

Town of Gabbs Nye County, Nevada

Water Conservation Plan

April 8, 2024



Prepared for:

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Introduction

The water supply in Nevada is a precious commodity and plays an important role in determining Nevada's future. Nevada is the one of the driest states in the nation as well as one of the fastest growing ones. Nevada's future, both from an economic and a quality-of-life view, depends heavily upon the wise management of the water supply.

Groundwater, in general, provides about 40 percent of the total water supply used in Nevada. In some areas, groundwater provides the entire water supply. Groundwater usage may vary considerably from year-to-year as it is sometimes pumped to supplement surface water sources.

Water use in Nevada can be classified as:

- Domestic (household, both indoor and outdoor) – Met by public supply or private supply (e.g. wells).
- Commercial (businesses) – Met by public supply or private supply (e.g. non-community systems).
- Industrial (manufacturing/construction) – Met by public supply or private supply (e.g. non-community systems).
- Thermoelectric (electric/fossil fuel/geothermal power generation) – Met by public supply in a minor fraction.
- Mining (mining processes) – Supply source varies widely from operation to operation and is dependent upon the mineral being recovered and the recovery process employed.
- Irrigation (land use) – Met by self-supplied or supplied by irrigation companies or districts.
- Livestock (farm needs) – Supply source varies.

While all classifications of water usages have shown an increase over the years, it has historically been irrigation water use which has accounted for most of the water use in Nevada.

It has been estimated that the domestic water use accounts for less than 15 percent of the water used in Nevada, but this is expected to rise to nearly 25 percent as the population increases (based upon existing water use patterns and conservation measures). It is expected that Nevada's population will become increasingly concentrated in its primary urban areas of Las Vegas (Clark County), Reno/Sparks (Washoe County) and Carson City, with varied spillover effects on neighboring counties.

It is vitally important that all residents understand the fundamental science of water, how it is managed in the state, and the issues affecting its management. Water education must become a priority and must include education of children as they are our future.

Because Nevada does not have a comprehensive state-wide conservation program, it is reliant upon individual water suppliers for developing their own conservation programs. In 1991, Nevada enacted a law requiring adoption of conservation plans by water suppliers.

Minimum standards for plumbing fixtures were adopted in 1991 (Assembly Bill 359) by Nevada and in 1992 minimum flow standards for plumbing fixtures were adopted by the federal government (National Energy and Policy Conservation Act).

Conservation is an essential part of ensuring adequate water supply as it is no longer feasible to develop new sources. It has proven to be a cost-effective way to reduce demand and/or to extend a given water supply. It can easily be pursued by all water users regardless of the water system type. Key to evaluating the program's effectiveness is the water use measurement (through meters and other measurement devices). Various conservation measures can be put into place and the achievement of the goals set with these measures is vital to combating the expected increase in water usage.

This plan is being submitted to the Nevada Department of Conservation and Natural Resources (DCNR), Division of Water Resources (DWR) for review and approval prior to its adoption by Nye County on behalf of the Town of Gabbs, as required by NRS 540.131.

This plan is available for inspection during normal business hours at 503 Brucite Street Gabbs, NV 89409.

The original Water Conservation Plan for the Town of Gabbs was developed in April 2009.

In accordance with NRS 540.131, this plan will be reviewed from time-to-time to reflect changes and must be updated every five (5) years to comply with NRS 540.131 and NRS 540.141. The next update of this plan is to be on, or before, April 2029.

Statutory Requirements

This water conservation plan was prepared for the Town of Gabbs in accordance with Nevada Revised Statute (NRS) 540. As outlined in NRS 540.141, the provisions of this plan must include:

General Provisions

The supplier must provide an opportunity for any interested person to submit written views and recommendations on the plan.

The plan must be reviewed by the DWR after its submission and approved for compliance with regulations before it is adopted by the supplier of water. To be approved, a plan must be based on the climate and living conditions of the service area and comply with the requirements of the regulations.

The plan and any revisions must be available for inspection by members of the public during office hours of the supplier.

The supplier must update the plan and submit for approval every 5 years and comply with the requirements of this NRS 540.131 and NRS 540.141.

In addition to the provisions of the water conservation plan, listed above, NRS 540.141 also requires a rate analysis to be performed and included with the submittal.

