

## **Issues and Recommendations for Discussion at 6/2/10 NNWPC Meeting**

### **1. Municipal Water Resources in the Central Truckee Meadows**

(1995-2015 Regional Water Plan Issue)

#### **Specific Issues and Linkages**

In September 2000, Sierra Pacific announced its intention to sell the water utility business, which it had operated since 1861. In November 2000, a cooperative agreement was executed between Reno, Sparks and Washoe County to form TMWA. On June 11, 2001, TMWA officially opened for business upon the completion of bond sales and the transfer of title to all diversion, treatment, conveyance, water transmission, wells and distribution related facilities.

One specific requirement of the Reno, Sparks and Washoe County Joint Powers Authority (JPA) was for TMWA staff to produce a water resource plan to address specific goals. One such goal was to establish a water budget and a water resource plan for the Authority, which shall reflect, among other things:

- Water Supplies available to the Authority and separately to each Member from all sources,
- Demand within each Member's jurisdiction within the Authority's retail service area, and
- The peaking capacity required for delivery of Water Supplies by the Authority to each Purveyor Member, if applicable, and the means by which such requirements shall be met.

Linkages: Water rights balance with TROA implementation and wastewater effluent reuse. See Section 9.22 and Chapter 7.

#### **Action Taken / Alternatives Evaluated to Address the Issues**

On March 19, 2003 the TMWA Board of Directors adopted the Authority's 2005–2025 Water Resource Plan (WRP). Issues addressed by the Plan include: the Joint Powers Agreement, Water Demand Forecast, Water Production Facilities, Water Conservation, Water Meter Retrofit, Current Water Resources, Drought Standard, Water Rights Availability and Future Water Resources.

#### **Recommendations**

The adopted TMWA 2005–2025 Water Resource Plan presents Key Findings and Recommendations associated with the issues identified above. These Key Findings and Recommendations are not reiterated within this Plan update; however, several of the significant recommendations are summarized below:

Water Demand Forecast: The Board accepts the water demand as a reasonable estimate of future water demands to be used for planning purposes.

Water Production Facilities: The Board acknowledges the efficiencies of a single purveyor and that the water treatment and delivery system be operated in a unified manner; Staff should review and update where necessary the 2002-2022 Facility Plan to

incorporate the peak day projections in the WRP; and TMWA should continue its well development program to meet drought supply needs.

Drought Standard: The Board shall: (1) for planning purposes, design and manage TMWA's water resources to withstand the length of the worst drought cycle of hydrologic record (1987 to 1994) for the Truckee River, (2) recognize that although commitments could expand from 99,000 af annually to 113,000 af annually through the continued conversion of irrigation water rights to municipal use, manage commitments to 110,000 af; and (3) direct staff to continue review of the performance of this standard and update the Board when future conditions change and/or at the next Water Resource Plan update in 3-5 years.

Water Rights Availability: The Board direct TMWA staff to: (1) continue to purchase water rights under its Rule 17 and (2) expand its activities in cooperation with Reno, Sparks and Washoe County in identifying and purchasing fractionated Truckee River water rights under the streets within those jurisdictions.

Future Water Resources: The Board should continue to support the efforts to implement TROA and direct TMWA Staff to investigate, evaluate, and negotiate, where appropriate, other potential water supply projects.

### **Subsequent Activities and Additional Work Needed**

- 1.A Negotiated Settlement (TROA) – NEPA and CEQA require an environmental evaluation of the TROA. This process is underway. From now until the execution of TROA, storage agreements must be negotiated, change applications filed and the change process completed contingent on the implementation of TROA.
- 1.B Drought Standard – The RWPC intends to review Policy 1.2.e – Conjunctive Management of Surface Water and Groundwater Supplies to Meet a 9-Year Drought Cycle, and revise it if necessary during the next update of this Plan.
- 1.C Water Supply Development – TMWA and Washoe County will continue to pursue water supply projects that are economically feasible and that can be implemented to ensure water supplies are available, as future demands require.
- 1.D Arsenic Compliance – TMWA and Washoe County are presently developing Arsenic Compliance Plans. Compliance strategies may impact off-river reliability goals.
- 1.E Hidden Valley WTP – Washoe County Utility Division is evaluating the feasibility and benefits of a surface water / groundwater treatment plant to reduce dependence on TMWA wholesale supplies, provide PCE and arsenic treatment on two wells, and increase system reliability.
- 1.F Verdi – Ongoing facility and water resource planning to serve anticipated growth in the Boomtown / Verdi area.

### **Relevant Planning Documents**

- Truckee Meadows Water Authority, 2003, 2005–2025 Water Resource Plan
- Truckee River Operating Agreement, Draft, 2003,  
[www.usbr.gov/mp/lbao/troa/docs/TROAdraft.pdf](http://www.usbr.gov/mp/lbao/troa/docs/TROAdraft.pdf)

## **2. Municipal Water Resources in the South Truckee Meadows** (1995-2015 Regional Water Plan Issue)

### **Specific Issues and Linkages**

In 2002, Washoe County through the RWPC, WCDWR and STMGID, completed an update to the water facility plans for the South Truckee Meadows. The Facility Plan (ECO:LOGIC, 2002) provides a comprehensive water supply plan for build-out of the planning area, which encompasses an area stretching from just north of Double Diamond Ranch south to Pleasant Valley, east to the Virginia Foothills and west to Galena Forest. The major goals of the Facility Plan are to:

- Utilize the creek resources to their highest and best beneficial uses, and balance beneficial M&I uses with in-stream flow requirements for recharge, wildlife, riparian habitat, aesthetics and quality of life
- Ensure that recommended plans for water supplies and facilities conform to regional wastewater disposal / water quality requirements at the South Truckee Meadows Water Reclamation Facility (STMWRF) and Truckee Meadows Water Reclamation Facility (TMWRF)
- Allow development to proceed in a phased approach, keeping upfront capital costs low and total water service costs competitive, and provide reliable and economical utility service to the South Truckee Meadows
- Promote system integration, conjunctive use and expand reclaimed wastewater service to maximize the efficient use of water resources and facilities

Water supply needs also included consideration of existing and future domestic wells in the planning area.

