Item 23

CITY COUNCIL REPORT

Meeting Date: March 18, 2014
General Plan Element: ***Public Services & Facilities***
General Plan Goal: ***Meet or surpass all applicable water quality standards for domestic, commercial, and industrial uses***

ACTION

Amend City Code/Salinity Reduction Rebate Program. Adopt Ordinance No. 4146, amending City Code Chapter 49, Water, Sewers, and Sewage Disposal, to allow for a Salinity Reduction Rebate program to be effective July 1, 2014.

BACKGROUND

Increased salinity in water supplies in Arizona, and specifically Maricopa County, is an issue of growing concern. As people try to combat the natural water hardness of Arizona water supplies using conventional water softeners, increased discharge levels of salt are introduced into wastewater systems and treatment plants and in many cases back into the groundwater aquifers. The increased salinity negatively impacts the environment and will add significant costs to water utilities as they try to deal with the issue.

The most dominant residential method of combating hard water is water softening through ion exchange. Self-Regenerating Water Softeners (SRWS) accomplish softening by employing resin to exchange sodium ions for the hardness ions present in the source water. When the resin has exchanged all of its available sodium ions for hardness ions, a regeneration or flushing cycle is required to replace the lost sodium ions. The result is a waste stream of brine and hardness ions discharged to the sewer system. It's through these repetitive discharges to the sewer system that SRWS adds more salts to the wastewater stream.

High levels of salinity also degrade the water quality of reclaimed water which is used extensively in Arizona for water reuse and recharge. Traditional wastewater treatment processes are not designed to address salinity. Elevated salinity concentrations found in sewage translates into elevated salinity of reuse water, unless more expensive advanced water treatment is applied. Scottsdale's Advanced Water Treatment (AWT) facility features a reverse osmosis system which decreases salinity in water used for golf course irrigation and indirect potable recharge. Scottsdale is unique in that we are the only city in Maricopa County to use AWT before recharging groundwater. By doing so, we eliminate additional salinity added to the groundwater in Scottsdale.

Action Taken _____

However, the groundwater aquifer does not recognize municipal boundaries and increased salinity introduced in other cities will eventually influence the salinity levels of Scottsdale's groundwater.

The process of removing salinity at the AWT comes with a cost both now and in the future. The operating costs to the city can be reduced if salinity in the wastewater stream is reduced. SRWS are estimated to increase the salinity of wastewater in Scottsdale by 300 mg/l. A reduction of wastewater salinity by half this much or 150 mg/l could reduce the operating costs of the AWT by as much as $200,000 per year. An additional component of cost is involved with treating the brine concentrate in the waste stream (the salt and other materials removed by the AWT process). Currently this stream is discharged into a portion of the sewer system which eventually ends up at the 91st Avenue Wastewater Treatment Plant. This wastewater is treated under a multicity agreement through the Joint Municipal Water Reclamation System with management oversight through the Sub-Regional Operating Group (SROG) Committee. Scottsdale recently participated in a pilot study that determined we would need to invest an additional $90M in capital to add technology that could further treat the concentrated brine and remove those salts from the ecosystem.

Salinity has been on the radar of water professionals for some time. The Central Arizona Salinity Study (CASS) group was formed in 2001 to evaluate salinity impacts and identify potential remedies. CASS was an active participant in the Joint Legislative Study Committee on Water Salinity Issues. Under the guidance of this Committee, the Technical Advisory Committee (TAC) was formed and recently produced a document entitled "Strategy for Water Softener Salinity Control and Management". One of the key findings from this document is "Managing salinity in Central Arizona is a problem that is becoming increasingly worse over time." The document went on to further state that "Salinity is one of the major factors impacting water reuse in the state and particularly the Phoenix Active Management Area, which comprises the greater Phoenix metropolitan area".

Having identified the water quality impacts of increased salinity, the TAC document explored the additional salinity contributions from SRWS. Citing data collected from Scottsdale and Phoenix, the study determined that SRWS significantly contribute to increases of salinity concentrations in wastewater.

ANALYSIS & ASSESSMENT

Recent Staff Action

Scottsdale Water Resources is unique among Arizona cities in its proactive work to reduce salinity in reclaimed water through the AWT process at the Water Campus. The reduction of salinity has a cost that Water Resources experiences. This cost is projected to increase as both energy costs and salinity levels rise. Ultimately salinity levels will reach a point where other municipalities, including the SROG partners, are forced to deal with the issue. While one method of dealing with salinity is through treatment plant processes, an alternative approach is to reduce salinity at the source, before it is introduced into the waste stream.

