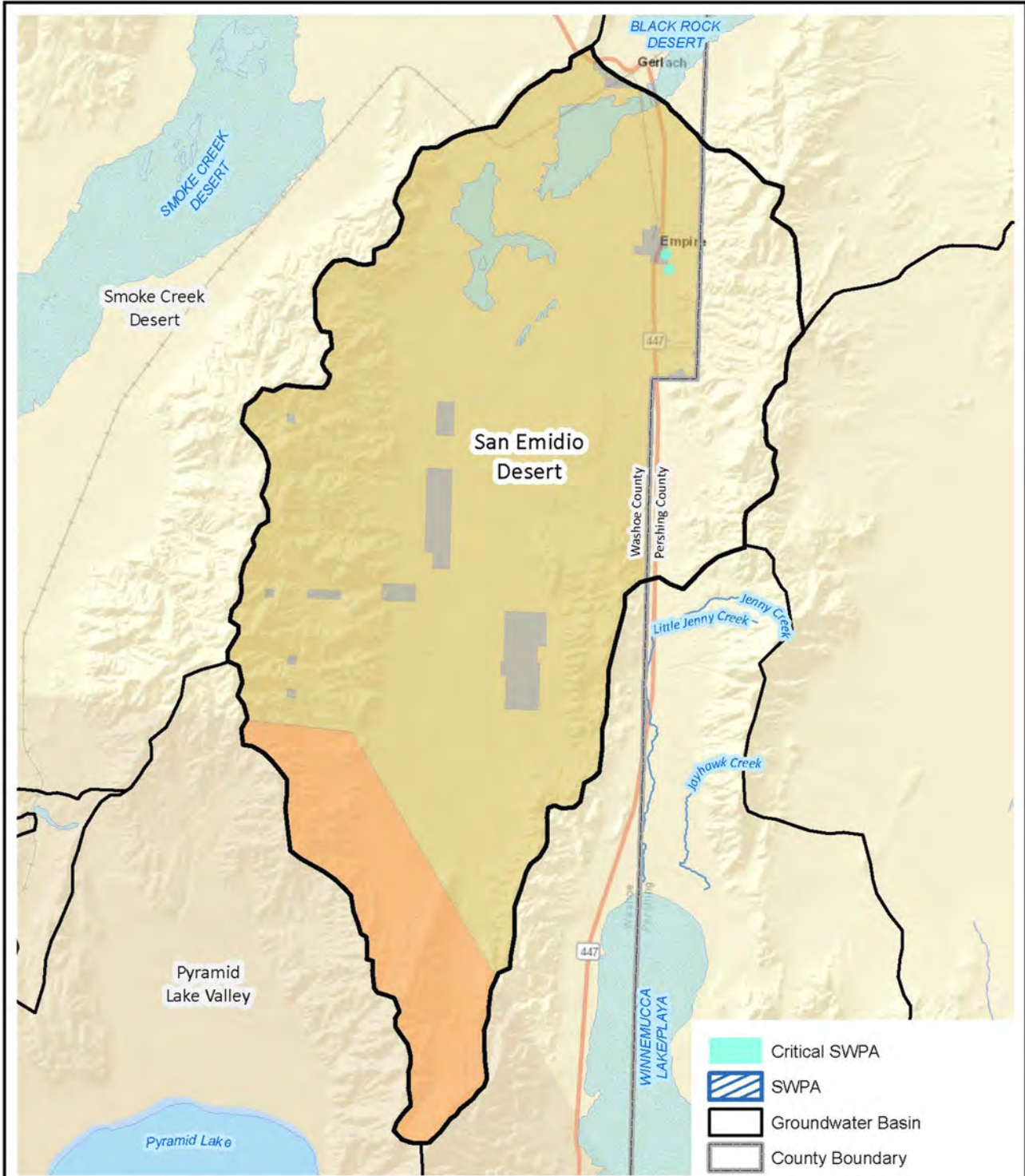
The following interagency communication objective is an important tool to both reinvigorate and invest additional resources in water quality, as well as utilize existing resources and programs:

- Support communication and coordination between the two local land managers: The Empire Mining Company and the BLM.

Resource Investigation and Planning

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

- Explore and engage funding sources available for the Empire Mining Company to expand monitoring, implement improvements, and develop contingency plans.



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San Emidio Desert

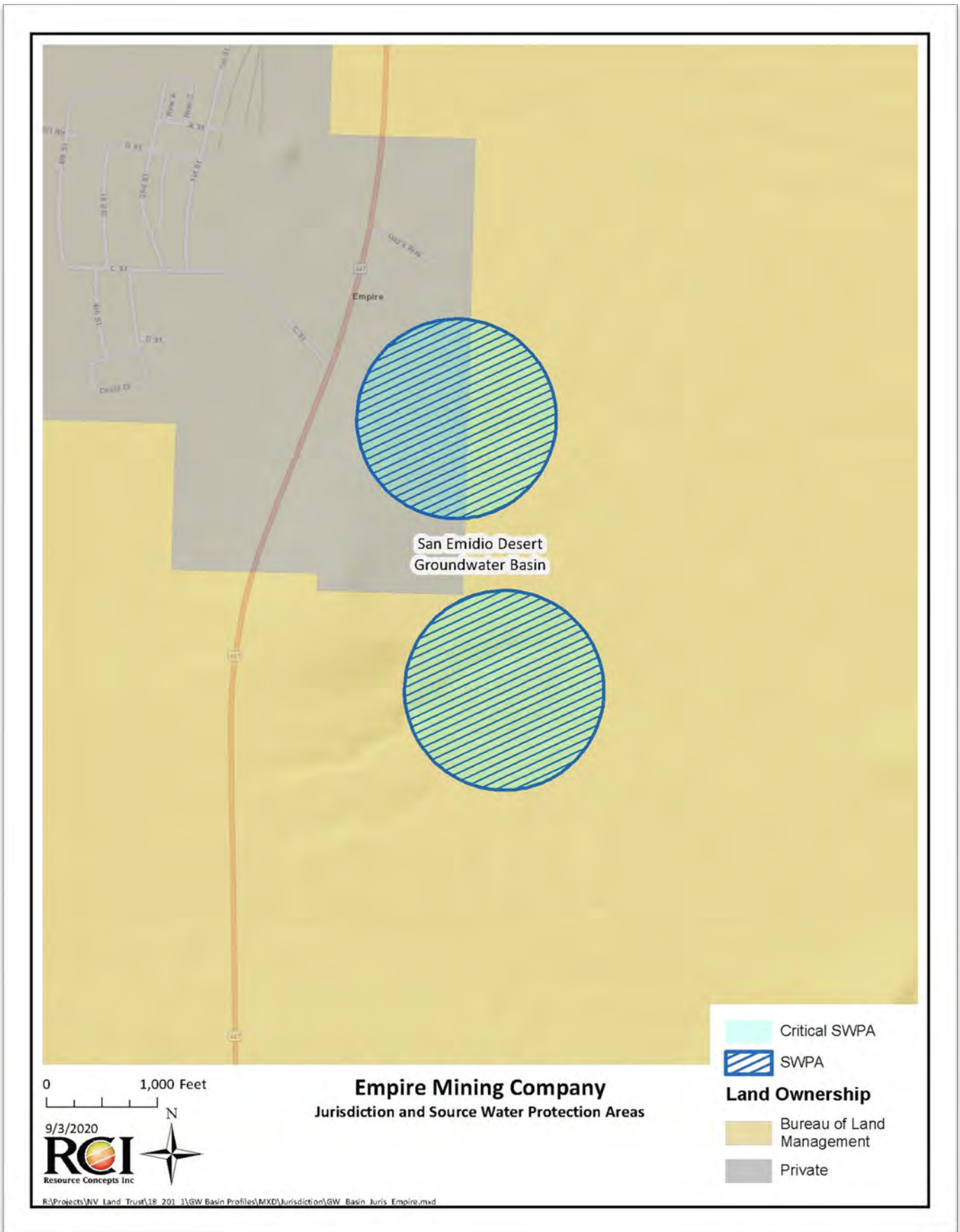
Groundwater Basin

Jurisdiction and Source Water Protection Areas

Land Ownership

- Critical SWPA
- SWPA
- Groundwater Basin
- County Boundary
- Bureau of Indian Affairs
- Bureau of Land Management
- Private

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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:

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Project Stakeholders	
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- 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.

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

Activities in Washoe County are reviewed according to the Master Plan Planning Areas. The San Emidio Desert area is included in the Gerlach/Empire planning area. The County has Citizen Advisory Boards (CABs) which provide important community perspective on local issues to the Washoe County Board of Commissioners. The area is within the Gerlach/Empire CAB ([CAB Boundaries](#)).

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, 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.

Western Regional Water Commission and the Northern Nevada Water Planning Commission

The Western Regional Water Commission (WRWC) focuses on improving water resource planning at the regional level and facilitating coordinated resource management among City of Reno, City of Sparks, Washoe County, TMWA, Truckee Meadows Water Reclamation Facility (TMWRF), South Truckee Meadows GID and Sun Valley GID.

The Northern Nevada Water Planning Commission (NNWPC) is a technical advisory panel that reports to the WRWC. The NNWPC develops and updates a Comprehensive Regional Water Management Plan (RWMP) and makes recommendations to the WRWC for adoption. In addition, the NNWPC develops priorities and an annual budget for the Regional Water Management Fund, also for recommendations to the WRWC.

The Comprehensive Regional Water Management Plan includes several applicable objectives:

- [Objective 1.2](#) Provide for a Sustainable Water Supply and an Acceptable Level of Service to the Community (including protecting groundwater recharge areas).
- [Objective 1.3](#) Implement measures to protect and enhance water quality for a sustainable water supply (including source water protection).
- [Objective 2.1](#) Promote Efficient Use of Resources (Reduction of Non-Point Source Pollution for TMWRF Pollutant Credit).
- [Objective 2.2](#) Manage wastewater for protection and enhancement of water quality.
- [Objective 3.1](#) Effective and integrated watershed management (protection of human health, property, and water quality, including storm water).

References

NDEP BMRR, Nevada Division of Environmental Protection. [Bureau of Mining Regulations and Reclamation](#)

NDEP BSDW, Vulnerability Assessment Program (VAP) Public Water System Report, 2017.

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](#)

USGS, Mining and Water Quality. [Mining and Water Quality](#)

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](#)

Hualapai Flat

Groundwater Basin #024, 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 Hualapai Flat 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 Black Rock Station. There are no surface waters used directly by water systems in this basin. This profile includes potential and existing water quality concerns, types of land uses, management strategies and projects, and the involved stakeholders and their corresponding plans with water quality components.

The Hualapai Flat basin is a north-south oriented hydrographic area of 315 square miles in northwestern Washoe County. It is bounded on the west and east by the northward convergence of the Granite Range and Calico Hills and on the southeast by the Black Rock Desert. Younger and older alluvium underlie the lowlands of Hualapai Flat and the adjacent mountains are composed of granitic and volcanic rocks (Harrill, 1969, plate 1). The Black Rock Station well, located in the Wagon Tire Creek HUC-12, is the only source of public water supply in the basin.

Land at the Black Rock Station well is owned by four private entities including the Jackson Family Trust, Granite Investment Group LLC, Black Rock City Properties LLC, and the Burning Man Project. SWPAs were developed county-wide by stakeholders to help protect drinking water sources.

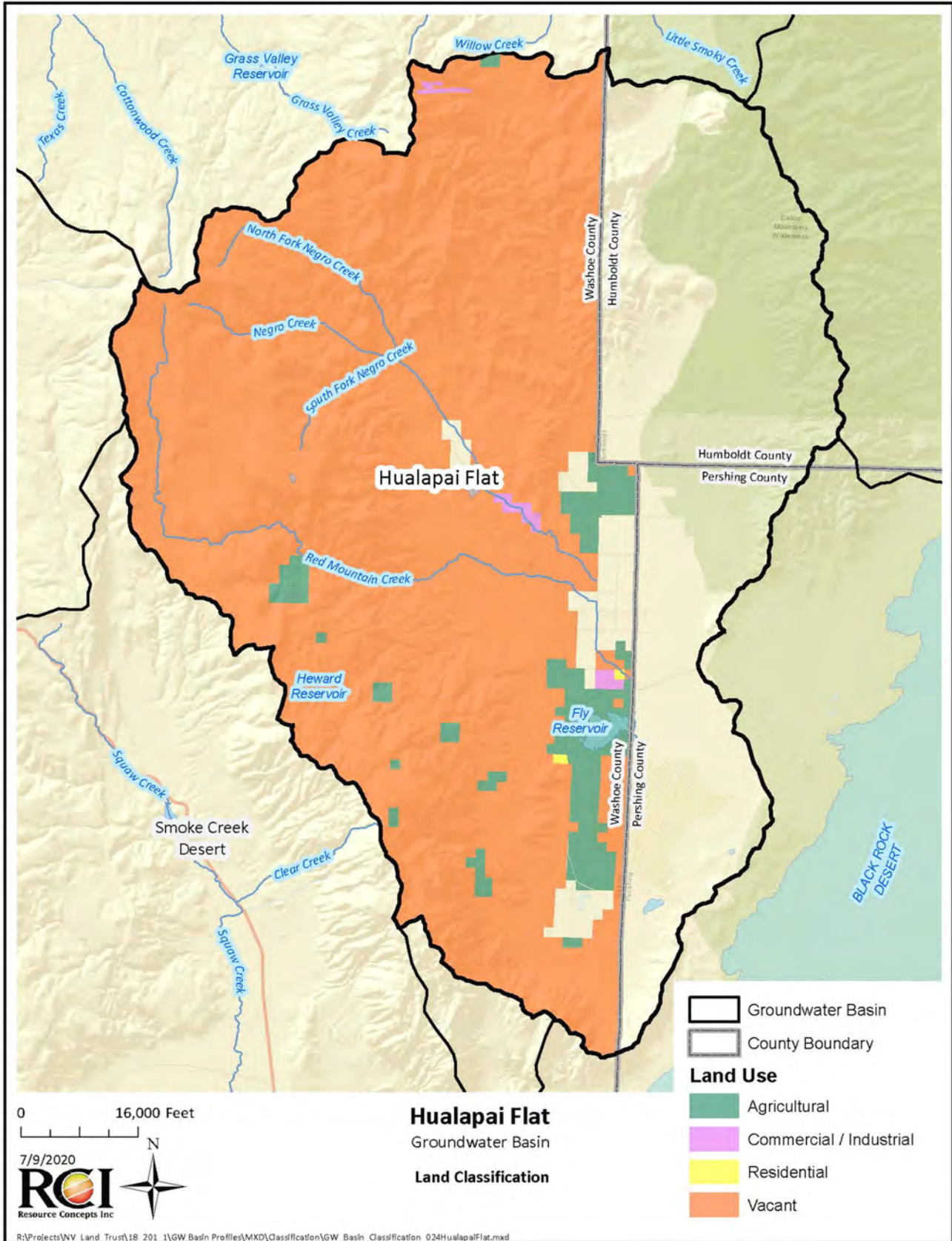
The following table summarizes key water quality aspects of this basin.

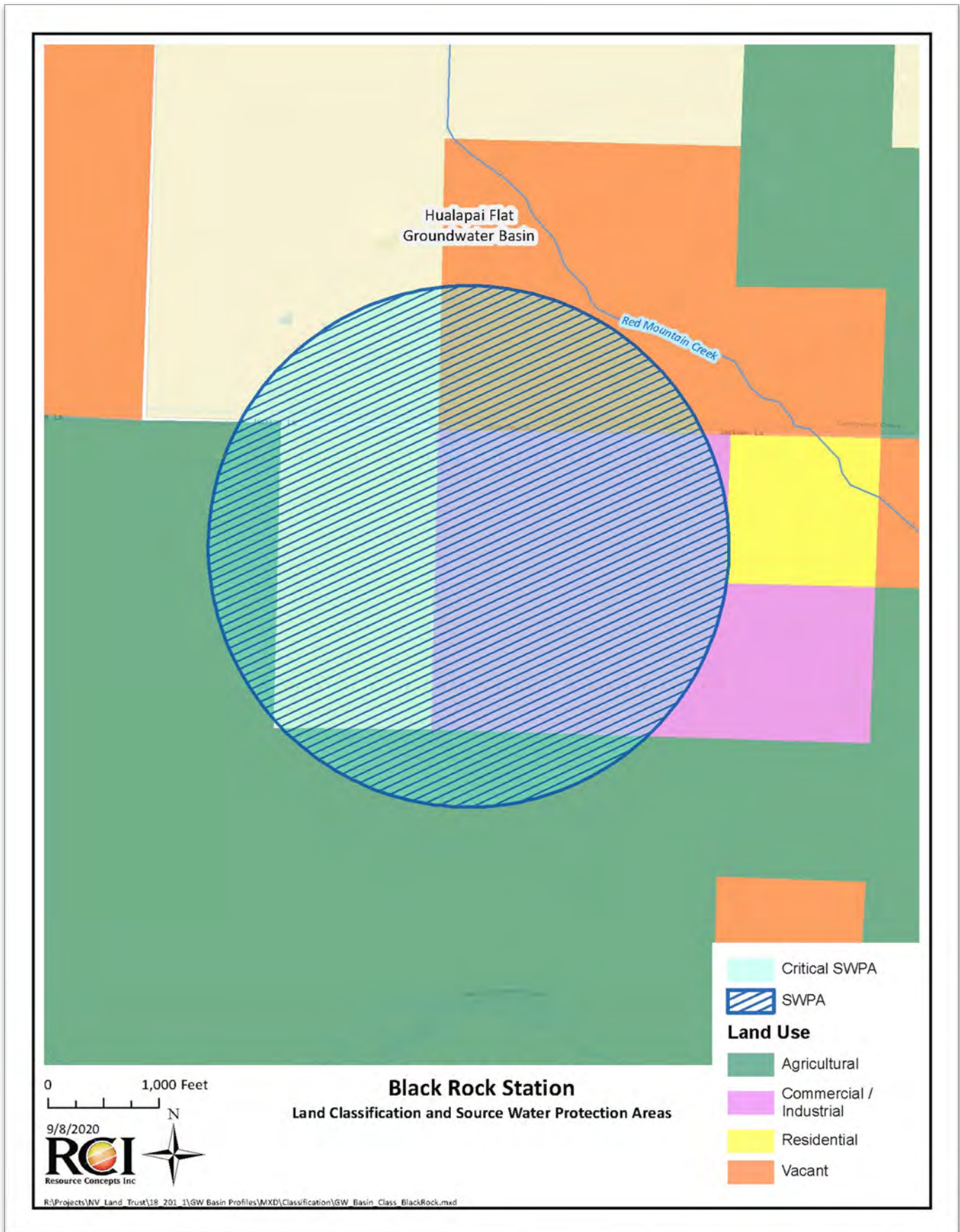
Basin Summary	
Basins	<ul style="list-style-type: none"> • Groundwater Basins: Hualapai Flat #024 • HUC-12 Watershed: Wagon Tire Creek #160402030306
Source Water Protection Areas	<ul style="list-style-type: none"> • A SWPA provides a buffer around public water system wells, and it represents a precautionary indicator to safeguard the drinking water sources. • One well is managed by one public water system that provides drinking water to the Black Rock Station area. This water system serves 25 people. • 398 acres make up the SWPA in this Basin.
Special Considerations & Issues	<ul style="list-style-type: none"> • No surface waters are used for public water supply. • There are no surface waters with “designated” Beneficial Uses or water quality standards in the Wagon Tire Creek HUC-12 watershed.

SWPA Acreage	Type	Acres
Land Jurisdiction	Washoe County Non-Federal:	395
Land Use	Agriculture:	65
	Commercial/Industrial:	155
	Vacant:	54
	Not assigned:	124

Land uses and jurisdictions in the SWPAs are summarized in the adjacent table and illustrated by the [Land Classification Figure](#).

The four entities that share ownership and management in these SWPAs are the Jackson Family Trust, Granite Investment Group LLC, Black Rock City Properties LLC, and the Burning Man Project.





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](#). Hualapai Flat Basin is located within the “Black Rock Desert Region”. There are no designated beneficial uses ([NAC 445A.1282](#)) or water quality standards ([NAC 445A.1284](#)) for surface water bodies in the Wagon Tire Creek HUC-12. For groundwater, 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

The well used by the Black Rock Station is highly valued because it is the only source of water for this area.

The Black Rock Station is a 200-acre staging and storage location for the Burning Man event located within the SWPA. Hazardous materials such as fueling, equipment, and vehicles are stored in the vicinity. Potential leaking of industrial chemicals at this location could be a concern for water quality.

A large agricultural operation is located on the northern boundary and just outside of the SWPA. Agricultural practices have the potential to contaminate groundwater through fertilizers, herbicides, and livestock waste.

Strategies to Protect and Improve Water Quality

The water quality concerns identified in this basin can be addressed through management strategies described in this section, the proposed projects detailed in the Project Profiles, as well as applicable on-going water quality projects and programs described under Stakeholders and Plans. These strategies pertain to the entire basin but may be prioritized in SWPAs.

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. Activities in these buffer areas can affect the quality of water downstream or underground. These management strategies acknowledge the value of these SWPAs to prevent future contamination of sources of drinking water.

The SWPA buffers in this groundwater basin are based on a 20-year time of travel for groundwater. 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.
- Encourage coordination between Public Water Systems, landowners, and City or County 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

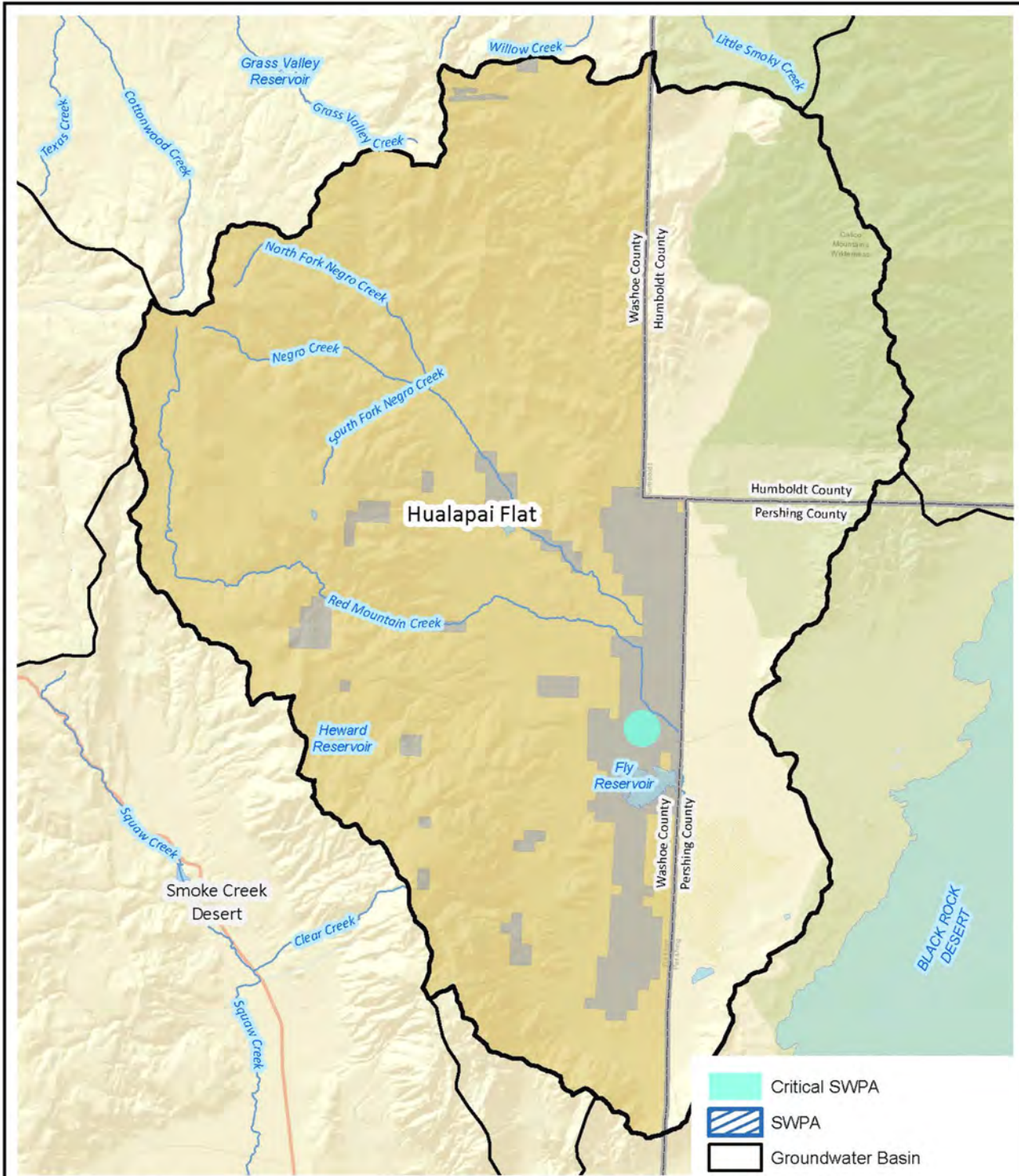
The following education and outreach objective is intended to help effectuate positive actions to protect water quality:

- Inform landowners and developers within SWPAs about the importance of avoiding contamination and their proximity to a valuable drinking water source.

Resource Investigation and Planning

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

- Explore and engage funding sources available for the Black Rock Station to expand monitoring, implement improvements, and develop contingency plans.



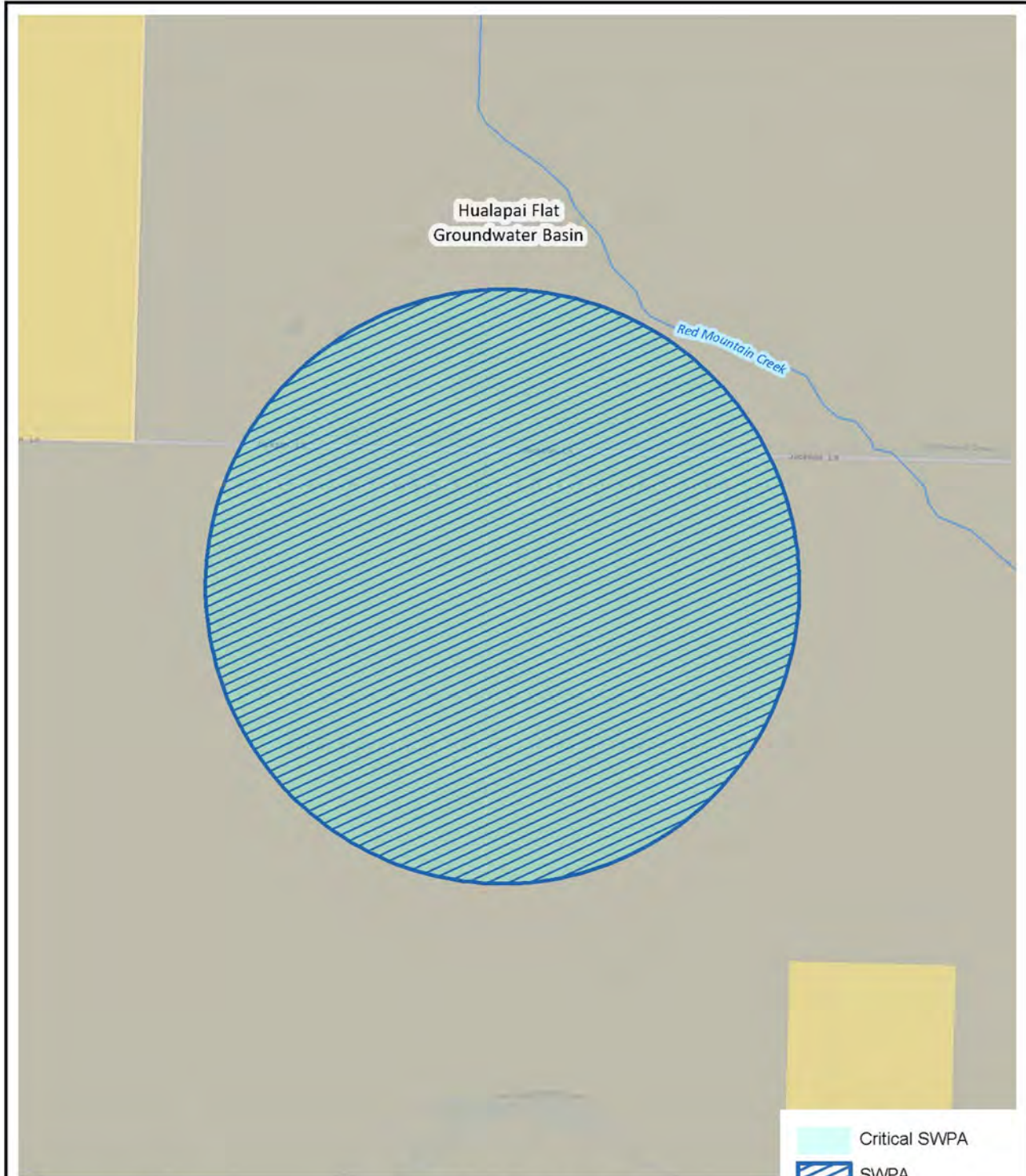
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Hualapai Flat
 Groundwater Basin
Jurisdiction and Source Water Protection Areas

- Critical SWPA
- SWPA
- Groundwater Basin
- County Boundary
- Land Ownership**
- Bureau of Land Management
- Private

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Black Rock Station
Jurisdiction and Source Water Protection Areas

- Critical SWPA
- SWPA
- Land Ownership**
- Bureau of Land Management
- Private

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Resource Concepts Inc

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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	
<ul style="list-style-type: none"> • Nevada Division of Environmental Protection • Washoe County 	<ul style="list-style-type: none"> • Washoe County Health District • Western Regional Water Commission

Nevada Division of Environmental Protection

The Nevada Division of Environmental Protection (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.

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

Activities in Washoe County are reviewed according to the Master Plan Planning Areas. The Hualapai Flat area is included in the Gerlach/Empire planning area. The County has Citizen Advisory Boards (CABs) which provide important community perspective on local issues to the Washoe County Board of Commissioners. The area is wholly within the Gerlach/Empire CAB ([CAB Boundaries](#)).

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, 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.

Western Regional Water Commission and the Northern Nevada Water Planning Commission

The Western Regional Water Commission (WRWC) focuses on improving water resource planning at the regional level, and facilitating coordinated resource management among City of Reno, City of Sparks, Washoe County, Truckee Meadows Water Authority (TMWA), Truckee Meadows Water Reclamation Facility (TMWRF), South Truckee Meadows GID, and Sun Valley GID.

The Northern Nevada Water Planning Commission (NNWPC) is a technical advisory panel that reports to the WRWC. The NNWPC develops and updates a Comprehensive Regional Water Management Plan (RWMP) and makes recommendations to the WRWC for adoption. In addition, the NNWPC develops priorities and an annual budget for the Regional Water Management Fund, also for recommendations to the WRWC.

The Comprehensive Regional Water Management Plan includes several applicable objectives:

- [Objective 1.2](#) Provide for a Sustainable Water Supply and an Acceptable Level of Service to the Community (including protecting groundwater recharge areas).
- [Objective 1.3](#) Implement measures to protect and enhance water quality for a sustainable water supply (including source water protection).
- [Objective 2.1](#) Promote Efficient Use of Resources (Reduction of Non-Point Source Pollution for TMWRF Pollutant Credit).
- [Objective 2.2](#) Manage wastewater for protection and enhancement of water quality.
- [Objective 3.1](#) Effective and integrated watershed management (protection of human health, property, and water quality, including storm water).

