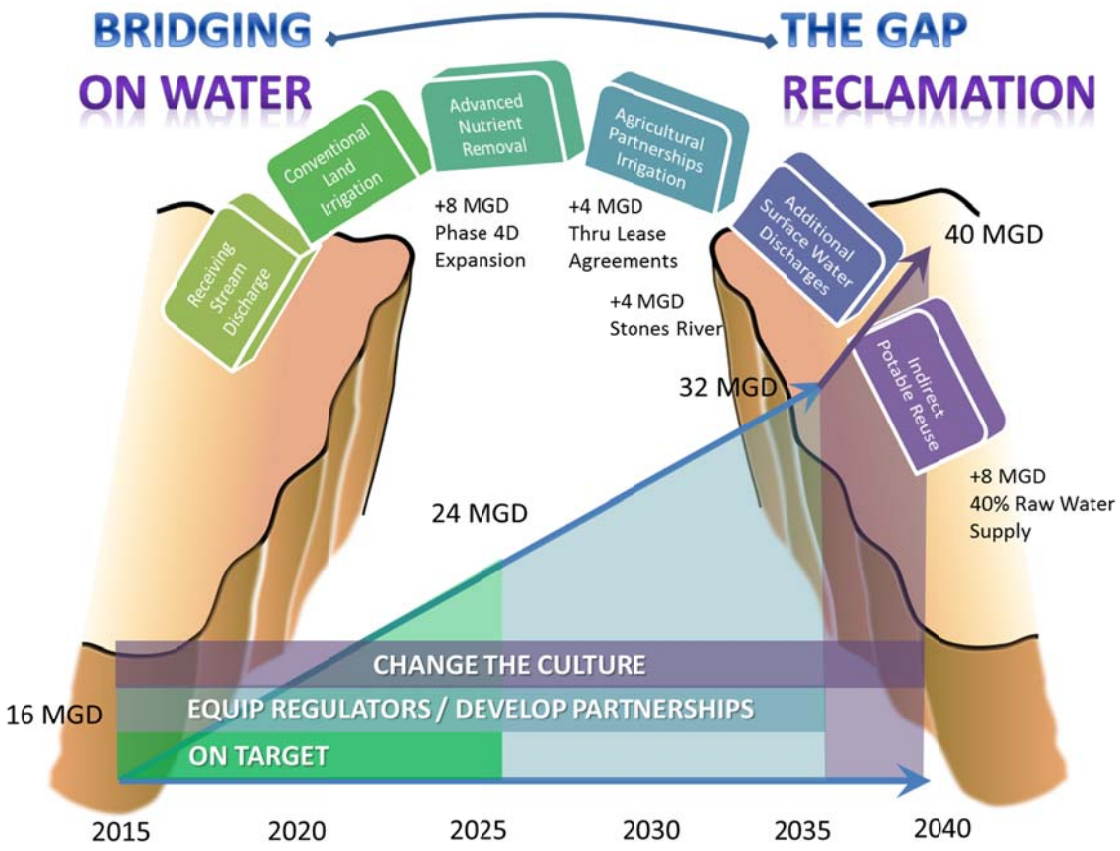
Executive Summary



Murfreesboro Water and Sewer Department

Reflecting Back on **FY14-15** and Anticipating Things to Come in **FY15-16**

An executive summary of past performance, quick wins and upcoming challenges and goals; centered around Effective Utility Management and Lean manufacturing principals

By: Darren Gore, Director

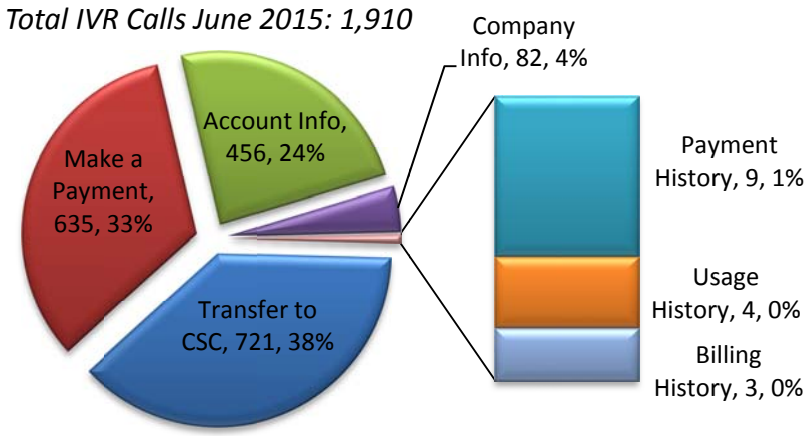
August 13, 2015

Murfreesboro Water and Sewer *FY15 Review*

Reflecting Back on the Past Year

Deploying Interactive Voice Response (IVR) IT Solution

Requests for Competitive Sealed Proposals (RFCSP) were issued in August 2013 to afford the Department the ability to record phone conversations, allow customers to pay via telephone, as well as gain valuable call center metrics (e.g., first call resolution). This enterprise solution is linked with the Department's New CIS.Infinity software. This system "went live" in March 2015.



