

**WESTERN REGIONAL WATER COMMISSION  
BOARD OF TRUSTEES  
AGENDA  
Friday, January 8, 2010 @ 1:30 p.m.  
Sparks Council Chambers, Legislative Building  
745 Fourth Street, Sparks, Nevada 89431**

NOTICE OF POSSIBLE QUORUM OF THE BOARD OF DIRECTORS OF THE TRUCKEE MEADOWS WATER AUTHORITY ("TMWA"), BOARD OF COUNTY COMMISSIONERS OF WASHOE COUNTY ("BCC"), BOARD OF TRUSTEES OF THE SOUTH TRUCKEE MEADOWS GENERAL IMPROVEMENT DISTRICT ("STMGID"), AND NORTHERN NEVADA WATER PLANNING COMMISSION ("NNWPC")

*(See 'Notes')*

1. Roll Call and Determination of presence of a Quorum\*
2. Pledge of Allegiance\*
3. Approval of Agenda **(ACTION)**
4. Public Comment\* (Three-minute time limit per person)
5. Approval of the minutes of the November 13, 2009 meeting **(ACTION)**
6. Election of Chairman, Vice-Chairman, Secretary and Treasurer for the 2010 calendar year — Jim Smitherman, Water Resources Program Manager and John Rhodes, Legal Counsel **(ACTION)**
7. Status report on pending integration/consolidation of the Washoe County Department of Water Resources ("DWR"), and the Truckee Meadows Water Authority ("TMWA"), and possible direction to staff — Mark Foree, TMWA and Rosemary Menard, DWR **(ACTION)**
8. Review and discussion of the Water Resources portion of the 2011 Comprehensive Regional Water Management Plan, including sections addressing issues relating to sustainable water resources, and possible direction to staff — Jim Smitherman **(ACTION)**
9. Discussion and possible approval of funding not to exceed \$49,000 from the Regional Water Management Fund to support a scope of work and Consulting Engineering Agreement with ECO:LOGIC Engineering for technical services related to the development of the 2011 Comprehensive Regional Water Management Plan, and, if approved, authorize the Chairman to execute the Agreement — Jim Smitherman **(ACTION)**
10. Status report on proposed funding sources for existing U.S. Geological Survey stream gauges on Truckee River and tributary gauging stations, and possible direction to staff — John Buzzone, DWR **(ACTION)**

11. Status report on the Truckee River Coordinated Monitoring Program Memorandum of Understanding adopted pursuant to Nevada Senate Concurrent Resolution 2 (2008) — Leo Drozdoff, P.E., Administrator, Nevada Division of Environmental Protection (“NDEP”)\*
12. Discussion and possible direction to staff regarding agenda items for the February 12, 2010 Commission meeting and future meetings (**ACTION**)
13. Commission Comments\*
14. Staff Comments\*
15. Public Comment\* (Three minute time limit per person)
16. Adjournment

\*Indicates a non-action item

**Notes:** Because several of the WRWC Trustees are also members of the Board of Directors of TMWA, it is possible that a quorum of the TMWA Board may be present. Such members will not take action at this meeting as members of the TMWA Board, but may take action solely in their capacity as WRWC Trustees. A quorum of the BCC, STMGID and the NNWPC may also be in attendance but will not be taking action.

Public comment will be taken on agenda items upon the submittal of a request via submittal of a Speaker Information Card. There is a three-minute time limit per person.

Items on the agenda without a time designation may not necessarily be considered in the order in which they appear. The WRWC may take action on any of the action items listed.

Facilities in which this meeting is being held are accessible to the disabled. Persons with disabilities who require special accommodations or assistance (e.g. sign language interpreters or assisted listening devices) at the meeting should notify the Washoe County Department of Water Resources, at 954-4663, at least 24 hours prior to the meeting.

In accordance with NRS 241.020, this agenda has been posted at the following locations: Reno City Hall (1 East First Street), Sparks City Hall (431 Prater Way), Sparks Justice Court (630 Greenbrae Dr), Sun Valley GID (5000 Sun Valley Blvd.), TMWA (1355 Capital Blvd.), Washoe County Administration Building (1001 E. 9th Street), Washoe County Clerk’s Office (Court and Virginia Streets), Washoe County Central Library (301 South Center St.), Washoe County Department of Water Resources (4930 Energy Way), Galena Market (19990 Thomas Creek Rd.), Galena High School (3600 Butch Cassidy Way), South Valleys Library (15650A Wedge Parkway), and the WRWC website: <http://wrwc.us>.

# WESTERN REGIONAL WATER COMMISSION BOARD OF TRUSTEES *DRAFT* MINUTES

Friday, November 13, 2009

The regular meeting of the Western Regional Water Commission (WRWC) Board of Trustees was held on Friday, November 13, 2009, at Sparks Council Chambers, 745 Fourth Street, Sparks, Nevada.

- 1. Roll Call and Determination of presence of a Quorum** – Chairman Carrigan called the meeting to order at 1:30 p.m. There was a quorum present.

Commissioners Present:

Mike Carrigan, Chair  
John Breternitz  
Steve Cohen  
Bob Larkin (left at 1:47 p.m.)  
Geno Martini  
Ron Smith

Representing:

Truckee Meadows Water Authority (TMWA)  
Washoe County  
South Truckee Meadows General Improvement District (STMGID)  
Truckee Meadows Water Authority (TMWA)  
Truckee Meadows Water Reclamation Facility (TMWRF)  
City of Sparks

Commissioners Absent:

Dave Aiazzi, Vice-Chair  
Bob Cashell  
Patricia Lancaster

Representing:

City of Reno  
Truckee Meadows Water Authority (TMWA)  
Sun Valley General Improvement District (SVGID)

- 2. Pledge of Allegiance**

Commissioner Smith led the Western Regional Water Commission in the Pledge of Allegiance.

- 3. Approval of Agenda**

Commissioner Martini made a motion to approve the November 13, 2009 WRWC agenda as posted. Commissioner Larkin seconded the motion, which carried unanimously.

- 4. Public Comment**

Chairman Carrigan called for public comments. Ginger Pierce referred to the Regional Water Plan, Section 1.3.b, and asked what review process is in place for groundwater recharge. She next asked if there is an analysis of impact based on groundwater recharge and what is being done? John Rhodes, Legal Counsel, agreed to follow up on the questions.

Chairman Carrigan called for further public comments and hearing none, closed the public comment period.

- 5. Approval of the Minutes of the October 9, 2009 meeting.**

The minutes of the October 9, 2009 Western Regional Water Commission meeting were submitted for approval. Commissioner Breternitz made a motion to approve the minutes as submitted. Commissioner Smith seconded the motion, which carried unanimously.

**6. Discussion and possible acceptance of a Clean Water Act grant in the amount of \$40,000, to offset funding for the ongoing regional integrated wastewater system planning project; and, if accepted, authorize the Chairman to execute a Subgrant Agreement with the Nevada Division of Environmental Protection (NDEP).**

Chairman Carrigan invited Chris Wessel to present this item. Mr. Wessel stated that this item was previously discussed and staff was directed to pursue the \$40,000 grant, which was done. He stated that the request was approved by NDEP and the Subgrant Agreement is ready for signature by the WRWC Chairman. He added that the grant will have no negative impact on the budget and should be considered a budget augmentation.

Mr. Wessel recommended a possible motion “to accept the Clean Water Act grant in the amount of \$40,000, to offset funding for the ongoing regional integrated wastewater system planning project; and authorize the Chairman to execute the Subgrant Agreement with the Nevada Division of Environmental Protection”.

Commissioner Smith asked if the funding has to be used for wastewater treatment, to which Mr. Wessel stated it must be used specifically for water quality projects.

Commissioner Martini made the motion as recommended by staff. Commissioner Smith seconded the motion, which carried unanimously.

**7. Discussion and possible approval of the WRWC fiscal year 2008/09 Financial Statements and audit opinion from Schettler, Macy & Silva, LLC.**

Chairman Carrigan welcomed Ben Hutchins. Mr. Hutchins thanked and commended the auditors, Schettler, Macy & Silva, LLC, on a good job on the financial statement and audit. Mr. Hutchins gave a brief review of the finances, which as of June 30, 2009 includes:

- \$3.3 million in assets
- \$72,000 in liabilities
- \$3.28 million in net assets
- \$1.35 million in total revenue (Earnings on investment was almost 5%, which is good.)
- \$1.19 million in expenses

Mr. Hutchins summarized that report gives the WRWC a “clean bill of health”. He welcomed questions from commissioners. Commissioner Larkin asked about the “unqualified statement”. Mr. Hutchins stated he believes it is a matter of terminology but offered to clarify with the auditors.

Commissioner Larkin made a motion to accept the auditor’s report, including the clarification he requested. Chairman Carrigan commended the auditors for the ease in reading the financial statements. Commissioner Breternitz seconded the motion, which carried unanimously.

**8. Presentation, discussion and possible direction to staff on the Desert Research Institute’s (“DRI”) proposed approach to short and longer term funding for its Truckee-Tahoe Basin Cloud Seeding Program.**

Ms. Menard stated that at a recent Board of County Commissioners (BCC) and TMWA Board joint meeting, a recommendation was made to move forward with the DRI cloud seeding program. She reported that DRI staff would provide a brief presentation with a request for \$45,000 from the Regional

Water Management Fund to continue the program for the next year. She introduced Ken Kunkel, Executive Director of Atmospheric Sciences, and Greg Bortolin, Director of Communications for Governmental Affairs.

Mr. Kunkel thanked commissioners for the opportunity. He reported that in looking at long-term support and funding for the cloud seeding program, staff plans to meet with stakeholders such as the ski industry, forestry, and others who benefit from increased precipitation. He reported that Southern Nevada Water Authority recently committed to fund cloud seeding in central Nevada, i.e. Ruby Mountain and Tuscarora regions. He added that partial funding was also committed by the Walker River Irrigation District basin.

Commissioner Smith asked if funding was previously provided by DRI. Mr. Kunkel stated it was; however, the program budget was cut by 15%. Commissioner Smith asked if the funding request is a temporary thing. Mr. Bortolin stated that the honest answer is that additional funding will probably be needed for the long-term. Mr. Kunkel gave a brief overview of how and where the seeding occurs.

Commissioner Breternitz stated that he supports the program. He added that Ms. Menard mentioned forming a coalition. He asked if today's funding request is for a maximum of \$45,000 with the idea that funds raised by the coalition could reduce the commitment from the WRWC. Mr. Bortolin stated he believes that is a potential. He added that Dr. Steve Wells, DRI President, has been in communication with possible stakeholders all over Nevada, which include the Cattlemen's Association of eastern Nevada, Squaw Valley and other ski resorts and Las Vegas stakeholders. He summarized that the coalition would be statewide.

Commissioner Cohen asked if there have been studies on the program results. Mr. Kunkel stated that studies indicate that seeding increases the extraction by approximately 15%. Chairman Carrigan stated that if additional funding past this year is to be requested, he would like to see some empirical data that the program provides a benefit. He added that he has received comments from some that the program does not work. Mr. Kunkel stated that many studies have been conducted in the past and perhaps a summary of the findings is warranted.

Commissioner Breternitz suggested that if a motion is approved for funding today, a public education process should be implemented. He added that such a process needs to include a summary of the results of the program.

Ms. Menard stated that at the recent joint meeting, direction was given that the WRWC would become the point of contact for the cloud seeding program coordination. Commissioner Breternitz agreed that it is appropriate for the WRWC to be the leader of the program and made a motion as such. Commissioner Smith seconded the motion, which carried unanimously. Commissioner Cohen stated that he agrees with the motion but mentioned that at the joint meeting, Commissioner Humke stated that he did not think the WRWC should fund the program unless it is beneficial to all in the region.

**9. Discussion and possible approval of a request by DRI for funding in the amount of \$45,000 from the Regional Water Management Fund to support its Cloud Seeding Program for current season; and, if approved, authorize the Chairman to execute an Interlocal Agreement with DRI.**

Chairman Carrigan reported that City of Reno pledged \$10,000 to the program and asked for clarification that if the WRWC approves \$45,000 in funding, Reno would not have to pay. Ms. Menard stated that is correct. Chairman Carrigan stated he appreciates Reno offering but added that money could probably be better spent by the City. Ms. Menard suggested that if a motion for funding is made that it be based on an amount "up to \$45,000" in case other funding is raised by the coalition.