Water Resources has evaluated several strategies to reduce salinity at the source. To gain a better understanding of the viability of these strategies, including the cost effectiveness and customer satisfaction, we propose implementing a two-year pilot rebate program offering three specific rebate measures. These measures are designed to reduce salinity loading entering the sewer system, while offering the customer a range of options depending on their personal water quality preferences. The three proposed rebates are summarized below:

(1) *Improved Efficiency Ion Exchange Water Softeners:* Rebates will be available for customers who replace their less efficient earlier generation self-regenerating ion exchange water softeners with a new, more efficient ion exchange unit. This rebate allows the customer to continue to address hard water using a SRWS, but phases out less efficient units still in service.

(2) Portable Exchange (PE) Water Softeners: Rebates will be available for customers who remove their existing self-regenerating ion exchange water softener and subscribe to a portable exchange service, where the spent resin tanks are removed and replaced by the service provider. This rebate allows the customer to soften their water through ion exchange, but with a portable exchange service, the discharge to the sewer from the customer's home is eliminated. The portable exchange service replaces the customer's spent tanks on a recurring basis and more efficiently regenerates the resin at their central facility.

(3) Salt-based Water Softener Removal: Rebates will be available for customers electing to disconnect and remove their existing self-regenerating ion exchange water softener. This rebate is for customers interested in discontinuing ion exchange water softening altogether. A follow-up inspection is proposed for this rebate to ensure that a new SRWS is not subsequently installed at this address within a defined timeframe.

An important component of this program will be a customer survey for each rebate type to determine long term customer costs and satisfaction with the technology selected and the rebate program in general.

Because the salinity rebates outlined above are not captured in Scottsdale's current ordinance, Water Resources is proposing an amendment to the City Code. The amended Code would allow for salinity rebates only if budget authority is granted by Council.

Community Involvement

Public outreach will begin prior to the rebates being issued, so customers can be informed on the salinity rebate process and the benefits stemming from salinity reduction.

RESOURCE IMPACTS

Available funding

The proposed code changes have no current year budget impacts. If approved, Water Resources will propose funding rebates in the FY14/15 budget. Rebates will only be given, if budget authority is granted by Council.

Staffing, Workload Impact

Existing Water Resources staff is available to administer this program.

Future Budget Implications

Water Resources has programmed, subject to Council approval, $82,000 in Operating funds for FY14/15 to finance the rebate program. The proposed pilot program also envisions, subject to Council approval, $82,000 in FY15/16. The proposed pilot program will end on June 30, 2016, or earlier if budgeted funds have been exhausted prior to that date.

OPTIONS & STAFF RECOMMENDATION

Recommended Approach

Adopt Ordinance No. 4146, amending City Code Chapter 49, Water, Sewers, and Sewage Disposal, to allow for a Salinity Reduction Rebate program to be effective July 1, 2014.

RESPONSIBLE DEPARTMENT(S)

Water Resources Department

STAFF CONTACTS (S)

Chris Hassert, Water Resources Planning and Engineering Director
(480) 312-5681, chassert@scottsdaleaz.gov

APPROVED BY

3-4-2014

Brian K. Biesemeyer, Executive Director
(480) 312-5683

Date

ATTACHMENTS

1 Ordinance No. 4146

2. Technical Advisory Committee Report to Joint Legislative Study Committee on Water Salinity Issues

ORDINANCE NO. 4146

AN ORDINANCE OF THE CITY OF SCOTTSDALE, MARICOPA COUNTY, ARIZONA, AMENDING ARTICLE VII OF CHAPTER 49, WATER CONSERVATION, OF THE SCOTTSDALE REVISED CODE, AND ADDING DIVISION IV RELATING TO SALINITY REDUCTION, IMPLEMENTING A SALINITY REDUCTION REBATE PROGRAM, AND ESTABLISHING A DELAYED EFFECTIVE DATE

WHEREAS, the City of Scottsdale recognizes the presence of dissolved minerals can impair the beneficial use of water supplies; and

WHEREAS, the use of certain ion exchange water softeners to remove dissolved minerals can result in increased salt content or loading in the city's wastewater and require additional treatment costs; and

WHEREAS, the city encourages practices and the use of devices which reduce the amount of salt loading in the city's wastewater system;

NOW, THEREFORE, BE IT ORDAINED by the Council of the City of Scottsdale as follows:

Section 1. Article VII, Water Conservation, of Chapter 49 of the Scottsdale Revised Code, is hereby amended by adding Division IV. Salinity Reduction as follows:

DIVISION IV. SALINITY REDUCTION

Sec. 49- 270. Definitions.

The following words, terms, and phrases, when used in this division, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning.

Applicant means the owner of record of a single family residence which receives city wastewater service or a person who provides to the water resources division satisfactory evidence of authority to remove or replace water softening devices at such residence.