### **Action Taken / Alternatives Evaluated to Address the Issues**

Several water supply components are available in the South Truckee Meadows, including TMWA wholesale supplies from the Truckee River, groundwater, conversion of local tributary streams (Thomas, Whites, Galena and Steamboat Creeks) from agricultural irrigation to municipal use, and reclaimed water. The water supply plan addresses the natural variability of surface water and groundwater supplies during drought, and recognizes the needs of over 1,700 domestic well owners who share the local groundwater resource.

### **Recommendations**

- Initially, a “creek exchange” concept is proposed, which provides a short-term means to expand water service while creek water rights and connection fees are accumulated.
- Prior to the wholesale demand level exceeding the existing contract maximum of 5,400 gallons per minute, the initial 2 MGD phase of the lower water treatment plant should be in service. The lower water treatment plant utilizes the combined flows from Thomas and Whites Creeks.
- During late summer and drought periods when flows in the creeks are diminished, unused treatment plant capacity is available to treat “secondary groundwater”, which will require treatment to meet water quality standards.

An upper 3 MGD water treatment plant located on Galena Creek is also included in the approved facilities. The upper water treatment plant relies on Galena Creek non-irrigation season diversions as its primary water supply. An upper treatment plant keeps more water in Galena Creek in the winter rather than diverting it to Washoe Lake; and most importantly, it offsets winter groundwater pumping and provides recharge water to the upper Mt. Rose fan area.

### **Subsequent Activities and Additional Work Needed**

- Washoe County Department of Water Resources is presently conducting an alternative site analysis for the lower STM treatment facility.
- The wholesale agreement between Washoe County and TMWA was modified to provide a temporary increase in capacity up to 7,400 GPM, until such time as the South Truckee Meadows Water Treatment Plant is constructed.
- Washoe County Department of Water Resources is currently developing a tributary creek water rights dedication policy that considers the varying yield of different types of rights for the lower surface water treatment plant in the South Truckee Meadows.

### **Relevant Planning Documents**

- ECO:LOGIC, 2002. South Truckee Meadows Facility Plan. Prepared for RWPC, Washoe County Department of Water Resources, and South Truckee Meadows General Improvement District.

## **3. Municipal Water Resources in the Stead/Lemmon Valley**

(1995-2015 Regional Water Plan Issue)

### **Specific Issues and Linkages**

In 2002, the RWPC performed a detailed analysis of water supply alternatives that will support the build-out land uses in the Stead, Lemmon Valley, and Cold Springs regions

of Washoe County. Growth in these areas is currently constrained by existing water infrastructure that imports water from the Truckee Meadows and local groundwater supplies. The work included three major components:

- Develop facility requirements, opinions of probable cost and preliminary implementation schedules for two water importation projects to supply the Stead / Lemmon Valley area, including the northern Vidler Water Company / Intermountain Pipeline groundwater supply and the southern TMWA Truckee River based supply
- Develop facility requirements and an opinion of probable cost to provide additional water supplies to support the build-out of potential land uses in the Cold Springs Valley
- Determine the operational and distribution system improvements necessary to maximize the use of existing facilities and water resources in the Stead / Lemmon Valley area until such time as an import supply can be constructed

Linkages: Wastewater treatment and disposal requirements. Flood plain management in closed basins.

#### **Action Taken / Alternatives Evaluated to Address the Issues**

The importation projects considered are 1) a combined Vidler Water Company / Intermountain Pipeline importation project consisting of groundwater from Fish Springs Ranch, Dry Valley, Newcomb Lake, Bedell Flat and Warm Springs (northern option), and 2) increased TMWA Truckee River based water supply that would necessitate the replacement of the existing Stead Main with a larger pipe and pump station (southern option).

The water supply comparison work was built from prior facility planning work performed by ECO:LOGIC and Stantec Consulting Engineers. Using projected build-out planned land uses in the Stead, Lemmon Valley and Cold Springs areas, water distribution improvements and wastewater interceptor collection system options were evaluated, and potential effluent reuse customers and facility requirements were identified.

#### **Recommendations**

The projected build-out water demand for the Stead / Lemmon Valley area is 12,923 af, including 1,000 af for supplemental water resource needs. With estimated long-term groundwater withdrawals of 2,189 af based on present TMWA and Washoe County groundwater rights holdings, there is a need to import a total of 10,734 af to meet potential build-out demands in the Stead / Lemmon Valley area.

From a long-term, water supply perspective, development of a northern importation project to serve the Stead / Lemmon Valley area would provide greater benefits for the region compared to the Stead Main alternative, at a lower overall cost. The total cost per af to supply water to Cold Springs is higher than for Stead / Lemmon Valley.

#### **Subsequent Activities and Additional Work Needed**

- North Valleys Strategy, amendment to the Regional Water Plan, dated 7/14/98

- Implementation of the integrated operation of the TMWA and Washoe County water systems in the Stead / Lemmon Valley areas is underway. Integrated operation provides a short-term water supply while a long-term water importation project is implemented.
- Facility planning for the Stead / Lemmon Valley area has identified a potential long-term imbalance between water supply needs and wastewater disposal capacity. A thorough feasibility-level evaluation of several effluent disposal options is being undertaken.
- Draft EIS under preparation, North Valleys Water Supply Project

#### **Relevant Planning Documents**

- JBR / Montgomery Watson, 1997, Water Supply Alternatives for North Valleys. Prepared for Washoe County, Department of Comprehensive Planning.
- RWPC, 1998, Amendment to Regional Water Plan for North Valleys Strategy.
- ECO:LOGIC, 1999, North Valleys Water Facility Plan. Prepared for RWPC.
- ECO:LOGIC, 2002, North Valleys Water Supply Comparison. Prepared for RWPC.

#### **4. Municipal Water Resources in Cold Springs**

(Identified after 1995-2015 Regional Water Plan adoption)

##### **Specific Issues and Linkages**

There has been rapid development in the Cold Springs hydrographic basin subsequent to the publication of the 1995-2015 Regional Water Plan. Development in Cold Springs relies on the groundwater resources available in the Cold Springs and Long Valley hydrographic basins.