Commissioner Breternitz made a motion to approve funding up to a maximum of \$45,000, which could be reduced by successful efforts of the coalition to raise funds. Commissioner Smith seconded the motion, which carried unanimously.

#### **10. Status report on development of the 2011 Comprehensive Regional Water Management Plan, including outline and timeline, and possible direction to staff.**

Chairman Carrigan invited Mr. Wessel to present this item. Mr. Wessel referred to the staff report, which included an outline of the proposed schedule and contents of the new Regional Water Plan. He stated that direction was received to “not reinvent the wheel”. He reviewed the outline, which includes reorganizing the Plan to be easier to read and understood. Some additions to the Plan include an Executive Summary and a section on water sustainability (based on the outcome of Washoe County (WC) #3 ballot question).

Mr. Wessel reviewed the outline and briefly explained what each chapter would include along with the timeline for completion. Commissioner Carrigan suggested providing the public with a better understanding of water use versus supply and the availability of water rights. Mr. Wessel stated those issues would be addressed under Chapter 2. Ms. Menard suggested the issue be addressed in the Executive Summary, which could be developed as a stand-alone document and broadly distributed.

Mr. Wessel reported that staff is working with other agencies to ensure consistency in population and other numbers (i.e. TMWA’s Water Resource Plan). He reported that the Draft Water Plan is scheduled for review by the NNWPC on August 10, 2010. The schedule includes a WRWC Public Hearing on the Water Plan on December 10, 2010 in order to have an approved Water Plan by January 1, 2011 as required by the Act.

Commissioner Martini made a motion to approve staff’s recommendation to move forward with development of the 2011 Comprehensive Regional Water Management Plan. Commissioner Breternitz seconded the motion, which carried unanimously.

#### **11. Status Report on “State of the Science” for the Central Truckee Meadows (Groundwater) Remediation District.**

Ms. Menard introduced Chris Benedict, Central Truckee Meadows Remediation District (CTMRD) Program Manager, to present this item. Mr. Benedict thanked commissioners and provided a PowerPoint presentation that included the history of the program, the areas of tetrachloroethene (PCE) groundwater contamination, and the treatment program. He stressed the need to treat PCE as near the source as possible. He added that once contamination reaches the wellhead, it is estimated to cost \$100 per teaspoon of water treatment. (*Note: The PowerPoint presentation is available upon request.*) Some of the highlights include:

- The CTMRD program was created in 1995 and is implemented by Washoe County Department of Water Resources (DWR) on behalf of the BCC and in coordination with a stakeholder group that includes NDEP, Reno, Sparks, TMWA, DWR and the Washoe County Health District (WCHD).
- Principal goals of the project are to prevent, protect, and mitigate PCE contamination in accordance with the Remediation Management Plan (RMP), which includes:
  - Protect and treat the resource needed to meet municipal water demands
  - Ongoing groundwater monitoring and investigations
  - PCE source management and potential source area investigations

- Update the RMP to reflect new information and ways to work with stakeholders to better prevent, protect, and mitigate PCE contamination.

Mr. Benedict reported that the WCHD Air Quality Division is proposing a ban on PCE use that will be heard in December.

Commissioner Cohen thanked Mr. Benedict for the very informative report and asked what the program costs. Mr. Benedict stated that to date, the program has cost approximately \$26 million, and that the annual CTMRD budget is approximately \$2.5 million, which includes treatment. He added that the average cost to remediate a former dry cleaner site is \$400,000. He stated that the PCE focus is on dry cleaners; however, they are not the only source.

Commissioner Cohen asked how PCE compares with Arsenic. Mr. Benedict stated that Arsenic is a naturally-occurring substance while PCE is not. He added that the drinking water standard for Arsenic is 10 micrograms per liter; PCE is 5 micrograms per liter. He stated that PCE contamination is fairly easy to clean up.

Chairman Carrigan thanked Mr. Benedict for his presentation.

### **12. Status Report on the proposed amendment to the Truckee Meadows Regional Plan, sponsored by Washoe County, regarding sustainability of water resources.**

Ms. Menard reported that at the August 12, 2009 Regional Planning Governing Board (RPGGB) meeting, the issue of WC #3 was sent to the BCC for consideration of sponsoring an amendment to the Regional Plan to address the sustainability issue based on population and available water. She stated that between that time and the October 27, 2009 BCC meeting, staff developed a proposed amendment, which was adopted by the BCC and sent back to the RPGGB. She stated that the staff report includes the BCC process and welcomed questions. Chairman Carrigan thanked Ms. Menard for her update.

### **13. Status report on pending integration/consolidation of TMWA and DWR.**

Ms. Menard and Jeff Tissier provided an update on the progress of the pending integration/consolidation of TMWA and DWR. Ms. Menard stated that a joint meeting of the TMWA Board and the BCC was held on October 27, 2009. At the meeting an overview of the Interlocal Agreement (ILA) was provided. She added that the two Boards would have another joint meeting on December 9, 2009. She stated that the due diligence process is underway.

Mr. Tissier reported that this week a schedule for the due diligence process was developed, which will focus on operations, hydraulic modeling, engineering, financial aspects and other issues. He stated that TMWA and DWR staff met to review the schedule and provide input. He stated that the Engineering and Operating Plan is a key development, which will lead to the development of a work plan and budget.

Ms. Menard reported that a memo was provided to DWR staff last week to identify the preliminary list of DWR positions that would be affected by consolidation, which includes 35 of the 85 DWR employees. She summarized that much work and coordination is occurring with employees and supporting the process.

Mr. Tissier reported he has been working with John Sherman and bond counsel on restructuring DWR debt. He stated that discussions will be initiated with the State Treasurer to discuss the financial issues associated with integration/consolidation.

Ms. Menard reported that the BCC acted on the recommended changes to the Joint Powers Agreement (JPA) to change the governing structure of the TMWA Board to add an additional representative of Washoe County. She added that Reno City Council will discuss the issue on November 18, 2009. Wayne Seidel reported that Sparks City Council will discuss the issue at their meeting on December 14, 2009. Chairman Carrigan thanked Ms. Menard and Mr. Tissier for the update.

#### **14. Discussion and possible direction to staff regarding agenda items for the December 11, 2009 Commission meeting and future meetings**

Chairman Carrigan asked about the next meeting of the WRWC. Ms. Menard stated that upcoming agenda items for the December 11, 2009 meeting include:

- Status of funding for stream gages
- Possible recommendation from the NNWPC concerning the DRI cloud seeding program, formation of a coalition, long-term funding, and direction to staff – The NNWPC will hear a technical presentation by DRI.
- Status report on SCR 2 and Cooperative Monitoring Program memorandum of understanding (MOU) – requested by NDEP

Ms. Menard reiterated that staff plans to bring the Draft Water Resources chapter and definition of sustainable water resources, and possible direction to staff to the January 8, 2010 WRWC meeting. She reported that the Legislative Oversight Committee (LOC) will convene in December or January and offered to provide updates as appropriate. Chairman Carrigan thanked Ms. Menard.

#### **15. Commission Comments**

None

#### **16. Staff Comments**

None

#### **17. Public Comment**

Chairman Carrigan called for public comments and hearing none, closed the public comment period.

#### **18. Adjournment**

With no further business, the meeting was adjourned at 3:00 p.m.

Respectfully submitted by,

Niki Linn, Recording Secretary

Approved by Commission in session on \_\_\_\_\_ 2010.

\_\_\_\_\_  
Mike Carrigan, Chairman

Note: DRAFT Minutes not approved by Board.

# Western Regional Water Commission

## STAFF REPORT

DATE: December 28, 2009

TO: Chairman and Members, Western Regional Water Commission

FROM: Jim Smitherman, Water Resources Program Manager

**SUBJECT: Election of Chairman, Vice-Chairman, Secretary and Treasurer for the 2010 calendar year**

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### **SUMMARY**

According to Chapter 531, Statutes of Nevada 2007, Section 27.1, "The Board shall elect one of its members as Chairman and one of its members as Vice Chairman, and shall elect a Secretary and a Treasurer, who may be members of the Board. The Secretary and the Treasurer may be the same person. The terms of the officers expire on December 31 of each year."

### **PREVIOUS ACTION**

On January 9, 2009, the WRWC Board Members elected the following officers:

Mike Carrigan, Chairman  
Dave Aiazzi, Vice-Chairman  
Patricia Lancaster, Secretary  
Steve Cohen, Treasurer

On April 11, 2008, the WRWC Board Members elected the following officers:

Mike Carrigan, Chairman  
Dave Aiazzi, Vice-Chairman  
Jim Ainsworth, Secretary  
Steve Cohen, Treasurer

# Western Regional Water Commission

## STAFF REPORT

DATE: December 28, 2009

TO: Chairman and Members, Western Regional Water Commission

FROM: Jim Smitherman, Water Resources Program Manager

**SUBJECT: Review and discussion of the Water Resources portion of the 2011 Comprehensive Regional Water Management Plan, including sections addressing issues relating to sustainable water resources, and possible direction to staff**

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### SUMMARY

Staff has prepared a preliminary draft Water Resources Chapter for the Western Regional Water Commission's ("WRWC") review. The primary purpose of this presentation is to show how the 2011 Comprehensive Regional Water Management Plan will address sustainable water resources issues raised by Washoe County Ballot Question #3. The pertinent section, number 2.2.1 "Sustainability", begins on page 3.

At this time the preliminary draft chapter comprises two sections that consist of text only; maps and figures will be added later in the plan development process. Sections presently under development are noted. The attached preliminary draft chapter covers two main topics:

- *Sources of Water* This section focuses on the various water resources that are currently available within the planning area, including surface water, groundwater and reclaimed water. In addition, the section contains the water baseline table which identifies and quantifies water resources by appropriations and by current estimates of groundwater basin perennial yield. The table further elaborates on the potential for conversion of various water rights to municipal and industrial use.
- *Water Sustainability* This portion of the chapter discusses sustainability, describes how the identified water resources are related to population forecasts and the Truckee Meadows Regional Plan, and discusses factors that affect water sustainability. Factors include economic conditions; laws, regulations, decrees and agreements, and source-water reliability, which covers climate change, drought and water quality issues.

## Chapter 2 - Water Resources

### ***Purpose and Scope***

This chapter describes the various sources of water that comprise the region's sustainable water resources and quantifies those resources with planning-level estimates consistent with the Nevada State Engineer's records. It also discusses sustainability and describes numerous factors that affect sustainability, including the economy, the Truckee River Settlement and TROA, and source water reliability.

### ***Summary of Findings***

The major findings of this chapter include:  
(to be developed)

### ***Introduction***

(to be developed)

## **2.1 Sources of Water**

For the purposes of regional water resources planning, water sources are grouped into three general categories: surface water, groundwater and reclaimed water.

### **2.1.1 Surface Water**

The Truckee River system is the primary source of water supply for the Truckee Meadows. Originating at Lake Tahoe, the Truckee is fed by runoff from seasonal mountain snowpack carried by numerous tributary lakes and creeks. Regulated reservoir releases primarily from Lake Tahoe and from time to time Donner Lake, Independence Lake and Prosser, Boca and Stampede Reservoirs provide for most of the flows that enter the Truckee Meadows. Figure \_ shows the Truckee River system with high, low and average flows at various locations. The Truckee River generally flows to the north from Lake Tahoe through California, crossing into Nevada at Verdi and flowing to the east through the Truckee Meadows to Wadsworth and then northerly to Pyramid Lake, about 116 miles by river from Lake Tahoe. Most of the water that flows to the Truckee River by Nevada tributaries comes from the east slope of the Carson Range to Steamboat Creek, while other tributaries flow directly to the Truckee from the north slope of the Carson Range, the Verdi Range and Peavine Mountain (see Figure \_).

**Figure \_ Surface Truckee River System with Highest, Lowest and Average Recorded Flows** (use TMWA WRP fig 2)

Steamboat Creek originates at Washoe Lake and flows fifteen miles to the north through Pleasant Valley and the eastern Truckee Meadows to the Truckee River. Along its course it is joined by six perennial creeks: Browns, Galena, Whites, Thomas, Dry and Evans that flow from the Carson Range, and one ephemeral stream (Bailey Creek) from the Virginia Range. Steamboat Creek is significant because of its water rights and those of its tributary creeks.

