NEVADA DIVISION OF WATER RESOURCES

Nevada Department of CONSERVATION & NATURAL RESOURCES

Division of Water Resources

Tim Wilson, P.E., State Engineer
Division of Water Resources

Committee on Public Lands

May 29, 2020

water.nv.gov

Mission Statement

To conserve, protect, manage and enhance the State's water resources for Nevada's citizens through the appropriation and reallocation of the public waters.

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State Engineer

Adam Sullivan, P.E.
Deputy Administrator

Micheline Fairbank, JD
Deputy Administrator

Bradley Crowell
Director

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What we do

- ✓ Appropriate and Manage use of Nevada Waters (except Colorado River)
- ✓ Adjudicate pre-statutory and federal reserved water right claims
- ✓ Distribution and regulation of certain decreed surface water
- ✓ Well Drilling Regulation, Licensing and Inspection
- ✓ Dam Safety
- ✓ Flood Plain Management
- ✓ Water Planning
- ✓ Aquifer Storage and Recovery (ASR)
- ✓ Effluent Reuse
- ✓ Subdivision Review

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What we don't do

- ✕ Safe Drinking Water
- ✕ Water Pollution Control
- ✕ Source Water Protection
- ✕ Laboratory Certification
- ✕ Operator Certification
- ✕ Water quality standards for surface water (Rivers, Streams and Lakes)

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COVID-19 Impacts

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Continued operations to meet essential functions by:

- Transitioning 90% of staff to telework
- Encouraging public access through online services
- Continuing field work of essential water distribution and safety inspections with social distancing
- Conducting hearings via video conferencing
- April workload near-normal after initial transitions

Groundwater Management in Nevada

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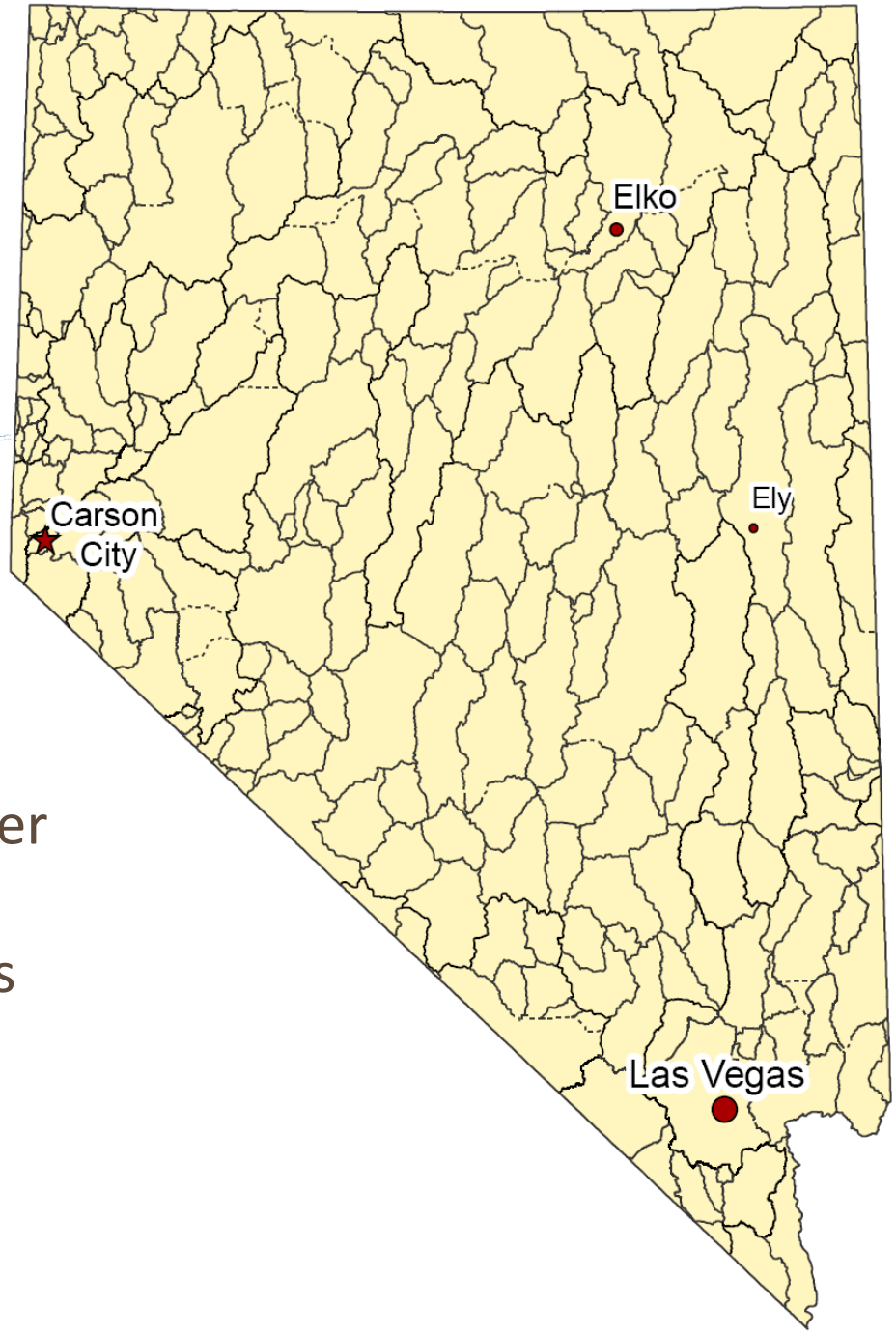