The lack of RWPC accepted data with respect to sustainable water resources leads to difficulties in determining whether there is an existing or potential future deficit with respect to water resources. This data is needed in order to implement RWPC water policies.

Wastewater and storm water linkages:

- Nitrate contamination of groundwater has been observed in areas with high densities of septic tanks. The 1995-2015 Regional Water Plan expressed concern over continued installation of septic tanks in this hydrographic basin.
- Importation of a new water supply into the Cold Springs hydrographic basin would result in the generation of additional effluent and storm water run-off volume in this closed basin.

### **Action Taken / Alternatives Evaluated to Address the Issues**

- New development in Cold Springs is designed to minimize water consumption in order to extend the available water resources as far as possible.
- A developer in Cold Springs is undertaking work in consultation with WCDWR hydrology and RWPC staff to determine the sustainable yield of the existing and proposed Utilities Inc. production wells.
- The potential future water demands associated with development of Cold Springs were included in the RWPC analysis of water supply alternatives for the North Valleys.

### **Recommendations**

The RWPC's North Valleys Water Supply Comparison was a presentation of alternatives for importation of water supplies to the Stead / Lemmon Valley area, and included a supplemental analysis of the additional water resources and infrastructure costs required to support the build-out of land use in Cold Springs (2,000 gpm, 3,200 af/yr, additional \$2 to \$3 million depending upon Northern supply or Stead Main option). See Section 9.3 for a discussion of the report conclusions.

### **Subsequent Activities and Additional Work Needed**

- 4.A A facility plan needs to be completed for the build-out of approved land uses in the Cold Springs Truckee Meadows Service Areas.
- 4.B A comprehensive water resource plan needs to be prepared for Cold Springs and portions of the Long Valley hydrographic basin to estimate the perennial yield for the water baseline.

### **Relevant Planning Documents**

- ECO:LOGIC, 2002, North Valleys Water Supply Comparison. Prepared for the RWPC.
- JBR Environmental Consulting and Montgomery Watson, 1997, Water Supply Alternatives Evaluation for the North Valleys. Prepared for the Washoe County Department of Comprehensive Planning.

## **5. Municipal Water Resources in Spanish Springs** (1995-2015 Regional Water Plan Issue)

### **Specific Issues and Linkages**

The Spanish Springs area has experienced rapid growth since publication of the 1995-2015 Regional Water Plan, both within the City of Sparks Sphere of Influence area and in the unincorporated area to the north.

The portion of the Spanish Springs hydrographic basin that lies within the City of Sparks Sphere of Influence area is served by TMWA from a combination of Truckee River water, Truckee Meadows groundwater and Spanish Springs groundwater pumped from TMWA wells. This portion of the hydrographic basin is managed in conjunction with TMWA's overall resource planning.

Many of the issues identified in the 1995-2015 Regional Water Plan were related to the demands that would be placed on water resources as a result of future growth in the unincorporated area of the hydrographic basin and the water quality impacts that were suspected to be occurring due to existing growth. Following are the key water supply issues and linkages identified in the 1995-2015 Regional Water Plan that affect the availability of future municipal water supplies in the unincorporated area of Spanish Springs:

- Over-allocation of groundwater resources in Spanish Springs resulted in a situation where cumulative groundwater pumping by all entities exceeded the perennial yield of groundwater resources.
- The potential exacerbation of groundwater deficits, as future land use changes, result in reduction of recharge occurring from surface water irrigation via the Orr Ditch.
- Importation of water from the Truckee Meadows was identified as a possible resource to supply the demands of future growth.

Wastewater and storm water linkages:

- Recharge of storm water as a possible method of supplementing groundwater resources
- The potential for future impacts to water resource availability due to nitrate contamination of groundwater. At the time of plan publication, the source of contamination had not been verified, but septic tanks were suspected.

#### **Action Taken / Alternatives Evaluated to Address the Issues**

A number of actions have been taken by the RWPC and other entities to manage water resources for long-term sustainability in the Spanish Springs Valley:

- The USGS developed a model of the Spanish Springs hydrographic basin detailing the sources and quantity of the groundwater resource.
- WCDWR entered into a wholesale agreement for importation of 3,000 af/yr of TMWA resources to serve future growth in the unincorporated area.
- WCDWR prepared a comprehensive water facility plan that identifies the water resources and infrastructure required to serve build-out of approved land uses in the unincorporated area.
- WCDWR has adopted policies requiring the dedication of water rights when new parcels are created via the parcel map process in an effort to better balance water

rights and water resources and enable future mitigation of possible water level declines.

- WCDWR has developed a multi-faceted plan for the management of nitrates in the aquifer, including conversion of septic tanks to the sewer system as funding becomes available and use of non-potable shallow groundwater for irrigation.
- The RWPC sponsored preparation of an Orr Ditch Recharge Study that includes a long-term water balance and management strategies for the Spanish Springs hydrographic basin.
- The City of Sparks has extended TMWRF effluent reuse infrastructure far into the valley, enabling the use of effluent to offset demands on the municipal water system.
- The RWPC has developed water policies that seek to ensure that new commitments against the groundwater resource do not exceed its sustainable yield.

### **Recommendations**

Extensive planning work has been accomplished for the Spanish Springs area since publication of the 1995-2015 Regional Water Plan. Following is a summary of the recommendations that have evolved out of the body of work completed to date:

- Implement conjunctive use of imported water and groundwater in the unincorporated area
- Integrate three separate WCDWR water systems into a single water system for operational flexibility and reliability
- Extend City of Sparks effluent infrastructure to the unincorporated area of Spanish Springs to offset potable water demands
- Implement phased conversion of areas with high densities of septic tanks to community sewer system for protection of groundwater quality
- Undertake further investigation of shallow groundwater extraction system to use poor quality groundwater as a water source for non-potable water demands

### **Subsequent Activities and Additional Work Needed**

The sources of water required to satisfy the demands of approved development in the Spanish Springs Valley have been identified and secured through the wholesale agreement between Washoe County and TMWA.

- 5.A There is the possibility that WCDWR could pursue development of an additional water supply to the area with the importation of water from its surface water holdings in Warm Springs. The use of this potential alternative water supply would necessitate the development of an estimate of the sustainable yield of

the resource and engineering analysis of the facilities required to convey the water to Spanish Springs.

