DEVELOPMENT OF WATER QUALITY STANDARDS (WQS) FOR INDIRECT POTABLE REUSE IN OKLAHOMA

Oklahoma Clean Lakes and Watersheds Association
25th Annual Symposium
March 29, 2016

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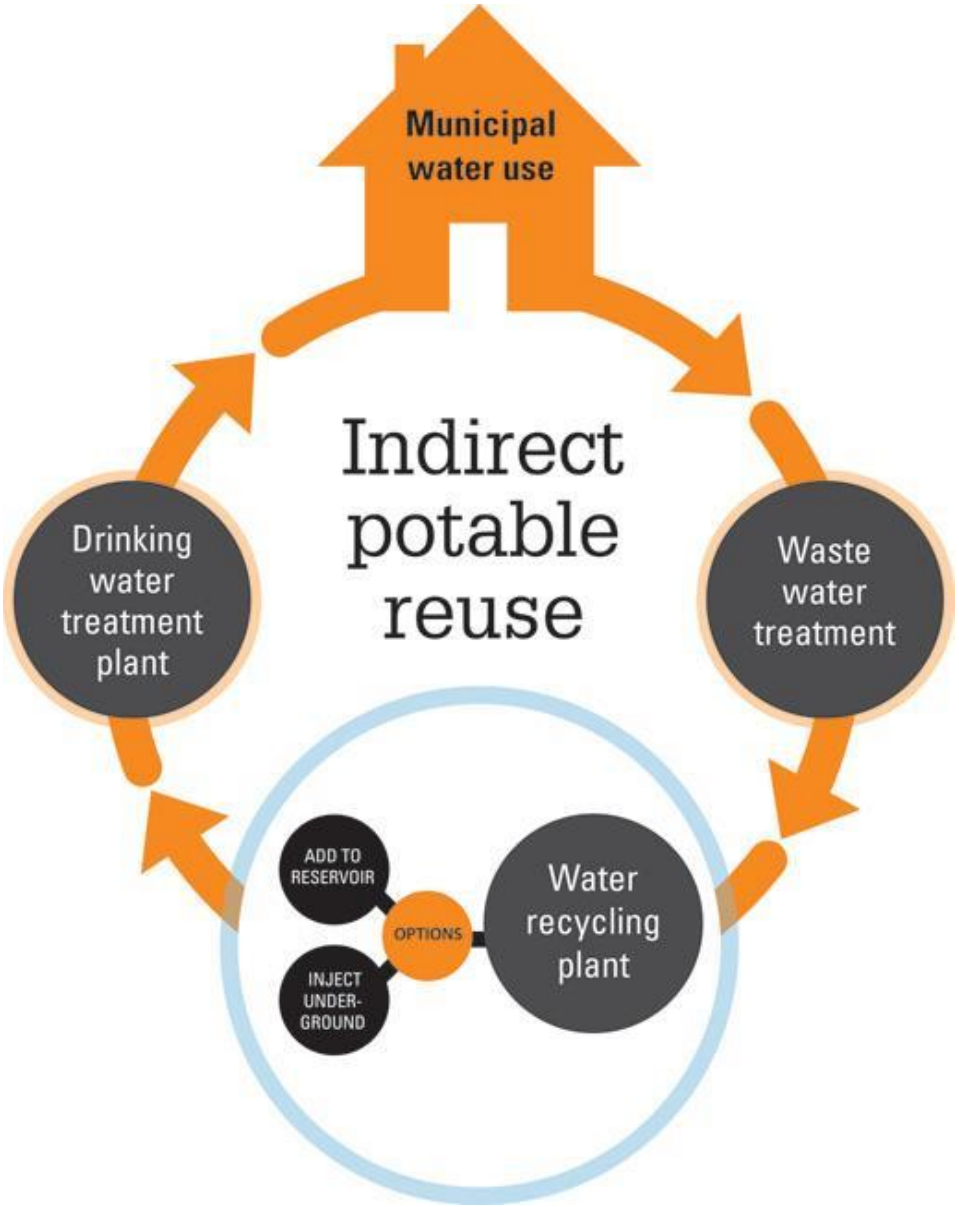
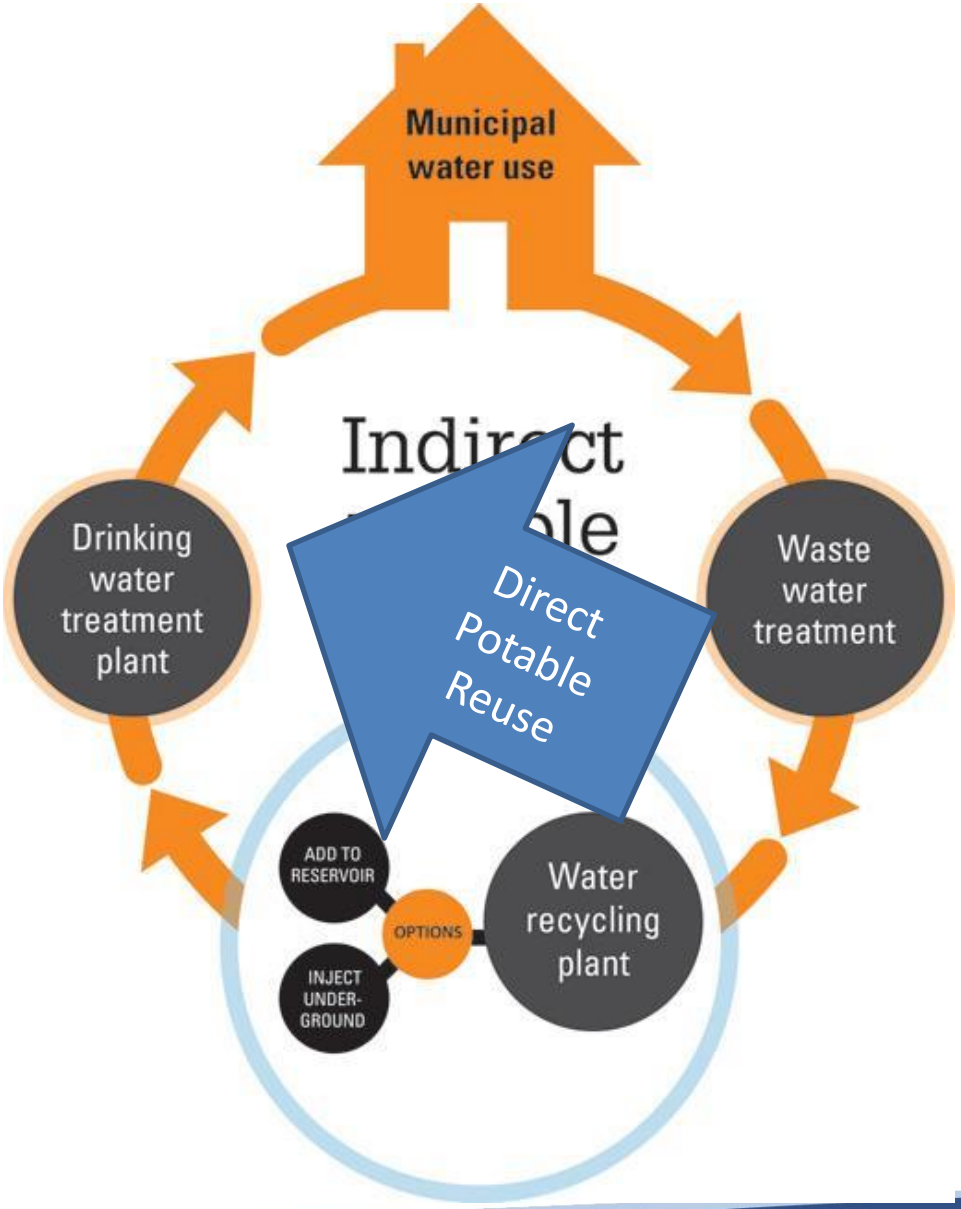

