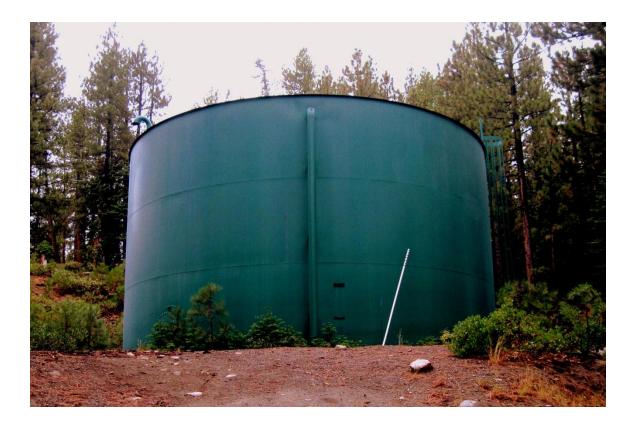
# Water Conservation Plan for Rosemount Water Company



By Scott Schoenfeld P.E.

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# Water Conservation Plan

#### **Background/System Information**

The **Rosemount Water Co.** public water system (PWS NV0000767) serves customers within the Rosemount Service area which is located in Washoe County. The total service area is approximately two square miles. The estimated population served (in 2010) is **55.** Residential customers are all metered and meters will be required to be installed on all new residential services. There are two commercial services which are both metered, and any new commercial services with be required to install meters. Residential customers are billed on a base plus water usage rate basis; commercial customers are also billed on a base plus water usage basis.

The system is located in Washoe County, adjacent to State Route 431. Water is supplied from natural springs and is pumped to the distribution system and an above ground storage tank using two centrifugal pumps equipped with constant speed drive motors. Above-ground storage consists of a 250,000 gallon welded steel reservoir. Full-time disinfection is practiced with the use of a chlorinating pump and a thirty gallon mixing tank. Wastewater collected from the area is managed through individual septic systems for all existing residential and commercial customers. With the exception of the three residential lots which currently exist within Sunridge Estates, new residential and commercial services will be required to hook up to the sanitary sewer main located on the north side of the Mount Rose Highway, which will transport the sewage to the South Truckee Meadow Waste Water Reclamation Facility, where 100% of the effluent is recycled in a separate distribution system. There is no reclaimed water within the Rosemount Water Company service area.

This is the original Conservation Plan for the system. The plan is to be reviewed at five year intervals, with modifications to meet changing system conditions.

#### Water Rights

Rosemount Water Company currently includes the following permits:

62628 - 28.23 Acre Feet per year 62629 - 56.01 Acre Feet per year

#### **Plan Elements**

The plan describes the drinking water conservation and drought management efforts in the Rosemount Water Company Service area, along with implementation schedules. The plan components conform to Nevada regulations as outlined by the Nevada Department of Conservation and Natural Resource, Division of Water Resources. Plan elements address the following areas:

- Increase public awareness of the need to conserve water
- Encourage reduction in lawn sizes and use of arid and semiarid plants
- Identify specific water conservation measures
- Propose plan to identify and reduce leakage
- Increase reuse of effluent where applicable
- Provide a drought contingency plan
- Implementation schedule
- Plan effectiveness metrics

For each conservation measure specified in the plan or join plan, an estimate of the amount of water that will be conserved each year as a result of the adoption of the plan or joint plan, stated in terms of gallons of water per person per day (gpcpd).

• Variable pricing analysis

The feasibility of charging variable rates for the use of water to encourage the conservation of water.

• Water savings in gallons/person/day

How the rates that are proposed to be charged for the use of water in the plan or joint plan will maximize water conservation, including, without limitation, an estimate of the manner in which the rates will affect consumption of water (expressed in terms of gpcpd).

• How will rate structure impact conservation

How the rates that are proposed to be charged for the use of water in the plan or joint plan will maximize water conservation, including, without limitation, an estimate of the manner in which rates will affect consumption of water (expressed in terms of gpcpd).

