

BEATTY WATER & SANITATION DISTRICT



**WATER CONSERVATION
AND
DROUGHT CONTINGENCY PLAN**
Revised and Updated June 01, 2019

PREPARED FOR:

Beatty Water & Sanitation District
101 N 2nd Street
P.O. Box 99
Beatty, Nevada 89003
(775) 553-2931

INTRODUCTION (NRS 540.121)

This water conservation plan has been updated for the Beatty Water & Sanitation District Public Water System (BWSD). The purpose of the water conservation plan is to continue to encourage a more efficient use of water within the BWSD service area and comply with Nevada Revised Statutes 540.121 through 540.151. BWSD supplies water for municipal and domestic purposes and by state law (*as indicated in bold/italics throughout this report*) is required to submit a water conservation plan for its service area.

NRS 540.121 Supplier of water defined.

As used in NRS 540.121 to 540.1511 inclusive supplier of water includes but is not limited to:

- 1. Any county, city, town, local improvement district, general improvement district and water conservancy district;**
- 2. Any water district, water system, water project or water planning and advisory board created by a special act of the Legislature; and**
- 3. Any other public or private entity, which supplies water for municipal, industrial or domestic purposes. The term does not include a public utility required to adopt a plan of water conservation pursuant to**

NRS 704.662. {Added to NRS by 1991, 520}

The small rural community of Beatty is located within Nye County, approximately 115 miles north of Las Vegas, Nevada. BWSD supplies residents of this community with their water and wastewater needs. The community is predominately residential with one Hotel/Casino, six motels, and numerous local attractions nearby (Scotty's castle, Death Valley, etc).

BWSD currently has 368 residential connections and 74 commercial connections serving approximately 1,010 persons. Water is supplied via three drilled underground wells, three storage tanks, and distribution pipelines of various sizes. The water system and the distribution pipelines are very old (pre-1965) and was originally constructed with Asbestos Cement Pipe (ACP). BWSD currently has an arsenic water treatment facility within its system and delivers water in the range of 300 to 500 gallons per minute. The treatment facility lowers the arsenic levels and fluoride levels are blended with small wells to meet EPA regulations. In addition, potable water is blended with the two water wells to lower the arsenic/fluoride levels. Wastewater collected from the area is currently managed through a series of Rapid Infiltration Basins (RIB) and Evaporation Ponds which were recently relined (April 2007). BWSD currently treats its wastewater through this system of aeration and evaporation ponds and eventually the wastewater infiltrates and recharges the groundwater. Currently, BWSD does not reclaim any of the wastewater for "direct" reuse (golf courses, alfalfa fields, parks, etc).

Population in the BWSD service area is expected to remain stable, in the near future, yet, the water system may continue to face water quantity issues for the BWSD distribution system. This will result in an increased water demand over time. As the demand for water increases new facilities will need to be constructed/maintained and new sources of water will need to be developed. Financial savings may be possible through water conservation (if upgrades or new infrastructure can be deferred). Currently, the District is in the process of revising their water system master plan to include commercial development based on the mining companies finding gold in the Beatty area.

The primary water conservation goals for BWSD are listed below. Some of these goals involve ongoing efforts and others are one-time projects that will improve the abilities of BWSD to manage available water and reduce the amount of water waste.

- BWSD will increase public awareness of the limited supply of water in Nevada and the need to conserve water. BWSD will dedicate a small spot on its user's monthly water bill for "Water Conservation Tips." BWSD will also include water conservation mailers/flyers on a semi-annual basis in its bills. These will be included on the new website www.beattywsd.net.
- BWSD will encourage the reduction in lawn sizes and the use of native plants/drought tolerant plants. To prevent water waste from irrigation overspray, BWSD will educate users in practical locations and sizes for turf in order to avoid areas that are difficult to water (narrow, strip, or odd shaped turf.)
- BWSD has reduced water waste and reduced the consumption by 5% by the year 2018 with approximately a conservation savings of 3,500,000 gallons.
- BWSD will strive to maintain accurate water pumping and usage records in order to identify and reduce water leakages and inaccuracies in the water system. A recent water audit was performed and found a 10 to 15% water loss reducing water loss by 5%.
- At such time that it proves to be financially feasible for BWSD to treat its wastewater and the wastewater can be put to beneficial use, BWSD will provide a plan to reuse its effluent water. However, this continues to be not feasible within the 5-year timeframe of this water conservation plan and continues to this date.
- BWSD will continue to discourage the "wasting of water" within its service area through reports by customers, BWSD personnel, and the Nye County Sheriff and Road Departments and the issuance of violation notices.
- BWSD will update its current drought contingency plan in order to maintain the most current list of emergency contact information, equipment available for emergencies, etc.

- BWSD will periodically review and evaluate water conservation measures and incentives for effectiveness and determine if revisions or continuations to the programs will be made.
- BWSD will train management and existing key personnel in water conservation measures, management practices, and techniques.
- All connections in the BWSD service area are currently on water meters. BWSD currently utilizes an increasing block rate water structure which, in itself, helps to conserve water by charging customers based on the amount of water that is actually used. A review was performed on current rate structure and an increase in water rates occurred on June 12, 2017.
- BWSD will update the water conservation plan every five years (as required by NAS 540.131.4.c.)

This plan includes information to help water customers in the BWSD service area continue to conserve water. The plan can be used as a resource to implement and measure the effectiveness of conservation efforts and can provide a planning guide for future conservation.

The following is included in this water conservation plan prepared for BWSD:

- Conservation Goals
- Existing and Planned Conservation Measures and Incentives
- Educational Materials/Examples

This plan is compliant with Nevada Revised Statutes (NRS) sections 540.121 through 540.151 and is available for public inspection at the following location:

Beatty Water & Sanitation District
101 N 2nd Street, P.O. Box 99 Beatty,
Nevada 89003
(775) 553-2931

Public comments about this plan are encouraged. Written comments may be sent to the address above.

GENERAL (NRS 540.131)

BWSD supplies water for municipal purposes and is required to submit a water conservation plan to the State for approval. BWSD's current water conservation plan was submitted to the State in 2008 and update on 2014. This water conservation plan is an update to that plan as required every five years. Following is the code from the water conservation portion of the Nevada Revised Statutes and its applicability to BWSD.

NRS 540.131 Plan of water conservation: Procedure for adoption and updating of plan; review of plan by Section; joint plans permitted by certain suppliers; duties of local governing body.

- 1. Except as otherwise provided in subsection 5, each supplier of water which supplies water for municipal, industrial or domestic purposes shall, on or before July 1, 1992, adopt a plan of water conservation based on the climate and the living conditions of its service area in accordance with the provisions of NRS 540.141, and shall update the plan pursuant to paragraph (c) of subsection 4. The provisions of the plan must apply only to the supplier's property and its customers. The supplier of water shall submit the plan to the Section for review by the Section pursuant to subsection 3.*
- 2. As part of the procedure of adopting a plan, the supplier of water shall provide an opportunity for any interested person, including, but not limited to, any privateer public entity that supplies water for municipal, industrial or domestic purposes, to submit written views and recommendations on the plan.*

BWSD will provide an opportunity for any interested party to submit written views and recommendations on the plan. BWSD will have a public hearing on the water conservation plan and will notify the public of said hearing by posting the agenda in the normal locations to allow anyone interested in the water conservation plan to provide either written comment or personal testimony. BWSD will review all public comments and make any revisions it deems necessary.

- 3. The plan must be reviewed by the Section within 30 days after its submission and approved for compliance with this section and NRS 540.141 before it is adopted by the supplier of water.*
- 4. The plan:*
 - (a) Must be available for inspection by members of the public during office hours at the offices of the supplier of water;*

BWSD will keep this water conservation plan in its office during regular business hours for public viewing. Members of the public are encouraged to make written views and recommendations on the water conservation plan. These written views should be sent to the BWSD office.

(b) May be revised from time to time to reflect the changing needs and conditions of the service area. Each such revision must be made available for inspection by members of the public; and

BWSD will revise this water conservation plan (as needed) to keep up with any changing needs and conditions of its service area. If any revisions are made to this water conservation plan, such revision will be made available for inspection by members of the public in the BWSD office during regular business hours.

(c) Must be updated every 5 years and comply with the requirements of this section and NRS 540.141.

BWSD will update this water conservation plan at least every 5 years (in order to comply with State requirements). The next update to the plan will need to be approved by the State and completed in 2018.

5. Suppliers of water:

(a) Who are required to adopt a plan of water conservation pursuant to this section; and

(b) Whose service areas are located in a common geographical area may adopt joint plans of water conservation based on the climate and living conditions of that common geographical area. Such a plan must comply with the requirements of this section and NRS 540.141.

This water conservation plan is intended solely for use within the BWSD service area boundaries and does not include a joint effort with any additional water suppliers.

6. 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 conservation adopted pursuant to this section which applies to property within its jurisdiction;

BWSD is within the jurisdiction of Nye County, and as such, **Nye County Code 19.40** (approved by the Nye County Board of County Commissioners July 17, 2007) pertaining to the "Prohibition of water wasting from any public water system within the county" is applicable to BWSD users (see **Appendix A**). BWSD will continue to discourage the "wasting of water" within its service area.

(b) Establish a schedule of fines for the violation of any ordinances adopted pursuant to this subsection; and

Nye County Code 19.40 "Wasting Water" states that any customer found in violation of the Ordinance for the first violation will be issued a written warning by an official representative of the public water system and a second violation constitutes a misdemeanor. **Appendix B** includes actual notices sent out by BWSD and a form that can be filled out to report the wasting of water.

(c) Hire such employees as it deems necessary to enforce the provisions of any ordinances it adopts pursuant to this subsection. (Added to NRS by 1991, 520; A 2005, Z570; Z007, 1Z53}

Due to the small size of the system, BWSD does not currently have personnel, procedures, or finances in place to monitor water waste full time; however, existing employees and individual members within the community report visible water wasting to the district's manager. BWSD does not have the financial capability of hiring employees for the sole purpose of water conservation; however, there is value in training key personnel in order for the conservation and drought sections in this plan to be effective. BWSD will train existing personnel in water conservation methods and water waste.

CONSERVATION PROVISIONS/MEASURES(NRS 540.141)

BWSD will implement public education programs to increase awareness of the limited supply of water in the State of Nevada and the need to conserve water (as required by NRS 540.141.) Following is the code from the water conservation portion of the Nevada Revised Statutes and applicability to BWSD:

NRS 540. 141 *Required provisions of plan or joint plan of water conservation; review by Section; posting of plans and joint plans on Internet website (www.beattywsd.net).*

1. A plan or joint plan of water conservation submitted to the Section for review must include provisions relating to:

(a) Methods of public education to:

(1) Increase public awareness of the limited supply of water in this State and the need to conserve water.

A key objective of this plan is to increase public awareness of the limited supply of water in Nevada and the need to conserve water. A successful educational program provides information to the public that helps to motivate water users in their efforts to conserve water. The BWSD provides its customers with educational materials and resources including home & landscape guides, mailers, and links to conservation websites.

