

NACWA 2012 Excellence in Management Recognition Program
Western Virginia Water Authority
Product Quality

The Roanoke Regional Water Pollution Control Plant (WPC Plant) is a 55 MGD facility with tertiary treatment. The facility discharge is governed by VPDES permit VA0025020. The cumulative elements of this permit create one of the most stringent discharge requirements in the Commonwealth of Virginia. In total the facility has over 7,000 compliance points annually for the facility with no exceptions granted in the permit structure. The primary limits within the permit are represented below:

	Permitted Monthly Average	Permitted Weekly Maximum	Actual Annual Average
Total Suspended Solids	5 mg/l	7.5 mg/l	0.5 mg/l
Biological Oxygen Demand	5 mg/l	7.5 mg/l	0.2 mg/l
Total Kjeldahl Nitrogen (Tiered Seasonally)			
<i>January - March</i>	4.0 mg/l	5.0 mg/l	1.1 mg/l
<i>April –September</i>	2.0 mg/l	3.0 mg/l	0.3 mg/l
<i>October-December</i>	3.8 mg/l	4.2 mg/l	0.03 mg/l
Phosphorus	0.2 mg/l	0.3 mg/l	0.08 mg/l
Total Cl ₂ Residual	0.0028 mg/l	0.0034 mg/l	0.0 mg/l
D.O.:	Minimum of 6 mg/l		6.7 mg/l

The facility design and management systems have been carefully structured to meet and exceed the permit requirements as evidenced by the receipt of four consecutive NACWA Gold Peak Performance Awards.

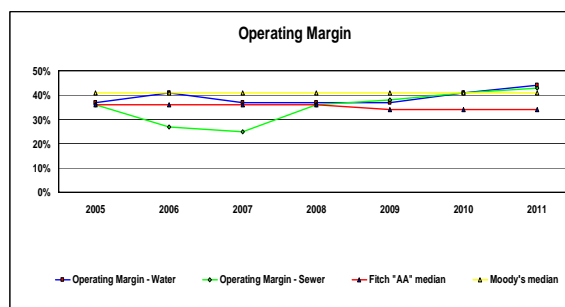
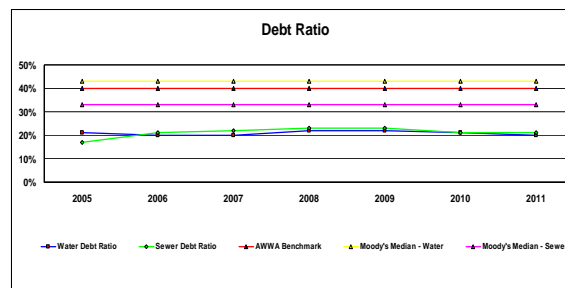
The Water Division of the Western Virginia Water Authority vigilantly safeguards the drinking water supplies and is in full compliance with all state and federal monitoring and reporting compliances. The data below is reported in the Authority's 2011 calendar year Consumer Confidence Report.

Substance	Units	Ideal Goals (EPA's MCLG)	Highest Level Allowed (EPA's MCL)	Violation	Carvins Cove	Falling Creek	Crystal Spring	Spring Hollow
Chlorate	ppm		0.8	no	(0 - 0.07) 0.013	N/A	N/A	(0-0.03) 0.01
Chlorine	ppm		4-MDRL	no	(1.0 - 1.3) 1.1	(1.1 - 1.4) 1.2	(0.9 - 1.0) 1.0	(1.2 - 1.3) 1.2
Chlorite	ppm		0.8	no	(0 - 0.09) 0.013	N/A	N/A	(0 - 0.08) 0.016
Fluoride	ppm	4	4	no	(0.5 - 0.9) 0.6	(0.52 - 0.73) 0.66	(0.6 - 0.8) 0.6	(0.66 - 0.83) 0.7
Total Organic Carbon	ppm	TT	N/A	no	(1.62 - 1.96) 1.67	(1.33 - 2.08) 1.63	N/A	(1.04 - 1.29) 1.19
Total Nitrate & Nitrite (as N)	ppm	10	10	no	0.1	0.05	0.69	0.4
TTHM's	ppb	0	80	no	(1 - 106) 32			
HAAS's	ppb	0	60	no	(ND - 96) 31			
pH	pH units		6.5 - 8.5	no	(7.4 - 8.1) 7.7	(7.0 - 7.3) 7.2	(7.6 - 7.9) 7.8	(7.5 - 7.7) 7.6
Turbidity	NTU	TT	0.3	no	(0.11 - 0.24) 0.14	(0.12 - 0.28) 0.21	(0.03 - 0.06) 0.04	(0.06 - 0.09) 0.07
Total Coliforms	MPN/ 100 mL or P/A	0	Presence of coliform bacteria in >5% of monthly samples	no	0	0	0	0
Fecal Coliforms	MPN/ 100 mL or P/A	0	A routine and a repeat sample are total coliform positive, and one is also fecal coliform or E. coli positive.	no	0	0	0	0

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Financial Viability

The Authority's has a strong fiscal policy to maintain a financially viable operation that can protect and manage essential water resources through delivery of quality water and wastewater service to our customers, maintain and enhance financial flexibility in order to be able to continually adapt to local and regional economic and regulatory changes and preserve and improve the sound fiscal condition of the Authority. Staff provides operating performance measures to the Board as part of an overall program to document performance.