• Incentives to encourage water conservation

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- Incentives to retrofit plumbing fixtures
- Incentives for water conserving landscaping

## **Public Awareness**

The Rosemount Water Company efforts to enhance public awareness of the need to conserve water including the following:

- New customers are provided with literature on conservation, or are directed to pertinent internet sites when they open a water service account. Examples include materials from, or links to the Turf Institute, American Waterworks Association, and USDA Agricultural Extension.
- Periodically, educational literature or web links are included in water bills. Educational materials include tips on Conservation landscaping, 5 basic ways to conserving water, 25 things you can do to prevent water waste and water leak loss calculators.
- We participate in Earth Day activities or other public outreach opportunities to raise public awareness of water use.
- Incentives for the customers of Rosemount Water Company to observe water conservation practices are demonstrated through educational pamphlets, flyers and bill stuffers.

## Lawn sizes and use of arid and semiarid plants

The Rosemount Water Company encourages the public to practice scientific turf management, makes literature and resources such as the Turf Institute, available to customers. Local nurseries are encouraged to promote the use of drip irrigation and climate-appropriate plant materials.

## **Specific water conservation measures**

- Washoe County has adopted a Plumbing-Water Conservation Ordinance (copy enclosed). The Ordinance applies to structures which are renovated as well as all new construction.
  - Copies of the Plumbing Water Conservation Ordinance are furnished to local suppliers and contractors.

- The Washoe County Building Department checks new construction, renovation, and expansions within Washoe County to insure compliance with the ordinance.
- All meters 2" and larger are tested annually, and replaced if under registering by more than 5%
- All residential meters are tested every ten years, and replaced if registering by more than 5%
- The plumbing code, which specified low-flow fixtures, is enforced.
- The Washoe County code includes a provision that water service can be shut off for wasting water. This is enforced by visual inspection for runoff, following-up on citizen reports, and review of use at metered services. Typically a verbal or written warning is issued, followed by a shut-off when cooperation is not forthcoming.
- All commercial customers are metered and pay a metered water rate charged based on usage (water rate charges are included)
- A residential metering program has been implemented, requiring water meters to be installed on all new construction and anytime a property changes ownership. These meters are read monthly to obtain usage information and are used for billing purposes.
- Incentives for the customers of Rosemount's to retrofit plumbing fixtures are demonstrated through educational pamphlets, flyers and bill stuffers.

## Plan to identify and reduce leakage

- Rosemount Water Company will be installing a master meter during the summer of 2011, to help determine water loss and potential leakage
- Monthly, we compare current to historical same-month and previous month production. When production increases unexpectedly, we will contact the homeowner initiate a leak survey.

• It is our policy to repair leaks in a timely manner. All large leaks are repaired immediately and small leaks (less than 1 gallon per minute) within 5 days.

#### **Reuse of effluent**

Existing customers are currently on septic systems and the existing streets do not include a sanitary sewer lines. The three existing undeveloped home sites within the Sunridge subdivision will be on septic systems, however, future development will be required to tie into the Washoe County sanitary sewer main. These future customers' sewage will be treated by Washoe County, with 100% reuse for agricultural and landscaping purposes within the South Truckee Meadows area. However, there are no plans in place to reuse effluent within the service area.

#### **Drought Contingency Plan**

Nevada is an arid state and Washoe County is continuing to grow and water requirements are increasing. The area is subject to drought cycles; therefore, it is necessary to have a drought contingency plan. The objective of our plan is to manage the available resources to insure continued supply of potable water during periods of drought. We monitor flow of our springs and record the information.

If the Rosemount Water Company finds that a water scarcity condition exists or is likely to exist and has proclaimed the existence of a drought or emergency condition, it shall also declare an appropriate drought or emergency stage for its service area which may be Stage 1, Stage 2, Stage 3, or Stage 4, described as follows:

#### **State 1 Drought or Emergency**

- 1. Water from the Rosemount water system which is allowed to pool, pond, or run-off of applied areas is considered a waste of water and as such is not permitted.
- 2. Leaks occurring on the customer side of each meter in the Rosemount water system are considered a waste of water and as such are not permitted.
- 3. Water from the Rosemount water system which runs down the street due

Rosemount Water Company | Water Conservation Plan

to excessive watering or poorly maintained sprinklers is considered a waste of water and as such, is not permitted.