Municipal water use
Indirect potable reuse
Drinking water treatment plant
Waste water treatment
ADD TO RESERVOIR
OPTIONS
INJECT UNDER-GROUND
Water recycling plant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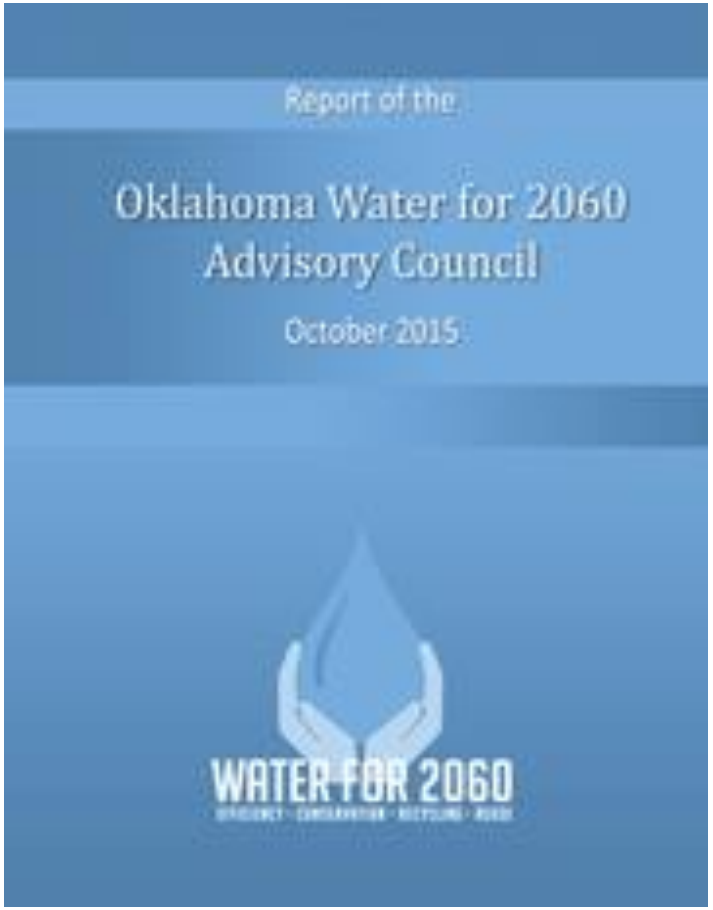
Oklahoma's Comprehensive Water Plan

