NACWA 2012 Excellence in Management Recognition Program

City of Aurora, Sand Creek Water Reuse Facility

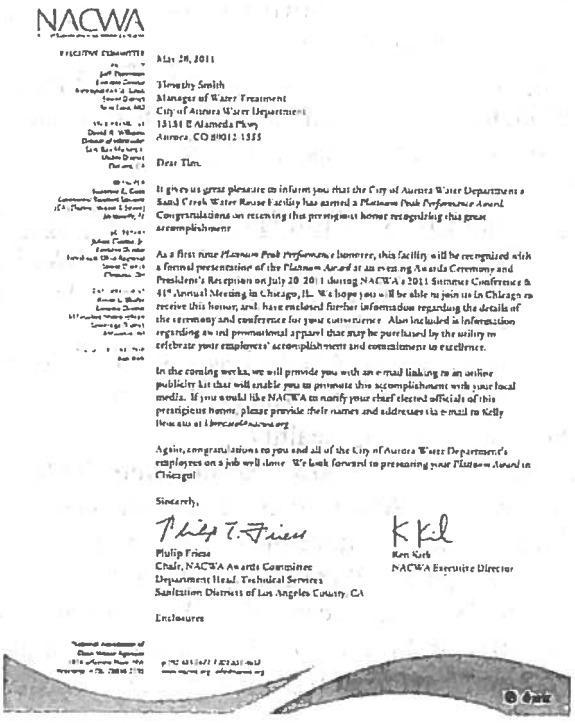
Product Quality

Since 2006 to 2010 the facility has been awarded the NACWA Peak Performance gold award and in 2011the platinum award. We have submitted for the NACWA Peak Performance platinum award for 2011 and have received notice of receipt.

The facility has the ability to discharge its effluent back into the interceptor and on to another treatment facility should water quality not meet the facility standards. Staff have installed dissolved oxygen, total suspended solids probes in each of the treatment trains to monitor and to ensure water quality and are looking a other instruments for addition in the future as budget allows.

The Water Treatment Division used Root Cause Analysis to evaluate current and historical events that had negative impacts on Water Quality, Safety, and Regulations. A root cause that was common to past events was our lack of awareness to identify hazards and to protect against them. Improving awareness is a cultural change in the workplace and requires all employees to think "What If" and use a Task Assessment form for each task so all staff involved understand the hazards.

Staffs have started an optimizing to see how far the facility can lower the Nitrate and Phosphorus without the use of chemicals.



NACWA

May 25, 2011

Timothy Smith
Manager of Water Treatment
City of Aurora Water Department
15151 E Alameda Pkwy
Aurora, CO 80012-1555

Dear Tim,

It gives us great pleasure to inform you that the City of Aurora Water Department's Sand Creek Water Reuse Facility has earned a *Platinum Peak Performance Award*. Congratulations on receiving this prestigious honor recognizing this great accomplishment.

As a first time *Platinum Peak Performance* honoree, this facility will be recognized with a formal presentation of the *Platinum Award* at an evening Awards Ceremony and President's Reception on July 20, 2011 during NACWA's 2011 Summer Conference & 41st Annual Meeting in Chicago, IL. We hope you will be able to join us in Chicago to receive this honor, and have enclosed further information regarding the details of the ceremony and conference for your convenience. Also included is information regarding award presentational apparel that may be purchased by the utility to celebrate your employees' accomplishments and commitment to excellence.

In the coming weeks, we will provide you with an e-mail linking to an online publicity kit that will enable you to promote this accomplishment with your local media. If you would like NACWA to notify your chief elected officials of this prestigious honor, please provide their names and addresses via e-mail to Kelly Hess also at khess@nacwa.org.

Again, congratulations to you and all of the City of Aurora Water Department's employees on a job well done. We look forward to presenting your *Platinum Award* in Chicago!

Sincerely,

Philip T. Friese

Philip Friese
Chair, NACWA Awards Committee
Department Head, Technical Services
Sanitation Districts of Los Angeles County, CA

K Kirk

Ken Kirk
NACWA Executive Director

Enclosures

NACWA 2012 Excellence in Management Recognition Program
City of Aurora - Aurora Water
Financial Viability

The concept of financial viability is a very important attribute to Aurora Water. The topic is discussed on a continuous basis to ensure long range financial planning is in line with established policies and objectives of the system.