References

Harrill, J.R., 1969, Hydrologic response to irrigation pumping in Hualapai Flat, Washoe, Pershing and Humboldt Counties, Nevada, 1960-67: Nevada Division of Water Resources, Water Resources Bulletin No. 37, 75p.

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](#)

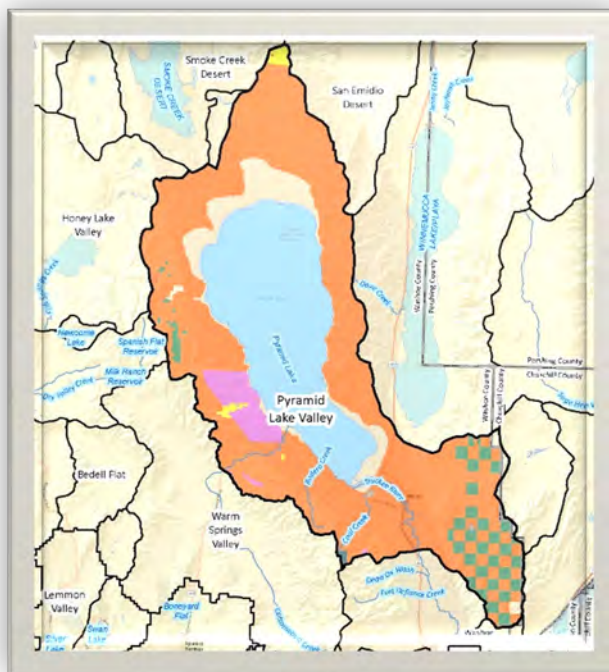
Washoe County Master Plan, 2008. [Washoe County 2008 Master Plan](#), [Washoe County Health District](#)

WRWC, Western Regional Water Commission, Comprehensive Regional Water Management Plan 2016-2035 Update, 2017. [WRWC Comprehensive Regional Water Management Plan 2016-2035](#)

Pyramid Lake Valley

Groundwater Basin #081, Source Water Profile

[Click here for the SWPA Map](#)



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[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.

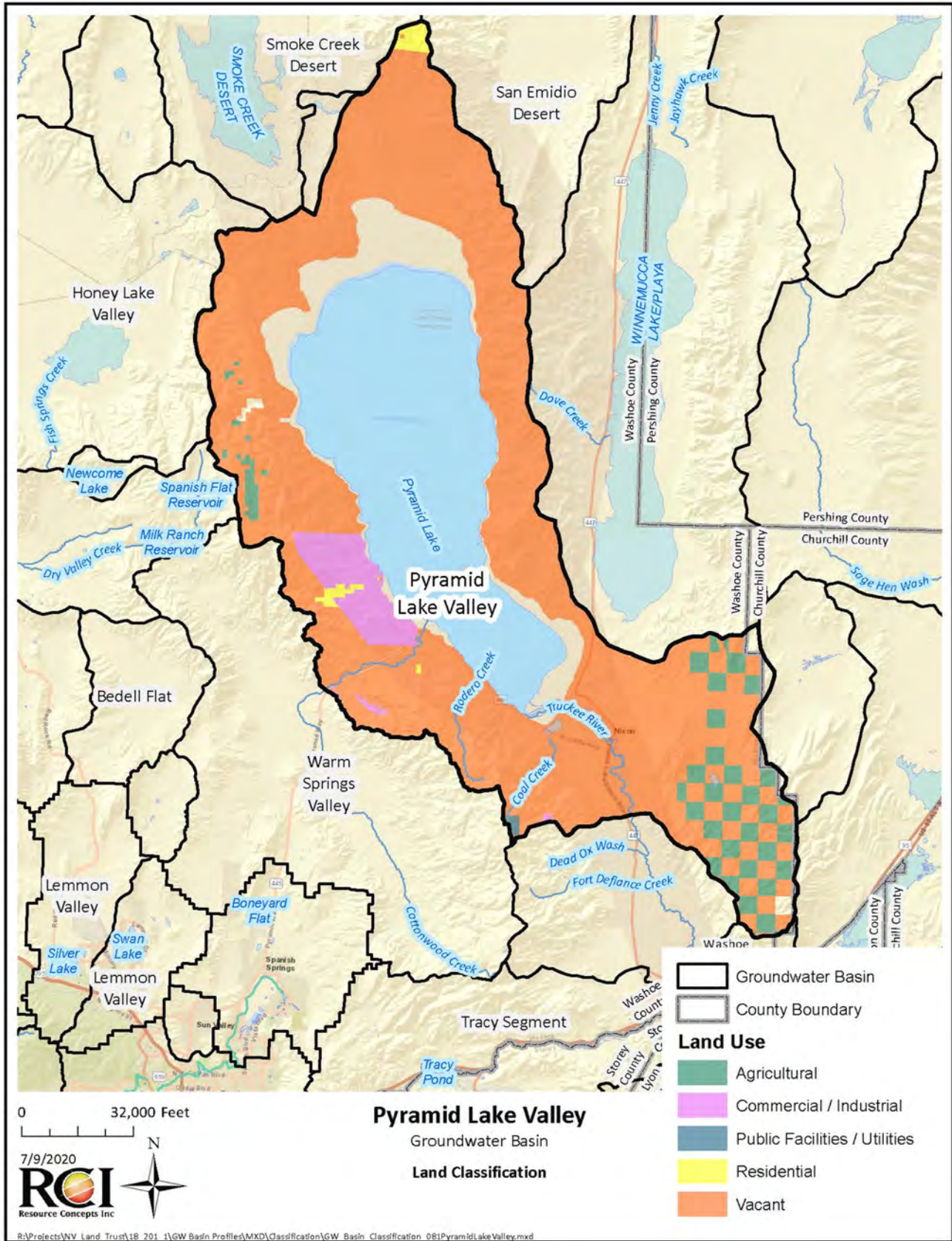
The following table summarizes key aspects of SWPAs and Well Head Protection Areas (WHPAs) in this basin.

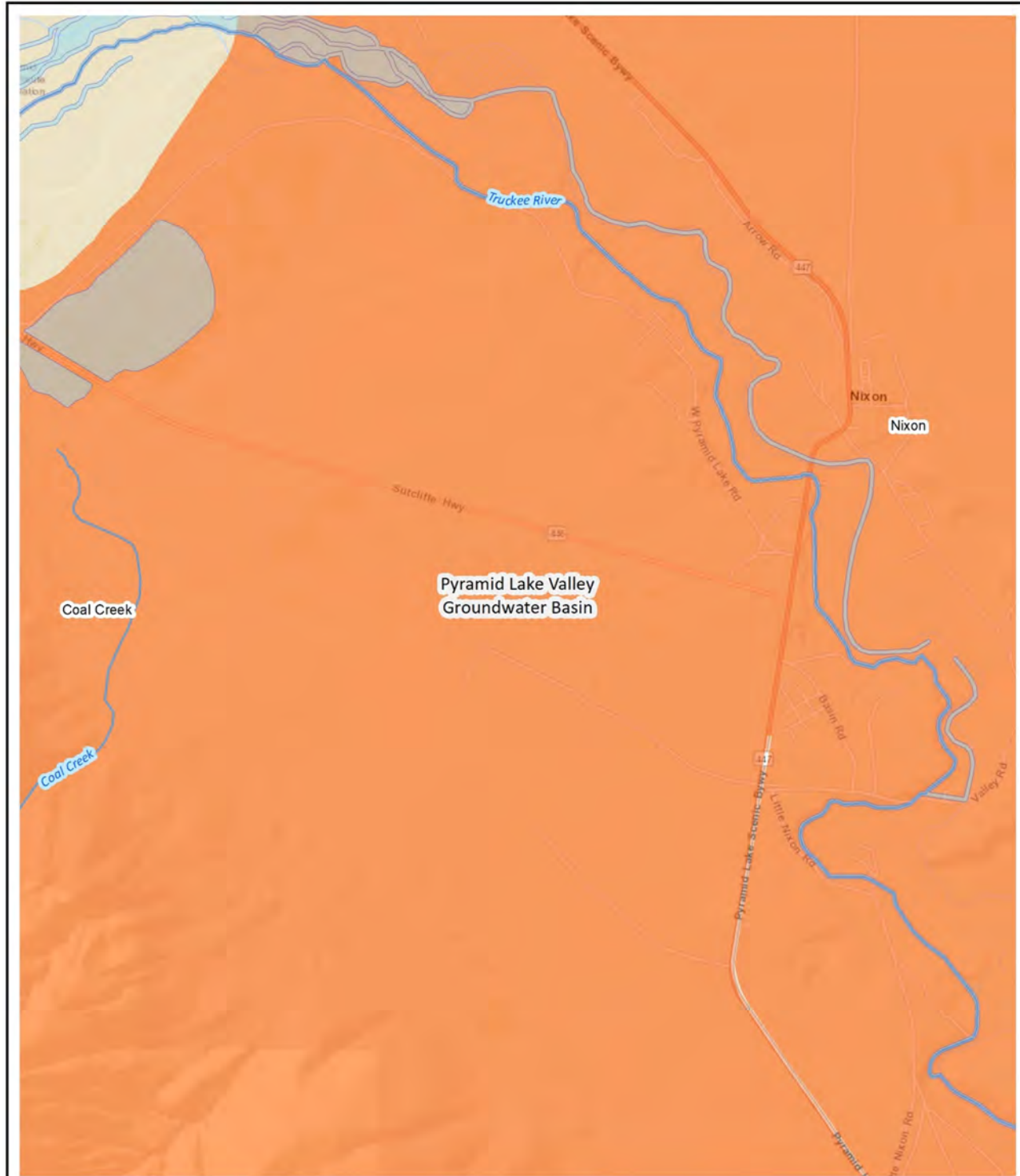
Basin Summary	
Basins	<ul style="list-style-type: none"> • Groundwater Basins: Pyramid Lake Valley #081 • HUC-12 Watersheds: Coal Creek-Truckee River #160501030304 Hardscrabble Creek HUC-12 #160501030600 Lower Mullen Creek HUC-12 #160501030600
Source Water Protection Areas	<ul style="list-style-type: none"> • 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. Contact the Pyramid Lake Paiute Tribe about wellhead protection areas for the public water systems under tribal jurisdiction.
Special Considerations & Issues	<ul style="list-style-type: none"> • 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 <i>Well Head Protection Area Delineation and Drinking Source Water Evaluation</i> (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:	354
	Washoe County Non- Federal:	81
	Water:	25
Land Use	Pyramid Lake Paiute Tribe:	354
	Commercial/Industrial:	12
	Residential:	9
	Vacant:	60
	Water:	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.





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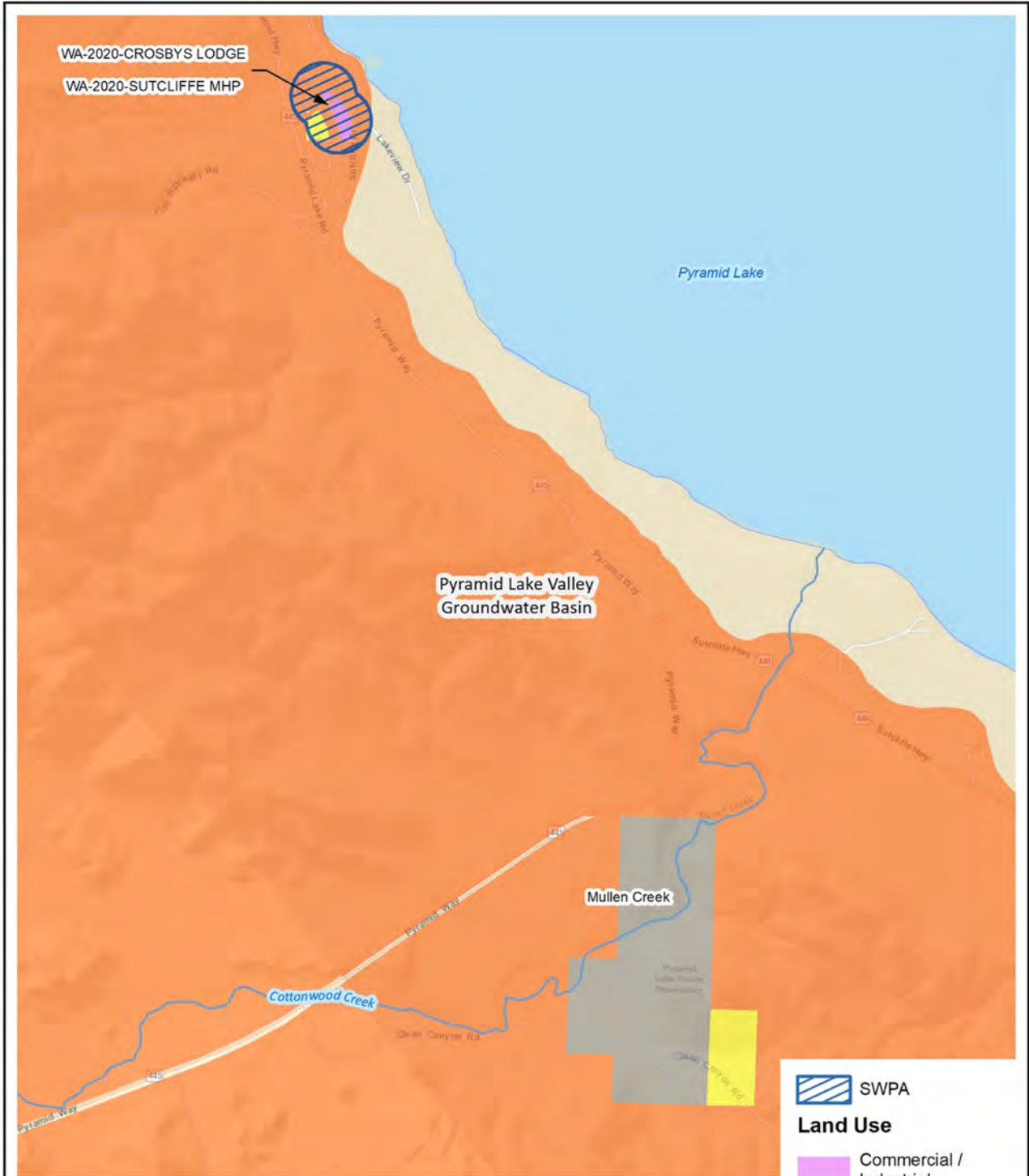
Nixon Area

Land Classification and Source Water Protection Areas

Land Use

-  Pyramid Lake Paiute Tribe

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Sutcliffe Area
Land Classification and Source Water Protection Areas

-  SWPA
- Land Use**
-  Commercial / Industrial
-  Residential
-  Pyramid Lake Paiute Tribe
-  Vacant

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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 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 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:

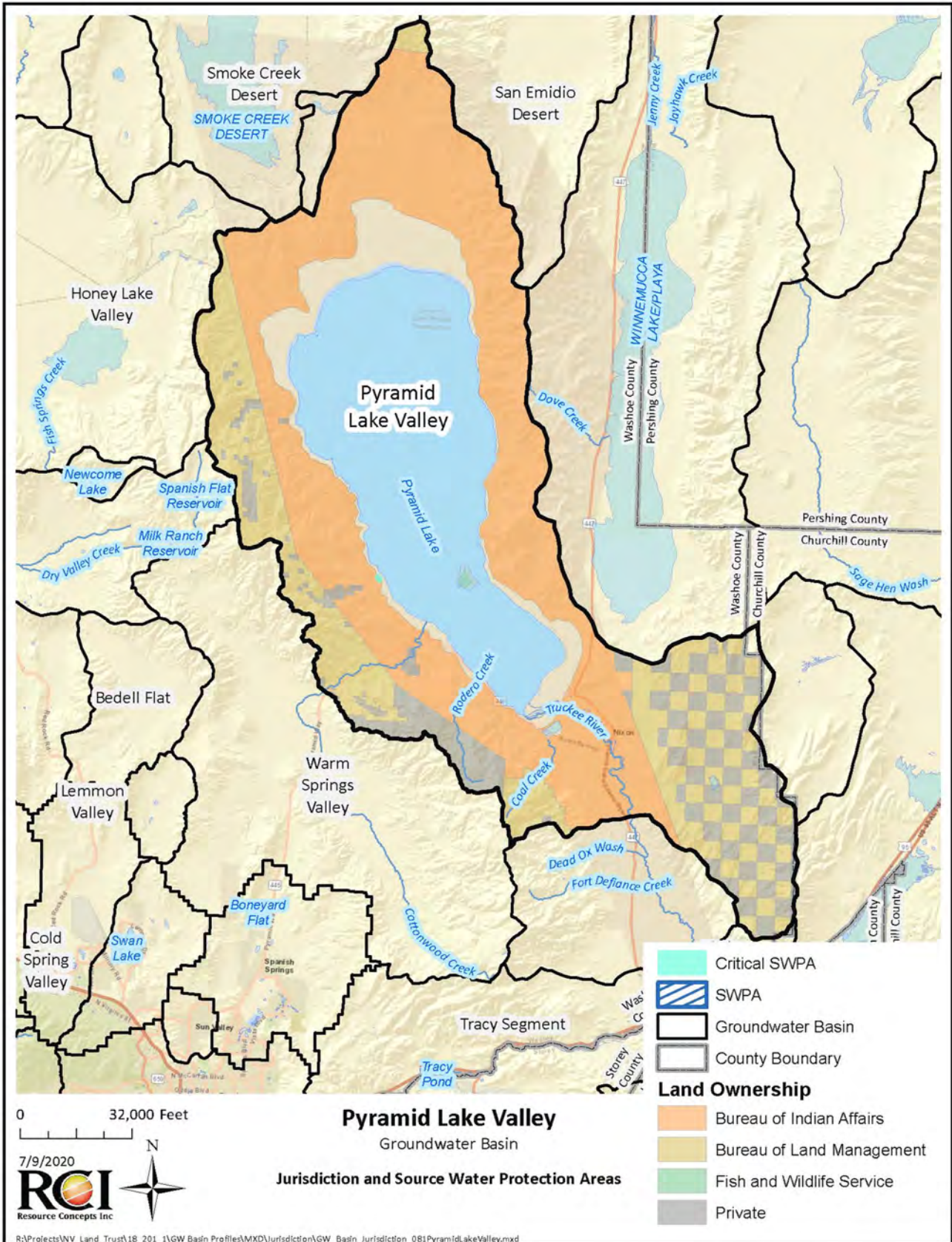
- county-wide source water protection efforts for public water systems,
- the proposed projects detailed in the Project Profiles of the planning effort,
- on-going water quality projects and programs described under Stakeholders and Plans, and
- Well Head Protection Area Delineation and Drinking Water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

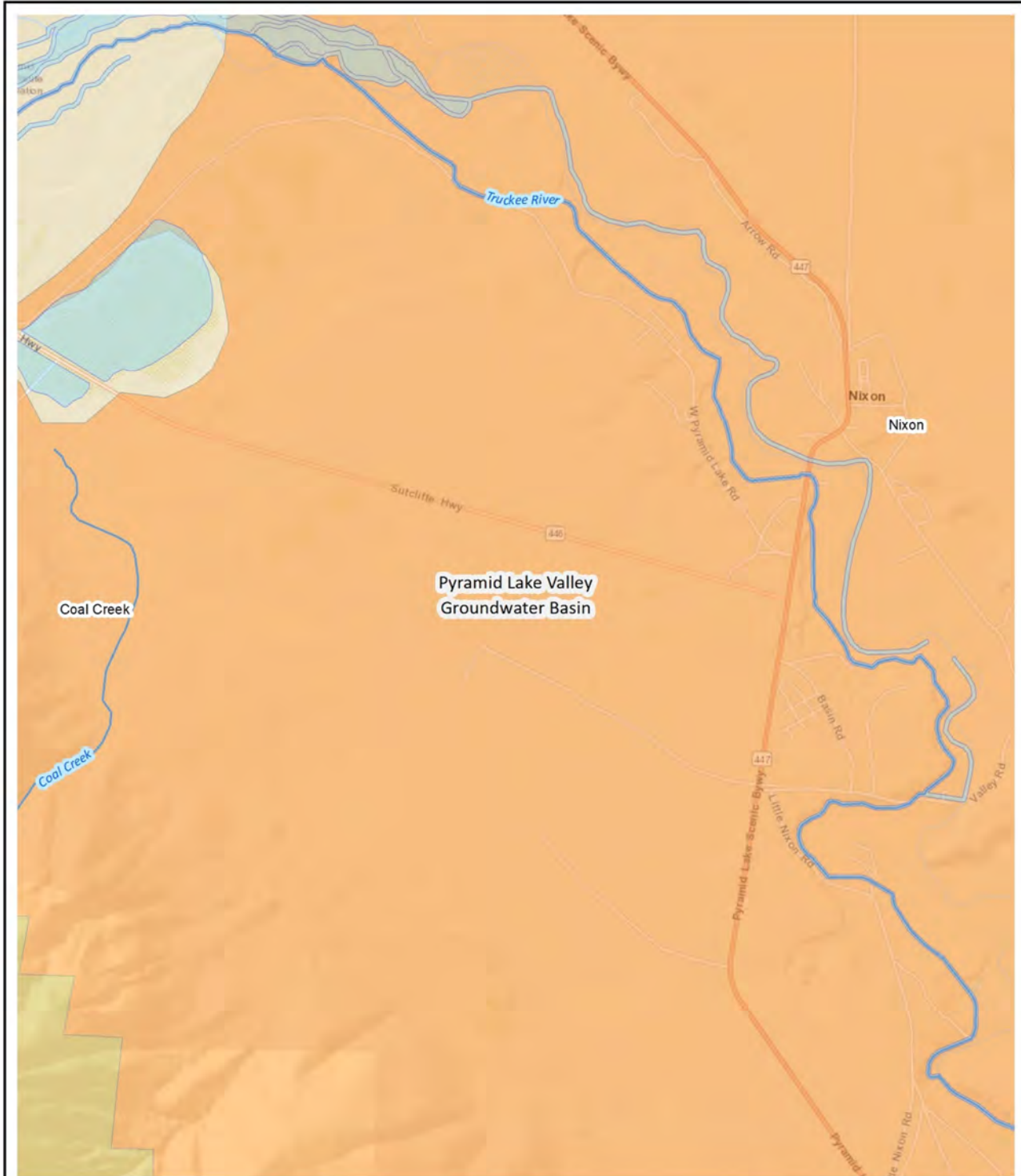
Source Water Protection Area Identification and Management

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.





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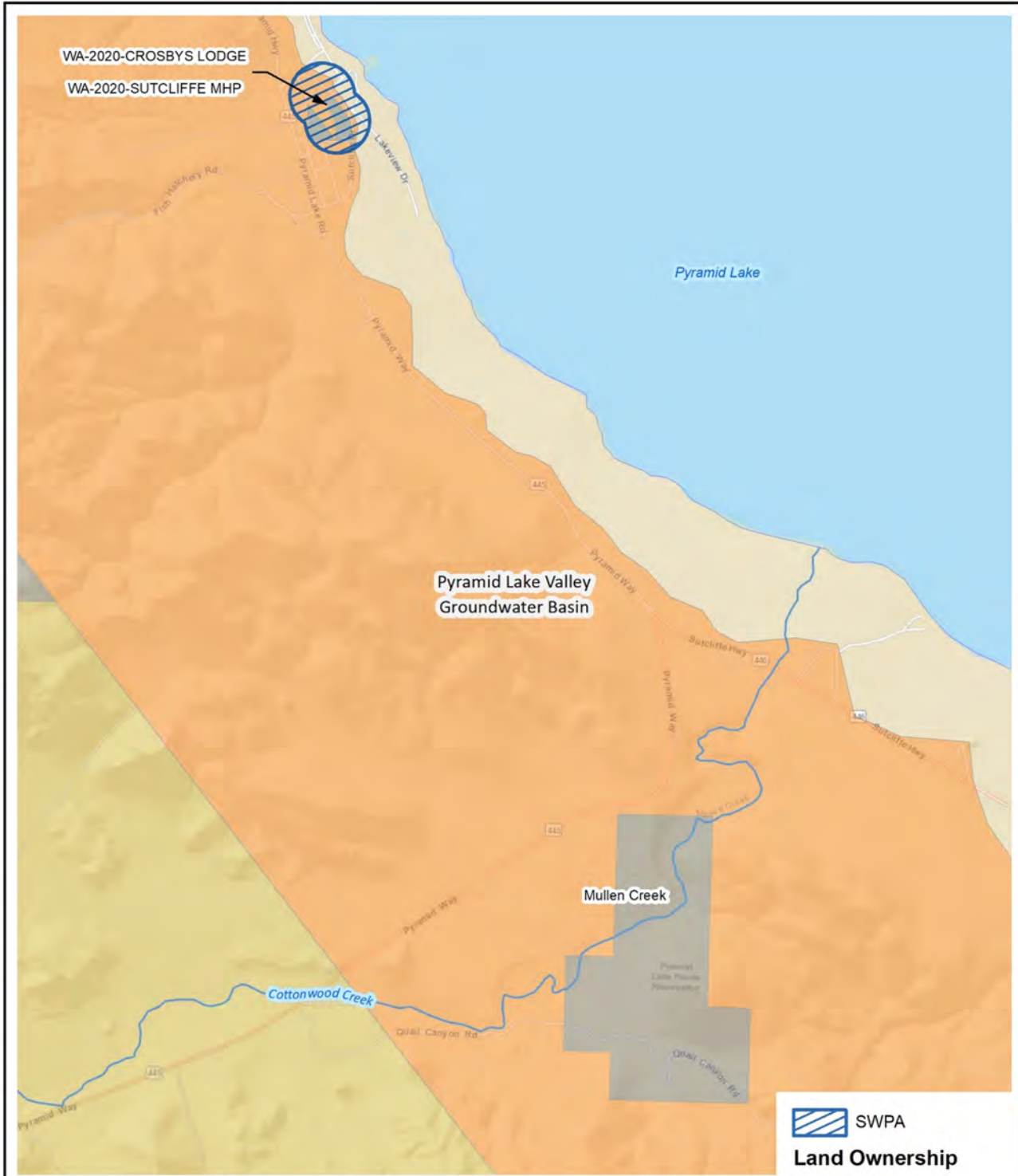


Nixon Area
 Jurisdiction and Source Water Protection Areas

Land Ownership

- Pyramid Lake Paiute Tribe
- Bureau of Land Management

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Sutcliffe Area
 Jurisdiction and Source Water Protection Areas

-  SWPA
- Land Ownership**
-  Pyramid Lake Paiute Tribe
-  Bureau of Land Management
-  Private

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- 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	
<ul style="list-style-type: none"> • Bureau of Land Management • Nevada Division of Environmental Protection • Pyramid Lake Paiute Tribe 	<ul style="list-style-type: none"> • 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](#)

Tracy Segment

Groundwater Basin #083, 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 Tracy Segment 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. This profile includes thirteen public water system wells that are regulated by the Nevada Division of Environmental Protection (NDEP), as well as seven 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, 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 Tracy Segment Basin includes the Truckee River Canyon and adjacent uplands of the mountain ranges, the Virginia Range to the south and the Pah Rah Range to the north of the canyon, encompassing about 285 square miles. The Truckee River is incised through this narrow canyon that spans from the City of Sparks eastward to Wadsworth. At the northeast end near Wadsworth, the Truckee River begins to bend to the north, entering the adjacent Dodge Flat Groundwater Basin. Groundwater movement stems from upland recharge areas and flows through the volcanic rock and down to the Truckee River.

In the Tracy Segment Basin, the eight separate public water systems, regulated by NDEP, have SWPAs corresponding buffers around the 13 wells. The east end of the Tracy Segment basin also includes a portion of Pyramid Lake Paiute Reservation, the Pyramid Lake Paiute Tribe (PLPT) has developed well head protection measures for seven wells all in the Wadsworth area that are under separate tribal jurisdiction.

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

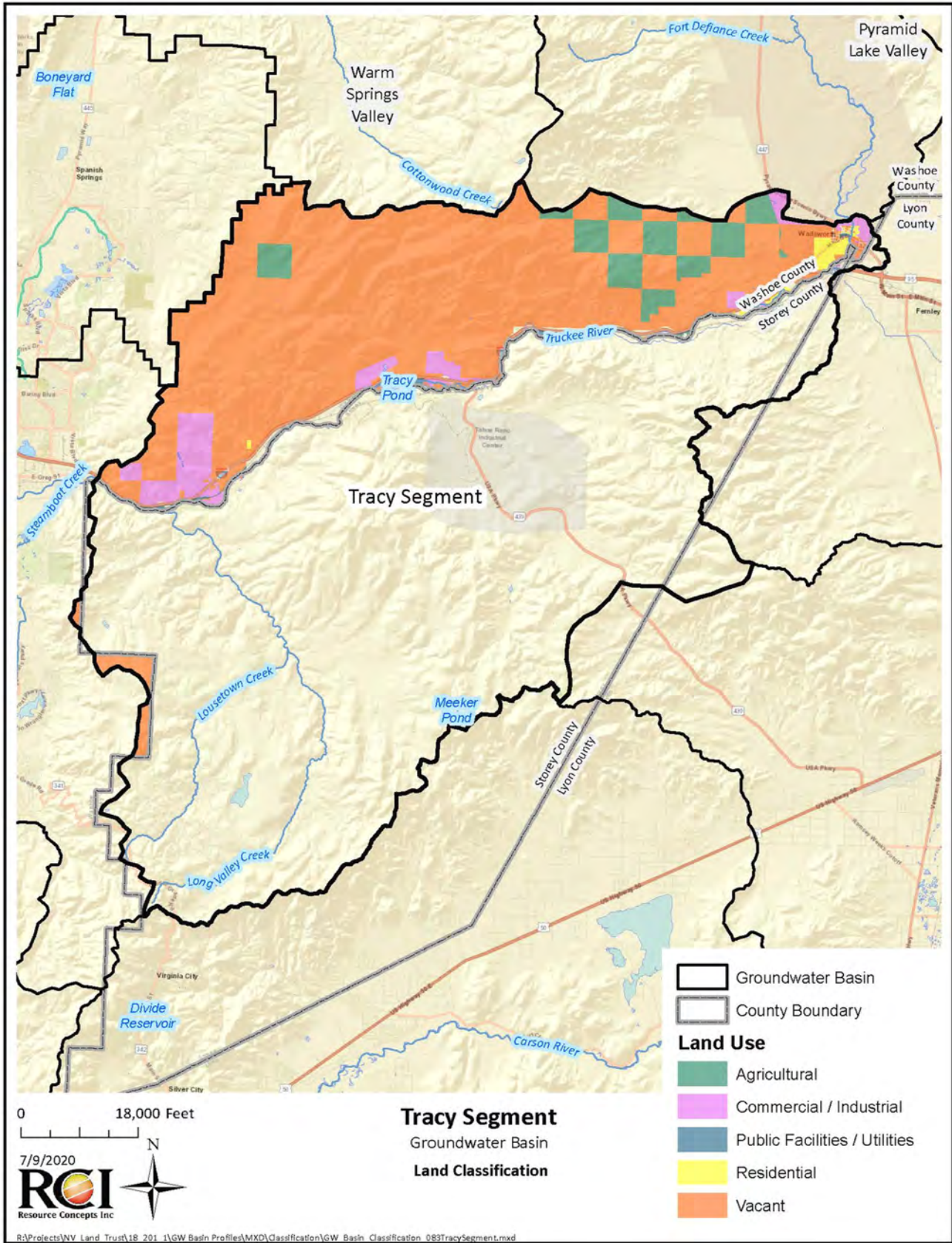
Basin Summary	
Basins	<ul style="list-style-type: none"> Groundwater Basins: Tracy Segment #083 HUC-12 Watershed: Giants Throne Canyon-Truckee River #160501020607 Derby Dam-Truckee River #160501020608 Dead Ox Wash-Truckee River #160501030304 Unnamed #160501020604
Source Water Protection Areas	<ul style="list-style-type: none"> A SWPA provides a buffer around public water system wells, and it represents a precautionary indicator to safeguard the drinking water sources. Critical SWPAs represent areas closer to public water system wells. 13 wells, regulated by NDEP, are managed by eight individual public water systems that provide drinking water to multiple public businesses, including two industrial parks, and residential areas around the community of Wadsworth. SWPAs have been delineated around these wells. There are seven wells identified by the Pyramid Lake Paiute Tribe in the Wadsworth area. Contact the Pyramid Lake Paiute Tribe about WHPAs for the public water systems under tribal jurisdiction. The Truckee Canyon and Stampmill water systems are currently operated by the Truckee Meadows Water Authority (TMWA).
Special Considerations & Issues	<ul style="list-style-type: none"> No surface waters are used directly for public water supply. However, public water systems in the Tracy Segment Basin exclusively rely on groundwater. The Truckee River has “designated” Beneficial Uses or water quality standards in three of the HUC-12s: Giants Throne Canyon-Truckee River, Derby Dam-Truckee River, and Dead Ox Wash- Truckee River. The east end of the Tracy Segment basin near Wadsworth area extends into the Pyramid Lake Paiute Tribe Reservation. Pyramid Lake Paiute Tribe has a Water Quality Control Plan (2015) for surface waters. The Pyramid Lake Paiute Tribe has developed the <i>Well Head Protection Area Delineation and Drinking Source Water Evaluation</i> (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 Wadsworth community.