Advanced Metering Infrastructure (AMI) Request for Competitive Sealed Proposals

An Advanced Metering Infrastructure (AMI) request for competitive sealed proposals (RFCSP) was issued in July 2014, requesting proposals from qualified companies for the acquisition and implementation of an AMI for water services, encompassing approximately 28,000 meter replacements ranging from 5/8" to 2" in size. The scope of this competitive proposal includes design,

Performance Driven through EUM

Performance Benchmarking for Effectively Managed Water Utilities has been rolled out in Water Research Foundation's (WRF) **Project 4313b** to:

- Identify practice areas associated with achieving the Ten Attributes.
- Identify key metrics and potential targets associated with each leading practice.
- Provide the capability for utilities to identify targets associated with each leading practice.
- Develop a benchmarking framework and assessment methodology.
- Develop supporting benchmarking tool(s).
- Pilot test the framework across an appropriate cross-section of utilities
- Make the tool available for the use and benefit of the water sector.

procurement, installation, testing, and related services for the AMI and associated systems throughout the MWSD service area. The objective for MWSD AMI is to improve operational efficiencies, increase customer service and billing accuracy, and reduce unaccounted water loss. This project was approved in February 2015 at a cost of $8.3M.

Centralizing Wastewater Maintenance Personnel and Resident Inspectors at the Sinking Creek Wastewater Plant

A new roof was put on the old sand filter building at the Sinking Creek Wastewater Plant in February 2012. Bids were advertised in September 2013 to renovate the interior of this structure so that all maintenance technicians working in the wastewater area as well as the resident inspectors can be centralized in one facility. The inspectors moved in to this space in September of 2014.

Working the Water and Sewer Capital Improvements Plan

The upgrade of the SCWWTP from 16 MGD to 20 MGD was bid in January 2015. Securing funding for the plant upgrade ($36.5M) was accomplished through the State Revolving Fund (SRF) loan program at a 20-yr fixed rate of 1.4%. The low bidder was awarded to 3D Enterprises in the amount of $30,472,000. Notice to Proceed was issued in April 2015. The Southwest Regional Pump Station and Force Main and the Sinking Creek Wastewater Treatment (SCWWTP) Headworks facility effectively completed by year end of FY15 as well. The total costs of these projects are $23.4M and are funding with State Revolving Fund (SRF) money at 20-yr fixed 1.1% loans. There is $2.4M in principal forgiveness associated with these SRF loans.

Development of a Supervisors Training Curriculum

At the prompting of the Sinking Creek Plant Manager, the following supervisors training curriculum was developed with the help of the Human Resource Department for the wastewater plant supervisors. Water and Sewer staff believes that preparing new supervisors is critical in creating a foundation for the City's future success and expects to springboard off of this curriculum for other divisions within the Department.

June 10th	Documentation	Pam Russell
July 8th	Leadership & Communication	Darren Gore
Aug. 12th	Hiring/Probationary Evaluations	Glen Godwin
Sept. 9th	FMLA	Pam Russell
Oct. 14th	Employee Accident Reporting	Richard Rucker
Nov. 12th	Work Place Harassment**	Kelley Baker

Expanding the City's NPDES Permit into the West Fork Stones River & Investigating the potential for Discharge into the East Fork Stones River