Approved means accepted by the water resources division as satisfying minimum specifications referenced in this division, meeting performance or efficiency criteria, or demonstrating suitability for a proposed purpose.

Demand initiated regeneration unit means a water softening device whereby all operation is initiated and performed automatically in response to demand for treated water.

Portable exchange water softener service means a service agreement between a single family residential wastewater customer and a third party whereby spent water softener units are periodically removed and replaced with fully regenerated units.

Salinity reduction means reducing dissolved salt content in wastewater that is discharged into the city's wastewater system.

Self-regenerating ion exchange water softener means a device that treats hard water by exchanging calcium and magnesium ions with sodium or potassium ions and discharges saline water or brine into the city's wastewater system.

Sec. 49-271. Salinity reduction rebate program options.

(a) The City may offer the following salinity reduction rebate program options to single family residential wastewater customers:

(1) *Ion exchange water softener replacement.* For replacing self-regenerating ion exchange water softeners with approved demand initiated regeneration units or other more efficient devices.

(2) *Portable exchange water softener service.* For removing self-regenerating ion exchange water softeners and subscribing to an approved portable exchange water softener service. Approved service providers must demonstrate regeneration of spent tanks occurs at a centralized facility and thereby eliminates potential discharges from the regeneration process to the city's wastewater system.

(3) *Water softener removal.* For disconnecting and removing self-regenerating ion exchange water softeners.

(b) Any city wastewater customer who accepts a rebate for water softener removal shall not thereafter install a self-regenerating ion exchange water softener at the customer's residence for a period of at least five (5) years.

(c) Within twelve (12) months of a customer's acceptance of a rebate, division employees may inspect the customer's residence to confirm compliance with the city's rebate program offer. A customer who refuses to permit such an inspection will forfeit the rebate.

Sec. 49-272. Salinity reduction rebate program.

(a) The water resources executive director or designee shall administer this division.

(b) At the beginning of a fiscal year, the water resources division will post on its website the total amount of available funds for each salinity reduction rebate program option. Salinity reduction rebate program costs shall not exceed the maximum amount of funds budgeted each fiscal year for each rebate program option. If rebate program applications exceed the funds budgeted in a fiscal year, applicants may submit a new application for the next fiscal year the city offers such rebates. The city reserves the right to adjust the amounts of the rebates and has no obligation to fund such a rebate program in future fiscal years. Rebates will be limited to one per applicant per residence.

(c) To qualify for a rebate, each applicant must submit:

(1) A completed rebate application form;

(2) Satisfactory proof of purchase of an approved water softener replacement device, proof of removal of self-regenerating ion exchange water softeners, or a service agreement reflecting a portable exchange water softener service; and

(3) A completed rebate evaluation survey.

(d) All rebates will be paid in the form of a credit applied to the residential owner's water bill unless the water resources division designates otherwise.

(e) The water resources division is authorized to inspect and confirm, as applicable, the disconnection or removal of an ion exchange device, installation of an approved replacement device, verify a binding portable exchange service agreement, and to conduct inspections.

(f) No salinity reduction rebates will be granted for program options undertaken prior to July 1, 2014.

Section 2. The Chapter 49, Article VII, Division IV amendment set forth in Section 1 will be effective from and after July 1, 2014.

PASSED AND ADOPTED by the Council of the City of Scottsdale this 18th day of March, 2014.

ATTEST:

By: _____
Carolyn Jagger
City Clerk

CITY OF SCOTTSDALE

An Arizona municipal corporation

By: _____
W.J. "Jim" Lane
Mayor

APPROVED AS TO FORM
Bruce Washburn, City Attorney

By: _____
Steven B. Bennett
Deputy City Attorney

Strategy for Water Softener Salinity Control & Management

Technical Advisory Committee Report
to
Joint Legislative Study Committee on Water Salinity Issues

Phoenix, Arizona
January 22, 2014

Introduction

A Technical Advisory Committee ("TAC") was formed under the guidance of the Joint Legislative Study Committee on Water Salinity Issues ("Committee") to discuss solutions and develop recommendations for the Committee's consideration. Consistent with our charge, assumptions and key findings were derived from the Central Arizona Salinity Study ("CASS") and municipal studies associated with it. The full report is included with this report (Attachment A).

Hard water, high salinity, water conservation and reuse, are all issues in the Phoenix metro area. Source waters are high in both hardness and salinity. Salinity affects reuse and treatment costs. Point of use water softening systems provide a solution to hard water problems from the homeowner perspective, but add to salinity in wastewater, degrading the quality of this resource for reuse and recharge.