Example water conservation brochures and pamphlets are included in **Appendix C**. Regardless of the type of educational resources that are used, the most important consideration is their content and if the information is disseminated successfully. Specific water conservation incentives are included in the NRS 540.151 section of this plan.

(2) Encourage reduction in the size of lawns and encourage the use of plants that are adapted to arid and semiarid climates.

Water usage is much higher in the summer than the winter due to the watering needs of landscaping. For this reason, a landscaping code is a fundamental part of an effective water conservation plan. Landscape codes regulate new landscapes and the replacement of existing landscapes. The intent of the code is not to limit landscaping options, but to help customers optimize the efficiency of landscape water use. BWSD does not have the authority to institute a landscaping code. BWSD, however, will encourage the reduction of the size of lawns and encourage the use of Xeriscaping methods and drought tolerant/native plants by providing education to its users through brochures in the monthly bills and conservation tips in its monthly newsletter. **Appendix D** gives a list of compatible shrubs, trees, and plants for the BWSD service area.

Education will encourage BWSD customers to become more conscious about the types of plants that can be purchased, that require the least amount of water, and the locations where the plants are most suited for planting. BWSD will encourage the reduction of lawn sizes within its service area through education. BWSD will consider implementing a watering schedule (i.e. even/odd schedule) and instituting times during the day when watering is not allowed (hottest times when water is most likely to evaporate).

(a) Specific conservation measures required to meet the needs of the service area, including, but not limited to, any conservation measures required by law.

Water conservation measures are defined as a device/behavioral practice that is implemented by a water system/user that will result in a quantifiable/measurable amount of water savings or a more efficient use of water. Water conservation measures include "hardware" devices/equipment or behavioral/management practices that will directly save water. Examples of water conservation measures are listed below and are included in **Appendix E**:

- Residential (Indoor)

Hardware devices/equipment- installing low flow toilets, waterless and composting toilets and urinals, low-flow shower heads and faucets, water-efficient clothes washers and dishwashers, etc.

Behavioral/management practices- not using toilets for trash disposal, shutting off faucets when brushing teeth or performing other duties, washing only full loads of clothes, dishes, etc.

- Landscaping
 - Hardware devices/equipment- installing native/drought tolerant plants/landscaping (including Xeriscape techniques), drip irrigation, automatic shut-off hoses, rain sensors, etc.
 - Behavioral/management practices- watering less frequently, utilizing water efficient landscape maintenance practices, etc.
- Commercial/Industrial/Institutional
 - Hardware devices/equipment- using cooling towers with recycled water, reusing process water, leak repair within facility, etc.
 - Behavioral/management practices- shutting off unused valves, sweeping a sidewalk rather than washing with a hose, use water-efficient equipment, not serving water automatically in restaurants, etc.
- Water utilities
 - Hardware devices/equipment- leak detection and repair, hydrant capping, utilizing reused effluent, implementing water rate structures that promotes conservation, etc.
 - Behavioral/management practices- regularly service and adjust system valves and connections, reduce high pressure locations, etc.

Water conservation measures that are applicable to BWSD are listed as follows:

BWSD Residential Hardware/Device Conservation Measures

BWSD is a small water system that has limited regulatory authority and finances. Conservation measures involving retrofitting equipment/devices are expensive; therefore, a cost-benefit analysis would need to be performed before implementation of any such program to evaluate its effectiveness. Most indoor water can be saved in the bathroom. Toilets, showerheads, and faucets are typically the biggest culprits of indoor water waste. BWSD will purchase dye tablets so that its users can determine if they have a leaky toilet. BWSD will include instructions on how to use the dye tablets and information on how much water/money can be saved if a leaky toilet is fixed. Typically retrofit of a leaking toilet can save between 0.5 to 1.5 gpf, depending on the type of retrofit device installed and the adaptability of a particular toilet to operate at reduced flows. In a household the water savings range from 2 to 4gpcpd.

BWSD can expect to save between 1,000,000 to 1,600,000 gallons of water per year if all of the toilets within its district were operating efficiently. BWSD will encourage the use of toilet retrofit devices within its system through education.

BWSD Residential Behavioral Conservation Measures

BWSD will use informational measures to educate its users of individual behavioral changes that can be made to save water. A small section on the monthly bill will be allocated to "Water Conservation Tips" and can include amounts of water saved each year by implementing behavioral conservation measures such as turning off the water when brushing your teeth, using other methods besides allowing the water to run to cool/heat the water that comes out of the faucet, taking shorter showers, only washing clothes/dishes when the machine is full, proper landscaping techniques, etc. BWSO will also strive to include water conservation pamphlets in the monthly bill on a semi-annual basis. BWSD continues to currently consider the feasibility of creating a website. If a website is set up for BWSD, it will include links to water conservation websites and additional water conservation tips. A successful educational program can change behaviors, resulting in long term water savings and a financial savings to the water user.

BWSD Commercial/Industrial Hardware & Behavioral Conservation Measures

There are approximately 80 commercial connections on the BWSD water system. Water conservation to these establishments can come from a variety of different methods. BWSD will provide educational materials to these establishments on the importance of fixing leaking toilets/sinks, proper landscape maintenance, etc. Education can result in both hardware and behavioral changes that will directly save water.

BEATTY WATER AND SANITATION DISTRICT												
January	February	March	April	May	June	July	August	September	October	November	December	Total
8,218,700.00	6,978,400.00	7,278,000.00	8,602,300.00	9,085,400.00	9,634,300.00	7,897,400.00	8,469,000.00	7,506,000.00	7,113,000.00	4,913,200.00	4,687,300.00	90,383,000.00
0	0	0	0	0	0							903,830.00
0	0	0	0	0	0	0	0	0	0	0	0	
8,218,700.00	6,978,400.00	7,278,000.00	8,602,300.00	9,085,400.00	9,634,300.00	7,897,400.00	8,469,000.00	7,506,000.00	7,113,000.00	4,913,200.00	4,687,300.00	
200000	200000											
8,018,700.00	6,778,400.00	7,278,000.00	8,602,300.00	9,085,400.00	9,634,300.00	7,897,400.00	8,469,000.00	7,506,000.00	7,113,000.00	4,913,200.00	4,687,300.00	
8,018,700.00	6,778,400.00	7,278,000.00	8,602,300.00	9,085,400.00	9,634,300.00	7,897,400.00	8,469,000.00	7,506,000.00	7,113,000.00	4,913,200.00	4,687,300.00	
8,418,700.00	7,178,400.00	7,278,000.00	8,602,300.00	9,085,400.00	9,634,300.00	7,897,400.00	8,469,000.00	7,506,000.00	7,113,000.00	4,913,200.00	4,687,300.00	90,783,000.00
	3,993,390	4,117,870	13,589,980	5,043,330	5,744,060	9,236,296	7,856,555	6,586,544	6,586,544	5,000,000	4,000,000	71,754,569
52.57%	42.64%	-86.73%	41.37%	36.78%	4.13%	-16.95%	7.23%	12.25%	7.40%	-1.77%	14.66%	9.46%
												Yearly Average

WATER PRODUCTION LOSS AND ACCOUNTABILITY REVIEW

BWSD will save water through the process of detecting and repairing leaks within its system. Detecting leaks within the system can be a time-consuming and costly process that may or may not result in the actual savings of a significant amount of water. Leaks within the system can contribute to high percentages of unaccounted-for water within the system. Based on historical records for pumping and water usage the amount of unaccounted water for BWSD currently averages 10 to 15%.

BWSD has compiled a spreadsheet for each year monitoring water loss and currently averages 10 to 15% of unaccounted water. The reason they based was on well or production meters not registering portions of the flowing water. The water loss issue was reviewed by staff and found the issue was the timing of the meter reads in the distribution with water production reads. An analysis was performed by matching the days of water produced to the meter read dates. BWSD learned they actually were in a range of 10 to 20 percent of unaccounted water loss. This would coincide with meters typically under-registering in the distribution system. Water accountability will continue to be investigated by utilizing the approved AWWA Water loss spreadsheet calculator. Staff has reported they are replacing meters known to be 5 years or older in the distribution and/or when they discover meters that are of concern.

Currently, BWSD's personnel will identify leaks in the water system through meter readings, billing records, monthly audits, and well logs. BWSD personnel currently compare the monthly bills from previous bills when a read meter indicates an unusual water usage. BWSD identifies leaks at the users end and inaccuracies in water meters through billing records and monthly audits. BWSD identifies leaks within the system through abnormal well logs and unusual pressure readings. BWSD's water system *is* old ACP pipelines and the pipes have had a history of leaks. BWSD's well meters have shown that they are not indicative of the amount of water that is being used (well meters are under-registering (water pumped is less than the billed water)).

BWSD will strive to reduce the amount of water extracted from the various sources versus the water actually delivered to customers through a system of identifying and reducing leaks in the water distribution system, instituting a meter maintenance/replacement program, connecting un-metered and multiple users, monitoring water usages that are not billed for, and servicing the system valves and connections are methods that can help BWSD reduce leaks.

An audit comparing water production with metered amounts has been performed. Additional audits will then be done every year thereafter. Results from the initial audit will be compared with those of subsequent audits in order to determine the effectiveness of measures and/or incentives under this water conservation plan. A water audit demonstrated errors were made by Farr West Engineering leading to a higher per capita per day water usage. BWSD will continue to detect leaks by comparing pumping and usage records to evaluate how much water is unaccounted-for annually. If the percentages increase significantly, BWSD will consider implementing a leak detection program. In addition, BWSD has purchased leak detection equipment to check for leaks in the distribution system.

(b) Where applicable, increase the reuse of effluent.

This plan will encourage good management practices for the reuse of effluent by those holding authority for its use. Note that BWSD currently has primary storage rights to its effluent. Wastewater collected from the area is currently managed through a series of Rapid Infiltration Basins (RIB) and Evaporation Ponds which were recently relined (April 2007). BWSD currently treats its wastewater through this system of aeration and evaporation ponds and eventually the wastewater infiltrates and recharges the groundwater. Currently, BWSD does not reclaim any of the wastewater for "direct" reuse.

As it was previously, it is not feasible for BWSD to treat its wastewater and there are no future plans to "directly" reuse effluent. If it does become financially feasible for BWSD to treat its wastewater and the effluent can be put to beneficial use, BWSD will provide a plan to "directly" reuse the effluent water. However, treatment of BWSD wastewater is not anticipated to be financially feasible during the 5-year time frame of this water conservation plan.

(c) A contingency plan for drought conditions that ensures a supply of potable water.

BWSD will update its current contingency plan (last update was 1/1/2002) in order to maintain the most current list of emergency contact information, equipment available for emergencies, etc. The primary goal of water conservation is to ensure that there is sufficient water for essential public health and safety needs at all times. The climate in Northern Nevada is arid and subject to periodic droughts that can vary in duration. It is important, therefore, to have a reserve on hand for such events. Conserving water during times of plenty can help to ensure that such reserves are available for drought and emergency conditions. With recent water shortages becoming evident in other locations around the United States, maintaining an adequate supply of water is becoming a more vital component of providing the water that a community needs.

