

Truckee Meadows Reclaimed Water Planning

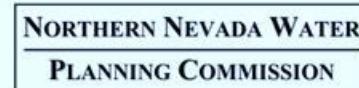
Regional Effluent Management Team

*September 2016 Update
Board of Directors
Truckee Meadows Water Authority*



Today's Agenda

- Reclaimed water use in the Truckee Meadows
- Nevada reclaimed water regulations
- Reclaimed water potential opportunities
- Regional feasibility study
- Discussion



Regional Team

Joe Coudriet, City of Reno

Michael Drinkwater, Truckee Meadows Water Reclamation Facility

John Enloe, Truckee Meadows Water Authority

Andy Hummel, City of Sparks

Dave Kershaw, City of Reno

Kerri Lanza, City of Reno

Lydia Peri, Washoe County

Jim Smitherman, Northern Nevada Water Planning Commission

Rick Warner, Washoe County

Expert Team

Jeff Mosher, National Water Research Institute

Krishna Pagilla, University of Nevada



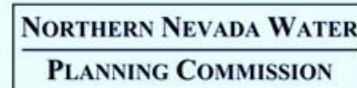
NORTHERN NEVADA WATER
PLANNING COMMISSION



Truckee Meadows Regional Water Reclamation

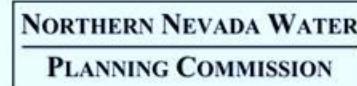


- Reclaimed water is highly treated wastewater effluent
- Region has decades of experience using reclaimed water for irrigation and industrial uses
- 15-million gallons per day in the summer
- 10-percent of total regional water supply
- Offers significant environmental benefits



Current Reclaimed Water Regulations

- Nevada Division of Environmental Protection regulates reclaimed water usage
- Categories A - E
 - Category A and B represent highest water quality
 - Water quality achieved through filtration and disinfection
 - Safely used for irrigating parks and ballfields
 - Regional water reclamation facilities are permitted as A or B



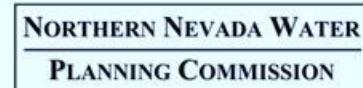
Proposed Nevada Water Regulations

- Categories A-E
 - Some new uses allowed (e.g. snow making)
- [new] Category A+, or *Exceptional Quality*
 - Quality achieved through advanced water treatment and natural purification processes
 - Potential uses include groundwater augmentation or high tech manufacturing applications



Reclaimed Water Feasibility Study

- Determine if *Exceptional Quality* offers beneficial water management opportunities for the region- developed through a 5-year feasibility study.