4. During a Stage 1 Drought or Emergency, lawn watering, including landscaping and the watering of the garden, will <u>NOT</u> be permitted between the hours of 1:00 pm and 5:00 pm

## Stage 2 Drought or Emergency

- 1. Water from the Rosemount water system which is allowed to pool, pond, or run-off of applied areas is considered a waste of water and as such is not permitted.
- 2. Leaks occurring on the customer side of each meter in the Rosemount water system are considered a waste of water and as such are not permitted.
- 3. No hard surfaces including sidewalks, driveways, parking areas, or decks may be washed or hosed down with water supplied through the Rosemount potable water system unless required by health and safety requirements.
- 4. No washing of vehicles with hoses is permitted with water supplied through the Rosemount potable water system, except with hoses equipped with an automatic shut off device.
- 5. Water used for watering vegetation, including lawns, landscaping, and gardens is limited as follows:
  - Residences with even numbered addresses: Monday, Wednesday & Saturday;
  - Residences with odd numbered addresses: Tuesday, Thursday & Sunday;
  - c. Commercial and Industrial Customers: Tuesday, Friday and Sunday
  - d. All watering of laws, landscaping and gardens is prohibited between the hours of 1:00 pm and 5:00 pm
- 6. No use of water for and decorative purposes is permitted.

## Stage 3 Drought or Emergency

- 1. Water from the Rosemount water system which is allowed to pool, pond, or run-off of applied areas is considered a waste of water and as such is not permitted.
- 2. Leaks occurring on the customer side of each meter in Rosemount water system are considered a waste of water and as such are not permitted.

- 3. No hard surfaces including sidewalks, driveways, parking areas, or decks may be washed or hosed down with water supplied through Rosemount potable water system unless required by health and safety requirements.
- 4. No washing of vehicles with hoses is permitted with the Rosemount water supplied through the Rosemount potable water system, except with hoses equipped with an automatic shut off device.
- 5. Water used for watering vegetation, including lawns, landscaping, and gardens is limited as follows:
  - a. Residences with even numbered addresses: Wednesday & Saturday
  - b. Residences with odd numbered addresses: Tuesday & Sunday
  - c. Commercial and Industrial Customers: Monday & Thursday
  - d. All watering of lawns, landscaping and gardens is prohibited between the hours of 1:00pm and 5:00pm.
- 6. No use of water for a decorative purpose is permitted.

# Stage 4 Drought or Emergency

- 1. Water from the Rosemount water system, which is allowed to pool, pond, or run-off of applied areas is considered a waste of water and as such is not permitted.
- 2. Leaks occurring on the customer side of each meter in the Rosemount water system are considered a waste of water and as such are not permitted.
- 3. No hard surfaces including sidewalks, driveways, parking areas, or decks may be washed or hosed down with water supplied through the Rosemount potable water system, unless required by health and safety requirements.
- 4. No washing of vehicles with hoses is permitted with the Rosemount water supplied through the Rosemount potable water system, except with hoses equipped with an automatic shut off device.
- 5. Water used for watering vegetation, including lawns, landscaping, and gardens is limited as follows:
  - a. No watering from November through February
  - b. Watering will only be allowed one day per week during March, April & May
  - c. Watering will be allowed two days per week from June 1<sup>st</sup> through August 15<sup>th</sup>.
  - d. Residences with even numbered addresses: Wednesday &

Saturday

- e. Residence with odd numbered addresses: Tuesday & Sunday
- f. Commercial and Industrial Customers: Monday & Thursday
- g. One day per week August 16<sup>th</sup> through September;
- h. All watering of lawns, landscaping and gardens is prohibited between the hours of 1:00pm and 5:00pm
- 6. No use of water for and decorative purpose is permitted.
- 7. During a Stage 4 Drought or Emergency, the planting or installing of new lawns is prohibited from July through September.

# **Implementation Schedule**

The plan elements listed above will go into effect in January of 2011. The plan is to be reviewed every five years, and updated as system needs change.

100% of residential services are now metered. Residential meters in place are being read.

# Plan Effectiveness Metrics

Historical water sales will be compared to estimated population each year to determine the gallons per capita per day (gpcpd) consumption. For 2009, Rosemount Water Company sold 2,026,000 gallons of water for residential uses and 413,000 gallons of water for commercial uses. The gross production of residential sales, divided by the estimated population, divided by 365 days is 101 gpcpd. When average annual consumption is significantly greater than 200 gpcpd, plan revision will be considered, to include additional conservation measures. At the present time, gross sales, less commercial sales, provides a gross gpcpd estimate. The same calculation applied to winter sales, provides an estimate of non-irrigation household use. More accurate determination of water loss and conservation components will become available as residential metering nears completion.