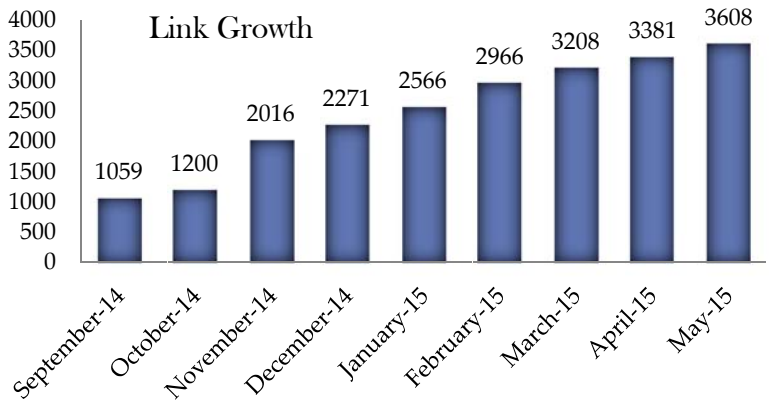
Since June of 2013, staff, SSR and AquAeTer have been assembling a data set that we believe demonstrates that effluent discharged into W. Fork enhances the water quality of the river. The data provided and reviewed in March of 2015 demonstrates that the biology in the stream is healthy and that the stream is in fact meeting its designated uses. The team believes that it is in the City's best interest to continue to sample these receiving streams in an effort to reinforce that the benefit to the West Fork Stones River is a long term display. Additional sampling of the East Fork Stones River is recommended to demonstrate that lake effect issues will always impact the water quality and diversity of species in this branch of the Stones; opening the possibility of effluent being discharged into the river actually enhancing the water quality of the E. Fork.

Continue to Regain Capacity through Sanitary Sewer Rehabilitation and Replacement Efforts

The Department has been dedicated to a rigorous, voluntary (i.e., not mandated) rehab program since 2007; utilizing both outside contracting services and in-house engineering and operations and maintenance personnel. With the reorganization of the O&M division, the Department continues to expect to see less sanitary sewer overflows (SSO's) and allow more connections to occur in basins that have been programmatically rehabilitated. Regaining capacity by removal of infiltration and inflow of stormwater into the sanitary sewer system remains a priority within the Department. The Engineering division has contracted with Littlejohn Engineering in December of 2014 to develop new rehabilitation and replacement construction specifications.

Infinity.Link Web Portal for Enhanced Customer Engagement

With our ongoing information technology (IT) enterprise implementations we are now able to reach many more customers and allow on-line querying and interactions within their accounts. The Department's new Infinity.Link is our on-line web portal, and it is growing each month.



Approval to Develop a Water Resource Integration Plan (WRIP)

In FY15, The City of Murfreesboro is poised to begin a historic planning campaign through the commissioning of the Comprehensive Plan initiative with Kendig Keast Collaborative. As has been acknowledged in past discussions with City and Chamber of Commerce leaders, a key to the continued growth and socioeconomic welfare of the City of Murfreesboro will be the availability of water and sewer services within the Urban Growth Boundary. The City of Murfreesboro faces numerous challenges in the supply of these services within the Urban Growth Boundary, including, but not limited to:

- Limited assimilative capacity of the local receiving streams for wastewater effluent and stormwater runoff
- Contractual restrictions with the Corps of Engineers on raw water withdrawals from the J. Percy Priest Reservoir and its tributaries
- Service of portions of the Urban Growth Boundary by other entities (e.g., Consolidated Utility District)

The Water and Sewer Board and City Council approved the development of a Water Resource Integration Plan in April 2015.

Improvements to Stones River Water Treatment Plant

Granular Activated Carbon was replaced in one contactor in July 2014. Staff conducted a pilot scale study to prove that feeding hydrogen peroxide is a proper chemical treatment to reduce disinfection by-products (DBP's) to a level that meets the Stage 2 DBP rule. Construction of a full scale hydrogen peroxide feed system started in March 2015. Painting of areas at the SRWTP and Stoney Meadow storage tank to maintain appearance started in February 2015. Renovation of the #2 Raw Water Pump Station started in May 2015. Removal of existing tube settlers and installation of new tube settlers by staff started in June 2015.

Deploying a New Financial Information System (FIS) IT Solution

Requests for Competitive Sealed Proposals (RFCSP) were issued by the City's Finance Department for an Enterprise Resource Planning (ERP) business management software that encompasses implementing a new Financial Information System (FIS) and Human Resource Information System (HRIS) solution. The Department is anticipated to convert from our old legacy COBOL financial system to the new off-the-shelf, state-of-the-art FIS that the City Finance Dept. is implementing. The transition occurred on July 1, 2015.