New drinking water standards for arsenic that take affect in 2006 will likely apply to five of the nine WCDWR wells in Spanish Springs. Washoe County anticipates that early implementation of planned infrastructure transmission and well improvements will enable compliance with the new rule by diluting water from wells that exceed the arsenic standard with high quality well and surface water resources from other parts of the system.

Section 9.14 discusses wastewater issues in Spanish Springs. The final configuration of wastewater treatment and effluent disposal options selected for Spanish Springs will need to be considered with respect to the long-term water balance for the valley.

### **Relevant Planning Documents**

- US Geological Survey, 1997, Hydrogeology and Simulated Effects of Urban Development on Water Resources of Spanish Springs Valley, Washoe County, West-Central Nevada, Water Resources Investigations Report 96-4297.
- AMEC, 2000, Sparks Effluent Pipeline Extension. Prepared for City of Sparks.
- Washoe County Department of Water Resources, 2002, Spanish Springs Valley Nitrate Occurrence Facility Plan. Prepared for the Nevada Department of Environmental Protection.
- Washoe County Department of Water Resources, 2003, Spanish Springs Water Facility Plan.
- ECO:LOGIC, 2004, Orr Ditch Recharge Study. Prepared for RWPC.
- Truckee Meadows Water Authority, 2003, 2005–2025 Water Resource Plan.

## **6. Municipal Water Resources in the Lower Truckee River**

(1995-2015 Regional Water Plan Issue)

### **Specific Issues and Linkages**

Industrially zoned lands are concentrated in the Mustang and Patrick / Tracy areas. Existing wells are low volume producers, although there are three wells that show promise. Planning evaluations concluded that the use of existing wells has a lower overall cost than importation of water from Sparks, even with expected treatment requirements to meet drinking water standards.

Linkages: Joint water supply planning and facility sharing with Storey County may reduce overall costs and infrastructure requirements.

### **Action Taken / Alternatives Evaluated to Address the Issues**

Facility planning identified proposed industrial development along the lower Truckee River, which will require the construction of water supply and distribution facilities. Key issues include cost, and phasing of facilities and water rights.

### **Recommendations**

Mustang Area Water: Provide water supply improvements (existing wells) and distribution facilities to serve 20 parcels with 261 developable acres.

Tracy Area Water: Provide water supply improvements and distribution facilities serving three pressure zones, serving 10 parcels covering 891 developable acres.

### **Subsequent Activities and Additional Work Needed**

6.A Update to Water and Wastewater Corridor for East Truckee Corridor that includes analysis of the approved development potential within the Truckee Meadows Service Areas Boundary

6.B Coordination with Storey County regarding existing commitments and future potential demands for the entire Tracy Segment hydrographic basin

6.C RWPC development of a position statement regarding construction of surface water treatment facilities in the Lower Truckee River

### **Relevant Planning Documents**

- AGRA Infrastructure, 2000, Water and Wastewater Facility Plans on Industrial Zoned Lands Along the Lower Truckee River within Washoe County. Prepared for RWPC.

## **7. Integrated Water Resource Planning in Washoe Valley**

(Identified after 1995-2015 Regional Water Plan adoption)

### **Specific Issues and Linkages**

The 1995-2015 Regional Water Plan identified a number of water resource issues in Washoe Valley including:

- Poor groundwater quality due to high concentrations of fluoride, iron and manganese
- Nitrate contamination of groundwater in New Washoe City due to high concentrations of septic tanks
- Limited groundwater resources to support new development

Another issue in Little Washoe Lake, Ophir Creek, and Steamboat Creek is mercury in sediments. There are not currently any actions underway to address mercury in these areas, but it needs to be part of the issues considered in overall planning for this area.

### **Action Taken / Alternatives Evaluated to Address the Issues**

East Washoe Lake, an area with 1,174 septic tanks, was included in the study area for the RWPC Septic to Sewer Conversion study. The study evaluated options for sewerage in this area, including construction of a small regional treatment facility in Washoe Valley or conveying wastewater flows through the proposed Pleasant Valley interceptor to STMWRF.

The potential for importation of effluent from STMWRF was mentioned as a way to mitigate the loss of septic tank recharge if wastewater flows were sent out of the valley.

### **Recommendations**

The Septic to Sewer Conversion study did not identify a preferred recommendation for management of septic tanks in Washoe Valley.

### **Subsequent Activities and Additional Work Needed**

The ranches on the west side of the valley have been identified as desirable acquisitions as open space to preserve the rural character of the valley. As these ranches are acquired, the water rights associated with the land are sometimes sold. Additionally, market conditions may improve the potential to develop the creek resources in Washoe Valley as a municipal supply in the Truckee Meadows. The combination of ranch acquisition and sale of water rights may lead to a change in the character of the valley as the ranch lands are no longer irrigated.

While the 1995-2015 Regional Water Plan mentions a limitation on groundwater resources, the RWPC's Water Resource Baseline completed in 2003 (Appendix D) identifies a potential surplus of groundwater resources when comparing potential municipal demands against available water resources. More effort could be spent on describing the availability of resources in Washoe Valley.

There is the potential to use wastewater effluent as a replacement water resource to continue the irrigation of preserved ranch lands.

Additionally, as Washoe Lake storage rights are acquired for municipal purposes, there is the opportunity to manage the lake in a way that might reduce the risk of flooding to low-lying properties and help achieve Truckee River water quality objectives.

7.A There is a need to develop an integrated water resource management plan in response to these changing conditions to sustain and enhance the quality of life in Washoe Valley, as well as investigate opportunities to meet water supply, wastewater treatment and disposal, flood control, and water quality objectives for the region.

This future planning needs to be coordinated with regional land use planning policies and criteria, with particular thought given to the fact that Washoe Valley is outside of the Truckee Meadows Service Areas Boundary.