When a plan element is activated, such as mailing literature or declaring a drought stage, production in terms of gpcpd will be compared to same month historical data to estimate effectiveness. It is estimated that **metering** alone is the major driver of conservation, by raising awareness of individual account use.

# Variable pricing analysis

The present residential and commercial water rate structure is a base fee plus commodity charge for water used. Rosemount Water Company is regulated by the Public Utility Commission of the State of Nevada (PUC), so rate changes are subject to review and approval of the PUC. There is currently a bill within the State Legislature, which would permit small water companies to increase the rates on an annual basis based on some consumer price increase. This legislature is not currently in effect. The feasibility of charging variable rates for the use of water to encourage conservation of water may also be considered in future rate cases.

## Water savings in gallons/person/day

The current water usage of Rosemount Water Company is 101 gpcpd, which is 101% of the national average of approximately 100 gpcpd for residential users. Rosemount will continue to monitor the water usage of it's population and water use regulations will be amended as needed.

#### Rate structure impact on water conservation

At this time, Rosemount does not anticipate any further water conservation in terms of gpcpd due to rate structure alterations. Rosemount will continue to monitor the gpcpd of it's customers and will re-visit this issue at each rate modification.

# **APPENDIX A – CONSERVATION MEASURES**

Conservation measures are divided into two types: (1) Hardware/Equipment and (2)Behavioral/Managerial. Each of these is subdivided into five categories of application: (1)Residential, (2) Landscape, (3) Commercial, and Institutional (ICL), (4) Agricultural, and (5) Purveyor.

The following conservation measures will be classified first by application then by type.

#### A.1 RESIDENTIAL CONSERVATION MEASURES

#### A.1.1 Behavioral Measures

**A.1.1.1 Residential Water Audits:** Perform self-audits to determine potential conservation opportunities. The following elements should be part of an effective audit:

- Estimation of use for all fixtures and appliances
- Check for repairs and leaks
- Evaluation of landscape (See "Landscape Conservation Measures")
- Evaluation of outdoor water use

#### A.1.2 Hardware/Equipment Measures

The following is a list of devices/practices that will reduce water consumption in the home.

Measure	Description
Bathroom/Kitchen Fixtures	
Low-flow toilets	1.6 gallons per flush
Toilet retrofit devices	Bladders (bags), dams, early close flappers, other hardware and adjustments
Toilet Leak repairs	Includes detection (dye tabs) and replacement of worn parts
Low-volume shower heads	2.5 gallons per minute at 80 psi
Showerhead retrofit devices	Includes temporary cutoff valves and restrictors
Low-volume faucets	2.5 gallons per minute at 80 psi
Faucet retrofit devices	Includes aerators, activation sensors, self-closing meter valves
Faucet maintenance	Includes washer replacement, repacking, tightening and cleaning aerators
Water pressure reduction	Only needed if house pressure exceeds what's required
High Efficiency Appliances	
Clothes washers	27 gallons per load
Dish washer	4.5 gallons per load

# A.2 LANDSCAPE CONSERVATION MEASURES

### A.2.1 Behavioral Measures

#### A.2.1.1 Landscape Water Audits

Landscape water audits will be conducted on high-volume irrigation users. A residential landscape audit should take no more than an hour. Larger (high-volume) users could take substantially longer. The following elements should be part of an effective audit:

- Purpose of the audit
- Estimation of outdoor use based on meter records
- Check for repairs and leaks
- Evaluation of landscape (size, soil, amount of turf, types of plants)
- Evaluation of irrigation system (Timers, Use of drip, Precipitation amounts)
- Efficiency recommendations
- Educate customers using available fliers

#### A.2.1.2 Xeriscape<sup>™</sup>

Xeriscape is a method of landscaping that employs low-water use plants, turf, ground covers, shrubs and trees. It includes careful planning, soil analysis, and irrigation system design. A list of native plants can be found in Appendix D.