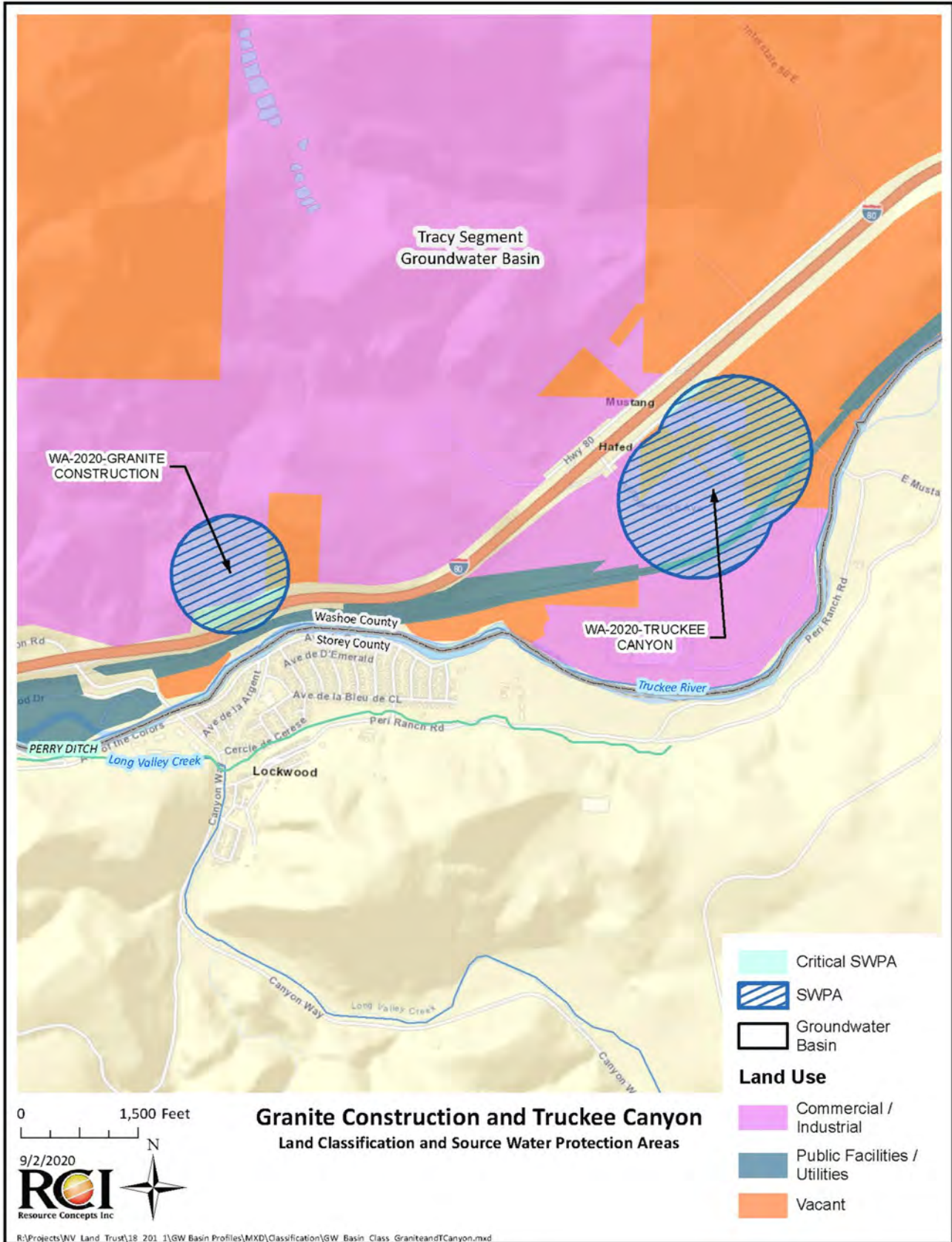
SWPA Acreage	Type	Acres
Land Jurisdiction	BIA:	1058
	Washoe County Non- Federal:	813
	BLM:	113
	BOR:	6
Land Use	Commercial/Industrial:	395
	Residential:	326
	Public facility/ Utilities:	23
	Vacant:	1057
	Undefined:	23
	Roads (Miles):	39

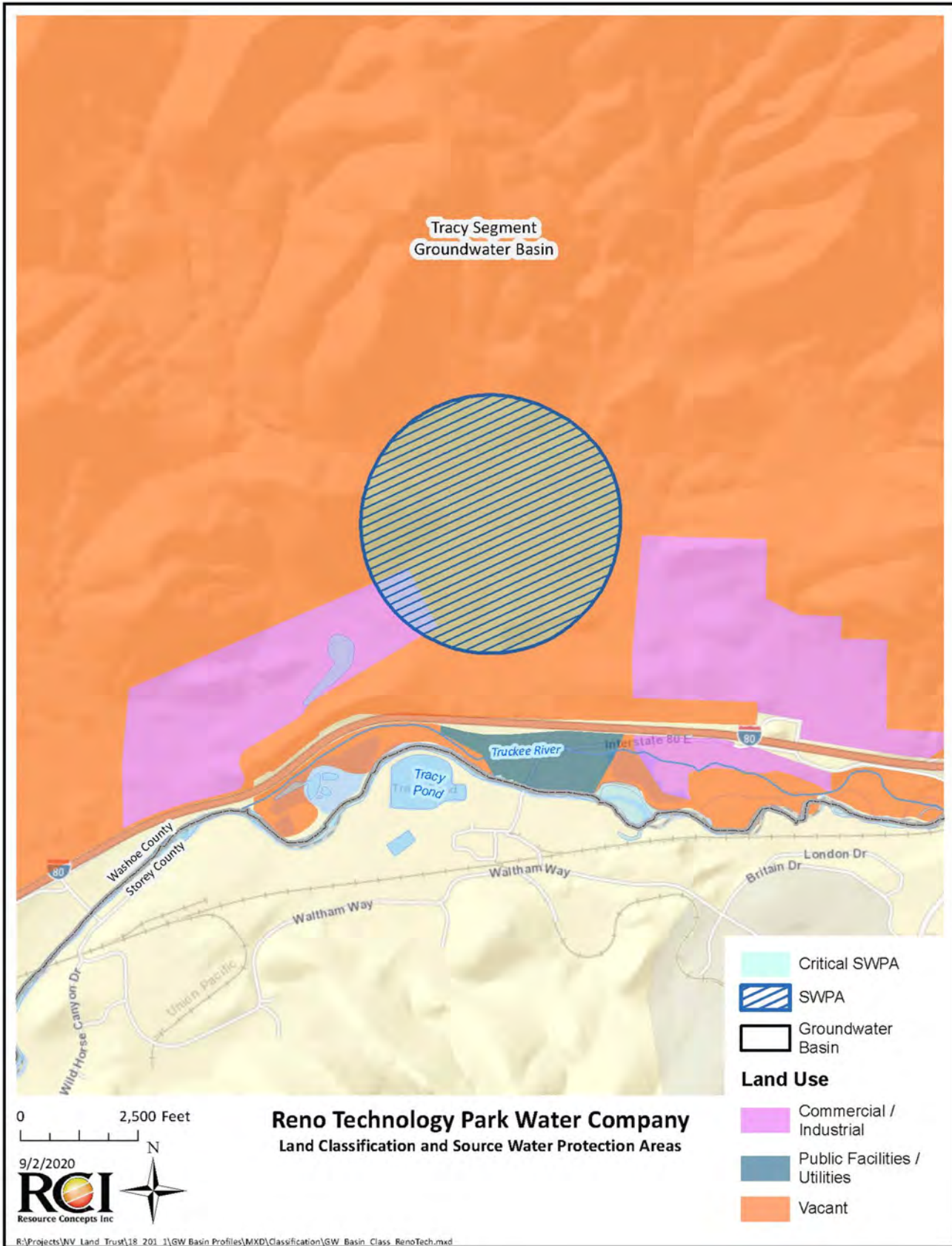
Land uses and jurisdictions in the SWPAs are summarized in the adjacent table and illustrated by the [Land Classification Figure](#). Lands are privately owned or managed by one of the following federal agencies: Bureau of Indian Affairs (BIA), Bureau of Land Management (BLM), or Bureau of Reclamation (BOR).The Interstate 80 (I-80) corridor is managed by NDOT.

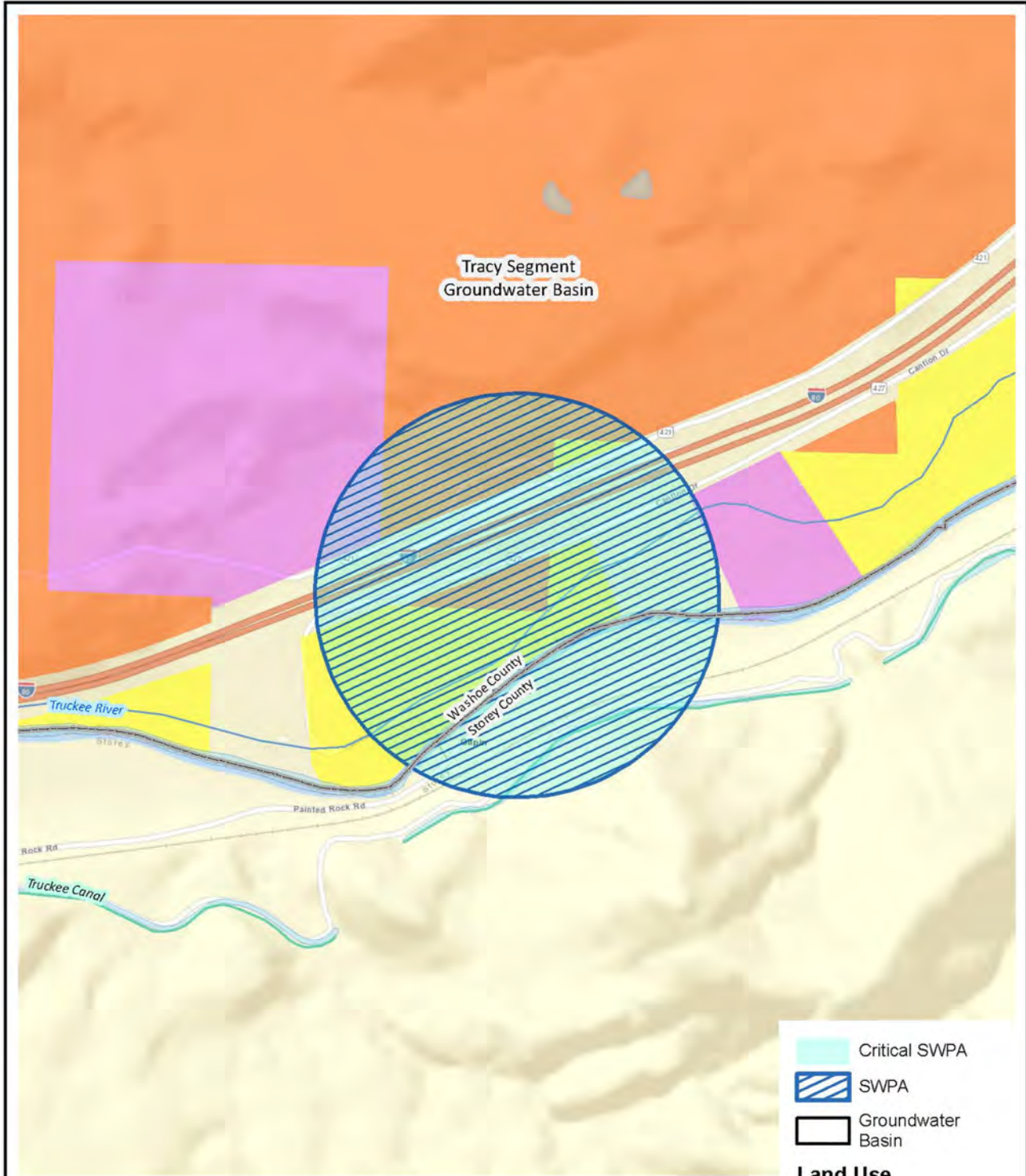
The public water systems, Granite Construction, Truckee Canyon Well, and the Reno Technology Park Water Company, and portions of the Wadsworth SWPAs, consist of industrial zoning. Potential water quality concerns are primarily due to chemical/fuel leaks or spills. Residential areas around the Stampmill and Wadsworth SWPAs are served by septic systems, therefore, nitrate is a potential

groundwater contaminant. Agriculture is a potential contributory activity occurring along the river corridor near Wadsworth and the NDOT Wadsworth Rest Stop.









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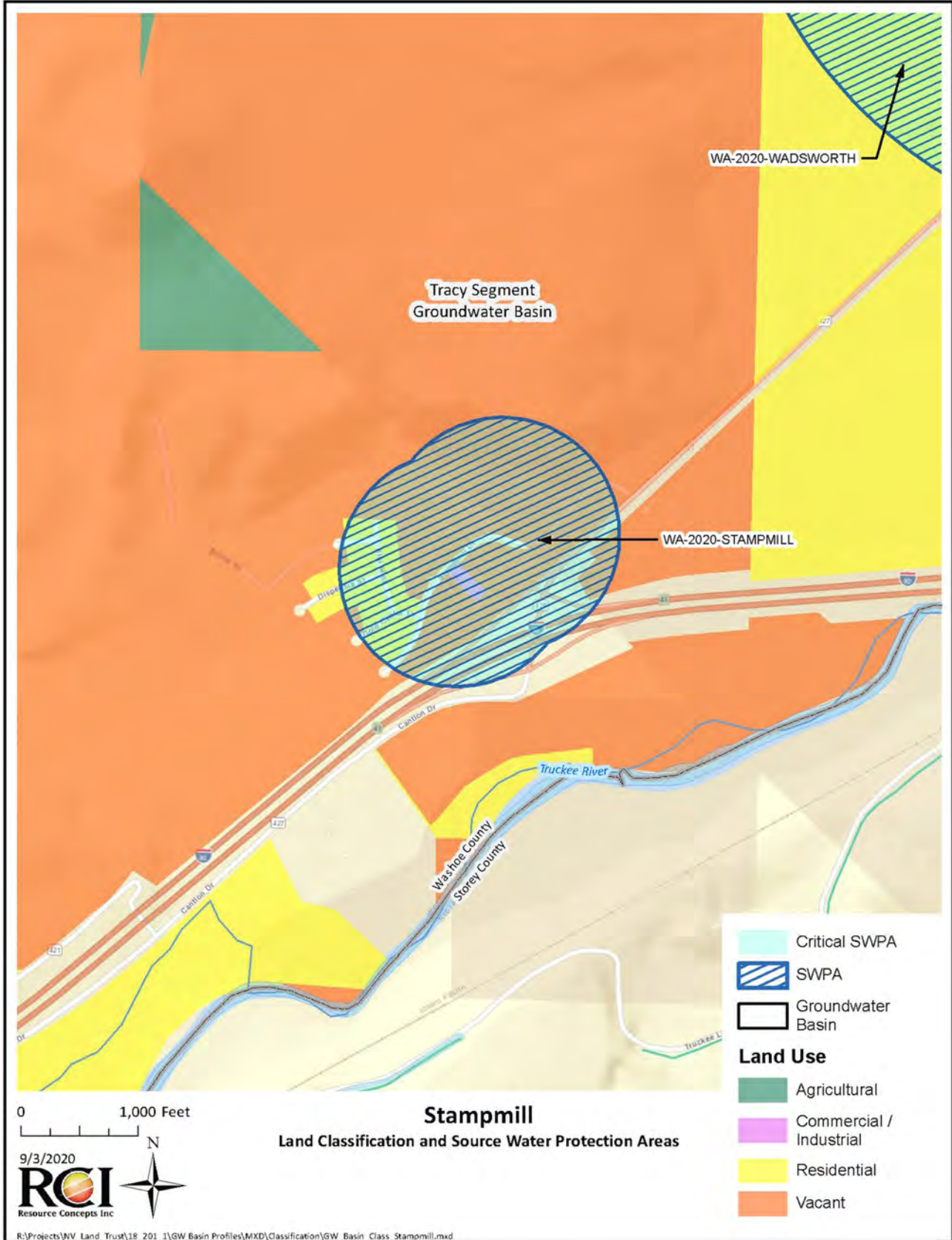
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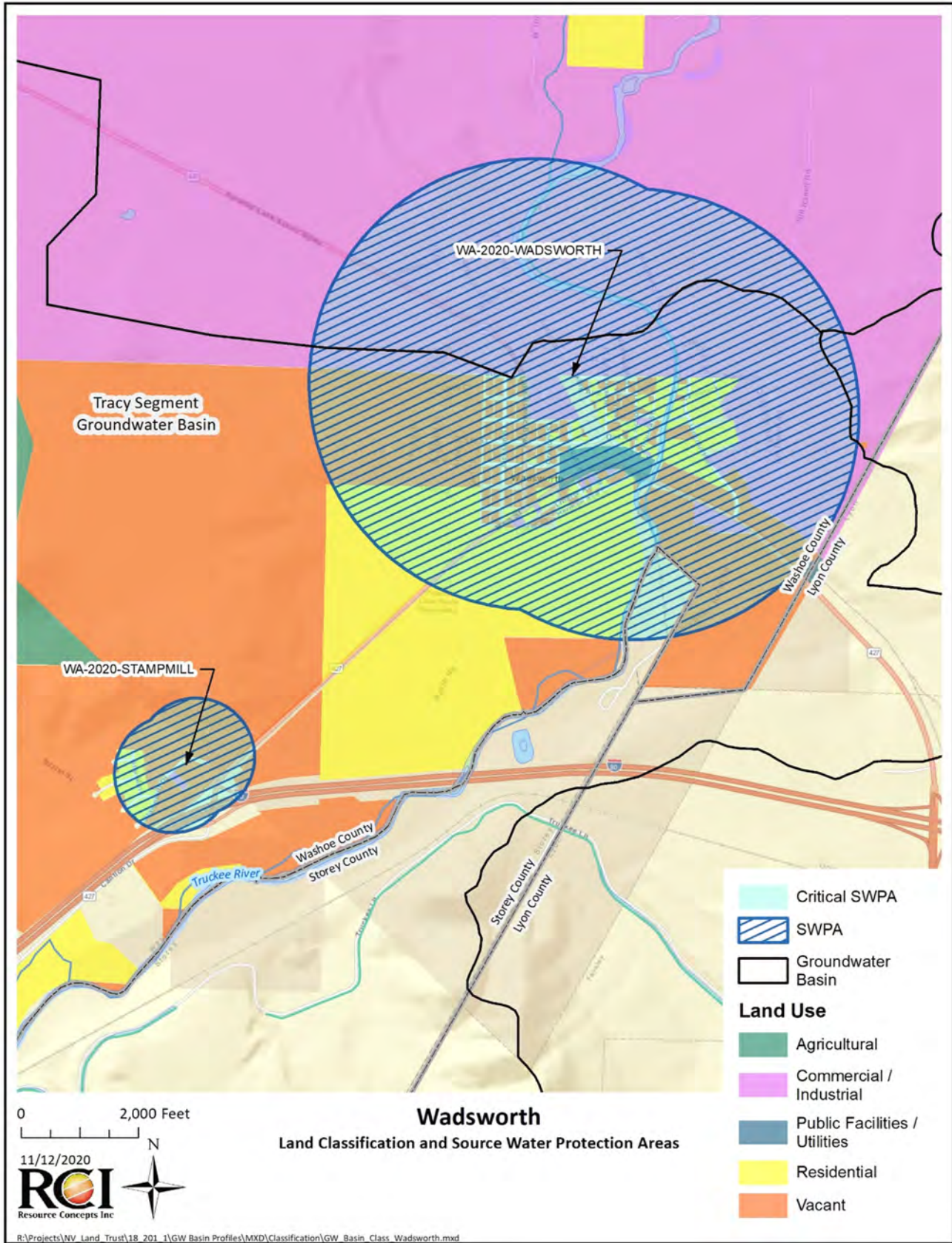


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NDOT Wadsworth Rest Stop Land Classification and Source Water Protection Areas

-  Critical SWPA
-  SWPA
-  Groundwater Basin
- Land Use**
-  Commercial / Industrial
-  Residential
-  Vacant





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 Tracy Segment is located within the “Truckee River Basin”. Standards applicable to beneficial uses are generally described under [NAC 445A.122](#). The Nevada Division of Environmental Protection (NDEP) Bureau of Water Quality Planning Nevada 2016-2018 Water Quality Integrated Report identifies the beneficial uses and the surface water quality standards for the Truckee River and Lagomarsino Creek within the Tracy Segment. Reaches of the river are impaired for “Aquatic Life” due to Temperature, and “Irrigation” due to Boron. In addition, the Truckee River is listed as not meeting the “Total Maximum Daily Load” from Lockwood to Wadsworth for the parameters Total Nitrogen and Total Phosphorus. All segments of the river fully support “Municipal and Domestic Supply” beneficial use. As the public water systems within the Tracy Segment are small and rely solely on groundwater, water quality protection for surface water is not further addressed in this planning effort.

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 13 wells used by eight small individual public water systems, regulated by NDEP, in the Tracy Segment groundwater basin. There are 7 existing or future water systems wells identified by the Pyramid Lake Paiute Tribe for well head protection (Stetson, 2011). These wells are highly valued because they are isolated water systems providing drinking water to the public in Washoe County and the tribal community in Wadsworth.

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

- Hazardous Materials from Spills or Leaks (industry/commercial, I-80 east)
- Pollution from Community Activities and Runoff
- Nitrate from Individual Sewage Disposal Systems

Hazardous Materials from Spills or Leaks

The SWPAs for wells associated with the Granite Construction, Truckee Canyon, and Reno Technology Park Water Company PWSs encompass lands that are currently zoned or planned for industrial uses. Industrial activities may result in accidental leaks and spills from the storage and use of chemicals. Similarly, leaking above and below ground fuel storage tanks or underground piping have routinely been found to cause groundwater contamination. The Truckee Canyon wells are in the immediate vicinity of several industrial facilities, including underground storage tanks. Wells for the Granite Construction or Reno Technology Park systems are more isolated, though surrounding land has potential for expanding industrial activity. All the SWPAs in the Tracy Segment reside along I-80 and the railroad. Hazardous materials or fuel from leaks and spills, if not properly cleaned in a timely manner, have the potential to contaminate groundwater.

Pollution from Community Activities and Runoff

Groundwater may be vulnerable to infiltration of polluted runoff from developed areas. Potential contaminants include:

- nutrients from fertilizers
- agricultural chemicals
- animal wastes
- pollution from household waste
- runoff from roads and parking lots

The SWPA formed around wells supplying the following water systems: the Natchez school, the Natchez gym, Conestoga Mobile Home Park, and Wadsworth Mobile Home Park, regulated by NDEP and the seven public water systems identified by the PLPT including three community wells, Big Bend Ranch House and RV Park, a mixed service smoke shop and irrigation well encompasses the community of Wadsworth. Some commercial/industrial activity has the potential for pollution of groundwater or runoff, for example: auto repair services, commercial storage of goods and vehicles, salvage yards, gas stations, schools, or the improper disposal of household wastes. Orphaned wells in agricultural and residential areas can also provide a direct conduit for pollution to reach groundwater.

There are agricultural activities surrounding the NDOT Wadsworth Rest Stop and Wadsworth SWPAs. In general, agriculture is likely to involve the use and storage of fertilizers and pesticides/herbicides that, depending on handling practices and irrigation, can contribute to groundwater quality issues.

Nitrates from Individual Sewage Disposal Systems

Individual Sewage Disposal Systems, or septic systems, are associated with nitrate contamination of groundwater if there are large numbers concentrated in a small area, for example, neighborhoods with lot sizes less than one-acre. The Stampmill and Big Bend Ranch House and RV Park in Wadsworth SWPAs both have residential areas with lot sizes less than one-acre served by septic systems. Susceptibility to contamination can depend on depth to groundwater, flow direction, well screen depth, and the soil types between the septic tank and the well screen.

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.
- 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 PWS wells regulated by NDEP, and 10-year WHPA Model evaluations for wells identified by 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.
- 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.

For additional information on the WHPAs on the Pyramid Lake Paiute Reservation refer to the Well Head Protection Area Delineation and Drinking Source Water Evaluation (Stetson Engineers, 2001).

Education and Outreach

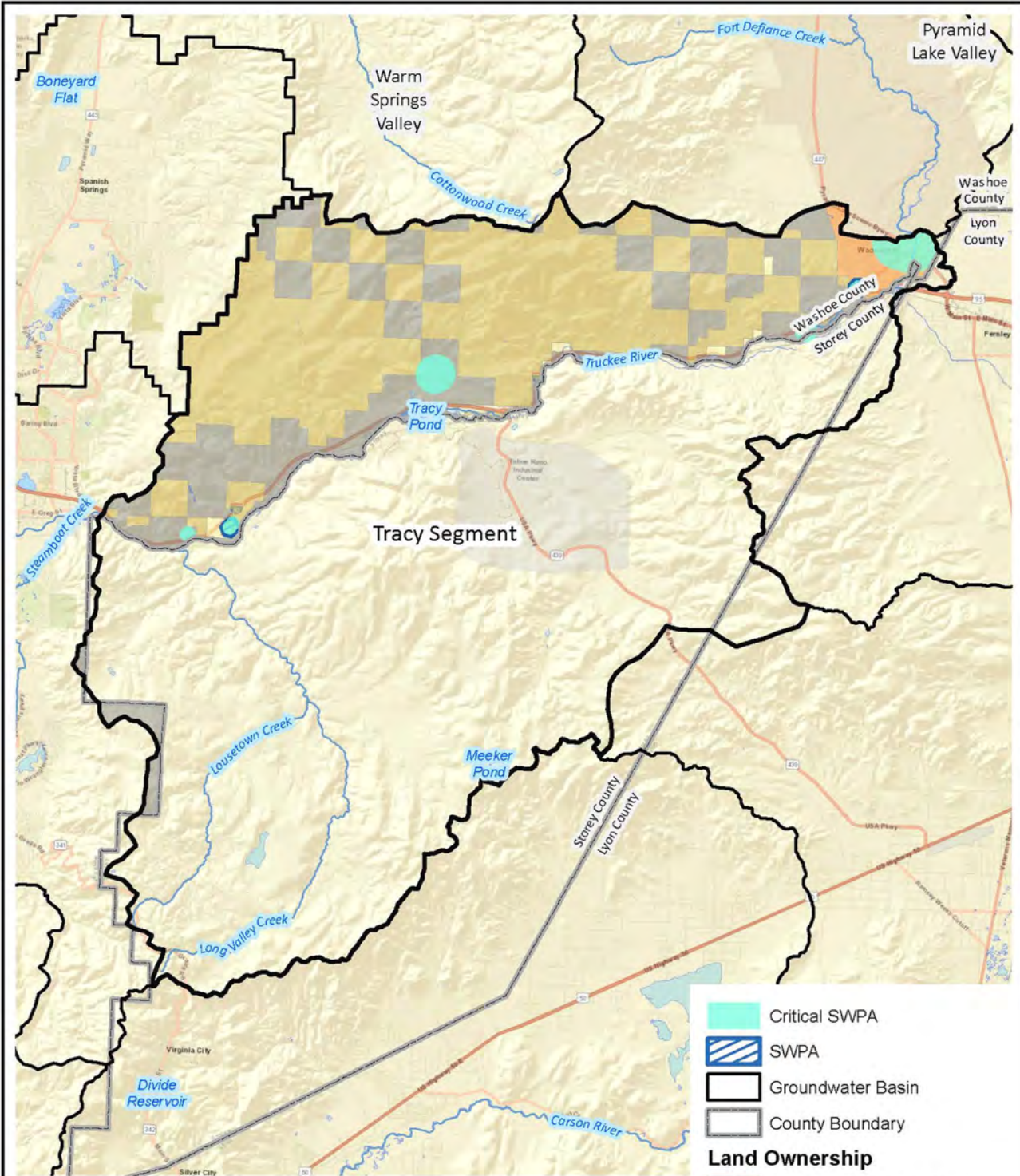
The following education and outreach objectives are intended to help effectuate positive actions to protect water quality:

- Increase knowledge of water quality protection and the pollution in stormwater runoff through local outreach efforts.
- Increase knowledge about household and commercial chemical use, storage, and disposal through local outreach efforts.
- Inform landowners and developers residing in critical 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, TMWA, NDEP, Washoe County Health District, Pyramid Lake Paiute Tribe, BIA, BOR, and private landowners.
- Continue to increase coordination and communication regarding spills and corrective actions along I-80 and the railroad.
- 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).



