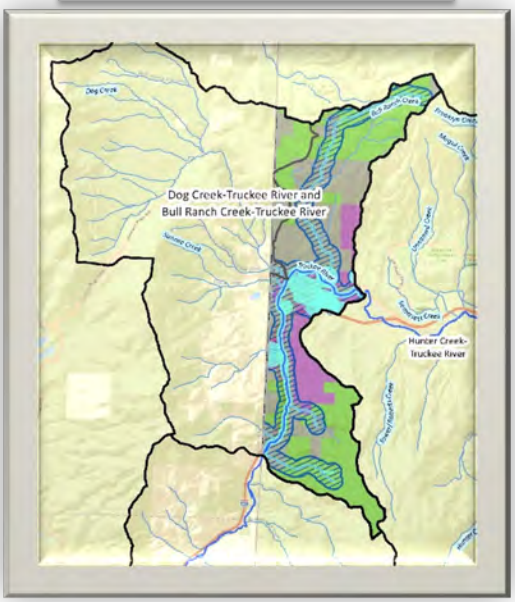
Bull Ranch Creek & Dog Creek – Truckee River

HUC-12 Watershed #160501020504 & #160501020503 Profiles

Click here for complete HUC-12 Watersheds Map



Contents

Introduction

The Bull Ranch Creek-Truckee River and Dog Creek HUC-12 Watersheds 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), as well as the Watershed Management and Protection Plan for Tributaries to the Truckee River. This document is a part of the on-line watershed mapping tool.

This watershed description is intended to be a guide and resource for organizations working within the watersheds, and an educational tool for those interested in learning more about the watershed in which they live. This Plan can be used to support funding for a multitude of water quality projects in these watersheds. Note that only non-regulated activities are eligible for the Nevada Division of Environmental Protection Source Water Protection Program or the 319 Non-Point Source Program funding.

Summary

This profile focuses on the watersheds water quality. It includes potential and existing concerns, types of land uses, watershed management strategies and projects, and the involved stakeholders and their corresponding plans with water quality components.

The mountainous Bull Ranch Creek-Truckee River and Dog Creek watersheds lie in both California and Nevada. High elevation snowmelt and runoff from Peavine Peak, the Carson Range, the Verdi Range, and Dog Valley supply water to the Truckee River. The Bull Ranch Creek-Truckee River HUC-12 Watershed includes the Truckee River segment downstream from the Nevada State line, through Verdi, to just above the Highland Canal Diversion Dam. River water is diverted at the dam to the Chalk Bluff Water Treatment Plant operated by the Truckee Meadows Water Authority (TMWA). The river provides about 80-85% of the drinking water to nearly 425,000 people in TMWA's service area. The river and tributaries in these watersheds host excellent water quality.

