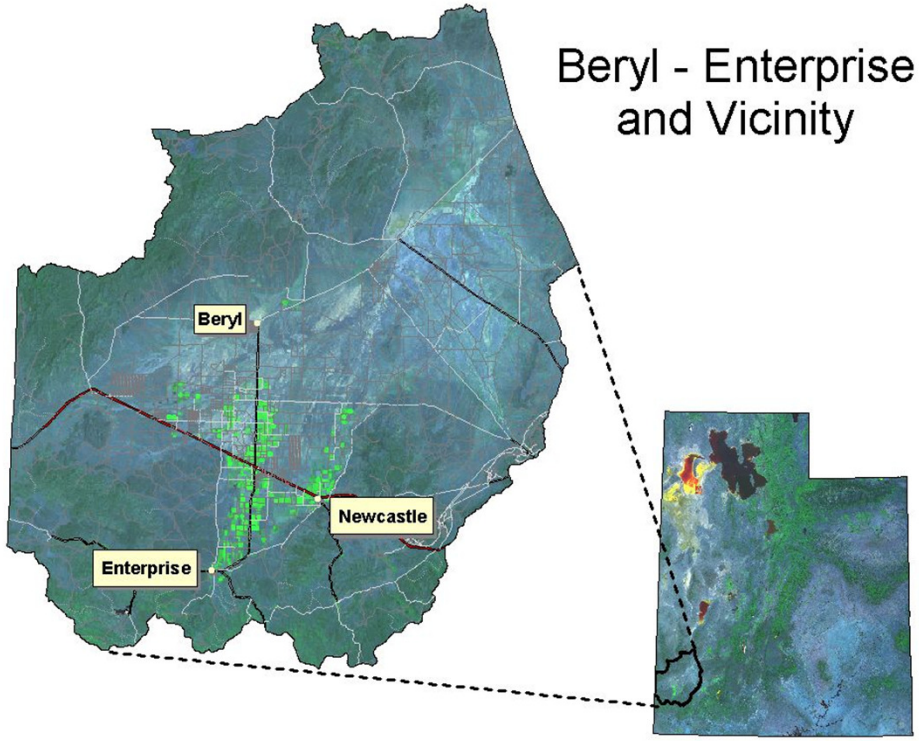
Ground-Water Management Plan
Beryl Enterprise Area



2011

Kent Jones, Utah
Presentation at the AWSE annual meeting: Groundwater panel

(3) (a) In **developing a groundwater management plan**, the state engineer may consider:

- (i) the hydrology of the groundwater basin;
- (ii) the physical characteristics ….;
- (iii) the relationship between surface water and groundwater, ….;
- (iv) the geographic spacing and location of groundwater withdrawals;
- (v) water quality;
- (vi) local well interference; and
- (vii) other relevant factors.

(2) (a) The state engineer may **regulate groundwater** withdrawals within a specific groundwater basin by **adopting a groundwater management plan** ….

(b) The **objectives** of a groundwater management plan are to:

(i) **limit** groundwater withdrawals to **safe yield**;

(ii) **protect the physical integrity** of the aquifer; and

(iii) **protect water quality.**

- **3 (b) The state engineer shall base the provisions of a groundwater management plan on the principles of prior appropriation.**

4 (b) When adopting a groundwater management plan for a critical management area, the state engineer shall, based on economic and other impacts to an individual water user or a local community caused by the implementation of safe yield limits on withdrawals, allow gradual implementation of the groundwater management plan.