The financial ratios and measures guide the Authority in establishing a target for rates and asset measurement. Debt leverage ratios, operating performance ratios and liquidity ratios are benchmarked to the Authority's Fiscal Policy as well as national rating data provided by AWWA, Moody's and Fitch's ratings. The Authority maintains a debt ratio in the Water Division of 0.20 and of 0.21 in the Wastewater Division. Both of these benchmarks are in line with AWWA's Benchmark Data target of a range of 0.2 to 0.5. Our Operating Cost per Customer, a measure of expense efficiency of \$244 for Water and \$255 for Wastewater, also falls within the AWWA target range of \$184 to \$532 for Water and \$157 to \$347 for Wastewater.



The Authority's budget maintains a level of expenditures which provides for the safe upkeep and efficient operation of its facilities, meet the Authority's Fiscal Policy of 1.5 budgeted coverage to issue new debt, an Operating Margin of 36-40% and provide annual contributions to Reserve Funds. As part of the budgeting process, the Authority forecasts its water & wastewater fund expenditures and revenues for each of the next five years and updates this forecast annually. A five-year Capital Improvement Plan is also submitted with the annual budget.

	FY 2010	FY 2011	FY2012
Budgeted water capital projects	\$3.5M	\$3.8M	\$5.7M
Budgeted sewer capital projects	\$4.2M	\$29.7M	\$6.2M

The Authority's rate structure is a component of its financial strategic plan that preserves and improves its sound financial condition. The Authority sets fees and user charges which provide for reliable operation of the utility, continued commitment to replacing infrastructure, system improvements and provides for growth while maintaining a healthy financial standing and adequate reserves for contingencies. User rates are projected as part of the annual budget process for each of the next five years and are reviewed annually. The Authority considers the affordability of rates in the context of local wealth and income indicators and maintains user rates within a range of 1.0 to 1.5% of medium household income. If rate increases are necessary, the Authority prefers smaller gradual rate increases versus larger infrequent rate increases.

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Western Virginia Water Authority
Customer Satisfaction

The Water Authority takes a proactive approach to customer service, educating our consumers about all aspects of our operation before any customer service concerns arise. The Authority's customer service initiatives begin with our nationally recognized education outreach programs (Water Environment Federation 2009 Public Education Award) that create a positive brand image in our customers' minds. In addition to our strong presence in the classrooms, over fifty civic and community groups annually benefit from hearing our "Behind the Faucet" presentation that informs customers of the steps involved in treating and delivering quality drinking water and exceeding our high standards in wastewater treatment. Tours of our drinking water or wastewater treatment facilities also improve our customers' satisfaction with the Authority. After touring our facilities or hearing our presentation, customers regularly comment that they are impressed that we are able to deliver a quality product at such an affordable rate. Water and wastewater operators assist the outreach staff with these tours so that they can directly connect with the customer and share their unique knowledge. All employees embrace the "I am the Water Authority" motto – no matter what division you work for or what task you perform, you may very well be the only Water Authority employee with whom a customer interacts.

All interactions with our customers are measured and reviewed to ensure that we are maintaining the highest level of customer satisfaction. This past fiscal year, the Authority's customer service staff averaged 479 customer interactions per day and successfully met their goals by answering 91% of all incoming calls. Unlike most utilities in our area, the Authority maintains an in-house call center and a walk-in customer service department.

Customers who experience a sewer or water emergency are given immediate attention. The Authority has a designated staff member who responds to sewer back-ups typically within 10-15 minutes of the initial customer call. If we anticipate a severe wet weather event, additional staff is placed on-call. Customers who need service after our normal business hours are also given superior service. In 2010, the Authority formed a partnership with Roanoke County's non-emergency 911 dispatch staff to respond to night-time and weekend calls. If a customer needs immediate attention, the County's staff can dispatch the call to one of the Authority's stand-by field service crews. This contractual relationship benefited the County of Roanoke by providing an additional revenue stream and the Authority benefited by being able to reduce expensive overtime staffing.