- House Bill 3055
- Goal is to consume no more in 2060 than in 2010
- Recommends conservation, incentives, and education to reach goal
- Considers reuse as a viable option



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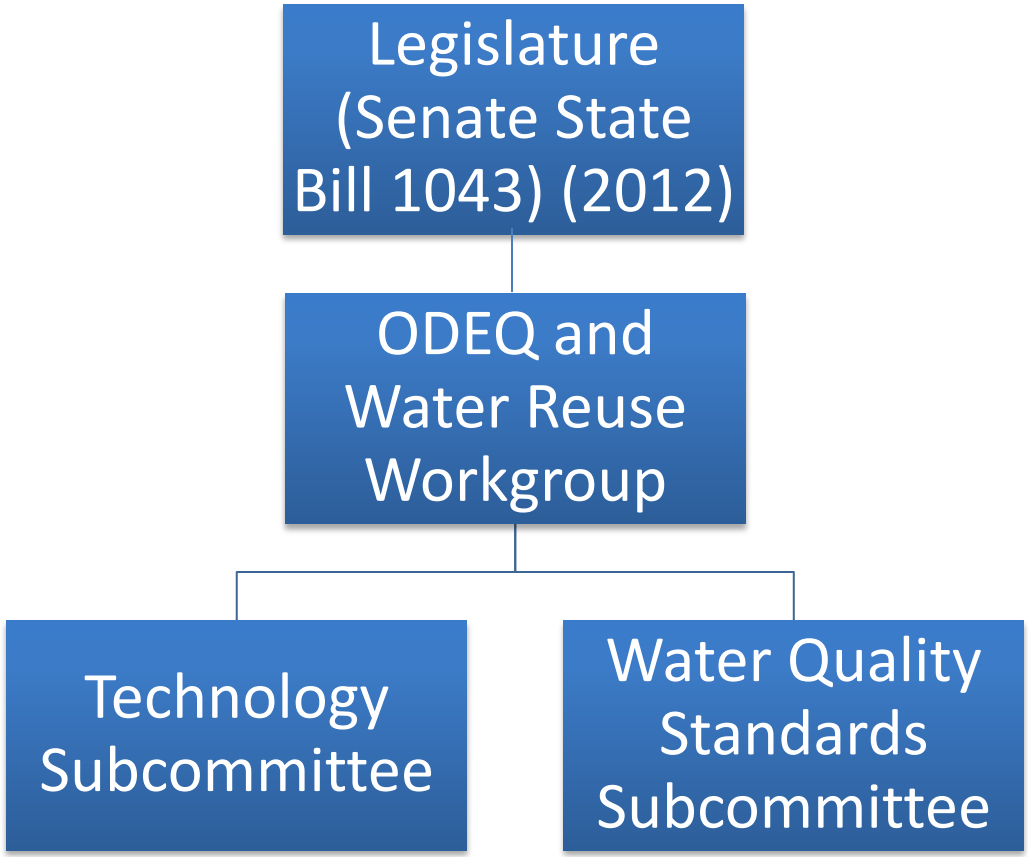
Legislative Action to Explore Potable Reuse