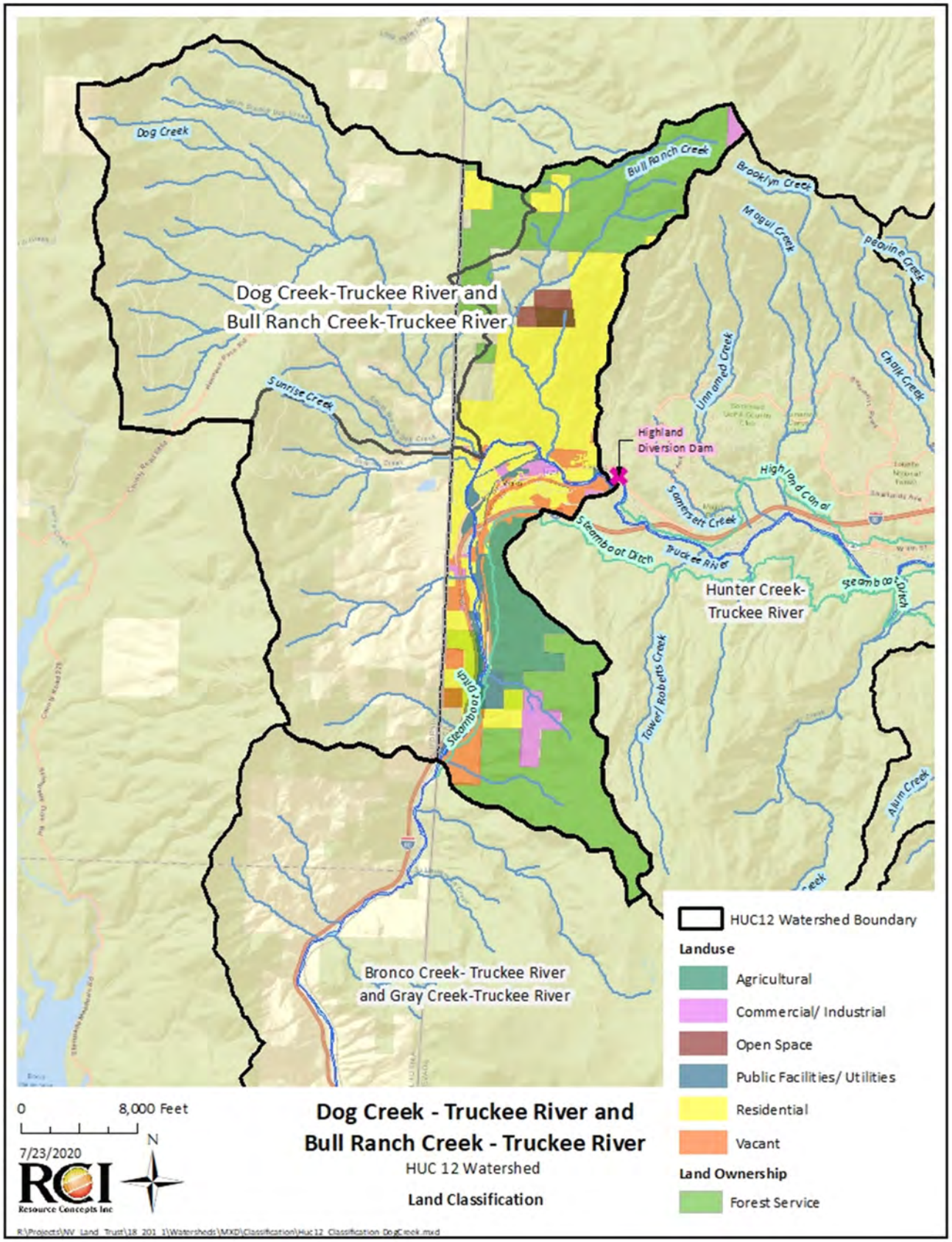
Source Water Protection Areas (SWPAs) for this watershed were developed by stakeholders to help protect drinking water sources. A narrow band of existing and new development in the Truckee River canyon, which is also a significant road and rail transportation corridor. Shallow groundwater and springs along the river corridor in Verdi supply water to ten small public water systems. Because groundwater locally and surface water regionally are both important sources of public drinking water, the Truckee River corridor and tributaries are a SWPA. The following table summarizes key water quality aspects of the watersheds.

Watersheds Summary	
Basins	• Bull Ranch Creek-Truckee River HUC-12 Watershed #160501020504. • Dog Creek HUC-12 Watershed #160501020503. • Groundwater Basin: 091 (Truckee Canyon).
Water Bodies & Water Quality	• Truckee River, not impaired, see NAC 445A.1684. • Sunrise Creek, not assessed. • Bull Ranch Creek, not impaired, see NAC 445A.1684. • Dog Creek, not impaired, see NAC 445A.1684. • Four unnamed creeks, not assessed. • Irrigation ditches: Coldron and Steamboat.
Source Water Protection Areas	• SWPAs create buffers along perennial streams throughout the watersheds. These areas represent a precautionary indicator to safeguard drinking water sources. • Critical SWPAs represent areas closer to perennial streams, the Truckee River, and public water system wells. • Ten wells and two springs in the Bull Ranch HUC-12 Watershed managed by ten different public water systems. • 4,000 acres, or approximately 36% of the watersheds in Nevada are in Source Water Protection Areas. • 1,900 acres, or about 17% of the watersheds in Nevada are in Critical Source Water Protection Areas.
Special Considerations & Issues	• Watersheds are in Nevada (11,100 acres) and in California (19,600 acres). • Upstream of the Highland Ditch diversion that sends Truckee River water to the Chalk Bluff Water Treatment Plant. • Potential for wildfire in the Carson and Verdi Range, resulting in turbidity in Truckee River. • Increasing urbanization in the adjacent to the river in the Truckee Canyon. • Travel corridors: I-80 and the railroad.