Customer service improvements have also been made in our collections department as the number of customer payment options has been expanded. Customers are now given the option to pay their bills by eCheck, electronically transferring funds from their checking or savings account. This payment option has now become our third most popular payment option, behind mailed payments and automatic bank drafting. Once the new billing system is implemented in 2013, customers will be able to electronically view detailed consumption data based on real-time readings.

With the addition of our new Red Alert system in 2011, we are able to notify customers of planned repairs that will result in service disruptions, major water line breaks and potential emergency situations. This reverse-911 platform also allows us to call customers who are in jeopardy of having their service terminated due to non-payment.

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Western Virginia Water Authority
Employee and Leadership Development

The Western Virginia Water Authority recognizes that our best asset is a highly trained and motivated workforce. To that end, the Authority partnered with Virginia Western Community College (VWCC), to create a comprehensive employee development program for existing supervisors as well as the Water and Wastewater Certificate Program to train future operators.

Since the program launch in 2007, Authority supervisors and managers have participated in weekly classes focusing on successful leadership skills, employee development, skills to create a high performance workplace, managing public interactions as well as basic technology skills. A new group of employees are selected for the program each year. These classes not only help the supervisor or manager grow within the organization, but they improve efficiencies of our staff and offer skill sets that managers need to help their employees grow and succeed. Class participants also brainstorm ways to improve operations of the organization. For example, one group of class participants recognized that a new streamlined employee evaluation program was needed. As a result of their suggestions, the new evaluation process involves more employee communication with less paperwork.

With one-third of all staff eligible for retirement within the next five years, the Authority has taken a proactive approach to reaching our next generation of employees. The Authority has two full-time positions dedicated to providing water education outreach classes and tours to over 10,000 students a year. These grade-specific programs, offered to students in K-12 and college, increase the students' knowledge of water, natural resource management and conservation. They also plant the seed about future careers at the Authority. The Water and Wastewater Certificate program, created in 2008 as a partnership with VWCC, continues this education through in-class training taught by the Authority's executive staff, water operators and engineering professionals. At the end of the one-year training program, participants put their new skills to practice as Operators in Training. Many of the program graduates are now employed by the Authority or with neighboring public utilities. The Authority also offers a tuition assistance program for employees who desire to further their college educations.

Because the Authority manages a variety of water sources and several types of treatment facilities, cross-training is important for day-to-day operations and productivity. All water operators rotate through the Authority's three main treatment facilities so they are familiar with the various treatment technologies. The Water Pollution Control Plant established a specialized unit called Operation Training and Support (OTS) which has developed an extensive training program for new and existing employees. The OTS unit has expanded the effort beyond inclusion of basic facility information to focus on developing a robust and easily accessible system for knowledge capture and information sharing.

Finally, safety is an important part of all the Authority's operations. In addition to standard programs to track occupational injuries, work days without accidents, and vehicle accident reviews, the Authority has partnered with thirteen other localities, authorities and private utilities to create a public works academy. Activities include joint funding of training classes, review of right-of-way issues, coordination of planned work and experience sharing.

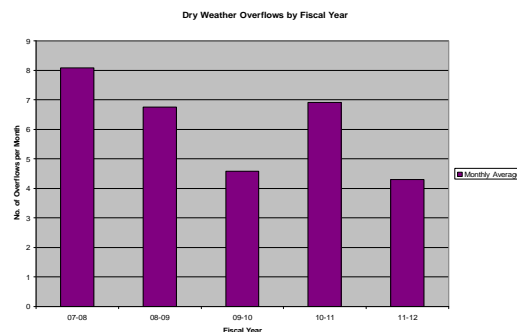
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Operational Optimization

In the past three years, significant advances have been made as the Authority has embarked on five distinct but inter-related optimization projects. Prior to 2010, the Authority collected data in the field on paper for various field activities such as manhole inspections, incident investigations, re-check meter readings, planned maintenance and repairs & rehabilitations. These data were then entered by hand into assorted silos such as spreadsheets, databases, a CMMS and old billing software. Water meters ranged in age from one to sixty years and the accuracy of the demand data they provided was questionable. The billing software was cumbersome to use and did not allow for field data entry of re-check work orders. A basic skeletonized hydraulic water model was built; however, there was no hydraulic sewer model.

In 2010, new Asset Management software which consolidates all available asset and inspection data in one GIS system was implemented. The office software was adopted to better manage the data and a mobile component of the software was implemented to allow seamless field data entry. All asset and work order data is exported to a web GIS so all Authority staff may view it either in the office or in the field.

In 2011, work was completed on an all-mains hydraulic water model which is being used for fire-flow analyses, master planning and water age analysis. As part of an energy audit project, work began to replace all 58,000 commercial and residential water meters with modern high accuracy meters and add extra bulk meters to better manage water consumption and water loss. The system includes a fixed based AMI system that will read meters remotely and free up existing meter readers for more strategic purposes. Once the AMI system is in place, system demands and diurnal patterns will be updated in the model to match real-time data. In 2012, new billing software was purchased with projected full implementation by 2013. This will improve current billing and customer service practices and integrate directly with the AMI system. A mobile component will allow seamless field data entry.