The board of county commissioners of a county, the governing body of a city and the town board or board of county commissioners having jurisdiction of the affairs of a town shall:

- a) Adopt any ordinances necessary to carry out a plan of water conservation adopted which applies to property within its jurisdiction.
- b) Establish a schedule of fines for the violation of any ordinances adopted; and
- c) Hire such employees as it deems necessary to enforce the provisions of any ordinances it adopts pursuant to the plan.

Required Provisions of Water Conservation Plan

Methods of public education

- a) Increase public awareness of the limited supply of water in this State and the need to conserve water.
- b) Encourage reduction in the size of lawns and encourage the use of plants that are adapted to arid and semiarid climates.

Specific conservation measures required to meet the needs of the service area.

- a) The management of water to:
 - 1) Identify and reduce leakage in water supplies, inaccuracies in water meters and high pressure in water supplies, and
 - 2) Where applicable, increase the reuse of effluent.
- b) A contingency plan for drought conditions that ensures a supply of potable water.
- c) A schedule for carrying out the plan or joint plan.
- d) A plan for how the supplier of water will progress towards the installation of meters on all connections.
- e) Standards for water efficiency for new development.
- f) Tiered rate structures for the pricing of water to promote the conservation of water, including, without limitation, an estimate of the way the tiered rate structure will impact the consumptive use of water.
- g) Watering restrictions are based on the time of day and the day of the week.

System Description

The Town of Gabbs water system is managed by Nye County. It is a publicly owned residential/business municipal non-transient/community water system and has a current water operation permit, NV0000063. The Town of Gabbs serves water to about 225 people on 161 residential and 9 business metered connections customers in its service area in Gabbs, Nevada, which is in Nye County. The service area boundaries are within the Gabbs town limits. The service area's terrain is a very gradual slope.

The estimated population served in 2015 is 250 people. The Town of Gabbs estimates that its customer base will increase by 0.00 % on a yearly basis through 2020. The State of Nevada, through its State Water Plan, estimates the population growth for Nye County through 2020 to be 2.74 % Annually.

The water supply is from groundwater which is located within Gabbs Valley # 122. There are a total of 2 groundwater wells supplying the system and a total of one storage tank. Each of these is identified in the tables below (Table 1 and Table 2).

Table 1 – Source of Supply

Well No.	Depth (feet)	Production (gpm)
1	400	350
3	500	350

Table 2 – Storage Tanks

Tank No.	Volume (gallons)
System Tank	500,000

The Town of Gabbs has been granted water rights. Application # 10803 has been certified; and # 76537, 81418, & 81900 have been permitted. The current water rights are listed in the table below (Table 3).

Table 3 – Water Rights

Application (Certificate No.)	Rate of Diversion	Annual Use
10803 (2909)	0.5 CFS	361.976755 afa
76537	0.134 CFS	61.378 afa
81418	1.0 CFS	234.34 afa
81900	0.014 CFS	2.24 afa

Water is pumped from the wells to the 500,000-gallon storage tank. Well 3 is the primary water source and Well 1 is used as a backup only due to being high in fluoride. Water is then distributed via gravity to the customers through 8" mainlines.

The Town of Gabbs water system requires, at a minimum, a Distribution Grade 1 operator.

The plant operator is required to perform all monitoring and testing of water quality. The Town of Gabbs water system does not currently have any outstanding water quality issues.

The last sanitary survey performed by the Nevada Department of Environmental Protection (NDEP) was completed on October 26, 2023, and shows no deficiencies with the system.

The Town of Gabbs water system charges metered rates. It does have a tiered rate usage fee. A breakdown of the customer type, number, and tiered charge is found in the tables below.

Residential customers are billed \$74.42 monthly in addition to a quantity charge after an initial amount. The fees are detailed in the table below (Table 4).

Table 4 – Residential Customers and Usage Charges

Meter Size	Number	Monthly Fee	Quantity Fee (\$/gallon)
Residential	161	\$74.42 (covers initial 5K gallons)	\$1.14 - 5,001 - 25,000 \$2.86 - 25,001 - 35,000 \$4.58 - 35,001 - 50,000 \$6.01 - 50,001 +
Business	8	\$90.45 (covers initial 5K gallons)	\$1.37 - 5,001- 25,000 \$3.43 – 25,001- 35,000 \$5.50 – 35,001- 50,000 \$7.21 – 50,001 +
Large User	1	\$153.41 (covers initial 5K gallons)	\$1.37 - 5,001- 25,000 \$3.43 – 25,001- 35,000 \$5.50 – 35,001- 50,000 \$7.21 – 50,001 +

Wastewater collected from the service area is collected and treated in a lagoon by the Town of Gabbs. The effluent evaporated off.

