RAINBOW MUNICIPAL WATER DISTRICT

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Effectively Managing Your Assets

RMWD's mission is to provide our customers reliable, high quality water and water reclamation service in a fiscally sustainable manner. We strive each and every day to attain this goal. The first component is securing a reliable high-quality source of water, which is currently supplied by SDCWA at our nine connections to their aqueduct system.

Our efforts focus on the infrastructure that is owned collectively by our customers in the form of our water distribution system. This system consists of hundreds of miles of pipelines, 13 water storage tanks, three covered reservoirs, five pump stations, and 70 pressure regulating stations. This is just on the water supply side of our organization.

For wastewater we operate over 60 miles of sewer lines, nearly 2,000 sewer manholes, six lift stations, and other sewer monitoring systems. These assets are either buried in roadways or in one of the nearly 2,000 easements that the District holds where pipelines cross private property.

Pipelines are expensive to build and sometimes even more expensive to replace, so through proactive maintenance processes we try to make the investments our customers have made in our systems last as long as possible. All of these assets are owned by you, the ratepayer. RMWD's task is to efficiently manage your investment to get the maximum service from them at the most reasonable expense.

Enterprise Asset Management System

In the past, our assets have been managed using a traditional paper-based system. Over the past couple of years, RMWD has converted each and every asset info a geographical information system (GIS). This digital based contains every pipeline, valve, pressure station, pump, etc., including data such as the size, material it is made of, age, operating pressure – all tied to its geographic location. With some of our pipelines and equipment located it very remote areas, this mapping system is critical to helping manage these assets.

Knowing the physical location of our assets is important, but that is only part of what is needed to efficiently manage this complex system. The other half is an Enterprise Asset Management system (EAM) that allows us to tie the service and labor costs associated with maintenance of the system to specific assets. Every time a component is checked or service this information is tracked. To do this, RMWD has licensed a product called *Infor EAM* from the software company Infor.

This system was selected because it could be integrated with our existing GIS system, allowing each and every asset in our maps is now linked with our EAM software. Any change in one is reflected in the other. For example, when a new pipeline is added to the GIS, it is automatically added to the EAM allowing us to track this assets and properly perform any maintenance.

To give you an idea of what is being tracked, as of this month, we have 97,558 individual assets in our EAM asset list! We are adding to this list on a regular basis and expect to go over 100,000 during this calendar year. Every pipe segment, valve, meter, hydrant, and other asset we operate and maintain is individually cataloged in the system with a unique ID number.

Asset Management at Rainbow MWD

The next time you open your faucet, take a shower, or watch your landscape irrigation system turn on, take a moment to think about what it takes to get that water to your home. The vast majority of water that is delivered by RMWD starts as snowfall or rain in the Sierras or the Rocky Mountains and travels hundreds of miles through countless rivers, canals, aqueducts, reservoirs, pipelines and pump stations to get to our region.

These systems are owned and operated by various agencies including the State of California Department of Water Resources (DWR), the Metropolitan Water District (MWD), and the San Diego County Water Authority (SDCWA). This system of water supply has been constructed over many decades and brings the water to our system for delivery to your home.

About 70% of our costs goes to pay for water conveyance from external systems to our District. Once the water is delivered to RMWD, we perform a very similar function but on a smaller scale. Our pipelines are not eight feet in diameter – they average just under 10” in diameter. Our storage reservoirs hold treated water, not fishermen and water skiers. Our water meters measure water in hundreds of cubic feet per month, not hundreds of cubic feet per second.

We manage a distribution system that covers about 80 square miles and consists of over 325 miles of pipelines! These assets allow the water that started as snow in the Rockies to gets to your home, and the management of the assets that deliver this water to you is the core of what we do here at RMWD.

How We Use the EAM System

The critical element we have implemented is to track everything we do and link it to those assets in the EAM. Apart from being a comprehensive catalog of assets, the EAM is also a very robust work management system. Through the EAM we issue work orders that our employees use to track their time spent performing various tasks.

Each work order has one or more assets associated with it, and every employee logs their time spent every day to one or more work orders. We also have codes for all the various activities that we perform, from excavation, to water quality sampling, to welding pipelines –over 300 distinct activities that employees record their time to. We track both when they worked on an asset, and what was done.

With an aging system like ours – some of our pipelines are over 50 years in age – it becomes critical to determine if and when one needs to be replace. Replace a pipeline too early, you lose some useful life. Wait too long, the costs to repair leaks becomes too great, not to mention the service disruption to effected customers. The EAM allows us to maintain a record of which pipelines have leaks, what caused the leaks and predict the likelihood if it may leak again.

Additionally, we know how many hours it took to repair the leak, which helps us plan for resources needed for the future. Analysis of this information helps us determine when it is more cost effective to simply replace that section of pipeline by balancing replacement costs versus costs associated with frequent repairs to a leaky section.

EAM allows us to establish preventative maintenance programs for assets so that we can extend the life of systems and equipment. There are well over 100 preventative maintenance schedules in place for various pumps, motors, and pressure regulating stations with more being added every day.

By doing the little things right, we prevent the big problems later. The EAM system will automatically generate work orders at the right time to dispatch an employee to perform this maintenance.

The EAM is not just for work on pipelines. We also use the EAM to track office employees' activities. We have created several "virtual" assets to cover functions like Customer Service and Human Resources so we can see how their time is being used day to day with an eye toward improvement.

You may have noticed that the return address on your water bills recently changed to a PO Box instead of our main offices. This change was implemented based on data we gathered from the EAM that showed it would cost less to outsource the process of opening bills and processing checks than having it done in-house.

With district growth, customer service representatives get busier, so offloading payment processing frees up employees to do other things allowing us to avoid having to add employees to manage growth.

Data Analytics

EAM makes it easy to enter their time each day, so most employees spend well under 10 minutes per day entering data. This growing data set provides great insight into how labor is being used in ways that were impossible with the old paper timecard systems.

For instance, if you are one of our customers whose bill includes a pump charge, you may have noticed that your fixed cost for pumping actually went down during our most recent rate change (the variable pump charge all goes to SDG&E for power so we don't control that part). This reduction was due to having more accurate data. The previous charges were based on our best estimates of labor spent on our pumping systems. With the more accurate EAM data we discovered that we actually spent a little less labor on that activity than was predicted, so we passed those savings on to our customers by lowering the fixed pump charge.

Each EAM user has a dashboard with many Key Performance Indicators (KPIs). We have dozens of KPIs and are continuing to expand these. KPIs show up as graphical representations that give feedback on whatever information is of interest. Some track overtime rates while others look at the number of work orders of a given type have been completed in the last 30 days.

The system can be set to trigger an alert if a high priority work order is not completed quickly or if the hours on a given project exceed a certain range. The system is very flexible and we use it to deliver information to employees so that they can be as effective as possible in managing your assets.

We have also tied our EAM data into our field GIS system that runs on iPads. Field employees can now see all of their work orders right on the map regardless of where they are and automatically get notified of new work orders near them while they are in the field potentially reducing drive time. With such a large service area, drive time is a significant part of our labor costs and this spatial mapping of work is critical to increase efficiency in the field.

Just Getting Started

The initial implementation of the EAM has taken about nine months, and all of our employees have been using the system for just about a year now, so we are still in the early stages. We have already used the data to make operational changes, and going forward we will certainly discover more ways to become increasingly efficient.

As we look at the data, sometimes what we learn causes us to ask new questions, and we alter our data gathering process to help answer the new question. Over time we will be continuously optimizing the data we collect so that we can improve our decision making. This is a tool that we use to make sure we apply our efforts in the most effective way possible to manage your assets.