Water and Sewer Rate Design

Starting in October 2013, with the Department's audit and determination of cash reserves, the Department utilized our cost of service study (COSS) for FY13 in conjunction with a FY18 pro forma

to forecast a five (5) year preliminary rate design. The Department's five (5) year rate design, affecting our residential customers (95% of MWSD's customer base) has been implemented per the following:

Fiscal Year	↑ in Residential Monthly Sewer Bill (500 cf)	↑ in Residential Monthly Water Bill(600 cf)	↑ Revenue Generated	Debt Coverage Ratio
July 1, 2013 (FY14)*	$1.67	$1.37	$1,778,047	1.61
July 1, 2014 (FY15)*	$0.50	$0.00	$852,316	1.72
July 1, 2015 (FY16)	$0.50	$0.00	$1,108,521	1.53
July 1, 2016 (FY17)	**$0.25**	$0.00	$1,457,481	**1.47**
July 1, 2017 (FY18)	**$0.25**	$0.00	$1,650,512	**1.45**

* FY14 - FY16 rate designs have been implemented and are in effect.

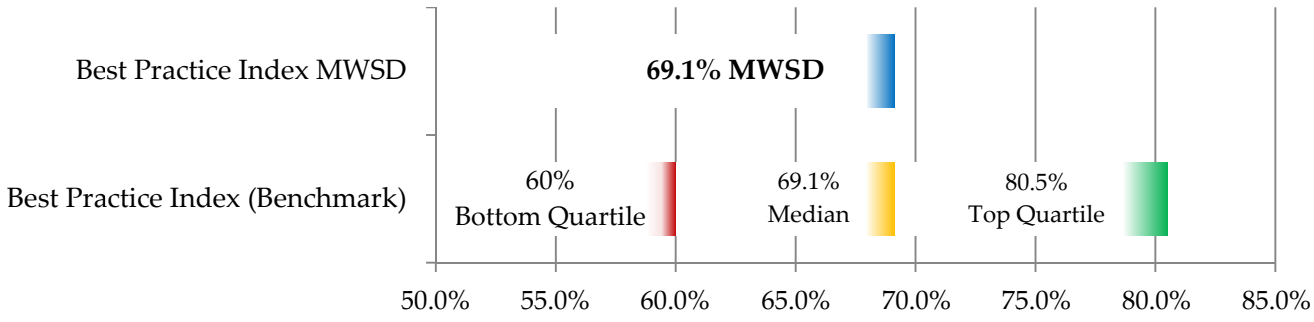
Development of 2015 Annual Review of Trends and Strategic Planning Issues

With the help of the Department's new Effective Utility Management (EUM) Coordinator, the Department developed its first strategic planning document in December 2013. The second version of this document was published in December 2014 and addressed the following:

- Rebranding Repurified Water
- Expanding Wastewater Management Capacity
- Maintaining Existing Infrastructure
- Implementing Efficiency and Service Improvements

Participation in AWWA 2013 Industry Benchmarking Study

With the new EUM Coordinator focusing on trends and benchmarking, the Department participated for the first time since 2006 in a more structured way in the American Water Works Association (AWWA) 2012 benchmarking study. The Department also participated in the AWWA 2013



Benchmarking study. We are moving up in the industry's Best Practice Index which is a composite score of Strategic Planning, Long Term Financial Planning, Risk Management Planning, Performance Measurement System Integration, Optimized Asset Management Program, Customer Involvement Program, Governing Body Transparency and Accountability, Drought Response/Water Shortage Contingency Plan, Source Water Protection Plan, Succession Planning and Continuous Improvement Program. A benchmarking section was included in the Department's FY16 budget to highlight additional benchmarked areas.

Expanding Spray Irrigation Efforts at Coleman and Jordan Farms

MWSD hired one and a half full time employees in FY15 to work land applying Sinking Creek plant's high quality effluent on the Jordan and Coleman farms. The farms are now being irrigated during weekends. The Department also purchased additional irrigation units to increase output on the farms and is anticipated to look at going to 24 hours 7 day a week operation in the future. Additionally, the Department awarded a contract for construction of a maintenance building and pole-barn at the Coleman Farm in May of 2015. This will allow less required transfer of equipment from the Jordan Farm and should allow for more efficient use of staff's time.