Managing salinity in Central Arizona is a problem that is becoming increasingly worse over time.

The CASS concluded that "salinity levels in reclaimed water and groundwater may increase to a point where these water resources will not be suitable for their intended uses. A "salt balance" will be necessary for the long term sustainability of Central Arizona." Dr. Herman Bouwer estimated in 1998 that 1.6 million tons of salt accompany the Salt and Colorado River water being imported into the Phoenix metropolitan area annually (Bouwer,1998). Additional salinity accumulates in groundwater and surface waters as a consequence of local human activities. According to Dr. Bouwer, "An equal quantity of salts would have to leave the area to maintain a salt balance." [1]

[1] U.S. Geological Survey, 1998. *The potential effects and management of salt accumultation in south-central Arizona,* U.S. Department of Interior, Tucson, Arizona

Water conservation and reuse is critical to meeting projected water supply needs

- Salinity is one of the major factors impacting water reuse in the State and particularly the Phoenix Active Management Area, which comprises the greater Phoenix metropolitan area.

Thorough study has shown that self-regenerating water softeners ("SRWS") contribute varying levels of salinity to the water supply.

- The CASS and other efforts show that the market penetration of SRWS greatly affects the overall increase of salinity in local water supplies.

- The CASS estimates that about **26% of the total homes** in Phoenix have a SRWS. A study conducted for the City of Phoenix Water Services Department by HDR found that residential, commercial, and industrial water softening activities contribute **8-10% of the total** salinity entering the wastewater system at Phoenix's three wastewater treatment plants ("WWTP") - Cave Creek Water Reclamation Plant ("CCWRP"), 23rd Avenue WWTP , and 91st Avenue WWTP (Attachment B, page 4). Additionally, there is a significant increase in salinity from "other communities" that contribute wastewater to these same facilities. It is safe to assume that a portion of this increase is from SRWS (Attachment B, page 5).

- Examination of data from more recently developed portions of Phoenix provides much different results. The CASS shows that **51% of the homes built after 2000** have SRWS (Attachment A, page 6). A majority of homes within the CCWRP service area fall into this post-2000 category, and the CASS quantified that **36% of the salinity increase at the CCWRP** comes from residential uses, which includes additions from SRWS.

- According to the City of Scottsdale, SRWS penetration is **46% across the entire city**. Scottsdale estimates that **78% of the total increase in salinity** in their wastewater in the north and central portions of the city are derived from their residential customer base, which includes additions from SRWS (Statistics provided directly from Scottsdale).

- While the previous examples focus on specific municipalities, there is consensus among the TAC members and non-member participant on the general premise of newer homes throughout the Phoenix metro area and Arizona having a higher penetration of SRWS.

The cost of treating the effects of hard water by residents and property owners is high.

According to a study performed by the Battelle Memorial Institute (Attachment C), water softening provides significant benefits by:

- Reducing the cost of heating water;
- Increasing the lifespan of water heaters and other household appliances;
- Enhancing cleaning tasks including laundry, dish washing, and bathroom fixtures while requiring less soaps, detergents, and housekeeping chemicals for cleaning;
- Reducing the cost and salinity contribution from cleaning agents;
- Promoting longer useable life of fabrics.

Wastewater reuse is a critical component of Arizona's water management plans.

- Reclaimed water is a major source of supply for agricultural and landscape (common area, golf courses, and parks) irrigation and industrial water use, including serving as the cooling supply for the Palo Verde Nuclear Generating Station ("PVNGS").
- Treated wastewater is used to provide wildlife habitat throughout the State, including the Tres Rios Wetland Project and the Gilbert Riparian Preserve.
- Reclaimed water is also used to recharge groundwater throughout the State, augmenting and preserving aquifers for future use.

The cost to treat and reuse wastewater with salinity is high:

- Traditional wastewater treatment has no effect on salinity levels.
- Many of the golf courses in the City of Scottsdale north of the CAP Canal receive their water from the Scottsdale Water Campus, which treats and distributes reclaimed water as a significant portion of its supply mix. These courses were experiencing impacts from salinity in this supply. To solve this issue and remove salinity to acceptable levels, the golf courses invested $23 million in capital to construct additional capacity in Scottsdale's Advanced Water Treatment (AWT) facility located on the Scottsdale Water Campus. Operating costs, paid by these same golf courses, for this treatment are approximately $1 million per year.
- Brine disposal for Scottsdale's AWT is currently accomplished through mixing with the existing sewage flow into the multi-cities Sub-Regional Operating Group (SROG) sewer system. If salinity levels continue to rise and a salinity limit is imposed by SROG, a stand-alone brine disposal facility could cost Scottsdale up to $90 million to construct and over $2 million per year to operate.