Work was also completed on an all-mains hydraulic sewer model which is used for analysis and prioritization of capital improvement projects. Once each sewershed basin is calibrated, the model will be used for prioritization of sewer flow monitoring and will reduce the need for further flow monitoring. Dry weather overflows are already decreasing due to an increase in CCTV inspections of the sanitary sewer lines as well as educating the public about the hazards of putting fats, oils and grease down drains.



A standard SCADA platform has been adopted by the Authority for all facilities. The program to fully integrate systems into the SCADA system produced immediate benefits in maximizing staff efficiency in managing a distributed system. As new facilities are added to the system, they are integrated into the SCADA network. The Wastewater Division has further expanded the use of the SCADA system to incorporate inclusion of O&M manuals, facility drawings, Standard Operating Procedures, and training videos created specifically for the facility. This system has increased Operator knowledge and has been an integral component of ongoing facility training programs.

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Western Virginia Water Authority
Operational Resiliency

Authority staff, management and directors have worked collaboratively to evaluate known and unknown risk factors that could disrupt operations or impact our level of service. Since its formation, the Authority has focused on improving interconnections between the four treatment facilities. What had been two separate, non-connected systems is now a cohesive distribution system connected in such a manner that over ninety percent of the service area can be served by more than one water source. This flexibility has been tested during periods of drought but will prove critical in the case of an environmental or natural disaster. Authority Management continuously reviews possible downgrading incidents and proactively plans infrastructure projects or implements procedural changes to mitigate risks.

Within the past three years, emergency response plans (ERP's) have been created or revised for each reservoir and treatment plant that allow for continued operation in the case of drought or other emergency. These plans, created by staff on all levels, are reviewed regularly and employees participate in ERP training. Internal table tops have also been conducted to prepare for power outages, pump station failures, drought and floods. Staff was also instrumental in creating a Utility Mutual Aid Network in Virginia. Preventative maintenance is performed on all major critical assets in pump stations and treatment plants.

At our Regional Water Pollution Control (WPC) Plant, combined heat and power generators were put into service in 2012 to convert waste methane gas into usable electricity. This grant funded project provides forty percent of the plant's heating, cooling and electricity needs. An additional diesel fueled generator provides continuous back-up power generation for at least 24-hours. The plant also has a diesel-fueled blower for aeration.

To quickly address overflows during wet weather events, staff at the WPC Plant are assigned prioritized geographic areas to physically inspect during wet weather events. By quickly targeting the manhole covers in sewersheds that historically are more susceptible to overflows, our crews can be proactive in anticipating and avoiding problems.

The Authority employs a full time Risk/Fleet Safety Coordinator who is responsible to safety and risk abatement for the organization. The coordinator tracks trends for incidents of injury or illnesses and meets with the Authority's insurance carrier twice a year to review loss ratio to identify areas of high incidents. Measures are undertaken to reduce the loss ratio based on past history. Measures include training, grants for new equipment and participation in routine audits from the insurance carrier.

Cross training is practiced in all departments and specific personnel are designated to be on call in the event of an emergency to ensure 24 hours per day coverage. Many employees have Authority laptops with VPN access to allow them access to SCADA, flow monitoring and critical IT systems.

The Authority's IT Director coordinates disaster recovery for IT systems including billing, payroll, the asset management system and GIS. Employees participate in disaster recovery drills on an annual basis to ensure proper functioning of systems. Disaster recovery servers are maintained and tested in parallel with production servers.

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Community Sustainability

It is the goal of the Western Virginia Water Authority to enhance the well-being and quality of life for our regional community by protecting natural resources through education and conservation. Even though our drinking water sources are in protected areas, national reports indicate that water sources can become contaminated by pharmaceuticals and personal care products being flushed down toilets.



Prescription drugs collected at one take-back location on April 28, 2012

Local law enforcement officers, the Roanoke Area Youth Substance Abuse Coalition (RAYSAC) and the Authority formed a regional Task Force in 2010 to address the environmental and health risks associated with the improper disposal and misuse of prescription drugs. The Task Force has been instrumental in developing local solutions for our regional community and continues to meet quarterly to promote safe drug disposal methods and increase awareness of prescription drug abuse in our communities. Over 3,600 pounds of pharmaceuticals have been collected at semi-annual drug take back events and phone poll surveys show an increasing awareness associated with flushing medications. When polled in 2011 about how they dispose of unused or expired medications, 62% of all the entire population surveyed thought that flushing meds could leave traces of pharmaceuticals in the drinking water as compared to 54% from the 2010 survey.