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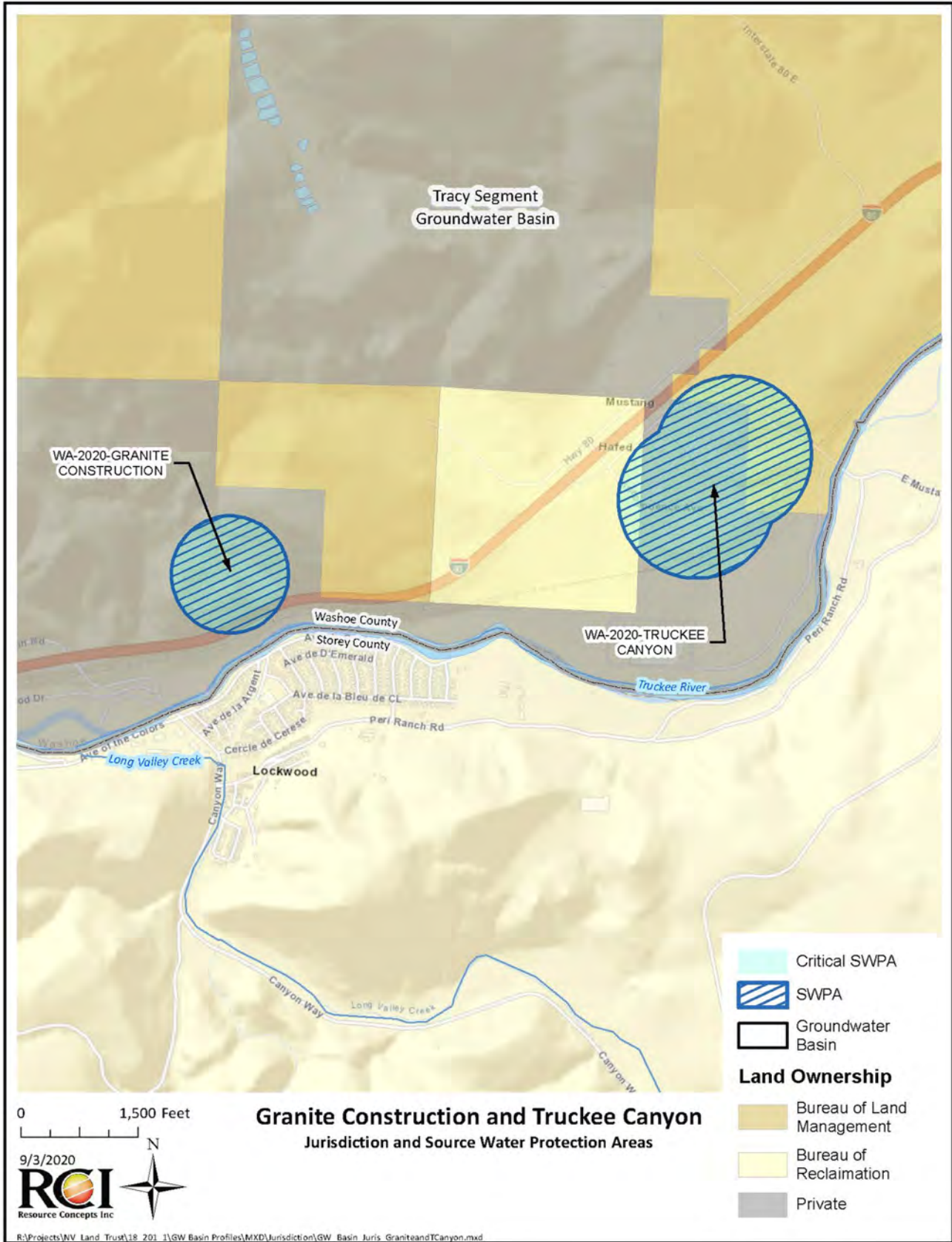
Tracy Segment

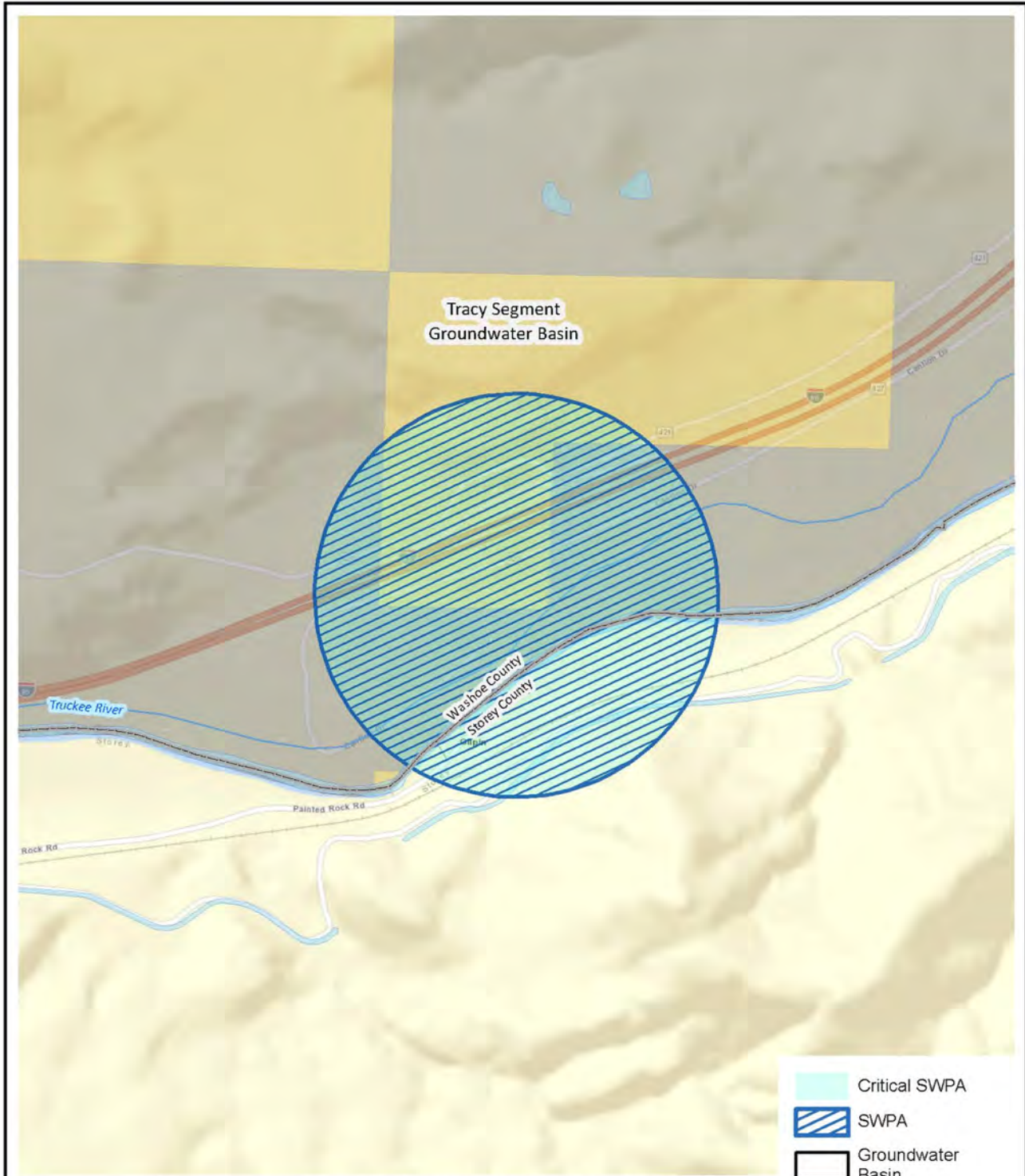
Groundwater Basin

Jurisdiction and Source Water Protection Areas

- Critical SWPA
- SWPA
- Groundwater Basin
- County Boundary
- Land Ownership**
- Bureau of Indian Affairs
- Bureau of Land Management
- Bureau of Reclamation
- Private

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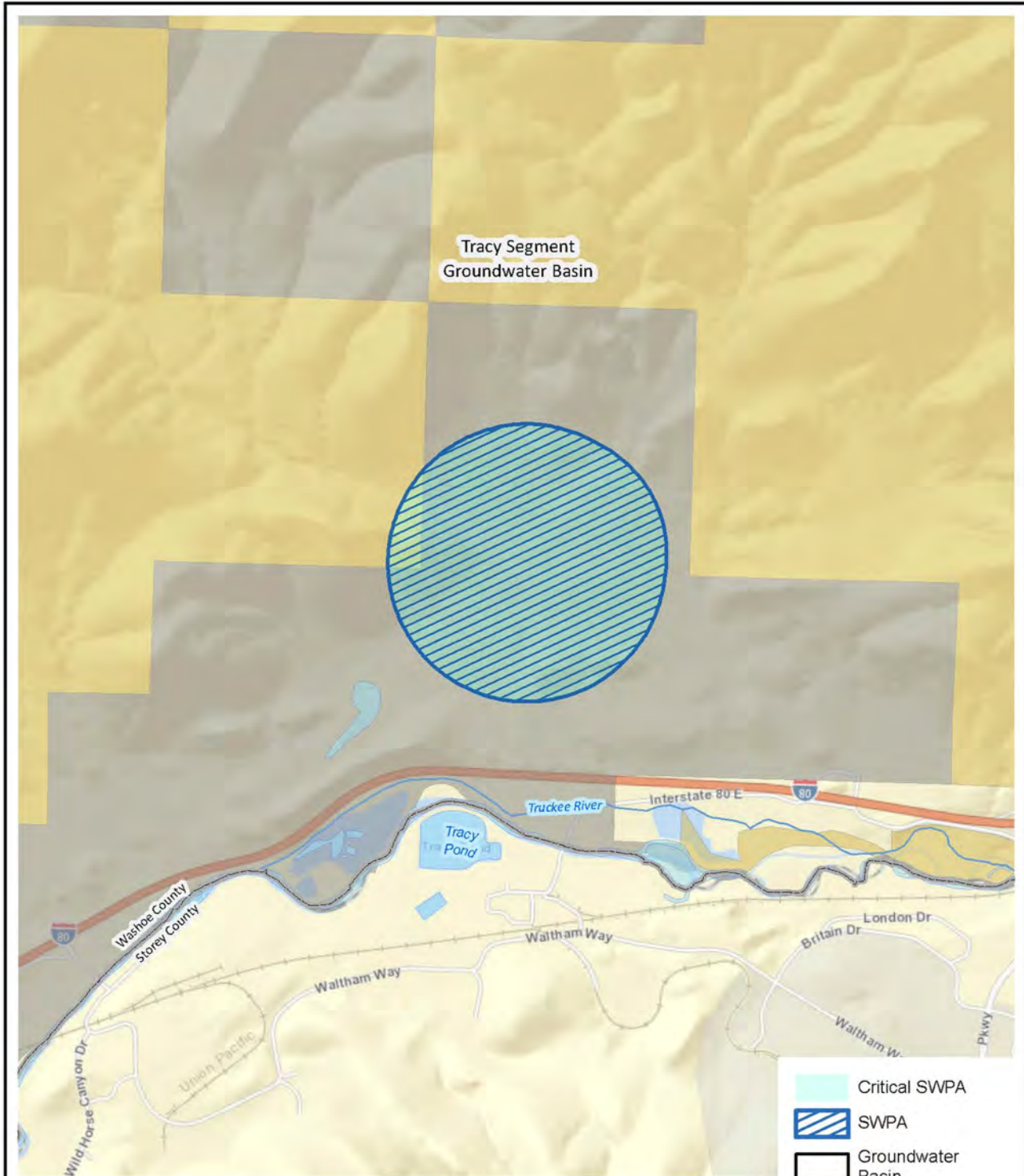
NDOT Wadsworth Rest Stop
Jurisdiction and Source Water Protection Areas

- Critical SWPA
- SWPA
- Groundwater Basin

Land Ownership

- Bureau of Land Management
- Private

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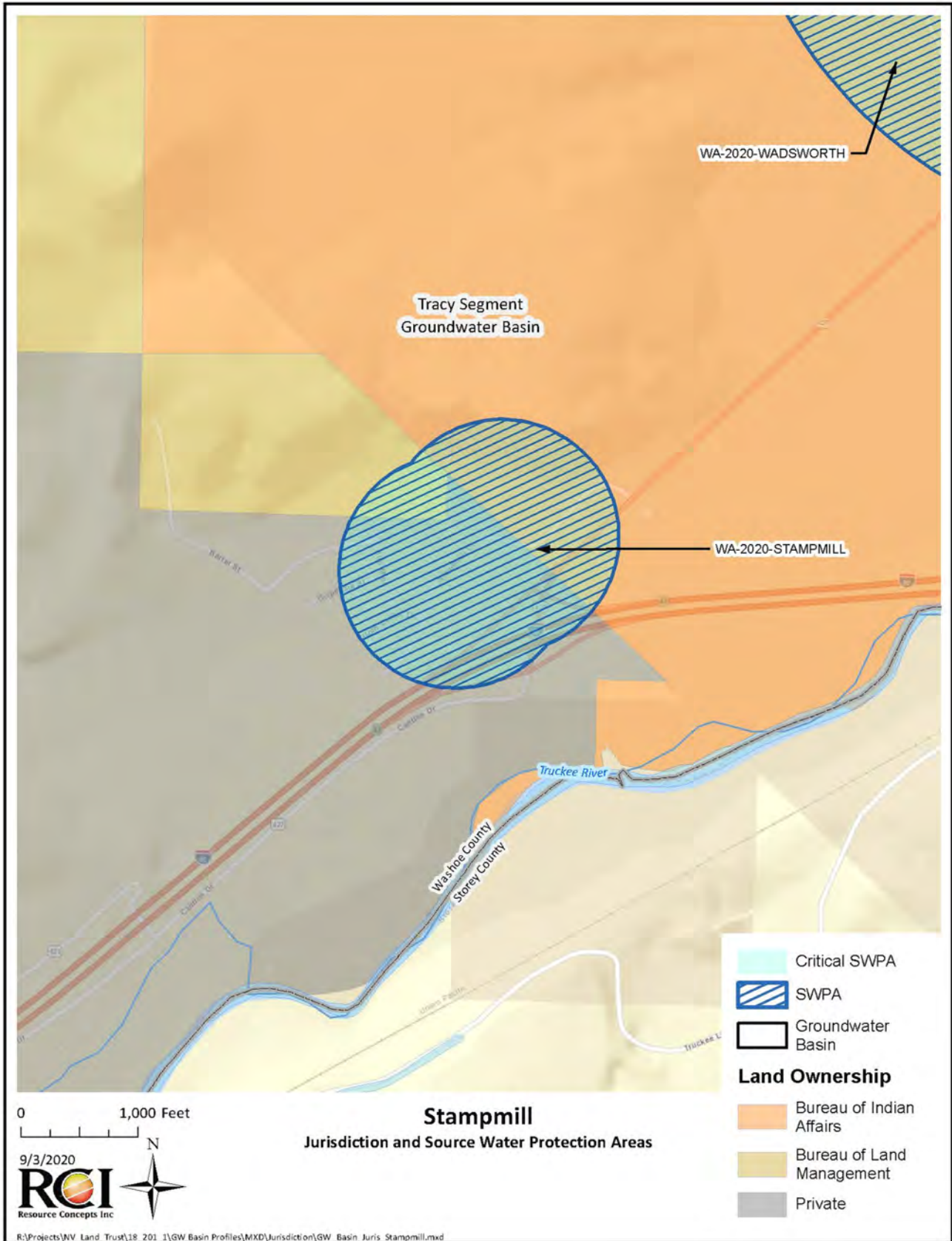
Reno Technology Park Water Company
Jurisdiction and Source Water Protection Areas

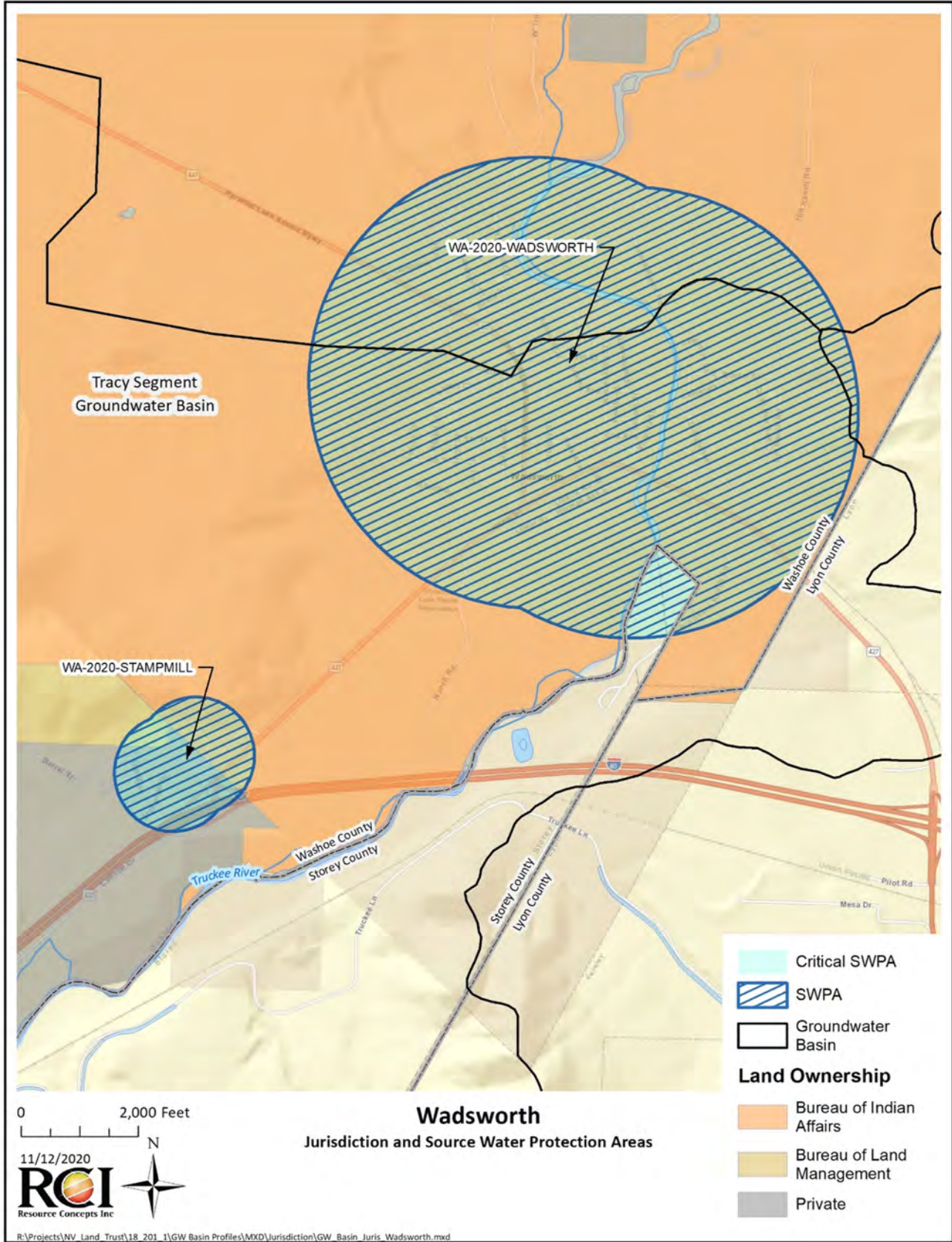
- Critical SWPA
 - SWPA
 - Groundwater Basin
- Land Ownership**
- Bureau of Land Management
 - Private

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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, 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 eight 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.
- Fertilizer and pesticide management plans for irrigated green spaces.

Proposed Implementation Projects

Proposed implementation actions are generally described under 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	
<ul style="list-style-type: none"> • Bureau of Land Management • Nevada Division of Environmental Protection • Pyramid Lake Paiute Tribe • Truckee Meadows Water Authority 	<ul style="list-style-type: none"> • Washoe County • Washoe County Health District • Western Regional Water Commission

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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](#)

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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.

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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.

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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 10 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) which 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 PUD](#)

Truckee Meadows Water Authority

TMWA is responsible for almost all municipal water delivery in the greater Reno-Sparks area. TMWA also owns and operates the municipal wells in this basin. The following program and plans guide the management of these water resources:

- TMWA Water Resources Plan (2016-2035):
This plan describes water quality issues and goals for the water resources managed by TMWA. Special focus is placed on changes in future water supply and demand, and how those changes will impact the region's water resources.
- Source Water Quality Assurance Program (2016-2035):
TMWA's objective is to deliver high-quality potable water to its customers in a cost-effective manner. To achieve this objective, TMWA has established a water quality assurance program. The components that make up the program are source water quality protection, potable water treatment, maintenance of distribution system water quality, and cross connection control.
- Wellhead Protection Plan (2016):
The purpose of the Wellhead Protection Plan is to protect groundwater that serves as a source for public drinking water supplies. This plan is intended to be a tool used by TMWA to assist in protecting drinking water sources.

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:

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The Comprehensive Regional Water Management Plan includes several applicable objectives:

- [Objective 1.2](#) Provide for a Sustainable Water Supply and an Acceptable Level of Service to the Community (including protecting groundwater recharge areas).
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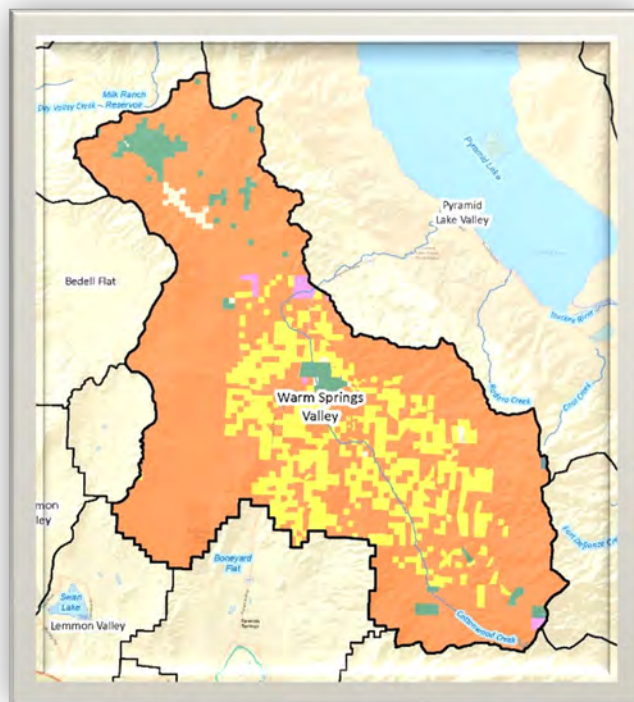
References

- 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.
- TMWA, Truckee Meadows Water Authority, 2016-2035 Water Resource Plan. Appendix 2-9 Basin Summaries, 2016. [TMWA 2016-2035 Water Resources Plan Volume III](#)
- 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](#)

Warm Springs Valley

Groundwater Basin #084, 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 Warm Springs 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 for small recreation developments in the valley. There are no surface waters used directly by water systems in this basin. This profile includes potential and existing water quality concerns, types of land uses, management strategies and projects, and the involved stakeholders and their corresponding plans with water quality components.

The Warm Springs Valley basin is a northwest hydrographic area of 247 square miles surrounded by the Virginia Mountains in the northeast, Dogskin Mountain to the north, and the Pah Rah Range in the south. The mountains are composed of mostly volcanic, sedimentary, and granitic rock. The principal aquifer in the basin is in alluvium. Groundwater moves from upland recharge areas down to basin lowlands.

Small public water systems regulated by the state of Nevada in this basin include: Air Sailing, Inc. Gliderport, the Washoe Regional Shooting Range, and the Springwood Equestrian Center, each with their own active well. The land in these SWPAs is privately owned with a small portion of the land in the SWPA at the Air Sailing, Inc. Gliderport managed by the BLM. The Reno-Sparks Indian Colony (RSIC) also has a public water system in Warm Springs Valley with several wells under separate tribal jurisdiction.

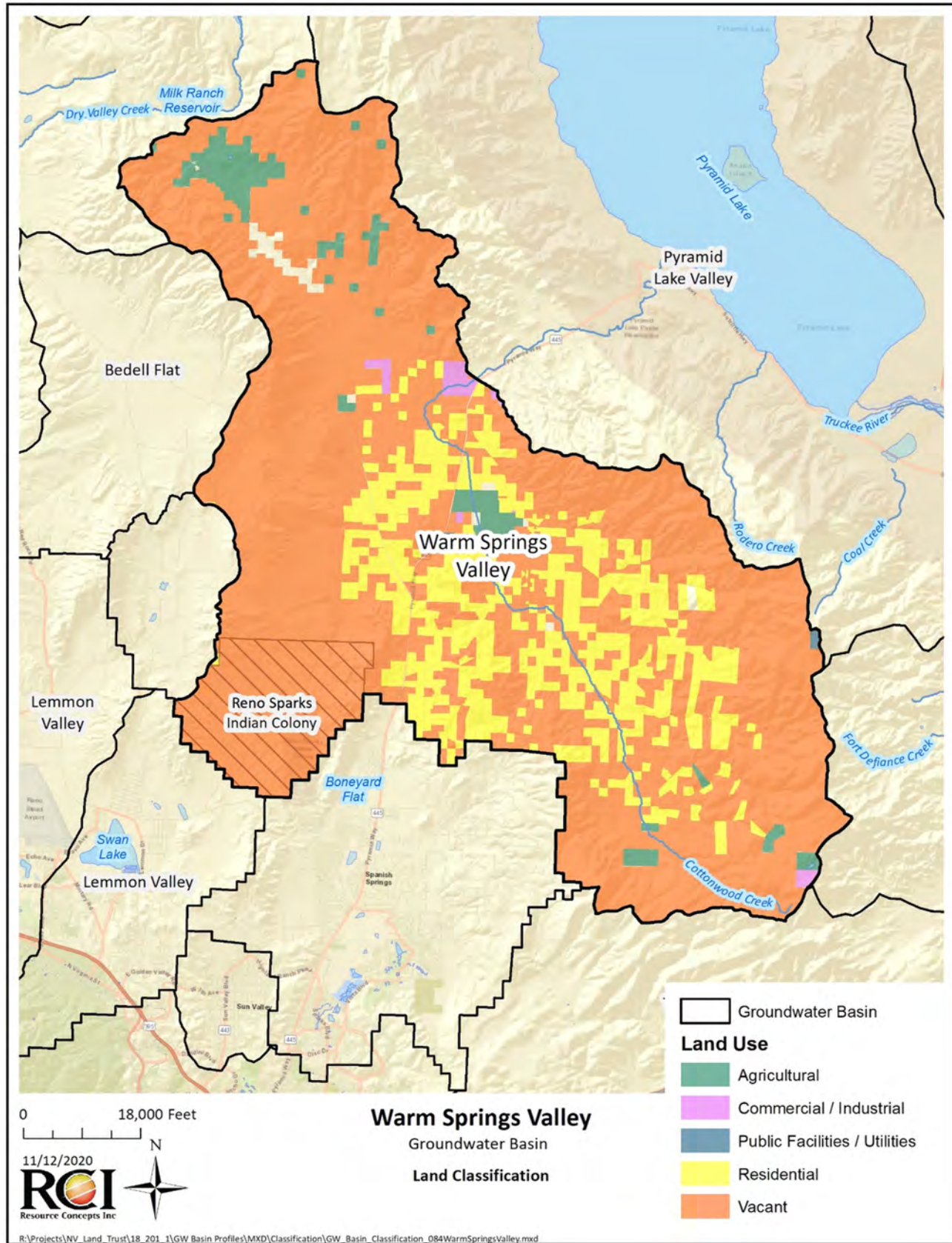
The following table summarizes key water quality aspects of this basin to help protect drinking water sources.

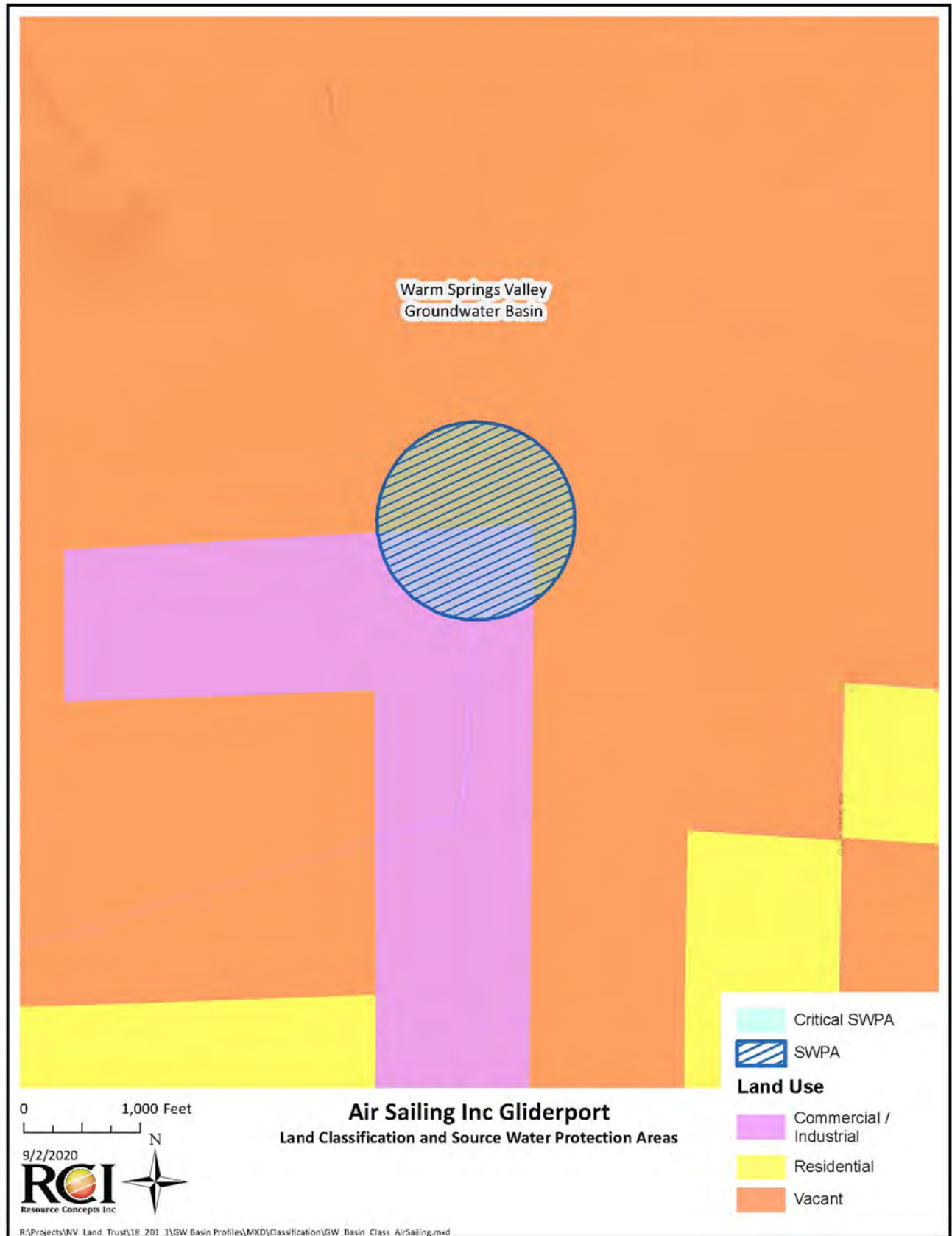
Basin Summary	
Basins	<ul style="list-style-type: none"> • Groundwater Basins: Warm Springs Valley #084 • HUC-12 Watershed: Upper Mullen Creek #160501030407 Lower Mullen Creek #160501030600 Bacon Rind Flat #160501030404
Source Water Protection Areas	<ul style="list-style-type: none"> • A SWPA provides a buffer around public water system wells, and it represents a precautionary indicator to safeguard the drinking water sources. • Three wells are managed by three small State regulated public water systems that provide drinking water to 25 people, 25 people, and 175 people, respectively. • 299 acres make up the SWPA areas identified through this Plan. • The Reno Sparks Indian Colony has a public water system with multiple wells and groundwater protection planning information under tribal jurisdiction.
Special Considerations & Issues	<ul style="list-style-type: none"> • No surface waters are used for public water supply. • Cottonwood Creek is the only surface water with “designated” Beneficial Uses in the groundwater basin.