Alternatives to traditional self-regenerating water softeners:

- The three main technologies capable of producing soft water are ion exchange water softeners, reverse osmosis, and distillation. Of these, ion exchange is currently, and is anticipated to remain, the dominant technology for softening water on a residential or small commercial scale. Other technologies, such as specialty media, electrochemical demineralization, citric acid, and magnetic and electromagnetic devices do not produce soft water, defined as less than one grain of hardness per gallon. Their performance is not yet validated by independent third parties due to lack of scientific standards and accepted testing protocols.

- Portable Exchange (PE) water softening provides soft water to homes and businesses without discharging salt to the wastewater stream at the home or business. Exhausted tanks are regenerated at centralized treatment facilities under controlled environments with brine reclaim and reuse, greatly reducing the potential for salt discharge. Further improvements in centralized plant regeneration could result in no salt or water discharge to the sewer system.

Action Plan

The TAC proposes a series of objectives, discussed in detail below, to be considered by the Committee. The TAC sought to craft a series of objectives to reduce wastewater salinity derived from water softening by encouraging users to employ efficient softening systems and processes. These objectives create an overarching strategy and action plan that combines industry driven programs and solutions with legislative changes.

In developing these plans, we were mindful that water softener salinity sources include:

1. Residential
2. Small commercial businesses – restaurants, coffee shops and other businesses that use residential-scale softeners
3. Large commercial businesses – hotels, resorts, commercial laundries and other businesses that use specially designed softener systems that are operated by facility managers
4. Industrial – use specially designed softener systems as part of a larger "water treatment train" operated by facility or manufacturing process managers. Municipal water and wastewater treatment plants use ion exchange water softeners in their operations and are included in this category.

Each requires a tailored strategy and approach.

Residential & Small Commercial: Strategy & Objectives

This strategy seeks to reduce salinity in wastewater derived from water softening through source control by encouraging homeowners and small commercial businesses to:

1. Reduce the impact of older softening technologies that have a higher (less efficient) usage of salt and water
    - Phase out the sale of time clock regenerated residential ion exchange water softeners within 18 months of enactment of the law
    - Establish efficiency standards for the prospective sale, installation and operation of demand initiated regenerated residential ion-exchange water softeners on waters as follows:
        - Minimum of 4,000 grains of hardness removed per pound of salt;
        - Maximum of 5 gallons of water expended per 1,000 grains of hardness removed; and,
        - Allows retailers of water treatment equipment up to 18 months from enactment to sell existing non-compliant inventory, provided that systems are installed to operate at their optimum efficiencies.

ACTION PLAN: Legislative changes and industry driven education

2. Focus on water treatment technologies that reduce or eliminate the escalation of salinity in wastewater discharged to the sewer system, including:
    - Whole house water treatment systems using membrane or electrochemical technologies to reduce hardness and total dissolved solids in the water used throughout the home
    - Installation of reject water management systems for on-site capture and use for landscape irrigation, providing distributed treatment and reducing the salinity load on wastewater treatment systems
    - Centralized regeneration facilities for water softening ion exchange resins that recycle the water and salt used in regeneration

ACTION PLAN: Industry driven standards and innovation

3. As new technologies are developed, independent and third party certification organizations should adopt standards and certification for alternatives to SRWS that reduce salinity in the wastewater.

ACTION PLAN: Industry driven standards and certification

4. Encourage installation of equipment that diverts the highest salinity waters during regeneration so that it does not end up in the sewer system
    - Install a collection tank and divert the "brine" from softening and have it hauled to a central facility for treatment and disposal
    - Encourage the use of regeneration salts that have the least impact on the "re-usability" of water for irrigation and at industrial facilities, i.e., potassium chloride vs. sodium chloride

ACTION PLAN: Industry driven education

5. Encourage homeowners to look at their plumbing to be certain that softened water is not being used for outside purposes:
    - Irrigation systems should be plumbed prior to water softeners with appropriate backflow prevention.
    - Encourage installation of hose bibs to use unsoftened water and not softened water.

ACTION PLAN: Industry driven education of builders and homeowners. Municipal government plumbing code adoption and enforcement

6. Establish a public education program on water softening options and impacts that:
    - Informs the public of the short and long-term costs associated with salinity increases
    - Describes the range of steps that can be taken to reduce or eliminate the negative effects from increased salinity in our current and future water supplies associated with water softeners
    - Provides incentives that encourage the greatest possible reduction in salinity from water softening systems

7. Establish a training and certification program for parties engaged in selling or installing water softening equipment that assures that:
    - Consumers are properly and adequately informed about Water softening systems at the time of sale
    - Units are properly installed and maintained
    - Installed systems carry a label with the certification identification of the installer certifying that it was properly installed and maintained to achieve the efficiency standards established
    - Requires annual training and periodic re-certification of sales, installation and maintenance personnel.