Water for various uses is diverted from the Truckee River into a number of ditches, such as the Highland Ditch which conveys water to the Chalk Bluff Treatment Plant. Water diverted for irrigation is conveyed several miles north to Spanish Springs Valley via the Orr Ditch, and to the south via Steamboat, Last Chance and Lake Ditches. Other

irrigation ditches serve localized areas of the central Truckee Meadows. Water is also diverted a short distance from the river for hydroelectric energy generation. In general, historical and current ditch uses are the same: municipal supply, irrigation and hydroelectric generation.

**Figure \_ Surface Waters Tributary to the Truckee River** (use 2004-2025 RWMP fig 2-1)

### 2.1.2 Groundwater

The major hydrographic basins within the planning region that supply municipal and industrial (“M/I”) and/or domestic water include the Truckee Meadows, Truckee Canyon (Verdi/Mogul), Tracy Segment (East Truckee Canyon), Pleasant Valley, Washoe Valley, Sun Valley, Spanish Springs Valley, West Lemmon Valley, East Lemmon Valley, Warm Springs Valley and Cold Springs Valley, as shown in Figure \_. Developments in the Truckee Meadows, Sun Valley, Lemmon Valley and Spanish Springs Valley rely on Truckee River water in addition to groundwater while the remaining basins rely on groundwater as the source of water supply. Development in the Red Rock, Antelope and Bedell Flat basins are supplied by domestic wells. The timing of groundwater importation to Lemmon Valley from the Honey Lake Valley hydrographic basin by way of existing infrastructure will depend on future land development projects.

**Figure \_ Hydrographic Basins** (use 2004-2025 RWMP fig 2-3)

### 2.1.3 Reclaimed Water

Recent data show that more than 37,000 afa of reclaimed water is generated in the region of which approximately 6,000 afa are used for a small number of non-potable purposes such as irrigation, construction and dust control. The remainder is discharged to the Truckee River, Swan Lake wetlands or to the ground. Recent investigation of reclaimed water uses in other regions has shown that reclaimed water is not one product limited to a small number of uses, but multiple products where the water quality is tailored to the use. Advances in water treatment technology ensure that reclaimed water can meet the water quality requirements of virtually any need. Although Nevada reclaimed water regulations presently allow for non-potable uses only, reclaimed water service providers continue to investigate the feasibility of implementing groundwater recharge using reclaimed water as a long-term water resource management strategy.

NDEP administers reclaimed water regulations which delineate water quality requirements, buffer zones, signage, run-off capture, and other requirements. NDEP is developing amendments to its reclaimed water regulations that are anticipated to allow for groundwater recharge. The main local benefit in the use of reclaimed water is that it provides an efficient drought-resistant water source which helps to balance the regional water resources budget.

### 2.1.4 Water Baseline Table

Table \_ (water baseline table) provides 20-year planning-level estimates for water resources considered to be sustainable using the best available information. The table identifies selected hydrographic basins within the region, and quantifies surface water and groundwater in two ways. Appropriations (water rights), including decreed rights and rights permitted or certificated by the State Engineer for M/I uses and those that

may be converted to M/I, are quantified separately from those that cannot be converted to M/I. The table also shows the quantity of groundwater in each basin consistent with the State Engineer's estimates of perennial yield. In basins where appropriations for M/I uses, or those that may be converted to M/I, are less than the perennial yield estimate, only those water rights actually appropriated are considered to be sustainable. In addition, the table estimates the annual amount of surface water, groundwater and reclaimed water transferred into, and out of, each basin, and estimates M/I and domestic commitments against the identified resources. Basins not listed are not expected to provide M/I water supplies within a 20-year planning timeframe. They are located in relatively undeveloped areas and only limited information exists.

### **Table \_: Water Baseline Table for Selected Basins**

#### **2.2 Factors Affecting Water Resource Sustainability**

This section discusses major trends, events and other factors affecting the sustainability of water resources in the Region. In addition, it describes a proposed procedure to ensure that local government land-use plans are based upon and in balance with the sustainable water resources identified in Table \_ (water baseline table).

##### **2.2.1 Sustainability**

During the last two years, issues involving water resource sustainability and population growth have been the subject of significant public discussion. Public concern has focused on local government and regional land-use plans prepared during a four-year period of record growth in the Region. In November 2008, voters approved Washoe County Question #3, which read "Shall the Truckee Meadows Regional Plan be amended to reflect and to include a policy or policies requiring that local government land-use plans be based upon and in balance with identified and sustainable water resources available in Washoe County?" (Appendix \_). With this in mind, it is important to understand the meaning of the term "sustainable" with respect to water resources.

Sustainability, in the context of resource planning, is usually defined as the ability to meet present needs while ensuring resource opportunities for future generations that provide optimal economic, social and environmental benefits.

Identification of sustainable water resources for 20-year planning purposes requires consideration of the practical availability of water for M/I purposes as well as for other community-supported values. Surface water and groundwater rights are generally established in Nevada by the appropriation system administered by the State Engineer. Most surface water rights, such as rights for waters of the Truckee River and its tributaries, have also been adjudicated through court decrees. The Truckee River is governed by several operating agreements, which will be superseded by the Truckee River Operating Agreement ("TROA") when it is fully implemented. TROA was negotiated over the course of several decades and was subject to an extensive environmental review based upon abundant historic hydrographic information. TROA is designed to provide long-term sustainable water operations for the multiple stakeholders on the Truckee River system.

The determination of sustainable groundwater supplies begins with the State Engineer's office. Before allowing appropriation of groundwater from a hydrographic basin, the State Engineer makes an assessment of the perennial yield based upon the best

available science. If a basin lacks a perennial yield estimate, the local government or water purveyor will work with the State Engineer to use the best available information, and may require or conduct additional studies as deemed necessary to make a decision. For planning-level estimates, if a basin is not fully appropriated (i.e., appropriations are less than the perennial yield) public water purveyors consider only the total water rights actually appropriated, including M/I rights and those that may be converted to M/I. This methodology forms the basis for water resources compiled in Table \_ (water baseline table). In addition, public water purveyors may exclude water resources that have inadequate quality for municipal use.

Depending on the availability of water rights in the open market, local water purveyors or their customers may acquire water rights from willing sellers in the future as the need for additional water resources arises, prior to the purveyor committing to serve development. Before determining whether to make water service commitments based upon these resources, the water purveyors will, in the case of Truckee River rights, consider the priority and condition of the water right, and whether the right can be appropriately exchanged for municipal use or storage; in the case of groundwater, the purveyor will consider the priority and condition of the groundwater right, groundwater quality, and the long-term productive capacity of the basin.

The comprehensive plan will include the results of evaluations performed by water purveyors and others of the sustainability of water resources to be used to serve proposed developments contained within local government land-use designations. It should be noted that community values, as reflected in land-use decisions, will significantly influence the population projected to be served by the region's water resources. To adjust for potential variability over the long-term planning horizon, estimates of sustainable surface and groundwater resources will constrain the population estimates when calculating the total population that may be supported by the sustainable water resources identified in the comprehensive plan. The plan provides guidance on use and allocation of future water resources; however, the existence of a planning-level estimate of available resources should not be considered a commitment to, nor a guarantee of, the availability of a water allocation for any specific project or parcel.

In areas where the approval of commitments through the parceling or subdivision process would tend to create or exacerbate an imbalance between sustainable yield and commitments, the local governments and water purveyors will limit such approvals or may take affirmative actions to mitigate the deficits through mechanisms such as artificial recharge and recovery of groundwater, conjunctive use of available resources, or the use of alternative water resources.

### **2.2.1.1 Water Resources Sustainability and Population Forecasts**

In response to Washoe County voters' concerns that the Regional Plan does not contain policies requiring that local government land use-plans be based upon and in balance with identified and sustainable water resources available within Washoe County, the Washoe County Board of Commissioners ("BCC") in October 2009, proposed certain amendments to the Truckee Meadows Regional Plan ("Regional Plan"). The amendments are intended to provide for a comparison between the Washoe County Consensus Population Forecast ("Consensus Forecast") and the estimated population that can be supported by the sustainable water resources as identified in Chapter \_. The BCC further proposed that Regional Planning Governing

Board (“RPGB”) Regulations on Procedure be amended to designate the Northern Nevada Water Planning Commission (“NNWPC”) and the Western Regional Water Commission (“WRWC”) as the entities to perform a comparison prior to the Regional Planning Commission’s adoption of the Consensus Forecast, and make findings as to whether the Consensus Forecast is in balance with sustainable water resources. If the draft Consensus Forecast is greater than the estimated population that can be supported by the sustainable water resources, the Consensus Forecast would be constrained and the WRWC would investigate new or alternative water sources, and/or water demand management strategies. The proposed amendments implement the voters’ intent. The adopted Consensus Forecast will be incorporated into the Regional Plan and all local government land use plans must conform to the provisions of the Regional Plan. It is anticipated that the amended Regional Plan and RPGB regulations will be consistent with the decision tree shown in Figure \_.

**Figure \_ Decision Tree: Regional Population Forecast based on Water Sustainability**

### **2.2.2 Economic Conditions and the Cost of Water Rights**

Development activity in the Truckee Meadows from 2003 to 2006 was approximately double the historic average, followed by a sharp decrease beginning in late 2006. The 2003-2006 period of unprecedented growth exerted upward pressure on the price of housing in addition to the price of water rights. The greatest increase in housing prices occurred between 2003 and 2005 when the median sales price of existing homes increased 103% from \$155,000 to \$315,000. Today the median sales price of existing single family homes is approximately \$170,000.

In the spring of 2006, the statewide unemployment was at a record low of 3.9%, in sharp contrast to a record high of 13.3% in September 2009. The Reno-Sparks area unemployment rate tracks very closely with the statewide rate. In addition, Nevada continues to rank in the top five states for the highest home foreclosure rate<sup>1</sup>. The long-term effects of these fundamental changes to the region’s economy are incorporated into the population and water demand forecasts provided by TMWA and discussed in Chapter \_.

The economic factors described above have had a direct impact on the water rights market, including water rights associated with the Truckee River system which is the region’s primary source of new water resources. The water rights market experienced a major disruption in 2005, which led to a temporary reduction in the availability of water rights for all buyers, including TMWA, which maintains a water rights inventory available for purchase by developers and other potential customers. Throughout 2005 developers and other buyers of water rights paid prices as high as \$60,000 per acre-foot at a time when market prices earlier in the year were averaging between \$4,000 and \$8,000 per acre-foot. The demand for water rights in the Truckee Meadows competed with other demands for Truckee River water rights. These other demands included rights purchased for historic agricultural uses or to improve lower-river water quality affected by water reclamation facility discharges to the Truckee River, M&I demands for Truckee River water rights in the Fernley area, and other in-stream-flow

<sup>1</sup> Source: RealtyTrac.com.

uses such as fisheries and wildlife. These competing interests along with the cost and time needed to determine a water right's ownership contributed to limited available supply and higher water rights prices.

TMWA maintains an inventory of water resources it has acquired from willing sellers at negotiated prices. In previous years, when there were fewer buyers and less demand for water rights, TMWA was very successful in acquiring water rights. Today, the water rights market is characterized by an increased number of buyers and a decreased number of willing sellers unless the seller achieves a high price for their water right. This, along with recent buyer's willingness to pay much higher prices than past or current market trends would have predicted, resulted in a 500% run-up in TMWA's Rule 7 price over a 6-month period in 2005. However, market corrections are occurring consistent with the recent decline in development activity and an associated decrease in demand for water rights, aligning the price of water rights closer to market conditions. Figure 7 shows that, although an increase in the cost of water rights as measured by TMWA's average annual price of Rule 7 water resource inventory generally lagged the rapid increase in housing prices; the magnitude of the price change was unprecedented.

