

04/13/2016

Town of Goldfield

Water Conservation Plan

04/13/2016

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 the majority 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 the individual water suppliers for developing their own conservation programs. In 1991,

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Nevada enacted a law requiring adoption of conservations 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 demands 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.

Statutory Requirements

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

- a. Public Education
- b. Conservation Measures
- c. Water Management
- d. Contingency Plan
- e. Schedule
- f. Evaluation Measurements
- g. Conservation Estimates

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.

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 the **Town of Goldfield**, as required by NRS 540.131.

This plan is available for inspection during normal business hours at the Town of Goldfield Water System Office located at 337 Eliot Street, Goldfield.

The original Water Conservation Plan for the **Town of Goldfield** was developed in 1992 and modified in 2008.

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, **04/13/2021**.

System Description

The **Town of Goldfield** is a publically -owned residential/commercial non-transient community water system and has a current water operation permit, NV0000072. The **Town of Goldfield** serves water to 283 residential and 37 business connections in its service area in the Town of Goldfield, which is located in Esmeralda County. The service area boundaries are within the town limits. The service area's terrain is flat.

The estimated population served in 2016 is 350. The **Town of Goldfield** estimates that its customer base will increase by 20% on a yearly basis through 2020. The State of Nevada, through its State Water Plan, estimates the population growth for Esmeralda County through 2020 to be 0.28% annually.

The water supply is from groundwater which is located within the Alkali Spring Valley (Esmeralda) - 142 Basin of the Central Hydrographic Region. There are a total of two (2) wells supplying the system, a total of two (2) booster stations and, a total of two (2) storage tanks. The wells and tanks are identified in the tables below (Table 1 and Table 2).

Table 1 – Source of Supply

Well No.	Depth (feet)	Production (gpm)
Klondike 1	410	300
Klondike 2	410	296

Table 2 – Storage Tanks

Tank No.	Volume (thousand gallons)
1	200
2	366

The **Town of Goldfield** has been granted water rights in the total amount of 8.38 MGA. Applications # 10150, 20552, 20553, 20554, 20555, 21157, 21158, 21159, 21160, 21162, 21314, 22691, 27309, 41861 have been certified; # 22690, 55627, 60963, 76340 have been permitted; and # 85508, 85509, are Ready for Action. The current water rights are listed in the table below (Table 3).

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Table 3 – Water Rights

Application (Certificate No.)	Well No.	Rate of Diversion (CFS)	Annual Use (AFA)
10150 (2795)		0.25	0.5339886
20552 (6982)	POPENBERGER WELL	0.25	0.5339886
20553 (6216)	RABBIT SPRING WELL	2	4.265771
20554 (6199)		0.25	0.5339886
20555 (6217)	MEYER WELL	4	8.531542
21157 (6218)	CHILDERS WELL	0.25	0.5339886
21158 (6219)	FAYHEN WELL	0.35	0.7457427
21159 (6220)	BREWERY WELL	0.11	0.2363053
21160 (6221)	TRIPOD WELL	0.3	0.6414001
21162 (6222)		4	8.562231
21314 (6200)	DAHLSTROM WELL	0.3	0.6414001
22691 (7670)		0.023	16.29
27309 (8754)	Spring	0.25	181.003722
41861 (13195)		0.188	136.105715
22690		2	0
55627		1.5	150.007832
60963		1.5	300
76340		0.0031	2.24
85508		1	723.97
85509		1	723.97

Water is produced from the two (2) system wells. Two (2) boosters move the water to the treatment plant where arsenic is removed prior to the water entering the two (2) system storage tanks. Gravity feeds water to the community. Water is then distributed to the customers through C900 PVC ranging from 4”-8”.

The **Town of Goldfield** requires, at a minimum, a Distribution Grade 2 and Treatment Grade 2 operator. Mike Anderson is the system operator and holds Distribution Grade 2 and Treatment Grade 2 certificates.

The plant operator is required to perform and testing of water quality. The **Town of Goldfield** does not currently have any outstanding water quality issues.

The **Town of Goldfield** charges a base rate and metered usage charges. A breakdown of the customer type, number, and charge is found in the tables below.

Customers are billed a monthly service fee in addition to a quantity charge. The fees are detailed in the table below (Table 4).

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Table 4 – Customers and Usage Charges

Connection Type	Number	Monthly Fee	Quantity Fee (\$/1k gallons)
Residential	283	\$25.00 (1 st 2k gal)	\$2.50
Commercial A	29	\$35.00 (1 st 1k gal)	\$3.00 1,001-500,000 \$4.00 500,001 and greater
Commercial B	2	\$45.00 (1 st 1k gal)	\$3.00 1,001-500,000 \$4.00 500,001 and greater

Wastewater collected from the service area is collected and treated in a lagoon system. Effluent is discharged through evaporation.