All water supplied by BWSD comes from groundwater sources. Because of this it is difficult to determine the effect of a drought year on the groundwater system and the consequences of a drought may not be detected in the water table until several years after the drought. In extreme instances, where a well can no longer provide the needed water, BWSD will consider options such as restricting water usage until the problem can be solved, increasing the depth of the existing wells, developing a new well site, and/or aggressively finding a new water source, etc.

(d) A schedule for carrying out the plan or joint plan.

The conservation measures and incentives in this plan will be implemented according to the schedule shown in Table 2.

Table 2 Beatty Water & Sanitation District Conservation Implementation Schedule			
Measures	2018	2019	2020
Leak Detection Program	Monitor/Evaluate	Implemented	Ongoing
Incentives	Water Tiers	Water Tiers	Water Tiers
Annual Production Audit	Ongoing	Ongoing	Ongoing
Monthly Consumption Audits	Ongoing	Ongoing	Ongoing
Conservation Training for Personnel	Implemented	Ongoing	Ongoing
Monthly Newsletter Conservation Tips	Draft	Implement Website	Continue
Update Drought Contingency Plan	Implemented	Ongoing	Ongoing
Meter Replacement Program (Source)	Ongoing	Ongoing	Ongoing
Meter Replacement Program (Distribution)	Ongoing	Ongoing	Ongoing

(e) Measures to evaluate the effectiveness of the plan or joint plan.

The annual production versus water usage audit will help determine if the schedule needs to be adjusted to accommodate the implementation of new measures or incentives or the discontinuation of old ones. Based on the total billed/unbilled water usage, "estimated" water usage including a conservative loss of 10% and a population of 1,010 persons, BWSD averages 120 gallons per capita per day (gpcpd). This number is a conservative estimate based on the number of hotels and tourists who use water as transients.

The average water usage in the State of Nevada is 200 gpcpd. Southern Nevada (longer/hotter season) typically uses more water per person than the State average and Northern Nevada (shorter/cooler season) typically uses less water per person than the State average. Implementation of the measures/incentives in this plan and several years of data collection will be required in order to evaluate their effectiveness (a yearly analysis and/or water audit should be performed to compare the pumping & usage records to that of previous years).

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

The implementations of measures/incentives described in this plan are anticipated to conserve water. Water conservation amounts based on the implementation of educational based incentives are difficult to quantify. Because it is difficult to determine the additional level of individual participation in educational conservation programs, a range is provided for an average water conservation reduction of

10 gpcpd. Conservation can be obtained through an increase in the residential customers becoming further educated and continually reminded of the value of conserving water.

For each conservation measure and incentive, the amount of water saved will continue to reduce consumption. However, the BWSD is currently operating at 120 gpcpd below the average water use in Nevada. The ongoing process of providing educational material to assist with large water users **will** benefit the conservation of water. The reviewing of replacing and repairing meters in the distribution will also assist water accountability. A goal of reducing water consumption by 2% each year is obtainable once an accurate picture is provided through improving the time of reading distribution meters to coincide with water production readings. The focus of watering techniques and planting drought resistant plants will be assisting as well.

1. A plan or joint plan submitted for review must be accompanied by an analysis of:

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

BWSD currently charges its users based on an increasing block rate schedule. The current water rates include a monthly base rate of \$23.70 per unit (includes 2,000 gallons of water usage). Additional charges for water above the 2,000 gallons included in the base rate are shown below in Table 3. Regardless of meter size or customer classification (residential, commercial, etc), all customers are charged the same commodity rate for additional water that is not included in the based rates.

TABLE 3

Tier	Commodity Charge per 1,000 gallons	Gallons
1	\$0	0-2,000 included base rate
2	\$1.47	2,001 to 8,000
3	\$2.05	8,001 to 15,000
4	\$2.47	15,001 to 30,000
5	\$3.26	>30,000

Monthly base rate increased from \$17.50 to \$23.70, June 12, 2017

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

Water rates, as a conservation incentive, work to increase awareness about the value of reducing water and can motivate users to implement water conservation measures. The multiple increasing blocks/tiered rate structure {currently utilized by BWSD) helps to encourage its users to become more conscious of the water that is being used by increasing the cost to use higher volumes of water. The existing BWSD water rates have been designed to charge users for the amount of water they actually use and to encourage conservation.

- 2. Section shall review any plan or joint plan submitted to it within 30 days after its submission and approve the plan if it is based on the climate and living conditions of the service area and complies with the requirements of this section.**
- 3. The Chief may exempt wholesale water purveyors from the provisions of this section which do not reasonably apply to wholesale supply.**
- 4. To the extent practicable, the State Engineer shall provide on his Internet website a link to the plans and joint plans that are submitted for review. In carrying out the provisions of this subsection, the State Engineer is not responsible for ensuring, and is not liable for failing to ensure, that the plans and joint plans which are provided on his Internet website are accurate and current. (Added to NRS by 1991, 521; A 2005, 2571; 2007, 1254)**

Benchmarks from selected conservation measures from EPA 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
	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

5. For the installation of landscaping that uses a minimal amount of water.

BWSD will encourage the reduction of lawn sizes within its service area through education, incentives. Regulatory conservation incentives that BWSD will draft and implement include an outdoor water irrigation scheduling (with watering days and times). A watering schedule (such as even/odd addresses) and times of the day when watering is not permitted will encourage users to conserve water and install landscaping that utilizes a minimal amount of water. BWSD will include brochures on Xeriscaping methods, types of plants that grow well in the area, and the difficulty in watering small strips/odd shaped turf, etc. to encourage its users to become more conscious about the types of plants to purchase and locations to place them. The intent of water rules and regulations is to limit water use during water shortages and drought conditions, or to restrict use if it is found that water is being wasted. BWSD will continue to discourage the "wasting of water" within its service area through reports by customers, BWSD personnel, and the Nye County Sheriff and Road Departments and the issuance of violation not in policy guidelines.

CONSERVATION INCENTIVES (NRS 540.151)

Water conservation incentives are defined as methods that motivate water users to implement conservation/efficiency measures. In itself, conservation incentives do not directly save a single drop of water; they increase the customer awareness about the value of reducing water.

Increasing public awareness about the value of reducing water will lead to users making behavioral changes that will result in the increase implementation of conservation measures that directly save a quantifiable amount of water. Conservation incentives are classified into three categories: educational, financial, and regulatory. Examples of water conservation incentives are listed below:

Educational: Direct-mail literature, water bill inserts, adding historical water consumption on users bills, television and radio advertisements, media coverage, school curriculum, local workshops/training programs/"Water Fairs" are a few examples.

Financial: Bill credits, rebates, conservation designed water rate structures, incentives or surcharge fees, developer rebates/compensations for water saving achieved.

Regulatory: Water efficiency policies/ordinances/laws/plumbing codes, landscape design standards, irrigation scheduling, penalties for outdoor water waste, pollution prevention requirements along with other additional regulatory measures.

Following are specific conservation incentive methods that are used or will be utilized by BWSD to increase public awareness on water conservation within its service area:

- BWSD will continue draft and implement a plan to mail water conservation flyers (on a semi-annual basis) and inform customers using their website about the importance of conserving water. Mailings will be timed with water conservation information during peak demands. For instance, landscaping conservation tips should go out in the May and June months and continue throughout the summer months. Whereas, indoor conservation tips should go out during the months of September and October, and extreme cold weather tips to prevent water pipe breaks. Included in Appendix G are websites that BWSD can utilize to obtain valuable information on water conservation tips to pass on to its users.
- BWSD has implemented a website to provide information to the consumers. The website is posted on the water bill. Appendix G shows websites that BWSD can provide links to from its website so that is users can obtain valuable information on water conservation.
- Detecting leaks, on the customer's side of the property, can help users to identify and fix water waste related to unnecessary leaks on their individual properties. Included in Appendix H is a description and examples on how to read a water meter and can be included in the monthly bill to inform users on how to detect a leak on their side.

DROUGHT CONTINGENCY PLAN

Stage 1 - Warning Stage

1. BWSO would increase monitoring of water supplies.
2. BWSO would begin creating public awareness of the water supply situation and the need to conserve.
3. BWSO would inform customers of voluntary conservation measures (non-essential water uses, listed below).
4. BWSO would provide customers with retrofit kits either at cost or free.

Non-essential water uses are:

- 1) Use of water through any connection when BWSO 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.
- 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 outside plants, lawn, landscape, and turf areas with even numbered addresses watering on Tuesdays and Thursdays and odd numbered addresses watering on Wednesdays and Fridays. Watering of plants, lawn, landscape, and turf areas are prohibited between the hours of 10 a.m. and 6 p.m. No watering of plants, lawn, landscape, and turf areas is allowed on Mondays.
- 9) Use of water for watering outside plants and turf areas using a hand-held hose without a positive shut-off valve.
- 10) 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.
- 11) Use of water for the filling or refilling of swimming pools.

Stage 2 - Alert Stage

1. **BWSD** set conservation goals and call for wide-based community support to achieve those goals.
2. BWSD would inform customers of mandatory conservation measures (non-essential water uses, listed in Stage I are now mandatory).
3. BWSD would inform customers of penalties if mandatory conservation measures are not observed (penalties are listed below).
4. BWSD would inform customers of mandatory conservation water fees.
5. **BWSD** limit the use of fire hydrants to fire protection uses only.
6. BWSD would provide customers with retrofit kits either at cost or free.

Penalties for violation of mandatory conservation measures are:

1st violation - written warning.

2nd violation- \$100.00.

3rd violation - tum-off of water services, plus \$100 re-connection fee.

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 - Emergency Stage

1. BWSD would declare a drought and water shortage emergency and use media relations to supplement efforts to keep customers informed.
2. BWSD would set rationing benchmarks for each customer class.
3. BWSD would inform customers of prohibited water uses (non-essential water uses, listed in Stage I are now prohibited).
4. BWSD would inform customers of penalties if prohibited measures are not observed (penalties are listed below).
5. BWSD would inform customers of rationing water fees.
6. BWSD would limit the use of fire hydrants to fire protection uses only.
7. BWSD would provide customers with retrofit kits either at cost or free.
8. BWSD would seek monetary assistance in an effort to mitigate the drought (e.g. federal funding).

Rationing benchmark is set at 90 gpcpd.

Penalties for violation of prohibited water use measures are:

1st violation - written warning.

2nd violation - \$200.00.

3rd violation - turn-off of water services, plus \$100 re-connection fee.

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 BWSD in writing, explaining in detail the reason for such a variation. BWSD shall respond to each request.

CHAPTER 19.40 WASTING WATER

19.40.010: EFFECTIVE AREA:

This Chapter shall be effective within the town boundaries of the unincorporated town of Beatty. (Ord. 159, 1994)

19.40.020 : DEFINITIONS:

The following definitions apply specifically to this Chapter:

CUSTOMER: Any person or entity who is an owner, occupant, manager or user of real property to which water is supplied by a public water system; any person or entity who uses water supplied by a public water system; any person or entity who is billed for the supply of water from a public water system; or any person or entity who otherwise has the right or permission to utilize water provided by a public water system, provided that "customer" does not include any firefighting department or agency.

