

The background of the slide is a landscape photograph showing rolling hills under a clear blue sky. In the distance, an industrial facility with a tall tower is visible. A semi-transparent purple rectangular box is overlaid on the lower-left portion of the image, containing the title and date.

OWRB Produced Water Group - Proposal to Evaluate Solutions

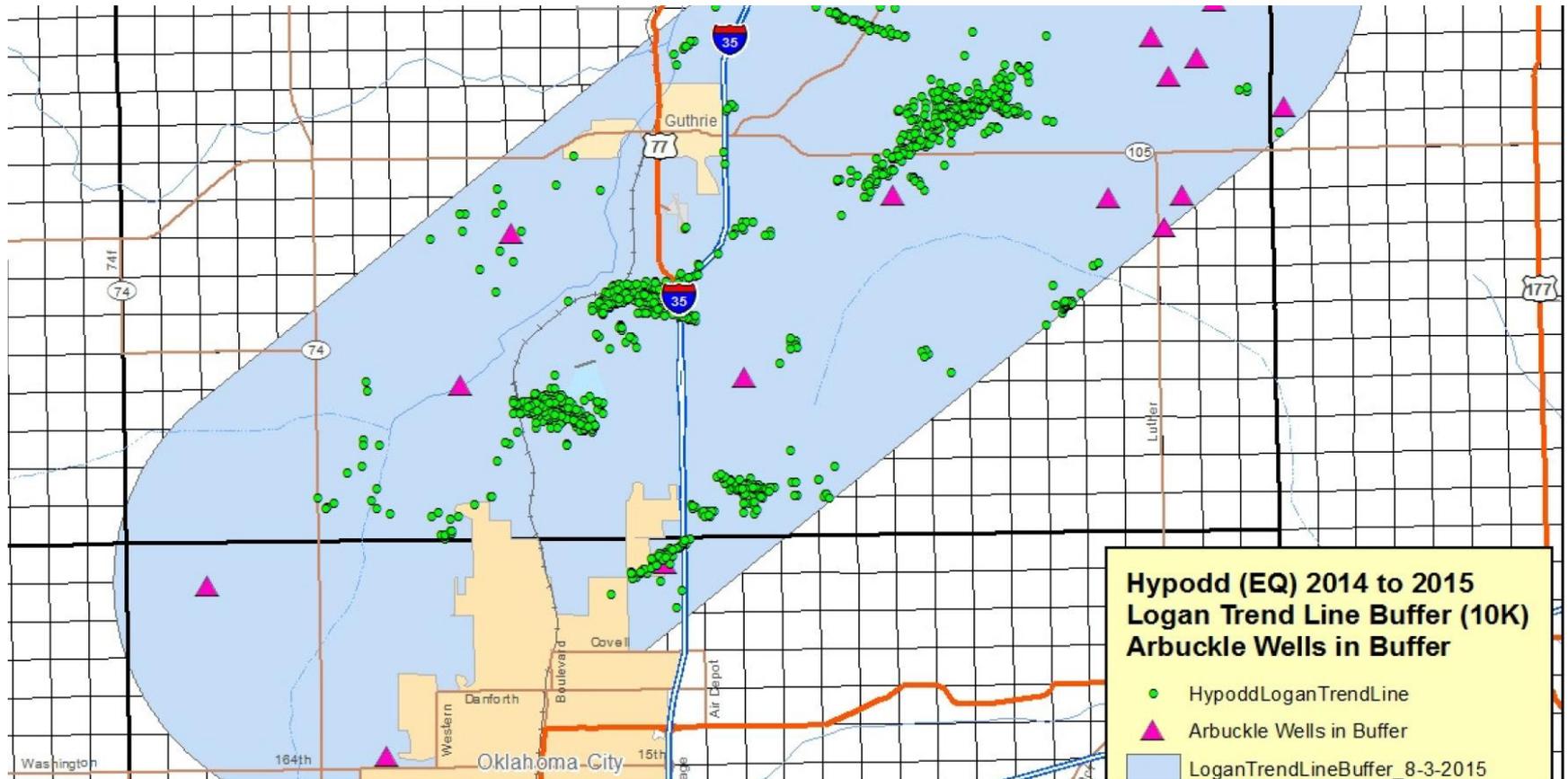
June 7th, 2016

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Defining the Problem

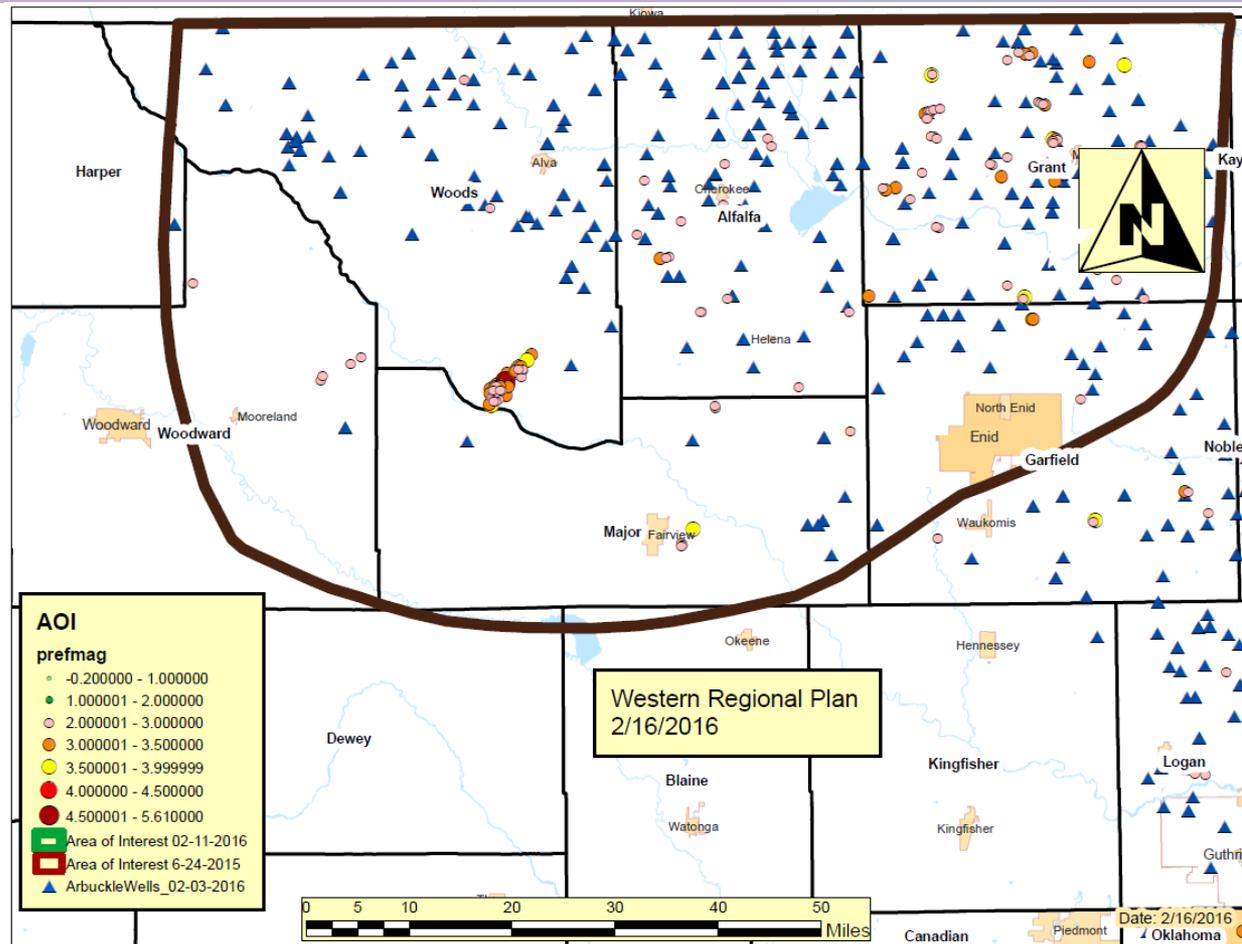
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- An oil pumpjack is visible in the middle ground, situated in a field of dry, brown grass. The sky is a clear, pale blue. In the background, there is a line of trees and a tall utility pole. A dirt road leads towards the pumpjack.
- **Too much produced water compared to limited underground injection capacity (disposal)**
 - Long term need to conserve fresh water sources
 - What are the economically viable alternatives for produced water reuse or recycling?

