Challenges Restoring Springs on Public Lands in Nevada

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Background

Spring: Where groundwater flows to the surface

In Southern Nevada/Eastern Mojave Desert springs are an important source of water

Springs sustain unique aquatic, riparian and phreatophytic ecosystems

Historically important to Native American Indians, pioneers, miners, settlers and modern residents (farmers and ranchers)

Major cities grew close to spring systems (i.e. Las Vegas, Pahrump)

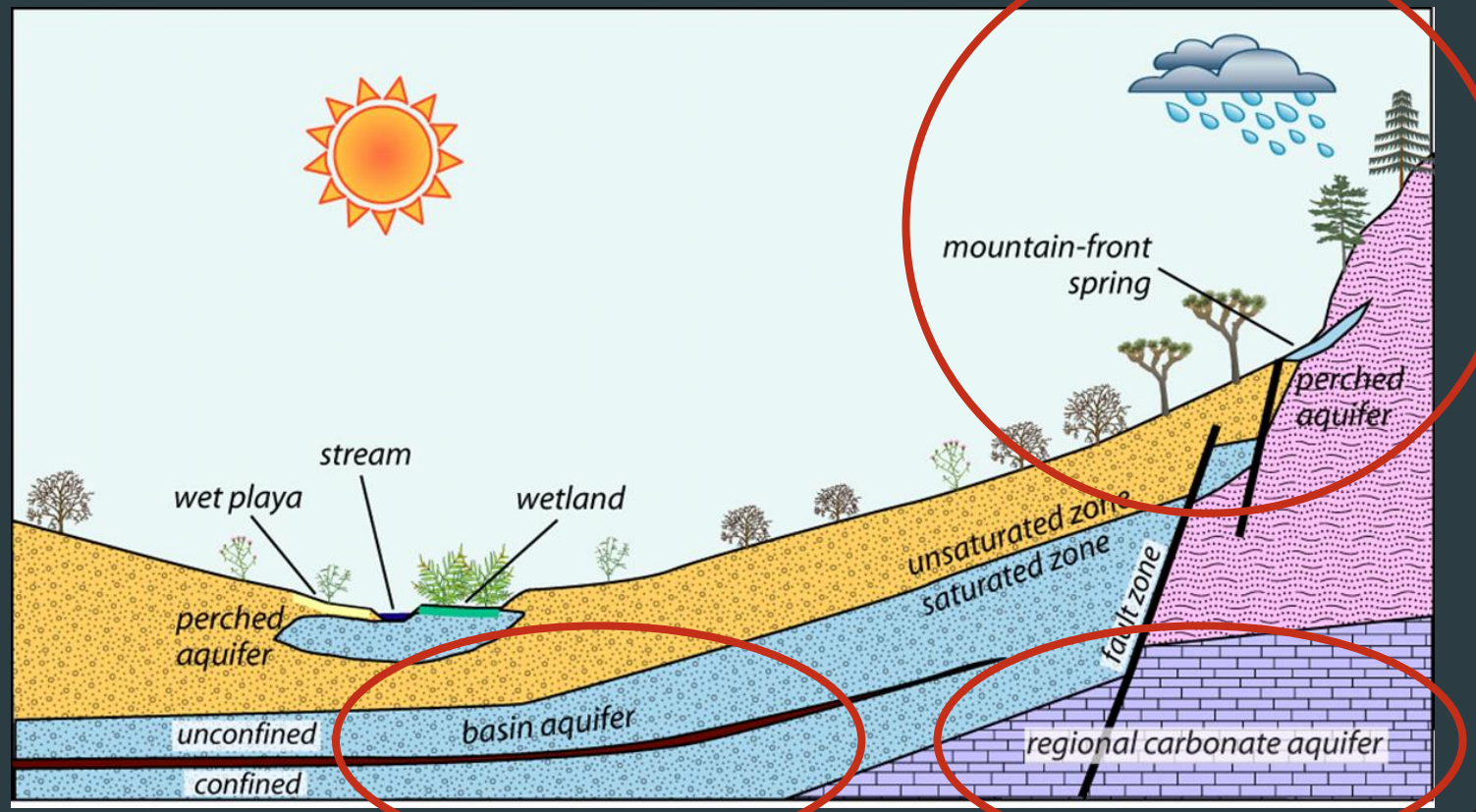
Spring Definitions

- ***Artificial Lakes*** *- Quarry/Pit Mine Lakes, Dammed drainages that are filled with groundwater from a perched aquifer or collected run-off and provide surface water year-round.*
- **Cave** – Emergence in a cave – *(i.e. Grapevine Spring)*
- **Exposure** – Groundwater is exposed at the land surface but does not flow. *(i.e. Devils Hole)*
- **Fountain** – Artesian fountain form. *(i.e. Manse Spring)*
- ***Hand-dug Wells*** *- Perched aquifers that have been exposed by historic human development and provide surface water to wildlife at least some of the time (i.e. Summit Spring)*
- **Hanging garden** – Dripping flow emerges usually horizontally along a geologic contact. *(i.e. ERG-1 Lower)*
- **Helocrene** – Emerges from low-gradient wetlands; often indistinct or multiple sources. *(i.e. Red Rock Spring)*
- **Hillslope** – Emerges from a hillslope (30-60° slope); often indistinct or multiple sources. *(i.e. Quail Spring)*
- **Hypocrene** – A buried spring where flow does not reach the surface. *This includes Adits and Qanats as well as collapsed qanats, adits.*
- **Limnocrene** – Emergence in pools. *(i.e. Horse Spring, Lost Creek Spring)*
- **Rheocrene - lotic channel floor** – Flowing spring, emerges directly into one or more *stream channels. (i.e. Rainbow Spring, Ki-up Spring, Bear Paw Poppy Spring)*
- ***Tenaja*** *- A natural deep pool in the bedrock which collects run-off and provides surface water for wildlife most of the year. (i.e. Indian Gardens)*

Green – Can be restored

Types of Aquifers and Springs

Climate Change



Groundwater Pumping

Water Rights

- The BLM recognizes the primary role of individual states in the management of surface and groundwater resources. BLM does not perform or attempt to perform the same management activities that state water regulatory entities perform, with respect to the allocation of water and or water rights. BLM considers water, both surface and groundwater, within the broader context of all resources on BLM administered lands and their interaction as they relate to BLM responsibilities.