Current water rates were established in 2023. There is no current schedule for water rate review.

Plan Provisions

In accordance with NRS 540.131, this plan will be reviewed from time-to-time to reflect changes and must be updated every five (5) years to comply with NRS 540.131 and NRS 540.141. The next update of this plan is to be on, or before, April 2029.

Nye County will appoint a staff member, if economically feasible, to oversee the conservation efforts and this staff member will be responsible for implementation of conservation programs, monitoring of water use, and will review /revise the conservation plan when needed.

To promote voluntary conservation and aid in Nevada's future, Nye County on behalf of the Town of Gabbs, will enact the voluntary conservation measures found in the *Conservation Measures* section. When more stringent measures are needed, Nye County will enact the measures found in the *Contingency Measures* section. All measures can be found in Appendix A.

As required by NRS 540.141, the water conservation plan must include the following provisions:

- a. Methods of public education
 - Increase public awareness of the limited supply of water in this State and the need to conserve water.
 - Encourage reduction in the size of lawns and encourage the use of plants that are adapted to arid and semiarid climates.
- b. Specific conservation measures required to meet the needs of the service area.
- c. The management of water to:
 - Identify and reduce leakage in water supplies, inaccuracies in water meters and high pressure in water supplies, and
 - Where applicable, increase the reuse of effluent.
- d. A contingency plan for drought conditions that ensures a supply of potable water.
- e. A schedule for carrying out the plan or joint plan.
- f. A plan for how the supplier of water will progress towards the installation of meters on all connections.
- g. Standards for water efficiency for new development.
- h. Tiered rate structures for the pricing of water to promote the conservation of water, including, without limitation, an estimate of the way the tiered rate structure will impact the consumptive use of water.
- i. Watering restrictions are based on the time of day and the day of the week.

Each provision is discussed below.

Public Education

Public education is a key for cooperation with conservation efforts, so funding for public education is crucial. Nye County recognizes this and will establish a conservation education program and corresponding budget, if economically feasible.

It is the goal of Nye County to increase public awareness to conserve water, encourage reduction in lawn sizes, encourage the use of climate-appropriate plants, encourage the use of drip irrigation, and encourage conscious decisions for water use.

The conservation education program includes education materials such as bill inserts, pamphlets, flyers, and posters. New customers will be provided with these materials when service is established, while existing customers will receive these materials periodically through bill inserts or direct mail. Educational pamphlets will be provided to all customers upon request and should include an explanation of all costs involved in supplying drinking water and demonstrate how the water conservation practices will provide water users with long-term savings. Education materials should also encourage reduction of lawn sizes, use of drip irrigation, use of climate-appropriate plants, and conservation tips and techniques (see Appendix B).

Customers should also be able to read and understand their water bills. Bills should be informative, going beyond the basic billing information. Bills should include comparisons to previous bills and tips on water conservation that can help customers make informed choices about their water usage. Bill inserts can also include this information.

Nye County could participate in public outreach opportunities such as Earth Day, provide information at a variety of school programs, participate at workshops for plumbers/suppliers/builders, and could provide incentives for conservation efforts (e.g. plumbing retrofit rebates, water conservation landscaping rebates, etc.).

Nye County could also establish a water conservation advisory committee that would involve the public in the conservation process and provide feedback to the system concerning its efforts, thus fostering support for conservation in the community.

Conservation Measures

To promote conservation and voluntarily conserve water, Nye County on behalf of the Town of Gabbs is adopting water-use regulations to promote water conservation during non-emergency situations. These regulations include the following non-essential water use:

- 1) Use of water through any connection when the Town of Gabbs has notified the customer in writing to repair a broken or defective plumbing, sprinkler, watering or irrigation system and the customer has failed to make such repairs within 5 days after receipt of such notice.
- 2) Use of water which results in flooding or run-off in gutters, waterways, patios, driveways, or streets.