PUBLIC WATER SYSTEM: Any publicly or privately owned network of pipes, conduits, wells, reservoirs, holding tanks and other components, including any combination thereof which supplies water to customers who are charged a fee of any kind or nature for such purpose of which is designed to supply water or is capable of supplying water to customers for a fee and includes any such system whether or not it is operated under the regulatory authority of the Nevada Public Service Commission, but does not include any irrigation company or district whose primary purpose is to supply water for farming.

TO WASTE WATER: The expenditure or application of water from a public water system that results in water:

- A. Flowing into any gutter, sidewalk, swale, or storm drain, in a steady stream or flow during the course of a period of ten (10) or more continuous minutes; or
8. Collecting in pools or any depressed area in a public street, sidewalk, or right of way, to a depth of one inch (1") or more. (Ord. 159, 1994)

19.40.030: WASTING WATER UNLAWFUL

- A. In General: It is unlawful for any customer of a public water system to waste water, or to allow the waste of water, from real property owned, occupied, used or managed by said customer, in the unincorporated areas of the County.
- B. Notice Of Violation: Any customer found to be in violation of this Chapter, for the first time, shall be issued a written warning by an official representative of the public

water system. That warning will describe the manner in which the water is being wasted and will warn the customer that it is unlawful to waste water.

- C. Service Of Notice: The written warning shall be served upon the offending customer by one of the following means: 1) personal service upon the customer; 2) personal service upon a person of suitable age and discretion residing at the customer's residence or working for the customer at the place where the waste of water initiates; 3) posting such notice upon the premises where the waste of water initiates; or 4) mailing a copy of such notice to the customer at his, her or its address, as shown on the records of the public water system. (Ord. 159, 1994)

19.40.040: CRIMINAL PENALTIES:

Any second violation of this Chapter by a customer, after the proper service of written notice of a first violation, constitutes a misdemeanor. (Ord. 159, 1994)

19.40.050: AUTHORITY TO ISSUE CITATIONS:

The Nye County Sheriff and Sheriff's deputies are authorized to prepare, sign and serve misdemeanor citations, pursuant to Nevada Revised Statutes chapter 171, to enforce the provisions of this Chapter, and shall diligently prosecute the violation thereof. (Ord. 159, 1994)

19.40.060: OTHER PENALTIES:

Any person, group of persons, partnership, corporation or other business or governmental entity which furnishes water to persons within the unincorporated areas of the County for business, manufacturing or household use and is not a public utility regulated by the Public Service Commission of Nevada may reduce or terminate water service to any customer who wastes water, as defined by this Chapter. (Ord. 159, 1994)

APPENDIXB - BWSO WATER WASTER FORM AND VIOLATIONS

BEATTY WATER & SANITATION DISTRICT
101 N 2nd Street
Beatty, NV 89003-0099
phone 775•553-2931

NOTICE OF VIOLATION OF WATER WASTING ORDINANCE #159

Date: _____

Issued Against: _____

Account Number: _____

Please accept this document as official notice that on this date at _____
Beatty Water & Sanitation District personnel observed a Violation of the above-
mentioned ordinance as follows:

Any second violation of this ordinance shall constitute a misdemeanor and
a citation will be issued. A copy of said ordinance is enclosed.

Signed: _____
Manager

Should you have any questions, contact District Office during regular business hours.

NOTICE OF VIOLATION OF WATER WASTING ORDINANCE #159

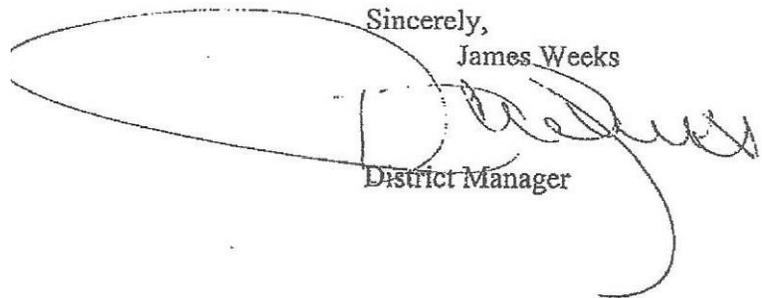
BEATTY WATER & SANITATION DISTRICT
1300 A AVENUE NORTH
P.O.BOX99
BEATTY, NV 89003
775 -553-2931

[REDACTED]

TO WHOM IT MAY CONCERN,

Please accept this document as an official notice of water wasting as stated in ordinance#159. After complaints from several individuals along with a notification from Nye County Sheriff's Department and the Nye County Road Department, Lorraine Eastman an employee of Beatty Water & Sanitation District, did go to _____ on _____ to find water flowing off pavement and lawn areas at the _____ into a dirt ditch alongside art unpaved city street Becky Lane. There it overflowed the ditch and ran across the street in multiple places causing ruts in the road and mud puddles. Excessive watering has been observed of 4 times a day. The standing water on Becky Lane is attracting nuisances such as flies, mosquitoes, and burros to the area. Any second violation of this ordinance shall constitute a misdemeanor and a citation will be issued.

Sincerely,
James Weeks


District Manager

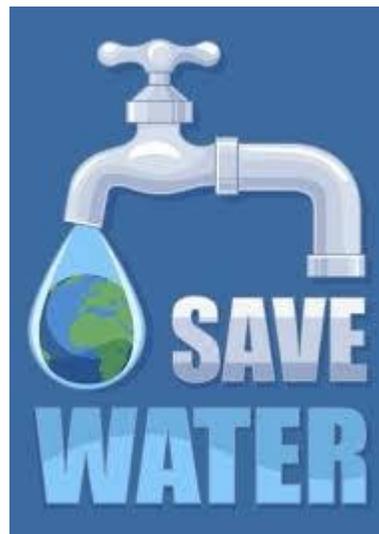
APPENDIX C -AWWA CONSERVATION BROCHURES/PAMPHLETS EXAMPLES

The following pamphlets are available on the AWWA website at:

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

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

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



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

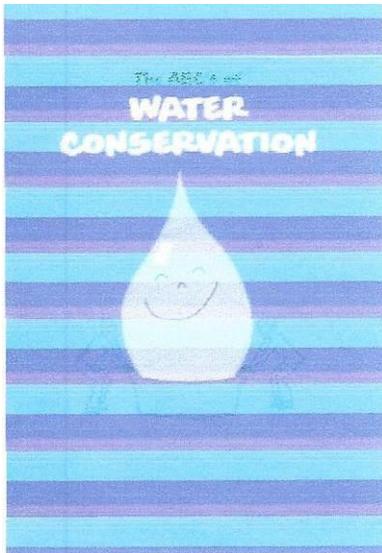
55 Facts, Figure and Follies of Water Conservation is a list of 55 items that promote water conservation.

Let's Learn About...The Water Cycle diagrams the seven stages of the water cycle (see Figure 1.7)

A Consumer's Guide to Water Conservation the Inside Story gives eight ways to reduce water waste inside the home (see Figure 1.8).

A Consumer's Guide to Water Conservation the Outside Story gives eight ways to reduce water waste in landscaping (see Figure 1.9).

Pershing County Water Conservation Guide and Sample Page:



APPENDIX D - LANDSCAPE GUIDES

Welcome to our Water-Efficient Landscape Guide!



We live in a high-desert climate in the Truckee Meadows with an average annual rainfall of seven inches. Since water is a limited resource and outdoor irrigation increases usage by 400 percent during the summer months, we always encourage responsible water use. This guide addresses the seven horticultural principles from proper planning to maintenance, providing you tools you will need for a healthy, water-efficient landscape.

Whether you are remodeling an existing yard or starting from scratch, this guide will stimulate your ideas and imagination on how to layout your landscape, provide a selection of plants that grow well in our climate while adding natural beauty, and provide guidance on how to care for your lawn and plants. The seven principles, or processes, include:

1. **Proper Planning (design)**
2. **Efficient Irrigation**
3. **Plant Selection**
4. **Soil Improvement**
5. **Mulching**
6. **Planting**
7. **Maintenance**

These seven principles are broken down into three sections, giving you the tools to form the right plan for your yard. So, follow the steps in this guide to achieve the landscape you desire, while using water responsibly.

APPENDIX E - EXAMPLES OF WATER CONSERVATION MEASURES

Conservation measures are divided into two types: (1) Hardware/Equipment and (2) Behavioral/Managerial. Each of these is subdivided into five categories of application: (1) Residential, (2) Landscape, (3) Industrial, Commercial, and Institutional (ICI) (4) Agricultural, and (5) Purveyor. The following conservation measures will be classified first by application and then by type. These measures are suggestions and can only be enforced if included as part of an ordinance.

A.1 RESIDENTIAL CONSERVATION MEASURES

A.1.1 Behavioral Measures

A.1.1.1 Residential Water Audits. Water audits could target high use customers first and then be offered to all customers. The following elements should be part of an effective audit.

- Purpose for the audit.
- Estimation of use for all fixtures and appliances.
- Check for and repair leaks.
- Evaluation of Landscape (See "Landscape Conservation Measures)
- Evaluation of outdoor water use.
- Evaluate efficiency measures.
- Educate customers using available flyers

An audit should take no more than 30 to 45 minutes.

A.1.1.2 Additional Measures. The sample pamphlets in Appendix A include additional behavioral conservation measures.

A.1.2 Hardware/Equipment Measures

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

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

A.2 LANDSCAPE CONSERVATION MEASURES

A.2.1 Behavioral Measures

A.2.1.1 Landscape Water Audits. Landscape water audits should be conducted on park and golf course irrigation systems and could be considered an option on residential irrigation systems, targeting high-volume users.

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

A residential landscape audit should take no more than an hour. Parks and golf courses could take substantially longer.

A.2.1.2 Xeriscape™. Xeriscape is a method of landscaping that employs low-water use plants, turf, ground covers, shrubs and trees. It includes careful planning, soil analysis, and irrigation system design.

A.1.1.3 Additional Measures. The sample pamphlets in Section 5.1 include additional behavioral conservation measures.

A.2.2 Hardware/Equipment Measures

Landscape hardware measures consist of two basic groups: (1) Landscape materials and (2) irrigation equipment.

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

A.3 INDUSTRIAL, COMMERCIAL, AND INSTITUTIONAL (ICI) CONSERVATION MEASURES

A.3.1 Behavioral and Hardware/Equipment Measures

A.3.1.1 ICI Water Audits. Since ICI water audits can require a substantial amount of time (4 hours or more), it may be necessary to have a private engineering firm hired by the water user conduct the audit. There is incentive for ICI customers to pay for audits since the results of an audit could translate into substantial savings. An ICI water audit should include the following elements:

- Support from ICI owners, managers, and employees
- Survey/Estimation of facility use based on meter records.
- Calculation of water-related costs.
- Evaluation of efficiency measures.
- Evaluation of payback periods for measures.
- Efficiency recommendations and implementation.
- Tracking and reporting system.

