

**City of Venice
Water Conservation Plan
July 20, 2007**



"City on the Gulf"

The Purpose of This Plan

The purpose of this plan is to devise strategies that build upon the numerous water conservation measures already put into place by the City of Venice by determining a plan of action that includes both short-term and long-term additional water conservation efforts for the City Council to consider for approval. This plan should be considered as dynamic, continuously subject to improvements, additions, deletions, etc., in order to most effectively and efficiently identify, investigate, and implement water conservation measures in the City of Venice over time.

This plan is intended to ensure the most beneficial use of our water resources, and incorporate the industry's best management practices to protect our water resources for future generations. A goal is to improve (reduce), or at least maintain (do not increase) our current per capita water usage of 90.3 gallons per person per day (based on functional population). Functional population can be generally described as permanent residents adjusted for seasonal resident influx. The high seasonal population variation in City of Venice is well known and has characterized the City for many years. More detailed information can be found within the 2006 Southwest Florida Water Management District (SWFWMD) Water Survey for the City of Venice.

Background Information

The City of Venice water treatment facility produced over 827 million gallons of water in 2006 serving a seasonal population of 28,573 and fulltime residents of 21,584. The demographic of population composition is primarily retired and seasonal population. The average age of residents in the City of Venice is 67.8 years.

The treatment process uses a reverse osmosis (RO) plant that draws brackish ground water from 14 wells which withdraw from PZ-3 of the Intermediate Aquifer System (IAS). The distribution system consists of 175 miles of pipeline, two 300,000 gallon elevated storage tanks (one at RO plant; one near the Venice Airport), a 1.0 million gallon clearwell (at the RO plant), and one 1.5 million gallon ground storage tank (at Wellfield Park). Venice regional hospital is the largest significant user of water in our system with a daily average of 85,000 gallons. Note that the calculation of the City's low per capita use rate of 90.3 gpcd did not subtract out this significant user, or the City's per capita use rate would be even lower. Because the City easily complies with SWUCA per capita requirements the City did not need to take advantage of the allowed subtraction of this significant user in its per capita calculations.

The City has an extensive reclaimed water system serving local neighborhoods and golf courses. The City's water reuse program has been aggressive in providing reuse water for beneficial uses. The city received the 1996 Dr. David W. York Water Reuse Award from the Florida Water Environment Association in recognition of the development and operation of an exemplary water reuse program. The original design of the system produced 1.5 million gallons of reclaimed water offsetting the need for additional usage from groundwater sources. In some areas that were supplied with reuse water ground water use dropped essentially to zero. Reuse was originally provided to 160 single family homes offsetting approximately 96,000 gallons per day from the City's potable water distribution system. The City received a grant from Southwest Florida Water Management District to expand the reuse system to 2 million gallons per day of reuse capacity with a total of 95,000 additional feet of distribution lines allowing for an additional 2,000 homes to be connected to the system. The reuse system is interconnected with Sarasota County, improving system reliability during times of high demand.

The City contracted with Burton & Associates to conduct a water rate study. The study evaluated an inclining block conservation rate. The recommendations were reviewed and an inclining rate structure has been adopted and approved by Council.

The City of Venice has retained Malcolm Pirnie, Inc to provide population projections through the year 2030 as an integral part of the Water Master Plan. This document is being developed for the City at this time. The Population Projection Technical Memorandum provided by Malcolm Pirnie, and coordinated with the City Manager and Planning Department, has been used in formulating Water Conservation Planning for the requested 20-year term of the Water Use Permit (WUP).

As stated in the July, 2007, WUP application, the City is requesting "straight renewal" of its existing WUP, and no new IAS groundwater quantities are being sought at this time. The Water Master Plan will include consideration of which sources are best to serve the City beyond the current IAS wellfield quantities. The City is in the process of conducting its Master Water Plan efforts, and is closely following the PRMRWSA and SWFWMD regional dialogue regarding an interconnected regional water supply system.

Potential future water supply options already identified by SWFWMD and/or the Peace River Manasota Regional Water Supply Authority (PRMRWSA) include Gulf desalinization, Flatford Swamp/Upper Myaka Watershed, Cow Pen Slough/Dona Bay System, the Shell Creek System, and IAS conjunctive groundwater supplies, among other sources.