The Authority vigilantly protects the 13,000-acre watershed around Carvins Cove, our 6.5-billion gallon reservoir. In 2006, when a 250-acre parcel of land in the Cove's watershed was put up for sale, the Authority partnered with local Hollins University and a business owner to purchase the land. By working together, we prevented future development in the watershed and won a state conservation award for our efforts. And in 2009, the Authority worked with the City of Roanoke to establish 6,185 acres of the Carvins Cove watershed as a permanent conservation easement.

Because our education outreach program is so vibrant, we have the opportunity to utilize our plant sites as demonstration areas for watershed protection and energy conservation. To demonstrate to homeowners how they can minimize the impact of stormwater run-off, Authority employees partnered with a local Eagle Scout candidate and an area businessman to create a rain garden that filters run-off from twenty acres of land that drains through our Regional Water Pollution Control Plant (WPC). The Authority also partnered with the Upper Roanoke River Roundtable last spring to construct a demonstration rain garden and install rain barrels next to our security office at the Carvins Cove reservoir.

Energy improvements at the WPC Plant and in water metering will save energy and reduce our carbon emissions. The combined heat and power system at the plant will utilize 246 million BTU of methane gas, a waste by-product of the solids treatment process, into usable electricity and thermal heat. And by installing new lights, HVAC equipment and pumps in our treatment facilities, we will reduce our carbon emissions – the equivalent of removing 780 cars from the road.

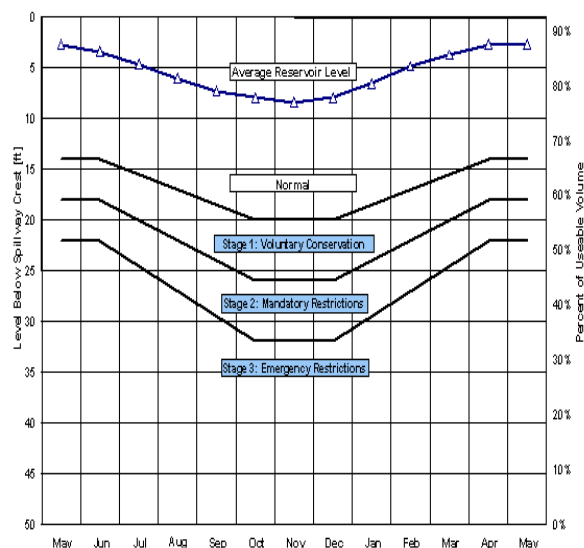
NACWA 2012 Excellence in Management Recognition Program
Western Virginia Water Authority
Water Resource Adequacy

As both a water and wastewater agency, ensuring an adequate water supply of superior quality is critical for our customers. The Authority has undertaken two long range water supply planning efforts in the last decade; the first in 2002 and an update in 2011 that included an expanded area and more climate variation. Both plans are regional in scope and include utility operations for twelve area localities.

Planning efforts indicate that the Roanoke Valley will have adequate water supply for at least the next 40 years. However, the Authority is proactively planning for what will constitute that water supply in the year 2050 and beyond. The likely future water source is Smith Mountain Lake, a 20,000 acre lake that is part of a power generation project managed by American Electric Power. Through a Federal Energy Regulatory Commission permitting process, the Authority and two neighboring counties partnered to establish the lake as a future water source. This partnership has also led to the construction of a 12.5 mile water line that conveys water to Franklin County to meet immediate needs for reliable public water and fire protection. In the future, the main can be reconfigured to transport water from Smith Mountain Lake back to the Roanoke Valley. Finally, Smith Mountain Lake is the collection point for wastewater discharged by the Authority's treatment plant to the Roanoke River. This means that the Authority's Water Pollution Control Plant must produce a high quality effluent at all times. To that end, the Authority is upgrading the plant's disinfection system to meet public access reuse quality and has an active prescription drug take back program (described elsewhere).

While it is important to plan for future water supplies, utilities must also address water loss and ensure that customers understand how to use water wisely. To address unaccounted for water, the Authority began a utility-wide infrastructure project in 2011 to replace all 58,000 water meters with fixed network AMI capability. Not only will the new meters help customers detect leaks sooner, the project includes installation of zone meters and a software system that will compare meter readings to production statistics on a neighborhood scale to reduce unaccounted for water in the Authority's system.

Participants in the Authority's outreach programs are provided tips on how to conserve water and this information is included in our annual water quality report and on our website. The Authority's drought contingency web page also allows customers to monitor daily reservoir levels. The drought contingency plan is also available. Staff is confident that the infrastructure repairs and the consistent "Use Water Wisely" message is working as average daily water production has decreased 20% since 2004 while the total number of customers has increased.