- While the allocation of water for activities, such as development, mining and power generation, is a state function, the prevention of adverse environmental impacts from these BLM authorized uses is an agency responsibility as required by the National Environmental Policy Act.

Nevada Water Law

NRS 533.010 a “Person” is defined: “Person” includes the United States, this State and any political subdivision of this State.

NRS 533.025 states that water belongs to public, which means the water of all sources of water supply within the boundaries of the State whether above or beneath the surface of the ground, belongs to the public.

Resource Management Plan Directions

Improve	RP-1-b: Improve riparian areas, giving priority to areas Functioning at Risk with a downward trend. Implement measures to protect riparian areas, such as fencing and/or alternate water sources away from riparian areas.
Ensure	PR-1-c: Ensure that the minimum requirement of Proper Functioning Condition on all riparian areas is maintained or achieved.
Do not allow	RP-1-d: Do not allow competitive off-road vehicle events with 0.25 mile of natural water sources and associated riparian areas.
Retain	RP-1-e: Retain riparian and mesquite woodlands in Federal ownership, unless their disposal is in the public interest.

Threatened and Endangered Species & Special Status Species

- Spring Snails
- Relict Leopard Frog
- Ash Meadows Rare plants
- Bear Paw Poppy

Spring Impacts (that BLM has control over)

- Recreation (racecourse location, OHV access)
- Relict diversions (domestic, mining or ranching)

Spring Impacts (that BLM has control over)

- Wild Horse and Burro
- Grazing and Range “Improvements”
- Illegal Grazing and other legal activities (such as unauthorized spring modification)

Management Activities

- Fencing
- Habitat modification (Pools for snails and frogs)

Vegetation Management

- Restore biodiversity
- Enhance Riparian and Aquatic Ecology
- Manage Invasive Species

Monitoring

- PFC
- Spring snail surveys
- USGS Stream gages, ET studies, groundwater flow models

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Collaboration & Funding Sources

- SNPLMA
- Assistance agreements UNLV, GB, FNW

Restoring Springs/Altering Springs

- National Environmental Protection Act
- Public Scoping Meetings

Questions