Section 73-5-15
Ground-Water Management Plan

Definitions

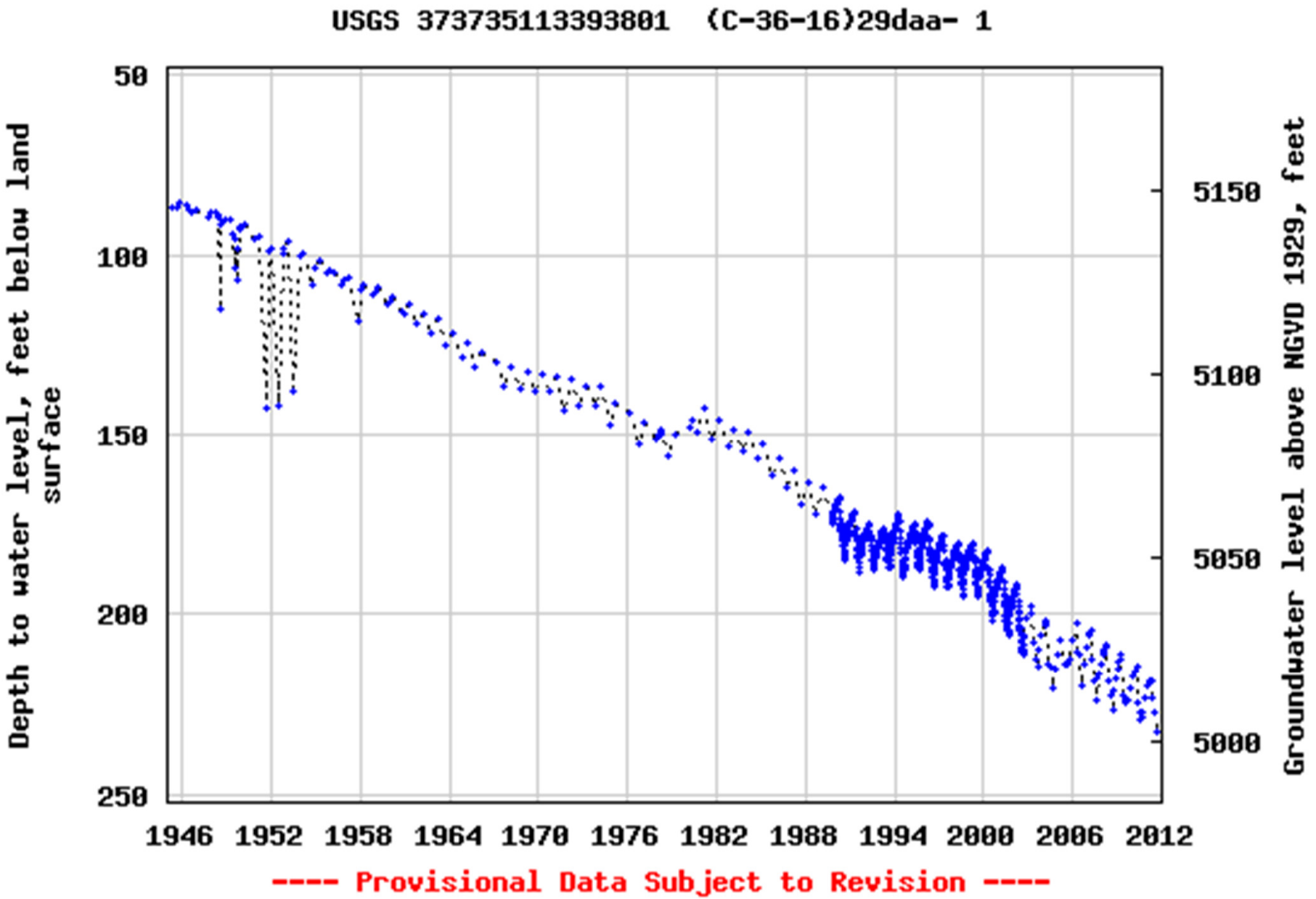
(1) As used in this section:

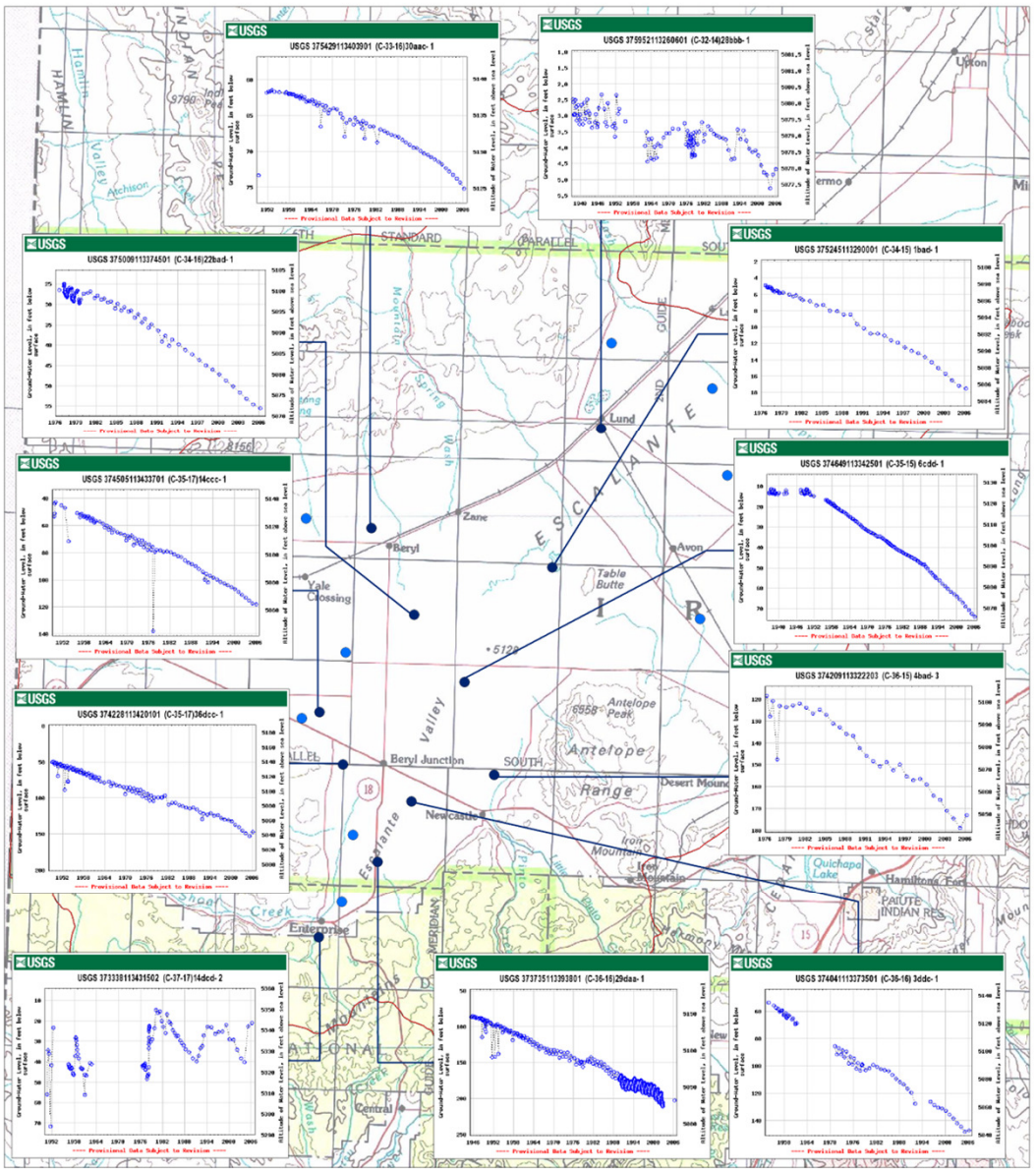
(a) "Critical management area" means a groundwater basin in which the groundwater withdrawals consistently exceed the safe yield.

(b) "Safe yield" means the amount of groundwater that can be withdrawn from a groundwater basin over a period of time without exceeding the long-term recharge of the basin or unreasonably affecting the basin's physical and chemical integrity.

Other provisions:

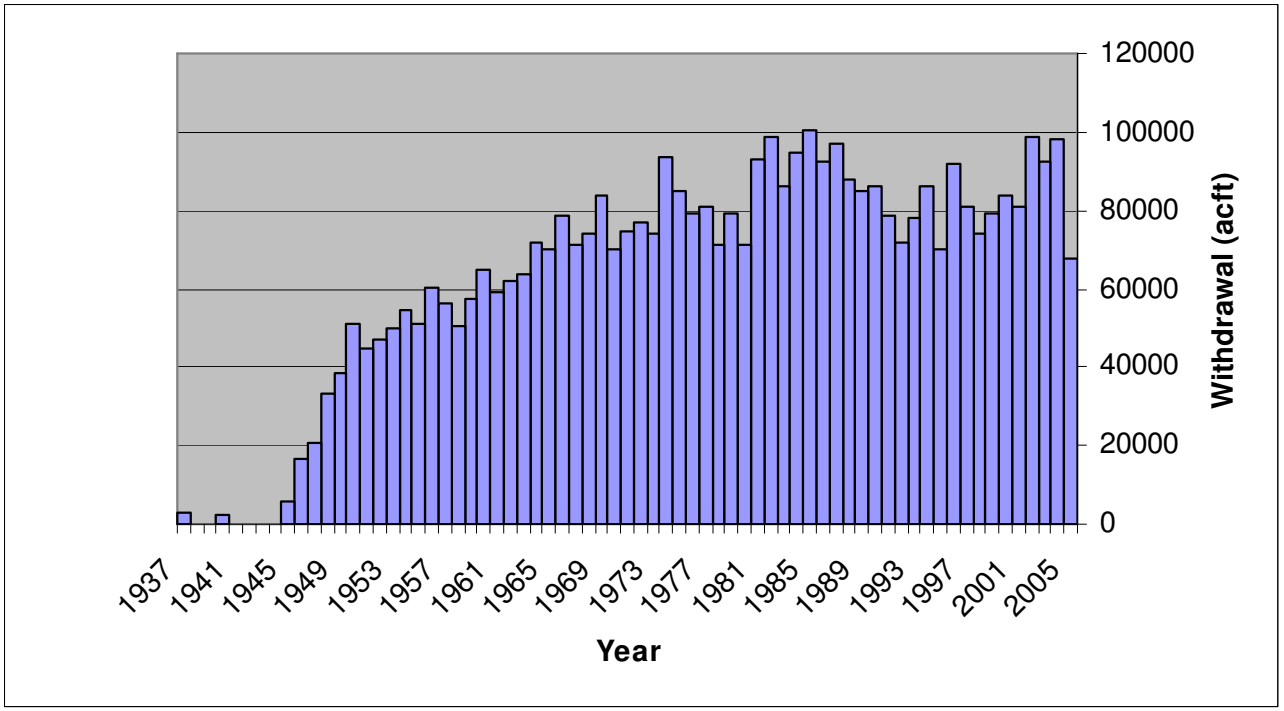
- Voluntary arrangement by water users
- Public notice and involvement
- Effective date plan
- Notice of the final plan
- Amending a plan
- Filing an appeal
- Exempt from rulemaking
- Existing plans recognized


USGS 373735113393801 (C-36-16)29daa- 1
Depth to water level, feet below land surface
50
100
150
200
250
Groundwater level above NGVD 1929, feet
5150
5100
5050
5000
1946
1952
1958
1964
1970
1976
1982
1988
1994
2000
2006
2012
---- Provisional Data Subject to Revision ----



USGS Observation Wells in the Beryl / Enterprize area

Groundwater Development



- Irrigation wells began being developed as early as 1919
- 1937 an estimated 3,000 acft of water was being pumped for irrigation.
- 1945 withdrawals increase sharply now reaching an average annual discharge rate of 85,000 acft