Stakeholder Understanding and Support

The Authority is actively involved in stakeholder, business and community organizations. The Authority is overseen by a seven member Board of Directors that represent the Authority's three locality members. The Board Directors are successful community leaders active in the Roanoke Valley. Staff members serve on the boards of the Smith Mountain Lake Association, the Upper Roanoke River Roundtable, the Virginia Biosolids Council, the Virginia Utility Mutual Aid Network, the Roanoke Valley Greenways Commission, the Virginia Association of Wastewater Agencies, the Virginia Water Environment Association and Virginia Utility Protection Services.

Staff is active in community service groups such as the Rotary, Lions and Kiwanis. The Authority actively participates in the Roanoke Valley United Way and the Roanoke Chapter of the American Cancer Society through its annual Relay for Life event. These charity efforts not only allow staff to interact with customers, but they also boost employee morale through the various fundraising activities. The Authority is also a member of each Chamber of Commerce in our service area and participates in the Leadership Roanoke Valley program. These connections allow us to gain knowledge from key community stakeholders as well as share information about our operations.

In addition to typical items such as our annual consumer report, website, a customer email service and facebook page, the Authority has an active community outreach program. This allows the Authority to be a familiar face at the many civic leagues in the valley, providing an convenient way for stakeholders to give us feedback. Staff members routinely make presentations at neighborhood meetings, community fairs, and expos explaining our operations and receiving customer comments. Staff holds public meetings regarding infrastructure decisions such as construction of water storage tanks or installation of sewer mains to replace failed septic tanks. Most recently staff conducted a series of balloon tests where a large red balloon was floated to the approximate height of a new water tower so that area residents could visualize the possible impact of the new facility.



Using the balloon as a guide, the proposed new tower was drawn on the photo so residents could visualize the project.

The Authority is a leader in regional cooperation among the various localities in the Roanoke Valley. Authority staff coordinates a regional construction standards group which provides consistent standards from developers across all jurisdictions. The Town of Fincastle selected the Authority through a competitive bidding process to manage its utility system. The Town and Authority have had a successful contractual relationship for the past five years to manage their water and wastewater utilities. What started as a contract to manage the treatment facilities and distribution system for the town has grown to include meter reading and utility billing.

In addition our management practices and structure have served as a model for other utilities including Halifax, Virginia and Wilmington, North Carolina. Through our local, regional and national participation in business organizations, the Western Virginia Water Authority has capitalized on the opportunity to learn from our stakeholders and share lessons learned about being a well-managed business.

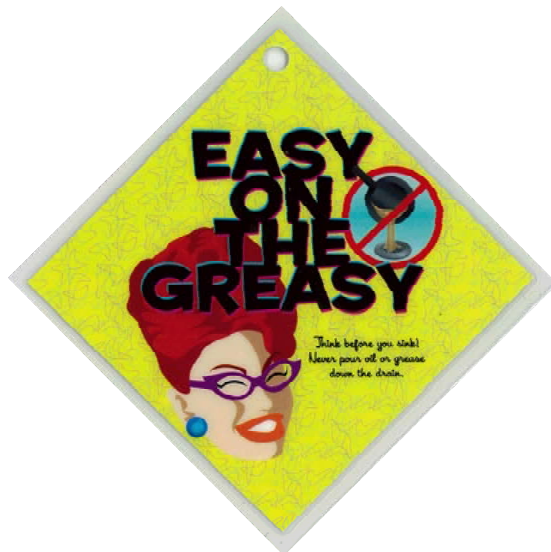
Resource Efficiency & Protection Activities: Pretreatment

The Authority's pretreatment program has a total of 64 permitted entities. In 2011, the program had nine Industries in SNC for 2011 or 14% of the program total. This level is higher than experienced in previous years which has primarily been attributed to industries increasing or re-initiating process discharges following intervals of reduced facility operation or outright temporary closure due to the economic slow down. No violations rose to the level of requiring enforcement fines or fees. In addition to these considerations, the program has also initiated monitoring beyond the minimum requirements of the regulations. All 64 industries were inspected in 2011.

The Pretreatment staff actively participate in the Virginia Water Environment Association (VWEA) including the annual conference. The VWEA has instituted Pretreatment Awards for industries recommended by Pretreatment staff and two of our permitted industries were nominated for and received VWEA Industrial Pretreatment Awards. The two specific industries were General Electric Drive Systems and Koppers, Inc.

In addition to the standard regulatory requirements for Pretreatment, the Authority has elected to expand the program to include permitting and monitoring hauled waste (septic discharges) as well a Fats Oil and Grease (FOG) program with the food service industry. The Septic Hauler program has 26 total permitted entities which generally haul more than 4,000 loads of waste annually. The permit process includes periodic inspection and seven facilities were audited in 2011.