A.3.1.2 Manual Washing. Manual washing is cleaning done on surfaces with hoses and cloths.

MANUAL WASHING

Behavioral Measures	Hardware/Equipment Measures
<ul style="list-style-type: none"> • Surfaces should be swept or brushed off before using water to clean. 	<ul style="list-style-type: none"> • High pressure low-volume hoses with automatic shut-off nozzles • High-pressure pumps, steam cleaners.

A.3.1.3 Vehicle Washing. Vehicle washing includes manual washing and automated car washes or a combination of both.

VEHICLE WASHING

Behavioral Measures	Hardware/Equipment Measures
<ul style="list-style-type: none"> • Limit number of spray nozzles and set flow rates at lowest volume and pressure required. • Adjust nozzles in automated systems so that they take full advantage of gravity and position. Also make sure water shuts off after vehicles have passed. • Increase conveyor speeds or reduce rinse cycle time. • Sweep wash area before using water to clean. • Establish a regular maintenance schedule that includes checking for leaks and making repairs. 	<ul style="list-style-type: none"> • Recycling systems. These would include filters and storage tanks. • High pressure pumping systems.

A.3.1.4 Kitchens and Restaurants. Kitchen and restaurant conservation is divided into four areas of application; 1. Food and drink preparation, 2. Dishwashing, 3. Garbage disposal and scraping trough, and 4. Ice making.

FOOD AND DRINK PREPARATION

Behavioral Measures	Hardware/Equipment Measures
<ul style="list-style-type: none"> • Presoak and wash food service articles in basins instead of running water. • Reduce thawing of food with hot water unless required by law. If required use lower flow. • Avoid running water to melt ice in sinks. • Use full loads in dishwashers and other automated equipment. • Serve water only when requested by customers. 	<ul style="list-style-type: none"> • Low-volume faucets • Hands-free foot pedal valves for faucets • On demand hot water dispensers

DISHWASHING

Behavioral Measures	Hardware/Equipment Measures
<ul style="list-style-type: none"> • Presoak utensils, dishes, and pots and pans in basins of water instead of using running water prior to loading dishwashing machines. • Scrape food off of plates rather than use running water. • Operate scraping troughs only while dishes are actually being washed. • Assess the water efficiency of the current dishwashing system to determine where improvements might be made. • Always wash full loads in automated machines. • Operate conveyor type dishwashers only when dishes are actually passing through the machine. • Verify that the dishwashing equipment is using the minimum amount of flow recommended by the manufacturer. • Since many older automated dishwashing systems are neither energy nor water efficient, evaluate the cost of retrofitting or replacing existing equipment. • Turn dishwashers off when not in use. • Routinely check all dishwashing equipment to ensure there are no leaks. • Post signs requesting that personnel minimize their use of utensils, dishes, and pots and pans to save water. 	<ul style="list-style-type: none"> • Manual pre-wash sprayers with "dead man" shut off controls. • Low-flow spray heads on all sprayers. • New water efficient dishwashing equipment. • Electronic eye sensors that shut off conveyer type systems when dishes are not passing through the machine.

GARBAGE DISPOSER AND SCRAPING TROUGH

Behavioral Measures	Hardware/Equipment Measures
<ul style="list-style-type: none"> Eliminate disposers and troughs. Use the minimum acceptable flow rate on all machines. Reuse wastewater in the mixing chamber of the disposer. 	<ul style="list-style-type: none"> Garbage strainers (instead of disposers) Sensors that detect the amount of flow in a disposer and regulate flow accordingly. Solenoid valves that turn water off when the disposer is off. Flow regulators for disposer supply lines.

ICE MAKERS

Behavioral Measures	Hardware/Equipment Measures
<ul style="list-style-type: none"> Use the minimum flow rate recommended by the manufacturer on water cooled icemakers. Adjust machines to produce ice only when it's needed. <p>Collect spent cooling water and reuse it for non-potable purposes.</p>	<ul style="list-style-type: none"> Air-cooled icemakers. Re-circulating systems for water-cooled icemakers. Ice flake machines that use less bleed off than cube machines.

A.3.1.5 Laundries and Laundromats. This section includes measures that are applicable in hotels, motels, hospitals, nursing homes, diaper services, restaurants, and coin operated Laundromats.

LAUNDRIES AND LAUNDROMATS

Behavioral Measures	Hardware/Equipment Measures
<ul style="list-style-type: none"> Operate equipment with full loads only. Reduce water levels for partial loads. Back flush fitters or softeners only when necessary. 	<ul style="list-style-type: none"> Computer controlled rinse water reclamation systems. Wash and rinse water treatment and reclamation systems. Continuous batch washers. Ozone laundry systems. Horizontal axis washers.

A.3.1.6 Swimming Pools. The measures in this section can be applied to commercial and residential swimming pools.

SWIMMING POOLS

Behavioral Measures	Hardware/Equipment Measures
<ul style="list-style-type: none"> Limit the frequency of pool refilling. Cover the pool with an insulated cover when not in use to reduce losses due to heat and evaporation. Reduce the level of the pool to avoid losses due to splashing. Lower the pool temperature. Back wash filters only when necessary. If timed, verify that frequency is efficient. Regularly check pool for leaks and cracks. Keep pool and filter clean to avoid unnecessary backwashing. 	<p>There are no special equipment measures that would help conserve water in pools. It is important however that available equipment is efficient and used properly.</p>

A.3.1.7 Cooling Systems. This section includes measures for three types of cooling systems: 1. Single-pass, 2. Evaporative, and 3. Equipment. Single-pass cooling uses fresh water to cool without re-circulating any of the water used in the first pass. Evaporative coolers are used for cooling in commercial and residential applications and are commonly known as swamp coolers. Equipment cooling includes both single-pass and re-circulating systems that are used to cool equipment and machinery.

SINGLE-PASS COOLING

Behavioral Measures	Hardware/Equipment Measures
<ul style="list-style-type: none"> • Reuse water for landscaping, vehicle washing, or another cooling application that allows for water to be at a higher temperature. • Eliminate single-pass systems. 	<ul style="list-style-type: none"> • Air-cooled equipment (i.e. compressors, pumps, icemakers, etc...) • Automatic controls that insure coolers only operate when needed.

EVAPORATIVE COOLING

Behavioral Measures	Hardware/Equipment Measures
<ul style="list-style-type: none"> • Regularly check for leaks in hoses and pan. • Replace pads at least annually. • Shut cooler off when building is unoccupied. • Annually service the equipment by oiling moving parts and cleaning off accumulated scale or corrosion. 	<p>There are currently no equipment measures for evaporative coolers. The design of the coolers is relatively simple.</p>

EQUIPMENT COOLING

Behavioral Measures	Hardware/Equipment Measures
<ul style="list-style-type: none"> • Reuse water in single pass systems for other cooling purposes. Examples of reuse include cooling molten materials, landscape, or boiler make-up water. • Replace al single pass cooling systems with closed-loop systems or replace water-cooled equipment with air-cooled. 	

A.3.1.8 Heating Systems. This section deals with conservation measures for boilers and steam generators which are used to heat large buildings and multiple-building facilities.

HEATING SYSTEMS

Behavioral Measures	Hardware/Equipment Measures
<ul style="list-style-type: none"> • Regularly inspect systems for leaks and make repairs. • Insulate all piping. • Limit boiler bleed-off to a level that satisfies water quality requirements. • Discharge blow-down into an expansion tank instead of using cold water to cool it. 	<ul style="list-style-type: none"> • Flow meters for make-up and blow-down valves. • Automatic controls to discharge blow-down.

A.3.1.9 Leaks and Water Losses. This section covers water conservation measures relating to leaks and losses.

LEAKS AND WATER LOSSES

Behavioral Measures	Hardware/Equipment Measures
<ul style="list-style-type: none"> • Regularly check for leaks at all water connections. Keep in mind that higher pressure applications have more incidence of leakage. • Regularly check all vessels that contain water for cracks or bad seals. • Regularly check all heating and cooling systems. • Repair any leaks that are discovered. 	<ul style="list-style-type: none"> • Leak detection equipment. This could include sonic or probe type equipment • Any equipment used to stop a leak This would depend on the material of the pipe or vessel that has a leak.

A.3.1.10 ICI Maintenance Practices. This section reemphasizes maintenance conservation measures for ICI facilities that have been mentioned in previous sections. These measures should become standard procedure at all ICI facilities.

- Create a maintenance schedule that includes schedules for leak detection inspections and meter reading, and repair procedures.
- Monitor water-use records keeping track of any increases or decreases in use.
- Conduct water audits every one to three years.
- Shut off supply lines to areas that are not being used.
- Install pressure reducers where feasible.
- Keep a maintenance schedule to clean cooling and heating equipment regularly.
- Recycle and reuse water when feasible.
- Insulate all hot water pipes.
- Replace old equipment with water saving equipment.
- Install timers wherever possible.
- Educate employees on water saving techniques.

A.4 GENERAL CONSERVATION MEASURES

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

HOME BEHAVIORS

1. When washing dishes by hand, don't let the water run while rinsing. Fill one sink with wash water and the other with rinse water.
2. Evaporative coolers require a seasonal maintenance checkup. For more efficient cooling, check your evaporative cooler annually.
3. Run your washing machine and dishwasher only when they are full and you could save 1000 gallons a month.
4. Use the garbage disposal sparingly. Compost instead and save gallons every time.
5. Keep a pitcher of water in the refrigerator instead of running the tap for cold drinks, so that every drop goes down you not the drain.
6. Check your water meter and bill to track your water usage.
7. Wash your produce in the sink or a pan that is partially filled with water instead of running water from the tap.
8. Use a broom instead of a hose to clean your driveway or sidewalk and save 80 gallons of water every time.
9. If your shower can fill a one-gallon bucket in less than 20 seconds, then replace it with a water efficient showerhead.
10. Collect the water you use for rinsing produce and reuse it to water houseplants.
11. We're more likely to notice leaky faucets indoors, but don't forget to check outdoor faucets, pipes, and hoses for leaks.
12. When you shop for a new appliance, consider one offering cycle and load size adjustments. They are more water and energy-efficient than older appliances.
13. Time your shower to keep it under 5 minutes. You'll save up to 1000 gallons a month.
14. Install low-volume toilets.
15. When you clean your fish tank, use the water you've drained on your plants. The water is rich in nitrogen and phosphorus, providing you with a free and effective fertilizer.
16. Put food coloring in your toilet tank. If it seeps into the toilet bowl, you have a leak. It's easy to fix, and you can save more than 600 gallons a month.
17. Plug the bathtub before turning the water on, and then adjust the temperature as the tub fills up.
18. Designate one glass for your drinking water each day. This will cut down on the number of times you run your dishwasher.