Summary

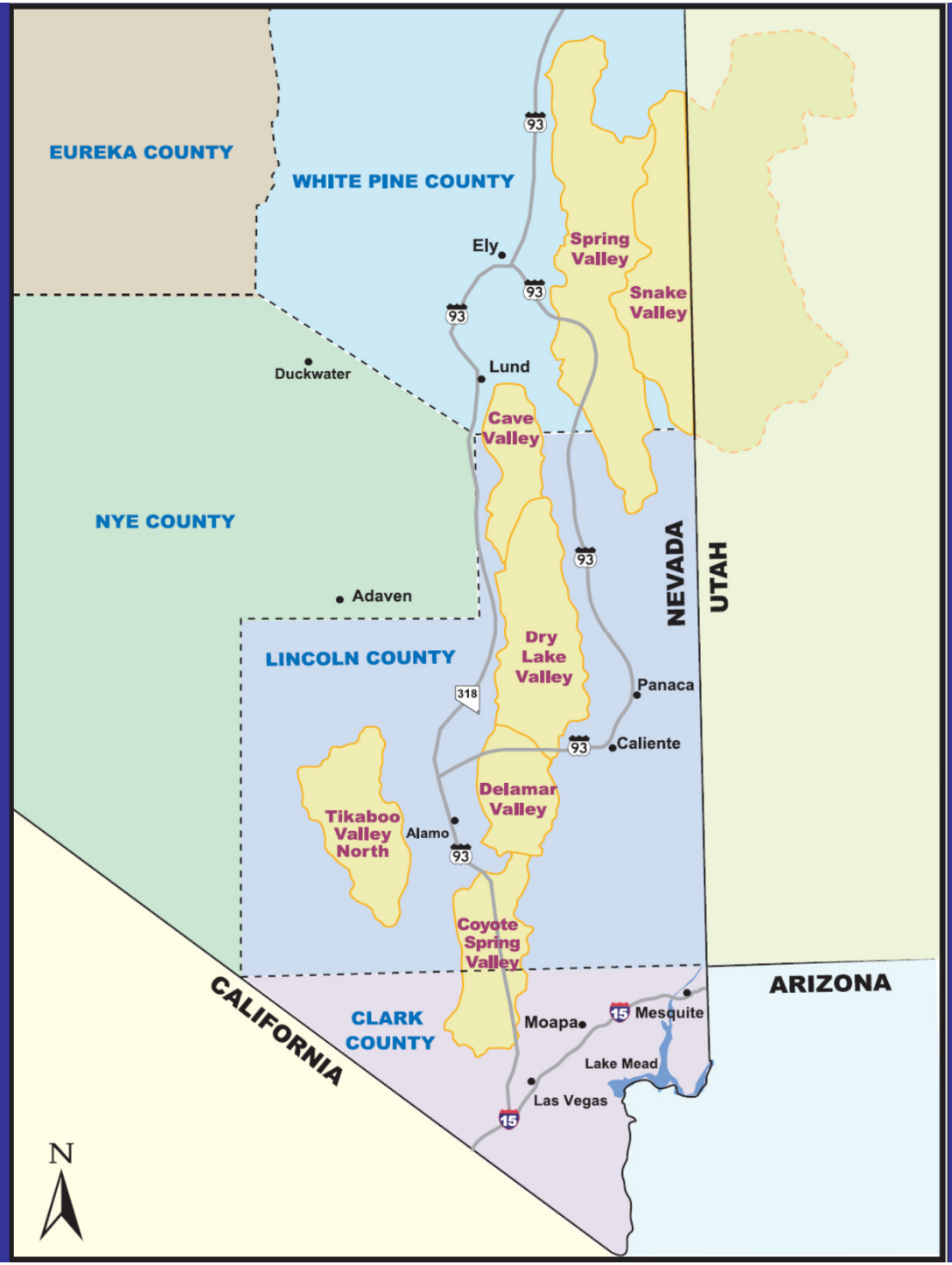
- **Average Annual Depletion - 65,000 acft**
- **Safe Yield - 34,000 acft**
- **Reductions Required - 31,000 acft**