- 3) Use of water for washing cars, buses, boats, trailers, or other vehicles without a positive shut-off nozzle on the outlet end of the hose. Exceptions include washing vehicles at commercial or fleet vehicle washing facilities operated at fixed locations where equipment using water is properly maintained to avoid wasteful use.
- 4) Use of water through a hose for washing buildings, structures, sidewalks, walkways, driveways, patios, parking lots, tennis courts, or other hard-surfaced areas in a manner which results in excessive run-off or waste.
- 5) Use of water for more than minimal landscaping in connection with any new construction.
- 6) Use of water for outside plants, lawn, landscape, and turf areas are prohibited between the hours of 10:00am to 5:00pm.
- 7) Use of water for watering outside plants and turf areas using a hand-held hose without a positive shut-off valve.
- 8) Use of water for decorative fountains or the filling or topping off decorative lakes or ponds. Exceptions are made for those decorative fountains, lakes, or ponds which utilize recycled water.
- 9) Use of water for the filling or refilling of swimming pools.

In the event these conservation measures are insufficient to control the water shortage, Nye County may wish to implement the mandatory measures discussed in the *Contingency Plan* section below.

Nye County also promotes the development of water conserving principles into the planning, development, and management of new landscape projects such as public parks, building grounds, and golf courses. Customers are encouraged to consult with the local nursery or perform an internet search on the availability of water conservation plants and how to renovate existing landscapes. Customers are also encouraged to evaluate irrigation management systems using metering, timing, and water sensing devices.

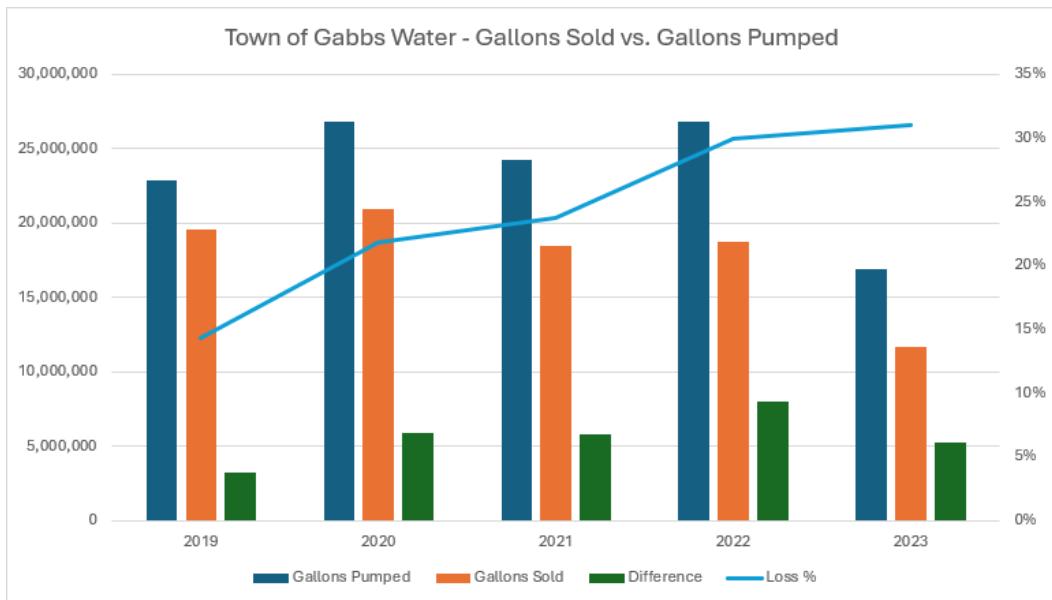
The Town of Gabbs provides the following incentives for conservation:
At present, it is not viable to offer any water conservation incentives.

Water Management

Nye County monitors and records water levels at the system wells and tank sites via SCADA system.

The Town of Gabbs does actively monitors unaccounted for water losses. Production versus sales and authorized usage allows the determination of unaccounted for water losses. Current-to-historical comparisons are examined and evaluation methods are examined to locate leaks if significant differences are found. . The Town of Gabbs does monitor production monthly and makes year-to-year comparisons. (Figure 1)

Figure 1



Nye County's goal for acceptable water loss would be not to exceed 15%. To reach this goal Nye County is currently undergoing a major waterline replacement project. The project will replace approximately 30% of aged waterlines in Gabbs. Nye County has also increased utility staff to monitor and maintain the water system more adequately.