#### **Figure 7: Changes in Median Price of Existing Homes and TMWA's Annual Rule 7 Price**

The Orr Ditch Decree, issued in 1944, established the number of water rights associated with the Truckee River and all its tributaries by reach, by priority, by owner, and by quantity. It is important to note that although surface water rights can be subdivided and/or converted from one use to another, for example from agriculture to M/I use, the overall total number of surface water rights available from the Truckee River has not changed from the amount defined in the Decree. A sufficient number of water rights is essential for issuing new will-serve commitments. New development must demonstrate that adequate water resources exist to serve a project. Will-serve commitments are only issued when, and if, water resources are available to service the estimated demand of a particular project and drought supplies can support the expansion of new demand. The needed water resources can either be purchased on the open market by an applicant for new water service and dedicated to a water purveyor or purchased directly from TMWA. Those purchasing will-serve commitments directly from TMWA are required to reimburse the utility for the costs it incurred in acquiring, processing and carrying the necessary water rights.

The primary water rights that applicants for new water service dedicate to TMWA are mainstem Truckee River water rights. Although the number of remaining Truckee River mainstem irrigation water rights available for conversion to M/I use continues to decrease, analysis in Chapter \_ will show over 50,000 acre-feet of Truckee River mainstem rights are potentially available for dedication to TMWA to support future will-serve commitments, and this amount is more than enough to meet TMWA's future water rights requirements through the planning horizon.

In addition to Truckee River mainstem rights available to TMWA to meet its future water rights requirements, WCDWR may make new will-serve commitments by receiving dedication of irrigation water rights associated with other sources, such as south Truckee Meadows tributary creeks, groundwater basins other than the Truckee

Meadows and, in the Lemmon Valley and Cold Springs Valley area, groundwater rights associated with the Fish Springs Ranch project.

### **2.2.3 Laws, Regulations, Decrees and Agreements**

#### **2.2.3.1 Truckee River Settlement and the Truckee River Operating Agreement (“TROA”)**

The Truckee River Settlement is important because it addresses decades of uncertainty with respect to Truckee River water uses and users. Before the late 1980s, parties with interests in Truckee River water had been largely unsuccessful in negotiating solutions to their issues and the community was unable to rationally plan for its future. Nevada’s U.S. Congressional Delegates and the Washoe Council of Governments were keenly aware that the community would be out of water and unable to grow unless many of these uncertainties were resolved.

Some of the historical uncertainties included: (1) whether the Truckee River reservoirs could be operated to accommodate the needs of the endangered and threatened species instead of providing water to water right holders; (2) the amount of water which California was entitled to use relative to the amount of water available for Nevada; (3) how California agencies charged with managing wildlife issues would implement their regulatory programs such as increasing minimum releases or in-stream flows, and whether those efforts would cause reservoirs to be depleted leaving less water available in a drought; (4) how a 60 year old court decree, dominated by agricultural uses, would adapt to changing uses or conversion of water uses from irrigation to municipal; (5) how pending litigation would be resolved; (6) how Tribal claims to water would be resolved and whether those claims to higher priority water rights would affect Truckee Meadows water rights; and (7) what impacts all these unsettled issues would have on the water utility’s ability to maintain existing water supplies, grow its water supplies and provide for the communities’ future demand for water.

Eventually, in 1989, the Sierra Pacific Power Company (“Sierra”) and the Pyramid Lake Paiute Tribe (“PLPT”) signed an agreement known as the Preliminary Settlement Agreement (“PSA”). The intent of the agreement was to settle numerous issues (some mentioned above), claims and counter-claims between these two parties and lay the foundation for a larger settlement to Truckee River issues that would include the five Mandatory Signatory Parties (United States, California, Nevada, Sierra [now TMWA], and PLPT) and other parties willing to participate.

In 1990, Congress passed and the President signed into law Public Law 101-618, the *Truckee-Carson-Pyramid Lake Water Rights Settlement Act* (“Settlement Act”). The Settlement Act, which incorporated and ratified the terms of the PSA; provided for the negotiation of a new operating agreement on the Truckee River; and preserved and protected the rights of all Orr Ditch water rights holders. The bill had provisions regarding other issues some of which were related to the settlement, such as economic development funds for PLPT; and some not related, such as the Fallon Tribe Settlement and the Newlands project reclamation reform provisions. Section 205(a) of PL101-618 directed the Secretary of the Interior to negotiate an agreement for the operation of Truckee River reservoirs. This agreement has become known as the Truckee River Operating Agreement (“TROA”).

Negotiations on TROA began in the 1990's leading to the final agreement in September of 2008. When implemented, TROA will allow for a congressionally authorized interstate allocation of water and change the operations of the Truckee River system to accommodate multiple beneficial uses for drought supply, endangered and threatened fish species, water quality, California water use, and storage. In addition, operations will enhance riparian habitat, reestablish river canopy, enhance reservoir releases, improve recreational pools in the reservoirs, and improve the process for emergency drawdown procedures for Lake Tahoe.

TROA was signed by the Mandatory Signatory Parties (TMWA, Pyramid Lake Paiute Tribe, California, Nevada, and the United States) and seven other parties on September 6, 2008. A number of conditions must be met before TROA can be implemented. Some of these have been satisfied since TROA's execution, others remain to be accomplished. These include:

- Publication of TROA in the Federal Register occurred on December 5, 2008 and its promulgation as a regulation occurred on January 5, 2009. The Truckee-Carson Irrigation District ("TCID"), Churchill County and the City of Fallon have initiated litigation in United States District Court challenging the regulation, including a challenge to the adequacy of the Final Environmental Impact Statement for the Operating Agreement. TCID, Fallon and Churchill County dismissed their lawsuit under CEQA and the time to bring that action has since run out.
- Modification of the Orr Ditch Decree to accommodate changes required by the Operating Agreement (submitted to the court in *United States v. Orr Water Ditch Company, et al.* for approval of modifications to the Orr Ditch Decree on November 17, 2008). The motion has been opposed by TCID, Churchill County and City of Fallon. Service of process on water right holders is to be completed by mid December with a full hearing on the merits projected for some time next year.
- The United States and the Truckee Meadows Water Authority submitted a joint motion to the court in *United States v. Truckee River General Electric Company* to modify the Truckee River General Electric Decree on November 20, 2008. The Court entered an order modifying the Decree on December 22, 2008 without objection from TCID Fallon or Churchill County. Now TCID has indicated that it intends to move to have this order vacated, but has not yet done so.
- Change petitions (filed in 2004) are pending approval by the California State Water Resources Control Board to change the water rights for Boca, Prosser Creek and Stampede Reservoirs, and for Independence Lake. A hearing date is expected in June 2010.
- Applications (filed in 2006 and 2007) are pending hearing and approval by the Nevada State Engineer to change the water rights in Nevada to allow Truckee Meadows Water Authority to hold the consumptive use component of certain of its water rights in storage. The hearing is scheduled for December 2009. In addition, changes to the Water Authority's water rights to generate single purpose hydroelectric power may also need to be approved; those change applications have been filed with the Nevada State Engineer, but no hearing date has yet been established.
- The Nevada State Engineer's ruling on unappropriated Truckee River water (granting the unappropriated Truckee River water to PLPT), State Engineer

- Ruling No. 4683, must be final, and the Orr Ditch Court must have made a determination that the Truckee River in Nevada is fully appropriated and closed to new appropriations. On March 30, 2009, the final appeal was dismissed, and Ruling No. 4683 is now final. However, the State Engineer's denial of an earlier TCID application for unappropriated Truckee River water is still pending in the Third Judicial District Court in and for the County of Churchill. It is anticipated that any decision by that court will also be appealed to the Nevada Supreme Court.
- *Pyramid Lake Paiute Tribe v. California*, Civil S-181-378-RAR-RCB, and *United States v. Truckee-Carson Irrigation District*, Civil No. 4-2987-RCB, cases pending in federal courts in California and Nevada, respectively, must be finally resolved. The *United States v. Truckee-Carson Irrigation District* case was dismissed with prejudice on August 10, 2009. Work is underway to have the remaining action dismissed with prejudice.

Additional accomplishments of the TROA parties or TMWA toward implementing PL 101-618 and TROA include the following: United States Bureau of Reclamation ("USBR") and TMWA executed a storage contract in 2008 and the referendum vote by PLPT held in 2008 was successful. TMWA has also completed the retrofit of its single family flat-rate services with meters. TMWA and the Mandatory Signatory Parties continue to work toward implementing TROA. Many or most of these accomplishments have or will be appealed by TCID, Fallon, Churchill County, or other parties. The effectiveness of TROA is conditioned upon all of these appeals being exhausted. It cannot be known with certainty when court rulings, regulatory or appeal processes will be complete.

TROA is now a signed document and binds PLPT, the United States, California and Nevada to move forward together to implement and make TROA effective. There are and always will be regulatory uncertainties surrounding the use the Truckee River. When TROA becomes effective there will be a new, more flexible framework for river operations which will provide parties additional opportunity to accommodate issues as they emerge. However, because TROA is not yet in place other water supply options to provide the drought reserves (if TROA implementation is delayed or halted) are discussed in Chapter 6.

### **2.2.3.2 Orr Ditch Decree**

In 1902, the United States withdrew from public entry the lands required for the government's first reclamation project, the Newlands Project located in and around the City of Fallon in Churchill County, Nevada. The following year, the United States posted an application to appropriate the water stored in Lake Tahoe. Recognizing that water released for the Newlands Project would be subject to a multitude of upstream diversions with very early priorities, the United States, first brought suit to condemn the operation of the Tahoe Dam and then filed to adjudicate all uses of Truckee River water within Nevada and to establish a firm water supply for the Newlands Project. The final decree in the water rights adjudication lawsuit is know as the Orr Ditch Decree and was entered in 1944.

The decree is administered by the U.S. District Court Federal Water Master. In combination with the 1935 Truckee River Agreement and the Floriston Rates (see below), the Orr Ditch Decree represents the basis for operation of the Truckee River between Lake Tahoe and Pyramid Lake. It incorporates the provisions of the Truckee River Agreement, which provides for operation of storage facilities, especially Lake

Tahoe, to satisfy Truckee River water rights. The Floriston rates constitute the chief operation objective on the Truckee River today and originated as a turn-of-the-century flow requirement for run-of-the-river users — hydropower and a pulp and paper mill. While the Orr Ditch Decree establishes water rights for entities within Nevada using the Truckee River's waters, the Truckee River Agreement, as part of that Decree, determines the operational mechanisms to satisfy those rights. The Orr Ditch Decree and the incorporated Truckee River Agreement provides TMWA with its basic water rights for its M/I water system.

<b>Floriston Rates (cfs)</b>				
Lake Tahoe Elevations	October	November thru February	March	April thru September
Below 6223.00 feet (natural rim)	0	0	0	0
Below 6225.25 feet	400	300	300	500
Between 6225.25 and 6226.00	400	350	350	500
Above 6226.00 feet	400	400	500	500

### **2.2.3.3 Water Quality Agreement**

During the winter of 1994-95, Nevada Senator Harry Reid initiated a series of multi-party negotiations to see whether resolution could be reached on the issues surrounding the lower Truckee-Carson Rivers that had not been solved in PL 101-618. Despite failure to reach an overall settlement of those issues, one portion of the discussion, that concerning water quality enhancement for the lower Truckee River, has continued forward and was approved by local governments and the Tribe in October 1996.

This agreement among the Cities, County, Tribe, United States, and NDEP provides in broad terms that the community and the United States would both buy water rights to be used for in-stream flows in the Truckee River in exchange for dismissal of lawsuits by the Tribe. It is expected that the augmentation of flows in the river will enhance its water quality.

### **2.2.3.4 Tribal Water Quality Standards**

Although the Pyramid Lake Paiute Reservation is not physically within the boundaries of the regional water planning area, the Tribe does have regulatory authority on lower Truckee River water quality standards. The 1987 amendments to the Clean Water Act allowed federally recognized Indian tribes to apply to be treated as a "state" for certain Clean Water Act purposes, including the development of water quality standards. The Tribe applied for "treatment as a state" status ("TAS") under these amendments in 1989, and received TAS status from EPA in 1990. Under this status the Tribe received grants to conduct a limnology study of Pyramid Lake and gathered other water quality data. Using the information from these studies the Tribe developed water quality standards for the lower Truckee River, from the Reservation boundary downstream to and including Pyramid Lake, which were approved by EPA on December 18, 2008. The Tribe, rather than the State of Nevada, is now responsible for meeting and enforcing these standards within the Reservation. The Tribe's numeric water quality standards are generally similar to the State standards.