	Type	Acres	%
Land Jurisdiction In Nevada	City of Reno: Washoe County Non-Federal: USFS:	1,800 4,400 4,850	16% 40% 43%
Land Use In Nevada	Agricultural: Commercial/Industrial: Open Space: Residential: Public Facility/Utilities: Vacant: Federally Managed:	800 400 200 3,400 350 800 4,850	7% 3% 2% 29% 3% 6% 43%

Land uses and jurisdictions in the watersheds are summarized in the adjacent table and illustrated by the Land Classification Figure. Note that the acreages are provided only for Nevada.

Within California, these watersheds are mostly public land managed by the U.S. Forest Service (USFS). Within Nevada, land use is primarily residential with on-going expansion. The railroad and Interstate 80 (I-80) parallel the Truckee River. The potential and existing water quality concerns from these activities are primarily hazardous materials from spills or leaks, pollution from urban area runoff, and sediment/turbidity from erosion.


Dog Creek
Bull Ranch Creek
Brooklyn Creek
Mogul Creek
Peavine Creek
Dog Creek-Truckee River and
Bull Ranch Creek-Truckee River
Sunrise Creek
Unnamed Creek
Chalk Creek
Highland
Diversion Dam
Highland Canal
Sommerset Creek
Steamboat Ditch
Truckee River
Hunter Creek-
Truckee River
Steamboat Ditch
Tower/ Roberts Creek
Steamboat Ditch
Alum Creek
Bronco Creek- Truckee River
and Gray Creek-Truckee River
HUC12 Watershed Boundary
Landuse
Agricultural
Commercial/ Industrial
Open Space
Public Facilities/ Utilities
Residential
Vacant
Land Ownership
Forest Service
0
8,000 Feet
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RCI
Resource Concepts Inc
Dog Creek - Truckee River and
Bull Ranch Creek - Truckee River
HUC 12 Watershed
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. 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 conditions in these watersheds, as summarized below:

- The Truckee River, Bull Ranch Creek, and Dog Creek water quality supports all beneficial uses (water quality standards NAC 445A.1684).
- None of the other drainages are assessed.

Groundwater and surface water are both important sources of drinking water for public water systems in this watershed area. Known groundwater contamination concerns have included nitrate and fuel/solvents.

Potential and Existing Water Quality Concerns

The primary potential and existing water quality concerns in the watersheds are listed below and described in the following paragraphs. The information focuses on the Nevada portions of the watersheds:

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

Hazardous Materials from Spills or Leaks

A concern in the Bull Ranch Creek – Truckee River HUC-12 Watershed is potential spills from accidents along the railroad and I-80. The railroad and I-80 parallel the Truckee River and, in several locations, spilled materials could easily and quickly enter the Truckee River upstream of the diversion to the Chalk Bluff Water Treatment Plant. To this date, no major toxic spill has occurred on the Truckee River; however, toxic spills in other waterways have reduced the supply of water for extended periods of time (WRWC, 2017).

The U.S. Department of Transportation accumulated a list of commonly transported hazardous materials within the Truckee River watershed (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

Though limited in number, there are also commercial and industrial businesses adjacent to this segment of the river. In 2019, TMWA and the Washoe County Health District worked with the Arconic facility to improve material storage and handling that would reduce the potential for an accidental release to contaminate river water above Truckee River diversions to the Chalk Bluff Water Treatment Plant. The travel time to the water intake and contaminant concentration at the intake depends primarily on the level of the river flows during and shortly after the time of the spill (Rivord et al. 2014).