The Town of Gabbs does not have a formal leak detection program. All large leaks are repaired immediately, and small leaks (less than 1 gallon per minute) are repaired as soon as operational conditions permit.

Meters that are not registering properly will be changed out by the operator on the next available shift and depending on the inventory of meters.

System pressures range from 70 to 105 psi. The system has 1 pressure zone and pressure is regulated by individual PRVs on the customer side. The system is planning to split into 2 pressure zones in the future.

The Town of Gabbs does have a formal well head protection program. Hazards are identified and activity is controlled to protect the water source.

Nye County has implemented a meter replacement program for all meters that are not registering properly. Meters are replaced at 20-year intervals.

A capital improvement plan is in place, is currently being funded through rates, and there are plans to replace distribution lines at their anticipated useful life.

The Town of Gabbs water system does not have a system for reusing effluent. Effluent is treated in a lagoon by the Town of Gabbs.

Nye County has adopted a Plumbing Water Conservation Ordinance which applies to structures which are renovated as well as all new construction. This ordinance is furnished to local suppliers and contractors. The county is responsible for checking new construction, renovation, and expansion within the county to ensure compliance with this ordinance.

Contingency Plan

The objective of the contingency plan would be to manage the available resources to ensure continued supply of potable water during periods of drought or extended drought.

It is envisioned that voluntary conservation will be sufficient to ensure an adequate supply of water and reduce water usage. However, if a sustained drought (lack of precipitation) is encountered, it may be necessary to implement mandatory restrictions to ensure an adequate supply of water to meet essential needs.

Nye County on behalf of the Town of Gabbs plans for drought response would be three (3) stages of drought response: (1) warning stage, (2) alert stage, and (3) emergency stage. This is based on the static water level of the primary system well, well 3. The static water level of Well 1 is also being monitored but will not be used as a stage trigger since the well is being used as a backup source.

Well 1 was put into service in April 1989 with a drill depth of 310', a pump depth of 180', and a static water level of 75'. As of April 2016, the static water level was measured at 76.5'.

Well 3 was put into service in May 2014 with a drill depth of 500', a pump depth of 295' and a static water level of 66'. As of April 2016, the static water level was measured at 67'.

A consideration in setting the stage triggers is also the fact that as the well levels drop the concentration of fluoride has increased. Well 1 had exceeded the maximum contaminant level (MCL) for the State of Nevada and this prompted the drilling of Well 3. The Nye County Utilities operators will continue to monitor fluoride levels in both wells to ensure compliance with the MCL for fluoride.

The stages will be triggered as follows:

Stage 1 will be declared if Well 3 reaches a static water level of 83'.

Stage 2 will be declared if Well 3 reaches a static water level of 88'.

Stage 3 will be declared if Well 3 reaches a static water level of 93'.

The stages are describing as follows:

In Stage 1, the warning stage, Nye County would increase monitoring of its water supplies and would begin creating public awareness of the water supply situation and the need to conserve. Conservation measures at this stage would be voluntary. Retrofit kits (low-flow faucet aerators, low-flow showerheads, leak detection tablets, and replacement flapper valves) can be made available, or at cost, and can be actively distributed, if needed.

In Stage 2, the alert stage, Nye County would call for wide-based community support to achieve conservation, limit the use of fire hydrants to fire protection uses (by requiring effluent for construction and dust control purposes), implement water use restrictions, and impose penalties for ignoring the restrictions. Conservation measures at this stage would be mandatory and violations would incur fines.

In Stage 3, the emergency stage, Nye County would declare a drought and water shortage emergency, would enforce water use restrictions, impose fines for violations, implement allocation of water (rationing), and impose higher fees for water usage. Media relations would be activated to inform the customers and monetary assistance may need to be secured to mitigate the effects of the drought (e.g. federal funding assistance). Conservation measures at this stage would be mandatory, rationing would be imposed, violations would incur fines, and over-use would be penalized by higher rates.

When a drought is declared over, voluntary conservation measures (see ***Conservation Measures*** section) will be reinstated and water supplies will continue to be monitored.

Schedule

All the provisions listed are currently in place and are actively working to achieve results.

Evaluation Measurements

An audit comparing water production with metered amounts will be performed prior to the implementation of measures/incentives. Additional audits will then be done every year thereafter. Results from the initial audit will be compared with those of the subsequent annual audits to determine the effectiveness of the measures/incentives.