ACTION PLAN: Industry driven education and standards

Large Commercial: Strategy & Objectives

This strategy seeks to reduce salinity in wastewater derived from water softening through higher efficiency and source control by encouraging commercial businesses to:

- Hold seminars for facility managers to educate them on optimization of softener equipment operation
- Encourage facility managers to have a water treatment professional conduct an efficiency evaluation of softening equipment to assure optimal performance

Industrial: Strategy & Objectives

This strategy seeks to reduce salinity in wastewater derived from water softening through source control by encouraging industrial users to:

- Hold seminars for facility managers to educate them on optimization of softener equipment operation
- Encourage facility managers to have a water treatment professional conduct an efficiency evaluation of softening equipment to assure optimal performance

Salinity Monitoring and Legislative Reporting

Salinity accumulation is a long-term issue for the State. The following monitoring and reporting recommendations are offered to ensure the effectiveness of the program recommendations offered above and provide future analysts and policy makers with a sound technical foundation upon which to address salinity management.

1. Direct the Arizona Department of Water Resources to prepare a report for submittal to the Legislature every 2 years on participation and the effectiveness of the public education and training programs listed in Items 6 and 7 under Residential and Small Commercial, above.
    - AWQA to report data to ADWR on program participation.
    - ADWR to evaluate and package AQWA supplied information into report to the legislature.

2. With consent of the full legislative study committee, prepare a proposal to develop a system to track salinity in water supplies, wastewater, and reclaimed water throughout the three county Central Arizona Project Service Area. To the extent practicable, rely on the water quality sampling requirements of existing operations and regulatory programs.
    - Leverage existing relationships between the Federal, State, and local government, raw water providers, private water and wastewater utilities, and water treatment trade associations.
    - Seek funding for the appropriate state agencies to develop and maintain a salinity database and reporting protocol and framework.

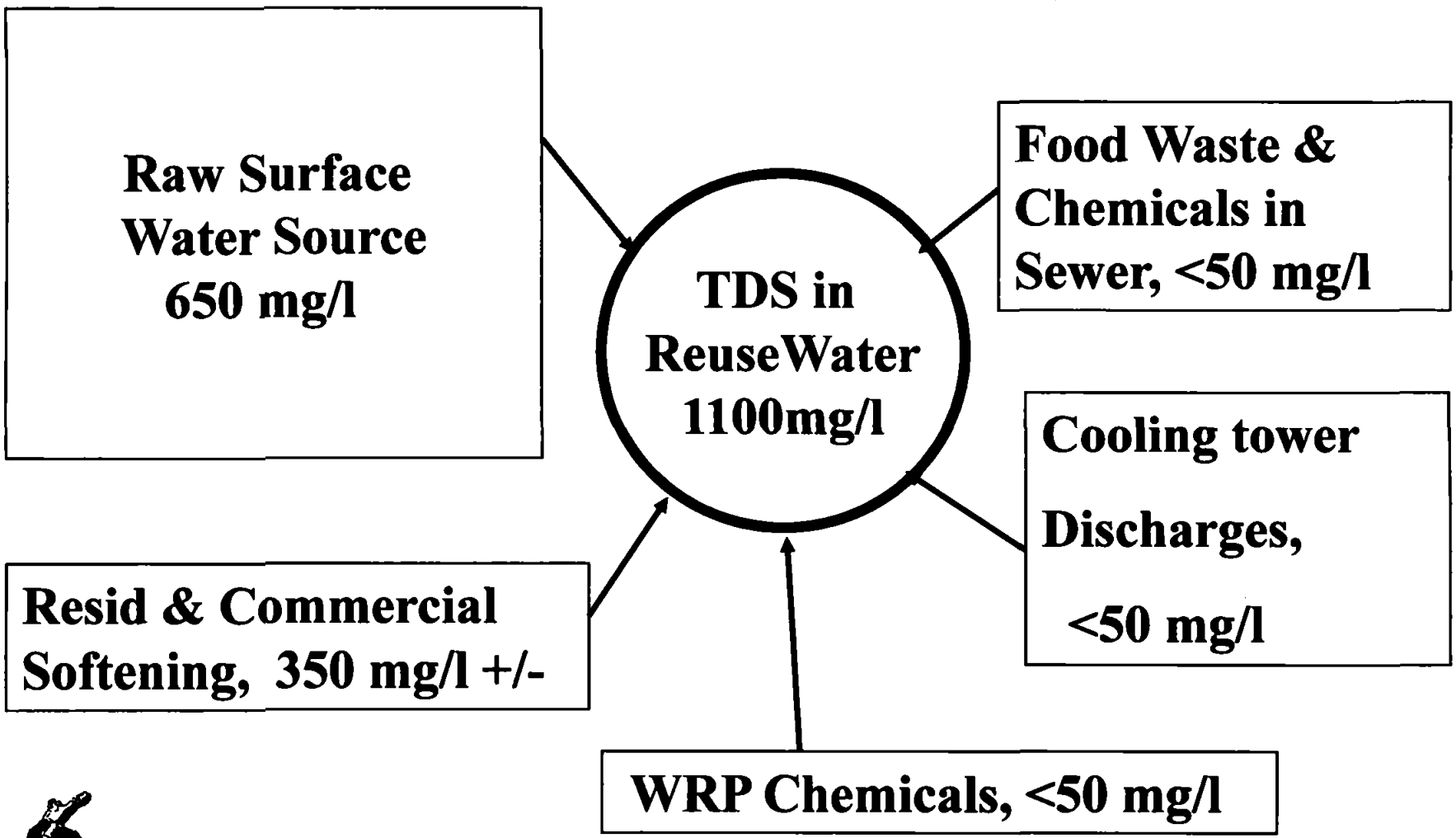
Amend City Code/Salinity Reduction Rebate Program