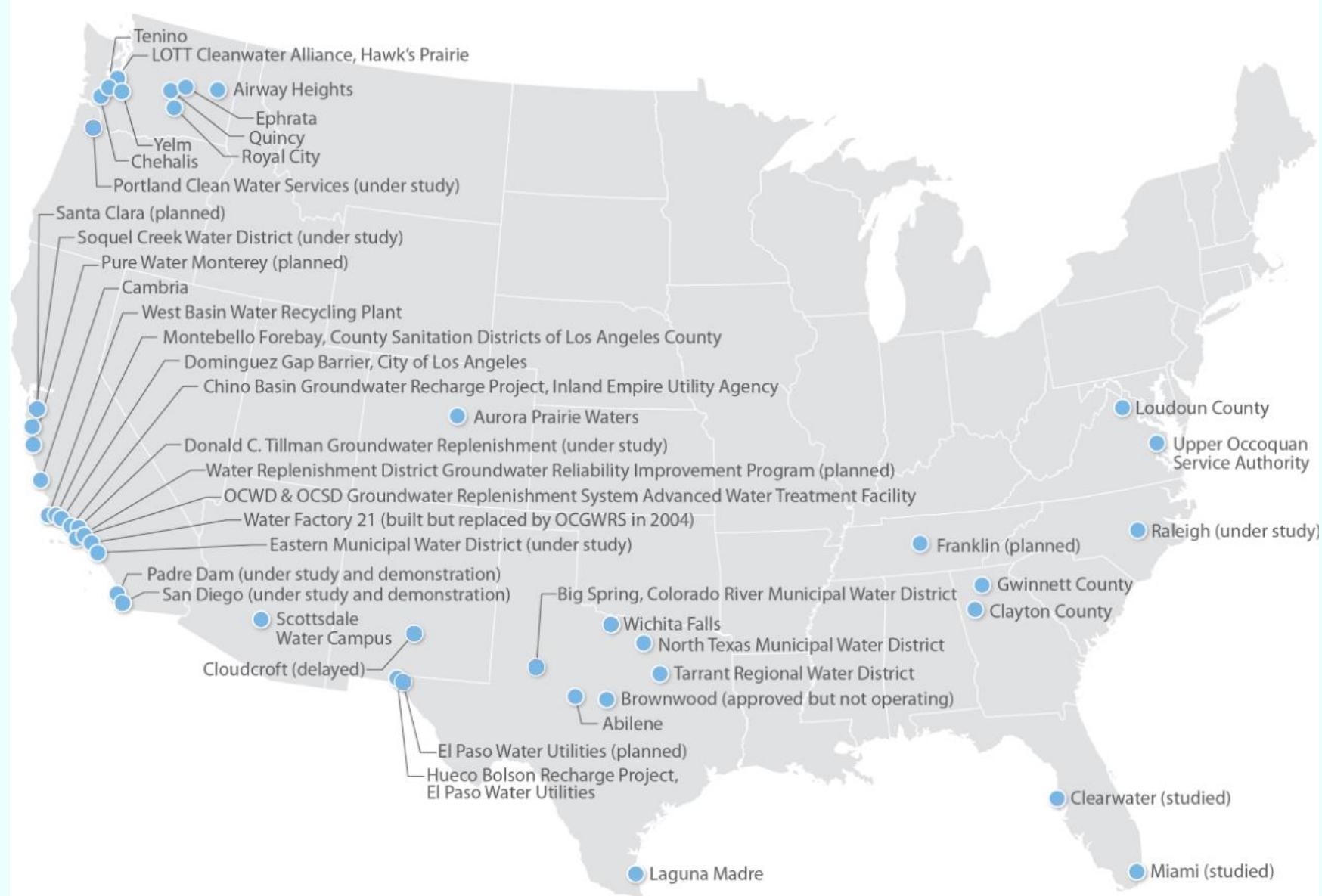


Exceptional Quality Potential uses

- Governor's Drought Forum recommended advanced reclaimed water treatment investigations
- Groundwater augmentation, potable, recreational or environmental uses
- Storing and securing a drought proof water supply for the future
- Diversify the region's water supply portfolio while reducing reliance on the Truckee River



**NORTHERN NEVADA WATER
PLANNING COMMISSION**





NORTHERN NEVADA WATER
PLANNING COMMISSION



Orange County Groundwater Replenishment System

Anaheim, California



- 100 million gallons per day
- Provides 25% of regional water supply - serving 2.3 million people
- Reduces dependence on imported water
- Treatment process includes reverse osmosis (RO)
- Pioneer in creating “agency legitimacy” movement



NORTHERN NEVADA WATER
PLANNING COMMISSION



West Basin Municipal Water District

El Segundo, California



- 40 million gallons per day
- 5 types of “designer water” – for irrigation, industry, groundwater replenishment
- Reduces dependence on imported water and ocean desalinization
- Protects groundwater from seawater intrusion



NORTHERN NEVADA WATER
PLANNING COMMISSION



Silicon Valley Advanced Water Purification Center

Santa Clara Valley Water District, California



- 10 million gallons per day advanced water purification center
- Operating as a demonstration project
- Engaging the public and educating the value of water
- May become a groundwater augmentation project



NORTHERN NEVADA WATER
PLANNING COMMISSION



Tucson Water Tucson, Arizona



- Promotes Tucson's “*renewable water resources portfolio*” through groundwater augmentation
- Collaboration with University of Arizona and Water Environment and Reuse Foundation
- Treatment approach considered very viable in Nevada
 - Ozone / Biological Activated Carbon / Advanced Oxidation / Soil Aquifer Treatment



NORTHERN NEVADA WATER
PLANNING COMMISSION



Successful Projects Have...