Relevant City of Venice Codes, Resolutions and Ordinances include:

1. (Code 1982, 19-21) Sec. 74-48. Authority to restrict use of water from City system and private wells.
2. (Ordinance No. 620-74) An ordinance of the City of Venice relating to the conservation of water during emergency drought condition, defining drought area: Authorizing the City council of the City of Venice to limit use of water in emergency drought areas by adoption of resolution: providing that violators shall be punished as provided by law.
3. Outdoor watering ordinance number 94-13 provides for water restrictions.
4. Resolution NO. 99 – 35 establishing rates, charges and conditions for the use of the City reclaimed water system.

Current Water Conservation Activities

1. **Conserve Florida "Guide" program:** The City of Venice is the first utility in SWFWMD to participate in Conserve Florida's Web-Based water conservation program known as the "Guide". In response to the drought of 2000/2001, and through direction of the Florida Legislature and section 373.227 F.A.C., the University of Florida is hosting the Conserve Florida Water Conservation Clearinghouse that is tasked to house, test and review the Conserve Florida Water Conservation Guide. The purpose of the Guide is to assist utilities in the development of specific conservation goals, and includes:
 - Identification, evaluation, and implementation of best management practices that are economically feasible, effective, and efficient.
 - Monitor the progress of best management practices that have been implemented, and develop reports demonstrating progress towards meeting water conservation goals.

In October 2006 the City began working closely with Lois Sorensen from the SWFWMD Brooksville office to upload data into the software, verify the results, and provide comments to the Clearinghouse on the use of the software program.

2. **Customer leak detection program:** Meter readers use a hand held devise that will alarm if the consumption is higher than normal. The meter reader will investigate the cause by checking for flow through the meter and attempt to contact the resident in

person or leave a door hanger to alert the customer to the findings. Should the flow through the meter be excessive, the meter reader will shut off the meter and leave a door hanger alerting the customer to the actions taken.

3. Meter program:

- **Meter repair program:** The City has an aggressive meter repair program that began in 1978 and has been revised over the years. Faulty meters are repaired if possible and economically feasible; otherwise they are replaced.
- **Meter replacement program:** Distribution system personnel are in the process of changing out old meters to radio read meters, with approximately 2,500 of our existing 11,000 potable water meters already being converted to radio read meters since 2005. This represents approximately 23% of all potable water meters. Our goal is to convert all potable and reuse water meters to radio read meters within approximately 5 to 6 years. An effective metering program can be one of the most beneficial water conservation efforts.

4. Water system leak detection: The last leak detection test conducted indicated that the City of Venice distribution system had only a few leaks and had an unaccounted for water loss of less than 9%, which is considerably less than the 12% value required by District rule. An accounting of water loss is conducted monthly by staff and any anomaly is investigated and corrected.

5. Inclining rate structure: The city has enacted an ordinance for an inclining conservation rate structure for potable water. The rationale for implementing a conservation rate is to reduce the usage of increasing amounts of water on a permanent basis, thereby providing an incentive to conserve.

6. Reclaimed water: In 2006 the city provided 1.8 million gallons of reuse water to 2,439 residential users, four golf courses, and one sports complex, covering a total of over 2,100 acres of land. This shows that approximately 64% of the available reuse water is beneficially used throughout the city. This efficiency rate easily exceeds the current 50% efficiency rating required by the District to qualify for District Cooperative Funding, and in fact already exceeds the District Reclaimed Water Task Force's pending recommendation to raise the funding threshold to 60%. The District has a goal of seventy-five percent (75%) system-wide reclaimed water offset efficiency by 2025. We are optimistic that beneficial reuse will increase to as much as 75% in the future as we continue to expand the system, and that we can meet the District's 75% goal by the latter part of the requested 20-year permit term.

7.

8. Green construction: More new subdivisions and individual constructed homes are interested in implementing various green construction components. One of particular note is Venetian Golf & River Club who received the 2004 Aurora Award for overall green construction from Audubon International. One of the many elements of this award pertains to water conservation, and seeks to maximize water conservation measures in the home and in the landscaping.

Reasons for This Plan

Water conservation is crucial to our future for continued growth, protection of the environment, and prosperity of our city. Public water supplies are the second largest users of water behind agriculture in the state. This Water Conservation Plan is also a required element of our Water Use Permit (number 20 005393.007) which is due for renewal on July 29, 2007.