Nevada's groundwater is divided into **256** hydrographic basins and sub-areas

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Amount of groundwater available is based on the concept of ***Perennial Yield***

- Put simply, this is the average amount of water available annually in each water basin – but best available science is critical
- The maximum amount of groundwater that can be used each year over the long term without depleting the ground water reservoir.
- The perennial yield cannot be more than the natural recharge and is usually limited to the natural discharge.
- Based on best hydrological assessments, the goal is to not allow the consumptive use of groundwater rights and domestic wells to exceed the basin's perennial yield.

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Perennial Yield is the primary guideline for the State Engineer's determination of groundwater available to appropriate

ALL basins need updated perennial yield estimates that consider the impacts of climate change.

Advanced science should be used to update perennial yield estimates too ensure we are doing the best job possible to protect the water resources of Nevada.

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How were *Perennial Yields* established?

Beginning in the early 1950's, basin-scale water budgets were evaluated by the USGS in cooperation with Water Resources.

Original analyses were often based on empirical methods with limited site-specific data.

The critical nature of these studies requires periodic modernization. Climate change was NOT a factor in these older studies.

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Decisions today about *water availability* must consider additional data and information

Hydrogeology

- Regional groundwater flow systems
- Connectivity with surface water sources
- Aquifer storage depletion and time to capture
- Improved water budget science

Actual use of water

- Consumptive use
- Effluent reuse
- Concentrated pumping centers
- Domestic wells

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In Summary

- Current Perennial Yield estimates are an important and valid baseline, but additional work is needed to update water budget studies
- Potential for partnering with Desert Research Institute and the United State Geological Survey
- Opportunity for comprehensive study for the whole State using fact based, unbiased data and analysis
- Consideration for Climate Change scenarios
- Drought Resiliency

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Committed Groundwater Resources vs. Current Basin Demand