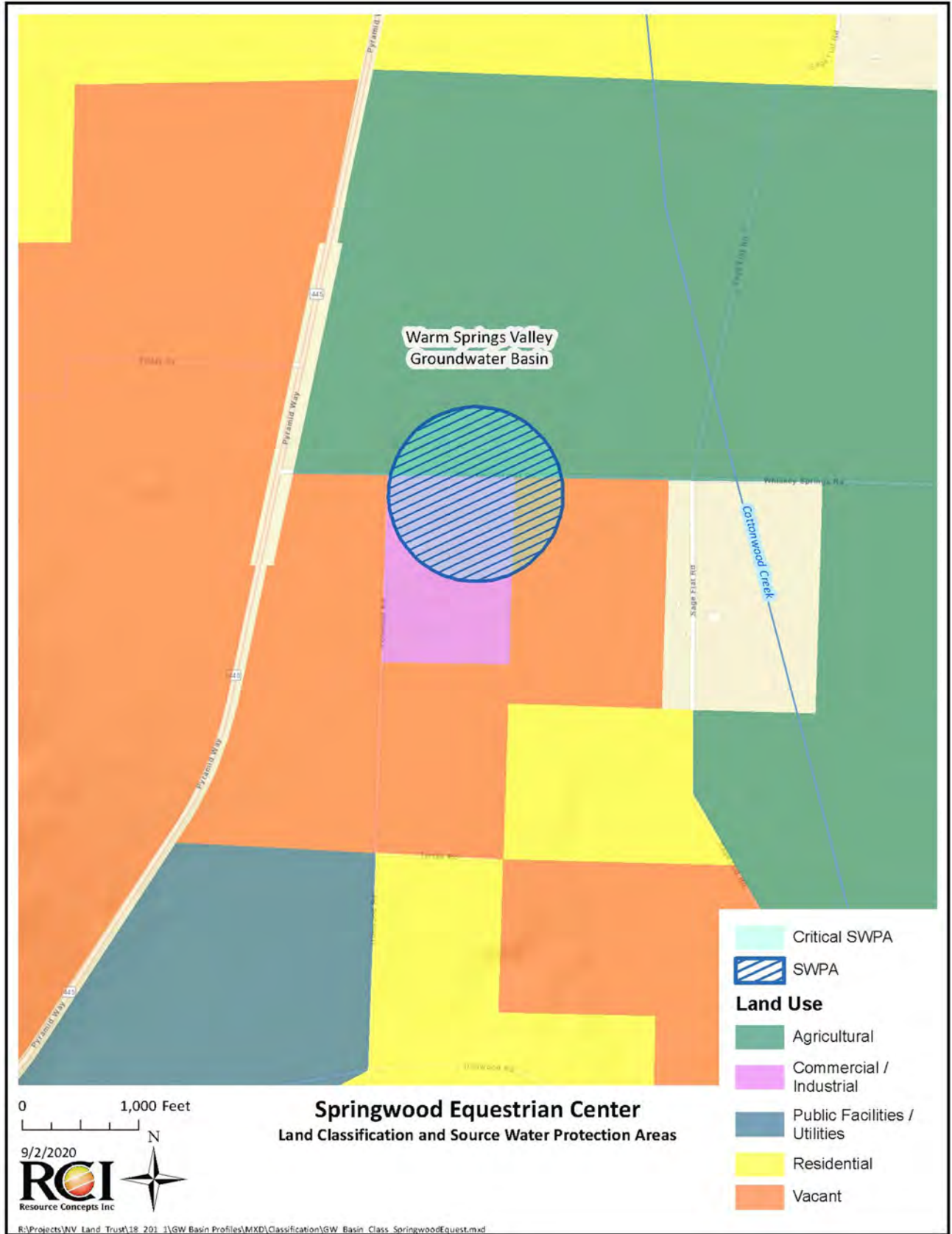
SWPA Acreage		Type	Acres
Land Jurisdiction	Washoe County Non- Federal:		294
	BLM:		5
Land Use	Agricultural:		15
	Commercial/Industrial:		220
	Residential:		1
	Vacant:		55

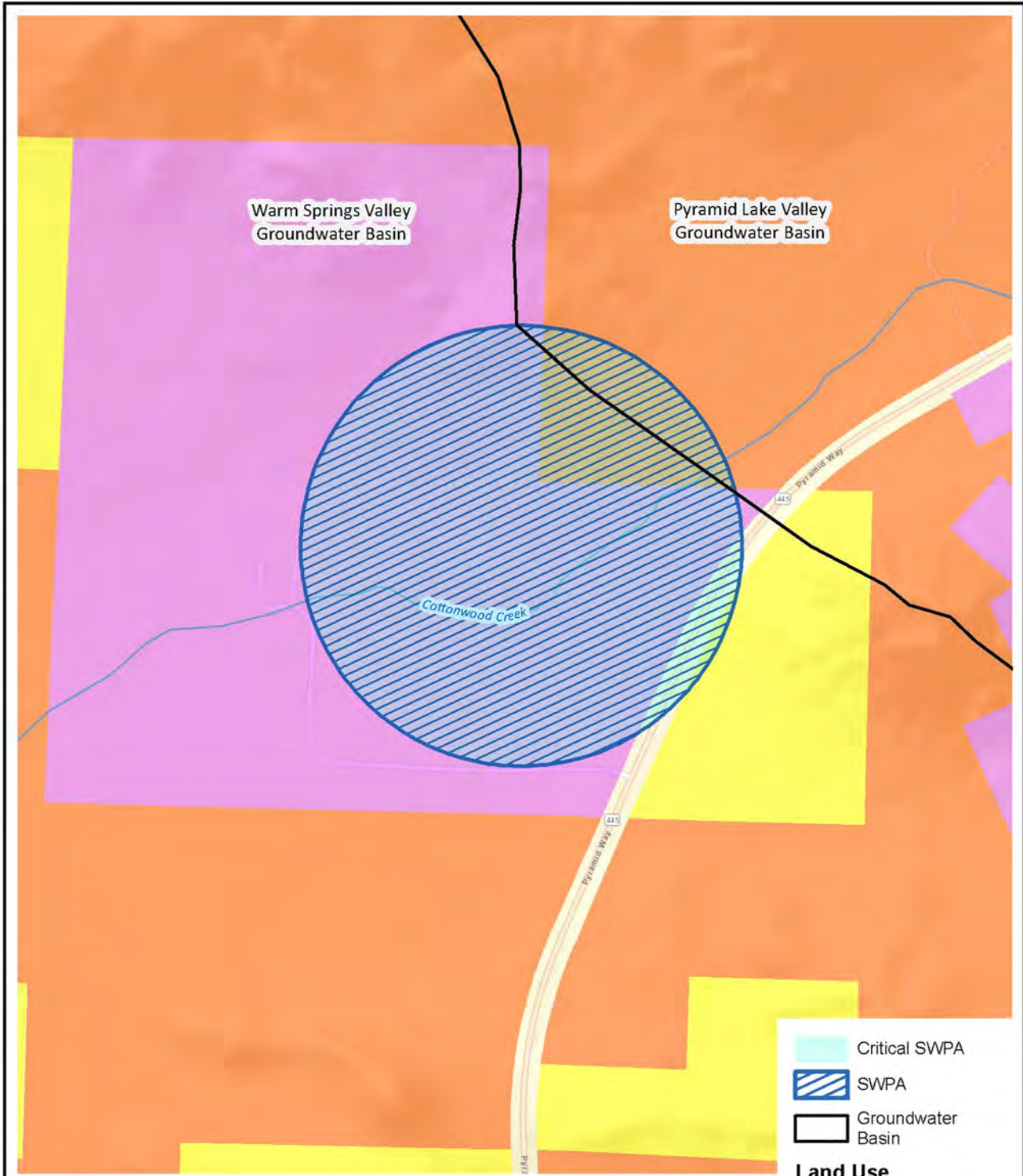
Land uses and jurisdictions in the SWPAs are summarized in the adjacent table and illustrated by the [Land Classification Figure](#).

The three small public water systems, Air Sailing, Inc. Gliderport, Washoe Regional Shooting Range, and the Springwood Equestrian Center are the multiple entities that share ownership and management in these SWPAs .









Washoe Regional Shooting Range
Land Classification and Source Water Protection Areas

-  Critical SWPA
-  SWPA
-  Groundwater Basin
- Land Use**
-  Commercial / Industrial
-  Residential
-  Vacant

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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 Warm Springs Valley is located within the “Truckee River Basin” region. Mullen Creek, which flows through the middle of the Washoe Regional Shooting Range SWPA, is tributary to Pyramid Lake. There are no designated beneficial uses ([NAC 445A.1622](#)) and water quality standards ([NAC 445A.1624](#)) for surface water bodies in the Upper Mullen Creek, Lower Mullen Creek, or Bacon Rind Flat HUC-12s. However, Cottonwood Creek, upstream of Mullen Creek in the Lower Cottonwood Creek HUC-12, is a Category 3 drainage ([NAC 445A.1694](#)). Category 3 drainages have insufficient information to make a use support determination that the water body is impaired for beneficial uses.

For groundwater, 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 the individual public water systems in this groundwater basin: the Air Sailing, Inc. Gliderport, the Washoe Regional Shooting Range, and Springwood Equestrian Center. These wells are highly valued because they are the only sources of public drinking water for these water systems.

Air Sailing, Inc. Gliderport is an educational soaring facility that hosts operations for small aviation. Aviation fuel, other fuel, and chemicals used to maintain aircraft may be stored and used at the facility. Leaks and spills of hazardous materials can be potential sources of groundwater contamination.

The Washoe Regional Shooting Range well resides in the Mullen Creek wash and contaminants could be mobilized in a wet season (NDEP, 2017). According to the Nevada Vulnerability Assessment Program Water System Report prepared by Nevada Division of Environmental Protection (NDEP) for the Washoe Regional Shooting Range, the well is moderately vulnerable to microbial contamination from nearby Mullen Creek. Mullen Creek is not an assessed water body by NDEP.

Agricultural activities surround the southern SWPA in Warm Springs Valley located at the Springwood Equestrian Center. In general, agriculture is likely to involve the use and storage of fertilizers and pesticides/herbicides that, depending on handling practices and irrigation, can contribute to groundwater quality issues. Horse stables are a source of animal waste which can also create potential water quality concerns.

Individual Sewage Disposal Systems, or septic systems, are associated with nitrate contamination of groundwater. Contamination can depend on depth to groundwater, flow direction, well screen depth, and the soil types between the septic tank and the well screen.

Strategies to Protect and Improve Water Quality

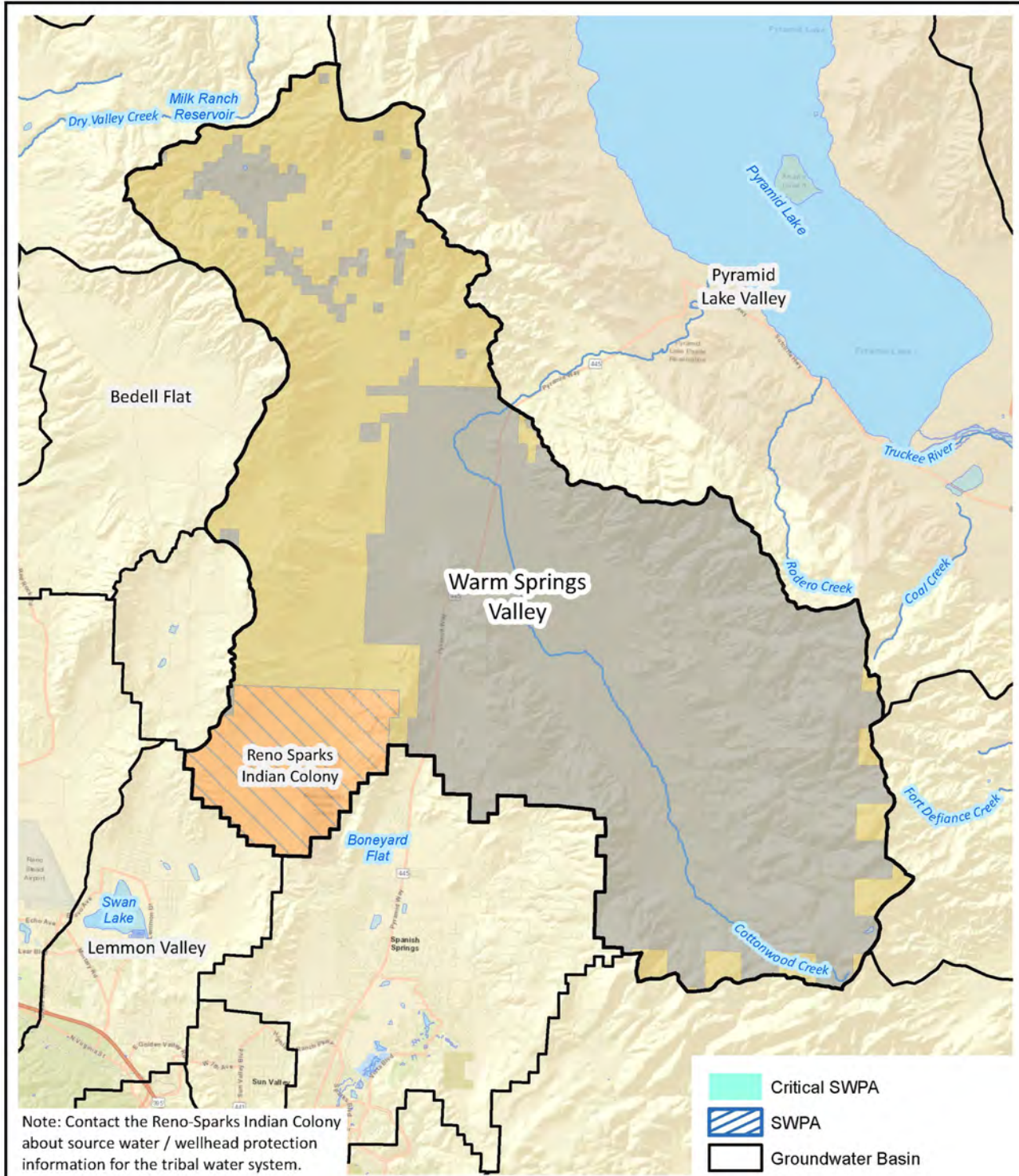
The water quality concerns identified in this basin can be addressed through management strategies described in this section, the proposed projects detailed in the Project Profiles, as well as applicable on-going water quality projects and programs described under Stakeholders and Plans. These strategies pertain to the entire basin but may be prioritized in SWPAs.

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. Activities in these buffer areas can affect the quality of water downstream or underground. These management strategies acknowledge the value of these SWPAs to prevent future contamination of sources of drinking water.

The SWPA buffers in this groundwater basin are based on a 20-year time of travel for groundwater. 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.
- Encourage coordination between Public Water Systems, landowners, and City or County 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.



Note: Contact the Reno-Sparks Indian Colony about source water / wellhead protection information for the tribal water system.

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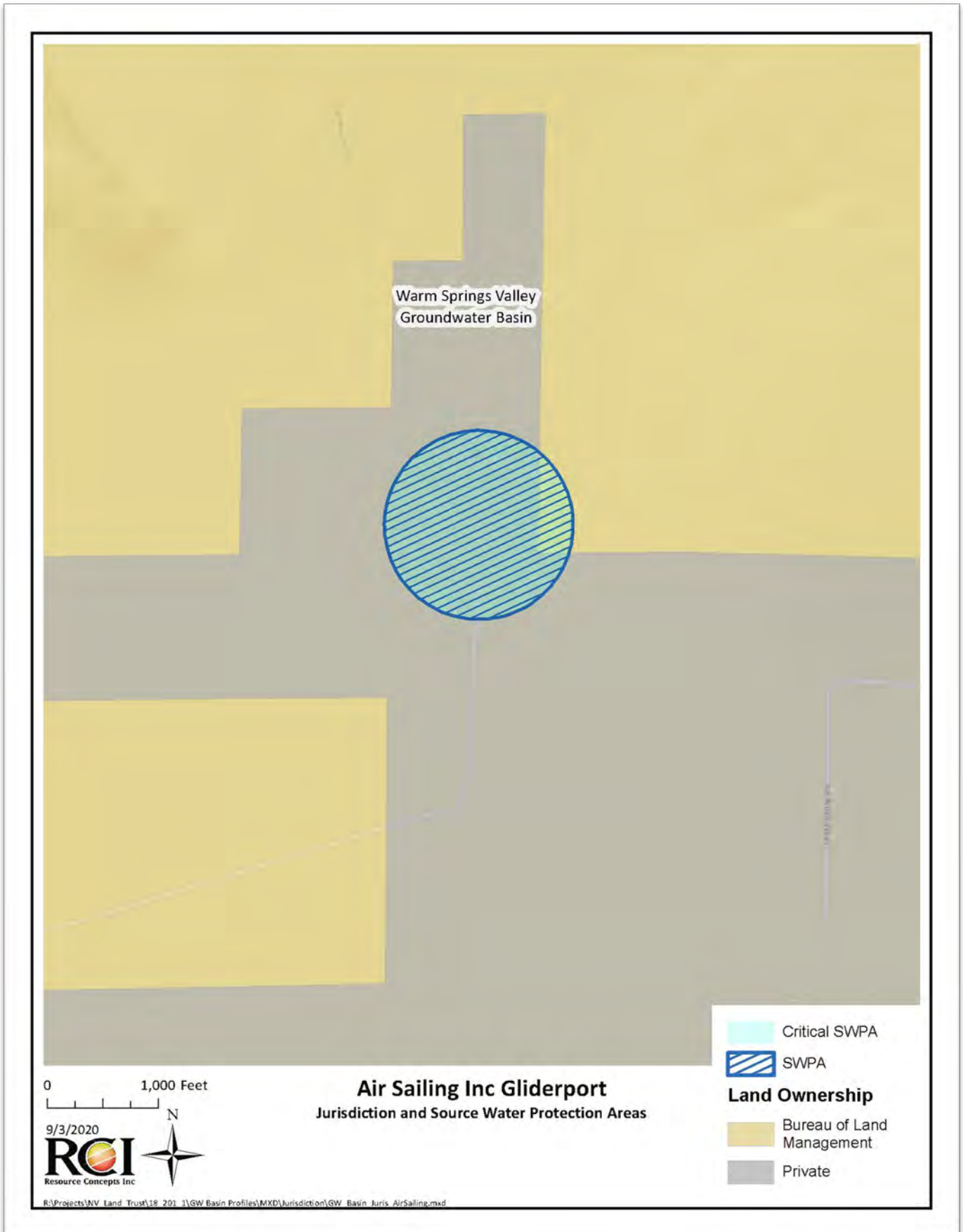


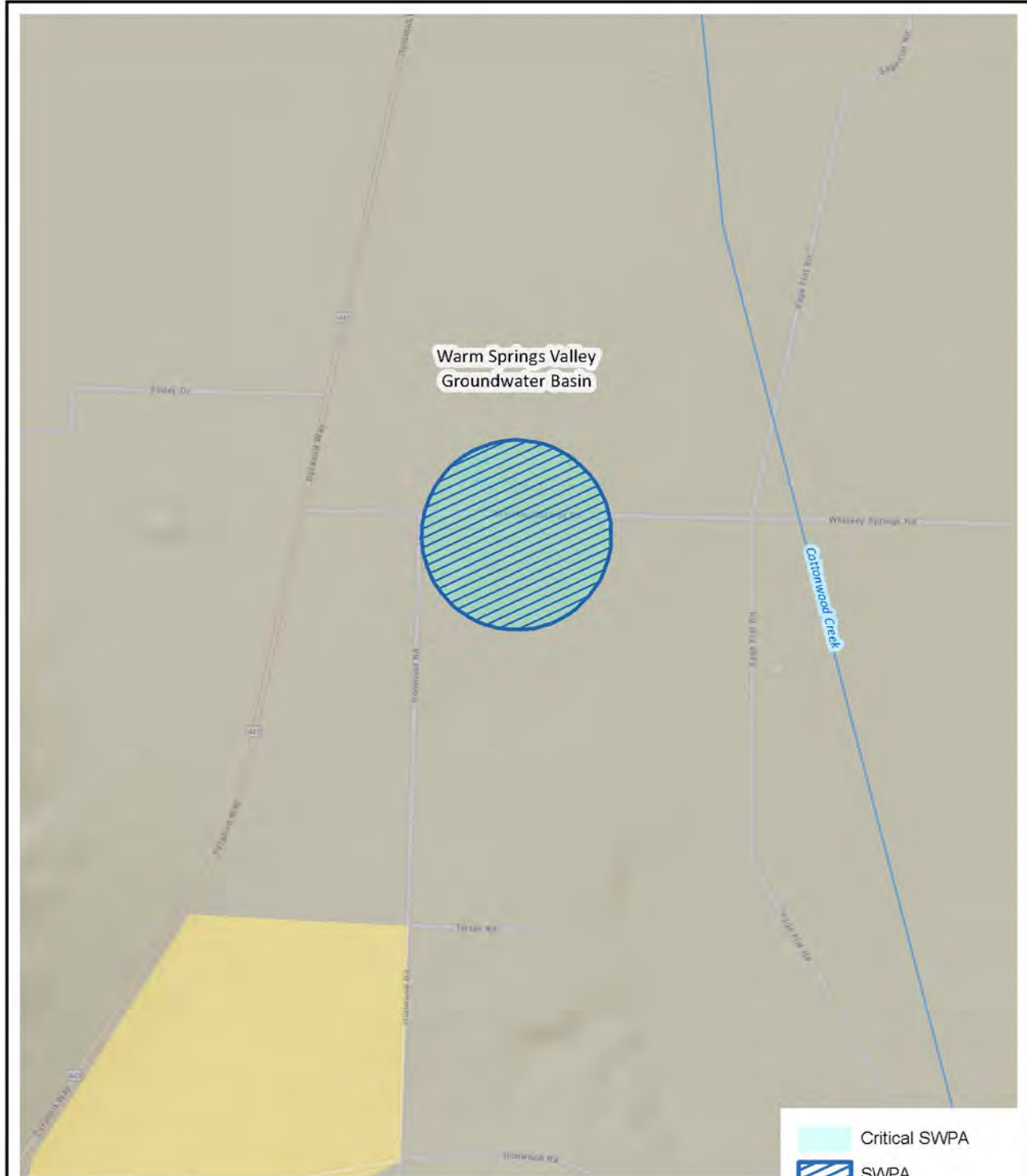
Warm Springs Valley
Groundwater Basin

Jurisdiction and Source Water Protection Areas

- Critical SWPA
- SWPA
- Groundwater Basin
- Land Ownership**
- Bureau of Indian Affairs
- Bureau of Land Management
- Private

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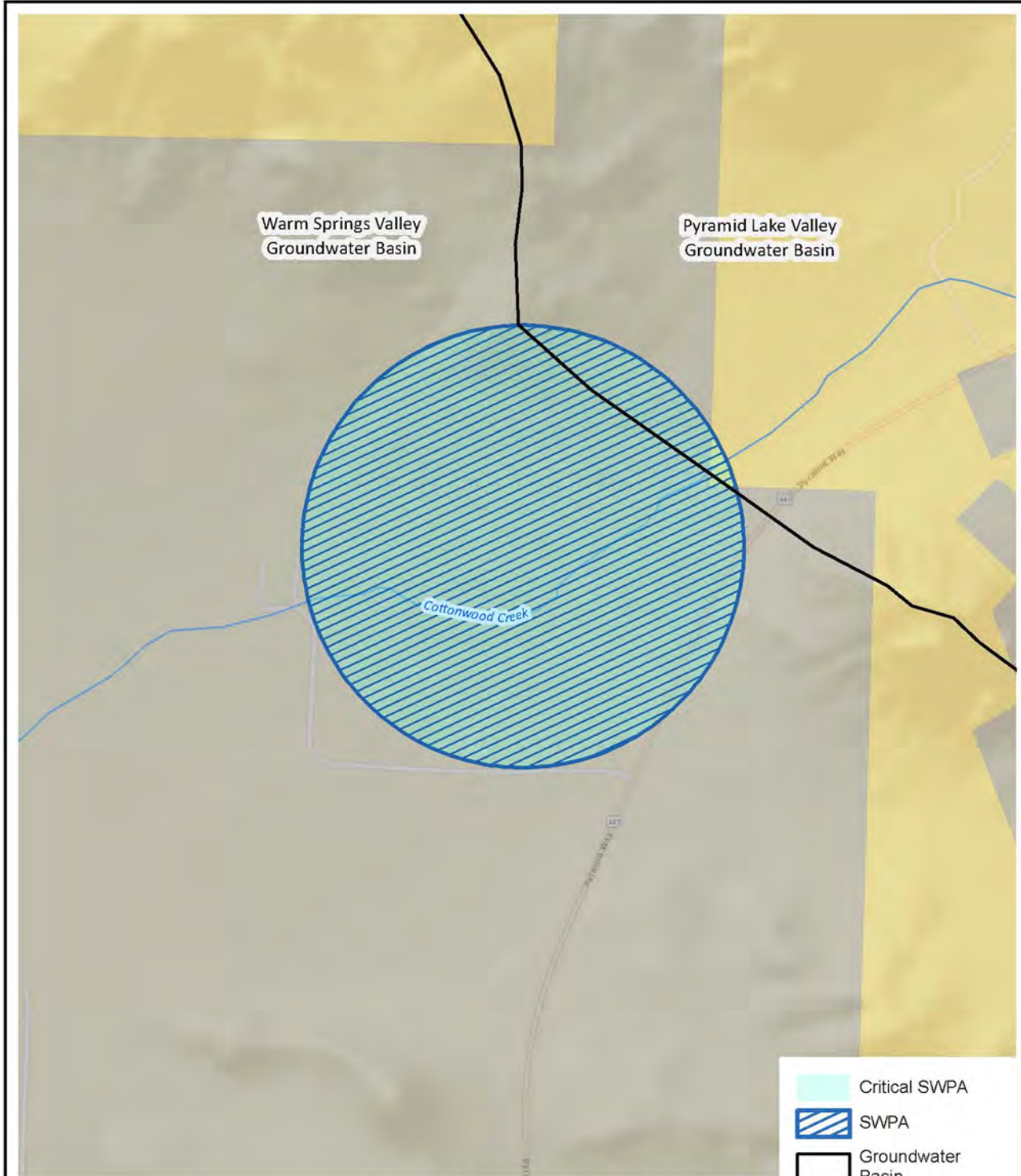
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Springwood Equestrian Center Jurisdiction and Source Water Protection Areas

- Critical SWPA
- SWPA
- Land Ownership**
- Bureau of Land Management
- Private






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Washoe Regional Shooting Range
Jurisdiction and Source Water Protection Areas

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-  Critical SWPA
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Education and Outreach

The following education and outreach objective is intended to help effectuate positive actions to protect water quality:

- Inform landowners and developers within SWPAs about the importance of avoiding contamination and their proximity to a valuable drinking water source.

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, RSIC, BIA, BLM, and private landowners.

Resource Investigation and Planning

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

- Explore and engage funding sources available for small public water systems to expand monitoring, implement improvements, and develop contingency plans.

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.

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Reno-Sparks Indian Colony

The RSIC consists of members from three Great Basin Tribes – the Paiute, the Shoshone, and the Washoe. The reservation lands consist of more than 15,000 acres in Hungry Valley located northeast of Spanish Springs and northwest of Lemmon Valley.

- “The Reno-Sparks Indian Colony Planning Department ensures the growth and development of the Colony is planned, implemented, and monitored to meet the goals and needs of the Tribal Council, community and future generations without compromising traditional values or causing harm to the environment and cultural resources. The Planning Department focuses on community development and strategic planning issues aimed at improving the quality of life, health, safety, and economic welfare of RSIC communities.” ([Reno Sparks Indian Colony website, 2020](#))
- The Public Works Department is responsible for providing a variety of services to the residents of the Colony and Hungry Valley. The utilities division manages the operations and maintenance of the Colony’s water and waste-water services.

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References

NDEP BSDW, Vulnerability Assessment Program (VAP) Public Water System Report, 2017.

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](#)

Reno-Sparks Indian Colony, 2020. [Reno Sparks Indian Colony website](#).

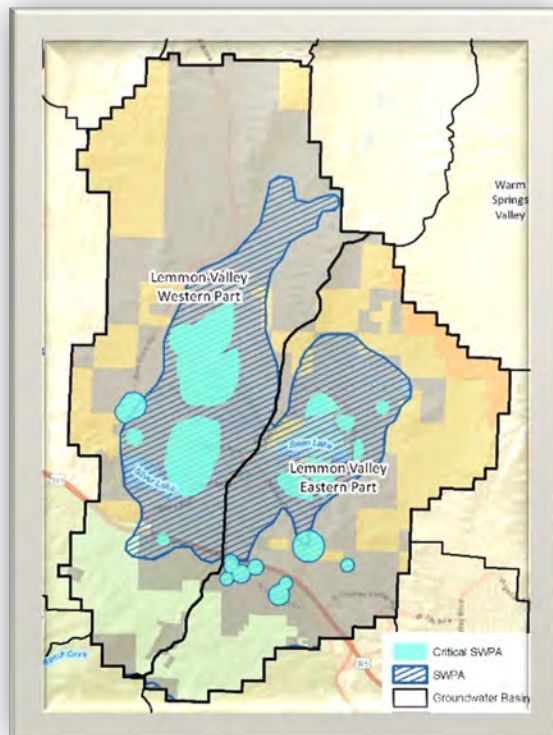
Washoe County Master Plan, 2008. [Washoe County 2008 Master Plan](#), [Washoe County Health District](#)

WRWC, Western Regional Water Commission, Comprehensive Regional Water Management Plan 2016-2035 Update, 2017. [WRWC Comprehensive Regional Water Management Plan 2016-2035](#)

Lemmon Valley

Groundwater Basin #092A and #092B, Source Water Profile

[Click here for the SWPA Map](#)



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Introduction

The Lemmon 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 a multitude of water quality projects in the basin.

Summary

This profile focuses on protecting water quality for the groundwater sources in this basin that are used by water systems to supply drinking water to the general public also known as source water. There are no surface waters used directly by water systems in this basin. Potential and existing water quality concerns, types of land uses, management strategies and projects, and the involved stakeholders and their corresponding plans with water quality components are described.

Lemmon Valley Hydrographic Basins #092A and #092B are topographically closed, and encompass about 97 square miles. The basin is subdivided into the east and west subbasins by the Airport Fault that runs down the middle of the basin. The Lemmon Valley HUC-12 Watershed (#180800030901) encompasses both of these groundwater basins. A groundwater basin is a structural depression filled with unconsolidated basin-fill. The surrounding mountains and the underlying bedrock are complexly faulted. Features other than mountain ridges and basin-fill deposits include Silver Lake and Swan Lake. Groundwater levels fluctuate annually with rises during the winter months and declines during the summer months.

SWPAs for this area were developed by stakeholders to help protect drinking water sources. There are 25 public water systems wells in this basin; eleven of them are operated by the Truckee Meadows Water Authority (TMWA) and the others are operated by thirteen other small public water systems (mobile home parks, restaurants, etc.).