As a plan element is activated (e.g. mailing literature or declaring a drought stage), production figures will be compared to same-month historical data to estimate the plan element's effectiveness. This information will be utilized as a basis for any future water conservation plan revision and plan elements.

Usage amounts measured will include summer use, average use per connection, and per capita use. If there is a decrease in usage because of a particular measure/incentive, that measure/incentive can be expanded or improved upon, if possible. If it is discovered that a particular measure/incentive is ineffective, it will be discontinued, and a new one can then be implemented to take its place.

In addition to changes resulting from audits, updates, and modifications to conservation measures/incentives there will be changes made to meet changing conditions (e.g. customer growth and demand, changing use, new technologies, etc.).

Conservation Estimates

During the Stage 1 phase of the conservation plan, it is estimated that conservation measures could be expected to provide a 5% reduction in water use.

During the Stage 2 phase of the conservation plan, it is estimated that conservation measures could be expected to provide a 10% reduction in water use.

During the Stage 3 phase of the conservation plan, it is estimated that conservation measures could be expected to provide a 25% reduction in water use.

The estimated water savings for various end-user efforts can be found in Appendix C.

Rate Analysis

The charging of variable rates for the use of water has sometimes been shown to encourage conservation of water, but not in all systems. Oftentimes the end-user will continue to pay increasing block rates out of necessity for the water used. The use of variable water rates needs to be evaluated on a case-by-case basis.

Nye County has recently adopted a new tiered rate structure for Gabbs which began in 2023.

Appendices

**APPENDIX A
CONSERVATION MEASURES**

Stage 1 – Warning Stage

1. Nye County would increase monitoring of water supplies.
2. Nye County would begin creating public awareness of the water supply situation and the need to conserve.
3. Nye County would inform customers of voluntary conservation measures (non-essential water uses, listed below).

Non-essential water uses are:

- 1) Use of water through any connection when the Town of Gabbs has notified the customer in writing to repair a broken or defective plumbing, sprinkler, watering or irrigation system and the customer has failed to make such repairs within 5 days after receipt of such notice.
- 2) Use of water which results in flooding or run-off in gutters, waterways, patios, driveways, or streets.
- 3) Use of water for washing cars, buses, boats, trailers, or other vehicles without a positive shut-off nozzle on the outlet end of the hose. Exceptions include washing vehicles at commercial or fleet vehicle washing facilities operated at fixed locations where equipment using water is properly maintained to avoid wasteful use.
- 4) Use of water through a hose for washing buildings, structures, sidewalks, walkways, driveways, patios, parking lots, tennis courts, or other hard-surfaced areas in a manner which results in excessive run-off or waste.
- 5) Use of water for more than minimal landscaping in connection with any new construction.
- 6) Use of water for outside plants, lawn, landscape, and turf areas are prohibited between the hours of 10:00am to 5:00pm. From November 1 through February watering is limited to only one day a week. From September 1 through October and March 1 through April watering is limited to only three days a week. From May 1 through August watering is limited to any day of the week.
- 7) Use of water for watering outside plants and turf areas using a hand-held hose without a positive shut-off valve.
- 8) Use of water for decorative fountains or the filling or topping off decorative lakes or ponds. Exceptions are made for those decorative fountains, lakes, or ponds which utilize recycled water.
- 9) Use of water for the filling or refilling of swimming pools.

Stage 2 – Alert Stage

1. Nye County would set conservation goals and call for wide-based community support to achieve those goals.
2. Nye County would inform customers of mandatory conservation measures (non-essential water uses, listed in Stage 1 are now mandatory).
3. Nye County would inform customers of penalties if mandatory conservation measures were not observed (penalties are listed below).
4. Nye County would inform customers of mandatory conservation water fees.

Penalties for violation of mandatory conservation measures are

- 1st violation – written warning.
- 2nd violation – \$25.00
- 3rd violation – \$50.00
- 4th violation – turn-off of water services.

Offenses for separate water use restriction violations will each start at the warning stage (1st violation) and the penalties for the offenses are in addition to the regular rate schedule charges.

Stage 2 water rates would be 2 times the normal quantity rate, or as deemed necessary.