Murfreesboro Water and Sewer ***FY16 Look Ahead***

Anticipating the Upcoming Year

Advanced Metering Infrastructure (AMI) Installation and Implementation

The Advanced Metering Infrastructure (AMI) encompasses approximately 28,000 meter replacements ranging from 5/8" to 2" in size. This project will allow the Department to read water meters wirelessly and no longer have to read them manually. The $8.3M project was approved in February 2015. This project's core benefits are:

1) Enhance customer service through proactive engagement; namely early leak notifications
2) Transform the manual meter reading business operation; eliminate routine tasks and reassign existing personnel to elevated functions
3) Confront real water loss and come into full observance of industry metrics for conservation
4) The AMI project's core goal is to have customers "pay their fair share"; otherwise, inaccuracy in meters have to be subsidized by all rate payers

The project pilot is anticipated to start October 1, 2015 and the total project is scheduled for completion within two (2) years.

Continue Developing a Partnership with TDEC and equipping them for Flexibility in their Permitting Framework

A summary of future objectives and action items involving teaming with TDEC are as follows:

Water Resource Integration Planning

- **Look holistically at the management of water** (drinking water, wastewater, repurified water, and stormwater) within the potential service areas of the Murfreesboro Water & Sewer Department.
- **Coordinate efforts with the Murfreesboro 2035 plan**, so that the overall goal of facilitating the growth of the City of Murfreesboro will be accomplished in an orderly fashion with consideration of affordable and sustainable water management.
- **Coordinate water management strategies with the Consolidated Utility District** to identify challenges and strategies to providing water services within the Urban Growth Boundary.
- **Develop a framework** for the Murfreesboro Water & Sewer Department to utilize as a strategic plan for utilizing **Effective Utility Management** to guide its evolution into a **"Water Resource Utility of the Future"**

1) Demonstrate the Sinking Creek plant's effluent meets the Environmental Protection Agency's (EPA) anti-degradation criteria through continued biological sampling of the West and East Fork Stones River.
2) Change the dialog from "reviewing the model results", to "reviewing the observed site-specific data results".
3) Initiate attempts to "de-list" the West Fork Stones River from the 303(d) impaired water bodies list.
4) Partner with TDEC in the paradigm shift that they are attempting to develop and cultivate tactics that TDEC approves as proper implementation protocols and conforms to the new paradigm.
5) Ask for an extension of the Sinking Creek plant's current NPDES permit (expires May 31st, 2016, but must be reapplied for in November 2015) in a time frame that allows incorporation of site specific data (not modeling outputs) to properly determine if the West Fork Stones River is meeting its designated uses.

Continue to Regain Capacity through Sanitary Sewer Rehabilitation and Replacement Efforts

Littlejohn Engineering was awarded a design contract to repair or replace portions of MWSD's sanitary sewer system that are deemed in need of repair. This total rehabilitation construction costs associated with this design contract is estimated at $1.2M, or approximately 0.52% of the total sewer system valuation per the 2013 Cost of Service Study.

Enhancing Security in the Customer Service Area

Staff is continuing to work on upgrades in security in the customer service area. This is the one item that was not achieved in FY15; however architectural services were secured in January 2015 with the firm of Johnson+Bailey. In FY16, the Department expects to develop detailed plans for renovation of this area to guard against potential theft or other security threats.

Move into the Paradigms required to become a "Utility of the Future"

- By continuing to develop The Water Resource Integration Plan that was commissioned in May 2015
- Through advancing MWSD's 2015 Annual Review of Trends and Strategic Planning Issues
- In continuing to seek to measure those key performance indicators that provide insight and guidance into becoming a more efficient and Lean organization.
- In developing Agricultural Partnerships for Land Application of Effluent Spray Irrigation (e.g., Williamson Farm, MTSU Farm)