Because fats, oils, and grease (FOG) are a primary cause of over-flows in its sanitary sewer system, the Authority developed a new, more stringent policy controlling disposal of FOG from restaurants. The FOG program has 451 Restaurants that are currently in the data base with permit numbers assigned. In 2011, 140 restaurants were either inspected or visited to distribute Best Practices training materials to them. To educate restaurant managers and employees, the Authority developed a set of printed publications explaining the FOG policy and FOG best management practices (BMP). These publications feature Blanche, the face of the Authority FOG policy. Blanche is a colorful and curvy character reminiscent of a 1950s waitress, who encourages food service workers to go, "Easy on the Greasy". Blanche is featured on a brochure for managers explaining why and how to comply with the Authority's FOG policy, a brochure for restaurant employees explaining FOG BMP and the consequences of poor FOG management, a poster for display in kitchens that highlights FOG BMP, a small "Baby on Board"-style, laminated sign designed to be mounted over a dishwashing station (see above) and a pocket folder which holds the other printed materials.



Resource Efficiency & Protection Activities: Biosolids/Septage/Residuals Management

The Roanoke Regional WPC Plant biosolids program achieves beneficial re-use of 100% of the generated solids. With the close proximity of farm land and suitable crops, land application of a Class B liquid product has continued to be the lowest cost program option. Currently the facility manages around 10,000 dry tons of materials annually in the program.

Dry tons of Biosolids Land Applied by Year

FY 09-10: 9,457 tons | FY 10-11: 9,962 tons | FY 11-12: 8,019 tons year-to-date

The solids treatment process includes anaerobic digestion followed by long term lagoon storage (23-pond acres of lagoon storage). The unique combination of the anaerobic digestion and lagoon storage produces a biosolid product which is recognized regionally as an extremely low odor product which is favored by the farm community. Prior to opening a lagoon for land application activities, the facility has also adopted an additional regimen to conduct testing beyond the process certification requirements. Testing includes a sampling plan for each lagoon with a required number of samples which are run for Fecal Coliform as well as the bench scale volatile solids demonstration.

The Biosolids program and associated management structure received recognition from the United States EPA in 2002 with a second place award for the Large Operating Projects category. The program includes regular coordination with local governments where the materials are applied and public outreach in various forms including public meetings. The demand for the product exceeds the land area required for the quantity of material which often leads to a waiting list of facilities to enter the program.

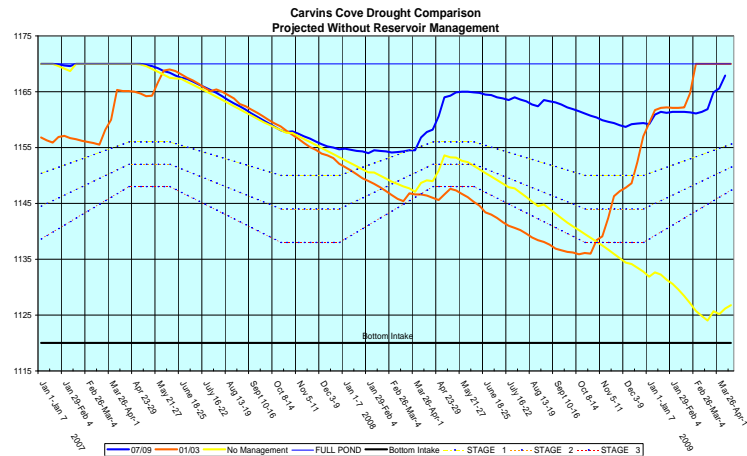
In 2012, a new section of the Roanoke River Greenway opened on the Authority's WPC Plant property offering views of the biosolids lagoons. The Authority is capitalizing on this public relations opportunity by installing informative signs along the Greenway which explain the plant's treatment process and benefits of the biosolids land application program.

Based on fuel costs and trends, diversification of the process is being evaluated with an emphasis on low energy and labor input processes such as solar drying. Strategic land purchases adjacent to the facility were completed in the last five years to permit consideration of a broader range of secondary options like solar drying.

The Authority was also instrumental in forming the Virginia Biosolids Council (VBC), a cooperative effort among generators, processors of biosolids, land appliers, and supporting agencies to promote the beneficial uses of biosolids. By working together, the VBC has provided education, information, and public outreach regarding recycling of biosolids and compost for agricultural and other purposes in a manner that is protective of public health and the environment. Efforts of the VBC have resulted in greater acceptance of biosolids land application and recycling in Virginia and ensures that land application continues to be available to the Commonwealth's farmers and that practical, biosolids recycling is expanded through the use of innovative technology.

Resource Efficiency & Protection Activities: Climate Change Adaptation or Mitigation

All facets of the Authority's business processes have been reviewed for maximum efficiency. One key area that was addressed early on in the Authority's formation was the need to better manage our raw water sources. This process involved evaluating treatment capacities and staffing at each of our four raw water sources. Improvements to our distribution system interconnections were also studied to optimize production at each facility.