Public engagement

- Builds agency legitimacy*



Regional effort

- Engages diverse expertise*



Clearly defined purpose

- Total water management*

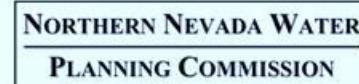


Clear regulatory pathway

- Safe and reliable*

Feasibility phase conducted

- Demonstration project - "prove concepts"*



Regional Feasibility Phase Activities

Project Development

Community Outreach

Nevada Regulations

Pilot Testing
Technologies

Demonstration Project

Hydrogeologic
Investigations

*Regional Feasibility
Study created from
recognized best
practices*

Funding



NORTHERN NEVADA WATER
PLANNING COMMISSION



Advanced Water Treatment Expert Panel



Garringer

Salveson

Tchobanoglous

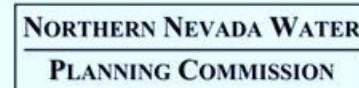
Mosher

Crook

Hultquist

Millan

- Experts helping guide and critique our regional work
- Organized by **National Water Research Institute**, Jeff Mosher
- Chaired by George Tchobanoglous, UC Davis
- Project kick off workshop held in May 2016
- Assisting NDEP develop Nevada's proposed regulations



Expert Panel Assessment

- *Overall approach is sound*
 - Proposed Nevada regulations are protective of public health
 - Conducting feasibility study is a best practice
 - Affirm need for a ***field-scale demonstration project***
- *UNR involvement is strongly endorsed*
 - Research is conducted independently
 - Provides access to diverse experts within the University system
 - Leverage additional research funding and grants
 - Builds local expertise

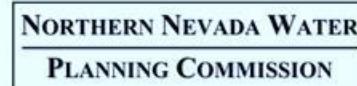


NORTHERN NEVADA WATER
PLANNING COMMISSION



Exceptional Quality Reclaimed Water Field Demonstration Project (2017-2020)





UNR Collaboration

- Krishna Pagilla, PhD
 - Internationally recognized water treatment expert
 - Vast research experience
 - Building UNR's local water research capacity
- 2 fully dedicated PhD candidates:
 - Vijay Sundaram
 - Laura Haak
 - Supported by BS and MS students
- Laboratory and QA/QC Director
- Access to University and State resources
 - Medical School, Public Health, Business School, DRI, etc.





UNR Scope of Work

Advanced Water Treatment Technologies Demonstration

- 3- ½ year study
- Cost – Benefit Analysis
- Establish field-scale demonstration project
 - Select the advanced water treatment processes
 - Establish operating strategies
 - Performance monitoring and laboratory testing
- Prepare and publish final report
- \$676,000 contract