The Florida Legislature enacted section FS 373.227 that encourages the use of effective, efficient, and affordable water conservation measures for public water supplies.

With increased population and a higher demand for water we must focus our attention on cost-effective improvements in water use and efficiency. Water conservation means a variety of measures that will result in a permanent reduction from our current per capita water use of approximately 90.3 gallons per person per day.

We must find opportunities to improve water use by homeowners, small businesses, and restaurants through education, site audits, and incentives that will increase the effectiveness of water conservation. We should also consider auditing industries in order to identify creative solutions to reduce water consumption within the facility, and evaluate recreational uses such as golf courses, parks, and large-scale landscaping to improve irrigation practices.

By implementing and improving water conservation the City can reduce or postpone the development of new water supply sources. Developing a new source of water is cost intensive and can take years to permit, design, and construct.

It is commonly recognized that the most effective water conservation programs are those that combine a mix of alternatives. For example, an effective conservation program could include such things as a conservation rate structure for both potable and reuse water, landscape ordinances promoting water conservation measures and techniques, water audits of both indoor and outside water usage and practices, educational programs to promote water conservation to schools, civic organizations, and others, water reuse systems and programs to reduce reliance on potable water, partnering with Florida friendly yards to promote water conserving landscape techniques, and financial incentives such as rebates for efficient plumbing fixtures, washing machines, and landscape micro-irrigation systems.

The City of Venice Water Conservation Action Plan

The action plan is intended to identify the steps the City will take to evaluate the feasibility, efficiency, and economic impact for each potential water conservation measure identified. The measures can then be prioritized, and recommendations for implementation can be made. The City of Venice proposes the following action plan as an ongoing water conservation program.

ACTION	ITEM	DATE
1	Form the Water Conservation Team (WCT)	1/1/2008
2	WCT Inventories, Studies, and Prioritizes Conservation Measures	↑
3	WCT Submits Recommended Best Management Practices (BMP) Implementation Plan to Utilities Director	1/1/2009
4	Utilities Director Works to Obtain City Council Approval of BMP Implementation Plan	↓
5	City Submits City Council-Approved BMP Implementation Plan to SWFWMD	7/1/2009

By January 2008 Establish a Water Conservation Team likely consisting of representatives from the Engineering Department, the Public Works Department, and the Utilities Department. Tasks, duties, and responsibilities of the Team include, but are not limited to, the following:

1. The team's responsibilities will consist of structuring the team, creating an action plan, studying different conservation practices, making recommendations to the City, measuring the results of conservation efforts, and provide reports to the Utilities Director and others. The number of members will be determined by the team.
2. The team should develop a team charter, create a mission statement, set term limits of the members, develop goals, determine authority limitations, and provide implementation plans to the Utility Department Director within one year of forming the team.
3. The team will meet routinely to evaluate the effectiveness of the water conservation program and make routine reports to the City Council and the Utilities Department Director.
4. Provide input for the SWFWMD conservation progress report.
5. Hold workshops about the conservation plan for all customer classes, civic organizations, industries that contribute to water conservation such as builders, landscape companies, and plumbers, and others that request such.
6. By January 1, 2009 the conservation team will provide a priority list of conservation measures and implementation schedule to the Utilities Department Director. This should include recommendations for improvements to the current water conservation resolutions, codes, and ordinances.
7. Use the Conserve Florida "Guide" program as a source of information for the team.
8. Identify all high use customers, a large water using customer may have multiple meters and should be identified by name rather than by the meter number. This information can then be used to focus conservation measures and education towards these customers.
9. Develop an initial inventory of possible water conservation measures and activities for further study or consideration. At the present time, identified measures or activities include:
 - a. Continue and expand our public education program to include government officials, homeowners, homeowner association, local businesses, industrial users and through local school programs.
 - b. Consider and evaluate the feasibility of a local Florida Friendly landscape ordinance, modified building codes and other water conservation ordinances.
 - c. Continued meter replacement will improve metering and reducing water usage that will improve effectiveness of our water conservation efforts. Our goal is to evaluate and prioritize meter groups to determine where we can concentrate our efforts for improving water conservation.
 - d. Explore possibilities of expanding the reuse system. Florida has one of the largest reclaimed water programs in the country, and still there is a potential to increase the reuse program substantially within the state. Some examples the City may evaluate include enlarging reclaimed water storage capacity or constructing storm water storage ponds to implement stormwater reuse that can be used to supplement the reuse system.