### **Relevant Planning Documents**

- AGRA Infrastructure, 2000, Strategies to Reduce the Cost of Converting Septic Tanks to Community Sewers in Washoe County (Septic to Sewer Conversion)

Study) Final Report. Prepared for the Washoe County Department of Water Resources and the RWPC

## **8. Reliability of Water Service in Response to Contamination Event on Truckee River or Tributaries** (1995-2015 Regional Water Plan Issue)

### **Specific Issues and Linkages**

In 2001, the RWPC performed a detailed analysis of the ability of TMWA to provide a reliable water supply to meet water demands over a seven-day period in the event of a surface water contamination event on the Truckee River. It is assumed that water conservation measures would be initiated by both TMWA and its wholesale water customers to reduce demands to the maximum extent possible during this period.

Linkages: TMWA groundwater production, drought and arsenic compliance planning.

### **Action Taken / Alternatives Evaluated to Address the Issues**

The analysis shows that, over the 20-year planning period, there will be a deficit ranging from 8–18 MGD in meeting this standard of reliability. Sixteen water supply projects were evaluated and ranked to meet this deficit. Of the sixteen projects, five are recommended for continued evaluation.

### **Recommendations**

The recommended projects include TMWA / County water system interties in the North Valleys, South Truckee Meadows, and Spanish Springs, use of the Hilton Pond as off-river raw water supply storage for the Glendale Water Treatment Plant and retrofit of the Wingfield Springs wells for use on an emergency basis.

### **Subsequent Activities and Additional Work Needed**

8.A Ongoing TMWA investigation of Hilton Pond alternative coordinated with planned Glendale Diversion replacement project

8.B TMWA consideration of emergency supply recommendations during their ongoing infrastructure and water resource planning

8.C Washoe County management strategies to eliminate or greatly reduce wholesale water demand in the event of a surface water contamination event

8.D Washoe County management strategies to deal with risk of tributary creek contamination for new South Truckee Meadows Water Treatment Facility

### **Relevant Planning Documents**

- ECO:LOGIC, 2002, Recommended Projects to Provide an Emergency Water Supply to the South Truckee Meadows. Prepared for RWPC.

## **9. Water Conservation**

(1995-2015 Regional Water Plan Issue)

### **Specific Issues and Linkages**

The 1995-2015 Regional Water Plan described the benefits of water conservation and characterized the status of water conservation efforts to date. There are some unique issues regarding water conservation in the TMWA system that affect the use of conserved water. A summary of conservation issues dealt with in the 1995-2015 Regional Water Plan include the following:

- At the time of writing of the conservation chapter in the 1995-2015 Regional Water Plan, only 12,734 of 56,760 Sierra Pacific services (now TMWA) were metered.
- The Preliminary Settlement Agreement (PSA) with the Tribe established certain requirements for metering of SPPCo services.
- Under existing regulatory and legal constraints, water that is not diverted from the Truckee River as a result of conservation is left in the river, stored upstream in reservoirs for use during droughts or for fish and wildlife purposes, or used to recharge groundwater. This conserved water is not available to supply additional growth.
- The 1995-2015 Regional Water Plan developed a “Base Case” conservation plan that included a suite of seven conservation measures to be implemented in the upcoming five-year timeframe. Conservation measures proposed included new building practices, showerhead retrofit, toilet retrofit, landscape efficiency conservation, good earth-keeping, increasing block water rates, and water meter retrofit for a total projected savings when fully implemented of approximately 18,000 af/yr at 2015.

### **Action Taken / Alternatives Evaluated to Address the Issues**

Conservation measures that have been implemented include:

- Conservation ordinances have been adopted by all three local governments.
- Evapotranspiration weather station and irrigation controller studies have been completed.
- TMWA and Washoe County have implemented tiered water rates.
- TMWA has accelerated the meter retrofit program.
- The toilet retrofit program is underway.
- TMWA has implemented a multi-faceted public awareness and education program.
- TMWA has been granted authority to enforce water-wasting regulations.

- Expansion of the effluent reuse system to offset demands on potable water supplies.

### **Recommendations**

Section 8.5 of Chapter 8 includes an extensive listing of additional conservation measures that could be implemented for additional water savings. The water conservation goals identified in the 1995-2015 Regional Water Plan are still the goals of the Base Case conservation plan.

### **Subsequent Activities and Additional Work Needed**

9.A Continued implementation of conservation measures to achieve Base Case conservation goals

9.B Section 8.7 of Chapter 8 includes an extensive listing of additional work that could be undertaken in an effort to expand the suite of available conservation measures

### **Relevant Planning Documents**

- Carlos, W. J., Miller, W., Devitt, D. A., Fernandez, G., 2004, Evapotranspiration Satellite Irrigation Controller Study.
- Volt VIEWtech, 2003, Ultra Low Flush Toilet Rebate Program Final Report. Prepared for the RWPC.

## **10. Watershed Management and Protection**

(1995-2015 Regional Water Plan Issue)

### **Specific Issues and Linkages**

The need for watershed management and wellhead protection programs was identified as a priority in the 1995-2015 Regional Water Plan. At the time of plan publication, primary concerns were related to perchloroethylene (PCE) contamination of groundwater, nitrate contamination of groundwater, and total dissolved solids loading to the Truckee River. Since that time, additional issues that have been identified include: river and stream bank erosion, the need to reduce non-point sources of pollution, the need to implement programs to comply with the regional NPDES Storm Water Discharge Permit, and the need to protect and/or enhance groundwater recharge. Chapter 5 includes an extensive discussion of watershed management and protection efforts underway in southern Washoe County.

### **Action Taken / Alternatives Evaluated to Address the Issues**

Accomplishments to date include:

- Creation of Truckee Meadows Storm Water Permit Coordinating Committee
- Development of a Regional Storm Water Quality Management Program to comply with terms of the regional NPDES Storm Water Discharge Permit issued in 2000,

which authorizes discharge of municipal storm water runoff to the Truckee River, Silver Lake Playa, Swan Lake Playa and Whites Lake Playa

- Completion of a comprehensive assessment of the condition and water quality of tributaries to the Truckee River
- Completion and RWPC acceptance of a watershed management and protection plan for tributaries to the Truckee River, as a guidance document
- Completion of a Construction Site Best Management Practices Handbook
- Progress towards completion of a Best Management Practices Handbook to address on-site storm water management practices
- Progress towards completion of a Low Impact Development Manual

### **Recommendations**

Many of the recommendations of the Watershed Management and Protection strategy have been implemented and are not reiterated here. Recommendations that have yet to be implemented include:

- Inclusion of the public in the watershed protection effort
- Development of educational programs
- Prioritization of restoration needs and pursuit of funding for implementation of restoration activities
- Investigation of Low Impact Development techniques that are appropriate to this region with subsequent integration into local government development codes

The Regional Storm Water Quality Management Program includes nine elements, including: intergovernmental coordination, public outreach, municipal operations, storm water discharge monitoring, land use planning, structural controls, construction site discharge, illicit discharge detection and elimination, and industrial discharge regulation.