March 18, 2014

Why Salinity in Wastewater Matters

- Reclaimed wastewater is a large (and essential) part of Scottsdale's water portfolio and is used for:
  - Groundwater recharge
  - Turf/golf course irrigation
- High total dissolved solids (TDS) (a general measure of salinity) is not removed in a traditional wastewater treatment process
- TDS in wastewater is costly to treat and creates a solids disposal issue

Sources of Salinity in Reclaimed Water



Water Resources Efforts

- Participation in various study and pilot projects:
  - Central AZ Salinity Study (CASS)
  - Study of Water Softener Alternatives with ASU
  - Sub-Regional Operating Group (SROG) Concentrate Management Study and Pilot project
- Expansion of the Advanced Water Treatment (AWT) Facility at the Water Campus
- Evaluation of salinity loading & effects as part of Wastewater Master Planning effort
- Participation in the Multi-States Salinity Coalition
- Participation in the Technical Advisory Committee to the Joint Legislative Study Committee on Water Salinity Issues

Water Softeners in Scottsdale

- It's currently estimated that 46% of residential customers in COS have a point of entry device (water softener)
- Regeneration of these softeners results in discharge to sewer of 300 million gallons or 900 Acre-ft per year
- A 150 mg/l reduction in TDS could reduce AWT operating costs by over $200,000
- Any TDS reduction would extend the life cycle of membranes and stretch out associated replacement cost
- SROG currently levies no charge for TDS in wastewater directed to the 91st Avenue WWTP

Options to Reduce Salinity

1. Water Reclamation Treatment Systems
   - AWT – increased operating and membrane replacement costs
   - Brine Management System – Initial cost estimates are $87 Million capital cost to construct and over $3 Million annual operating cost

2. Source Reduction – eliminating or reducing salinity before it enters the wastewater system

Pilot Rebate Program

1. Two Year Program designed to offer a variety of options to reduce salinity and conserve water at the source
2. Three Tiered Rebate Program
   - Rebate - Replace softeners with new high efficiency softeners
   - Rebate - Subscribe to a portable exchange service
   - Rebate - Remove salt-based water softener
3. Customer survey and data collection – required under each rebate to evaluate the customer satisfaction with process and technology.
4. Report to Council on program after second year to quantify results

Pilot Rebate Program Numbers

1. Replace existing softener with new high efficiency softener (Standards outlined by City of Scottsdale). $50 one time rebate limited to first 300 customers/year
2. Subscribe to Portable Exchange Service to eliminate sewer discharge. $100 one time rebate limited to first 100 customers/year
3. Remove Water Softener. Limit to first 200 customers ($125 up front and $125 after one year)

Pilot Rebate Program Costs

Rebate Program	FY14/15	FY15/16
High Efficiency Softener Rebate	$28,500	$28,500
Portable Exchange	$14,500	$14,500
Water Softener Removal	$34,000	$34,000
Program Administration and Customer Surveys	$ 5,000	$ 5,000
Total	$82,000	$82,000

Proposed Steps

- Request Council approval for a code change to allow for Salinity Rebates – tonight
- Propose Budget for Salinity Rebates as part of Water Resources Budget – April
- Role out rebates in July