Underground chemical and fuel storage tanks have had a history of leaks that can cause contamination of soil and groundwater. There are several active and closed corrective action sites associated with solvents, gasoline, and heating oil in the urban area near the river.

Pollution from Urban Area Runoff

Groundwater, surface water, and irrigation ditches may be vulnerable to polluted runoff from urban areas. Potential contaminants include:

- Nutrients from fertilizers
- Bacteria from animal waste
- Trash
- Pollution from household waste
- Runoff from roads and parking lots
- Dissolved salts from excess irrigation

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. Crystal Peak Park is in Verdi and provides direct access to the Truckee River.

In the Verdi area, there is potential for new urban development along the south flank of Peavine Mountain. 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 quality concerns in Chalk Creek (impaired for Total Dissolved Solids, Sulfate, Selenium, and Nitrate), which is located to the east in similar underlying geologic formations, may be related to this type of seepage (JBR, 2010).

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). Septic systems are located throughout the Verdi area. The Bull Ranch Creek watershed has 377 parcels with septic systems and the Dog Creek watershed has 18 parcels with septic systems. Past concerns about potential nitrate contamination in groundwater and surface water warranted extension of municipal sanitary sewer service (Lawton/Verdi Interceptor) to decommission small wastewater treatment plants in the area, as well as build capacity to serve new developments in the Truckee River canyon. One small wastewater treatment facility remains in the Bull Ranch Creek watershed.

Sediment from Erosion

Sediment from erosion conveys pollution, such as phosphorous, and degrades downstream water with suspended sediment. The primary causes of erosion and sedimentation in this watershed include wildland fire, noxious weeds, and drainage and landscape modifications.

TMWA has identified increased turbidity, and sediment from watersheds upstream of the Highland Ditch diversion as potential risks to their surface water treatment systems. TMWA can allow short term flood/runoff events that elevate turbidity in the Truckee River to bypass diversion to the treatment plant. However, there is a need to prevent long term increases in turbidity that might result from catastrophic fires or landslides.

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). In 1994, the Sunrise Creek area burned the vegetation on the hillside and the riparian area leaving it susceptible to erosion until the vegetation grew back and stabilized the soil (Jesch, 2007). In the lower reach of Sunrise Creek, close to the Truckee river, invasive and noxious weeds are found including tall whitetop (Lepidium latifolium), musk thistle (Carduus nutans), and poison hemlock (Conium maculatum) (CDM Smith, 2017).

There are a few locations along Sunrise Creek that show erosion and deposition near roads (CDM Smith, 2017). According to the CDM Smith reports, the entire creek appears healthy and the riparian corridors are in good condition (2017). There are adequate setbacks form the creek in the residential area it meanders through (CDM Smith, 2017). There are some areas with noxious weeds and some areas of localized erosion, but neither were excessive (CDM Smith, 2017).

Additionally, areas that are disturbed during construction projects can represent a potential risk of erosion and downstream sedimentation. Protection of stormwater runoff from contamination by construction in the Truckee Meadows is regulated under the regional stormwater management plan (Truckee Meadows MS4). There are many Best Management Practice (BMP) resources available to construction projects to help keep soil on-site and to reduce runoff.