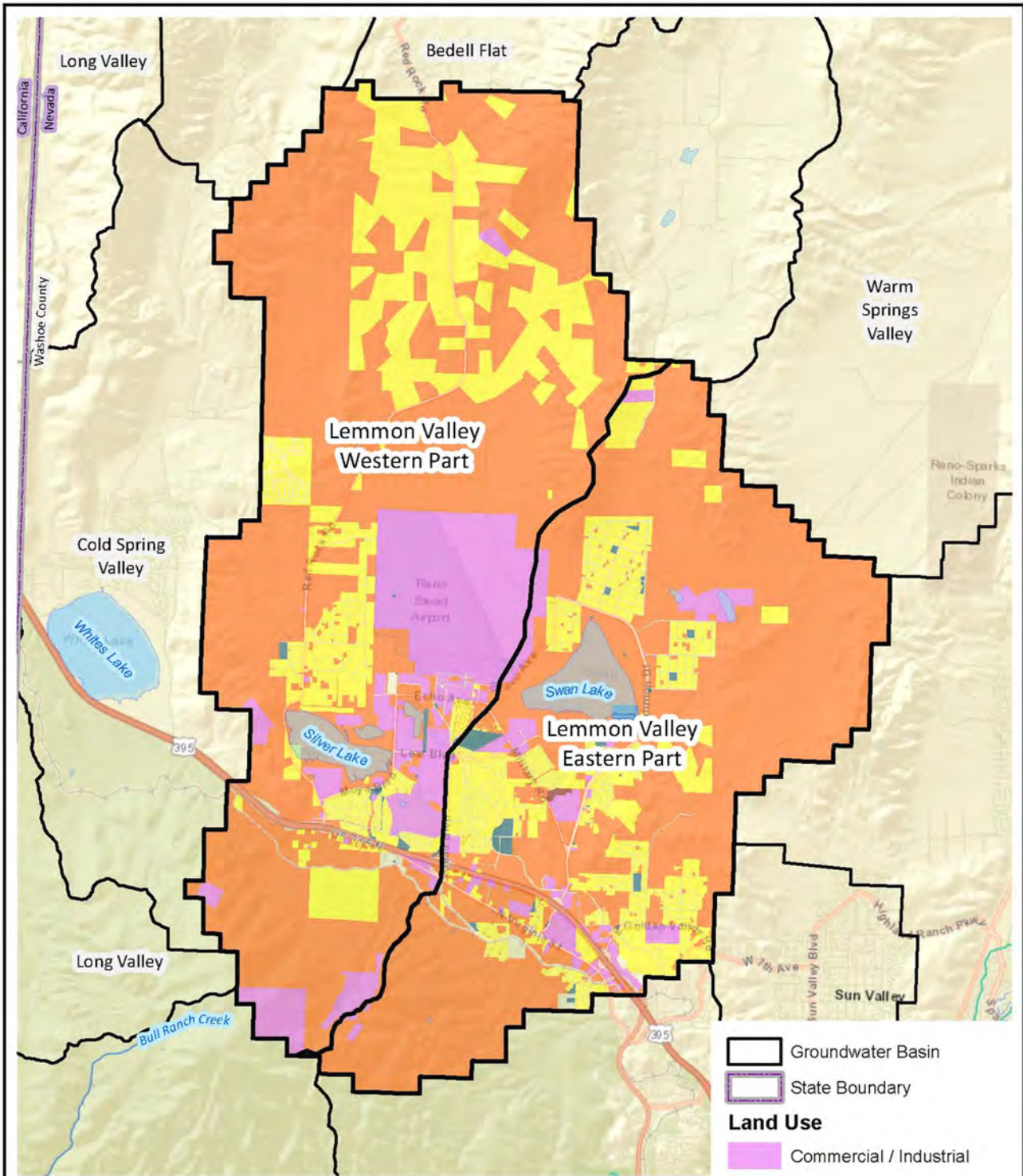
The following table summarizes key water quality aspects of this basin.

Basin Summary	
Basins	<ul style="list-style-type: none"> • Groundwater Basins: Lemmon Valley # 092A and #092B. • HUC-12 Watershed: Lemmon Valley #180800030901.
Source Water Protection Areas	<ul style="list-style-type: none"> • A SWPA provides a buffer around public water system wells, and it represents a precautionary indicator to safeguard the drinking water sources. • Critical SWPAs represent areas closer to public water system wells. • 25 public water system wells are managed by 14 different public water systems. • 19,700 acres, or roughly 27% of the basin is within the Source Water Protection Area. • 4,800 total acres, or approximately 7% of the basin is within a Critical SWPA.
Special Considerations & Issues	<ul style="list-style-type: none"> • Groundwater quality and quantity varies. The shallow groundwater near the playa areas is highly mineralized and poor water quality. • Locally, higher nitrate levels are associated with a higher density of septic tanks. • The nitrate concentration found in wells are well-specific and depends on depth to groundwater, flow direction, well screen depth, and the soil types between the septic tanks and well screen. • There are no surface waters used for public water supply and there are no surface waters with “designated” Beneficial Uses or water quality standards in Lemmon Valley.

SWPA Acreage	Type	Acres	%
Land Jurisdiction	City of Reno:	10,300	14%
	Washoe County Non- Federal:	7,900	11%
	BLM:	1,410	2%
Land Use	Agriculture:	0	0%
	Commercial/Industrial:	4,900	25%
	Residential:	4900	25%
	Public Facility/Utility:	360	2%
	Vacant:	8,400	43%

Land uses and jurisdictions in the SWPAs are summarized in the adjacent table and illustrated by the [Land Classification Figure](#).

Residential and commercial/industrial land uses are the dominant activities in this basin. The potential and existing groundwater quality concerns generated are primarily due to risk of hazardous material spills or leaks from commercial/industrial activities and nitrate from septic systems.



0 10,000 Feet



Lemmon Valley
 Groundwater Basin
 Land Classification

- Groundwater Basin
- State Boundary
- Land Use**
- Commercial / Industrial
- Open Space
- Public Facilities / Utilities
- Residential
- Vacant

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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](#). Lemmon Valley is located within the “Western Region”. There are no designated beneficial uses ([NAC 445A.1782](#)) or water quality standards ([NAC 445A.1784](#)) for water bodies in the Western Region, which includes Lemmon Valley. However, Nevada’s policy is to protect all groundwater against deterioration in quality in order to maintain supplies that are suitable for beneficial uses.

Groundwater is an important source of drinking water for public water systems in this watershed. Groundwater quality and quantity varies naturally, with highly mineralized, poor groundwater quality in shallow groundwater near the playa areas. Groundwater water quality has been affected by nitrate and solvents through human activities.

Potential and Existing Water Quality Concerns

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

- Hazardous Materials from Spills or Leaks
- Nitrate from Individual Sewage Disposal System
- Pollution from Urban Areas

Hazardous Materials from Spills or Leaks

The Reno Stead Airport, US Hwy 395 and other commercial and industrial businesses are in this basin. The U.S. Department of Transportation accumulated a list of commonly transported hazardous materials in the area (WRWC, 2017). These include:

- Ammonia perchlorate
- Anhydrous ammonia
- Chlorine
- Cyanide
- Hydrochloric acid
- Hydrogen sulfide
- Nitro cellulose (wet)
- Propane
- Petroleum naphtha
- Phosphoric acid
- White phosphorous
- Propargyl alcohol
- Sulfuric acid
- Sodium hydroxide

Remediation of solvent-related contamination at the Stead Solvent Site near the southern boundary of the Stead Airport in Basin #092A began in the late 1990s and is listed as completed by the Nevada Division of Environmental Protection (NDEP). The clean-up activities successfully reduced the migration of the contaminant plume.

Pollution from Urban Area Runoff

Groundwater may be vulnerable to polluted runoff in urban areas, particularly where there are expanding residential developments. Potential contaminants include:

- nutrients from fertilizers
- dissolved salts from excess irrigation
- trash
- bacteria from animal waste
- pollution from household waste
- runoff from roads and parking lots

Excessive fertilization in green areas such as yards, fields, golf courses or parks are potential sources of nutrients from runoff. These areas may also contribute E. coli from animal waste such as from horses, dogs and geese. Agricultural properties in the area also have livestock and farming practices, which may contribute to water quality issues from fertilizers, herbicides and livestock waste.

Excess irrigation of green areas can also create persistent “dry weather” flows due to direct discharge to storm drains and/or seepage through shallow soil layers to existing natural drainages. Irrigation seepage through desert soils, that were not previously irrigated, can mobilize salts (TDS), which in turn can lead to perennial flows with poor water quality in drainages that were originally ephemeral.

Water levels in the Swan Lake playa, a “closed” basin, rise and fall with seasonal runoff. Certain TMWA wells were surrounded by floodwaters in 2017, resulting in these wells being temporarily inactive due to potential for contamination.

Nitrate from Individual Sewage Disposal Systems

Individual Sewage Disposal Systems, or septic systems, are associated with nitrate contamination of groundwater if there are large numbers concentrated in a small area; for example, neighborhoods with lot sizes less than one acre, or if they are not maintained properly (WRWC, 2017). There are about 1,800 parcels with septic systems in the SWPAs, some with lot sizes between 0.3 and 0.6 acres. In Lemmon Valley, the nitrate concentrations found in wells are well-specific and depend on depth to groundwater, flow direction, well screen depth, and the soil types between the septic tanks and the well screen.

Strategies to Protect and Improve Water Quality

The water quality concerns identified in this basin can be addressed through management strategies described in this section, the proposed projects detailed in the Project Profiles, as well as applicable on-going water quality projects and programs described under Stakeholders and Plans. These strategies pertain to the entire basin but may be prioritized in SWPAs.

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. Activities in these buffer areas can affect the quality of water downstream or underground. These management strategies acknowledge the value of these SWPAs to prevent future contamination of drinking water sources.

There are two types of SWPA buffers in this basin. The first is a buffer surrounding the lower elevations of the valley and represents a precautionary indicator to safeguard these drinking water sources. The second type of buffer covers more critical areas close to the water system wells based on a 20-year time of travel for groundwater. 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.
- Encourage coordination between Public Water Systems, landowners, and City or County 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:

- Work with Homeowner Associations regarding source water pollution prevention measures.
- Increase knowledge about household and commercial chemical use, storage, and disposal through local outreach efforts.
- Inform landowners and developers residing in critical SWPAs about the importance of avoiding contamination and their proximity to a valuable drinking water source.

Interagency Communication

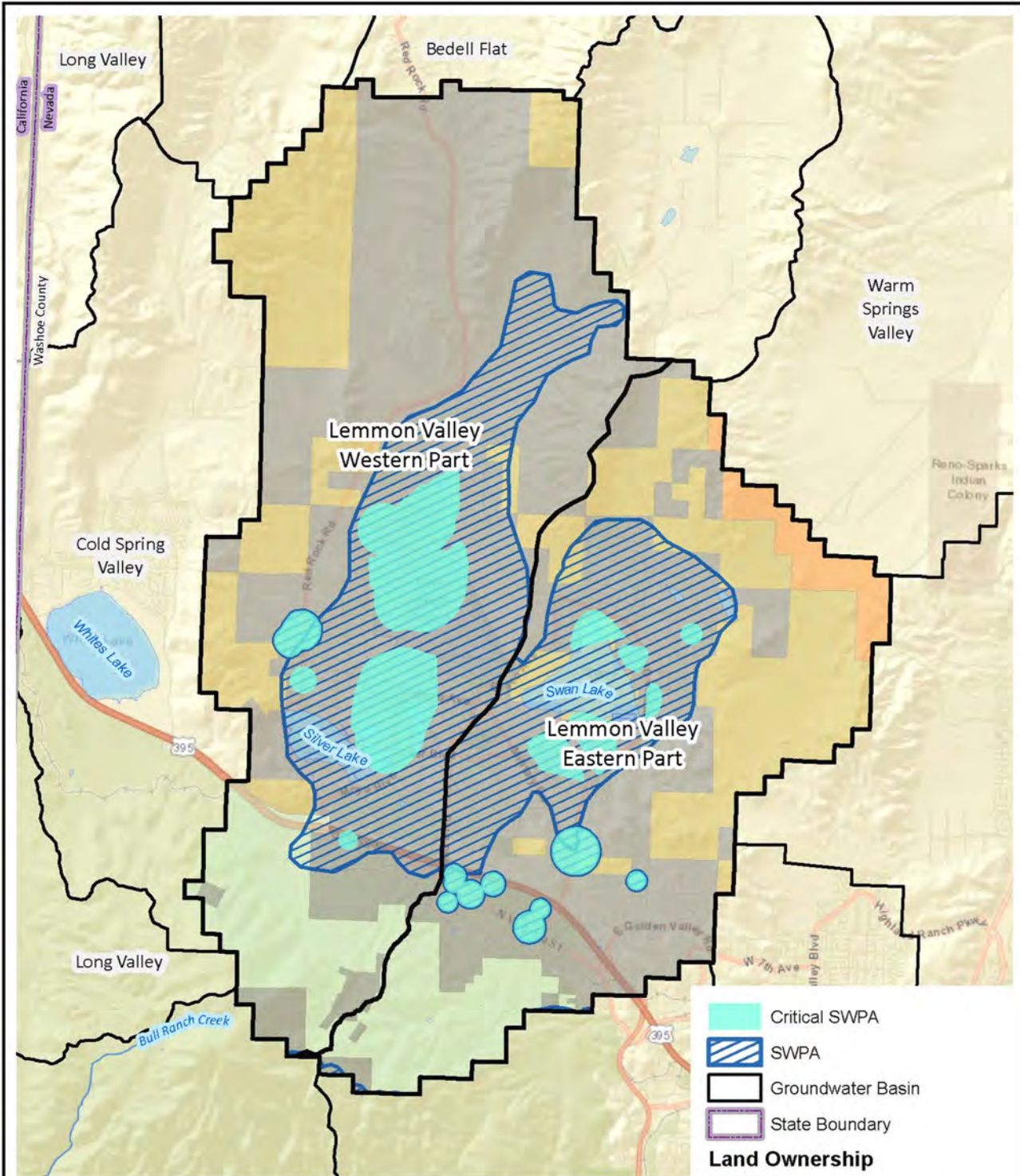
The following interagency communication objectives are important tools to both reinvigorate and invest additional resources in water quality, as well as utilize existing resources and programs:

- Each agency may evaluate how to improve lines of communication within and between jurisdictions regarding water quality issues; i.e. City of Reno, Washoe County, TMWA, NDEP, District Health, and BLM.
- Continue to increase coordination and communication between the appropriate agencies regarding spills and corrective actions along Hwy 395 and the airport.
- Collaborate with the Washoe/Storey Cooperative Weed Management Area to support their efforts in noxious weed management ([WSCWMA Website](#)).

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:

- 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.



- Critical SWPA
 - SWPA
 - Groundwater Basin
 - State Boundary
- Land Ownership**
- Bureau of Indian Affairs
 - Bureau of Land Management
 - Forest Service
 - Private

0 10,000 Feet



Lemmon Valley
 Groundwater Basin
Jurisdiction and Source Water Protection Areas

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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.
- Fertilizer and pesticide management measures for irrigated green spaces.

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. 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	
<ul style="list-style-type: none"> • City of Reno • Bureau of Land Management • Nevada Department of Transportation • Nevada Division of Environmental Protection • Nevada Division of Forestry 	<ul style="list-style-type: none"> • Truckee Meadows Regional Planning Agency • Truckee Meadows Water Authority • Washoe County • Washoe County Health District • Western Regional Water Commission

City of Reno

The City of Reno Master Plan goals and policies provide the framework for decision-making in the community.

Drinking water protection is addressed in the Master Plan’s guiding principle to promote a safe and more resilient community. The City works with TMWA and other partners to ensure clean drinking water.

Water quality is also addressed in the guiding principle for quality places and outdoor recreation opportunities in the sections on hydrologic resources, major drainageways and no net loss of wetlands, stream environments, playas, spring fed stands of riparian vegetation, and non-404 wetlands in the City, in terms of both acreage and value. The Design Principles for Sustainable Development also contain sections related to water quality.

The following articles from the Master Plan discuss several water-related items that are applicable to this Plan:

- Article XVIII: Section 18.12.1801 to 1808 describes wetlands and stream environment protection standards established for the review of development proposals within wetlands, stream environments, and areas of significant hydrologic resources.
- Article XIX: Section 18.12.1902 to 1907 Drainage Way Protection Standards carries out the provisions of the City of Reno Major Drainageways Plan, an element of the City of Reno Master Plan, and establishes standards for the review of development proposals within major drainage ways to, among other actions, maintain, preserve, or enhance the quality of the water in both the Truckee River and Stead basins.

The City of Reno also provides comprehensive services for construction and maintenance roads, landscaping and drainage facilities, citywide planning and code compliance, and emergency response services for fire and hazardous materials. All these roles contribute to preserving and improving water quality in the basin.

Additionally, the City of Reno is divided into five Neighborhood Advisory Board Wards. Each Ward has one representative on the Reno City Council that is specifically focused on the needs of their part of the City. These Wards provide opportunities for citizens to engage in important community issues and is the most efficient way for citizens to communicate their concerns and ask questions prior to any large decisions or projects. As such, these Wards and their input are essential in the implementation and success of any projects and plans within the community. Source water protection for this area falls within Ward 4.

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 Department of Transportation

The Nevada Department of Transportation (NDOT) has developed their Stormwater Management Program to reduce stormwater pollution from NDOT managed facilities and roads. The program BMPs and annual report outline the specific measures that NDOT will take to reduce stormwater pollutant discharges from its owned and operated storm drain system:

- Stormwater Management Program (2013):
 - The overall goal of the NDOT Stormwater Management Program is to reduce pollution associated with stormwater from NDOT's MS4 to the maximum extent practicable, as well as to protect surface and groundwater resources within the MS4 permit area. The Stormwater Management Program addresses stormwater pollution control as it relates to the planning, design, construction, and maintenance of NDOT's highway infrastructure statewide.
- Stormwater Management Program: Annual Report (2017):
 - This basin is impacted or has the potential to be impacted by I-80, I-580, Hwy 395, and Hwy 431. The Stormwater Management Program provides a helpful planning outline on handling and mitigating pollution from the roads.

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.

Nevada Division of Forestry

The Nevada Division of Forestry (NDF) is a state agency that uses a collaborative process to deliver science based natural resource management and protection to promote resilient landscapes, fire adapted communities, and safe, effective wildfire response provided by employees that embrace the core values of duty, respect, and integrity.

NDF provides professional natural resource and wildland fire management services to Nevada citizens and visitors to enhance, conserve and protect forest, rangeland and watershed values, endangered plants, and other native flora. [Protection of these resources helps to improve water quality:](#)

- Community Wildfire Protection Plans:

Community Wildfire Protection Plans (CWPPs) are authorized and defined in Title I of the Healthy Forests Restoration Act of 2003 (HFRA). CWPP's represent the best opportunity for communities to address the challenges of the Wildland-Urban Interface. A CWPP helps communities define their priorities for the protection of life, property, and shared assets-at-risk from wildfires. Developing a CWPP encourages community members and leaders to have valuable discussions about wildfire preparedness, evacuation planning, and local fire district capabilities. The CWPP increases grant funding opportunities by prioritizing fuel reduction projects around and within the community.

- Nevada Wildland Fire Cohesive Strategy:

The Nevada Fire Board Oversight Body is the custodian of the 2015 Nevada Wildland Fire Cohesive Strategy Summit's Action Plan to ensure goal achievement and identify emerging topics. This oversight body acts as an "advisory" body and is charged with the Nevada Cohesive Strategy Summit report and its Action Steps, ensuring that goal achievement is accomplished and monitoring emerging topics through the Nevada Fire Board. This body monitors progress, develops issue resolution, and addresses emerging issues such as protecting water quality.

Truckee Meadows Regional Planning Agency

The Truckee Meadows Regional Planning Agency (TMRPA) fosters coordination among Reno, Sparks and Washoe County. TMRPA facilitates land use, infrastructure provision and resource management conversations among public and private decision makers. The agency also serves as a collaborative information and data warehouse, coordinating regional data collection and delivering advanced geospatial analytics for regional solutions. TMRPA includes a Regional Planning Governing Board and a Regional Planning Commission.

The TMRPA Regional Plan (2012 as amended) provides goals and policies for multiple plans and programs, including those with watershed and wellhead protection components. The plan was revised in 2019-2020 and is considered a living document that will evolve over time.

Truckee Meadows Water Authority

TMWA is responsible for almost all municipal water delivery in the greater Reno-Sparks area. TMWA also owns and operates the municipal wells in this basin. The following program and plans guide the management of these water resources:

- TMWA Water Resources Plan (2016-2035):

This plan describes water quality issues and goals for the water resources managed by TMWA. Special focus is placed on changes in future water supply and demand, and how those changes will impact the region's water resources.

- Source Water Quality Assurance Program (2016-2035):

TMWA's objective is to deliver high-quality potable water to its customers in a cost-effective manner. To achieve this objective, TMWA has established a water quality assurance program. The components that make up the program are source water quality protection, potable water treatment, maintenance of distribution system water quality, and cross connection control.

- Wellhead Protection Plan (2016):

The purpose of the Wellhead Protection Plan is to protect groundwater that serves as a source for public drinking water supplies. This plan is intended to be a tool used by TMWA to assist in protecting drinking water sources.

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

Activities in Washoe County are reviewed according to the Master Plan Planning Areas. The Lemmon Valley area is included in the North Valleys planning area. The county has Citizen Advisory Boards (CABs) which provide important community perspective on local issues to the Washoe County Board of Commissioners. The Lemmon Valley area is wholly within the North Valleys CAB ([CAB Boundaries](#)).

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, 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.

Western Regional Water Commission and the Northern Nevada Water Planning Commission

The Western Regional Water Commission (WRWC) focuses on improving water resource planning at the regional level and facilitating coordinated resource management among City of Reno, City of Sparks, Washoe County, TMWA, Truckee Meadows Water Reclamation Facility, South Truckee Meadows GID and Sun Valley GID.

The Northern Nevada Water Planning Commission (NNWPC) is a technical advisory panel that reports to the WRWC. The NNWPC develops and updates a Comprehensive Regional Water Management Plan (RWMP) and makes recommendations to the WRWC for adoption. In addition, the NNWPC develops priorities and an annual budget for the Regional Water Management Fund, also for recommendations to the WRWC.

The Comprehensive Regional Water Management Plan includes several applicable objectives:

- [Objective 1.2](#) Provide for a Sustainable Water Supply and an Acceptable Level of Service to the Community (including protecting groundwater recharge areas).
- [Objective 1.3](#) Implement measures to protect and enhance water quality for a sustainable water supply (including source water protection).
- [Objective 2.1](#) Promote Efficient Use of Resources (Reduction of Non-Point Source Pollution for TMWRF Pollutant Credit).
- [Objective 2.2](#) Manage wastewater for protection and enhancement of water quality.
- [Objective 3.1](#) Effective and integrated watershed management (protection of human health, property, water quality including storm water).

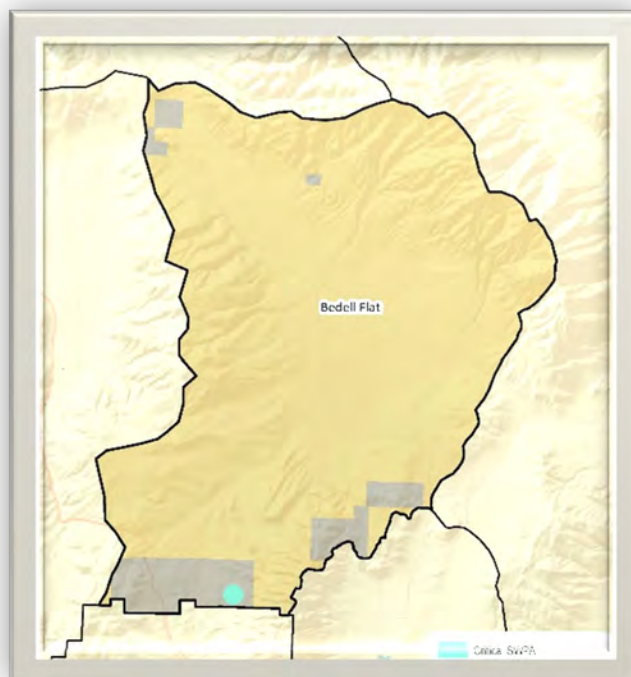
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Bedell Flat

Groundwater Basin #094, Source Water Profile

[Click here for the SWPA Map](#)



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Introduction

The Bedell Flat 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 Animal Ark Wildlife Sanctuary in the southern boundary of the Bedell Flat basin. There are no surface waters used directly by water systems in this basin. This profile includes potential and existing water quality concerns, types of land uses, management strategies and projects, and the involved stakeholders and their corresponding plans with water quality components.

The Bedell Flat groundwater basin is a small valley of 53 square miles and about 20 miles north of downtown Reno. It is bound on the east and northeast by the Dogskin Mountains, on the west by the Sand Hills and on the south by Freds and Warm Spring Mountains. Alluvium is the primary aquifer in the valley. In the past 20-30 years there has been an increase in groundwater pumping for ranchettes (Kennedy/Jenks, 2001).

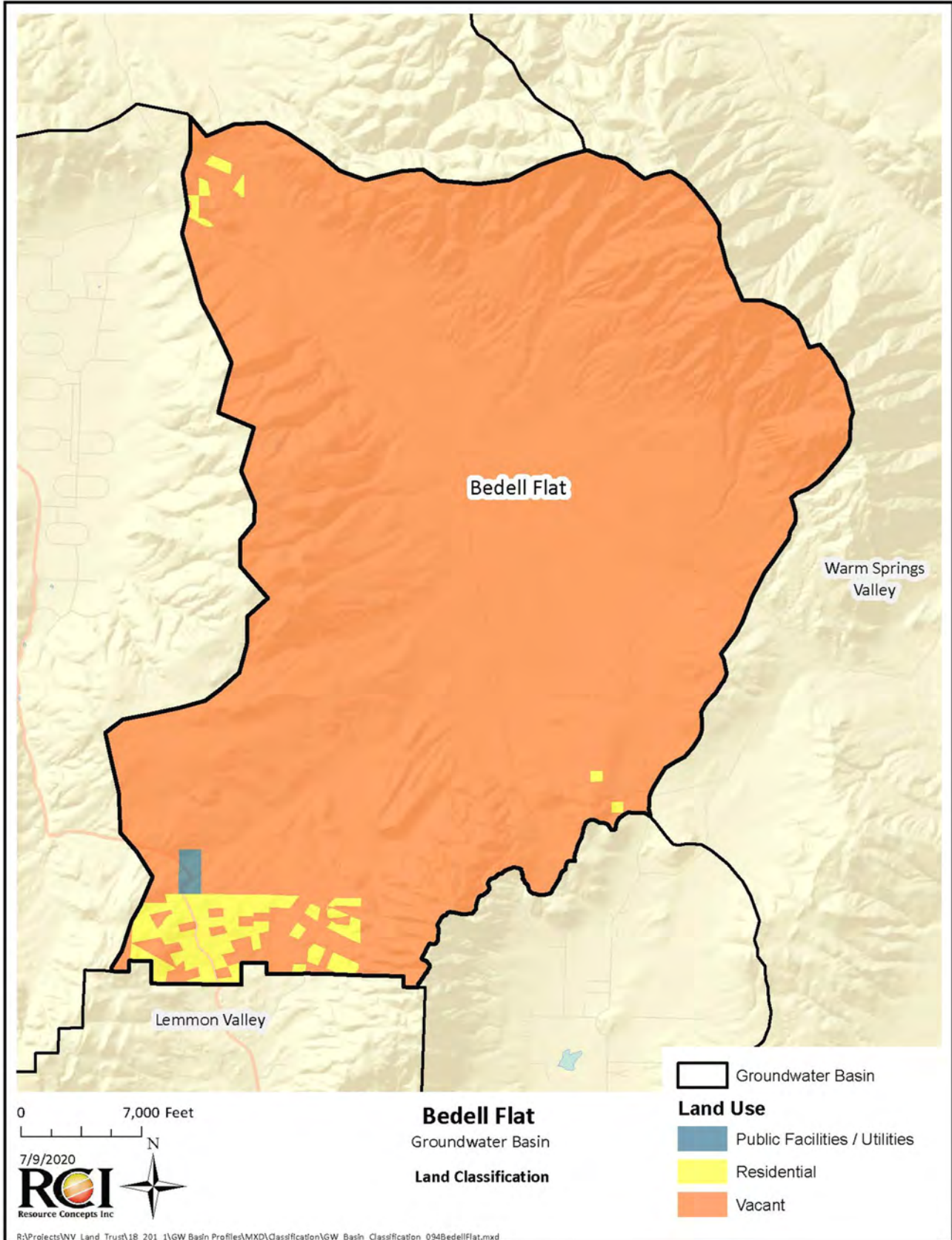
There is one public water system, Animal Ark, with one well located in the Whitney Spring HUC-12 in Bedell Flat. Land at the wells is owned by Animal Ark Inc, Roderick B Dexter et al, Aaron and Diana Hibel, and the Jo Anne S Gould Trust. SWPAs were developed County-wide by stakeholders to help protect drinking water sources. The following table summarizes key water quality aspects in this basin.

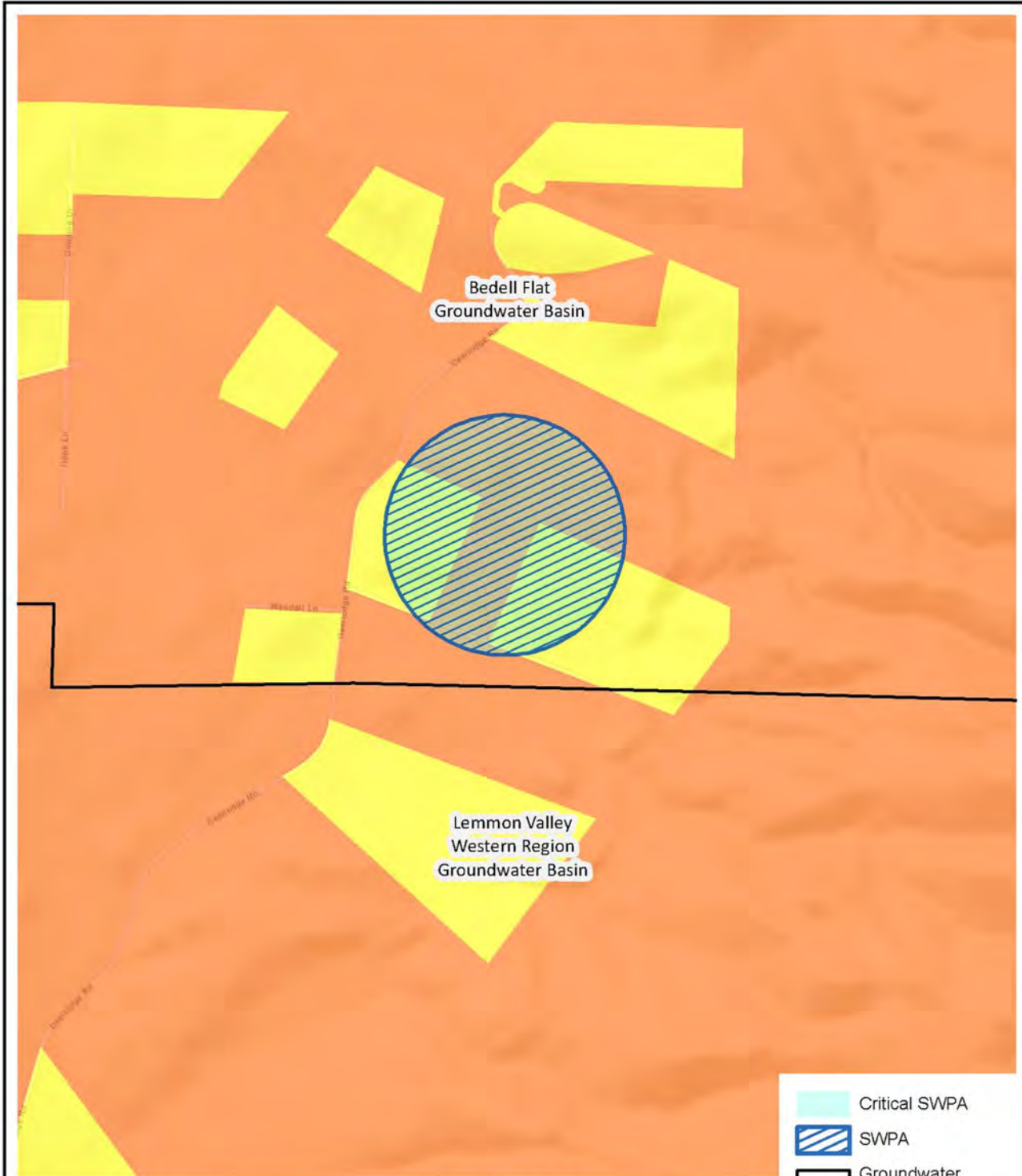
Basin Summary	
Basins	<ul style="list-style-type: none"> • Groundwater Basins: Bedell Flat #094 • HUC-12 Watershed: Whitney Spring #180800031002
Source Water Protection Areas	<ul style="list-style-type: none"> • A SWPA provides a buffer around public water system wells, and it represents a precautionary indicator to safeguard the drinking water sources. • One well is managed by one public water system that provides drinking water to the Animal Ark Wildlife Sanctuary. This water system serves 100 people. • 65 acres make up the SWPA in this basin.
Special Considerations & Issues	<ul style="list-style-type: none"> • No surface waters are used for public water supply. • There are no surface waters with “designated” Beneficial Uses or water quality standards in the Whitney Spring HUC-12 watershed.