Item 23

Amend City Code/Salinity Reduction Rebate Program

March 18, 2014

1

Why Salinity in Wastewater Matters

- Reclaimed wastewater is a large (and essential) part of Scottsdale's water portfolio and is used for:
  - Groundwater recharge
  - Turf/golf course irrigation
- High total dissolved solids (TDS) (a general measure of salinity) is not removed in a traditional wastewater treatment process
- TDS in wastewater is costly to treat and creates a solids disposal issue

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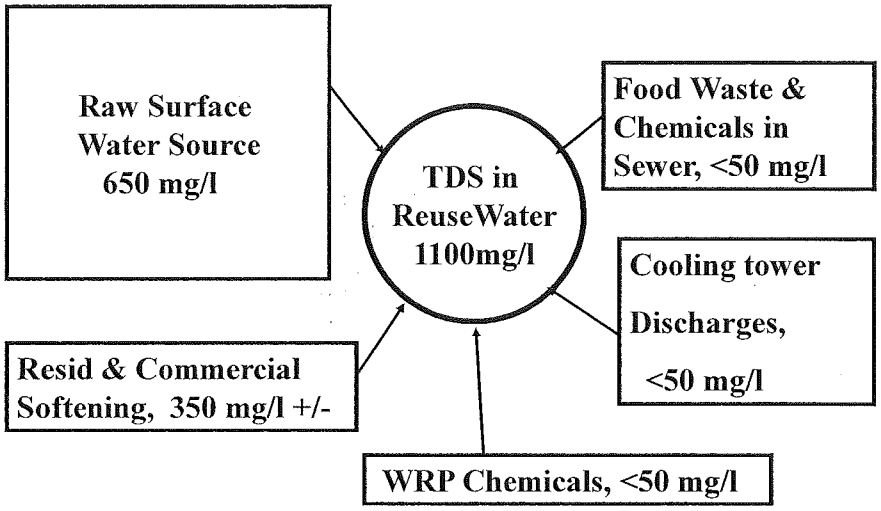
Sources of Salinity in Reclaimed Water



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Water Resources Efforts

- Participation in various study and pilot projects:
  - Central AZ Salinity Study (CASS)
  - Study of Water Softener Alternatives with ASU
  - Sub-Regional Operating Group (SROG) Concentrate Management Study and Pilot project
- Expansion of the Advanced Water Treatment (AWT) Facility at the Water Campus
- Evaluation of salinity loading & effects as part of Wastewater Master Planning effort
- Participation in the Multi-States Salinity Coalition
- Participation in the Technical Advisory Committee to the Joint Legislative Study Committee on Water Salinity Issues

4

Water Softeners in Scottsdale

- It's currently estimated that 46% of residential customers in COS have a point of entry device (water softener)
- Regeneration of these softeners results in discharge to sewer of 300 million gallons or 900 Acre-ft per year
- A 150 mg/l reduction in TDS could reduce AWT operating costs by over $200,000
- Any TDS reduction would extend the life cycle of membranes and stretch out associated replacement cost
- SROG currently levies no charge for TDS in wastewater directed to the 91st Avenue WWTP

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Options to Reduce Salinity

1. Water Reclamation Treatment Systems
   - AWT – increased operating and membrane replacement costs
   - Brine Management System – Initial cost estimates are $87 Million capital cost to construct and over $3 Million annual operating cost

2. Source Reduction – eliminating or reducing salinity before it enters the wastewater system

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Pilot Rebate Program

1. Two Year Program designed to offer a variety of options to reduce salinity and conserve water at the source
2. Three Tiered Rebate Program
   - Rebate - Replace softeners with new high efficiency softeners
   - Rebate - Subscribe to a portable exchange service
   - Rebate - Remove salt-based water softener
3. Customer survey and data collection – required under each rebate to evaluate the customer satisfaction with process and technology.
4. Report to Council on program after second year to quantify results

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Pilot Rebate Program Numbers

1. Replace existing softener with new high efficiency softener (Standards outlined by City of Scottsdale). $50 one time rebate limited to first 300 customers/year
2. Subscribe to Portable Exchange Service to eliminate sewer discharge. $100 one time rebate limited to first 100 customers/year
3. Remove Water Softener. Limit to first 200 customers ($125 up front and $125 after one year)

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Pilot Rebate Program Costs

Rebate Program	FY14/15	FY15/16
High Efficiency Softener Rebate	$28,500	$28,500
Portable Exchange	$14,500	$14,500
Water Softener Removal	$34,000	$34,000
Program Administration and Customer Surveys	$ 5,000	$ 5,000
Total	$82,000	$82,000

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Proposed Steps

- Request Council approval for a code change to allow for Salinity Rebates – tonight
- Propose Budget for Salinity Rebates as part of Water Resources Budget – April
- Role out rebates in July

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