### **Subsequent Activities and Additional Work Needed**

Additional work that may be undertaken by various entities in the future includes:

10.A Water purveyor completion of wellhead protection plans

10.B Further evaluation of recharge areas to prioritize and delineate the areas that have the highest recharge value

10.C Completion of Low Impact Development Manual

### **Relevant Planning Documents**

- Kennedy/Jenks, Broadbent, ADGIS, 2001, Southern Washoe County Groundwater Recharge Analysis. Prepared for the RWPC.
- Kennedy/Jenks and AMEC, 2001, Truckee Meadows Storm Water Quality Management Program. Prepared for Truckee Meadows Interlocal Storm Water Committee and Nevada Division of Environmental Protection.
- Kennedy/Jenks, to be completed in 2004. Truckee Meadows Structural Controls Design Manual. Prepared for the Truckee Meadows Interlocal Storm water Committee.
- Washoe County Department of Water Resources, 2002, Watershed Assessment for Tributaries to the Truckee River. Prepared for the RWPC.
- Washoe County Department of Water Resources, University of Nevada Cooperative Extension, Washoe Storey Conservation District, 2002, Watershed Management and Protection Plan for Tributaries to the Truckee River. Prepared for the RWPC.

## **11. Groundwater Remediation in Central Truckee Meadows**

(1995-2015 Regional Water Plan Issue)

### **Specific Issues and Linkages**

PCE in Central Truckee Meadows: In 1987, water quality tests on several of Sierra Pacific's (now TMWA's) production wells revealed the presence of PCE.

In 1995, the state legislature passed Senate Bill 489 requiring the formation of a remediation district once a groundwater contamination problem is certified by NDEP and/or the Washoe County District Health Department. Both agencies provided letters of certification in August of that year.

Central Truckee Meadows Remediation District (CTMRD) studies indicate that PCE contamination is widespread, covering more than 16-square miles to a depth greater than 350 feet. Eleven production wells are currently affected.

Hydrocarbon Fuel and Organic Solvents in Central Truckee Meadows: 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.

PCE in Lemmon Valley: Groundwater underlying the West Lemmon Valley hydrographic basin, near the Reno-Stead Airport, is also affected by PCE contamination. This PCE plume, identified in 1994, is smaller than the one in the central Truckee Meadows. The contaminant source is connected with US Air Force activities at the Stead Air Force Base, which was active during the 1940s and 1950s.

### **Action Taken / Alternatives Evaluated to Address the Issues**

PCE in Central Truckee Meadows: In 1997, the Nevada Revised Statute (540A) was amended to provide a funding mechanism to support groundwater remediation activities. The CTMRD was formed later that year.

District funding has paid for three air-stripping treatment facilities that remove PCE from five TMWA wells. Additionally, funding was used to develop a Remediation Plan (RMP), which was approved by the Board of County Commissioners and NDEP in 2003.

Hydrocarbon Fuel and Organic Solvents in Central Truckee Meadows: 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.

PCE in Lemmon Valley: The potential exists for this contamination to migrate to a TMWA production well; however, TMWA is successfully controlling plume migration by injecting fresh water to form a hydraulic barrier. Investigations and the development of remediation plans are ongoing under the direction and oversight of NDEP.

### **Recommendations**

PCE in Central Truckee Meadows: The three primary components of the RMP are:

- Clean Drinking Water Activities – focused on the removal of PCE from the public drinking water supply to the benefit of water users within the TMWA wholesale and retail service area
  
- Remedial Activities – focused on the identification, characterization, evaluation and remediation of sources of PCE, and the related monitoring programs requisite to all remedial actions to the benefit of residential and commercial property owners located above the areas containing or suspected of containing PCE contamination
  
- Program Outreach, Education, and Administration Activities – focused on the management of resources to optimize the remedial activities including outreach and educational tasks, and project administration and fund management to the benefit of water users and property owners

### **Subsequent Activities and Additional Work Needed**

PCE in Central Truckee Meadows: The RMP was adopted by Washoe County and approved by NDEP.

Ongoing CTMRD activities include:

- Implementation of the Remediation Management Plan through:
  - Investigation of potential ongoing PCE discharges
  
  - Working with NDEP and the Cities of Reno and Sparks to revise sewer discharge ordinances and mitigate potential groundwater impacts associated with defects in the sewer lines
  
  - Working with NDEP to define a protocol whereby PCE hotspots and sources can be eliminated prior to impacting groundwater

- Initiation of the Groundwater Monitoring Plan to better define the magnitude and extent of groundwater PCE contamination and support an evaluation of the behavior of PCE contaminated groundwater in response to various groundwater pumping and injection scenarios (early 2005)
  - Preparation of an annual report of 2003 CTMRD activities for presentation to the Board and the community (spring 2004)
  - Planned update of the CTMRD website (spring 2004)  
([www.co.washoe.nv.us/remediation](http://www.co.washoe.nv.us/remediation))
- Investigation of the source and nature of PCE impacts to the Sparks and Poplar II water wells (to be completed in mid to late 2004)

Hydrocarbon Fuel and Organic Solvents in Central Truckee Meadows:  
Recommendations yet to be developed

PCE in Lemmon Valley: Recommendations yet to be developed

#### **Relevant Planning Documents**

- Camp Dresser and McKee, Bouvette Consulting and Washoe County Department of Water Resources, 2002, Central Truckee Meadows Remediation District, Remediation Management Plan, prepared for the Central Truckee Meadows Remediation District.