1. The practice of long-range financial planning. Aurora Water annually prepares a 20-year financial plan to ensure operating revenues sufficient to recover operations and maintenance expenses, debt service and continued investment in the water system. Capital project spending must be prioritized and sustainable with the financial plan. Over the last several years, City Council and ratepayer support for increases have led to adequate system rates that maintain reserves, higher than the minimum established requirements, and provide for rate stability well into future.
2. The adoption of financial policies. Aurora Water presented Aurora City Council, the governing body of the Utility, with Financial Policies for consideration in 2007. These policies were adopted as a Resolution and serve as the basis for all financial planning. These policies established minimum goals and objectives for the Utility, general approaches to meet those objectives, identified risks associated with achieving the objectives as well as risk mitigation factors. Objectives include maintaining appropriate debt service coverage ratios, revenue sustainability, maintaining excellent bond rating, use of appropriate debt structuring, periodic review of financial policies with City Council, incorporating a water delivery plan and comprehensive capital improvement plan and tap fees that recover the cost associated with adding new customers to the system. Issuing debt for the Utility falls under the separate Debt Policy of the City of Aurora including objectives such as creditworthiness, purposes and uses of debt, debt standards and structure and debt administration.
3. The establishment of financial performance metrics tied to financial policies. Aurora Water, through the financial policy document, established specific financial performance metrics including minimum cash reserves, debt service coverage levels, debt-to-equity ratio and stable rates.
4. The inclusion of metrics and Utility performance for fiscal years 2011, 2010 and 2009.
    a. Minimum Cash Reserves for debt service plus 25% O&M plus 50% of tap fee revenue (Target goal 100%). Results were 2009 – 102%; 2010 – 123%; 2011 – 137%. These reserve levels are very healthy.
    b. Debt Service Coverage Levels (all debt payable from system revenues – minimum goal 1.2x. Results were 2009 - 1.71x; 2010 - 2.02x; 2011 - 1.73x. These coverage levels are very healthy.
    c. Debt-to-Equity Ratio – Goal > 40%. Results were 2009 - 40.58%; 2010 – 39.44%; 2011 – 36.48%. Aurora Water has made a concentrated effort to reduce debt outstanding in order to reduce the overall ratio.
    d. Stable rates – For the period 2006-2010, Aurora Water increased rates over 60%. Since 2011, Aurora Water has been able to better stabilize rates for the future with 0% increases in 2011 or 2012 and likely no increase for 2013. Future rate increases are projected at 3% or less through 2032.

NACWA 2012 Excellence in Management Recognition Program
City of Aurora, Sand Creek Water Reuse Facility
Operational Optimization

Sand Creek Water Reuse Facility (SCWRF) management and staff continually strive to produce the best quality, most cost effective and environmentally friendly reuse water possible. Improvement projects, highly trained operators, and Intensive maintenance programs are constantly implemented and improved to minimize wasting of resources, financial losses, and environmental impacts. Management and staff regularly research new techniques and equipment, and attend industry training to stay on the cutting edge of water reuse.

Many improvement projects have been completed recently at SCWRF. The Influent Pump Station (IPS) project included three new influent pumps, new Duperon screening machines, and improved piping. Which aided in reliability and quality of water produced. Interior clarifier coating was also a recent improvement project, which resulted in better appearance, easier cleaning and maintenance, and greater water quality.

New technology is used at SCWRF as much as economically feasible. BNR blower automation programming has been implemented for power savings and more consistent dissolved oxygen levels. Hach Solitax online solids probes have been installed in the BNRs to measure and record continuous solids measurements. New basin mixers are also being used, for reduced power consumption and more reliable treatment process.

Being environmentally friendly is a major concern for SCWRF management and staff. The final product of SCWRF not only takes a demand off of the city potable system, but also supplies city golf courses, parks and municipal buildings with irrigation water. SCWRF currently uses no chemicals in its treatment process, which lowers costs, reduces safety hazards, and is as eco friendly as possible. Solar power is used to power the Advanced Water Treatment (AWT) building, to save on power costs and carbon footprint.