Strategies to Protect and Improve Water Quality

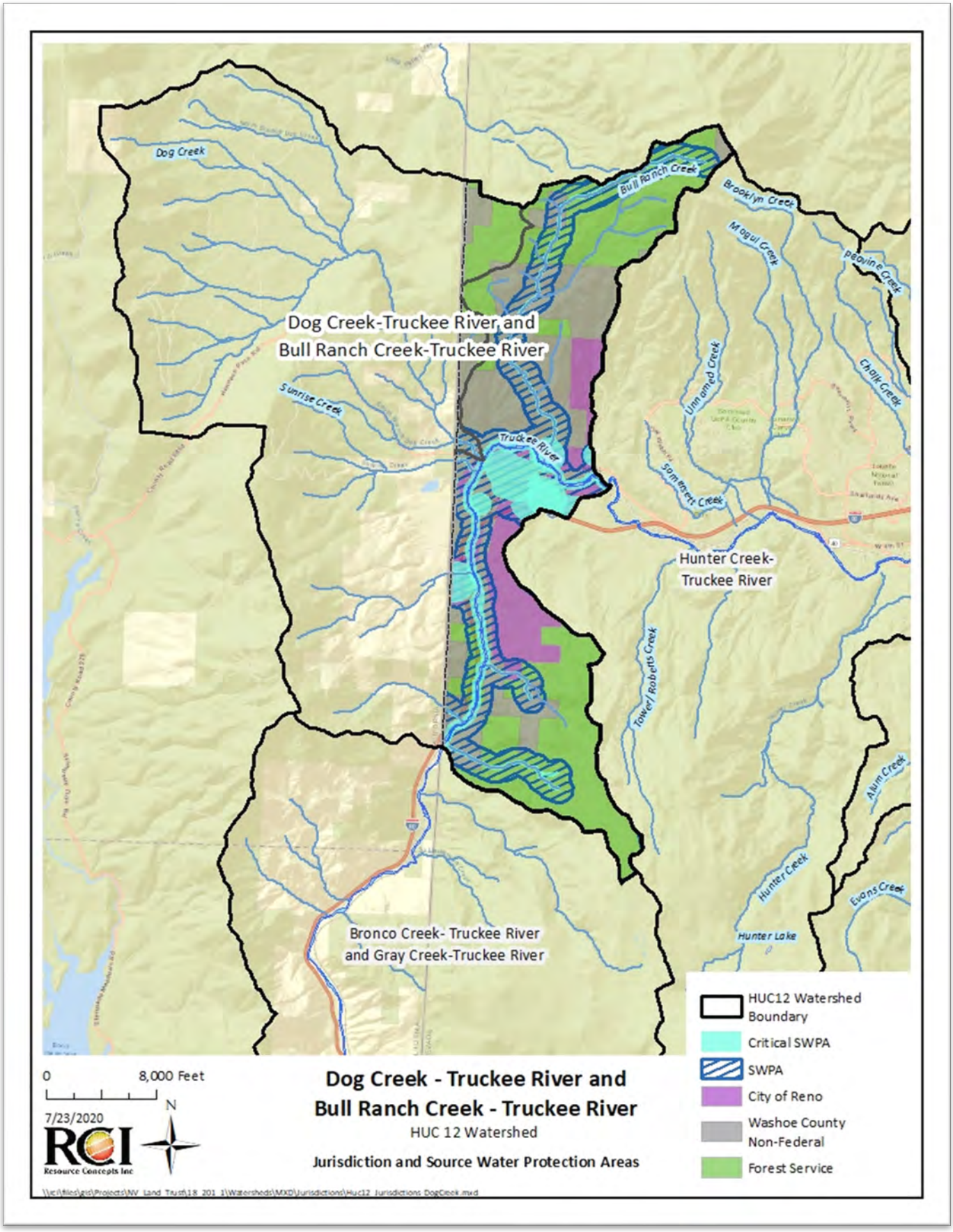
The water quality concerns identified in both watersheds can be addressed through management strategies described in this section, the proposed projects detailed in the Project Profiles, as well as applicable on-going water quality projects and programs described under Stakeholders and Plans. These strategies pertain to the entirety of both watersheds 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. Human activities in these buffer areas can affect the quality of water downstream or underground. These management strategies acknowledge the value of these SWPAs to help prevent future contamination of our sources of drinking water.

There are two types of buffers in these watersheds (RCI, 2020). One buffer encompasses the perennial tributaries, which represents a precautionary indicator to safeguard groundwater recharge areas. The second type of buffer surrounds critical areas closer to streams, water system wells or springs, and the Truckee River. 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 landowners and city or county planners to consider the importance of SWPAs in project reviews.