19. Don't use running water to thaw food.
20. Grab a wrench and fix that leaky faucet. It's simple, inexpensive, and can save 140 gallons a week.
21. When doing laundry, match the water level to the size of the load.
22. Teach your children to turn the faucets off tightly after each use.
23. . Before you lather up, install a low-flow showerhead. They're inexpensive, easy to install, and can save your family more than 500 gallons a week.
24. Soak your pots and pans instead of letting the water run while you scrape them clean.
25. Make sure you know where your master water shut-off valve is located. This could save gallons of water and damage to your home if a pipe were to burst.
26. Turn off the water while you brush your teeth and save 4 gallons a minute. That's 200 gallons a week for a family of four.
27. Make sure your toilet flapper doesn't stick open after flushing.
28. Make sure there are aerators on all of your faucets.
29. Install an instant water heater on your kitchen sink so you don't have to let the water run while it heats up. This will also reduce heating costs for your household.
30. Cut back on rinsing if your dishwasher is new. Newer models clean more thoroughly than older ones.
31. Bathe your young children together.
32. . Winterize outdoor spigots when temps dip to 20 degrees F to prevent pipes from bursting or freezing.
33. Insulate hot water pipes so you don't have to run as much water to get hot water to the faucet.
34. Drop that tissue in the trash instead of flushing it and save gallons every time.
35. If your toilet was installed prior to 1980, place a toilet dam or bottle filled with water in your toilet tank to cut down on the amount of water used for each flush. Be sure these devices do not interfere with operating parts.
36. Install water softening systems only when necessary. Save water and salt by running the minimum number of regenerations necessary to maintain water softness.
37. Wash clothes only when you have a full load and save up to 600 gallons each month.
38. Listen for dripping faucets and toilets that flush themselves. Fixing a leak can save 500 gallons each month.
39. . Cook food in as little water as possible. This will also retain more of the nutrients.
40. Turn the water off while you shampoo and condition your hair and you can save more than 50 gallons a week.
41. Choose new water-saving appliances, like washing machines that save up to 20 gallons per load.

42. Select the proper size pans for cooking. Large pans require more cooking water than may be necessary.
43. Turn off the water while you shave and you can save more than 100 gallons a week.
44. To save water and time, consider washing your face or brushing your teeth while in the shower.
45. For hanging baskets, planters and pots, place ice cubes under the moss *or* dirt to give your plants a cool drink of water and help eliminate water overflow.
46. Throw trimmings and peelings from fruits and vegetables into your yard compost to prevent from using the garbage disposal.
47. Keep a bucket in the shower to catch water as it warms up or runs. Use this water to flush toilets or water plants.
48. When you are washing your hands, don't let the water run while you lather.
49. Pre-treat stains before washing clothes to avoid re-washing.
50. Use the shortest wash cycle for lightly soil cloths.
51. Check washing machine hoses regularly for leaks.
52. Do not pre-rinse dishes except in cases of sticky or burn-on food.
53. Scrape off food with a utensil or used paper napkin when pre-cleaning for dishwasher.

LANDSCAPE BEHAVIORS

1. Check your sprinkler system frequently and adjust sprinklers so only your lawn is watered and not the house, sidewalk, or street.
2. Avoid planting turf in areas that are hard to water such as steep inclines and isolated strips along sidewalks and driveways.
3. Plant during the spring or fall when the watering requirements are lower.
4. Minimize evaporation by watering during the early morning hours, when temperatures are cooler and winds are lighter.
5. Use a layer of organic mulch around plants to reduce evaporation and save hundreds of gallons of water a year.
6. Divide your watering cycle into shorter periods to reduce runoff and allow for better absorption every time you water.
7. Only water your lawn when needed. You can tell this by simply walking across your lawn. If you leave footprints, it's time to water.
8. Adjust your lawn mower to a higher setting. Longer grass shades root systems and holds soil moisture better than a closely clipped lawn.
9. Use the sprinkler for larger areas of grass. Water small patches by hand to avoid waste.

10. Use porous materials for walkways and patios to keep water in your yard and prevent wasteful runoff.
 11. Direct downspouts and other runoff towards shrubs and trees, or collect and use for your garden.
 12. Install a rain shut-off device on your automatic sprinklers to eliminate unnecessary watering.
 13. Choose a water-efficient drip irrigation system for trees, shrubs and flowers. Watering at the roots is very effective, be careful not to over water.
 14. Reduce the amount of grass in your yard by planting shrubs and ground cover with rock and granite mulching.
 15. Remember to check your sprinkler system valves periodically for leaks and keep the heads in good shape.
 16. Don't water your lawn on windy days. After all, sidewalks and driveways don't need water.
 17. Water your plants deeply but less frequently to create healthier and stronger landscapes.
 18. When watering grass on steep slopes, use a soaker hose to prevent wasteful runoff.
 19. Group plants with the same watering needs together to get the most out of your watering time.
 20. Remember to weed your lawn and garden regularly. Weeds compete with other plants for nutrients, light, and water.
 21. While fertilizers promote plant growth, they also increase water consumption. Apply the minimum amount of fertilizer needed.
 22. Avoid installing ornamental water features and fountains that spray water into the air. Trickling or cascading fountains lose less water to evaporation.
 23. Buy a rain gauge to track how much rain or irrigation your yard receives. Check with your local water agency to see how much rain is needed to skip an irrigation cycle.
 24. Teach your family how to shut off your automatic watering systems. Turn sprinklers *off* if the system is malfunctioning or when a storm is approaching.
 25. Set a kitchen timer when watering your lawn or garden with a hose.
 26. Next time you add or replace a flower or shrub, choose a low water use plant for year-round landscape color and save up to 550 gallons each year.
 27. Use a screwdriver as a soil probe to test soil moisture. If it goes in easily, don't water. Proper lawn watering can save thousands of gallons of water annually.
 28. Avoid over-seeding your lawn with winter grass. Once established, ryegrass needs water every three to five days, whereas dormant Bermuda grass needs water only once a month.
 29. Landscape with Xeriscape trees, plants and groundcovers. Call your local conservation office for more information about these water thrifty plants.
- JO.** If you have an evaporative cooler, direct the water drain to a flowerbed, tree, or your lawn.
31. Leave lower branches on trees and shrubs and allow leaf litter to accumulate on top of the soil. This

keeps the soil cooler and reduces evaporation.

32. Start a compost pile. Using compost when you plant adds water-holding organic matter to the soil.
33. Use sprinklers that throw big drops of water close to the ground. Smaller drops of water and mist often evaporate before they hit the ground.
34. More plants die from over-watering than from under-watering. Be sure only to water plants when necessary.
35. Water only as rapidly as the soil can absorb the water.
36. Aerate your lawn. Punch holes in your lawn about six inches apart so water will reach the roots rather than run off the surface.

COMMUNITY BEHAVIORS

1. Encourage your school system and local government to help develop and promote a water conservation ethic among children and adults.
2. Make suggestions to your employer to save water (and dollars) at work.
- J. Support projects that use reclaimed wastewater for irrigation and other uses.
4. Encourage your friends and neighbors to be part of a water-conscious community.
5. Pick-up the phone and report significant water losses from broken pipes, open hydrants and errant sprinklers to the property owner or your water management district.

MISCELLANEOUS BEHAVIORS

1. Install covers on pools and spas and check for leaks around your pumps.
2. Periodically check your pool for leaks if you have an automatic refilling device.
3. Use a commercial car wash that recycles water.
4. Don't buy recreational water toys that require a constant flow of water.
5. Use a grease pencil to mark the water level of your pool at the skimmer. Check the mark 24 hours later. Your pool should lose no more than $\frac{1}{4}$ inch each day.
6. When the kids want to cool off, use the sprinkler in an area where your lawn needs it the most.
7. Make sure your swimming pools, fountains, and ponds are equipped with re-circulating pumps.
8. Bathe your pets outdoors in an area in need of water.
9. While staying in a hotel or even at home, consider reusing your towels.
10. When backwashing your pool, consider using the water on your landscaping

APPENDIX F - NYE COUNTY POPULATION ESTIMATES

APPENDIX F



Nye County Planning Department

Tonopah Office

PO Box 1531

101 Radar Road

Tonopah, NV 89049

Phone: 775-482-8181 Fax: 775-482-7302

15-020DL(L) July 29, 2015

RE: Nye County Population Estimates Through the Second Quarter, 2015

Interested Parties

I am pleased to bring you population estimates through the first quarter of 2015 (June 30, 2015) for Nye County and its communities prepared by the Nye County Planning Department. Please note that these estimates have been benchmarked to the year 2000 Census through our recalibrated spreadsheet, and are considered "Census Consistent."

Our estimates indicate that the population of Nye County at the end of this period was 46,989 and the population of our communities--as defined by Nye County's procedures--was as follows:

Note that there are now zero (0) persons permanently residing on the Nevada Test Site (NTS) and Tonopah Test Range (TTR) as was determined by the 2000 Census. Our spreadsheet uses only active residential customer data from the various electrical utilities multiplied times the average number of persons per household (per the Census) for each area, which have been scaled to the estimated number of households per residential electrical meter (example: Gabbs-for the first quarter, 2000-had 168 residential hookups times 2.37 persons per household times .958 [95.8 households per every 100 residential meters] = 381 population).

For this recalibration we have also converted the quarterly count of persons in group quarters (e.g., nursing homes and detention facilities) to a trending factor that was indicated over the previous decade. These trended counts will now be monitored on an annual basis by conducting annual telephone interviews to measure consistency.

Nye County is an Equal Opportunity Employer and Provider

Nye County uses its population estimates to monitor and assess baseline conditions for the Yucca Mountain Project, to prepare baseline projections for the County and its communities, to provide a basis for comparison with the estimates of others, and for public and private agency planning and management purposes. Nye County's procedure uses formulas benchmarked to the 2000 Census of Population and Housing; and these formulas include factors that, for each Nye County community, relate utility connection counts to the number of households and persons per household.

Should you have any questions or require additional information please contact me.

Sincerely,

Director of Planning

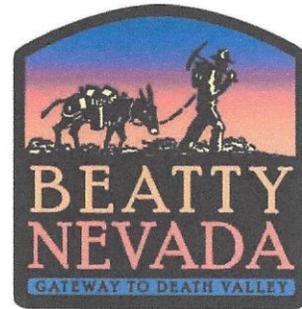
LDL/kh

Attachment as noted



5 Beatty, Nevada

Beatty is located in southern Nye County approximately 100 miles northwest of Las Vegas along U.S. 95. Beatty is just eight miles from Death Valley National Park and has been known as “The Gateway to Death Valley” since 1937. A formal trademark was filed with the State of Nevada in 2010 for the phrase “Gateway to Death Valley” along with the Burro and Miner logo.



The Town of Beatty was formed in the early 1900s as a result of mining exploration in the area and served as the railhead for three separate rail lines, including the Tonopah and Tidewater, Las Vegas and Tonopah, and Bullfrog Goldfield Railroad. The rail lines to and from Beatty spurred the community’s growth and kept the Town alive, unlike the neighboring Town of Rhyolite, a mining-turned-ghost town just four miles away from Beatty. Beatty consolidated with the neighboring town of Rhyolite, which was essentially abandoned by the 1920s and residents and facilities from Rhyolite were moved to Beatty. The nearby ghost town now serves as one of Beatty’s many tourist attractions.