## **12. Groundwater Resource Development and Impacts to Domestic Wells**

(Identified after 1995-2015 Regional Water Plan adoption)

#### **Specific Issues and Linkages**

- Yield estimates for groundwater basins in Washoe County within the jurisdictional boundary of the RWPC are not of sufficient detail to allow exacting, sub-basin scale management of groundwater production.
- Existing domestic wells are failing in certain portions of the region because of declining water table elevations and with continued development, water table declines are projected to continue in some areas.
- Restoring water supply to affected homes is costly.
- Uncertainty and disagreement exist regarding responsibility for restoring water supply in areas where municipal production wells co-exist with domestic wells.
- Linkages – Conjunctive use of surface and groundwater resources in South Truckee Meadows (see Section 9.2)

**Action Taken / Alternatives Evaluated to Address the Issues**

- Golden Valley Recharge Project to enhance water resources available to domestic wells
- South Truckee Meadows Facility Plan for conjunctive use of surface and groundwater resources with limitation on overall groundwater pumping from municipal wells that considers impacts to domestic wells
- RWPC Groundwater Task Force formed in November 2001
- Groundwater Task Force Final Report completed in June 2003

**Recommendations**

The Groundwater Task Force Final Report contained a number of recommendations, including:

Creation of a Washoe County Groundwater Program with two elements: Groundwater Resource Data Center. The Groundwater Resource Data Center would provide monitoring of groundwater production, water levels, water quality sampling, well mapping, aquifer characterization, educational projects, annual reporting and other data dissemination.

Well Mitigation Program: The Well Mitigation Program would address the causes and responsibilities for impacts to domestic wells and the need for mitigation measures. The program would provide a process to determine the cause or causes of a domestic well impact, eligibility for mitigation and a funding mechanism that is equitable among the funding sources.

District Board of Health adoption of new water quality and well yield standards and testing requirements for newly constructed domestic wells, some rehabilitated domestic wells, and upon sale of residential properties served by domestic wells.

**Subsequent Activities and Additional Work Needed**

In August 2003 the Board accepted the Final Report of the Groundwater Task Force with the following actions approved:

12.A Creation of a Groundwater Resources Data Center

12.B Implementation of a Well Mitigation Program

**Relevant Planning Documents**

- ECO:LOGIC, 2002, South Truckee Meadows Facility Plan. Prepared for the RWPC, Washoe County Department of Water Resources, and South Truckee Meadows General Improvement District.

- RWPC Groundwater Task Force, 2003, Final Report to the RWPC by the Groundwater Task Force.
- Board of County Commissioners, Washoe County, Nevada, Minutes of August 26, 2003, meeting.

### **13. Efficient Use of Water Rights**

(Identified after 1995-2015 Regional Water Plan adoption)

#### **Specific Issues and Linkages**

The 1995-2015 Regional Water Plan identifies Truckee River and tributary water rights necessary to implement TROA. There are other demands for these water rights such as in-stream flows for water quality and return flow credit water for the non-consumptive use portion of Truckee River water that is not returned to the river. The various demands for water rights are discussed in detail in Section 6.6.1.

A water rights balance for six potential long-range water rights demand scenarios is presented in Chapter 6. In all six scenarios there are sufficient Truckee River and tributary water rights to meet the anticipated demands, subject to the assumption that, as the availability of water rights decreases, the price per acre-foot will increase, with the result being a greater incentive to sell water rights that have remained in agricultural use. Additionally, a higher cost per acre-foot will provide the incentive to seek out and secure water rights that require more effort to obtain, such as those that are associated with public rights of way.

Linkages:

- Truckee River agreements (Chapter 7: Constraints)
- Truckee River water quality standards and potential TMWRF discharge permit modifications (Chapter 3: Background on Water Quality and Wastewater)
- Yield of Tributary water rights and water rights dedication requirements under TROA (Chapter 6: Projections of Population, Water Demand and Wastewater Flow, Section 6.6)

#### **Action Taken / Alternatives Evaluated to Address the Issues**

In recognition of the concern over the availability of water rights to meet future demands, the RWPC completed a study of available Truckee River and tributary water rights (Stantec, 2001). This study is used in Chapter 6 as the basis of determining the availability of main stem Truckee River, Dog Creek, Evans Creek, and Hunter Creek water rights to meet future demands.

The remainder of water rights included in the Chapter 6 analysis, Thomas Creek, Whites Creek, Steamboat Creek and Galena Creek, were studied as part of the RWPC's South Truckee Meadows Facility Plan (ECO:LOGIC, 2002).

### **Recommendations**

The key recommendations of the 2001 water rights study include:

- Develop an aggressive program to recover and convert inactive Truckee River water rights to municipal use
- Compare end-point water demand projections to upcoming planning area growth projections and resolve any major discrepancies in consideration of geographic constraints
- Compare end-point water demand projections to forthcoming TMWA growth and water demand projections
- Compare the water demand and water right recovery estimates to future conditions imposed by TROA
- Update the Water Right Status and Demand Projections once every 5 years, or as new data becomes available
- Support efforts to convert tributary water rights into usable municipal water resources, or to be used as return flow credits to the Truckee River
- Support efforts to develop alternative sources of water supply to the North Valleys

### **Subsequent Activities and Additional Work Needed**

The RWPC, TMWA, Washoe County, and the Cities of Reno and Sparks have undertaken efforts to respond to all of the recommendations contained in the 2001 water rights study. Specific examples include the Water Resources Baseline (RWPC, 2003), the water rights balance in Chapter 6, the tributary water rights dedication policy under analysis and development by Washoe County, the TROA Environmental Impact Statement, and extensive effluent management planning for TMWRF.

Additional work that needs to be completed includes:

- 13.A Development and implementation of water rights recovery program to convert inactive Truckee River water rights to municipal use
- 13.B Continued analysis and development of non-structural measures to improve Truckee River water quality, enable increased TMWRF discharges, and ensure the future sustainability of the river
- 13.C Close coordination between water purveyors and wastewater treatment providers to ensure that Truckee River and tributary water rights are being utilized in a manner that maximizes the use of the region's water resources for multiple purposes

### **Relevant Planning Documents**

- Stantec Consulting, 2001, Analysis of Available Decreed Truckee River Water Rights and Projections of Future Demand. Prepared for the RWPC.