Dog Creek
Bull Ranch Creek
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Truckee River
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Somerset Creek
Hunter Creek-
Truckee River
Tower/Roberts Creek
Alum Creek
Hunter Creek
Evans Creek
Hunter Lake
Bronco Creek- Truckee River
and Gray Creek-Truckee River
HUC12 Watershed Boundary
Critical SWPA
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City of Reno
Washoe County Non-Federal
Forest Service
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Resource Concepts Inc
Dog Creek - Truckee River and
Bull Ranch Creek - Truckee River
HUC 12 Watershed
Jurisdiction and Source Water Protection Areas
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- Explore collaborative funding for water quality and watershed improvements and support the resource investigations needed to develop viable projects within SWPAs.
- 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:

- Engage residents in caring for their watershed.
- Increase knowledge about excess irrigation and the potential for creating TDS and nutrient discharge to the Truckee River from the residential areas.
- Increase knowledge of water quality protection and the pollution in stormwater runoff 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. Washoe County, TMWA, NDEP, U.S. Department of Agriculture (USDA) Forest Service, Reno Sparks Indian Colony, and California entities.
- Continue to increase coordination and communication between the appropriate agencies regarding spills and corrective actions along I-80 and the railroad.
- Collaborate with the Washoe/Storey Cooperative Weed Management Area to support their efforts in noxious weed management (WSCWMA Website).
- Evaluate how to collaborate with the Storm Water Committee in their public outreach and education efforts.
- Evaluate how to collaborate with stakeholders such as TMWA and the Storm Water Committee on incorporating drinking water source protection into community outreach and education strategies.

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 objectives as they pertain to wildfire and fuel management:

- Encourage development, maintenance, and implementation of the Community Wildfire Protection Plans.
- Support and collaborate with the Nevada Cohesive Strategy effort and the Shared Stewardship Agreement, the blueprint to address Nevada's wildland fire issues.
- Support for the Nevada Network of Fire Adapted Communities and their local chapters for people in high fire threat locations to fully prepare themselves, their homes, and the landscape where they reside to survive the destructive force of wildfire.
- Encourage the development of wildland fire risk reduction and emergency recovery plans to reduce the risk of wildfire, quickly restore burned areas, and reduce the risk of catastrophic post-fire erosion and sedimentation.
- Collaborate and coordinate to treat invasive and noxious weeds pre- and post-fire to reduce risk of wildfire and watershed destabilization.

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 in the watersheds and options for treatment.
- Water quality improvement planning for tributaries to the Truckee River.
- Development and implementation of integrated vegetation management programs.

Water Quality Best Management Practices

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

- Erosion reduction and sediment control measures.
- Invasive and noxious weed removal and integrated vegetation management.
- Recommendations in the tributary assessments.
- Pet waste cleanup initiatives.

- Proper abandonment of unused/orphaned 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 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 the Source Water Protection and Watershed Management 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 in the watersheds are incorporated by reference.

Nevada Project Stakeholders	
• City of Reno	• Truckee Meadows Storm Water Permit Coordinating Committee
• USDA Forest Service	• Truckee Meadows Water Authority
• Nevada Department of Transportation	• Truckee River Fund
• Nevada Division of Environmental Protection	• Washoe County
• Nevada Division of Forestry	• Washoe County Health District
• One Truckee River	• Western Regional Water Commission

City of Reno

The City of Reno 2017 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 Source Water Protection and Watershed Management Plan:

- Article I: Section 18.12.105 describes setbacks from the Truckee River.
- 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 watersheds.

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 projects and plans within the community. Source water and watershed protection for these watersheds falls within Ward 5.

USDA Forest Service

The Humboldt-Toiyabe National Forest within the watersheds is managed by the Carson Ranger District. Natural resource projects, including projects undergoing NEPA documentation, are listed on the Forest Service website. The Humboldt National Forest and Toiyabe National Forest Biannual 2018 Monitoring Report describes the conditions of the watersheds and present monitoring information.

Additionally, the Forest Service has created Land and Resource Management Plans (LRMP) to guide management decisions within the Humboldt-Toiyabe National Forest. Water resources are outlined in the LRMP along with management actions including maintenance, monitoring and enhancement of water quality:

- Humboldt National Forest Land and Resource Management Plan:

  Section IV.C.5 is "Soil and Water within the Forest-Wide Standards and Guidelines". This outlines the goals for the soil and resources on Forest Service managed land.