### **2.2.3.5 State Water Law**

Laws, regulations, and policies adopted by the State of Nevada and administered by the State Engineer affect the appropriation and use of the region's surface water and groundwater. (to be developed)

### **2.2.4 Source Water Reliability**

This section discusses the reliability of the region's primary water sources in terms of both quantity and quality for continued municipal purposes. The discussion explores weather-related factors, such as climate change and drought cycles, that can affect the availability of surface water resources seasonally, and groundwater on a longer-term basis, and water quality issues that can also affect the short- and long-term sustainability of the available water resources. The most imminent threats to the reliability of the region's water supply are weather and source water supply contamination, both of which may affect the quantity and quality of available water supplies.

#### **2.2.4.1 Weather**

Weather is the primary determinant in establishing water supply for the Truckee Meadows. Precipitation replenishes the reservoirs and aquifers from which water is used and recycled. While the weather pattern consistently provides precipitation during the winter and spring months, the type of precipitation (snow versus rain), water content of snow, and speed of snowmelt vary from year to year. Water resources managers address water supply uncertainty depending on the source of water. TMWA manages uncertainty through storage of water in upstream reservoirs, conjunctive use of surface and groundwater supplies and continual assessment of the threats to water supply reliability from weather. Purveyors largely or solely dependent on groundwater are concerned more with the long-term effects weather has on aquifer recharge and storage. The key weather-related concerns with ensuring a continued adequate water supply are climate change and drought.

##### **2.2.4.1.1 Climate Change**

In 2006 and in 2009 (see Appendix \_), TMWA partnered with the Desert Research Institute ("DRI") to assess the potential for climate change and global warming to affect the Truckee Meadows' water supplies. The results of the assessment show:

- historic data is the best data available for future planning at this point in time;
- scientific evidence remains inconclusive as to effect on the Truckee Meadows;
- the high variability in data and findings makes it difficult to detect long-term trends that may be due to climate change as a factor affecting regional water resources; and
- continued monitoring of research on this topic is warranted.

Specifically, DRI analyzed climate and hydrologic data in the Truckee Meadows region in order to reveal potential signs of environmental change that may be consistent and coincident with global warming. The analyses included investigations of temperature, precipitation, snow water equivalent, streamflow volume and timing, and reservoir volumes for the Lake Tahoe and Truckee River hydrographic basins.

Linear regression analyses were used to identify the following trends:

- Temperature data revealed a slight trend towards increased minimum and maximum temperatures at most gages. However, a few stations showed trends towards decreased temperatures and year-to-year variability was quite high at all stations.

- Annual precipitation showed very high variability with an overall trend towards slightly reduced winter precipitation.
- Snow water equivalent (“SWE”) showed very high variability with some stations reporting a trend towards increased snowpack and others showing reduced snowpack trends.
- The SWE trends were highly correlated with instrument elevation, where high elevation stations observed increased SWE and the low elevation stations observed reduced SWE.
- Mean annual streamflow data varied widely between water years.
- Long-term streamflow volume and timing trends were investigated through linear regressions of the cumulative streamflow volumes. The records revealed no consistent trends in streamflow volume or timing for the period of record.
- Cumulative-volume-linear-regression analyses were also used to investigate trends in reservoir volumes. The reservoir volumes displayed an obvious dependence on precipitation, as periods of drought strongly influenced reservoir volumes.

In order to investigate correlations between hydrologic variables and possible modifications in hydrologic processes, the following double-mass analyses were conducted:

- Relationships between streamflow and precipitation were studied at four paired stations. The results confirmed the expected high degree of correlation between these variables. The functions between precipitation and streamflow remained consistent throughout the records, indicating no observed modifications in large scale precipitation-runoff-streamflow processes at un-dammed gages.
- Double mass analysis of precipitation and reservoir volumes further demonstrated the high degree of correlation between these variables.
- Analyses of SWE and streamflow data revealed a slight deviation from historical trends over the past four water years.
- No consistent departures from long term patterns were observed between streamflow and reservoir volumes.
- Patterns between SWE and reservoir volumes remained consistent throughout the period of record.

As a result of these analyses, DRI concluded that no significant changes were found in the climatic and hydrologic variables over the period of record. Temporal trends in temperature, winter precipitation, and SWE were observed at some stations. However, very high year-to-year variability was observed for all stations and parameters.

#### **2.2.4.1.2 Droughts**

Consecutive years of low precipitation in the Lake Tahoe and Truckee River basins produce dry conditions and drought cycles for the Truckee Meadows. The length of a drought cycle is solely a function of climatic conditions over a period of years. A good indicator of an impending dry year is snowpack accumulation. Measured on April 1 of each year, the snowpack is used to forecast river flows through the year. Figure 10 shows snowpack for the Truckee River basin over the past 24 years. Annual snowpack accumulation in the Tahoe and Truckee River basins is the foundation for estimating the amount of water that will run-off and contribute to river flows during the year. In years of less than average snowpack, the risk of a continuing drought cycle with less than average river flows increases.

**Figure 10: Snowpack for the Truckee River Basin**

The most recent drought cycle in the Truckee Meadows occurred from 2000 to 2005. As shown in Figure 10, snowpack within the Truckee River basin was below average in 2000 and continued that pattern again in 2001. While there was an improvement over 2001 in the amount of snowpack and runoff in 2002-2004, it was not enough to end the drought. Although TMWA did not need to utilize any privately owned stored water (POSW) to meet customer demands during these five years, the reduced water availability made it difficult to sustain the required Floriston Rates in December 2002 and again from late 2003 into early 2004. In September 2004 Floriston Rate storage was exhausted and normal river flows were not met again until the end of February 2005 which ended up being a 125 % of average snowpack year in the Truckee River Basin. Due to heavy precipitation and flooding in late December 2005 and early January 2006 the elevation of Lake Tahoe rose significantly. In fact, almost 11 inches of precipitation was recorded at the USGS Farad gauging station over a two week period (Dec 21, 2005 to Jan 3, 2006). An above average snowpack was recorded again (126 % of average) in the Truckee River Basin in 2006. As a result, Lake Tahoe and all Truckee River Basin reservoirs filled as a result of the streamflow runoff that was produced the following spring. Those two consecutive above average snowpack years (2005 and 2006 respectively) effectively ended the five year drought cycle.

The severity of the 2000-2005 Drought as compared to prior droughts is illustrated by Lake Tahoe elevations in Figure 11, in which month-end elevations of Lake Tahoe during the 1928 to 1935 Drought, the 1987 to 1994 Drought, and the 2000-2005 Drought are compared. On November 30, 1992, Tahoe reached an historic low elevation of 6220.2, or 2.8 feet below its rim. As shown, the graph also illustrates that reservoir operations cause reservoir depletions to extend over a period of 5 to 6 years, whereas the reservoirs can refill completely with a year of nondrought year precipitation or wintertime flooding (e.g., 2005-2006).

The 1987 to 1994 Drought is still the most severe drought on record. Figure 11 shows that the Truckee River system is finishing the third year of an ongoing climatological drought cycle. It cannot be known whether the cycle will end with the 2009/2010 winter snowpack or continue on. Snowpack in the Truckee Basin was 51, 86, and 85 % of average for the years 2007, 2008, and 2009, respectively. In December of 2008 Floriston Rate storage ran out, and in 2009 Floriston Rates ran out on October 16 with Lake Tahoe at its natural rim and Boca Reservoir down to its minimum pool elevation.

As is typically the case, it took three consecutive dry years for Lake Tahoe to fall to its rim prior to November. By definition, the region in 2009 is in a Drought Situation but the loss of river flows will come after the prime irrigation season with no impact to TMWA's POSW or need to increase groundwater production. Should the 2009/2010 winter produce below average precipitation for a fourth year, the region will most likely be in a Drought Situation which could present an operational challenge for TMWA during Summer 2010.

Important observations to be drawn from reviewing the historical Truckee River hydrology and drought periods include:

- Water levels in all reservoirs are gradually depleted but refill rapidly following a drought, usually in a two to three year period.

- Truckee River supplies are available the majority of the year, whether climatological induced drought or non-drought year conditions persist.
- Donner and Independence Lakes typically fill each spring.
- Truckee River water supply provided by normal operation for Floriston Rates can diminish early in the summer of dry years.

### **Figure 11: Lake Tahoe Elevations during Drought Cycles**

Climate change and drought are the most significant weather-related variables with potential to change the quantity and quality of the water supply. Studies completed by DRI indicate that while potential for climate change to alter the timing, type of, and quantity of precipitation should continue to be monitored, it should not be artificially imposed as a constraint on current and future water supplies for a 20-year plan at this time. Drought cycles on the other hand have established historical patterns, with the most severe drought on record lasting eight years. TMWA plans for drought cycles by utilizing a combination of natural river flows, groundwater pumping, POSW releases, and extraction of accumulated groundwater injections. Operation of TMWA's water production facilities to meet demands during drought cycles is discussed in detail in Chapter \_\_.

#### **2.2.4.1.3 Groundwater Recharge**

The potential effects of drought and climate change are far less immediate on groundwater recharge and aquifer storage as compared to surface reservoir storage and stream flow. Groundwater recharge, however, is a long-term concern because the effects of development could exacerbate diminished recharge resulting from weather related changes in precipitation and runoff. Local development ordinances provide for the protection of groundwater recharge areas in most natural drainage ways, however conversion of irrigated land and conveyance ditches to urban uses remains a local concern. Studies have shown that surface irrigation serves as a source of secondary or incidental recharge to the groundwater system. Secondary recharge occurs as seepage from conveyance ditches and as deep percolation of water applied to fields and pastures. Groundwater level declines associated with diminished agricultural irrigation have been documented in the South Truckee Meadows by Yeaman and Broadhead (1988) and CES (1998).

Diminishing groundwater recharge is of greatest concern in the Spanish Springs Valley hydrographic basin, where as much as 67 % of the total groundwater recharge is from Orr Ditch leakage and irrigation practices (Hadiaris, 1988 and USGS, 1996). Washoe County DWR, working with TMWA and local land use planners, is implementing a water resource management strategy to increase TMWA wholesale water use and decrease reliance on groundwater to address this concern. This strategy and plans for water facilities to meet future demands in Spanish Springs Valley are discussed in detail in Chapter \_\_.

#### **2.2.4.1.4 Reclaimed Water**

Weather-related factors have little long-term effect on reclaimed water as a source of water supply. Reclaimed water is drought resistant in that water reclamation facilities receive, treat and discharge relatively constant average annual flows. Winter storage may limit the amount of reclaimed water for irrigation in some areas of the region.

#### **2.2.4.2 Source Water Quality**

This section begins with an overview of source water quality and identified potential risks of water supply contamination. Source water refers to surface water and groundwater sources before diversion for municipal use.

#### **2.2.4.2.1 Truckee River Water Quality**

The water quality of the Truckee River is normally excellent. Surface water is of exceptional quality because base flows are composed of Sierra Nevada Mountain snowpack runoff and seepage or spring flow. Typical water quality data are shown in Table 1. Mineral concentrations are very low, and turbidity levels are typically less than five NTU<sup>2</sup>. Higher than average turbidity events can occur in the Truckee River during periods of floods, storm runoff and/or algae growth associated with low flows and warm temperatures in summer.

**Table 1: Typical Mineral Concentrations of Surface Water**

The reliability of this source is governed by the ability of TMWA's surface-water treatment facilities to treat Truckee River water during possible events of high turbidity and chemical or biological contamination. Three types of contamination events are identified:

- Turbidity events – low frequency events that are flushed by river flows within hours.
- Non-persistent toxic spills – spills of substances that would be flushed by river flows, usually within an 8 hour period.
- Persistent toxic spills - spills lasting more than 2-4 days that do not flush through the river channel.

Turbidity at conventional filtration plants is removed through chemical stabilization (coagulation and flocculation), followed by sedimentation and filtration. All surface water is treated at CTP or GTP before distribution. The modern treatment facilities at CTP and GTP have greatly reduced the water supply risks associated with turbidity events. Both CTP and GTP are designed to operate during intermittent turbidity events as high as 4,100 NTU lasting 5-10 days, but, it is more practical to shut the plants down and let the turbid water pass by to avoid significant clean-up efforts and costs at the treatment plants. Should a turbidity event occur that exceeds TMWA's ability to treat the water to required standards, it is possible to operate the system with only wells to supply an average day demand, more than sufficient to meet current indoor or winter daily demands of approximately 35 MGD.

