# Manhattan Town Water

**PWS NV0000165**

# Nye County, Nevada

## Water Conservation Plan

**August 2021**

**Manhattan Town Water**
**Nye County**
**250 N. Hwy 160 Suite 2**
**Pahrump, NV 89060**
**(775) 751-6262**

# TABLE OF CONTENTS

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

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 Manhattan Town Water, as required by NRS 540.131.
This plan is available for inspection during normal business hours at 250 N. Hwy 160 Ste.#2 Pahrump NV. 89060.
The original Water Conservation Plan for the Manhattan Town Water was developed in May 2012.
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, May 2026.

## Statutory Requirements

This water conservation plan was prepared for the Manhattan Town Water 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 based on the time of day and the day of the week.

## System Description

The Manhattan Water System water system is managed by Nye County. It is a publicly owned residential/business municipal Community Water System and has a current water operation permit, NV0000165. Manhattan Town Water serves water to about 120 people on 105 residential and 5 business metered connections customers in its service area in Manhattan, Nevada, which is in Nye County. The service area boundaries are within the Manhattan town limits. The estimated population served in 2019 is 120 people. Manhattan 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 that is not under the direct influence of surface water (e.g., protected wells) and no surface water or groundwater under the influence of surface water sources. The groundwater is located within the Big Smoky Valley – Tonopah Flat – 137A.

There is one well (650 feet deep and produces 41 g.p.m.) supplying the system and one 250,000-gallon storage tank.

Manhattan Town Water has been granted water rights. Application # 76437 and #48520 have been certified. The current water rights are listed in the table below (Table 1).

**Table 1 – Water Rights**

| Application No. (Certificate No.) | Well No./Name | Diversion Rate | Annual Use |
|---|---|---|---|
| 76437 | Pipe Springs Well #2 | 0.1337 CFS max | 14.608 AFA (4.76 MG) |
| 48520 | Well- #1 | 0.0713 CFS max | 9.728413 AFA (3.1 MG) |

**Table 2 – Storage Tanks**

| Tank No. | Volume (gallons) |
|---|---|
| 1 | 250,000 |

Water is pumped from Well #2 to the 250,000-gallon storage tank. Well #2 (Pipe Springs Well) is the primary water source. Water is then distributed via gravity to the customers through 8" mainlines.

Manhattan Town Water system requires, at a minimum, a Distribution Grade 1 operator.

The system operator is required to perform all monitoring and testing of water quality. Manhattan Town 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 April 17, 2018 and shows no deficiencies with the system.

Manhattan Town Water charges a flat rate. It does not have a tiered rate usage fee.

Residential and business customers are billed $55.00 monthly.

Manhattan Town Water is currently in the process of conducting a rate study.

Wastewater collected from the Town of Manhattan is handled by individual septic systems.

## 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, August 2026.

Nye County may, if economically feasible, appoint a staff member to oversee the conservation efforts. The appointed 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, Manhattan Town Water will enact the voluntary conservation measures found in the *Conservation Measures* section. When more stringent measures are needed, Manhattan Town Water 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 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 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 Manhattan Town Water 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 Nye County 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 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 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

Manhattan Town Water provides the following incentives for conservation:

At present, it is not viable to offer any water conservation incentives.

## Water Management

Manhattan Town Water monitors and records water levels at the well and tank sites regularly. Currently Manhattan Town Water System has no way to monitor for unaccounted for water losses as customer meters are not being read because most meters are unreadable. Tank levels and the well meter are monitored regularly by SCADA. Total pumpage is monitored and recorded. At the present time, water loss can be estimated and calculated by close monitoring of the monthly master meter reading and following the trends recorded on SCADA. Historically we have seen leakage reflect on our recorded trends.

Nye County's goal for acceptable water loss would be not to exceed 10%. To reach this goal Nye County will seek to secure funding to upgrade all meters in Manhattan to make it possible to get accurate monthly meter readings. Currently Manhattan has 63 active meters and 42 non-active meters.

Total pumpage for 2019 and 2020 is listed below. (Table 3)

**Table 3 - Total Pumpage**

| Year | Total Pumped (Annual) | No. of Active customer connections | Average gallon usage (monthly) per customer connection |
|---|---|---|---|
| 2019 | 2.880,000 gallons | 65 | 3,692 gallons |
| 2020 | 3,632,000 gallons | 64 | 4,729 gallons |

Working relationships with other local water purveyors are maintained to ensure adequate water supplies are available.

Manhattan Town Water does not have a formal leak detection program. All leaks are repaired as soon as possible upon discovery.

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 to check new construction, renovation, and expansions within the county to ensure compliance with this ordinance.

The Town of Manhattan does not have a system for reusing of effluent. Effluent is treated by an on-site septic system.

## 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 Manhattan Town Water 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 Pipe Springs Well. The stages are described as follows:

In Stage 1, the warning stage, Manhattan Town Water would increase monitoring of its water supplies on a more frequent basis and would begin creating public awareness of the water supply situation and the need to conserve. Conservation measures at this stage would be voluntary.
Manhattan Town Water could install, where applicable, low-flow plumbing fixtures and perform leak detection on its bathroom fixtures.

In Stage 2, the alert stage, Manhattan Town Water would call for wide-based community support to achieve conservation, implement water use restrictions. Conservation measures at this stage would be mandatory.

In Stage 3, the emergency stage, Manhattan Town Water would declare a drought and water shortage emergency and implement more stringent water use restrictions. Media relations would be activated to inform the community 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.

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 the provisions listed will be placed after the approval of this plan.

## Evaluation Measurements

Manhattan Town Water should be able to evaluate the effectiveness of each plan element from the perspective of the whole system. In that regard, as a plan element is activated (e.g., mailing literature or declaring a drought stage), production figures will be compared to the same period of 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.

If there is a decrease in production 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., population 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 2.5 to 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 5 to 7.5% 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 7.5 to 15% reduction in water use.

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

# Rate Analysis

Nye County is currently in the process of conducting a rate study for Manhattan Town Water.

# 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 Manhattan Town Water 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 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.

## 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 are 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.

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, and
- Water Efficient Landscaping,

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

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

Specific tips for landscaping that can be provided to the users are listed below. During drought conditions for 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

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 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, 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 reading 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 |
| | Governmental building (indoors) | 5 % |
| Pressure management | 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% |
| | Irrigation timer | 10 gpcpd |
| Replacements and promotions | 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 |