Ratio of *Committed* Groundwater Resources to Perennial Yield by Basin

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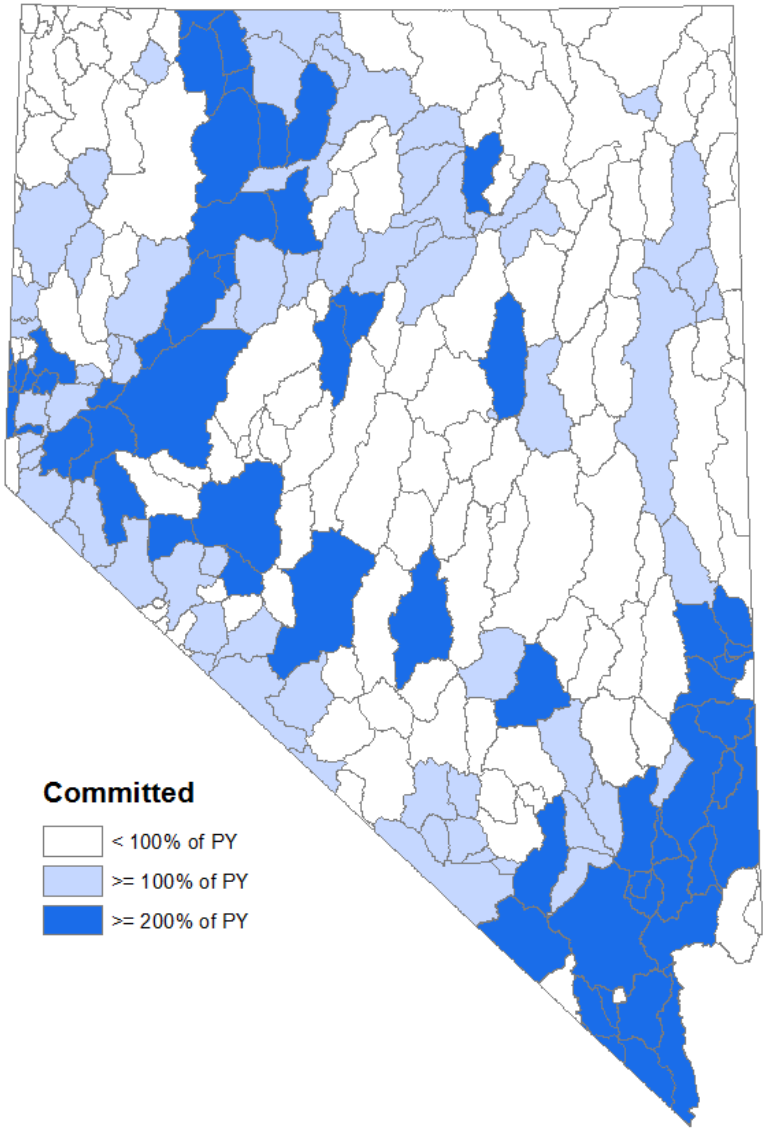
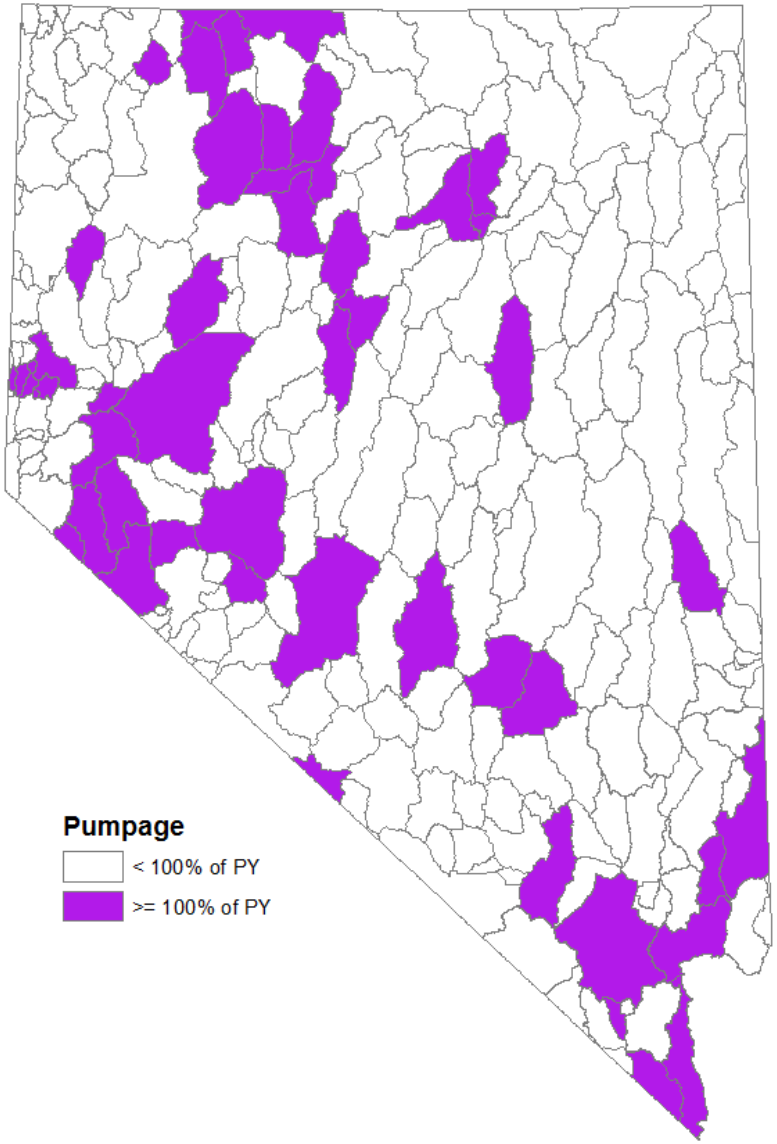