Few toxic spills have occurred on the Truckee River and none were of major proportion. The most recent event was a sewage spill near Truckee, California which occurred in the spring of 1991, resulting in the shutdown of Glendale Treatment Plant operations for a day. Major toxic spills that would render the Truckee River unusable have not been recorded. However, toxic spills into rivers throughout the United States do occur, some of which have rendered water supplies unusable for an extended period of time. In the event of an incident on the Truckee River the contaminant might be diluted and washed downstream within a day depending on the flow rate in the river at the time. TMWA might be able to increase river flows through release of its stored water. These steps are likely to mitigate any contaminant that does not readily adhere into the river bed.

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<sup>2</sup> The term "turbid" or "turbidity" is applied to waters containing suspended matter that interferes with the passage of light through water. Turbidity is measured in nephelometric turbidity units or "NTU".

Past resource plans and a recent review of United States Department of Transportation data, resulted in the identification of several types of hazardous materials which are commonly carried through the Truckee River watershed. They 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	

These chemicals represent ingredients used in the formation of products ranging from rocket fuel to pesticides. Although most are extremely toxic it is likely that all would be flushed past TMWA's treatment plant intakes within one day. Chemicals that would likely adhere to the river bed include manufactured pesticides, herbicides, and fungicides. Each chemical would require a specific response depending on location, duration, and other factors of the water quality emergency. In the event of a spill, it is currently possible to operate using distribution storage and wells while the water quality emergency is being assessed.

In 2007 research was completed at the University of Nevada, Reno on behalf of TMWA (see Appendix \_), to quantify the risk of a spill to the Truckee River using data that was previously not available. The analysis has shown no recorded contamination event from rail or highway transportation. The data also suggests that accidents tend to occur more frequently during the loading and unloading of trucks and rail cars. This suggests that the area of highest risk is downstream of TMWA's treatment facilities in the City of Sparks where there is a rail yard and a large number of warehouses and shipping companies.

Also completed by the University of Nevada, Reno in 2008 was a risk analysis and assessment accompanied by the development of a contaminant transport model of the Truckee River from Tahoe City to the Glendale Treatment Plant. The results of this research are provided in Appendix \_ and include travel times for various classes of chemicals at different flow rates. The model is used to quantify the time periods required for the river to flush a spill from different possible locations.

While a toxic spill into the Truckee River is clearly a concern, this would be an extremely rare event and such an event has not occurred to this date. However, depending upon the time of year, TMWA is able to operate without the river for a period of hours to days using system distribution storage and its production wells. A detailed plan cannot be developed for a major emergency on the Truckee River that would anticipate all possible combinations of circumstances requiring emergency actions. Variables include location, size, and type of spill; time of year; levels of reservoirs and streams; customer demands; and other factors. The supply of water available from its 32 production wells enables TMWA to meet demands for average indoor water use throughout the year. In addition to relying on its wells, other steps to reduce water use during an extreme event and/or extended river outage could include:

- Call for voluntary, then mandatory water conservation, including watering restrictions (e.g., once per week during summer months), reduced laundry at commercial properties, use of paper plates in restaurants, no use of potable water for non-potable purposes, and other measures.

- Engage all wells on the TMWA system for full operation subject to Health Department approval. This would include the use of wells that do not meet drinking water standards.
- Modify flows in the Truckee River to either flush, dilute, or isolate the contaminant.
- Utilize extraordinary treatment processes in the pre-treatment section of the water plants. An example of this might be neutralizing pH through chemical additions in the pre-settling basin or addition of granular-activated carbon to filters. The likelihood of these steps being successful will depend on the type of contaminant and its concentration.
- Where possible, utilize and expand emergency interconnections with other water systems.
- Acquire the use of all water in local irrigation ponds, recreational lakes, etc., to the extent that water can be conveyed to the TMWA's treatment plants through ditches or other means.
- Use isolated portions of the storm drain system and ditch system for conveying water from unusual source locations to the water treatment plants. This might include installing sandbag check dams in certain ditches, along with low head pumps, in order to move water up-gradient in a ditch to a treatment plant. For example, the creeks in the South Truckee Meadows might be conveyed to the Glendale Treatment Plant by collecting the water in Steamboat Creek, pumping it into Pioneer Ditch, and thence through step pumping to Glendale.
- Temporarily pump the discharge from the Sparks Marina to the Glendale Water Treatment Plant.
- When TROA is in effect utilize the emergency worse than worst case water supply to flush the river of contaminants.

Events other than the types of spills described above, may interfere with the availability of Truckee River water. In April 2008 an earthquake triggered a rock slide destroying a 200-ft section of flume along the Highland Ditch in the Mogul area. This incapacitated the primary raw water supply for CTP just as customer demands were increasing with the onset of springtime temperatures. Raw water supply to CTP was restored that same day via the Orr Ditch Pump Station ("ODPS") at a limited capacity of about 60 MGD, but more supply was required. The GTP was brought on-line early in order to help meet those increasing customer demands. Within a few weeks a temporary pumping station along the river was also set up to provide enough raw water in order for CTP to resume operating at its full capacity of 83 MGD. By July the damaged section of flume was bypassed with an aboveground pipe and flow from the river to CTP was restored at a limited capacity of about 26 MGD. The ODPS was used to supplement the additional 57 MGD or so that the CTP required to operate at full capacity. The earthquake event has fast-tracked the Mogul Bypass Project which will bypass or re-route a substantial portion of the Highland Ditch around and south of the Mogul area with a buried pipeline.

Though it cannot be predicted when a river interruption event will occur or what the nature of an event will be, TMWA plans for and practices scenarios to manage emergency events. The more extraordinary measures that can be engaged are believed to only apply in an extreme, worse-than-historic event that would occur in the peak of the summertime irrigation with contamination occurring between Boca and the Steamboat Ditch diversion. Most combinations of scenarios as to time, place, and nature of event are manageable with existing production facilities and management options without such

drastic measures. It must be emphasized that these are broad guidelines only. They are not intended as a definitive instruction list as to the response which should be taken in any given emergency situation. An event, should one occur, must be evaluated on its specific conditions, and a response plan devised accordingly.

#### **2.2.4.2.2 Tributary Water Quality**

Truckee River tributary streams that join the Truckee River upstream of water treatment plants have the potential to adversely affect raw water quality. Creeks that flow from the Carson, Verdi and Peavine Mountains contribute to Truckee River water quality upstream of the Glendale Water Treatment Plant. These streams are generally of the same pristine quality as the Truckee River. Stream flows are maintained by snowmelt runoff and snowmelt that infiltrates into the upper watershed and then provides base flows. One exception is Chalk Creek, which has become a perennial stream due to urban irrigation. Chalk Creek also carries heavy Nitrogen, Phosphorus, and Total Dissolved Solids (N, P, and TDS) loads, three pollutants of concern within the Truckee River system. The City of Reno has studied the creek and, with the help of the Truckee River Fund, will be constructing a small sulfate-reducing wetland to explore the removal of these pollutants on a pilot scale.

The Truckee Meadows Regional Stormwater Quality Management Program is concerned with the condition of Truckee River tributaries and collaborated with the University of Nevada Cooperative Extension and the Washoe Story Conservation District in 2002 to conduct baseline watershed assessments of many of those tributaries. The program has conducted annual assessments and published assessment reports since 2005. Results and recommendations are reported most recently in the "Truckee River Watershed Assessment:2008". A small number of these tributaries are included on Nevada's 2006 303(d) Impaired Waters List, although none are shown as high priority for TMDL development.

**Mercury**  
(to be developed)

#### **2.2.4.2.3 Groundwater Quality**

The sustainability of the region's groundwater resources is dependent on its capturability and its quality. Groundwater quality degradation can be the result of naturally occurring constituents or contaminants introduced by human activities. As municipal well fields were developed over time in the region, portions of aquifers with poor water quality were identified and avoided. Today, the areas of good quality groundwater that can be easily or economically captured are fairly well defined and developed.

#### **Anthropogenic Influences**

Probably the most significant human-caused groundwater contamination in the Truckee Meadows was discovered when tests showed concentrations of PCE, and organic solvent, in municipal wells. Similar, but unrelated solvent contamination affects groundwater in the West Lemmon Valley hydrographic basin. In addition, hydrocarbon fuel and organic solvent contamination near the Sparks Tank Farm and adjacent rail yard affects groundwater underlying the southern-most part of Sparks.

Nitrate contamination in Spanish Springs Valley groundwater resulting from overly-dense septic systems further emphasizes the importance of source water protection efforts.

The well map in Figure 12 depicts rough outlines of the extent and nature of some of the current threats to groundwater that TMWA, WDWR, Reno, Sparks, Washoe County, and NDEP are monitoring and managing.

***Figure 12: Production and Recharge Wells and Areas of Water Quality Concern***

**Solvent and Fuel Contamination**

Water quality in a large portion of the aquifer underlying the central Truckee Meadows is affected by the presence of perchloroethylene, or PCE. This solvent was used extensively from the 1950s to the 1980s as a degreaser by various commercial establishments and is presently used by the dry cleaning, automobile service, and chemical manufacturing industries. In the 1980s the EPA identified PCE as a hazardous / toxic material and required municipal water systems to initiate water quality monitoring. In 1987, water quality tests on several of Sierra's (now TMWA's) production wells revealed the presence of PCE.

In 1995, the State Legislature passed Senate Bill 489 (NRS 540A) requiring the formation of a remediation district once a groundwater contamination problem is certified by NDEP and/or the WCDHD. Both agencies provided letters of certification in August of that year. In 1997, NRS 540A was amended to provide a funding mechanism to support groundwater remediation activities and the Central Truckee Meadows Remediation District (CTMRD) was formed later that year.

Groundwater near the Reno-Stead Airport in the West Lemmon Valley hydrographic basin is also affected by solvent contamination. This PCE plume, identified in 1994, is connected with US Air Force activities at the Stead Air Force Base, which was active during the 1940s and 1950s. The potential exists for this contamination to migrate to TMWA production wells; however, corrective actions are successfully controlling migration and cleaning up the contaminated groundwater. Remediation plans are being implemented by responsible parties under the direction and oversight of NDEP.

Hydrocarbon fuel and organic solvent contamination originating from the Sparks Tank Farm and adjacent rail yard affects groundwater underlying the southern-most part of Sparks. The contamination forms a plume that roughly parallels I-80, extending from the tank farm to Sparks Marina Lake. The plume is being hydraulically contained with extraction wells, and contaminated groundwater is treated onsite. NDEP is overseeing and directing the ongoing, onsite remediation of contaminated soils and groundwater.

**Nitrate Contamination**

Nitrate contamination from septic systems has been identified in a small number of isolated areas in the region. Elevated nitrate concentrations in groundwater have been documented in Spanish Springs Valley (Washoe County, 2002), and New Washoe City (McKay, 1989). In Spanish Springs, nitrate contamination affects municipal wells, which prompted NDEP to require corrective action involving mandatory sewerage to eliminate the nitrogen source.

A 2008 report to the Regional Water Planning Commission entitled Septic Nitrate Baseline Data and Risk Assessment Study for Washoe County reported the results of a literature review, data compilation and analysis of data gaps to identify potential areas of concern and prioritize areas for further study. The study identified 16 areas of concern in seven hydrographic basins: Truckee Meadows, Lemmon Valley, Cold Springs,

Spanish Springs, Truckee Canyon, Pleasant Valley and Washoe Valley. The report concluded that more than 18,000 septic systems exist in Washoe County and that 79% to 95% of all septic systems in a particular hydrographic basin are found within the individual areas of concern. Septic system densities ranged from 50 to 350 per square mile. The highest risks were attributed to high septic density, shallow depth to groundwater and the shortest distance to sensitive receptors. Of the areas having sufficient data, those ranked highest for management action are consistent with areas having known impacts, such as Spanish Springs Valley.