Water Quality Standards Subcommittee Comprised Of:

- Various Municipalities
- Consulting Engineers and Other Technical Experts from Several Engineering Firms, State Agencies, and the General Public
- Other Members of the General Public
- Total Membership of 21

Water Reuse Water Quality Standards Subcommittee Explored Indirect Surface Water Reuse into Sensitive Water Supplies (SWS)

- Current WQS don't allow new point source discharges, or increased loading from existing discharges, into a Sensitive Water Supply (SWS)
- Must demonstrate to the permitting authority that discharge is "maintaining or improving" existing conditions of the direct receiving water and the public water supply reservoir
- Eventually Create a new SWS-Reuse Classification

Why do we need a new SWS-Reuse Classification?

- SWS is a Tier 2 type classification within Oklahoma's Antidegradation rules
  - No new point sources or increased loads and maintain existing water quality and uses
  - Developed 30 years ago
- Wastewater treatment has advanced tremendously in 30 years
- Statewide demographics and supply needs have changed considerably over the last 30 years
- Wastewater reuse (water supply augmentation) is a component of Oklahoma's Comprehensive Water Plan

Goals of the new SWS-Reuse (SWS-R) Classification

- Protect Water Quality
  - Protect public health and aquatic ecosystems
  - Protect all lake existing and designated beneficial uses
- Create a deliberative, consistent approach for Antidegradation Review
- Create pathway for discharge of treated municipal wastewater into SWS lakes for augmentation
- Does not reclassify SWS waterbodies
  - Reclassification of a particular waterbody must occur through rulemaking

- **What is Antidegradation?**

- **What is a Sensitive Water Supply**

What is Antidegradation?

Outstanding Resource Waters (e.g., Scenic Rivers)

Sensitive Water Supply (e.g., Arcadia Lake) or a High Quality Water (Blue River)

Protect the Beneficial Use (aka, the floor)