Ratio of Groundwater *Pumpage* to Perennial Yield by Basin



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Over-Appropriated Basins

- Many basins were already over-appropriated prior to enactment of the Perennial Yield Doctrine and the establishment of a science-based perennial yield (keep in mind that 25% of PY's are < 1000 acre-feet).
- Desert Land Entry Success Rate
  - Diamond Valley and Pahrump Valley
- In the case of Las Vegas Valley, purposely allowed to overdraft (revocables) with the intent that infrastructure would eventually be in-place to deliver Colorado River water and the over pumping would be curtailed.

Over-Appropriated Basins

- Presumption that not all water rights would be put to their maximum beneficial use, so it was acceptable to over-appropriate. In theory, actual pumpage would not exceed the perennial yield
- Permits issued for finite period of time
- Permits issued for temporary uses
- Permits issued to supplement surface water in times of drought

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Management of Over-Appropriated Groundwater Basins

- Curtail by priority; or
- Designate Critical Management Areas
  - Starts 10-year time clock to develop a Groundwater Management Plan (GMP); or
- Administrative steps to reduce commitments
  - Forfeiture for non-use, deny extensions, penalties for over-pumping
    - Little effect on current pumping
  - Metering of all uses

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Addressing Over-Appropriated Basins

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New tools must include:

- A more robust statutory framework to provide stakeholders the ability to create and adopt a groundwater management plan for approval by the State Engineer.
- The framework needs to allow for maximum flexibility in terms of what tools can be used to bring a basin back to a sustainable level.
- Creative solutions to encourage water conservation - prevent “use it or lose it”
- Explore programs to allow for the acquisition of water rights.

Nevada Water Law

- Nevada water law and policy is extremely complicated, and transparency and consistency is critical
- "Know before you Grow" – Water sustainability
- Contemporary water law/policy must be clear, science-based, and applied consistently. Any new water laws must be done delicately by focusing on new management tools without upending decades of decisions
- Contemporary Perennial Yield Studies
- Strengthen Groundwater Management Plan statutes
- Agricultural Water Conservation Credits
- Reform of NRS §533.450 (Judicial Review and Appeals)