SWPA Acreage		Type	Acres
Land Jurisdiction	Washoe County Non- Federal:		65
Land Use	Residential:		28
	Vacant:		37

Land uses and jurisdictions in the SWPAs are summarized in the adjacent table and illustrated by the [Land Classification Figure](#).

The only four entities that share ownership and management in these SWPAs are Animal Ark Inc., Roderick B Dexter et al, Aaron and Diana Hibel, and the Jo Anne S Gould Trust.





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Animal Ark Land Classification and Source Water Protection Areas

- Critical SWPA
- SWPA
- Groundwater Basin
- Land Use**
- Residential
- Vacant

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 Bedell Flat Basin is located within the “Western Region”. There are no designated beneficial uses ([NAC 445A.1782](#)) or water quality standards ([NAC 445A.1784](#)) for surface water bodies in the Whitney Spring HUC-12. For groundwater, 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

The well used by the Animal Ark Wildlife Sanctuary is highly valued because it is the only source for this public water system at this remote location in the Bedell Flat groundwater basin. The animal feeding and care operations occurring at the facility have limited potential to contribute to groundwater contamination from animal waste.

Strategies to Protect and Improve Water Quality

The water quality concerns identified in this basin can be addressed through management strategies described in this section, the proposed projects detailed in the Project Profiles, as well as applicable on-going water quality projects and programs described under Stakeholders and Plans. These strategies pertain to the entire basin but may be prioritized in SWPAs.

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. Activities in these buffer areas can affect the quality of water downstream or underground. These management strategies acknowledge the value of these SWPAs to prevent future contamination of sources of drinking water.

The SWPA buffers in this groundwater basin are based on a 20-year time of travel for groundwater. 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.
- Encourage coordination between Public Water Systems, landowners, and City or County 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 objective is intended to help effectuate positive actions to protect water quality:

- Inform landowners and developers within SWPAs about the importance of avoiding contamination and their proximity to a valuable drinking water source.

Resource Investigation and Planning

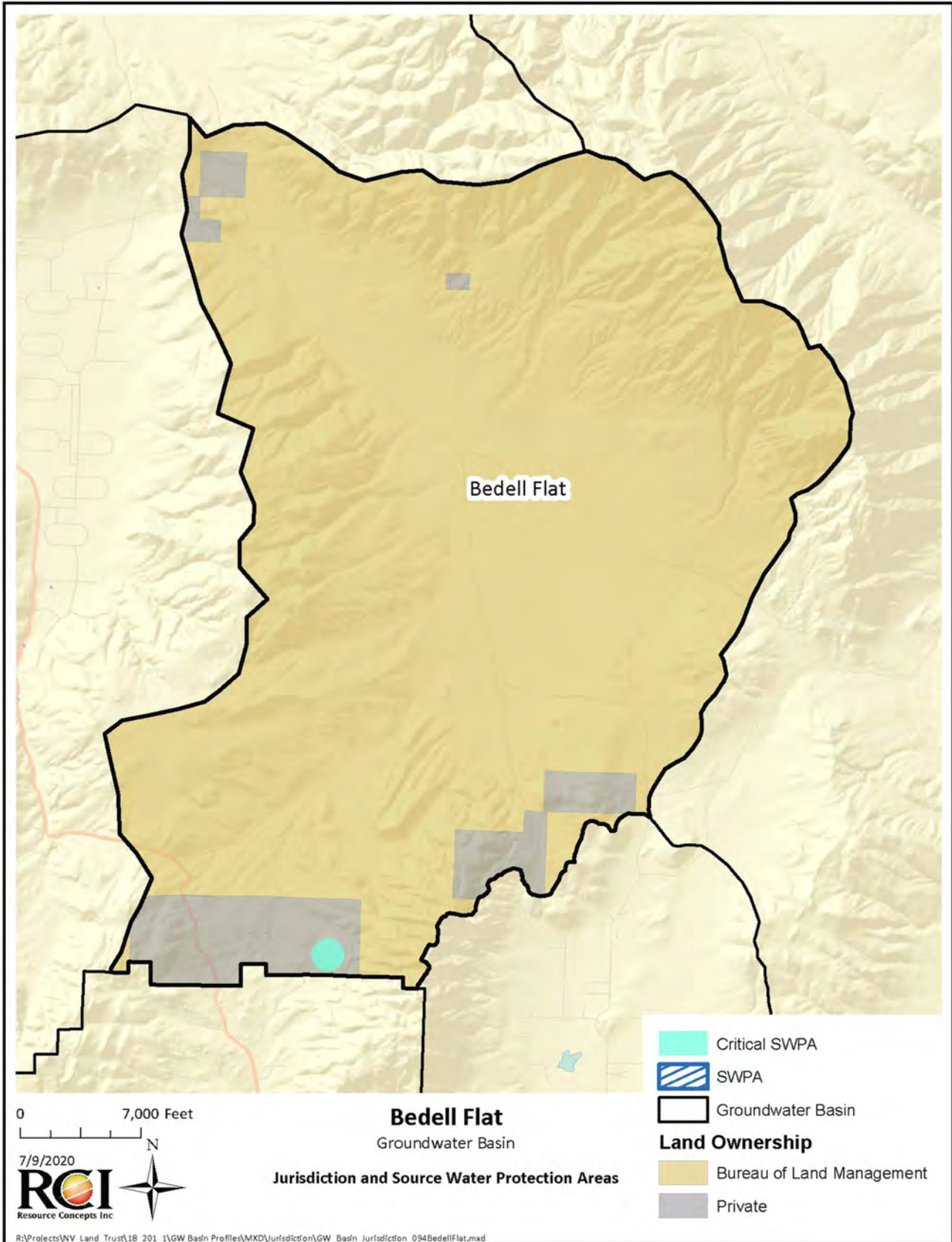
Stakeholders may consider supporting the following resource investigation and planning, which can help fill data gaps, inform implementation designs, and prioritize projects:

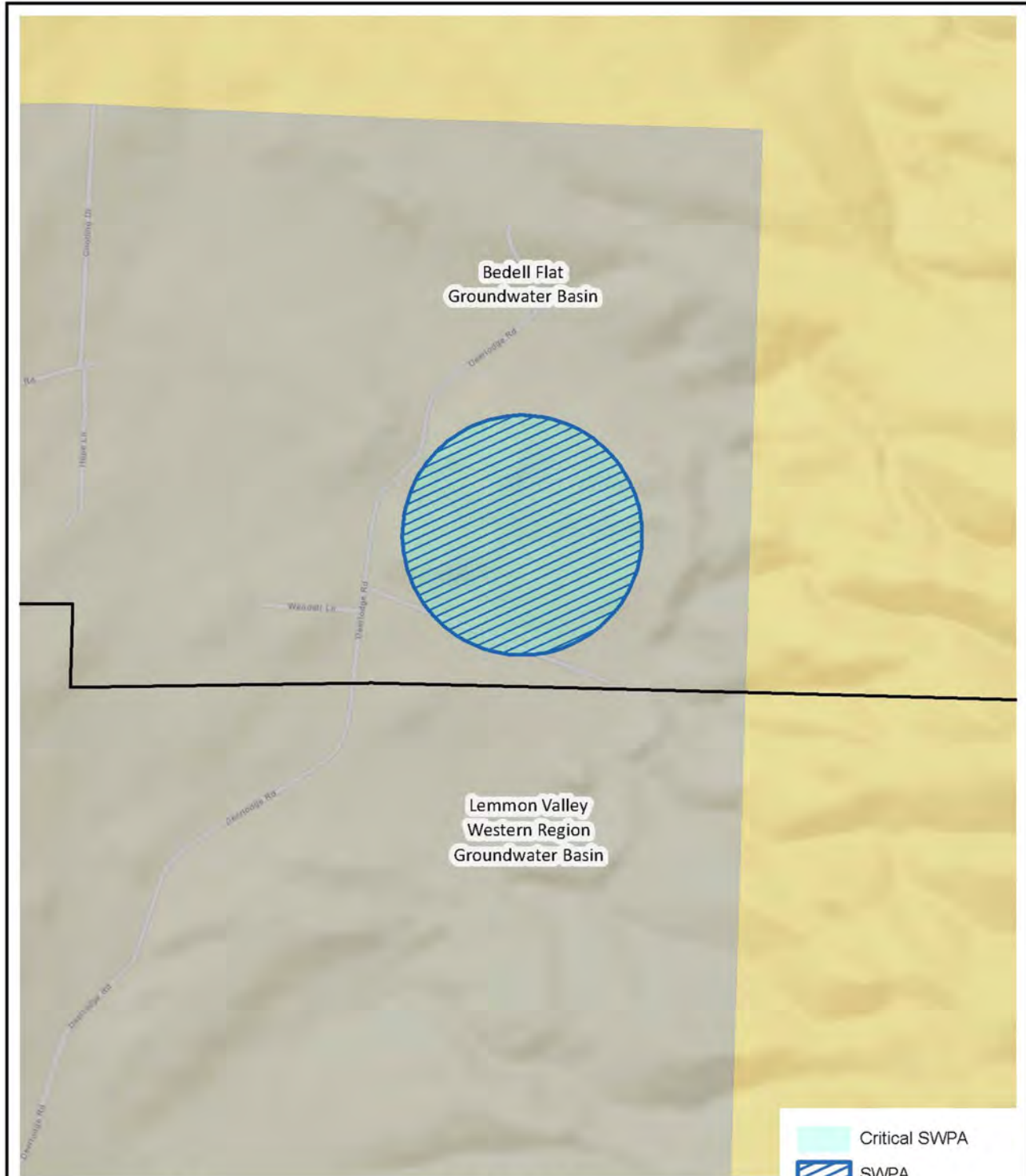
- Explore and engage funding sources available for the Animal Ark Wildlife Sanctuary to expand monitoring, implement improvements, and develop contingency plans.

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.





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Animal Ark
Jurisdiction and Source Water Protection Areas

 Critical SWPA

 SWPA

Land Ownership

 Bureau of Land Management

 Private

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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	
<ul style="list-style-type: none"> • Nevada Division of Environmental Protection • Washoe County 	<ul style="list-style-type: none"> • Washoe County Health District • Western Regional Water Commission

Nevada Division of Environmental Protection

The Nevada Division of Environmental Protection (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.

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

Activities in Washoe County are reviewed according to the Master Plan Planning Areas. The Bedell Flat area is included in the North Valleys planning area. The County has Citizen Advisory Boards (CABs) which provide important community perspective on local issues to the Washoe County Board of Commissioners. The area is wholly within the North Valleys CAB ([CAB Boundaries](#)).

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, 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.

Western Regional Water Commission and the Northern Nevada Water Planning Commission

The Western Regional Water Commission (WRWC) focuses on improving water resource planning at the regional level and facilitating coordinated resource management among City of Reno, City of Sparks, Washoe County, Truckee Meadows Water Authority (TMWA), Truckee Meadows Water Reclamation Facility (TMWRF), South Truckee Meadows GID and Sun Valley GID.

The Northern Nevada Water Planning Commission (NNWPC) is a technical advisory panel that reports to the WRWC. The NNWPC develops and updates a Comprehensive Regional Water Management Plan (RWMP) and makes recommendations to the WRWC for adoption. In addition, the NNWPC develops priorities and an annual budget for the Regional Water Management Fund, also for recommendations to the WRWC.

The Comprehensive Regional Water Management Plan includes several applicable objectives:

- [Objective 1.2](#) Provide for a Sustainable Water Supply and an Acceptable Level of Service to the Community (including protecting groundwater recharge areas).
- [Objective 1.3](#) Implement measures to protect and enhance water quality for a sustainable water supply (including source water protection).
- [Objective 2.1](#) Promote Efficient Use of Resources (Reduction of Non-Point Source Pollution for TMWRF Pollutant Credit).
- [Objective 2.2](#) Manage wastewater for protection and enhancement of water quality.
- [Objective 3.1](#) Effective and integrated watershed management (protection of human health, property, and water quality, including storm water).

References

Kennedy/Jenks Consultants Broadbent & Associates, Inc. ADGIS. Southern Washoe County Groundwater Recharge Analysis. Prepared for Regional County Water Planning Commission, 2001.

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](#)

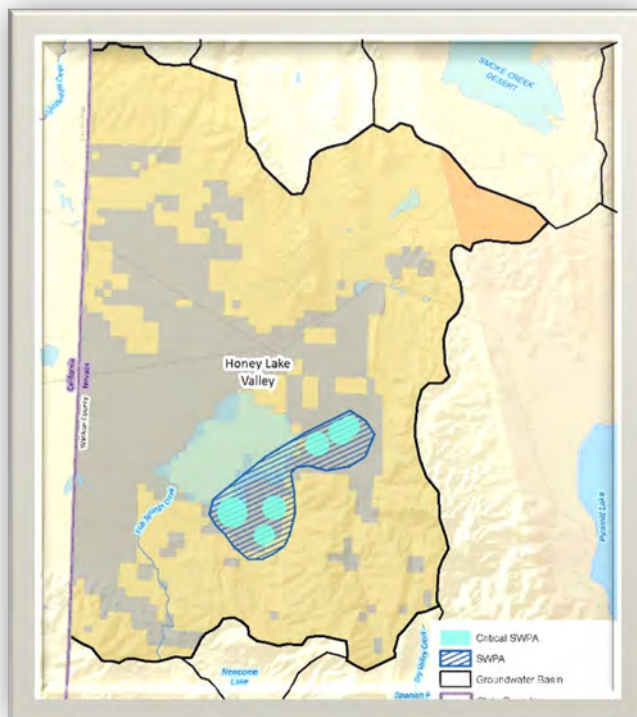
Washoe County Master Plan, 2008 . [Washoe County 2008 Master Plan](#), [Washoe County Health District](#)

WRWC, Western Regional Water Commission, Comprehensive Regional Water Management Plan 2016-2035 Update, 2017. [WRWC Comprehensive Regional Water Management Plan 2016-2035](#)

Honey Lake Valley

Groundwater Basin #097, Source Water Profile

[Click here for the SWPA Map](#)



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[Potential and Existing Water Quality Concerns](#)

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[Stakeholders and Plans](#)

[References](#)

Introduction

The Honey 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 North Valleys area which includes Stead, Silver Lake, and Lemmon Valley. The Fish Springs Water Importation project, completed in 2016, transfers groundwater from the Honey Lake basin to the North Valleys area to accommodate the growing community. There are no surface waters used directly by water systems in this the Honey Lake Basin. This profile includes potential and existing water quality concerns, types of land uses, management strategies and projects, and the involved stakeholders and their corresponding plans with water quality components.

Honey Lake Valley is a 2,200-square-mile, northwest-trending, topographically closed basin, about 35 miles northwest of Reno, Nevada. Unconsolidated basin-fill deposits on the valley floor and fractured volcanic rocks in the northern and eastern uplands are the principal aquifers. The valley floor is surrounded by Fort Sage Mountains to the west, Virginia Mountains in the south, Pyramid Lake to the east, and volcanic uplands to the north. Precipitation infiltrates through unconsolidated deposits and faults and fractures in consolidated rocks to become ground water.

The Truckee Meadows Water Authority (TMWA), the only public water system in the Honey Lake Basin, operates six wells. Three of the wells are in the Fish Springs-Frontal Calneva Lake HUC-12, and the other three wells are in the Sand Pass-Frontal Calneva Lake HUC-12. Most of the land within the SWPA boundaries is privately owned, with a portion of BLM managed land mostly within the Calneva Lake HUC-12. The SWPAs were developed county-wide by stakeholders to help protect drinking water sources.

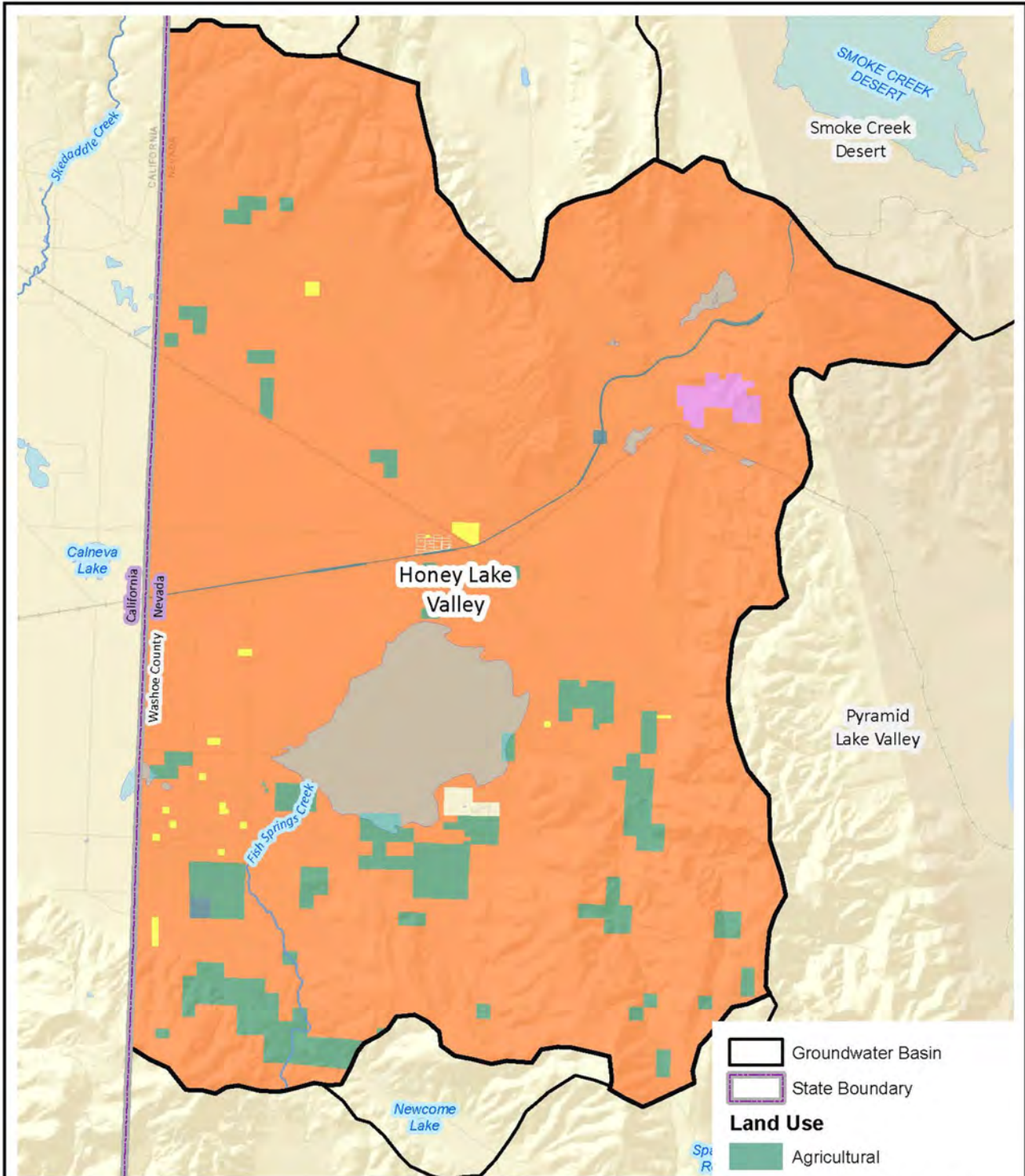
The following table summarizes key water quality aspects of this basin.

Basin Summary	
Basins	<ul style="list-style-type: none"> • Groundwater Basins: Honey Lake #097 • HUC-12 Watershed: Fish Springs Creek - Frontal Calneva Lake #160402030306 Calneva Lake # 180800031408 Sand Pass - Frontal Calneva Lake #180800031406
Source Water Protection Areas	<ul style="list-style-type: none"> • A SWPA provides a buffer around public water system wells, and it represents a precautionary indicator to safeguard the drinking water sources. • Critical SWPAs represent areas closer to public water system wells. • Six wells are managed by one public water system (TMWA) that provides drinking water to the North Valleys area. TMWA’s service area includes about 425,000 people. • 6,076 acres make up the SWPA in this basin.
Special Considerations & Issues	<ul style="list-style-type: none"> • No surface waters are used for public water supply. • There are no surface waters with “designated” Beneficial Uses or water quality standards in the Fish Springs Creek-Frontal Calneva Lake, Calneva Lake, and Sand Pass-Frontal Calneva Lake HUC-12 watersheds. • Groundwater from this basin is used for drinking water supply for the Stead, Silver Lake, and Lemmon Valley areas.

SWPA Acreage		Type	Acres
Land Jurisdiction	Washoe County Non-Federal:		4,657
	BLM:		1,419
Land Use	Agriculture:		1,682
	Residential:		10
	Vacant:		4,140
	Not assigned:		244

Land uses and jurisdictions in the SWPAs are summarized in the adjacent table and illustrated by the [Land Classification Figure](#).

Agriculture is the dominant land use in the Honey Lake Basin SWPAs. There are multiple private entities that share ownership and management of agricultural activities. The BLM manages a portion of the land in the Calneva Lake HUC-12.



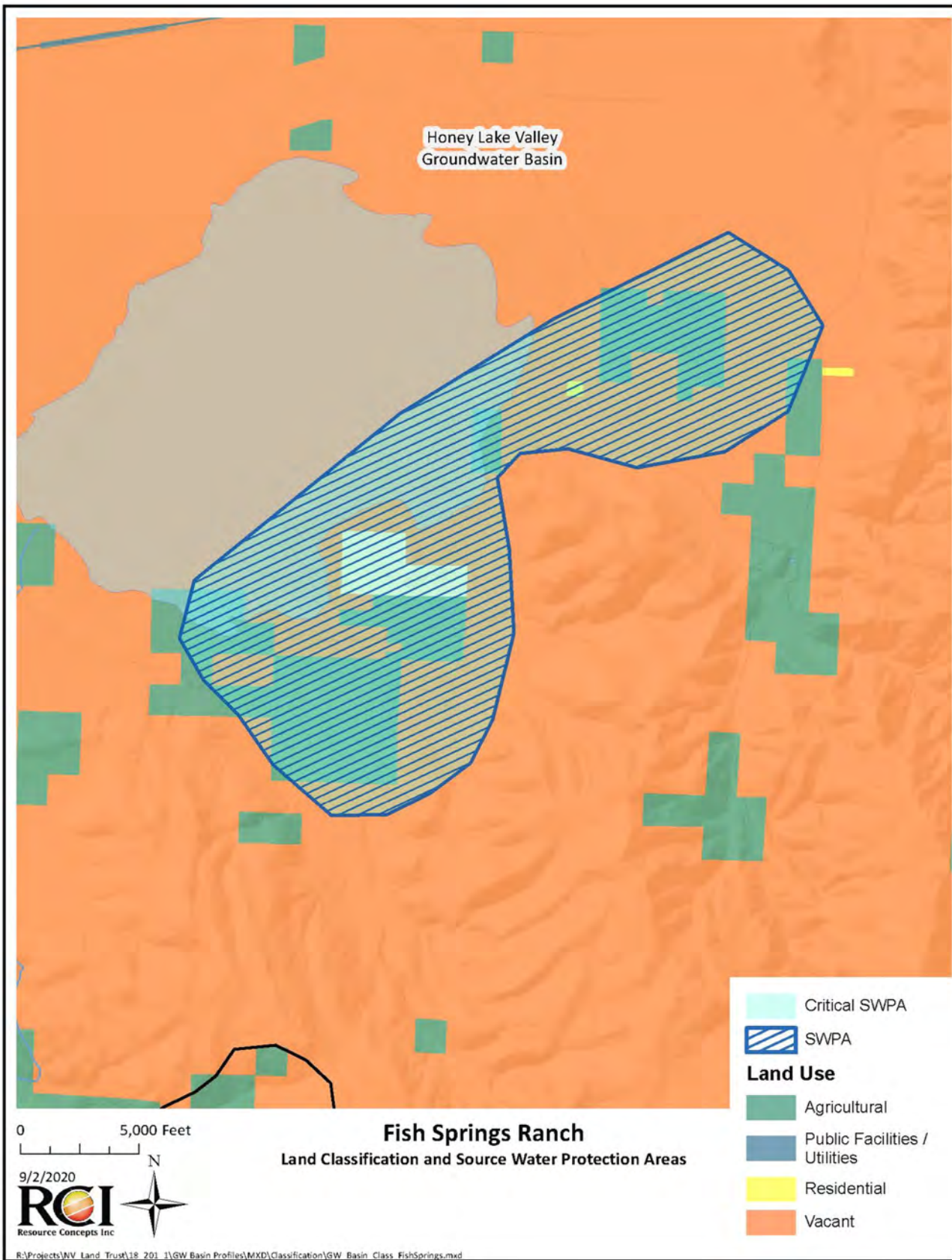
- Groundwater Basin
- State Boundary
- Land Use**
- Agricultural
- Commercial / Industrial
- Public Facilities / Utilities
- Residential
- Vacant

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Honey Lake Valley
Groundwater Basin
Land Classification

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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](#). Honey Lake is located within the “Western Region”. There are no designated beneficial uses ([NAC 445A.1782](#)) or water quality standards ([NAC 445A.1784](#)) for surface water bodies in the Fish Springs Creek-Frontal Calneva Lake, Calneva Lake, and Sand Pass-Frontal Calneva Lake HUC-12s. For groundwater, Nevada’s policy is to protect all groundwater against deterioration in quality, in order to maintain supplies that are suitable for beneficial use.

Groundwater is an important source of drinking water from the watersheds in Honey Lake Basin for residents not only in this basin but also in the Stead, Silver Lake, and Lemmon Valley areas. Groundwater quality and quantity varies naturally, with highly mineralized, poor groundwater quality in shallow groundwater near the playa areas.

Potential and Existing Water Quality Concerns

There are six wells, all operated by TMWA, in this groundwater basin that are highly valued because they provide an additional imported 8,000 acre-ft of groundwater to supplement water supplies for the North Valleys area (TMWA).

Agricultural activities surround the wells within the SWPA in Honey Lake. Irrigated fields and ranching operations involving the use and storage of fertilizers and pesticides/herbicides, can potentially contribute to groundwater quality issues. Also, if not properly stored and used, fuel and chemicals for equipment operation and maintenance equipment can present a concern for water quality.

Strategies to Protect and Improve Water Quality

The water quality concerns identified in this basin can be addressed through management strategies described in this section, the proposed projects detailed in the Project Profiles, as well as applicable on-going water quality projects and programs described under Stakeholders and Plans. These strategies pertain to the entire basin but may be prioritized in SWPAs.

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. Activities in these buffer areas can affect the quality of water downstream or underground. These management strategies acknowledge the value of these SWPAs to prevent future contamination of sources of drinking water.

The SWPA buffers in this groundwater basin are based on a 20-year time of travel for groundwater. 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.
- Encourage coordination between Public Water Systems, landowners, and City or County 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

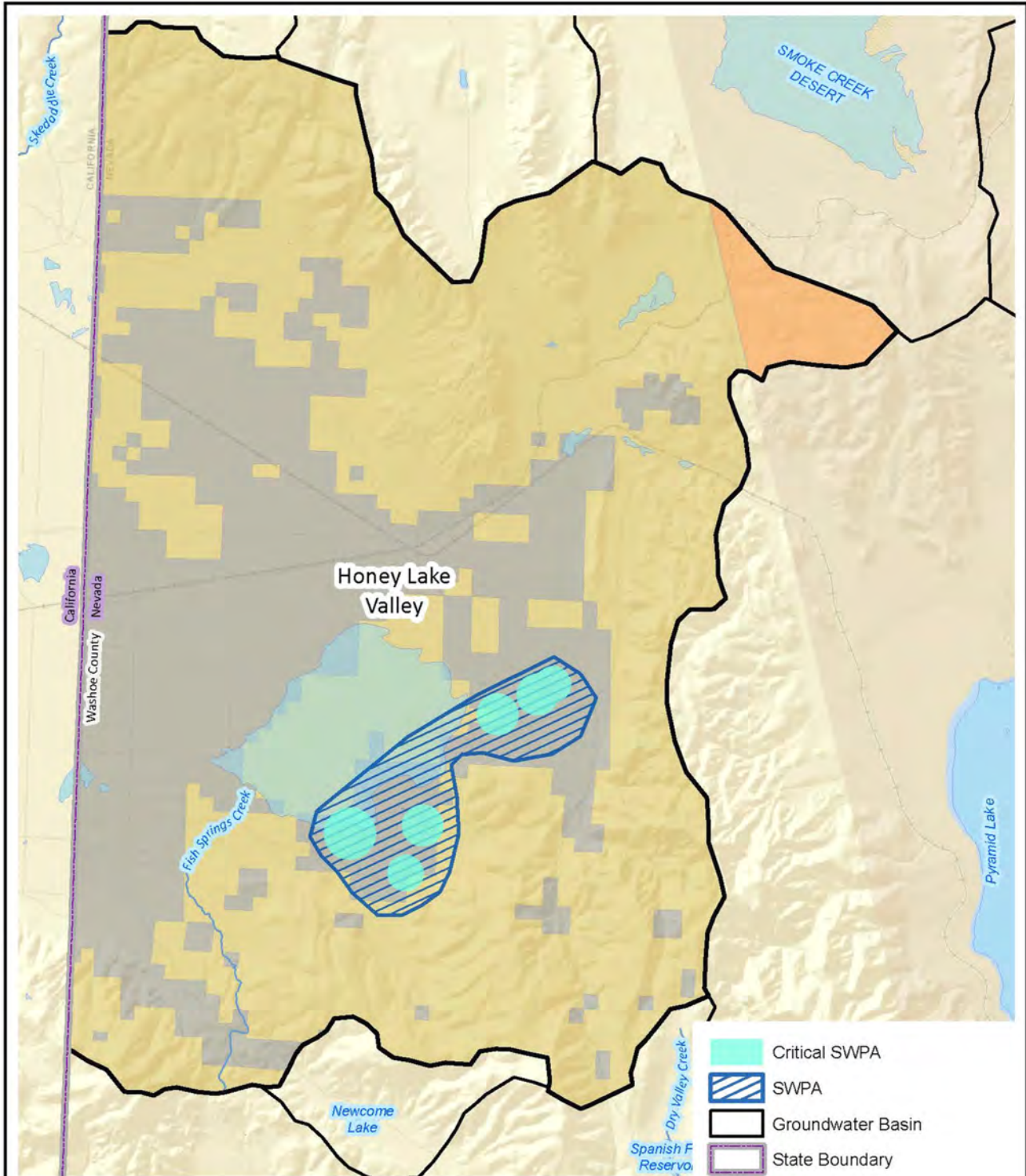
The following education and outreach objective is intended to help effectuate positive actions to protect water quality:

- Inform landowners and developers within SWPAs about the importance of avoiding contamination and their proximity to a valuable drinking water source.

Interagency Communication

The following interagency communication objective is an important tool 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. TMWA, private landowners and the BLM.