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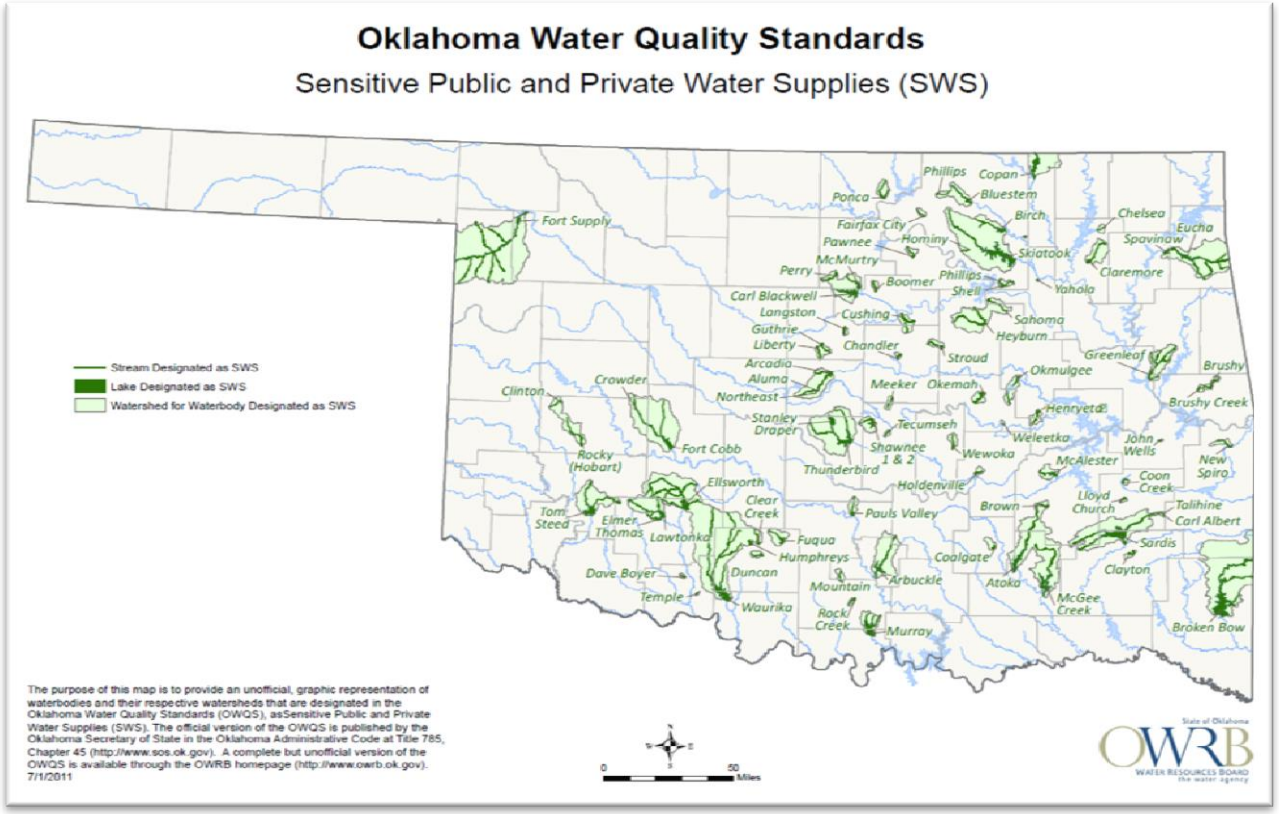
What are Sensitive Water Supplies?

- As defined in statute:
  - A public water supply reservoir
  - Generally watershed < 100 square miles
  - "Or, as otherwise designated by the Board"
- Carry Tier 2 antidegradation protection
  - No new point sources or loading
  - Protection of existing water quality

What are Sensitive Water Supplies?

- Geographically diverse
- Waterbody capacity and size are variable
  - ~75% < 23,000 acre ft storage
  - Nearly half < 500 surface acres
- Variable watershed sizes