In 200\_ Washoe County DWR began requiring Spanish Springs homeowners to connect to the municipal sewer in the areas of highest septic system densities. DWR's water resources management strategy and facility plan for Spanish Springs, mentioned earlier in this chapter, will help to address nitrate contamination in groundwater.

### **Natural Influences**

The naturally-occurring groundwater geochemistry in portions of the region's aquifers influence the location of production wells and the level of treatment required for water that does not meet regulatory drinking water standards.

### **Geothermal Influences**

Groundwater resource sustainability is constrained in part due to the influence of geothermal systems, most notably Moana Hot Springs in south-central Reno and Steamboat Springs in the southeast Truckee Meadows. A small number of South Truckee Meadows wells have concentrations of antimony exceeding the drinking water standard. It is speculated that the antimony is related to Steamboat Springs geothermal activity to the south. Smaller geothermal systems also exist in Spanish Springs Valley, Washoe Valley near New Washoe City, Warm Springs Valley and west Reno at the River Inn. Water derived from these geothermal systems is generally neither potable nor developed for municipal use. It is understood that large centers of municipal pumping peripheral to geothermal areas can induce geothermal water migration to the production wells. Consequently, consideration is given to the prevention of geothermal migration as a result of municipal well pumping.

### **Arsenic**

(edit to current status) In 2001, the EPA changed the arsenic MCL from 0.050 mg/L to 0.010 mg/L and announced that public water systems have until January 2006 to comply with the new standard. Compliance with the arsenic standard will be determined through the analysis of water samples collected at the points of entry into the distribution system. Those systems with arsenic concentrations greater than 0.010 mg/L will be required to collect samples on a quarterly basis. Compliance will be determined by calculating the annual average of the quarterly samples. Systems required to increase monitoring will not be considered in violation until the annual average exceeds the MCL. TMWA reports that the new arsenic standard affects 11 of its 30 wells. Water from most of these wells is, or can be, piped to a treatment facility. WCDWR anticipates that 9 County wells and 2 STMGID wells will be affected. Water purveyors are currently evaluating strategies to comply with the 0.01 mg/L arsenic standard.

### **Radionuclides**

(edit to current status) The EPA has taken a somewhat unique approach to regulating radon and has proposed two standards. The proposed radon MCL is 300 pCi/L with an alternative MCL (AMCL) of 4,000 pCi/L if there is a "multi-media mitigation" program

established to mitigate indoor air radon. The Nevada State Health Division is taking the lead in the establishment of a “multi-media mitigation” program acceptable to EPA. The EPA anticipates promulgation during 2005. New monitoring requirements for radionuclides have recently been promulgated. The EPA retained current MCLs for radium, 226 and 228, gross alpha particle activity and beta particle and photon radioactivity; however, new uranium MCL of 30 µg/L has been established. This regulation became effective December 8, 2003.

#### **2.2.4.2.4 Reclaimed Water Quality**

Reclaimed water generated at the region’s major water reclamation facilities is among the cleanest in the nation. The various water reclamation facilities provide different levels of treatment depending on permit limitations and the intended use of the reclaimed water. For example, reclaimed water produced at TMWRF, by far the largest facility, is of adequate quality for discharge to the Truckee River, and for use as irrigation water with minimal restrictions. NDEP regulates the use of reclaimed water, including minimum treatment levels in addition to requirements for bacteriological quality and buffer zones for spray irrigation.

DRAFT

# Western Regional Water Commission

## STAFF REPORT

DATE: December 28, 2009

TO: Chairman and Members, Western Regional Water Commission

FROM: Jim Smitherman, Water Resources Program Manager

**SUBJECT: Discussion and possible approval of funding not to exceed \$49,000 from the Regional Water Management Fund to support a scope of work and Consulting Engineering Agreement with ECO:LOGIC Engineering for technical services related to the development of the 2011 Comprehensive Regional Water Management Plan, and, if approved, authorize the Chairman to execute the Agreement**

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### **SUMMARY**

Staff has determined that a contract for technical engineering services is necessary for the development of the 2011 Comprehensive Regional Water Management Plan ("RWMP"). The Northern Nevada Water Planning Commission ("NNWPC") discussed the need for the contract at its December 2, 2009 meeting and voted to recommend to the Western Regional Water Commission ("WRWC") the approval of an agreement with ECO:LOGIC Engineering ("ECO"), not to exceed \$49,000 from the Regional Water Management Fund ("RWMF"), for technical services to support the development of the 2011 RWMP.

The scope of work includes revisions to facility cost estimates, revisions to a regional water balance using current population estimates and development of a regional wastewater analysis. These services include revisions to work done previously by ECO for the 2009 RWMP amendment, and expansion upon wastewater and reclaimed water analyses provided by ECO to the NNWPC under recent contracts. ECO is uniquely qualifying for the necessary services. Staff has negotiated a scope of work and budget not to exceed \$49,000, attached. ECO has agreed to incorporate into its net billings a 5 percent discount to the 2009 rates shown in the agreement.

### **FISCAL IMPACT**

The fiscal impact to the RWMF will be \$49,000. Budget authority is located in Fund Group 766, Fund 7066, Account Number 710100, Professional Services, Cost Object WP310600.2. The RWMF budget for FY 2009-2010, approved by the WRWC on May 13, 2009, includes up to \$430,000 for development of the 2011 RWMP. Execution of this contract would leave \$361,000 in the plan development budget.

### **RECOMMENDATION**

The NNWPC recommends that the WRWC approve the agreement with ECO:LOGIC Engineering for technical services to support the development of the 2011 RWMP in an amount not to exceed \$49,000 from the RWMF and authorize the Chairman to execute the agreement.

JS:jd

Attachment

**EXHIBIT “A”  
SCOPE OF WORK**

**Scope of Work for the 2011 Comprehensive Regional Water Management Plan Update**

ECO:LOGIC proposes to provide the following services to the WRWC in support of the 2011 Comprehensive Regional Water Management Plan. The primary emphasis of our work effort will be to update the water, wastewater and flood control cost analyses (Chapter 9). Additional efforts will include incorporation of a regional water balance, review of wastewater flow factors, and support services relating to population forecasts and projections of water demand (Chapter 6). ECO:LOGIC will provide information in electronic format, suitable to be incorporated directly into the 2011 Comprehensive Regional Water Management Plan working document.

The proposed scope of work will be completed based on the following tasks. The dollar amount associated with each task represents the estimated level of effort that will be applied to each task, in total hours, based upon ECO:LOGIC’s 2009 Fee Schedule. As negotiated, ECO:LOGIC’s net billings will also incorporate a 5 percent discount to the 2009 rates. ECO:LOGIC reserves the right to reallocate budgets between tasks as long as the total contract amount is not exceeded.

**Task 1. Project Management** - This task includes time for project management and coordination, reviewing existing information, and time for up to 6 coordination meetings with the WRWC Project Manager.

*Task 1 Total: \$4,000*

**Task 2. Revise Regional Water Balance** - Potentially available water resources will be updated using sustainable water resources baseline table (to be provided by the WRWC Project Manager). Potable water demands will be adjusted based on the current population estimate and 2030 population forecast, to be provided by the WRWC Project Manager in coordination with the Truckee Meadows Water Authority (TMWA) and the Truckee Meadows Regional Planning Agency (TMRPA). Several options will be presented on alternative methods to better estimate future wastewater flows for each treatment facility based on the current population estimate. The final method to estimate future wastewater flow will be determined in coordination with Washoe County, the City of Sparks and the City of Reno. The amount of existing disposal capacity for each facility will be updated based on information obtained from Washoe County, the City of Sparks and the City of Reno from the ongoing regional reclaimed water project.

*Task 2 Total: \$8,000*

**Task 3. Revise Cost Estimates** - Water, wastewater, stormwater and flood control facility costs from the January 2009 Amendment to the Comprehensive Regional Water Management Plan (TMSA Facility Plans) will be updated based on the revised Regional Water Balance. Water costs will represent the total cost of water service, including an estimate of water rights costs, and backbone infrastructure costs from approved TMWA, SVGID and Washoe County Facility Plans. The method for calculating wastewater and stormwater costs will be similar to what was previously developed for the TMSA Facility Plans. The Truckee River Flood Management Project cost will be provided by the WRWC Project Manager. A cost per dwelling unit will be developed for water, wastewater and stormwater and flood control. An estimate of the cost per dwelling unit will be developed based on the estimated infrastructure costs that will need to be constructed in two phases, the next 10 years, and 10 to 20 years. The phasing projection will by necessity be a high level estimate of the timing of facilities, based on available information and communications with appropriate City, County, TMRPA and utility staff.

Task 3 Total: \$15,000

**Task 4. Regional Wastewater Analysis**

Based on information developed in Tasks 2 and 3, compare the updated TMSA wastewater treatment facility requirements (in 2030) to a regional, integrated wastewater scenario that assumes no geo-political boundaries. ECO:LOGIC will work with the Reno, Sparks and Washoe County staff working group to determine the appropriate elements of the regional wastewater treatment and disposal scenario. ECO:LOGIC will estimate costs for the facilities consistent with the cost estimating methodology from Task 3. The difference in cost and a comparison of implementation issues between what the three jurisdictions are planning today (i.e. the TMSA Facility Master Plans) versus the regional scenario would be an initial step in determining the economic feasibility of regionalizing wastewater treatment.

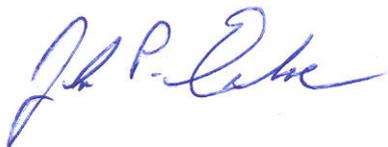
Task 4 Total: \$12,000

**Task 5. Work As Directed** - Additional tasks to be performed, if necessary, at the direction of the WRWC Project Manager, to address unanticipated needs or additional analyses not contemplated in this scope of work.

Task 5 Total: \$10,000

Based on the above scope of work, ECO:LOGIC proposes to complete this work on a time and expense basis not to exceed \$49,000. Tasks 1 through 5 will be completed in a time frame consistent with the overall schedule for the 2011 Update. Thank you for the opportunity to support the WRWC with the 2011 Comprehensive Regional Water Management Plan.

Sincerely,



John P. Enloe, P.E.  
ECO:LOGIC Engineering

## ECO:LOGIC Engineering Reno

### 2009 HOURLY RATE FEE SCHEDULE

Labor	Hourly Rate	Labor	Hourly Rate
<b>Engineer/Scientist</b>		<b>Finance</b>	
Principal Engineer	\$175.00	Senior Finance Specialist	\$155.00
Managing Engineer	\$158.00	Senior Economist	\$155.00
Supervising Engineer	\$147.00	Finance Specialist	\$116.00
Senior Engineer	\$137.00		
Associate Engineer II	\$130.00		
Associate Engineer I	\$122.00	<b>Technical</b>	
Engineer	\$116.00	Supervising Designer	\$112.00
Assistant Engineer II	\$110.00	Senior Designer	\$107.00
Assistant Engineer I	\$104.00	Designer III	\$100.00
Junior Engineer	\$98.00	Designer II	\$96.00
Environmental Compliance Mgr.	\$147.00	Designer I	\$92.00
Chief Hydrogeologist	\$135.00	Graphics Specialist	\$95.00
Senior Hydrogeologist	\$125.00	GIS Specialist	\$103.00
Staff Hydrogeologist II	\$98.00	Engineering Technician III	\$86.00
Staff Hydrogeologist I	\$88.00	Engineering Technician II	\$65.00
Water Quality Scientist	\$140.00	Engineering Technician I	\$55.00
		Engineering Intern	\$52.00
		Data Management Specialist	\$75.00
<b>Electrical Engineering</b>			
Senior Electrical Engineer	\$140.00		
Associate Electrical Engineer I	\$130.00	<b>Administrative</b>	
Electrical Engineer	\$120.00	Principal	\$175.00
Assistant Electrical Engineer	\$110.00	Administrative Assistant II	\$65.00
Junior Electrical Engineer	\$100.00	Administrative Assistant I	\$61.00
Sr. Field/SCADA Technician	\$122.00		
Sr. SCADA Programmer	\$122.00		
Field/SCADA Technician	\$100.00	<b>OTHER EXPENSES</b>	<b>RATE/AMOUNT</b>
		Vehicle Mileage *	\$0.55/mile
		CADD/GIS Equipment	\$15.00/hour
		Hydraulic Modeling Equipment	\$15.00/hour
<b>Construction Management</b>		Outside Services (Subconsultants)	Cost plus 10%
Engineer (Various)	Per Above	Reproductions	Cost plus 10%
Construction Manager/Inspector V	\$125.00	Mini Troll	\$115/Day
Construction Manager/Inspector IV	\$115.00	Laptop Computer	\$20/Day
Inspector III	\$100.00	Field pH, EC and Temp Meter	\$12/Day
Inspector II	\$94.00	Water-level Sounder	\$12/Day
Inspector I	\$86.00		

\*Or current IRS mileage rate

**Note: Hourly billing rates will be updated annually by ECO:LOGIC and the revised fees will be in effect as of January 1<sup>st</sup> each year. The revised rates will be provided at the client's request.**

# Western Regional Water Commission

## STAFF REPORT

DATE: December 22, 2009

TO: Chairman and Members, Western Regional Water Commission

FROM: John Buzzone, P.E., Senior Licensed Engineer, Washoe County  
Jim Smitherman, Water Resources Program Manager

**SUBJECT: Status report on proposed funding sources for existing U.S. Geological Survey stream gauges on Truckee River and Tributary Gauging Stations**

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### SUMMARY

The Cities of Reno and Sparks, Truckee Meadows Water Authority (TMWA), Truckee Meadows Water Reclamation Facility (TMWRF), and Washoe County participate financially with the United States Geological Survey (USGS) through various Interlocal or Cooperative Agreements in the establishment and on-going operation of flow gauging stations on the Truckee River and various tributaries in the Truckee Meadows area. The impetus for the flow monitoring varies from voluntary informational needs to meeting permit requirements. Other federal, state, and local agencies also participate with the USGS in funding other gauging stations on the Truckee River.