  Section V.A is the "Implementation Direction of the Forest Plan". This describes how the LRMP will be analyzed for its level of success.

- Toiyabe National Forest Land and Resource Management Plan:

  Section IV is the "Forest Management Direction with Forest-wide Standards and Guidelines" for soil and water as well as riparian areas. These sections outline the goals for the forest.

  Section V is the "Implementation of the Forest Plan" including the direction of the LRMP which also outlines the goals for the Forest.

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):

  These watersheds are impacted or has the potential to be impacted by I-80 and the railroad. The Stormwater Management Program provides a helpful planning outline on handling and mitigating pollution from the roads.

Nevada Division of Environmental Protection

NDEP has a goal to preserve and enhance the environment of the State in order to protect public health, sustain healthy ecosystems, and contribute to a vibrant economy. These HUC-12 Watersheds have several challenges facing source water protection, so the NDEP is an essential stakeholder and planning partner. Specifically, there are two programs under the NDEP that were involved in the Source Water Protection and Watershed Management Plan in Washoe County. Both programs provide education and outreach and offer funding opportunities for water quality protection and improvement:

- Integrated Source Water Protection Program under the Safe Drinking Water Bureau:

  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.

- 319 Nonpoint Source Pollution Management Program under the Bureau of Water Quality Planning:

  This Program can provide matched grant funding for projects that improve water quality.

The 2015-2019 State of Nevada Nonpoint Source Management Plan establishes how NDEP will work with partners to address NPS pollution. The Plan formalizes Nevada's approach for protecting and improving water quality and describes the goals, short- and long-term objectives, milestones and timeframes to guide activities, and measures for tracking success.

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 preserve and 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 that communities have 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.

One Truckee River

According to the One Truckee River website, "One Truckee River is a collaboration of public and private partners working together to realize a Truckee River that flows clean and clear, quenches our thirst, sustains the river's natural ecology, cultural resources and wildlife, and connects residents and visitors to unparalleled opportunities for recreation and regeneration":

- The One Truckee River Management Plan (2017) addresses actions to accomplish four primary goals, including protection of water quality and ecosystem health.

The following stakeholders were instrumental in compiling the plan and in implementing the plan action items:

- Truckee River Flood Management Authority
- Pyramid Lake Paiute Tribe
- Truckee Meadows Water Authority
- Resource Concepts, Inc.
- Nevada Division of Environmental Protection
- Renown
- Truckee Meadows Regional Planning Agency
- Keep Truckee Meadows Beautiful AmeriCorps
- Keep Truckee Meadows Beautiful
- Washoe County Health District
- City of Reno Public Works

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 well head protection components. The plan was revised in 2019-2020 and is considered a living document that will evolve over time.

Truckee Meadows Storm Water Permit Coordinating Committee

The Truckee Meadows Storm Water Permit Coordinating Committee (Storm Water Committee) is responsible for implementing the Truckee Meadows Storm Water Management Program to protect the water quality of the region's waterways, streams and the Truckee River. The Storm Water Committee continues to guide the development of numerous plans and assessments relevant to source water and watershed protection as summarized below.

Ordinance and Guidance Changes for Construction and Post-Construction Programs

The Storm Water Committee updated and joined the Structural Controls Design Manual and the Low Impact Development Manual, as well as updated the Truckee Meadows Construction Site BMP Handbook. These documents are referenced in the code for the city of Reno, city of Sparks, and Washoe County.

Watershed Assessments

Watershed assessment reports prepared for the Storm Water Committee were completed by Jesch et al. from 2002-2011 that include the Evans Creek and North Truckee Drain. These reports provide general watershed descriptions and can be used to track historical changes in creek condition and water quality over time. The reports do not include water quality data.

Hillside Design completed a comprehensive Watershed Assessment for Tributaries to the Truckee River in 2012 for these tributaries in this watershed: Evans Creek and North Truckee Drain.