Both of these measures are recommended in the SWFWMD's pending Reclaimed Water Task Force Recommendations. As reuse technology expands new methods will be developed and should be explored for economic feasibility as they become available.

- e. Continue to evaluate the rate structure of water and adjust the cost appropriately. Investigate the potential of adding a special drought rate structure that would encourage conservation and sustain a revenue stream.
 - f. Investigate, develop and implement measures that will reduce peak monthly and daily usage. Routinely evaluate the Conserve Florida "Guide" program to know if our efforts result in actual improvements and make adjustments where needed.
 - g. Investigate ways to promote more green construction, including such things as the Florida Water Star Program.
 - h. Investigate and evaluate the creation of incentive-based and public water conservation award programs.
 - i. Evaluate the cost effectiveness of rebates for items like low flow toilets and high efficiency clothes washers. Replacing older toilets with low flow units represent a savings of 26 gallons per day for each toilet replaced. High efficiency clothes washers typically use approximately 14 gallons of water per load as compared to the top load units that use up to 40 gallons of water per load.
 - j. Evaluate selective usage of pressure stabilizing valves as a water conservation measure that controls the system pressure while maintaining minimum pressures to meet regulatory requirements and specific system needs.
 - k. Investigate the availability of water conservation grants from both federal and state governments that target eligible water conservations programs and measures.
 - l. Investigate the feasibility of collecting and treating storm water in order to augment the reuse water system (aka stormwater reuse). While this should include all areas within the City, the downtown portion of the City is located on an island in which all storm water runs off into the intracoastal water way or directly into the Gulf of Mexico. Such a stormwater reuse program could provide water quality and natural system benefits in addition to water supply, thereby addressing three of the SWFWMD's "Areas of Responsibility" simultaneously.
 - m. Impoundments, ASR wells and cisterns offer additional sources of water that could offset water demands on the distribution system. All of these items will need to be studied for feasibility to evaluate the economic impact and efficiency of each option throughout the term of the permit.
 - n. Evaluate best management practices to determining the feasibility efficiency, effectiveness and prioritizing the strategies that will reduce water usage in each customer group.
10. Explore opportunities to further develop the existing water conservation education program. This program is designed to educate the public of the importance of conserving water and to gain a better understanding of the variety of measures one can undertake to conserve water. Some identified actions that should be considered include:

- a. Presentations or activities in local schools, including such things as poster contests.
 - b. Provide promotional and educational information through established public locations including city hall and libraries.
 - c. Make available water conservation kits that might include low flow showerheads, toilet flapper valves, low flow sink faucet aerators, and other water conservation items.
11. Explore utilizing the City billing system to provide water conservation oriented messages each month within the monthly bills. Each month a message could be provided with suggestions that will enlighten the homeowner of various water conservation measures. Twelve draft messages are provided below for consideration:
- a. Watering your lawn in the early morning minimizes evaporation and waste. A hearty rain can eliminate the need for watering up to two weeks. These suggestions are based on grass needs, so be sure you follow your local water restrictions. In the spring, lawns only need watering once every 3 to 5 days; in the summer once every 5 to 7 days; in the winter once every 10 to 14 days.
 - b. Lawns only need about one-half to three-quarters of an inch of water at a time. Measure your irrigation system by placing cans around the yard and measure the water collected in 15 minutes. Spread several cans around your yard to test for even distribution.
 - c. Install water-efficient sprinklers and a rain sensor switch to override your system when it rains. Check timing device setting regularly. Install soaker hoses or drip-irrigation systems for planting beds with shrubs and flowers. Make sure you are watering your plants and not the street or driveway.
 - d. Landscape with drought-tolerant ornamental grasses, plants and trees. Group plants together based on similar water needs. Mulch to retain moisture and reduce weeds.
 - e. Raising your lawn mower blade to its highest setting encourages grass roots to grow deeper and grass blades to hold moisture longer than a closely clipped lawn. Use fertilizers that contain slow-release, water-insoluble forms of nitrogen and apply sparingly.
 - f. Place a shutoff nozzle on your hose to control the flow of water so you only use what you need. Remember to turn the water off at the spigot to prevent leaks. If you don't have an automatic timer on your sprinkler, use a kitchen timer as a reminder to turn off the water. Left unattended, a garden hose can waste as much as 600 gallons of water in just an hour.
 - g. Find out if you have a leak in your home by reading your water meter before and after a 30-minute period when no water is being used. If the readings are different, you have a leak. If you have a well, listen to see if the pump kicks on and off while the water is not in use. If it does, you have a leak.
 - h. Repair dripping faucets by replacing washers. If your faucet is dripping at the rate of one drop per second, you can waste 20 gallons of water each day. A steady stream of water the size of a pencil can waste from 7,200 to 13,000 gallons of water each day (depending upon water pressure).
 - i. Detect toilet leaks by adding leak detector tablets or a few drops of food coloring to the toilet tank. If the tank is leaking, color will appear in the