SCWRF management and staff are comprised of highly trained and dedicated people. Water quality and sustainability are priority one. Plant operators are licensed at the highest levels available in the state. Fulltime maintenance staff is also in place. A 24 hour a day Flow Control Center is used to monitor water quality, equipment and parameters continuously. Management is regularly attending and seeking out training opportunities for themselves and staff. A state licensed, fully staffed, and equipped Quality Control (QC) lab samples, tests, and reports state permit and process parameters daily, which results in optimal information and control of treatment processes.

NACWA 2012 Excellence in Management Recognition Program

City of Aurora, Sand Creek Water Reuse Facility

Operational Resiliency

Sand Creek Water Reuse Facility (SCWRF) leadership and staff strive to work together to anticipate and avoid problems in the area of security and safety and water quality. This has required a cultural change in the workplace that requires all employees to use "What If" thinking and a Task Assessment Form for each task so all staff involved understand the hazards.

The SCWRW staff undertook the process of evaluating security utilizing the VSAT program and set Best Management Practices (BNMP) as a starting point to upgrade the security of the plant. VSAT is on a three year review and scheduled for review in 2013. The needs to monitor the facility continually and controlled access to the facility were addressed. Five cameras were installed to monitor the grounds and the entry gate. One camera was installed in the Advanced Water Treatment (AWT) building where final effluent is treated and discharged to the receiving stream and the Reuse System. Local law enforcement and emergency services have been given afterhours access to allow entry into the facility for security checks. SCWRF has a dedicated budget line item for security and security items are reviewed annually to upgrade needs and scheduled repair/replacement.

Customer complaints are handled as they come in and are routed either to Customer Service during business hours or to Flow Control for dispatch afterhours. The Central Lab conducts a study on the effluent and the effects of the effluent on the receiving stream. When the SCWRF experiences a questionable influent sample the City Environmental Group is notified and automatic samplers are placed in the collection system to identify the source of the questionable discharge into the collection system. If there is a problem identified in the plant process that could result in a discharge that could affect the environment, SCWRF has installed a diversion gate that allows all the discharge from the AWT to be routed to the Denver Metro plant.
Along with security, safety is of a prime concern for the SCWRF. All employees are trained either annually or every three years on:

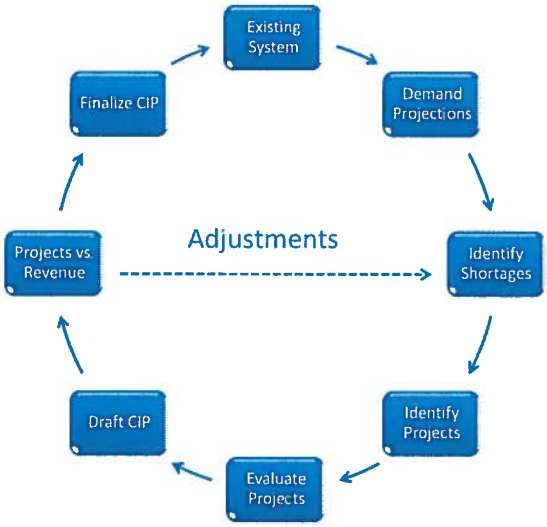
1. First aid/CPR training.
2. ARC Flash training.
3. Extensive safety training utilizing an online training program offered by the city through PURESAFETY.com. This training is reviewed annually.
4. Tornado shelters were identified and labeled.
5. All buildings have a fire alarm system that reports to the SCWRF control room that alarms and indicates the building where the alarm originates.

Operators are certified by the State of Colorado and renewed every three years. The City offers certification training and reimburses employees for the cost of renewal

NACWA 2012 Excellence in Management Recognition Program
City of Aurora, Sand Creek Water Reuse Facility
Water Resource Adequacy

Aurora Water depends on annual snowmelt for approximately 80% of its annual water supply. The remaining 20% comes from indirect potable reuse, direct non-potable reuse, and a small amount from groundwater. Aurora sits over one of Colorado's largest confined aquifers, but since these aquifers are not replenished, Aurora has made it a policy not to rely on groundwater, but for a small portion of its portfolio in drought years. In fact, Aurora is currently involved in a study to determine the benefits of Aquifer Storage and Recovery in the local area.