At present, the local agencies participate in the funding of about 20 flow gauges. The total 2009 annual cost to operate the gauges was about \$355,700, of which the local agencies paid about 61%, or \$218,220.

Development of the gauging stations has been on an ad hoc basis in response to new data needs. In recent months there has been discussion amongst local agency staffs as to the appropriateness of the gauging stations and responsibility for continued funding, as data from many of the gauging stations is relied upon by more than one agency and for multiple reasons. In response, staff from the agencies met to discuss data needs and the reasons for collecting the data to determine which agency was most appropriate for funding each gauge going forward. The staff concluded that each existing gauge is needed and then re-ordered funding responsibility amongst the agencies, based on criticality of data needs. The attached table shows the funding partnership arrangements proposed during the meeting. The agencies shown on the table will confirm the funding commitments internally and develop appropriate agreements with the USGS, accordingly.

JB:jd

Attachment



MEMORANDUM OF UNDERSTANDING  
FOR THE DEVELOPMENT AND MAINTENANCE  
OF A TRUCKEE RIVER COORDINATED MONITORING PROGRAM

This Memorandum of Understanding (“MOU”) is entered into by the undersigned signatories (individually, “Party” and collectively, “Parties”) to provide a framework for cooperation in the environmental monitoring and assessment of the Truckee River.

I. BACKGROUND AND PURPOSE

A. The Parties recognize the many benefits of developing and maintaining a coordinated monitoring program on the Truckee River. The Truckee River and its tributaries are monitored by numerous local, state, tribal and federal agencies and other organizations. These agencies and organizations collect chemical, physical and biological data and information for a variety of purposes including but not limited to:

1. Evaluating compliance with applicable federal, state, and local laws, regulations and permit requirements;
2. Assessing watershed health;
3. Developing watershed restoration plans;
4. Determining whether completed restoration plans achieve their intended goals; and
5. Conducting research.

B. Further, the 2009 Nevada Legislature encouraged the entities currently conducting environmental monitoring in the Truckee River watershed to engage in coordinated efforts regarding this monitoring, as described in the 2009 Legislative Session’s SCR-2 (attached).

II. GOALS

The goals of this MOU include:

- A. Increasing efficiency and minimizing duplication of effort among the Parties;
- B. Encouraging the Parties to utilize a central clearinghouse of technical and water-related information;
- C. Encouraging the Parties to develop robust data that may facilitate timely identification of potential problems with water quality or environmental degradation of the Truckee River, to the extent they have the authority and funding to do so;
- D. Promoting the future protection of the Truckee River; and
- E. Encouraging the Parties to share this information with each other, the public, and other interested parties.

III. OBJECTIVES:

To meet and achieve the foregoing goals, the Parties will strive to:

- A. Increase communication and coordination of Truckee River monitoring efforts among the Parties hereto.
- B. Identify and implement opportunities for the development, use, and sharing of physical, chemical, and biological data and information among signatories, other interested parties and the public.

- C. Promote and encourage opportunities to engage in coordinated monitoring efforts to improve efficiency, maximize and leverage resources and prevent duplication of efforts.
- D. Develop robust data that may facilitate identification of problems and promote the protection of the Truckee River.
- E. Promote sound quality assurance and quality control practices to ensure the collection of reliable and useful environmental data. Work toward creating consistency in data collection methodologies where appropriate.
- F. Provide accurate, clear and understandable environmental monitoring information regarding the Truckee River to the public.

IV. IMPLEMENTATION:

To achieve the foregoing objectives, the Parties agree to:

A. Establish a MOU Oversight Working Group comprised of a principal representative from each Party that will:

- 1. Oversee, manage, and implement the MOU.
- 2. Review and submit progress reports or similar documents as requested by the Nevada Legislature or other entities.
- 3. Periodically review, revise and/or update MOU, as needed, to achieve goals. Amendments shall become effective following written approval of the Parties.
- 4. Meet on a quarterly basis or other timeframe as deemed appropriate by the Parties to review progress, discuss issues, resolve policy decisions and provide guidance. The Nevada Division of Environmental Protection shall assume responsibility for coordination of these meetings for a period of at least one year from the date this MOU becomes effective.

B. Establish a Monitoring Coordination Working Group comprised of designated representative(s) from some or all Parties to develop a coordinated monitoring effort among the Parties that will:

- 1. Timely share information on field, laboratory and interpretive methods, guidelines and protocols for environmental assessment.
- 2. To the extent practicable, make data available to other Parties and the public through an existing data clearinghouse (Truckee River Information Gateway [TRIG] or other clearinghouse designated by the Parties) to timely share relevant monitoring data and methodologies.
- 3. To the extent practicable, coordinate monitoring activities to ensure the efficient use of funding and staff resources.
- 4. Identify and, if practicable, minimize duplicative efforts.
- 5. Meet as necessary and draft progress reports or similar documents as needed for review by the oversight working group.

V. GENERAL PROVISIONS:

A. The Parties recognize that each local, state, tribal and federal entity has statutory and regulatory authorities and responsibilities that cannot be delegated. Nothing in this MOU shall be construed as limiting, delegating, expanding or affecting, in any way, the legal authorities or responsibilities of the Parties. This MOU does not modify or supersede any other applicable interagency agreements existing as of the effective date of this MOU.

B. Each provision of this MOU is subject to the applicable laws and rules that govern each Party.

C. Nothing in this MOU shall be construed to require any Party to obligate or transfer any funds or limit a Party's ability to seek, obtain and spend funds within its statutory and regulatory authority. Specific projects or activities conducted in furtherance of this MOU that involve the transfer of funds, services, or property among any of the Parties shall be carried out according to the rules, regulations and requirements of each affected Party and be contingent upon the availability of appropriated funds. Such activities must be independently authorized by appropriate statutory authority and may require the execution of a separate agreement. The Agreement does not provide such authority. Negotiation, execution and administration of each such agreement must comply with all applicable statutes and regulations.

D. In carrying out the objectives of this MOU, unless otherwise agreed, each Party shall oversee its own activities and utilize its own financial and other resources. Each Party shall carry out its separate activities in a coordinated and mutually beneficial manner to the extent practicable.

E. This MOU is intended only to improve the cooperation among the Parties. It is not intended to, and does not create, any right, benefit, or trust responsibility, substantive or procedural, enforceable at law or in equity, by a third party against any of the Parties, their agencies, their officers, or any person. Further, nothing in the MOU shall be construed as creating a right of action between any of the Parties.

F. This MOU is not a legally binding contract. Rather it creates a framework for the cooperation between the Parties to participate in comprehensive and coordinated watershed monitoring efforts and disseminate resultant data through the existing data clearinghouse.

G. This MOU shall become effective upon signature of at least two Parties and shall be effective among the participating Parties until January 1, 2014 unless terminated by written consent of the participating Parties. Any Party may terminate its participation under this MOU, without cause, by providing written notice to each of the other Parties. Such termination shall become effective upon receipt of such notice by any Party.

H. This MOU may be modified or amended only by written, mutual agreement of the Parties. Amendments shall become effective only following written approval of the Parties.

VI. AUTHORIZED REPRESENTATIVES:

The Parties represent that the individuals listed on the signatory pages are authorized execute this MOU and to act in their respective areas for matters related to this MOU.

MEMORANDUM OF UNDERSTANDING  
FOR THE DEVELOPMENT AND MAINTENANCE  
OF A TRUCKEE RIVER COORDINATED MONITORING PROGRAM

In witness whereof, the Parties hereto have executed this MOU

Harold Singer  
Executive Officer  
Lahontan Regional Water Quality Control Board  
California Environmental Protection Agency

Kenneth E. Mayer  
Director  
Nevada Department of Wildlife

Leo M. Drozdoff, P.E.  
Administrator  
Nevada Division of Environmental Protection  
Department of Conservation and Natural Resources

John Warwick  
Executive Director/Research Professor  
Board of Regents, Nevada System of Higher Education  
on behalf of the Desert Research Institute

Ron Pardini, Acting Dean  
College of Agriculture, Biotechnology and Natural Resources  
University of Nevada, Reno

Leah Gorbet, Controller  
Board of Regents, Nevada System of Higher Education  
on behalf of the University of Nevada, Reno

Mervin Wright, Jr.  
Tribal Chairman  
Pyramid Lake Paiute Tribe

Robert A. Cashell, Sr.  
Mayor  
City of Reno

Geno Martini  
Mayor  
City of Sparks

Kathryn Landreth  
Nevada State Director  
The Nature Conservancy

Mark Foree  
General Manager  
Truckee Meadows Water Authority

Wayne Seidel  
City of Sparks Public Works Director  
Truckee Meadows Water Reclamation Facility

Naomi Duerr  
Director  
Truckee River Flood Management Project

Robert D. Williams  
Field Supervisor  
Nevada Fish and Wildlife Office  
U.S. Fish and Wildlife Service

David E. Humke  
Chairman  
Washoe County Board of Commissioners

ATTACHMENT A

MEMORANDUM OF UNDERSTANDING  
FOR THE DEVELOPMENT AND MAINTENANCE  
OF A TRUCKEE RIVER COORDINATED MONITORING PROGRAM

SIGNATORY PARTIES (IN ALPHABETICAL ORDER):

DESERT RESEARCH INSTITUTE  
LAHONTAN REGIONAL WATER QUALITY CONTROL BOARD  
THE NATURE CONSERVANCY  
NEVADA DIVISION OF ENVIRONMENTAL PROTECTION  
NEVADA DEPARTMENT OF WILDLIFE  
PYRAMID LAKE PAIUTE TRIBE  
CITY OF RENO  
CITY OF SPARKS  
TRUCKEE MEADOWS WATER AUTHORITY  
TRUCKEE MEADOWS WATER RECLAMATION FACILITY  
TRUCKEE RIVER FLOOD MANAGEMENT PROJECT  
UNIVERSITY OF NEVADA, RENO  
UNITED STATES FISH AND WILDLIFE SERVICE  
WASHOE COUNTY

# Western Regional Water Commission

## STAFF REPORT

DATE: December 22, 2009

TO: Chairman and Members, Western Regional Water Commission

FROM: Staff

**SUBJECT: Discussion and Possible Direction to Staff Regarding Future Meeting  
Dates and Agenda Items for the February 12, 2010 Commission Meeting**

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1. Status report on the first meeting (January 7, 2010) of the Legislative Oversight Committee
2. Briefing on the development of an effluent management strategy
3. Status report on the Regional Planning Governing Board's January 14, 2010 action on the proposed amendments to the Regional Plan concerning WC#3