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Major Water Resource Issues

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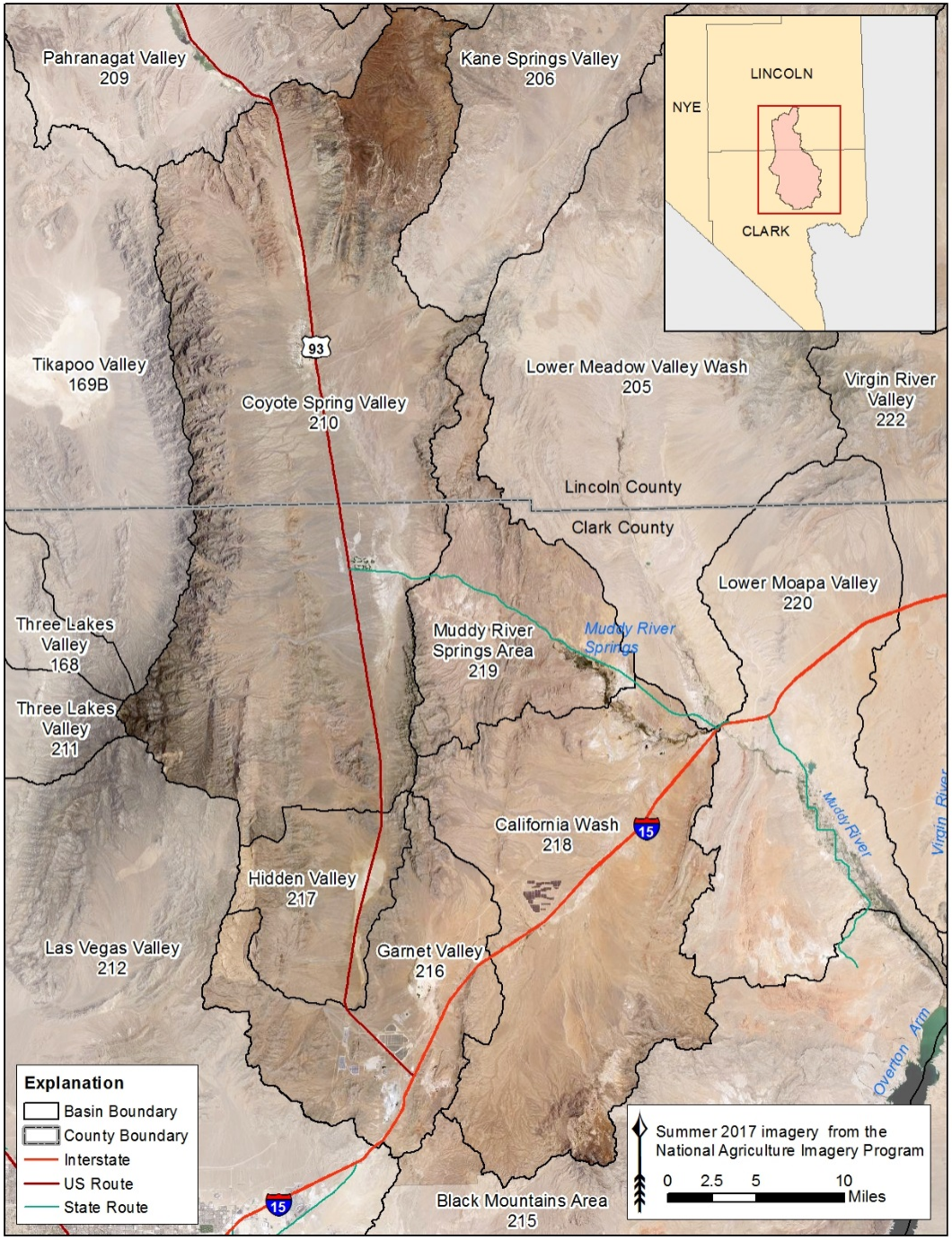
Lower White River Flow System

Domestic Wells

Southern Nevada Water Authority Development Project

Humboldt River Conjunctive Management

Lower White River Flow System



5+ basins underlain by highly transmissive carbonate aquifer

Discharge is the headwaters of the fully decreed Muddy River

40,000 acre-feet of groundwater appropriations, 9,000 acre-feet in use

Planned development projects in Coyote Spring Valley and the Apex industrial area

Hearing in October 2019, decision in mid-2020

Domestic Wells

- State Engineer vs. Pahrump Fair Water, LLC
  - Tests the State Engineer's authority to regulate the drilling of new domestic wells in an over-appropriated, statutorily "designated" basin.
- State Engineer's Order 1293A – Prohibits the Drilling of New Domestic Wells
- Pahrump, Nye County, Basin 162
- November 5, 2019 - Oral arguments in front of the Nevada Supreme Court
- Awaiting Nevada Supreme Court decision