PLANNING PROCESS



Snowfall in the Colorado Rockies is highly variable resulting in the need for abundant water storage and innovative operations to withstand water supply yields as low as half of Aurora's annual demand. Planning for such variability is crucial and Aurora follows a multi-step process each year in evaluating its Capital Improvement Plan. This process includes projecting demands, identifying and evaluating projects to meet those demands, and ensuring the financial viability of the Capital Improvement Plan. The process is summarized in the figure to the left. Demand and Supply are re-evaluated each year through the planning cycle to ensure the latest information is being considered.

The most recent water supply project completed by Aurora is the Prairie Waters Project. It is one of the most innovative indirect potable reuse projects in the country. At a capital cost of approximately $650 Million, the initial phase increased Aurora's Water Supply by 20% without the need to purchase additional water rights. The 34-mile pipeline and the advanced purification facility were oversized to accommodate low cost expansions of up to 5 times the initial capacity.

Through the annual planning process, projects are identified to meet Aurora's growing demand. (Aurora is a city of approximately 330,000 people and is expected to double in residents in the next 50 years). The following figure on the right shows Aurora's increase in water demand over time and the projects necessary to ensure an adequate water supply. Through demand conservation, the preservation of groundwater, and diligent Capital Improvement Planning, Aurora Water has ensures adequate water resources for current and future customers.

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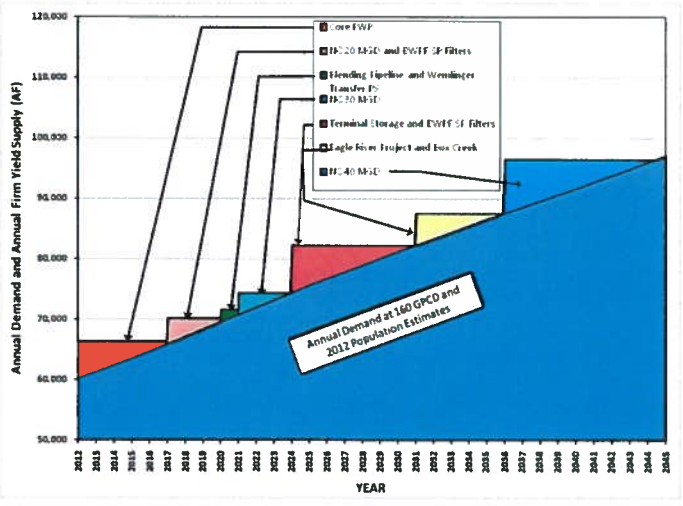

NACWA 2012 Excellence in Management Recognition Program
City of Aurora, Sand Creek Water Reuse Facility
Energy Management

In 2010, Aurora Water began a three year energy study for the entire water utility. The project included an audit of every facility (70 in total), assessment for implementation of renewable energy into each facility, development of the carbon footprint for the operating utility (Scope II) and an energy management implementation plan. During the course of the project Aurora Water learned that its energy provider, Xcel Energy, also performs energy audits through its Process Efficiency Program. This program differed slightly from the other energy program in that it focused specifically on the 5 major energy accounts within the utility which included the Sand Creek Water Reclamation Facility. The program also includes an energy management plan with reduction goals and rebates for new more efficient equipment.

The initial part of the audits was to visit each facility and identify "Quick Wins." Quick Wins are projects or changes to operations that can be easily be implemented and have a quick recovery of investment. Nearly 20 Quick Win Projects were identified city wide including the Sand Creek Water Reclamation Facility. These quick wins included lighting upgrades in high bay locations and office buildings. During the audit process, Aurora Water installed modulating butterfly valves in the existing Biological Nutrient Removal (BNR) process air piping to allow optimization of the air flow control. This improvement is estimated to save approximately 501,000 kWh per year and reduce the facilities carbon footprint by 947,000 lbs of CO2 equivalent each year. Aurora Water is also planning to replace the ultra violet disinfection system with a newer-more efficient system.