As shown in the graph, Carvins Cove Reservoir approaches the bottom intake level during a two-year drought if there was no reservoir management. In fact, under the City of Roanoke Public Utilities Department, the water level dropped to less than a six-month available supply in 2002 when Carvins Cove was relied upon as the primary source of water for the City of Roanoke. As shown by the orange curve, Stage Three or Mandatory Conservation measures were in place for all residents of the City. In 2007, another drought year, the Authority began an aggressive program of reservoir management. Although the drought continued into 2009, Water Authority customers were not placed under Stage One or Voluntary Conservation measures. The Authority was able to more efficiently manage reservoir levels because we had planned and tested distribution system interconnections, cross-trained staff at our treatment facilities to provide for manpower reallocation and had the necessary capacity to increase production at our other facilities. The Authority also developed a Drought Management Plan where declining reservoir levels will trigger specific water use restrictions (see Water Resource Adequacy)

The Authority, in conjunction with the Roanoke Valley-Alleghany Regional Commission, has developed two long-range water supply plans that address water supply needs as well as estimated costs. While the Authority's current rated capacity is 56-million gallons per day, we are only treating and delivering 23-million gallons a day; however, we are still planning for future water supplies that might be needed in the next 60 years. The addition of Franklin County to the Authority allowed us to look to Smith Mountain Lake as a future supply of water, a move recommended as part of the long-range study. The Authority's Contingency Reserve Fund, which is being built over a ten-year period to a level of \$5 million, and the Construction Reserve Fund, with a target level of 10-12% of operating expenses, will provide funding for future interconnections.

As previously detailed in this application, the Authority is converting waste methane gas to thermal energy and electric power. The Authority has also initiated discussions with various public agencies and private entities regarding additional wastestreams which may be considered to enhance gas generation. A closed landfill is also relatively close to the facility and may present another supplementary fuel source to further maximize power generation.

Resource Efficiency/Protection Activities: Water Quality Protection on a Watershed Basis

The Western Virginia Water Authority enhances the well-being and quality of life for our regional community by protecting our natural resources. The Carvins Cove Natural Reserve, a 11,200-acre watershed, surrounds the Authority's largest source of drinking water. The land, which is protected in large part by a conservation easement, is mostly forested with several different forest natural communities, perennial and intermittent streams and seasonal wetlands all of which provide diverse wildlife habitats. The main source of supply for customers in Roanoke County is Spring Hollow Reservoir, which is a pump storage reservoir near the headwaters of the Roanoke River in Roanoke County. The reservoir is supplied by a pumping station that pumps water from the Roanoke River when the river's flow is at or above the state-permitted withdrawal level.

The Authority's Prescription Drug Take-Back and Education program (see Community Stability) also protects our valley's waterways. The program has increased awareness of the problems associated with flushing prescription medications and removed over 3,600 pounds of unused medications from our community.

The Authority has an extensive program to address inflow and infiltration (I&I) that can lead to sanitary sewer overflows and reduction of asset life. The first component of this program involves a web based real time flow monitoring program which serves to update and enhance modeling activities of the system. Previous studies are updated annually to develop a prioritized sewer shed investigation list. The Authority established a specialized internal investigation group, the Sanitary Sewer Evaluation and Rehabilitation (SSE/R) Division to conduct system inspections through the use of CCTV, smoke testing, dye testing, manhole inspections and other activities to thoroughly investigate a prioritized shed. Field collected data is managed through the Meterstream software application which makes it close to a real time update of GIS system information. Repairs are typically managed immediately by Authority staff. The data collected through the field investigations serves to inform engineering staff of the field conditions so that the cumulative data serves to develop larger capital projects for prioritized sheds.

A second component of the I&I program managed by the SSE/R Division helps regulate and protect against private side contributions of I&I. The Authority successfully implemented an I&I Policy which allows the Authority access to inspect private property for defects such as rain leader or clear water sump pump contributions. The Authority worked with area real estate agents to educate them about the problems associated with I&I and enlisted them to coordinate the inspection and corrective action at the time of a real estate transaction. If I&I defects are found, property owners are required to take corrective action. Authority staff conduct inspections at no charge within five days of receiving an inspection request. The program has been so fully embraced by the local real estate community that the inspection activity has been incorporated into the local real estate contractual materials. Prior to the recent economic downturn, it was not unusual for the Authority to complete 300 or more residential and commercial property inspections during peak months of activity.

And finally, to add storage and peak flow capacity for larger return frequency storm events, the Authority is reinstating over 30,000 linear feet of the abandoned Roanoke River interceptor following rehabilitation.