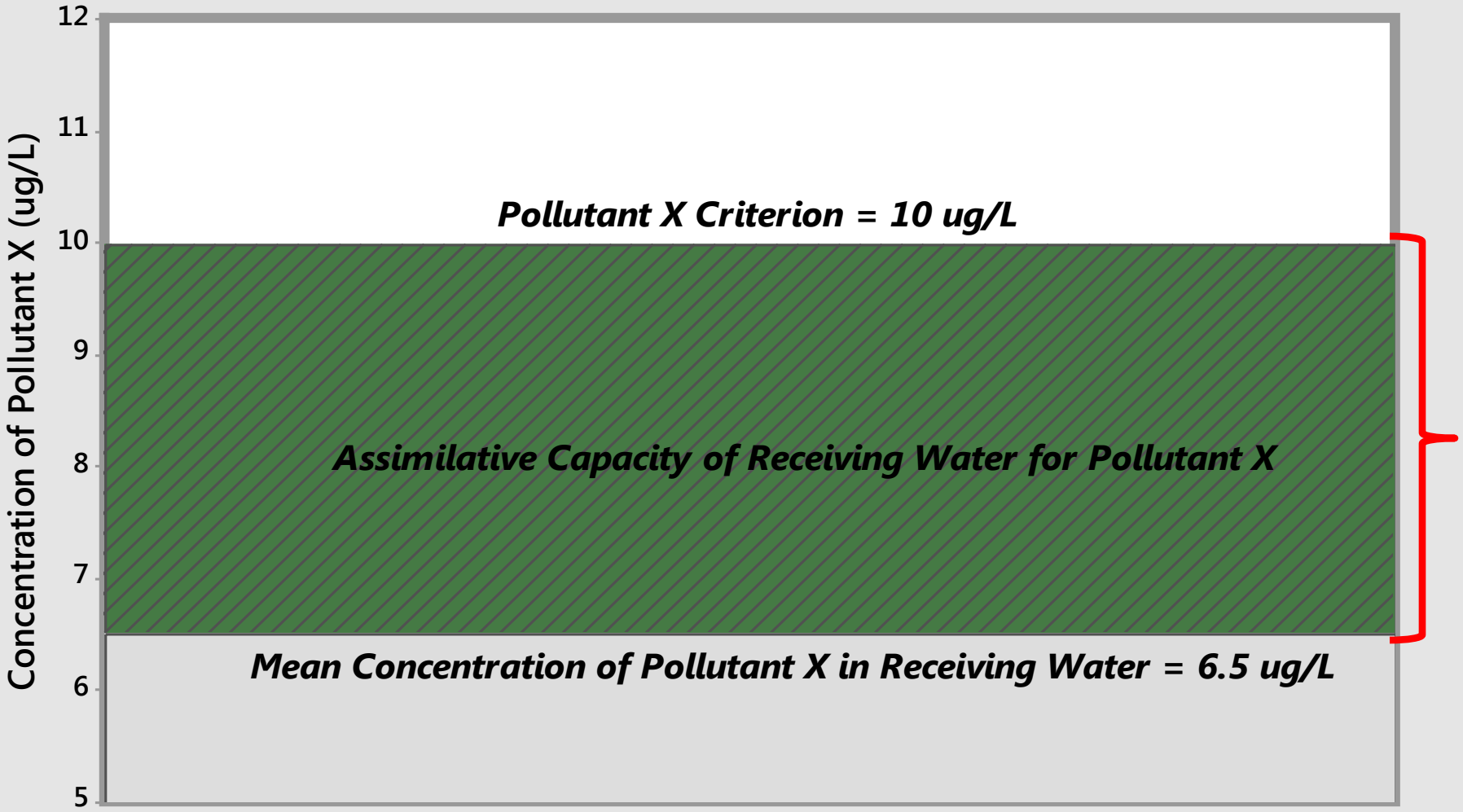
Proposed Creation of SWS-R

- With the concurrence of the Water Quality Standards Subcommittee of the Water Reuse Workgroup
- 2016 OWRB Rule Revision provides an optional antidegradation classification for SWS lakes, aka SWS-R
- Same characteristics as SWS and continues to provide additional protection [785:45-5-25(c)(8)(B)]
  - Except as outlined in the new rule
- Creates the framework for new municipal discharges [785:45-5-25(c)(8)(C)]
  - Requires a minimum level of effluent quality
  - Ties technology limits to implementation rules

Creates a Deliberative, Consistent Approach to Antidegradation Review

- An important **Social** or **Economic** development needs **Accommodation**
- **Assimilative Capacity** is documented
- After an **Analysis of Alternatives**, the consumption of a portion or all of the assimilative capacity may be determined necessary and permitted by a regulatory authority
- **Intergovernmental Coordination and Public Participation** occur consistent with Oklahoma's Continuing Planning Process

Theoretical Model of Assimilative Capacity in Receiving Waters



Other Protections of SWS-R

- All existing and designated beneficial uses of the receiving waterbody and downstream waterbodies shall be maintained."
- "The discharge shall not impair human health even during drought of record conditions."
- Public and Private Water Supply beneficial use applies a chlorophyll-a criterion to SWS-R lakes