#### A.2.1.3 Hardware/Equipment Measures

Landscape hardware measures consist of two basic groups (1) Landscape materials and (2) irrigation equipment. The following is a list of landscape materials and irrigation equipment and how they should be used to support water conservation principles.

Measure	Description
Landscape Materials	
Trees, plants and grass	Should be well suited to climate and altitude and be drought tolerant
Organic Mulch	Grass clippings, leaves, wood chips, bark, pine needles. Organic Mulches help to retain soil moisture and keep ground cool around plants
Inorganic Mulch	Boulders, gravel, pavers, decomposed granite, and stepping stones. Inorganic mulches are generally more for decorative purposes but they reduce the amount of trees, plants and turf, thereby conserving water
Compost	Made of manure or biosolids and wood, straw, grass and leaves. Helps plants stay healthy and retains moisture in the soil
Irrigation Equipment	
Valves	Should be sized to meet requirements and checked periodically for leaks
Sprinkler heads	Should match water volume requirements of area being irrigated
Sprinkler nozzles	Should have proper arc of coverage and proper trajectory
Irrigation controllers	Should have required number of stations, programs and starts. Also rain delays and sensor terminals
Drip irrigation	Insures Water is directs to where it is needed

#### A.3 General Residential Behavioral Measures

This list of conservation measures is divided into four parts: Home, Landscaping, Community, and Miscellaneous.

#### A.3.1.1 Home Behaviors

1. When washing dishes by hand, don't let the water run while rising. Fill one sink with wash water and the other with rinse water.

2. Evaporative coolers require a seasonal maintenance checkup. For more efficient cooling, check your evaporative cooler annually.

3. Run your washing machine and dishwasher only when they are full and you could save 1000 gallons a month.

4. Use the garbage disposal sparingly. Compost instead and save gallons every time.

5. Keep a pitcher of water in the refrigerator instead of running the tap for cold drink so no water goes down the drain.

6. Check your water meter and bill to track water usage.

7. Wash produce in the sink or a pan that is partially filled with water instead of using the tap.

8. Use a broom instead of a hose to clean your driveway or sidewalk to save 80 gallons of water each time.

9. If your shower can fill a one gallon bucket in less than 20 seconds, replace it with a more efficient showerhead.

- 10. Collect the water you use for rinsing produce and reuse it to water houseplants.
- 11. Check outdoor faucets and fixtures for leaks.
- 12. When purchasing a new appliance, look for one with adjustable cycle and load sizes.
- 13. Keep showers to less than 5 minutes to save up to 1000 gallons a month.

14. Install low-volume toilets.

15. Reuse water from a fish tank to water plants, as the water is rich in nitrogen and phosphorous, making it a free and effective fertilizer.

16. Put food coloring in your toilet tank and if it seeps into the toilet bowl there is a leak. It is easy to fix and can save up to 600 gallons a month.

17. Plug the bathtub before turning the water on, and adjust the temperature as the tub fills.

18. Only use one glass for drinking each day to reduce the need for washing dishes.

19. Don't use running water to thaw food.

20. Fix a leaky faucet to save 140 gallons of water a week.

21. Match the water level to the size of the load when doing laundry.

22. Turn faucets off tightly after use.

23. Soak pots and pans instead of running water over them.

24. Locate your master water shutoff valve to save water and prevent water damage in case of a broken pipe.

25. Turn off water while brushing your teeth.

26. Make sure your toilet flapper doesn't stick open after flushing.

27. Make sure there are aerators on all your faucets.

28. Install an instant water heat on your kitchen sink so you don't have to run the water until it gets hot.

29. Cut back on rinsing if you have a new dishwasher as they clean more efficiently than older models.

30. Bathe your young children together.

31. Winterize outdoor spigots to prevent pipes from bursting or freezing.

32. Insulate hot water pipes to reduce the amount of water you have to run to reach the desired temperature.

33. Drop tissues in the trash instead of flushing them.

34. Place a toilet dam or bottle of water in the toilet tank on toilets made prior to 1980 to reduce the amount of water required for each flush.

35. Install water softening systems only when necessary.

36. Wait until you have a full load to do laundry.

37. Cook food in the minimum amount of water required.

38. Turn off water while you shampoo and condition to save more than 50 gallons a week.

#### A.3.1.2 Landscape Behaviors

1. Adjust your sprinkler system to keep water on your landscaping and off of the driveway, sidewalk, house, and the street.