Current water rates were established in July 2005. Water rates are reviewed every year.

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, **[[04/13/2021]]**.

The **Town of Goldfield** 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.

In an effort to promote voluntary conservation and aid in Nevada's future, the **Town of Goldfield** will enact the voluntary conservation measures found in the *Conservation Measures* section. When more stringent measures are needed, the **Town of Goldfield** 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. Public Education
- b. Conservation Measures
- c. Water Management
- d. Contingency Plan
- e. Schedule
- f. Evaluation Measures
- g. Conservation Estimates

Each provision is discussed below.

Public Education

Public education is a key for cooperation with conservation efforts, so funding for public education is crucial. The **Town of Goldfield** recognizes this and will establish a conservation education program and corresponding budget, if economically feasible.

It is the goal of the **Town of Goldfield** 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 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.

The **Town of Goldfield** 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.).

The **Town of Goldfield** 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

In an effort to promote conservation and voluntarily conserve water, the **Town of Goldfield** is adopting water-use regulations to promote water conservation during non-emergency situations. These regulations include the following non-essential water use:

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- 1) Use of water through any connection when the **Town of Goldfield** 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, driveway, or streets.
- 3) Use of water for washing aircraft, 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 watering streets with trucks, except for initial wash-down for construction purposes (if street sweeping is not feasible), or to protect the health and safety of the public.
- 6) Use of water for construction purposes, such as consolidation of backfill, dust control, or other uses unless no other source of water or other method can be used.
- 7) Use of water for more than minimal landscaping in connection with any new construction.
- 8) Use of water for watering outside plants and turf areas using a hand-held hose without a positive shut-off valve.
- 9) Use of water for decorative fountains or the filling or topping off of decorative lakes or ponds. Exceptions are made for those decorative fountains, lakes, or ponds which utilize recycled water.
- 10) Use of water for the filling or refilling of swimming pools.
- 11) Service of water by any restaurant except upon the request of the patron.

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

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

Water Management

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The **Town of Goldfield** monitors and records water levels at both wells via transducers that are monitored and recorded via SCADA.

Working relationships with other local water purveyors are maintained to ensure adequate water supplies are available. No systems are close enough for interties to be formed but area systems will assist with parts and labor.

The **Town of Goldfield** does actively monitor 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.

Town of Goldfield 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.

The **Town of Goldfield** does have a formal well head protection program. Hazards are identified and activity is controlled in the areas surrounding the wells.

The **Town of Goldfield** does not have a formal meter replacement program. Meters that have been identified as not registering properly are replaced.

A capital improvement plan is in place and is currently being funded through rates.

The **Town of Goldfield** does not have a system for reusing of effluent. Effluent is treated in a lagoon system and is discharged via evaporated.

Esmeralda County conforms to the Universal Plumbing Code. All new construction must comply with these regulations.

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 in order to ensure an adequate supply of water to meet essential needs.

The **Town of Goldfield** plans for drought response would be three (3) stages of drought response: (1) warning stage, (2) alert stage, and (3) emergency stage.

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Stages are based on the static water levels of the system wells. Stage 1 would be declared if the static water level drops to 200 feet, Stage 2 if the static water level drops to 210 feet, and Stage 3 if the static water level drops to 220 feet.

The stages are described as follows:

In Stage 1, the warning stage, the **Town of Goldfield** 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.

In Stage 2, the alert stage, the **Town of Goldfield** 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, the **Town of Goldfield** would declare a drought and water shortage emergency, would enforce water use restrictions, impose fines for violations, and impose higher fees for water usage. Media relations would be activated in order to inform the customers and monetary assistance may need to be secured in an effort to mitigate the effects of the drought (e.g. federal funding assistance). Conservation measures at this stage would be mandatory 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 would continue to be monitored.

Schedule

All of 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 in order 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.

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Usage amounts measured will include summer use, average use per connection, and per capita use. If there is a decrease in usage as a result 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 5-10%.

During the Stage 2 phase of the conservation plan, it is estimated that conservation measures could be expected to provide a 10-15%.

During the Stage 3 phase of the conservation plan, it is estimated that conservation measures could be expected to provide a 15-30%.

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.