Pumping accounts for over 80% of all electricity used by the utility. The Process Efficiency Program examined individual pumps associated with the 5 largest pump stations. Suction and discharge pressure data along with flow rates and energy usage where used to determine if the pumps and motors were operating efficiently. As a result Xcel recommended that Aurora modify some pumps to better match actual operating points to the performance curves. In addition, Xcel recommended that pumps and motors be replaced at some older facilities. Aurora Water is the process of confirming these results and is developing an implementation plan.

Aurora Water is also developing an energy-water metric to track individual facility performance. This metric will be kWh/1000gallons. This metric will allow Aurora Water to better model the system and optimize pumping and operations.

Aurora Water's Sand Creek Water Reclamation Facility currently has a 100KW stationary photo voltaic system which is located in an open area of the facility. This system was installed by a third party and the majority of the energy produced is used onsite. Aurora Water is also in the conceptual phase to develop additional solar capacity which would partially cover the BNR basin. In addition to producing solar power, the system would also shade the BNR basin and reduce the ambient air temperature which may increase the efficiency of the process.

The carbon footprint was developed for the base year of 2009 for the operating utility. As expected, most of Aurora's emissions are related to the purchase of electricity. A reduction of electric use will have a significant impact on Aurora's carbon footprint. The base year will be updated to 2011 as new facilities have been added.

Scope 1 Emissions:	4,757,825 lbs- $CO_{2\ (equiv)}$
Scope 2 Emissions:	45,995,704 lbs- $CO_{2\ (equiv)}$
Total:	50,753,530 lbs- $CO_{2\ (equiv)}$

Aurora is current developing a treatment master plan. Information from the energy audits will be part of the plan and will be used to further refine the recovery of investment for equipment replacement and energy efficiency projects.

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Climate Change Adaptation or Mitigation

Aurora Water has been closely monitoring climate change conditions and participating in regional studies to better understand the phenomena in order to prepare adaption plans for the water system.

For the past 5 or 6 years staff and managers at Aurora Water have participated in workshops and attended local, regional and national conferences where the topic of Climate Change and its effects in water systems are evaluated.

Aurora Water has cooperatively participated with regional entities such as Denver Water, Colorado Springs Utilities, City of Boulder, and others in a Climate Change evaluation study titled "Joint Front Range Climate Change Vulnerability Study" (JFRCCVS). This study was published earlier this year by the Water Research Foundation which jointly funded this collaborative effort. The JFRCCVS was designed to enable entities that obtain their water supplies from the upper Colorado, South Platte, Arkansas, Cache la Poudre, St. Vrain, Boulder Creek, Big Thompson, and other similar river basins to examine potential effects climate change may have on those supplies. This regional unified approach is intended to help Colorado water providers communicate with their customers and the media cohesively by working with the same historic and projected hydrometeorological data, historic natural stream flow, and methodology. Lessons learned from this collaborative approach can be used to encourage and establish other regional efforts in Colorado and throughout the country.

Aurora Water is currently developing a plan to include information from the JFRCCVS in its long range planning. Aurora Water has been taken steps to insure Climate Change is incorporated in future studies. For instance, the first step has been to upgrade its water supply availability model to incorporate and evaluate Climate Change effects in its system using results from the JFRCCVS. The second step has been one of education. Along with the JFRCCVS participants, Aurora Water continues to hold meetings in which Climate Change experts are brought to present different aspects of Climate Change such as land use, adaptability, and modeling. Within the next year, the knowledge learned from studying Climate Change impacts to Aurora Water's system will be incorporated in the development of Aurora Water's next integrated water resources plan.

Aurora Water will continue participating with local, State and Federal entities in Climate Change evaluations studies and attending seminars and meetings such that Climate Change knowledge is increased such that Aurora Water's decisions and policies better reflect the Climate Change phenomena. Aurora Water's current policy is neither to ignore Climate Change nor to dedicate an unwarranted amount of resources until there is more certainty in the Climate Change studies.