Stage 3 – Emergency Stage

1. Nye County would declare a drought and water shortage emergency and use media relations to supplement efforts to keep customers informed.
2. Nye County would set rationing benchmarks for each customer class.
3. Nye County would inform customers of prohibited water uses (non-essential water uses, listed in Stage 1 are now prohibited).
4. Nye County would inform customers of penalties if prohibited measures were not observed (penalties are listed below).
5. Nye County would inform customers of rationing water fees.
6. Nye County would seek monetary assistance to mitigate the drought (e.g. federal funding).

Penalties for violation of prohibited water use measures are:

1st violation – written warning.
2nd violation – \$50.00
3rd violation – turn-off of water services.

Offenses for separate water use restriction violations will each start at the warning stage (1st violation) and the penalties for the offenses are in addition to the regular rate schedule charges.

Rationing benchmark is set at 25,000 gallons prior to being subject to the metered rate.

Stage 3 water rates would be 3 times the normal quantity rate, or as deemed necessary.

If any customer seeks a variance from the provisions of Stage 3, then that customer shall notify the Nye County Board of County Commissioners in writing, explaining in detail the reason for such a variation. The Nye County Board of County Commissioners shall respond to each request.

APPENDIX B
PUBLIC EDUCATION MATERIALS

There are several publications available for use at U.S. EPA website for general distribution (currently located at <http://epa.gov/watersense/pubs/index.htm#ideas>). These publications include such topics as:

- Simple Steps to Save Water
- Ideas for Residences
- Ideas for Commercial
- Using Water Wisely in the Home
- Outdoor Water Use in the US
- Toilet Flush Facts
- Watering Can Be Efficient
- Irrigation Timers for the Homeowner
- Water Efficient Landscaping

These publications can be utilized until the Nye County develops system-specific publications.

There are also numerous website that provide tips for conserving water. One of these is: <http://www.wateruseitwisely.com/100-ways-to-conserve/index.php>. Customers can be directed to this website for tips to conserve water.

Specific tips for landscaping that can be provided to the customers are listed below. During drought conditions outdoor watering restrictions may be imposed, and therefore some of the following tips will not apply.

Tips for Landscaping

Watering:

- Detect and repair all leaks in irrigation systems.
- Use properly treated wastewater for irrigation where available.
- Water the lawn or garden during the coolest part of the day (early morning is best). Do not water on windy days.
- Water trees and shrubs, which have deep root systems, longer and less frequently than shallow-rooted plants which require smaller amounts of water more often. Check with the local nursery for advice on the amount and frequency of water needed in your area.
- Set sprinklers to water the lawn or garden only—not the street or sidewalk.
- Use soaker hoses and trickle irrigation systems.
- Install moisture sensors on sprinkler systems.

Planting:

- Have your soil tested for nutrient content and add organic matter if needed. Good soil absorbs and retains water better.
- Minimize turf areas and use native grasses.
- Use native plants in your landscape—they require less care and water than ornamental varieties.
- Add compost or peat moss to soil to improve its water-holding capacity.

Maintaining:

- Use mulch around shrubs and garden plants to reduce evaporation from the soil surface and cut down on weed growth.
- Remove thatch and aerate turf to encourage movement of water to the root zone.
- Raise your lawn mower cutting height to cut grass no shorter than three inches—longer grass blades encourages deeper roots, help shade soil, cut down on evaporation, and inhibit weed growth.
- Minimize or eliminate fertilizing which requires additional watering and promotes new growth which will also need additional watering.

Ornamental Water Features:

- Do not install or use ornamental water features unless they recycle the water. Use signs to indicate that water is recycled. Do not operate during a drought.

APPENDIX C

END-USER WATER SAVINGS

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Here are just a few of the end-user water savings that could be realized:

Leaky Faucets

Issue: Leaky faucets that drip at the rate of one drip per second can waste more than 3,000 gallons of water each year.

Fix: If you're unsure whether you have a leak, read your water meter before and after a two-hour period when no water is being used. If the meter does not read exactly the same, you probably have a leak.

Leaky Toilets

Issue: A leaky toilet can waste about 200 gallons of water every day.

Fix: To tell if your toilet has a leak, place a drop of food coloring in the tank; if the color shows in the bowl without flushing, you have a leak.

Showering

Issue: A full bathtub requires about 70 gallons of water, while taking a five-minute shower uses 10 to 25 gallons.

Fix: If you take a bath, use a stopper in the drain immediately and adjust the temperature as you fill the tub.