The assessment included:

- Stream reach descriptions with numerous photo points,
- Proper Functioning Condition rating,
- List of restoration and management efforts needed to improve stream conditions, and
- Water chemistry for temperature, pH, specific conductivity, dissolved oxygen, turbidity, and flow.

CDM Smith was contracted in 2015 through 2017 to conduct watershed assessments. The following table lists the report year and the respective drainages and reaches that were assessed in this watershed:

Stream Reaches Addressed in Watershed Assessment Reports in the Bull Ranch Creek-Truckee River and Dog Creek Watersheds by Report Year

Stream Name	Lower Reach	Middle Reach	Upper Reach
	2017	2017	2017
Sunrise	X		
Dog	X		

Watershed Management and Protection Plan for Tributaries to the Truckee River

The Watershed Management and Protection Plan for Tributaries to the Truckee River (NCE, 2020) is an update to the 2003 Watershed Management and Protection Plan for Tributaries to the Truckee River, which has been implemented for more than 15 years by the regional MS4 through the Storm Water Committee. The 2003 plan described an approach for on-going watershed assessment studies and monitoring to protect and improve the water quality in the stream corridors and drainages tributary to the Truckee River. The 2020 Plan update provides a process and framework for identifying, developing, and implementing projects originated through the Storm Water Committee that are consistent with the guidelines for an EPA approved Watershed Management Plan. The 2020 plan by NCE and the 2020 Integrated Source Water and 319(h) Watershed Protection Plan for Public Water Systems and the Truckee River in the Truckee Meadows are mutually complementary and work together to address the broad scope of potential strategies to improve drinking water and surface water quality in Washoe County.

Truckee Meadows Watershed Protection Manual

This manual contains a Summary of the Watershed Protection Activities and Programs Developed in Conjunction with the Watershed Management Facilitator Scope of Work (Kennedy/Jenks, 2005). This document provides a reference and compendium of the various watershed protection activities and programs that were developed in 2004 and 2005 for Reno, Sparks and Washoe County.

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 watershed. 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. This plan provides useful Truckee River watershed information.

- 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.

Truckee River Fund

TMWA established the Truckee River Fund in 2004 (Truckee River Fund). The purpose of the Fund is to "protect and enhance water quality or water resources of the Truckee River, or its watershed." The Fund provides a way to respond to the requests from outside groups and organizations that are involved in promoting and improving the health of the Truckee River System and watershed. This in turn benefits the primary water source for the community and, in the long run, benefits TMWA customers. Currently, no projects have been funded through the Truckee River Fund in these watersheds.

Washoe County

Activities in Washoe County are reviewed according to the Master Plan Planning Areas. The Truckee River watershed includes nine planning areas. The Watersheds are included in the three planning areas: northeast Truckee Meadows, southeast and southwest Truckee Meadows. The County has Citizens Advisory Boards (CABs) which provide important community perspectives on local issues to the Washoe County Board of Commissioners. These watersheds are within the West Truckee Meadows/Verdi 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 in these watersheds.

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.

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).

California Entities

Most of these watersheds are in the state of California. Watershed issues can also be coordinated with the appropriate agency or organization.

California Project Stakeholders	
• Sierra County • Truckee River Watershed Council	• Caltrans

Sierra County

Sierra County has a Small Public Water Supply program that is regulated by the California Department of Public Health, Division of Drinking Water and Environmental Management. This includes a small northern portion of Bronco Creek. Sierra County, California Drinking Water Quality

Truckee River Watershed Council

The Truckee River Watershed Council is a non-profit organization that partners with private and public agencies. Their projects involve restoration of the Truckee River watershed in California. Their focus is to improve floodplains and restore riparian habitats to improve the water supply and wildlife habitat. Truckee River Watershed Council

Caltrans

The California Department of Transportation Stormwater Management Program's (SW Program) goal is to provide water quality monitoring and best management practices under the compliance of the Statewide Storm Water Permit Discharge Requirements in order to protect groundwater and surface water from stormwater runoff.

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