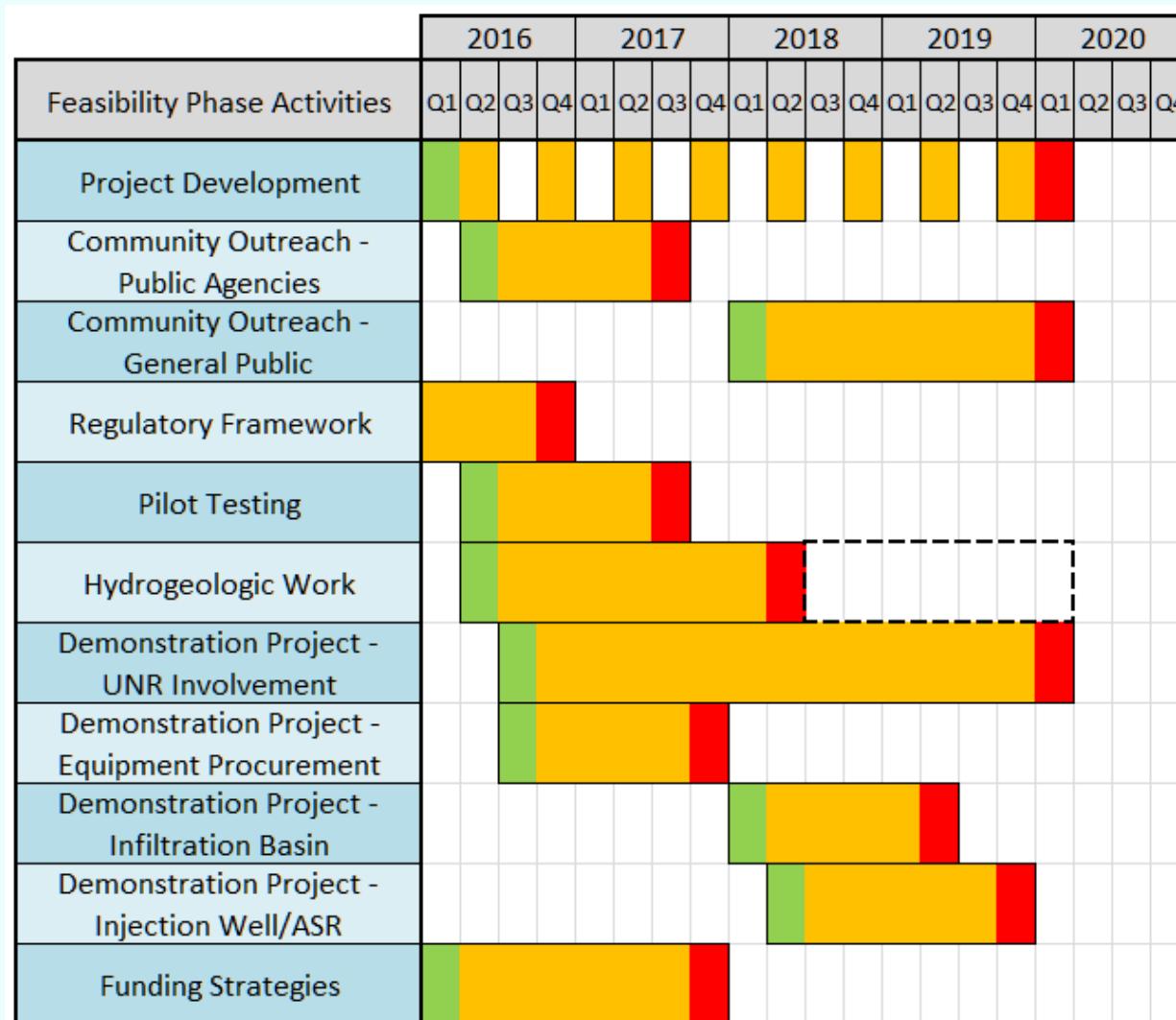


Feasibility Phase Funding

- \$5-6 million total over 5 years
- Regional effort
 - Water and wastewater utility funds
- Research funding already received
 - \$550,000 for pilot testing
 - Water Environment and Reuse Foundation
 - American Water/Stantec Consulting
 - \$40,000 NDEP grant for Bedell Flat investigation
- UNR will pursue additional research funding
- Regional Team pursuing additional collaboration and funding opportunities



Timeline





Thank you

John Enloe, Director of Natural Resources

- jenloe@tmwa.com

Rick Warner, Senior Engineer

- rwarner@washoecounty.us

Dr. Krishna Pagilla, UNR

- pagilla@unr.edu