5.1 Background and History

5.1.1 Demographic and Socioeconomic Data

Beatty has a population of 1,010. The median age of the population is 50.2 years, with 85.4 percent (863) age 16 and older and 20.8 percent (210) age 65 and older. (2010 Census, Beatty CDP). Historically Beatty has had an expandable/flexible workforce, and when gainful employment is available a workforce will move to the area and make Beatty their home. Table 10 provides a summary of demographic and socioeconomic data for Beatty and Nye County.

Table 10. Beatty Demographic and Socioeconomic Data

Subject	Beatty	Nye County
Population ¹	1,010	43,946
Median Age (Years) ¹	50.2	48.4
16 Years and Older ¹	85.4%	82.1%
65 Years and Older ¹	20.8%	23.4%
Percent Minority ¹	20.8%	21.1%
Average Household Size ¹	1.99	2.42
Poverty Rate ²	16.7%	18.9%
Per Capita Income ²	\$20,781	\$22,687
High School Graduate or Higher ²	80.9%	81.7%
Bachelor’s Degree or Higher ²	17.9%	10.5%

¹Data is from the 2010 U.S. Census data and is available at www.census.gov.

²Data is from the 2010 American Community Survey 5-year Estimates and is available at www.census.gov.



approximately twice the current population. The wastewater treatment plant, built in 2008, meets all regulatory standards and has a capacity to serve approximately twice the current population.

The Beatty Water and Sanitation District has a two million gallon water tank adequate to provide storage and fireflow requirements to the Town of Beatty, the Historical Town of Rhyolite, the Beatty Economic Development Corporation (BEDC) property, the Beatty Airport, and all developable areas south of the Town; however, the tank is not connected to the BWSD system. There is a water supply pipeline in the vicinity of the storage tank.

The BWSD is currently in the process of developing a master plan which will incorporate GIS mapping of the system infrastructure. Funding sources for this project includes a Community Development Block Grant (CDBG) with cash and in kind match from Nye County and the BWSD. The master plan will identify projects over the next ten years and address current and future issues such as Americans with Disabilities Act (ADA) upgrades, aging infrastructure, and GIS.



Internet services include DSL, Satellite, Mobile Broadband, and “Hotspots”.

5.1.3 Economy

The mining industry historically has been the major employer leading to fluctuations in the population based on industry trends. Mining was the catalyst on which the Town developed. Railroads serving the mining industry in the area also provided historic employment and helped spur the Town’s growth by providing needed materials, goods, shipping and transportation to the surrounding metropolitan and rural areas. Rhyolite, which is now a ghost town approximately four miles from Beatty, was one of the largest Nevada towns by population in the early 1900s. The decommissioning of the rail line resulted in a loss of jobs and economic benefits for the Town and its residents.

The Nevada National Security Site (NNSS) also provides a primary source of employment for local (fulltime and part-time) residents. Like the NNSS, the Yucca Mountain Project has also been a key source of employment as well as funding for the Town; however, the de-funding of the Yucca Mountain Project has resulted in a loss of employment and funding opportunities.

The leisure and hospitality industry has, for a long time, been a key part of the Town’s economy and is currently the main employer. This industry shows the greatest potential for growth; however, the employment opportunities associated with this industry provide low wages and limited benefits. While gaming is included in this sector, it is not a major factor in the growth of the leisure and hospitality industry, and actually resulted in significant job loss due to closure of two of the three casinos in the late 1990s.

5.2 SWOT Analysis

5.2.1 Strengths/Assets

A number of strengths have been identified for Beatty.



Auto Testing

Beatty makes an ideal testing ground for automobiles due to its climate and elevation extremes, minimal traffic areas, available lodging options, and proximity to Las Vegas for shipping needs.

Clean Energy

There are two privately held properties in Beatty suitable for solar projects. One of the properties is adjacent to VEA 138KV power transmission lines which may be available to service potential electricity generation projects. The other property has water resources which may be needed for a potential solar development. Additionally, VEA's agreement with the CAISO provides an impetus for the development of large scale solar power generation in the Beatty area.

Movie/Film Industry

Beatty makes an excellent location for filming movies due to the landscape (Western/Desert), proximity to Death Valley and Rhyolite, reasonable permitting process, privacy, lodging options, and proximity to Las Vegas for shipping needs.

Tourism

Beatty is in a premier location for attracting tourists to the area. Beatty is trademarked as the "Gateway to Death Valley." The ghost town of Rhyolite is just four miles away from the Town center. The Town is located on U.S. 95 approximately 120 miles from Las Vegas, less than a two hour drive. Beatty is a "Walking Town" with lodging, restaurants, entertainment, shopping and other conveniences all located near each other. Its moderate weather, beautiful desert scenery, spectacular night sky, native wildlife, unique natural artifacts, and natural hot springs are all selling points to promote the Town's tourism market. The Town has approximately 340 hotel rooms and multiple RV parks offering in and out of town experiences. Beatty is a pet-friendly community with lodging accommodations that accept pets and a dog friendly park.

The Bailey's Hot Springs RV Park features the natural hot springs. Other town amenities include the Beatty Museum, the Goldwell Open Air Museum and Visitors Center, and a number of natural and historic sites.

Transportation

The Beatty Airport is overseen by Nye County. The airport has one landing strip and a paved, fenced and lighted runway. It is also located on a major flight path from Reno to Las Vegas.

5.2.2 Weaknesses

While Beatty has a great number of strengths, weaknesses are also present and are identified below.

Movie/Film Industry

Beatty can serve as an excellent location for the film industry; however, the Town does not have industry contacts or promotional materials advertising the area.



Tourism

While Beatty has excellent tourist attractions, the lack of historical markers and signage around town or along the three major highways leading to Beatty highlighting things to do and places to visit and promoting the Town as the “Gateway To Death Valley” limits the potential for expanding the tourism market.

Utilities

Water System - The two million gallon water tank is not interconnected with the Beatty Water and Sanitation District water system and there is no distribution system infrastructure available to transport water to and from the tank and developable area. The water tank also needs to be sandblasted and recoated to meet requirements of American Water Works Association (AWWA) C210-92 for coating systems and American National Standards Institute (ANSI)\National Sanitation Foundation (NSF) Standard 61 for potable water storage tanks. In order to connect the tank to the water supply lines, easements need to be obtained for adjacent to public and private lands. Additionally, the tank’s water supply has slightly high fluoride levels, which would need to be treated.

Internet/Broadband - Hard-wired internet options are limited and universal access is not available.

Miscellaneous

Some additional weaknesses that could be improved include:

- Incomplete sidewalks
- Limited housing options
- Lack of specialized medical, dental, vision, and eldercare
- Emergency services staffing levels and skill sets
- Outdated Community Center Commercial Kitchen Facilities
- Lack of veterinary care
- Lack of mass transit transportation to surrounding communities

5.2.3 Opportunities

Both strengths and weaknesses have been identified for Beatty, and in those strengths and weaknesses lay a tremendous amount of opportunity.

Auto Testing

Beatty has the opportunity to cultivate the local auto-testing industry by reconnecting/connecting with manufacturers to determine what has kept them from using the area, what can be done to bring them back to the Town, and what will keep those using the area coming back.

Clean Energy

Properties suitable for solar development in Beatty have been identified, which can be marketed to interested parties. Additionally, Nye County maintains a list of developers to which the properties can be advertised.



Movie/Film Testing

Beatty is a prime location for filming projects that requires scenery common to the area and the seclusion and privacy that the rural Town provides. In order to break into this industry, Beatty needs industry contacts to advertise the area and its benefits.

Tourism

Beatty has a variety of tourist attractions that just need to be marketed to the public. Opportunities to enhance the tourism market include coordinated signage both inside and outside of Town promoting Beatty as the “Gateway to Death Valley” and other things to do, structured historical and paranormal tours, and completion of the “Beatty Beautification” project to construct and upgrade sidewalks, street lights, benches, and trash receptacles.

Transportation

The former Las Vegas, Tonopah, Reno (LTR) bus line provided a mode of mass transit to community members who took advantage of the ability to travel to Las Vegas, Tonopah, and Reno on the line. The LTR bus line also brought visitors and travelers to the community who patronized local businesses. Additionally, the bus line provided convenient and timely freight transportation to the citizens of Beatty. Using this service, items could be sent from Las Vegas to Beatty, or any other destination on the line, with a one day turn around. The bus line was taken out of service more than a decade ago, but reestablishing this mass transit option could open up economic development and other resources to the Town.

Utilities

Water Infrastructure System - In order to provide potable water that meets Safe Drinking Water Act standards, a fluoride treatment/blending process should be developed. Additionally, the interconnection of the two million gallon water tank into the BWSO system would provide access to water at the historical Town of Rhyolite, the BEDC property, the Beatty Airport, and all developable areas south of the Town of Beatty to enable economic development.



Photo: Town of Beatty
Photo courtesy of the Town of Beatty

Miscellaneous

- Additional housing and senior housing options
- Home healthcare for seniors
- Promote the value of both educational and personal of volunteerism
- Airport Shuttle: fuel, shuttle, and flight based operations services
- Transportation services: tours, sightseeing, local shuttles, rentals
- Youth activities: local and regional youth activity groups and; outdoor youth events
- Veterinary care clinic
- Revitalization of mass transportation



5.2.4 Threats

Threats to community growth and economic development in the Town of Beatty include:

- Limited medical services
- Lack of willing volunteers to staff emergency (fire and ambulance) services
- Lack of willing volunteers to staff community boards
- Potential for local species to be listed as protected/endangered and large swaths of land restricted from development, including the Amargosa Toad Habitat and Desert Tortoise Habitat.
- Lack of high-paying employment opportunities
- Lack of housing options
- Aging water infrastructure
- Restrictive land use policies, particularly on the federal lands surrounding Beatty



Photo: Beatty Community Center
Photo courtesy of the Town of Beatty

5.3 Vision, Goals and Objectives

5.3.1 Vision Statement

Beatty community representatives developed a vision statement as part of their development of the Beatty Area Master Plan, which is currently being undertaken. The vision statement is:

"The Town of Beatty will be a place where our small town atmosphere will be capitalized upon, where historic sites are preserved, natural beauty protected, and resources conserved. Our role as the gateway to Death Valley will be embraced, educational and economic opportunities will be expanded and orderly growth and development will be encouraged. The result will be a community where families live, work, and play in harmony."

This vision is consistent with previous planning documents including the Beatty Open Space Plan, which had as its mission: "To blend the preservation of the significant, historical, cultural, and habitat areas, with areas for outdoor recreational opportunities and areas for economic development."

5.3.2 Goals

Beatty has established the following goals to support its vision:

- A. Increase tourism dollars.
- B. Attract solar or other alternative energy companies.
- C. Improve water infrastructure to support community needs and business development.



- D. Retain and increase business sectors that have had a historic impact on the Town's economy.
- E. Support other infrastructure projects that will enhance community and economic development in Beatty.