OCC –Water Disposal Reduction #1



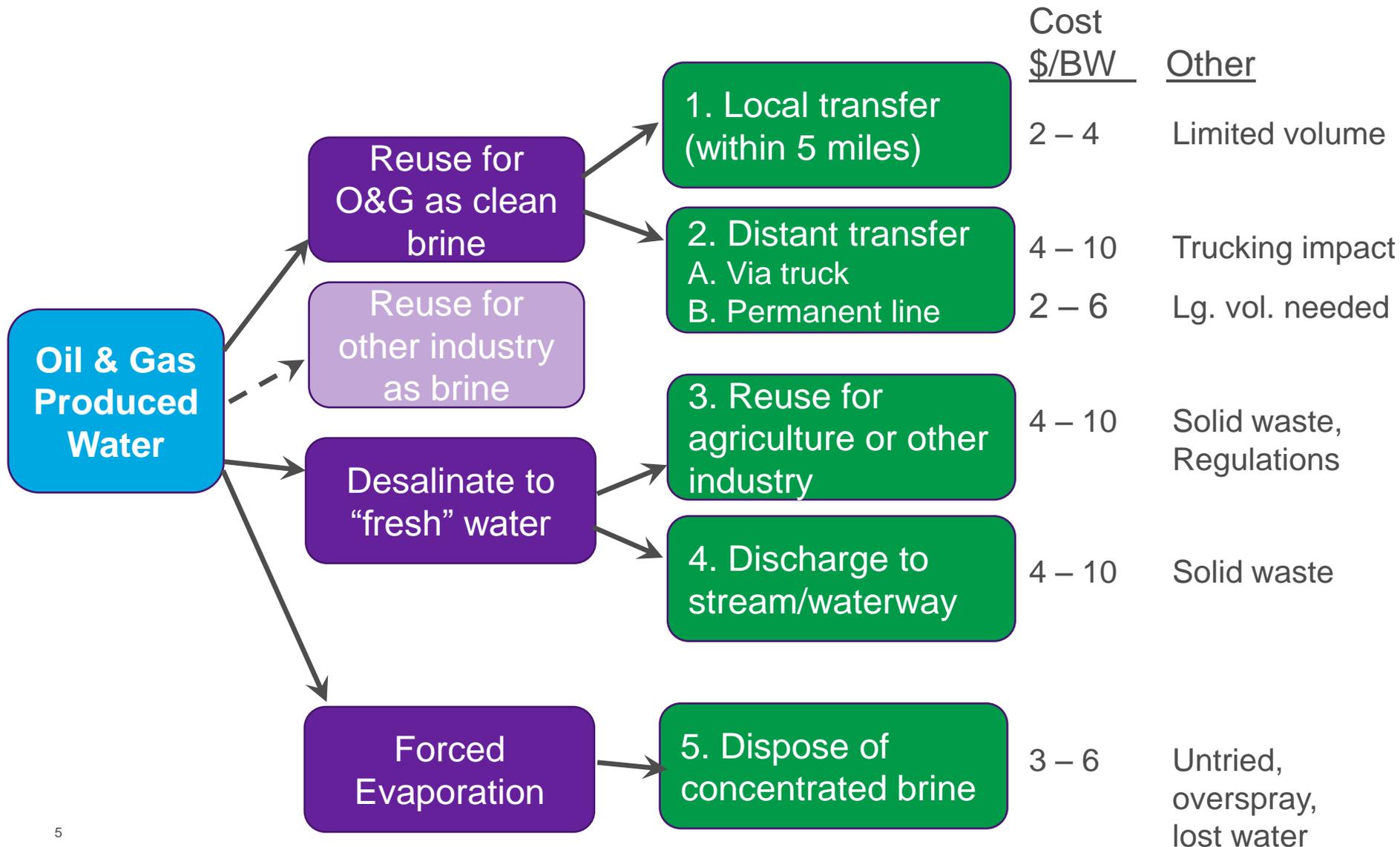
- First Disposal reduction occurred in August 2015 in northern Oklahoma County and southern Logan County
- Reduced injection by about 38%.

