Reclaimed Water Rules Revision
Listening Session Workshop

Flagstaff, AZ
May 5, 2016
1926 – Reuse of reclaimed water begins at South Rim, Grand Canyon

1972 – First reclaimed water rules, ADHS

1987 – EQA establishes ADEQ, which begins administering reclaimed rules

1999 – ADEQ gets clear legislative authority for permitting use of reclaimed water

2001 – New comprehensive rules transform program
82% of reuse occurs in just four states, Arizona being one.

Map: Western Water, July/August 2008

Source: Bluefield Research
Arizona is 2nd highest nationally in per capita reuse
### Reclaimed Water Use

**Water Reuse Capacity (AF/yr)**

<table>
<thead>
<tr>
<th>Country</th>
<th>Capacity (AF/yr)</th>
<th>Reclaimed Water as % of Total Water Supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Israel</td>
<td>510,000</td>
<td>20%</td>
</tr>
<tr>
<td>Singapore</td>
<td>80,783</td>
<td>30%</td>
</tr>
<tr>
<td>United States</td>
<td>3,400,000</td>
<td>3%</td>
</tr>
<tr>
<td>Florida</td>
<td>955,000</td>
<td>4%</td>
</tr>
<tr>
<td>California</td>
<td>807,000</td>
<td>2%</td>
</tr>
<tr>
<td>Texas</td>
<td>482,000</td>
<td>3%</td>
</tr>
<tr>
<td>Arizona</td>
<td>504,000</td>
<td>7%</td>
</tr>
</tbody>
</table>

Source: Bluefield Research

...but #1 at integrating reuse into the water supply portfolio
1. Nationally recognized as one of best

2. Stringent treatment stds. for new/expanding WWTPs

3. Of Arizona’s 100 largest WWTPs
   – 93 distribute for reuse
   – 58 treat to Class A+/A standard

4. In greater Phoenix area, 82 – 95% of treated wastewater is beneficially reused
City of Tucson

- Serves 1000s of residential, M & I, and agricultural users
  - 160 miles of purple pipe
  - 18 golf courses
  - 50 parks
  - 65 schools (incl. Univ. of Arizona)
  - >700 single family homes

Irrigating athletic field with reclaimed water,
University of Arizona
City of Flagstaff

13 schools (incl. NAU)
18 parks & other landscaped sites
4 golf courses
2 cemeteries
1 ski area
1 industry: SCA Tissues

Irrigation with reclaimed water, NAU
New and expanding WWTPs must employ Best Available Demonstrated Control Technology (BADCT)

- Disinfect effluent so it is routinely pathogen-free
  - No *E. coli*, 4 of 7 daily samples
- Remove nitrogen to below 10 mg/l
- If for open access reuse (i.e., Class A+, A)
  - Filter effluent
  - Meet turbidity of 2 NTU or less (24-hour average)
Class A+, A → open access by public
  - pathogen-free
  - denitrified (A+)
  - filtration to meet turbidity <2 NTU

Class B+, B → restricted access uses
  • $E. coli$ limit $\approx$ Full Body Contact

Class C → limited restricted uses

Note: Total N <10 mg/l to gain the A+ or B+
Some Class A+ and A Allowable Uses

- irrigation of food crops
- recreational impoundments
- residential/schoolyard irrigation
- toilet & urinal flushing
- fire protection systems
- snowmaking
- and more

Reclaimed Water Fire Hydrant

Viticulture with reclaimed water, Cottonwood (Yavapai College photo)
# Reclaimed Water Quality Comparison

<table>
<thead>
<tr>
<th></th>
<th>Class A, A+ Std.</th>
<th>Class B, B+ Std.</th>
<th>Surface Water FBC Std.</th>
<th>SRP Canal Sample* (lowest)</th>
<th>SRP Canal Sample* (median)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>E. Coli (cfu/100 ml)</strong></td>
<td>0</td>
<td>200</td>
<td>126</td>
<td>17</td>
<td>500</td>
</tr>
<tr>
<td><strong>Turbidity (NTU)</strong></td>
<td>2</td>
<td>--</td>
<td>--</td>
<td>6</td>
<td>14</td>
</tr>
</tbody>
</table>

*61 *E. coli* samples, 300 turbidity samples

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**Town of Payson**  
Green Valley Lake  
(Class A+ reclaimed water)

**Saguaro Lake**  
(Full Body Contact standard)

**SRP Residential Irrigation, Phoenix**  
(no standard)
1. Keep up with the rapidly moving reclaimed/reuse field

2. Sustainable water supplies are becoming increasingly important

3. Advance ADEQ Strategic Goals
   a. Enhance Arizona’s unique environment
   b. Support environmentally responsible economic growth
Rulemaking Process
Who’s Involved?

Governor’s Regulatory Review Council (GRRC)
Secretary of State’s Office (SOS)
Agency ADEQ
Rulemaking Process

- Agency files Docket Opening
- Agency prepares Notice of Proposed Rulemaking
- Public Hearing on proposed rules
- Agency prepares Notice of Final Rulemaking and submits it to GRRC
- SOS publishes Notice of Proposed Rulemaking
- SOS publishes Notice of Final Rulemaking
- We are here

3 weeks
3 weeks
30 days public comment
Rule changes effective 60 days later
Reclaimed Water Conveyances
(18 AAC, Chapter 9, Article 6)

R18-9-601. Definitions

R18-9-602. Pipeline conveyances

R18-9-603. Open water conveyances

Reclaimed water pipeline,
City of Chandler
Direct Reuse of Reclaimed Water (18 AAC, Chapter 9, Article 7)

Scope: Permits, permitting process

R18-9-701 & 702. Definitions & applicability of rules

R18-9-703. Transition of permits

R18-9-704. General requirements, including signage

R18-9-705 & 706. Individual permit requirements

R18-9-707. Individual permit with industrial wastewater influence
Direct Reuse of Reclaimed Water (18 AAC, Chapter 9, Article 7)

Scope: Permits, permitting process

R18-9-708. Overall general permit requirements

R18-9-709 & 710. General permit renewal, transfer, revocation


R18-9-717. General permit for blending facility

R18-9-718. General permit for reclaimed water agent

R18-9-720. Enforcement and penalties
Direct Reuse of Reclaimed Water (18 AAC, Chapter 9, Article 7)

Scope: Permits, permitting process

**R18-9-711.** General permit for *private residential* gray water use

**R18-9-719.** General permit for *other* gray water use

*Photo credit: Brad Lancaster*

**Home gray water irrigation**
Barrett Honors College, ASU
Reclaimed Water Quality Standards (18 AAC, Chapter 11, Article 3)

Scope: Standards and allowed end uses

R18-11-301 & 302. Definitions and applicability


R18-11-308 & 309. RWQS for industrial use and unlisted uses

Appendix A. Table of allowed end uses
• BADCT treatment requirements for WWTPs (under APP)

• Fees for reclaimed water permits (fee rules)

• Criteria for recharge of reclaimed water
  - permitted under APP
  - ADWR permit needed, too

• Development of certified operator classification for reclaimed water distribution systems
  - would fall under operator certification rules
Five Categories:

1. Conveyances/Infrastructure
2. Permits/Permitting Process
3. End Uses and Reclaimed Water Quality Standards
4. Gray Water
5. Other
• Write suggested changes/improvements on Post-it notes (20 minutes total)

• Post to the appropriate topic category

• Summary of Post-it notes for each category