5.3.3 Objectives

In order to accomplish the goals identified in the previous section, Beatty has developed the following objectives (organized by goal):

- A. Increase tourism dollars.
 - Work with the Nevada Commission on Tourism, Nevada Silver Trails, and related travel/tourism agencies; the Governor's Office of Economic Development (GOED); and Nye County to promote Beatty's local attractions and obtain resources necessary to increase the local tourism industry.
 - Continue development of an artist community near the entrance to the ghost town of Rhyolite.
 - Continue working with BLM to preserve the Rhyolite town site, which routinely sees 100,000 visitors annually.
- B. Attract solar or other alternative energy companies.
 - Work with Nye County to market Beatty locations to renewable energy developers.
- C. Improve water infrastructure to support community needs and business development.
 - Identify agencies, strategies, and funding to support necessary improvements to the local water infrastructure.
- D. Retain and increase business sectors that have had a historic impact on the Town's economy.
 - Promote Beatty as a premier location for the auto-testing and movie/film industries, conducive to their specialized needs.
- E. Support other infrastructure projects that will enhance community and economic development in Beatty.
 - Maintain up-to-date information on broadband, rail, and mass transit projects which may impact Beatty.
 - Promote marketing and redevelopment of the 80 acre light industrial park at the former Barrack Bullfrog site.
 - Continue implementing the Downtown's Beatification Plan.
 - Continue developing capacity at the Beatty Airport.

5.4 Action Plan

In order to achieve the goals and objectives presented in the previous sections, an Action Plan has been developed, and those items included in the Action Plan are summarized below, and organized by goals:

- A. Increase tourism dollars.
 - Tourism Promotional Materials – Beatty would like to install signage on the three major highways promoting the Town as the "Gateway to Death Valley." This project will include identifying placement of signage inside the Town and within one square mile of the Town boundaries and supporting the marketing of U.S. 95 as "Historic 95" similar to the Route 66 advertising model. The Town would also like to develop an internet-based advertising



campaign that would include designating a research team to search and identify internet advertising opportunities, such as enthusiast sites related to nature and outdoor recreation, historical adventures, and paranormal activities as well as traditional travel websites. The team would then take action to add links to the identified websites for the Beatty Town, Beatty Chamber, and Beatty Museum websites.

- Additionally, Beatty would like to install theme signage around town highlighting amenities, items of historical interest, and things to do. The research team will review theme signage in place in other communities, identify design concepts, identify sign content and locations in Beatty, and obtain cost estimates.
 - Beatty would also like to establish a strong interactive relationship with the Death Valley Chamber of Commerce and the National Park Service to identify conflicts and leverage joint promotion. The Beatty tourism promotional team will discuss opportunities for reestablishing a Death Valley Visitors Center in Beatty, such as incorporating the visitor center into an existing organization or business. The team will also provide the Park Service with an opportunity to review and comment on signage and promotional materials relevant to Death Valley. The Death Valley promotional materials and signage would include points of interest, things to do, and distance from Beatty. The team will attempt to determine how major GPS providers select routes and amenities that are used in their customer search requests and get the GPS providers to include Beatty as the travel route to selected points of interest.
 - In order to develop and install the signage and prepare promotional materials, the team will identify funding sources and present a plan to the identified funding sources.
- B. Attract solar or other alternative energy companies.
- Beatty Renewable Energy Development - Beatty is situated in an excellent solar resource zone with sufficient private and public land available for development of small (10 to 20 MW) and large generation sites. Over the last several years, there has been substantial interest from a variety of developers exploring options and issues associated with constructing solar generation facilities in the Beatty area.
 - The existing area transmission lines and substation, owned by Valley Electric Association (VEA), are being upgraded. VEA will become part of California Independent System Operator (CAISO) group in January 2013, thus allowing renewable power produced in Nevada and transmitted to California over VETA lines to qualify for California portfolio standards credit. This circumstance favors utility scale solar power generation within the VEA service area.
 - Beatty's role in advancing local solar projects lies in making its interests in such development known to the County, State, and private land owners. Securing VEA's participation and cooperation in advancing local solar power development within VEA's service area is critical, as local power would have to be purchased by VEA for local consumption or transmitted over VETA lines to the California market. The Beatty Town Advisory Board will work with VEA to identify how to best advance solar power production in the area and to assess the feasibility of such an endeavor.
- C. Improve water infrastructure to support community needs and business development.
- Water Infrastructure Improvements – Beatty will leverage the existing engineering plans to connect the two million gallon tank to the Beatty Water and Sanitation distribution system.



Beatty Community Committee members will work with the BWSD to gain their commitment and clearly define their contributions to the project. The team will identify current costs associated with interconnecting and rehabilitating two million gallon tank and work with County staff and commissioners to identify funding and other resources for the project.

- D. Retain and increase business sectors that have had a historic impact on the Town's economy.
- Promote Auto-testing and Movie/Film Industries – The Beatty Community Committee will identify Town representatives who have had or may have experience with major/minor auto manufacturers that, used or currently use facilities in Beatty. These Town representatives will form an economic development team focused on expanding opportunities in the auto-testing market. The team will identify contacts with all major/minor auto manufacturers to share information about Beatty. The team will also identify contacts in engineering fields whose testing would benefit from extreme conditions. The team will create promotional material, highlighting extreme conditions, close proximity to Las Vegas (for transportation and logistics), and advertising long and short term lodging options and amenities.
 - A team of community representatives will be formed to support economic development in the film industry. The team will identify films and other works filmed in the area. The team will contact the producers to obtain feedback on the strengths and weaknesses of Beatty as a filming location. The team will identify companies/services used by industry to locate shooting locations and market area assets/amenities to appropriate industry contacts. The team will develop marketing materials for this purpose.
- E. Support other infrastructure projects that will enhance community and economic development in Beatty.
- Develop and implement business and marketing plans for the Beatty Airport.
 - Bring a water pipeline to the Beatty Airport to support future airport operations.
 - Establish fueling facilities to support airport operations.
- F. Support other infrastructure projects that will enhance community and economic development in Beatty.
- Transportation and Infrastructure Project Awareness - The community will keep abreast of Yucca Mountain project status. Should the project move forward, the community will keep abreast of the potential railway project in an effort to leverage the impacts associated with the project to support community and economic development in Beatty.
 - The community will keep abreast of any local, State, or federal plans or initiatives that may impact the availability of fiber optic communications and mass transit options/expansion in the Beatty area.

APPENDIX G -WATER CONSERVATION WEBSITES

WATER

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

DROUGHT

- DroughtMonitor@ndmc.unl.edu

LANDSCAPE

- www.usda.gov/news/garden.htm
- www.tmwlandscapeguide.com/landscape_guide/interactive/index.php

EDUCATION

- www.wateruseitwisely.com
- www.washoeet.dri.edu/

INSTITUTIONAL

- www.douglascountynv.gov/sites/main/indexcfm
- www.lwwd.com
- www.snwa.com
- www.co.washoe.nv.us/water_dept/rwpc/regionalplm
- www.tmh20.com
- www.cabq.gov
- www.ci.phoenix.az.us/WATER/wtrteach.html
- www.owue.water.ca.gov/leak/fag/faq.cfm

LEAK DETECTION

- www.who.int/docstore/watersanitation_health/leakage/begin.html

APPENDIX H - METER READING INSTRUCTIONS

HOW TO READ YOUR WATER METER

Locate Your Meter,

Most water meters will be located outside in front of your house next to the curb on the street under a steel or concrete lid.

Reading Your Meter

There are two basic types of meters; a dial with a needle that measures in tenths of a cubic foot and a digital meter that measures from 100,000 down to 1 cubic foot. Most meters also have a small triangle on the face called a flow indicator. It will move when there is water passing through it. Read your meter from left to right.

Measuring Water Use Activities

It is possible to measure the water use of certain activities. These activities include but are not limited to the following:

- Shower or bath use.
- Watering the lawn.
- Washing clothes or dishes.
- Flushing a toilet
- Washing a car

To measure the water use of an activity, do the following (in order):

1. Make sure all water off. This includes all faucets (inside and out), appliances, swamp coolers, or icemakers.
2. Write down the meter reading to two decimal places.
3. Perform the activity. Be sure to measure the amount of time in minutes that the activity required.
4. At the end of the activity read the meter again. Subtract the first meter reading from the second one. The result is the amount of water used for the activity in cubic feet. To convert to gallons multiply the result by 7.48. To determine how many gallons per minute were used divide the gallon amount by the number of minutes the activity required. You should now have the water used amount in *gallons per minute*.

Detecting Leaks

1. Make sure all water off. This includes all faucets (inside and out), appliances, swamp coolers, or icemakers.
2. Write down the meter reading and time of day to the minute.
3. Wait at least an hour before reading the meter a second time. Make sure no water is used during the test. Read the meter at the end of the test and record the time to the minute. If the flow indicator is moving during the test you may have a leak.
4. Subtract the first meter reading from the second. Multiply the remainder by 7.48. The result is the amount of water in gallons that passed through the meter during the test period. Also record the time duration of the test.

5. Divide the amount of water by the number of minutes in the test. The result is the amount of water that went through the meter in *gallons per minute*.
6. To measure amount lost over time multiply the gallons per minute by the following
 - 1,440 for gallons per day.
 - 43,920 for gallons per month.
 - 527,040 for gallons per year.
7. Locating a leak is a process of elimination. Shut off one toilet at a time at the wall. Go to the meter and check to see if the flow indicator (triangle) is still moving. If the triangle has stopped you have discovered the leak. If not go on to the next one and repeat the above steps.
8. Check your sprinkler system. Shut off the system at the anti siphon valve and check the meter.
9. Check your main service line. You will need to shut off the valve between your house and the meter. If the meter stops the leak is between the meter and the valve.
10. These steps can be repeated for every fixture and fitting in your home. In the event you cannot locate the leak, you should call a professional plumber to find and fix it.

APPENDIX I - EPA RESIDENTIAL BENCHMARKS

Type of Use	Likely Range of Values
INDOOR USES	
Average household size	2.0-3.0 persons
Frequency of toilet flushing	4.0 - 6.0 flushes per person per day
Flushing volumes	1.6 - 8.0 Gallons per flush
Fraction of leaking toilets	0 - 30 percent
Showering frequency	0 - 1.0 showers per person per day
Duration of average shower	5 - 15 minutes
Shower flow rates	1.5-5.0 gallons per minute
Bath frequency	0 - 0.2 baths per person per day
Volume of water	30 - 50 gallons per cycle
Washing machine use	0.2 - 0.5 loads per person per day
Volume of water	45 - 50 Gallons per cycle
Dishwasher use	0.1 - 0.3 Loads per person per day
Volume of water	10 -15 gallons per cycle
Kitchen faucet use	0.5 - 5.0 Minutes per person per day
Faucet flow rates	2.0 - 3.0 gallons per minute
OUTDOOR USES	
Average lot size	5000 - 8000 square feet
Average house size	1200 - 2500 square feet
Landscape area	4000 - 5000 square feet
Fraction of lot size <i>in</i> turf	30 - 50 percent
Water allocation rates	1 - 5 feet per year
Homes with pools	10 - 25 percent
Pools evaporation losses	3 - 7 feet per year
Frequency of refilling pool	1 - 2 times per year