bowl within 15-30 minutes. Fix the leak and you can save as much as 200 gallons of water per day.

- j. Run automatic dishwashers only when fully loaded. Set clothes washers to the appropriate water level for the size of load you are washing.
 - k. By timing your showers to keep them under five minutes and installing low-flow showerheads, you can save water. The older the showerhead, the more water it uses.
 - l. New showerheads deliver 2.5 gallons of water per minute. Older fixtures can deliver as high as eight gallons per minute.
12. By the end of the first year of the permit, evaluate the feasibility of targeting homes built prior to 1995 for potential retrofit of plumbing fixtures. Retro fit kits are relatively inexpensive between \$10 and \$50 each and can provide for a reasonable reduction in water usage up to 100 gpd in the average household.

In addition to the Water Conservation Team’s activities the City plans to:

1. Continue the Web-based Conserve Florida “Guide” Program in order to track progress of our conservation plan and efforts for the remainder of the permit term.
2. Periodically throughout the permit evaluate the conservation or inclining rate structure for effectiveness in water savings.
3. The City will evaluate the feasibility of conducting a water leak survey of the distribution system within two years of the renewed permit and every five years thereafter.
4. Expand conservation tips for monthly customer’s bills concerning water conservation and billing information. Work with local retailers to promote Florida Friendly Landscapes.
5. Explore providing customer packets for both new and seasonal residents with information about efficient use of water in the home including tips for irrigation and landscaping. This option is relatively inexpensive and would encourage voluntary conservation.
6. Update and maintain the City website to provide monthly tips and information with links to water conservation information.
7. Investigate the feasibility of increasing the recovery rate of the RO water treatment system, and the potential for SWFWMD cooperative funding to do so.
8. The City will continue to expand the reuse program and explore water conservation initiatives for the reuse system that will allow for additional beneficial uses of the system.
9. Continue the Florida Friendly Yards program. This program and partnership can produce an immense amount of information on landscape design and water saving concepts for the customer. A guide to Florida-Friendly Landscaping is provided for the public along with conservation tip brochures, bumper stickers and bookmarks. The Florida Friendly Information Guide consists of:
 - a. Right plant right place
 - b. Landscape water efficiency
 - c. Fertilize appropriately
 - d. Mulch

- e. Reduce Storm Water run off
 - f. Protecting the waterfront.
- 10.** The City will consider the feasibility of implementing the following during the course of the permit.
- a. Provide indoor and outdoor water audits for the consumer.
 - b. Rain sensing devices for irrigation systems by rebate program.
 - c. Reduce the number of dead-ends in the system to reduce the need for flushing.
 - d. Evaluate the potential to optimize the fire departments water use during training and testing of their equipment.
 - e. High efficiency clothes washers and low flow toilets by ordinance or rebate program, and the potential for SWFWMD cooperative funding.
 - f. Consider implementing the Florida Water Star program.
 - g. Evaluate potential water supply sources as identified in the SWFWMD Regional Water Supply Plan and PRMRWSA Regional Water Supply Plan, such as:
 - Desalinization of Gulf waters and Conjunctive IAS PZ-3
 - Cow Pen Slough/Dona Bay System, Flatford Swamp/Upper Myakka Watershed, and Shell Creek Systems