- ECO:LOGIC, 2002, South Truckee Meadows Facility Plan, Phase II, Technical Memorandum No. 2: Tributary Water Availability Analysis. Prepared for the RWPC, Washoe County Department of Water Resources, and South Truckee Meadows General Improvement District.
- ECO:LOGIC, 2003, Water Resource Baseline. Prepared for the RWPC.

#### **14. Water Resource Linkages to Land Use Planning** (Identified after 1995-2015 Regional Water Plan adoption)

##### **Specific Issues and Linkages**

The importance of integrating water resource management with land use planning has come to light in several forums since adoption of the 1995-2015 Regional Water Plan. Rapid growth in the Truckee Meadows urban area and outlying valleys has led to questions about the sustainability of existing and potential development within the region's limited pool of natural resources. Specific issues that have arisen include:

- The availability and cost of water resources to supply the demands of existing and future potential development
- The importance of flood plain management in reducing the risk of future flooding within the community
- The importance of maintaining natural recharge to sustain groundwater resources
- The potential of the region to employ the use of "green infrastructure" and Low Impact Development techniques to enhance regional aesthetics and quality of life while preserving or enhancing natural resources

Linkages – Septic Tanks (Section 9.18 and Chapter 3), Watershed Management and Protection (Section 9.19 and Chapter 5), Flood Plain Management (Section 9.25 and Chapter 4), Water Conservation (Chapter 8)

##### **Action Taken / Alternatives Evaluated to Address the Issues**

Following are some of the activities that have been undertaken by various entities in an effort to integrate water resource management into land use planning and development processes:

- Washoe County adoption of a new development code section entitled "Significant Hydrologic Resources". The model for the code section was developed by the RWPC Stream Advisory Committee.
- Adoption by the Regional Planning Governing Board of the 2002 Truckee Meadows Regional Plan, which includes the following water resource policies and criteria:

- Establishment of the Truckee Meadows Service Areas boundary, the boundary within which municipal services are to be provided
  - Identification of Development Constraints Areas
  - Inclusion of Planning Principle No. 1: “Regional Form and Development Patterns” and relevant policies under Goal 1.2 for the provision of water resource infrastructure to support implementation of the Regional Plan
  - Inclusion of Planning Principle No. 2: “Management of the Region’s Natural Resources” in the Regional Plan
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- RWPC development and adoption of Interim Water Policies in response to the requirement of the October 2002 Regional Plan Settlement Agreement. The policies pertain to water resources and land use, water resource commitments, groundwater recharge, and flood storage mitigation in the Cooperative Planning Areas
  - Inclusion of a land use planning element in the Regional Storm Water Quality Management Program
  - Inclusion of a land use planning element in the RWPC Watershed Management and Protection Plan
  - RWPC completion and acceptance of a Regional Flood Plain Management Strategy
  - RWPC development of a Flood Storage Mitigation Plan for critical flood zones in the Truckee Meadows
  - RWPC development of tools such as the Water Resource Baseline and Southern Washoe County Groundwater Recharge Study that can be used by local government staff and water purveyors when performing conformance reviews
  - Establishment of a local branch of the Non-Point Source Education for Municipal Officials (NEMO) organization with representation from local and regional planning entities
  - Truckee Meadows Regional Planning Governing Board commissioning of a study on the Truckee River watershed managing entities and programs that resulted in recommendations for Regional Planning to:
    - Facilitate the development and integration of specific resource management guidance at the regional level for inclusion in local government development codes. Specific examples include groundwater recharge protection and flood plain management techniques.

- Facilitate the development of a mechanism to measure progress towards meeting regional resource management goals as they relate to land use planning and development
- Facilitate the development of a closer working relationship between the RWPC and Regional Planning Commission

### **Recommendations**

There are a number of recommendations contained in the Watershed Management and Protection Plan and Regional Storm Water Quality Management Program (Section 9.19 and Chapter 5), Flood Plain Management Strategy (Section 9.25 and Chapter 4), Flood Storage Mitigation Plan for Zones 1 & 2 (Section 9.25 and Chapter 4), Interim Water Policies and Truckee River Watershed Management Entities and Programs relating to the need to coordinate land use planning and water resource management.

### **Subsequent Activities and Additional Work Needed**

- 14.A Review areas within the Truckee Meadows Service Areas (TMSA) Boundary for gaps in facility planning and develop a plan to respond to changes in land use and the TMSA that affect current facility plans
- 14.B Coordinate with other entities on the development of a GIS parcel based tool that can be used to estimate potential water demands and wastewater flows based on approved land use. Identify an entity or entities that would assume responsibility for maintaining the water resource element of the GIS tool.
- 14.C Develop guidelines and checklists to aid in the development and review of facility plans for conformance with regional water planning policies

### **Relevant Planning Documents**

- Regional Plan Settlement Agreement, October 17, 2002.
- ECO:LOGIC, 2003, Water Resource Baseline. Prepared for the RWPC.
- ECO:LOGIC, 2003, Truckee River Watershed Management Entities and Programs. Prepared for the Truckee Meadows Regional Planning Agency.
- RWPC, 2003, Interim Water Policies and Criteria.
- RWPC Flood Plain Management Subcommittee, 2003, RWPC Flood Plain Management Strategy. Prepared for the RWPC.
- Washoe County Department of Water Resources, University of Nevada Cooperative Extension, Washoe Storey Conservation District, 2002, Watershed Management and Protection Plan for Tributaries to the Truckee River. Prepared for the RWPC.

- Truckee Meadows Regional Planning Agency, 2002, 2002 Truckee Meadows Regional Plan.
- Kennedy/Jenks Consultants, Broadbent, ADGIS, 2001, Southern Washoe County Groundwater Recharge Analysis. Prepared for the RWPC.
- Kennedy/Jenks Consultants and AMEC, 2001, Truckee Meadows Storm Water Quality Management Program. Prepared for Truckee Meadows Storm Water Permit Coordinating Committee and Nevada Division of Environmental Protection.