Appendices

**APPENDIX A
CONSERVATION MEASURES**

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Stage 1 – Warning Stage

1. The **Town of Goldfield** would increase monitoring of water supplies.
2. The **Town of Goldfield** would begin creating public awareness of the water supply situation and the need to conserve.
3. The **Town of Goldfield** 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 Goldfield** 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, driveway, or streets.
- 3) Use of water for washing aircraft, 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 watering streets with trucks, except for initial wash-down for construction purposes (if street sweeping is not feasible), or to protect the health and safety of the public.
- 6) Use of water for construction purposes, such as consolidation of backfill, dust control, or other uses unless no other source of water or other method can be used.
- 7) Use of water for more than minimal landscaping in connection with any new construction.
- 8) Use of water for watering outside plants and turf areas using a hand-held hose without a positive shut-off valve.
- 9) Use of water for decorative fountains or the filling or topping off of decorative lakes or ponds. Exceptions are made for those decorative fountains, lakes, or ponds which utilize recycled water.
- 10) Use of water for the filling or refilling of swimming pools.
- 11) Service of water by any restaurant except upon the request of the patron.

Stage 2 – Alert Stage

1. The **Town of Goldfield** would set conservation goals and call for wide-based community support to achieve those goals.
2. The **Town of Goldfield** would inform customers of mandatory conservation measures (non-essential water uses, listed in Stage 1 are now mandatory).
3. The **Town of Goldfield** would inform customers of penalties if mandatory conservation measures are not observed (penalties are listed below).
4. The **Town of Goldfield** would inform customers of mandatory conservation water fees.
5. The **Town of Goldfield** limit the use of fire hydrants to fire protection uses only.
6. Use of water for outside plants, lawn, landscape, and turf areas will only be permitted 2 days a week.

Penalties for violation of mandatory conservation 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.

Stage 2 water rates would be 1.5 times the normal quantity rate, or as deemed necessary.

A flow restrictor can be installed if the customer is non-responsive after the 1st violation. The flow restrictor shall not restrict water delivery by greater than 50% of normal. The flow restrictor may be removed only by the **Town of Goldfield**, only after a 30-day period has elapsed and only upon payment of the \$100.00 removal charge.

If, after the removal of the flow restrictor, any non-essential or unauthorized use of water shall continue, another flow restrictor may be installed and shall remain in place until water supply conditions warrant its removal and the appropriate charge for removal has been paid.

Stage 3 – Emergency Stage

1. The **Town of Goldfield** would declare a drought and water shortage emergency and use media relations to supplement efforts to keep customers informed.
2. The **Town of Goldfield** would set rationing benchmarks for each customer class.
3. The **Town of Goldfield** would inform customers of prohibited water uses (non-essential water uses, listed in Stage 1 are now prohibited).
4. The **Town of Goldfield** would inform customers of penalties if prohibited measures are not observed (penalties are listed below).
5. The **Town of Goldfield** would inform customers of rationing water fees.
6. The **Town of Goldfield** would limit the use of fire hydrants to fire protection uses only.
7. The **Town of Goldfield** would prohibit outdoor watering.
8. The **Town of Goldfield** would seek monetary assistance in an effort to mitigate the drought (e.g. federal funding).

Penalties for violation of prohibited water use measures are:

- 1st violation – written warning.
- 2nd violation – \$100.00
- 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.

Stage 3 water rates would be 2 times the normal quantity rate, or as deemed necessary.

A flow restrictor can be installed if the customer is non-responsive after the 1st violation. The flow restrictor shall not restrict water delivery by greater than 50% of normal. The flow restrictor may be removed only by the **Town of Goldfield**, only after a 30-day period has elapsed and only upon payment of the \$200.00 removal charge.

If, after the removal of the flow restrictor, any non-essential or unauthorized use of water shall continue, another flow restrictor may be installed and shall remain in place until water supply conditions warrant its removal and the appropriate charge for removal has been paid.

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

APPENDIX B
PUBLIC EDUCATION MATERIALS

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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, and
- Water Efficient Landscaping,

These publications can be utilized until the **Town of Goldfield** 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.

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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 watering 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 bath tub requires about 70 gallons of water, while taking a five-minute shower uses 10 to 25 gallons.

Fix: If you take a bath, stopper 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 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 WaterSense 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.

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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
Outdoor water use efficiency	Pressure-reducing valves, residential	5 – 30%
	Low water-use plants	7.5 %
Replacements and promotions	Lawn watering guides	15 – 20 %
	Large landscape management	10 – 25%
	Irrigation timer	10 gpcpd
Water-use regulation	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
	Dishwashers, residential	1 gpcpd
	Hot water demand units	10 gpcpd
Water-use regulation	Landscape requirements for new developments	10 – 20 % in sector
	Greywater reuse, residential	20 – 30 gpcpd