2. Avoid planting turf on inclines, and in isolated areas that are difficult to water.

3. Plant during the spring or fall when the watering requirements are lower.

4. Water early in the morning or late in the evening when temperatures are lower to minimize evaporation.

5. Use a layer of organic mulch around plants to reduce evaporation and save hundreds of gallons of water a year.

6. Use more frequent, shorter watering intervals to reduce runoff and allow for better absorption every time you water.

7. Only water your lawn when needed. If you walk across the grass and leave footprints, it is time to water.

8. Leave grass longer when you mow, as longer grass shades root systems and holds soil moisture better than a closely clipped lawn.

9. Use a sprinkler for large areas of grass and water by hand elsewhere to eliminate unnecessary watering.

10. Install a rain shut-off device on your automatic sprinklers to eliminate unnecessary watering.

11. Periodically check your sprinkler system for leaks and keep the heads in good shape.

12. Don't water your lawn on windy days.

13. Group plants by watering needs to maximize the benefits of your watering time.

14. Regularly weed your lawn and garden, as weed compete with desirable plants for nutrients, light and water.

15. Apply the minimum amount of fertilizer as it increases water consumption requirements.

16. Aerate your lawn so water will reach the roots instead of running off the surface.

#### A.3.1.3 Community Behaviors

1. Encourage your school system and local government to develop and promote a water conservation ethic among children and adults.

- 2. Make suggestions to your employer to save water at work.
- 3. Support projects that use reclaimed wastewater for irrigation and other uses.
- 4. Encourage your friends and neighbors to be part of a water-conscious community.

5. Report broken pipes, open hydrants and errant sprinklers to property owners or your water management district.

#### A.3.1.4 Miscellaneous Behaviors

- 1. Install covers on pools and spas and check for leaks around pumps.
- 2. Check your pool for leaks if you have an automatic refilling device.
- 3. Use a commercial car wash that recycles water.
- 4. Don't buy recreational water toys that require a constant flow of water.
- 5. Bathe pets outdoors in areas in need of water.
- 6. Reuse towels to reduce laundering requirements.
- 7. Reuse water from backwashing your pool on your landscaping.

# **APPENDIX B – WATER WEBSITES WATER**

- www.amsa-cleanwater.org
- www.energystar.gov
- www.awwa.org

#### DROUGHT

• DroughtMonitor@ndmc.unlv.edu

#### LANDSCAPE

- www.usda.gov/news/garden.htm
- www.tmwalandscapeguide.com/landscape\_guide/interactive/index.php

#### EDUCATION

- www.wateruseitwisely.com
- www.epa.gov/WaterSense/
- www.washoeet.dri.edu

#### INSTITUTIONAL

- www.lvvwd.com
- www.snwa.com
- www.co.washoe.nv.us/water\_dept/rwpc/regionalplm
- www.tmh20.com
- www.cabq.gov
- www.ci.phoenix.az.us/WATER/wtrteach.html
- www.owue.water.ca.gov/leak/faq/faq.cfm

#### LEAK DETECTION

www.who.int/docstore/water\_sanitation\_health/leakage/begin.html

# APPENDIX C – AWWA CONSERVATION PAMPHLETS

The following pamphlets are available on the AWWA website at: www.awwa.org/bookstore

Water Conservation at Home discusses in-home conservation practices for bathroom, kitchen and outdoor water use.

Landscaping to Save Water explains the seven principles in the Xeriscape(tm) concept that promotes attractive landscapes, conserves water, and protects the environment.

25 Things You Can Do to Prevent Water Waste has 25 easy things people can do to conserve water inside and outside their homes.

**5 Basic Ways to Conserve Water** provides 5 things people can do to cut water use by 25%.

It's a Natural is an introduction to planning a water-conserving home landscape.

55 Facts, Figure and Follies of Water Conservation is a list of 55 items that promote water conservation.

Let's Learn About...The Water Cycle diagrams the seven stages of the water cycle.

A Consumer's Guide to Water Conservation the Inside Story gives eight ways to reduce water waste inside the home.

A Consumer's Guide to Water Conservation the Outside Story gives eight ways to reduce water waste in landscaping.