Project Number
WRF-01-005
USBR AGREEMENT: #00-FC-81-0248
AwwaRF Project Number: 2744

Characterizing and Managing Salinity Loadings in Reclaimed Water Systems

Principle Investigators:
Ken Thompson, Wendy Christofferson, Dan Robinette, Jason Curl, Larry Baker, John Brereton, and Kenneth Reich

Cash Contributors (in addition to the Bureau of Reclamation):
Awwa Research Foundation

(This summary was copied from the AwwaRF website)

Objectives:

The research objectives of this study were to characterize the nature of salinity loadings for reclaimed water systems, develop new tools including salinity mass loading and economic models, and validate and apply the tools through utility case studies. The researchers also planned to develop a methodology that can be applied nationally to allow utilities to identify the most cost-effective and scientifically defensible approach to reducing salinity in their reclaimed water.

Results/Findings:

• The researchers conducted a literature review that found salinity sources in wastewater include human excretion, grey water, self-regenerating water softeners, swimming pools, industrial and commercial discharges, water treatment, wastewater treatment, and source water.

• A national survey of reclaimed water agencies found that among the responding utilities in the telephone survey, golf course and landscape irrigations had the highest uses of reclaimed water.

• Elevated salinity levels in reclaimed water used for irrigation affects plants differently. More sensitive crops such as strawberries, lettuce, and pecan trees can experience a 50% decline in production at TDS levels of 2,000 or less.

• Currently there are no federal regulations regarding the use of reclaimed water. However, several states have regulations which typically specify the level of treatment needed for various uses of reclaimed water. With the exception of one state, TDS is not regulated by most states.

• Salt balances were developed for each participating case study for a number of sewersheds by integrating data from extensive field sampling, residential, commercial, and industrial information, and a household survey into a newly developed model called Water Quality (WQ) Analyst. Finally, the net annualized cost of potential salinity mitigation practices was determined using an economics model.