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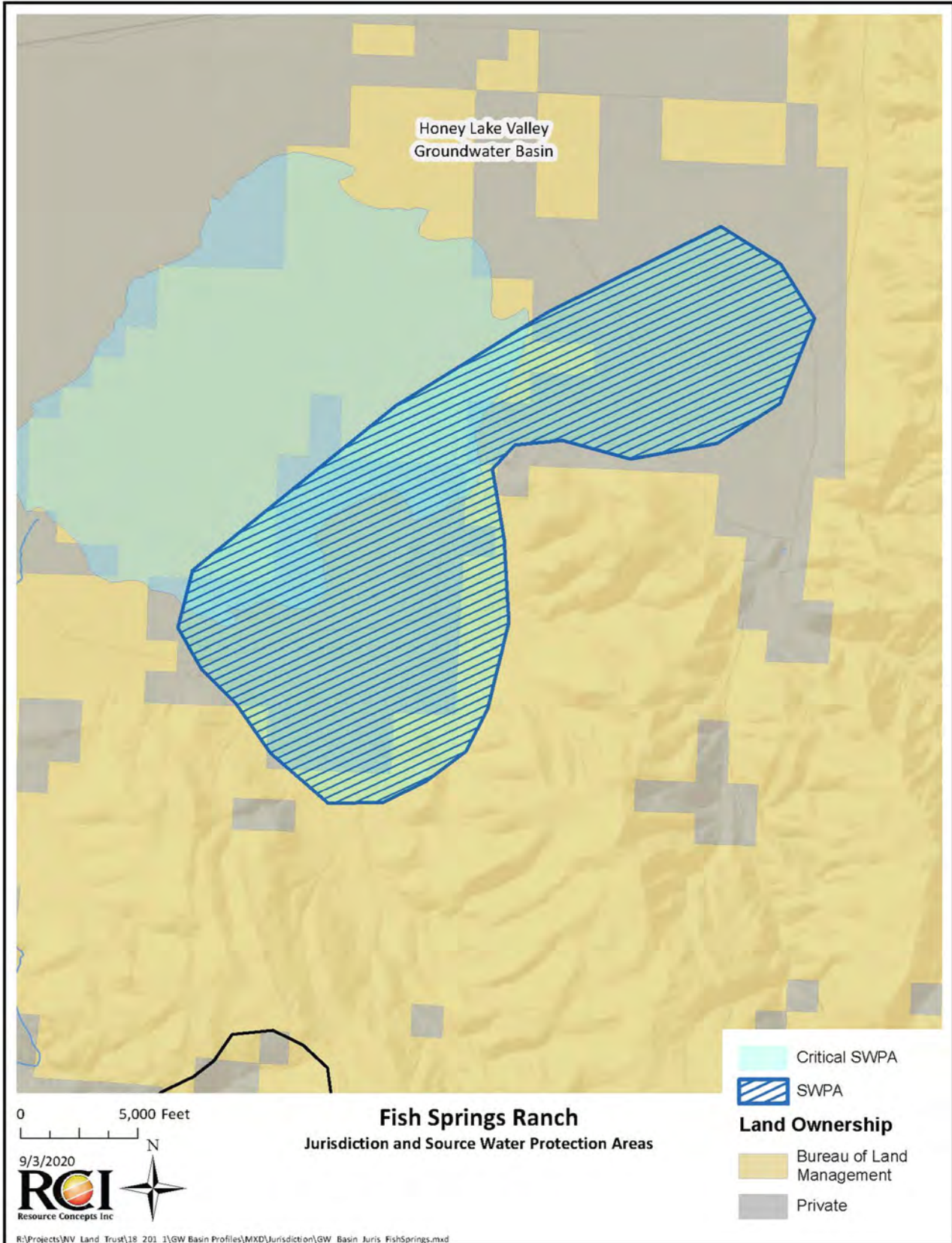


Honey Lake Valley
 Groundwater Basin

Jurisdiction and Source Water Protection Areas

- Critical SWPA
 - SWPA
 - Groundwater Basin
 - State Boundary
- Land Ownership**
- Bureau of Indian Affairs
 - Bureau of Land Management
 - Private

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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.
- Physical improvements prioritized in SWPAs for water quality improvement and protection.

Proposed Implementation Projects

Proposed implementation actions are generally described under 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	
<ul style="list-style-type: none"> • Bureau of Land Management • Nevada Division of Environmental Protection • Truckee Meadows Water Authority 	<ul style="list-style-type: none"> • 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 Nevada Division of Environmental Protection (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.

Truckee Meadows Water Authority

TMWA is responsible for almost all municipal water delivery in the greater Reno-Sparks area. TMWA also owns and operates the municipal wells in this basin. The following program and plans guide the management of these water resources:

- **TMWA Water Resources Plan (2016-2035):**
This plan describes water quality issues and goals for the water resources managed by TMWA. Special focus is placed on changes in future water supply and demand, and how those changes will impact the region's water resources.
- **Source Water Quality Assurance Program (2016-2035):**
TMWA's objective is to deliver high-quality potable water to its customers in a cost-effective manner. To achieve this objective, TMWA has established a water quality assurance program. The components that make up the program are source water quality protection, potable water treatment, maintenance of distribution system water quality, and cross connection control.
- **Wellhead Protection Plan (2016):**
The purpose of the Wellhead Protection Plan is to protect groundwater that serves as a source for public drinking water supplies. This plan is intended to be a tool used by TMWA to assist in protecting drinking water sources.

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

Activities in Washoe County are reviewed according to the Master Plan Planning Areas. The Honey Lake Valley area is included in the North Valleys planning area. The County has Citizen Advisory Boards (CABs) which provide important community perspective on local issues to the Washoe County Board of Commissioners. The Honey Lake Valley area is wholly within the North Valleys CAB ([CAB Boundaries](#)).

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.

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The Western Regional Water Commission (WRWC) focuses on improving water resource planning at the regional level and facilitating coordinated resource management among City of Reno, City of Sparks, Washoe County, TMWA, Truckee Meadows Water Reclamation Facility (TMWRF), South Truckee Meadows GID, and Sun Valley GID.

The Northern Nevada Water Planning Commission (NNWPC) is a technical advisory panel that reports to the WRWC. The NNWPC develops and updates a Comprehensive Regional Water Management Plan (RWMP) and makes recommendations to the WRWC for adoption. In addition, the NNWPC develops priorities and an annual budget for the Regional Water Management Fund, also for recommendations to the WRWC.

The Comprehensive Regional Water Management Plan includes several applicable objectives:

- [Objective 1.2](#) Provide for a Sustainable Water Supply and an Acceptable Level of Service to the Community (including protecting groundwater recharge areas).
- [Objective 1.3](#) Implement measures to protect and enhance water quality for a sustainable water supply (including source water protection).
- [Objective 2.1](#) Promote Efficient Use of Resources (Reduction of Non-Point Source Pollution for TMWRF Pollutant Credit).
- [Objective 2.2](#) Manage wastewater for protection and enhancement of water quality.
- [Objective 3.1](#) Effective and integrated watershed management (protection of human health, property, and water quality, including storm water).

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](#)

TMWA, Truckee Meadows Water Authority, 2016-2035 Water Resource Plan

TMWA, Truckee Meadows Water Authority. [Water Importation](#)

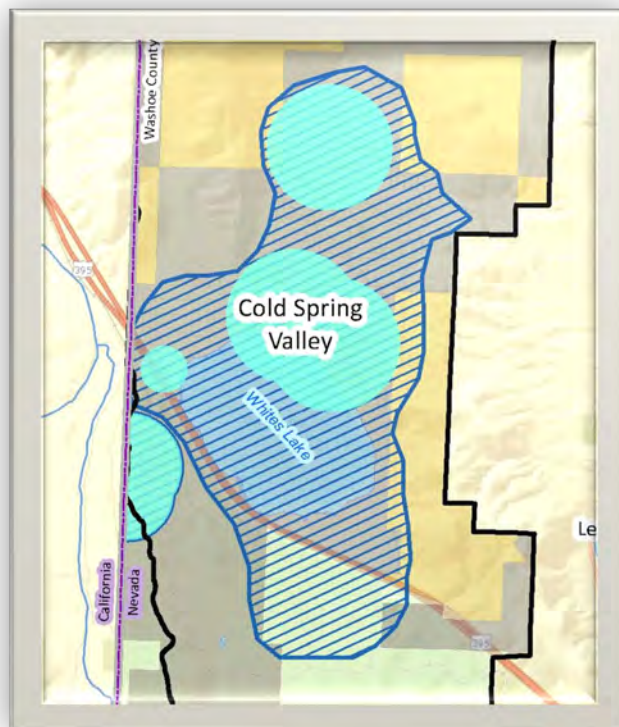
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Cold Spring Valley

Groundwater Basin #100 and #100A Source Water Profile

[Click here for the SWPA Map](#)



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- [Water Quality Standards and Beneficial Uses](#)
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- [Strategies to Protect and Improve Water Quality](#)
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- [References](#)

Introduction

The Cold Spring 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 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 basin where they live. This Plan can be used to support funding for a multitude of water quality projects in the basin.

Summary

This profile focuses on protecting water quality for the groundwater sources in this basin that are used by water systems to supply drinking water to the general public also known as source water. There are no surface waters used directly by water systems in this basin. Potential and existing water quality concerns, types of land uses, management strategies and projects, and the involved stakeholders and their corresponding plans with water quality components are described.

The Cold Spring Valley hydrographic area #100 and the adjacent #100A is a north-south trending valley of 30 square miles along the state line: about 12 miles northwest of downtown Reno. It is bounded on the east by the Granite Hills, on the north and northwest by Peterson Mountain and on the south by Peavine Mountain. The valley is topographically closed, and surface water drainage terminates in White Lake.

Cold Spring Valley is underlain by alluvium, and surrounding mountains are mostly composed of granitic and metamorphic rocks (Van Denburgh, 1981, p. 5). The alluvium is the main aquifer in the valley, and it receives an estimated 1,000 acre-feet per year of recharge. In 1981, movement of ground water in the valley was toward White Lake from recharge areas in the surrounding mountains. Currently, the groundwater gradient is to the north (NDWR water-level data at [NDWR Water Level and Site Data](#)), probably because of long-term pumping in the area.

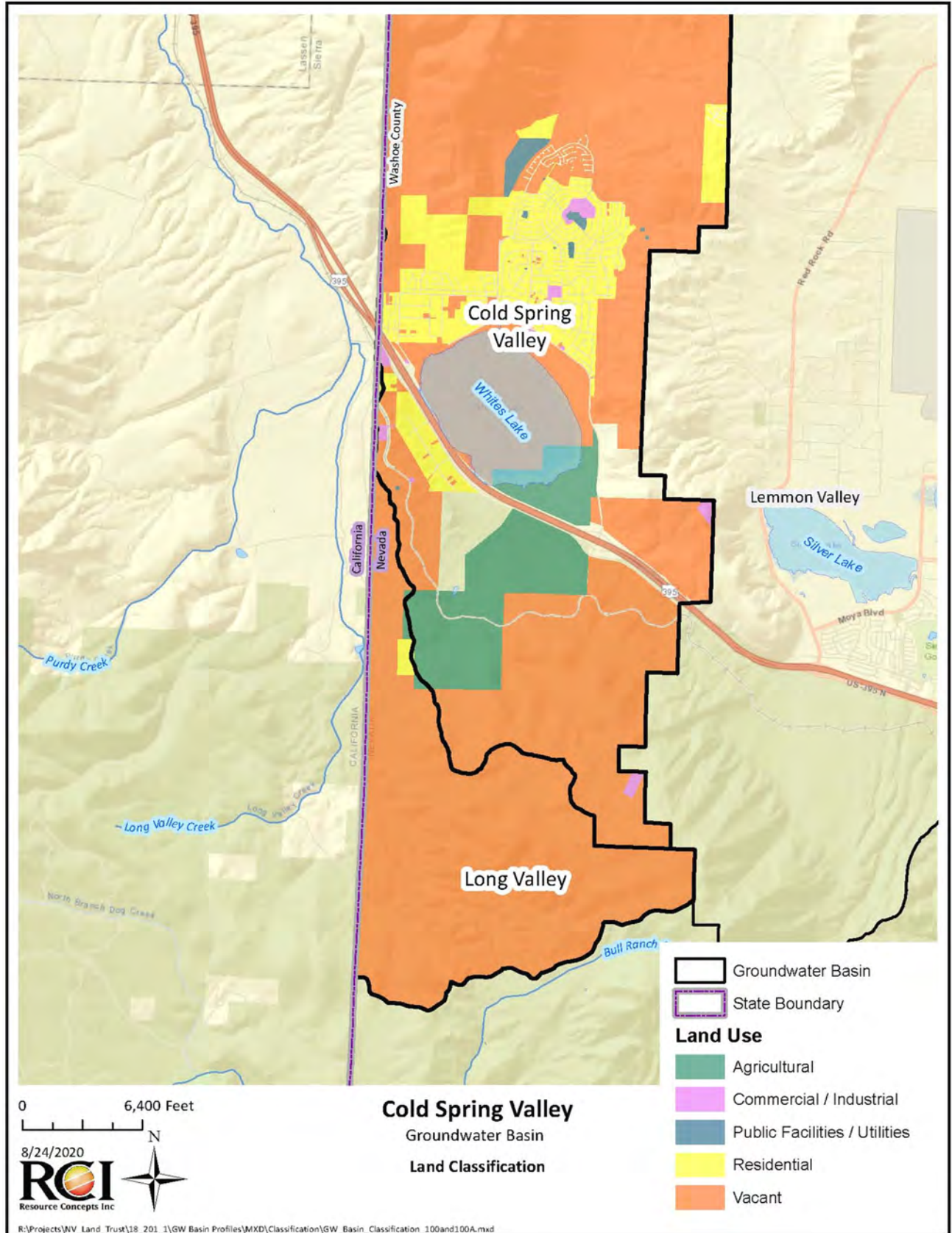
SWPAs for this area were developed by stakeholders to help protect drinking water sources. There are eight public supply wells in Cold Spring Valley. The following table summarizes key water quality aspects of this basin.

Basin Summary	
Basins	<ul style="list-style-type: none"> • Groundwater Basins: Cold Spring Valley #100 and #100A. • HUC-12 Watershed: Cold Spring Valley #180800030902.
Source Water Protection Areas	<ul style="list-style-type: none"> • A SWPA provides a buffer around public water system wells, and it represents a precautionary indicator to safeguard the drinking water sources. • Critical SWPAs represent areas closer to public water system wells. • Eight public water system wells are managed by two different public water systems. • 5,400 acres of SWPAs, or roughly 17% of the combined #100 and #100A basins are within the SWPAs. • 1,900 acres of critical SWPAs, or roughly 6% of the combined basins are within the critical SWPAs.
Special Considerations & Issues	<ul style="list-style-type: none"> • Groundwater quality and quantity varies. Highly mineralized, poor groundwater quality is in shallow groundwater near the playa areas. • Locally, higher nitrate levels are associated with a higher density of septic tanks. • The nitrate concentrations found in wells are well-specific and depend on depth to groundwater, flow direction, well screen depth, and the soil types between the septic tanks and well screen.

SWPA Acreage	Type	Acres	%
Land Jurisdiction within SWPAs	City of Reno:	2,500	47%
	Washoe County Non-Federal:	1,900	35%
	BLM:	350	6%
	Forest Service:	600	10%
Land Uses within SWPAs	Agriculture:	800	15%
	Commercial/Industrial:	100	2%
	Residential:	1,300	25%
	Public Facility/Utility:	100	2%
	Vacant:	2,300	43%

Land uses and jurisdictions in the SWPAs are summarized in the adjacent table and illustrated by the [Land Classification Figure](#).

Residential land uses are the dominant activities in this basin. The potential and existing water quality concerns generated are primarily due to risk of hazardous material spills or leaks, and pollution from urban areas, nitrate from septic systems, and sediment from erosion.



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](#). Cold Spring is located in the “Western Region”. There are no designated beneficial uses ([NAC 445A.1782](#)) or water quality standards ([NAC 445A.1784](#)) for water bodies in the Western Region. However, Nevada’s policy is to protect all ground water against deterioration in quality in order to maintain supplies that are suitable for beneficial uses.

Groundwater is an important source of drinking water for public water systems in this watershed. Groundwater quality and quantity varies naturally, with highly mineralized, poor groundwater quality in shallow groundwater near the playa areas. Groundwater water quality has been affected by nitrate and solvents through human activities.

Potential and Existing Water Quality Concerns

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

- Hazardous Materials from Spills or Leaks
- Pollution from Urban Areas
- Nitrate from Individual Sewage Disposal System

Hazardous Materials from Spills or Leaks

US Hwy 395 is in this groundwater basin. The U.S. Department of Transportation accumulated a list of commonly transported hazardous materials in the area (WRWC, 2017). These include:

- | | | |
|-----------------------|-------------------------|---------------------|
| • Ammonia perchlorate | • Hydrogen sulfide | • White phosphorous |
| • Anhydrous ammonia | • Nitro cellulose (wet) | • Propargyl alcohol |
| • Chlorine | • Propane | • Sulfuric acid |
| • Cyanide | • Petroleum naphtha | • Sodium hydroxide |
| • Hydrochloric acid | • Phosphoric acid | |

Though limited in number, there are also commercial and industrial businesses in this basin.

Pollution from Urban Area Runoff

Groundwater may be vulnerable to polluted runoff in urban areas, particularly where there are expanding residential developments. Potential contaminants include:

- | | |
|--|--------------------------------------|
| • nutrients from fertilizers | • bacteria from animal waste |
| • dissolved salts from excess irrigation | • pollution from household waste |
| • trash | • runoff from roads and parking lots |

Excessive fertilization in green areas such as yards, fields, golf courses or parks are potential sources of nutrients from runoff. These areas may also contribute *Escherichia coli* (*E. coli*) from animal waste such as from horses, dogs and geese. Agricultural properties in the area also have livestock and farming practices, which may contribute to water quality issues from fertilizers, herbicides and livestock waste.

Excess irrigation of green areas can also create persistent “dry weather” flows due to direct discharge to storm drains and/or seepage through shallow soil layers to existing natural drainages. Irrigation seepage through desert soils, that were not previously irrigated, can mobilize salts (TDS), which in turn can lead to perennial flows with poor water quality in drainages that were originally ephemeral.

Nitrate from Individual Sewage Disposal Systems

Individual Sewage Disposal Systems, or septic systems, are associated with nitrate contamination of groundwater if there are large numbers concentrated in a small area; for example, neighborhoods with lot sizes less than one acre, or if they are not maintained properly (WRWC, 2017). There are about 1,380 parcels with septic systems within the SWPAs, many with lot sizes between 0.3 and 0.6 acres.

Strategies to Protect and Improve Water Quality

The water quality concerns identified in this basin can be addressed through management strategies described in this section, the proposed projects detailed in the Project Profiles, as well as applicable on-going water quality projects and programs described under Stakeholders and Plans. These strategies pertain to the entire basin but may be prioritized in SWPAs.

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. Activities in these buffer areas can affect the quality of water downstream or underground. These management strategies acknowledge the value of these SWPAs to prevent future contamination of drinking water sources.

There are two types of SWPA buffers in this basin. The first is a buffer surrounding the lower elevations of the valley and represents a precautionary indicator to safeguard these drinking water sources. The second type of buffer covers more critical areas close to the water system wells based on a 20-year time of travel for groundwater. 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.
- Encourage coordination between Public Water Systems, landowners, and City or County 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:

- Work with Homeowner Associations regarding source water pollution prevention measures.
- Increase knowledge about household and commercial chemical use, storage, and disposal through local outreach efforts.
- Inform landowners and developers residing in critical SWPAs about the importance of avoiding contamination and their proximity to a valuable drinking water source.

Interagency Communication

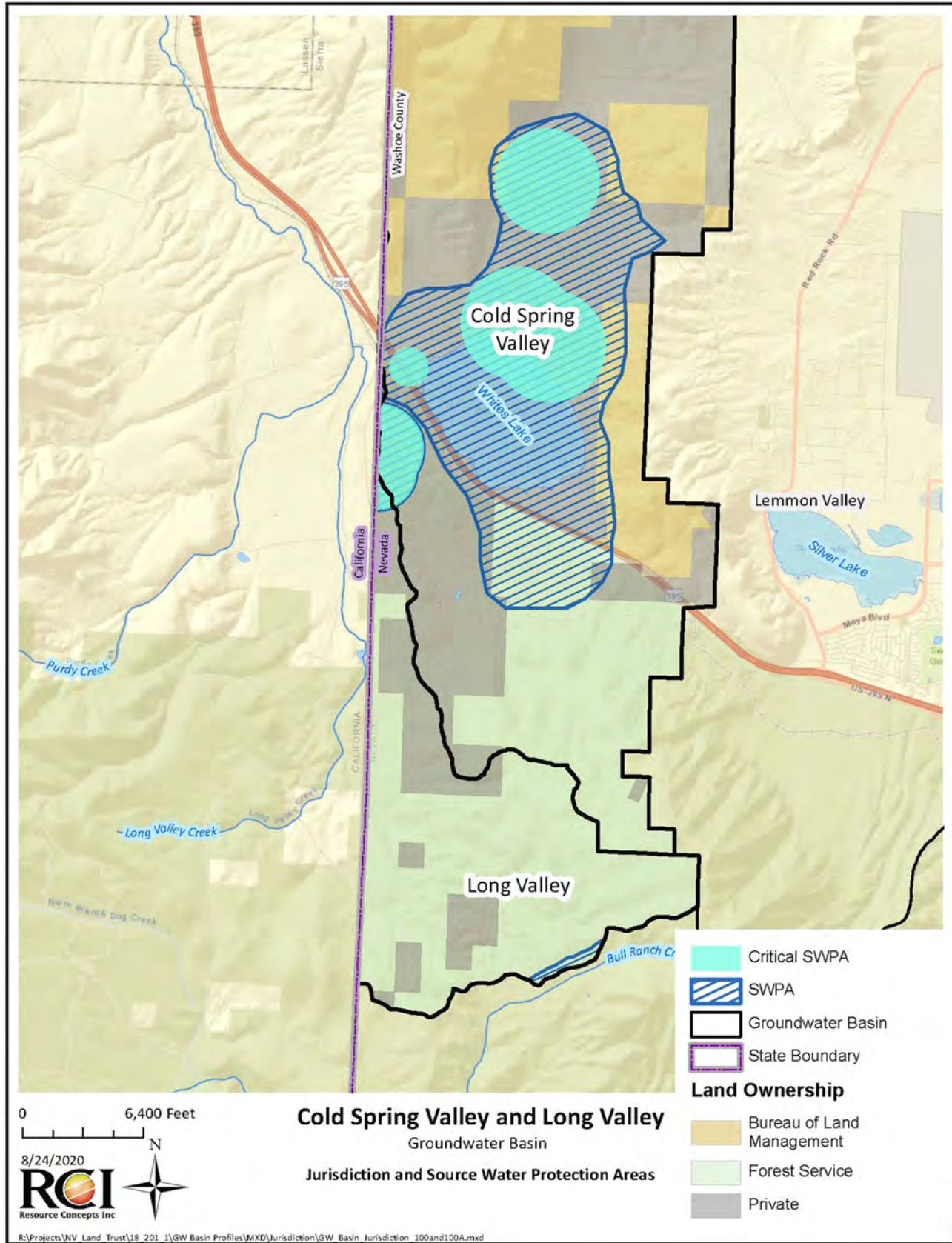
The following interagency communication objectives are important tools to both reinvigorate and invest additional resources in water quality, as well as utilize existing resources and programs:

- Each agency may evaluate how to improve lines of communication within and between jurisdictions regarding water quality issues; i.e. City of Reno, Washoe County, Truckee Meadows Water Authority (TMWA), Nevada Division of Environmental Protection (NDEP), District Health, and BLM.
- Continue to increase coordination and communication between the appropriate agencies regarding spills and corrective actions along Hwy 395 and the airport.
- Collaborate with the Washoe/Storey Cooperative Weed Management Area to support their efforts in noxious weed management ([WSCWMA Website](#)).

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:

- 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.



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.
- Fertilizer and pesticide management measures for irrigated green spaces.

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. 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	
<ul style="list-style-type: none"> • City of Reno • Bureau of Land Management • Nevada Department of Transportation • Nevada Division of Environmental Protection • Nevada Division of Forestry 	<ul style="list-style-type: none"> • Truckee Meadows Regional Planning Agency • Truckee Meadows Water Authority • Washoe County • Washoe County Health District • Western Regional Water Commission

City of Reno

The City of Reno Master Plan goals and policies provide the framework for decision-making in the community.

Drinking water protection is addressed in the Master Plan’s guiding principle to promote a safe and more resilient community. The City works with TMWA and other partners to ensure clean drinking water.

Water quality is also addressed in the guiding principle for quality places and outdoor recreation opportunities in the sections on hydrologic resources, major drainageways and no net loss of wetlands, stream environments, playas, spring fed stands of riparian vegetation, and non-404 wetlands in the City, in terms of both acreage and value. The Design Principles for Sustainable Development also contain sections related to water quality.

The following articles from the Master Plan discuss several water-related items that are applicable to this Plan:

- Article XVIII: Section 18.12.1801 to 1808 describes wetlands and stream environment protection standards established for the review of development proposals within wetlands, stream environments, and areas of significant hydrologic resources.
- Article XIX: Section 18.12.1902 to 1907 Drainage Way Protection Standards carries out the provisions of the City of Reno Major Drainageways Plan, an element of the City of Reno Master Plan, and establishes standards for the review of development proposals within major drainage ways to, among other actions, maintain, preserve, or enhance the quality of the water.

The City of Reno also provides comprehensive services for construction and maintenance roads, landscaping and drainage facilities, citywide planning and code compliance, and emergency response services for fire and hazardous materials. All these roles contribute to preserving and improving water quality in the basin.

Additionally, the City of Reno is divided into five Neighborhood Advisory Board Wards. Each Ward has one representative on the Reno City Council that is specifically focused on the needs of their part of the City. These Wards provide opportunities for citizens to engage in important community issues and is the most efficient way for citizens to communicate their concerns and ask questions prior to any large decisions or projects. As such, these Wards and their input are essential in the implementation and success of any projects and plans within the community. Source water protection for this area falls within Ward 4.

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 Department of Transportation

The Nevada Department of Transportation (NDOT) has developed their Stormwater Management Program to reduce stormwater pollution from NDOT managed facilities and roads. The program BMPs and annual report outline the specific measures that NDOT will take to reduce stormwater pollutant discharges from its owned and operated storm drain system:

- Stormwater Management Program (2013):
 - The overall goal of the NDOT Stormwater Management Program is to reduce pollution associated with stormwater from NDOT's MS4 to the maximum extent practicable, as well as to protect surface and groundwater resources within the MS4 permit area. The Stormwater Management Program addresses stormwater pollution control as it relates to the planning, design, construction, and maintenance of NDOT's highway infrastructure statewide.
- Stormwater Management Program: Annual Report (2017):
 - This basin is impacted or has the potential to be impacted by Hwy 395. The Stormwater Management Program provides a helpful planning outline on handling and mitigating pollution from the roads.

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.

Nevada Division of Forestry

The Nevada Division of Forestry (NDF) is a state agency that uses a collaborative process to deliver science based natural resource management and protection to promote resilient landscapes, fire adapted communities, and safe, effective wildfire response provided by employees that embrace the core values of duty, respect, and integrity.

NDF provides professional natural resource and wildland fire management services to Nevada citizens and visitors to enhance, conserve and protect forest, rangeland and watershed values, endangered plants, and other native flora. [Protection of these resources helps to improve water quality:](#)

- Community Wildfire Protection Plans:

Community Wildfire Protection Plans (CWPPs) are authorized and defined in Title I of the Healthy Forests Restoration Act of 2003 (HFRA). CWPP's represent the best opportunity for communities to address the challenges of the Wildland-Urban Interface. A CWPP helps communities define their priorities for the protection of life, property, and shared assets-at-risk from wildfires. Developing a CWPP encourages community members and leaders to have valuable discussions about wildfire preparedness, evacuation planning, and local fire district capabilities. The CWPP increases grant funding opportunities by prioritizing fuel reduction projects around and within the community.

- Nevada Wildland Fire Cohesive Strategy:

The Nevada Fire Board Oversight Body is the custodian of the 2015 Nevada Wildland Fire Cohesive Strategy Summit's Action Plan to ensure goal achievement and identify emerging topics. This oversight body acts as an "advisory" body and is charged with taking the Nevada Cohesive Strategy Summit report and its Action Steps, ensuring that goal achievement is accomplished and monitoring emerging topics through the Nevada Fire Board. This body monitors progress, develops issue resolution, and addresses emerging issues such as protecting water quality.

Truckee Meadows Regional Planning Agency

The Truckee Meadows Regional Planning Agency (TMRPA) fosters coordination among Reno, Sparks and Washoe County. TMRPA facilitates land use, infrastructure provision and resource management conversations among public and private decision makers. The agency also serves as a collaborative information and data warehouse, coordinating regional data collection and delivering advanced geospatial analytics for regional solutions. TMRPA includes a Regional Planning Governing Board and a Regional Planning Commission.

The TMRPA Regional Plan (2012 as amended) provides goals and policies for multiple plans and programs, including those with watershed related and wellhead protection components. The plan was revised in 2019-2020 and is considered a living document that will evolve over time.

Truckee Meadows Water Authority

TMWA is responsible for almost all municipal water delivery in the greater Reno-Sparks area. TMWA also owns and operates the municipal wells in this basin. The following program and plans guide the management of these water resources:

- TMWA Water Resources Plan (2016-2035):

This plan describes water quality issues and goals for the water resources managed by TMWA. Special focus is placed on changes in future water supply and demand, and how those changes will impact the region's water resources.

- Source Water Quality Assurance Program (2016-2035):

TMWA's objective is to deliver high-quality potable water to its customers in a cost-effective manner. To achieve this objective, TMWA has established a water quality assurance program. The components that make up the program are source water quality protection, potable water treatment, maintenance of distribution system water quality, and cross connection control.

- Wellhead Protection Plan (2016):

The purpose of the Wellhead Protection Plan is to protect groundwater that serves as a source for public drinking water supplies. This plan is intended to be a tool used by TMWA to assist in protecting drinking water sources.

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

Activities in Washoe County are reviewed according to the Master Plan Planning Areas. The Cold Spring Valley area is included in the Cold Spring and North Valleys planning area. The County has Citizen Advisory Boards (CABs) which provide important community perspective on local issues to the Washoe County Board of Commissioners. The Cold Spring Valley area is within the North Valleys CABs ([CAB Boundaries](#)).

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.

Western Regional Water Commission and the Northern Nevada Water Planning Commission

The Western Regional Water Commission (WRWC) focuses on improving water resource planning at the regional level and facilitating coordinated resource management among City of Reno, City of Sparks, Washoe County, TMWA, Truckee Meadows Water Reclamation Facility, South Truckee Meadows GID and Sun Valley GID.

The Northern Nevada Water Planning Commission (NNWPC) is a technical advisory panel that reports to the WRWC. The NNWPC develops and updates a Comprehensive Regional Water Management Plan (RWMP) and makes recommendations to the WRWC for adoption. In addition, the NNWPC develops priorities and an annual budget for the Regional Water Management Fund, also for recommendations to the WRWC.

The Comprehensive Regional Water Management Plan includes several applicable objectives:

- [Objective 1.2](#) Provide for a Sustainable Water Supply and an Acceptable Level of Service to the Community (including protecting groundwater recharge areas).
- [Objective 1.3](#) Implement measures to protect and enhance water quality for a sustainable water supply (including source water protection).
- [Objective 2.1](#) Promote Efficient Use of Resources (Reduction of Non-Point Source Pollution for TMWRF Pollutant Credit).
- [Objective 2.2](#) Manage wastewater for protection and enhancement of water quality.
- [Objective 3.1](#) Effective and integrated watershed management (protection of human health, property, water quality including storm water).

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