Brushing Teeth Wisely

Issue: The average bathroom faucet flows at a rate of two gallons per minute.

Fix: Turning off the tap while brushing your teeth in the morning and at bedtime can save up to 8 gallons of water per day, which equals 240 gallons a month!

Watering Wisely

Issue: The typical single-family suburban household uses at least 30 percent of their water outdoors for irrigation. Some experts estimate that more than 50 percent of landscape water use goes to waste due to evaporation or runoff caused by overwatering.

Fix: Drip irrigation systems use between 20 to 50 percent less water than conventional in-ground sprinkler systems. They are also much more efficient than conventional sprinklers because no water is lost to wind, runoff, and evaporation. If the in-ground system uses 100,000 gallons annually, you could potentially save more than 200,000 gallons over the lifetime of a drip irrigation system should you choose to install it. That adds up to a savings of at least \$1,150!

Washing Wisely

Issue: The average washing machine uses about 41 gallons of water per load.

Fix: High efficiency washing machines use less than 28 gallons of water per load. To achieve even greater savings, wash only full loads of laundry or use the appropriate load size selection on the washing machine.

Flushing Wisely

Issue: If your toilet is from 1992 or earlier, you probably have an inefficient model that uses at least 3.5 gallons per flush.

Fix: New and improved high-efficiency models use less than 1.3 gallons per flush—that's at least 60 percent less than their older, less efficient counterparts. Compared to a 3.5 gallons per flush toilet, a Water Sense labeled toilet could save a family of four more than \$90 annually on their water bill, and \$2,000 over the lifetime of the toilet.

Dish Washing Wisely

Issue: Running dishwasher partial full and pre-rinsing dishes before loading the dishwasher.

Fix: Run the dishwasher only when it's full and use the rinse-and-hold dishwasher feature until you're ready to run a full load. Pre-rinsing dishes does not improve cleaning and skipping this step can save you as much as 20 gallons per load, or 6,500 gallons per year. New water-saver dishwashers use only about 4 gallons per wash.

Estimated water savings from EPA Water Conservation Guidelines 1998
(Appendix B, Table B-1):

Type	Estimated Usage (gpcpd)	Conservation Usage (gpcpd)	Savings (gpcpd)	Savings (%)
Toilet	18.3	10.4	7.9	43 %
Clothes Washers	14.9	10.5	4.4	30 %
Showers	12.2	10.0	2.2	18 %
Faucets	10.3	10.0	.3	3 %
Leaks	6.6	1.5	5.1	77 %

Benchmarks from selected conservation measures from EPA Water Conservation Guidelines 1998 (Appendix B, Table B-4):

Category	Measure	Reduction of End Use (% or gpcpd)
Universal metering	Connection metering	20 %
	Sub metering	20 – 40 %
Costing and pricing	10% increase in residential prices	2 – 4 %
	10% increase in non-residential prices	5 – 8 %
	Increasing-block rate	5 %
Information and education	Public education and behavior changes	2 – 5 %
End-use audits	General industrial water conservation	10 – 20 %
	Outdoor residential use	5 – 10 %
	Large landscape water audit	10 – 20 %
Retrofits	Toilet tank displacement devices (for toilets using > 3.5 gallons/flush)	2 – 3 gpcpd
	Toilet retrofit	8 – 14 gpcpd
	Showerhead retrofit (aerator)	4 gpcpd
	Faucet retrofit (aerator)	5 gpcpd
	Fixture leak repair	0.5 gpcpd
Pressure management	Governmental building (indoors)	5 %
	Pressure reduction, system	3 – 6 % of total production
	Pressure-reducing valves, residential	5 – 30%
Outdoor water use efficiency	Low water-use plants	7.5 %
	Lawn watering guides	15 – 20 %
	Large landscape management	10 – 25%
Replacements and promotions	Irrigation timer	10 gpcpd
	Toilet replacement, residential	16 – 20 gpcpd
	Toilet replacement, commercial	16 – 20 gpcpd
	Showerhead replacement	8.1 gpcpd
	Faucet replacement	6.4 gpcpd
	Clothes washers, residential	4 – 12 gpcpd
Water-use regulation	Dishwashers, residential	1 gpcpd
	Hot water demand units	10 gpcpd
	Landscape requirements for new developments	10 – 20 % in sector
	Greywater reuse, residential	20 – 30 gpcpd