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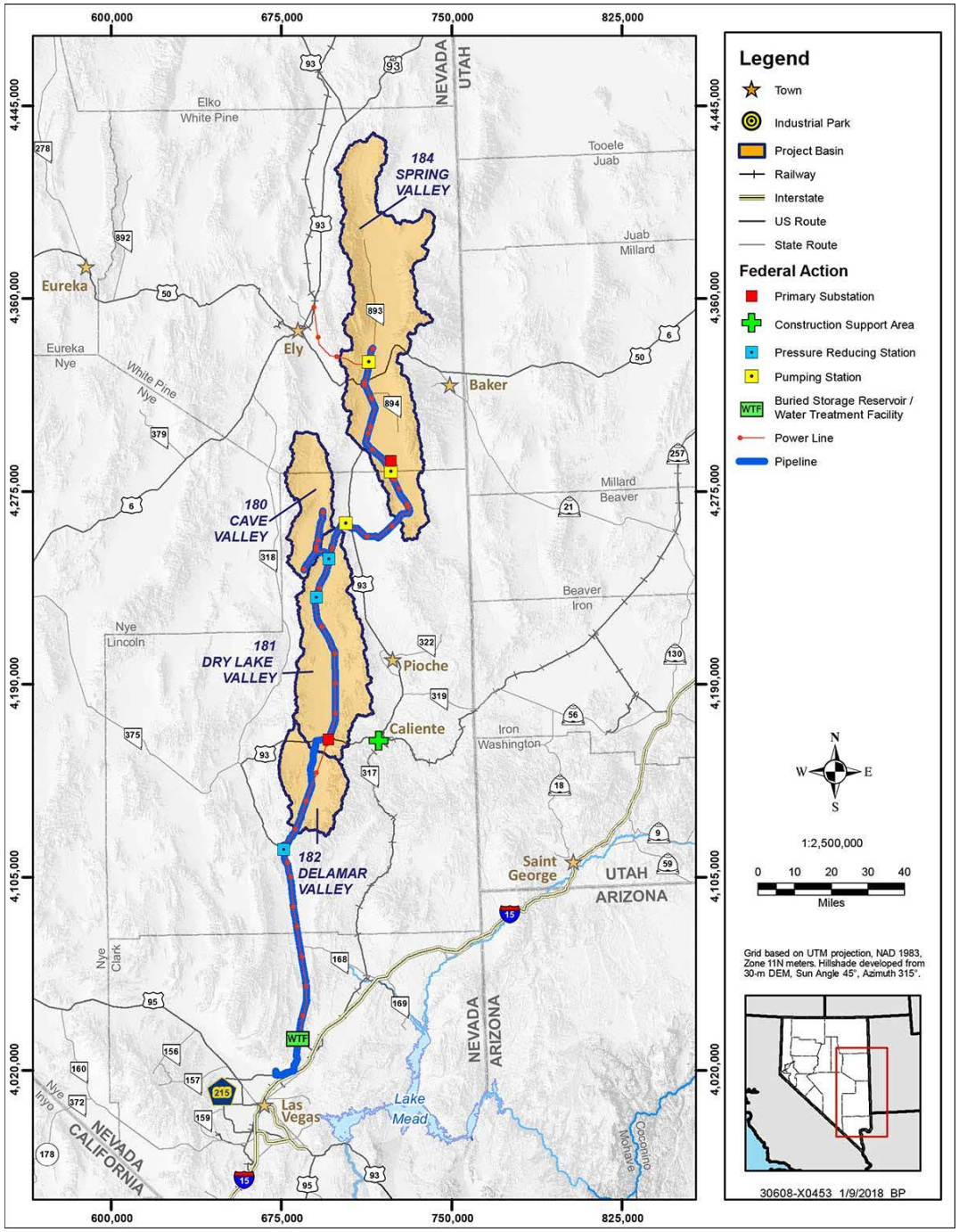