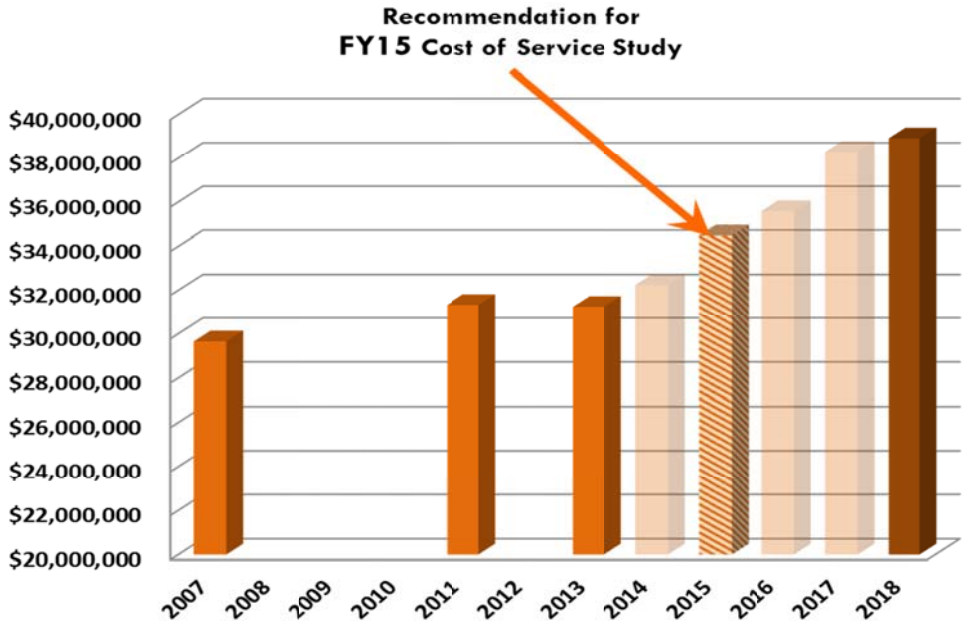
- In developing Industrial Partnerships for Financial, Environmental and Social Gains (e.g., General Mills & Indian Hills Collaboration)
- In facilitating Development Partnerships that may benefit from unconventional sewage treatment techniques (e.g., Dill/Rushing/Lyons Property).

Organizational Development Results in Elevating Meter Reading Workforce

The meter reading workforce was reorganized to report to the Operations Manager in FY14. This was intended to be the first step in the ultimate goal of developing the meter readers into Leak Detection and Advanced Metering Infrastructure (AMI) field technicians. AMI and Leak detection will be a more sophisticated level of work that will elevate an already committed workforce to handle new challenges and coordinate with Operations & Maintenance crews to fix leaks in the water distribution system.

FY14-15 Water and Sewer Cost of Service Study (COSS)

MWSD's last cost of service study was conducted for FY13. In order to maintain accurate 5-yr pro forma calculations, a new cost of service study will be recommended to calculate FY15 revenues and expenses. This will position the Department appropriately to develop our five (5) year rate design.



Social Media and Proactive Customer Engagement Initiative

MWSD is excited to initiate more public engagement through social media in FY16. With our ongoing information technology (IT) enterprise implementations such as AMI, we believe the social media venue to be of significant value. It is anticipated that the Lead Customer Service Clerk job

position will be filled in the first quarter of FY16. By filling this entry level supervisory role for oversight of day-to-day activities, there is a potential to allow the Customer Service Manager more flexibility in attending civic, chamber of commerce and school related events to "message" the value of water and MWSD's services and upcoming initiatives.

Replacement of Fournier Biosolids Presses

The Sinking Creek plant's Biosolids handing facility originally went online in August of 2000. Some of the machines have reached the end of their lifecycles. SSR will soon begin the work of drawing plans to replace two of the Fournier Biosolids presses. The associated electronic and networking systems, variable frequency drives, and Penn Valley sludge transfer pumps will also be replaced or upgraded as necessary. Regaining this vital solids handing capacity will ensure the plant's ability to accommodate growth in wastewater treatment demand and the potential for changes related to nutrient removal.

Pilot Testing New Membranes at the Stones River Water Plant

As MWSD approaches the useful life of the Pall membrane modules, it would be beneficial to have competition for their replacement. Scinor Water America, LLC manufactures a similar membrane that has received their NSF 419 certification. TDEC has approved the installation of these membranes at the water plant as of August 2015 in order to allow staff to determine if this product performs equally to the Pall membrane modules. If they do perform, this should result in savings when the membranes are replaced in whole due to the competitive bidding process.

Continued Partnering with Key Stakeholders

In FY16, MWSD staff will continue to partner and collaborate with key stakeholders such as the U.S. Army Corps of Engineers, Tennessee Department of Environment and Conservation, the Rutherford County Chamber of Commerce, General Mills / Pillsbury, Rutherford County, Middle TN State University, Consolidated Utility District, and the development community. Service Excellence is a committed culture within the Department.

Simplifying Processes to Foster Small Business Start-up and Land Development

Staff will continue to develop "tool kits" for easy navigation through our plans approval process. MWSD wants to continue to get information into the hands of small business entrepreneurs to educate them on water and sewer requirements so that there are "no surprises" as they navigate through the approval process. One exciting area that the Department expects to offer our guidance and expertise is in the development of an electronic plans approval process. One product of interest is Bluebeam Revu. This product provides powerful PDF creation, markup, editing and collaboration technology for paperless workflows. MWSD staff is committed to the "one stop shop" concept.