Advanced Treatment Technologies

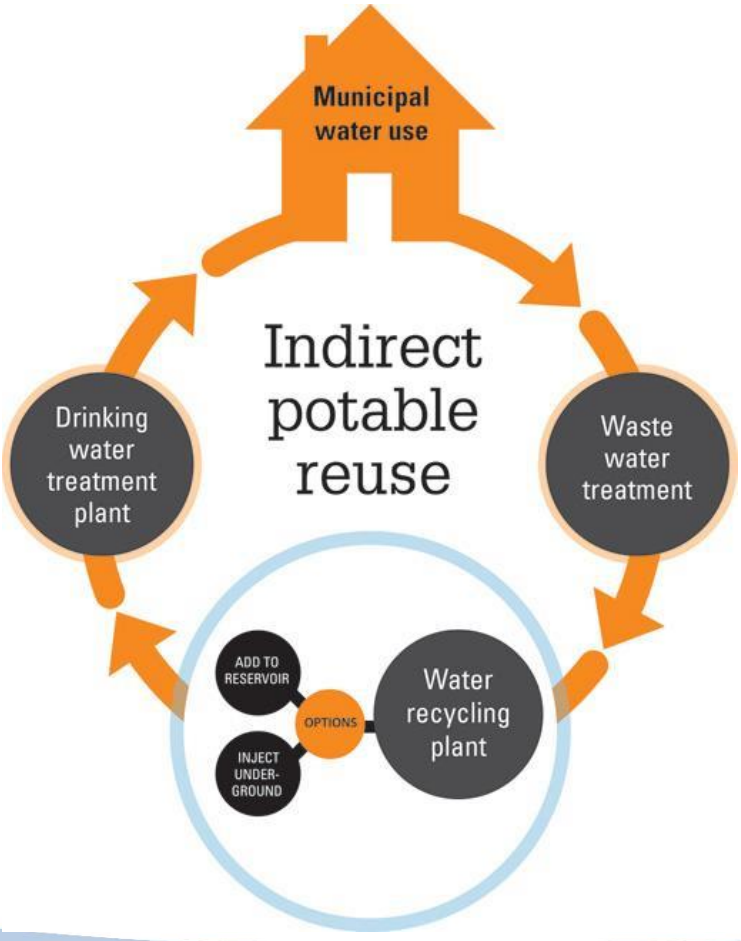
Mandated Monitoring and Periodic Review

- Provides for a mandated, periodic evaluation and assessment of the SWS-R waterbody
- Ensures the regulatory process is protecting water quality
- Provides remedies for correction

What's Next for SWS-R?

- What is not in this revision?
  - Reclassification of any SWS reservoir to SWS-R
  - Specific implementation and technology rules
- Implementation Revisions
  - OAC 785:46-13-4(e) is reserved for new rules
  - These new rules will be developed in coordination with the ODEQ's rules for indirect potable reuse
  - Planning for 2016-2017 Interim Rulemaking

Aquifer Storage and Recovery



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Three-Pronged Purpose of Groundwater Quality Standards(GWQS):

1. Beneficial Use and Waterbody Protection
   - Preserve Ambient Quality by Protecting to Background
   - Non-natural Pollutants at Non-detect
   - Protect to Untreated Drinking Water Use- "Most Stringent"

Three-Pronged Purpose of Groundwater Quality Standards(GWQS):

2. Minimize Impact
   - Corollary to surface water antidegradation concept
   - Do Not Degrade existing Water Quality
   - "Protective measures shall also be sufficient to minimize the impact of pollutants on water quality."

Three-Pronged Purpose of Groundwater Quality Standards(GWQS):

3. Implementation Framework and Corrective Action
   - Corrective Action is Required
   - Assigns Responsibility to Regulate
   - Responsibility to Regulate through Permitting (UIC at ODEQ and Land Application at ODAFF)
   - Responsibility to Monitor

Considerations for ASR

- Maintaining current protection philosophy while allowing ASR
- Quality of Injectate/Planned Treatment (RO or other advanced processes)
- Aquifer Water Quality (background, etc)
- Aquifer Characteristics
- Expected Zone of Influence
- Develop of Criteria and Translators
- Operational Specifics
- Public Involvement and Participation

Next Steps for ASR

- ASR Water Quality Workgroup

- Rulemaking in 2016?, 2017 and maybe 2018

Questions / Open Discussion

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