OCC –Water Disposal Reduction #2

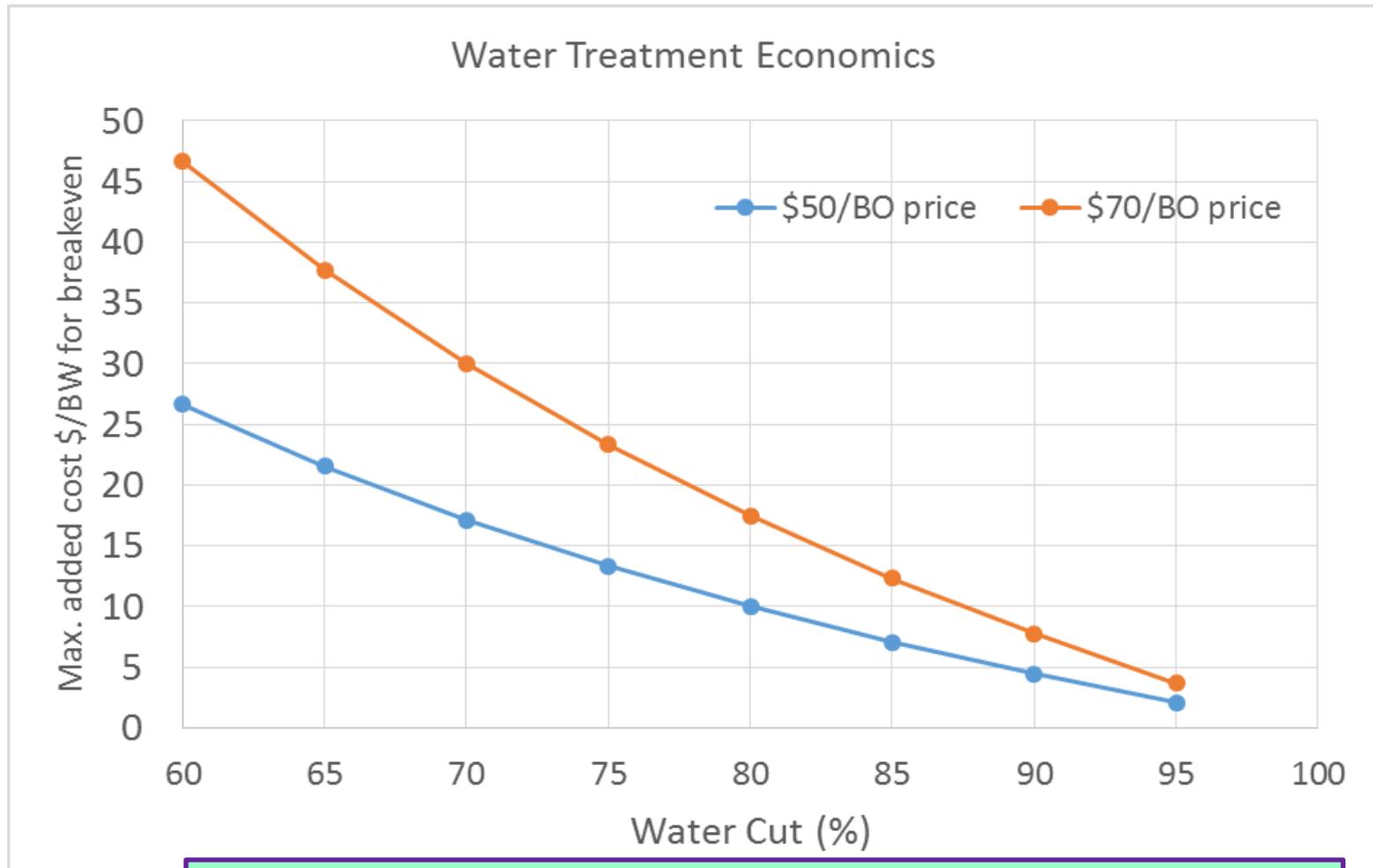


- Second water injection reduced by 40% from 245 wells in area above
 - Took effect from Feb to April 2016
 - Approximately 500,000 Barrels of Water Per Day (BWPD) shut-in

Options Overview (from March meeting)



How Much Additional Water Cost is Economically Possible?



- Conclusion: Wells with water cuts less than 90% that are shut-in due to limited disposal capacity could potentially carry higher costs of treatment and transportation.

Scope of Work - Proposal to DOE

1. Gather data about produced water and users of water
 - A. Volumes of water by region (county)
 - B. Produced water quality and quality needed by users
 - C. Create database; Focus on large volumes and proximity

2. Evaluate appropriate water treatment technologies
 - A. Solicit cost estimates from vendors (group thoughts?)
 - B. Prepare conceptual designs for treatment cases

3. Evaluate economic options and order of magnitude costs for selected scenarios

4. Prepare Final Study Report
 - A. Document methods, data and findings
 - B. Recommendations to support future discussion, planning and policymaking

Study Deliverables

1. Database of produced water volumes and water quality data
2. Database of potential users of water, their location and volumes and quality needed
3. Cost evaluation of top scenarios
4. Identification of potential obstacles
5. Recommendations and conclusions
6. Final report for public release

Proposal to DOE – Summary Points

1. \$200,000 proposal approved by DOE
2. Expect to start work in July or later
3. Hope to finish by December 2016.
4. Portion of funding will be for in-kind effort by OWRB and balance for third party
5. Emphasis on scoping evaluation of possibilities, rather than focusing too much in in a limited area.
6. PWWG is resource to study effort





Thank You

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Types of produced water treatment