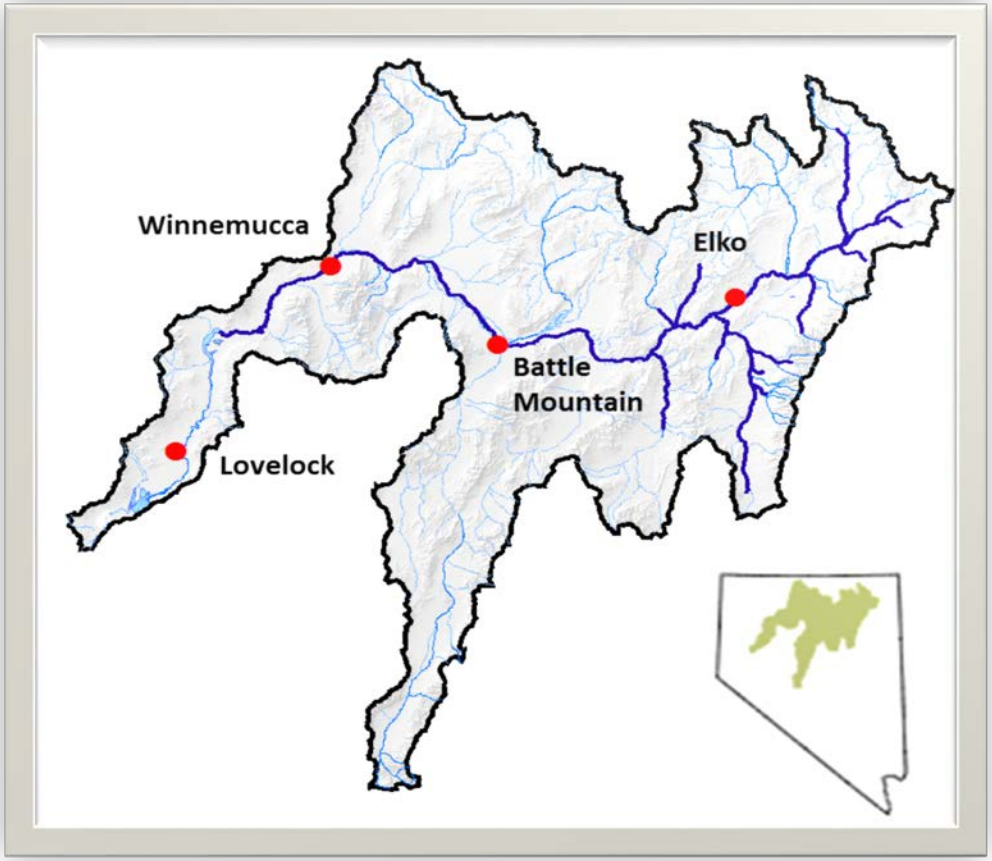
Southern Nevada Water Authority Groundwater Development Project

147 applications in 27 basins filed in 1989

Recent hearings in Spring, Cave, Dry Lake, Delamar Valleys

Project no longer being pursued

Humboldt River Conjunctive Management



The effect of pumping on streamflow may be very small, attenuated over a long time, and difficult to distinguish from drought or climate change

On-going modeling efforts with DRI and the USGS to quantify impacts in the Humboldt

Can the state and the water users develop a conjunctive management plan that is equitable, realistic, and in compliance with Nevada water law?

Summary

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- ✓ **Consistency is Critical**: Contemporary water law/policy must be clear, science-based, and applied consistently.
- ✓ **Misinformation is rampant**. All policymakers must help keep discussions fact based.
- ✓ **New Water Laws.** Must be done delicately by focusing on new management tools without upending decades of decisions.
- ✓ **Ability to Adapt.** Must adapt to new paradigms due to the ongoing pandemic and climate change.
- ✓ **We're all in this together!** Everyone has a role in managing NV's limited water supply.

Questions?

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