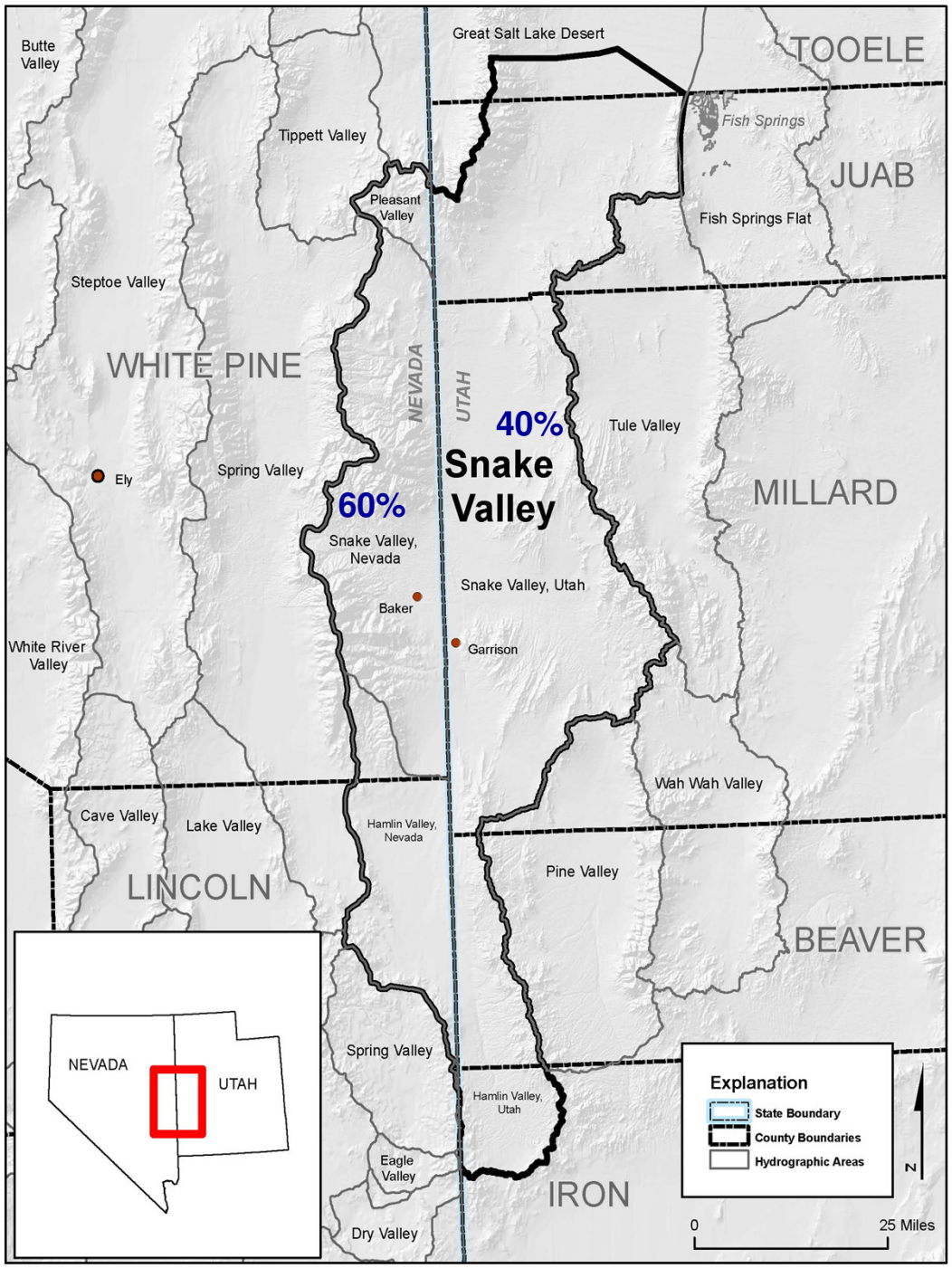
  48%

Reduction Schedule

Phase	Percent Reduction	Acre Feet Reduction*	Cumulative Percent	Cumulative Acre Feet	Time Frame	Required Reduction Date
	5 %	3,250 acft	5 %	3,250 acft		Oct. 31, 2030
1	5 %	3,250 acft	10 %	6,500 acft	20 yr	Oct. 31, 2050
	5 %	3,250 acft	15 %	9,750 acft	10 yr	Oct. 31, 2060
	5 %	3,250 acft	20 %	13,000 acft	10 yr	Oct. 31, 2070
	5 %	3,250 acft	25 %	16,250 acft	10 yr	Oct. 31, 2080
	5 %	3,250 acft	30 %	19,500 acft	10 yr	Oct. 31, 2090
	5 %	3,250 acft	35 %	22,750 acft	10 yr	Oct. 31, 2100
	5 %	3,250 acft	40 %	26,000 acft	10 yr	Oct. 31, 2110
	5 %	3,250 acft	45 %	29,250 acft	10 yr	Oct. 31, 2120
2	3 %	1,750 acft	48 %	31,000 acft	10 yr	Oct. 31, 2130

Utah/Nevada Ground-Water Apportionment and Protection Agreement


EUREKA COUNTY
WHITE PINE COUNTY
NYE COUNTY
LINCOLN COUNTY
CLARK COUNTY
NEVADA
UTAH
ARIZONA
CALIFORNIA
Ely
Duckwater
Lund
Adaven
Panaca
Caliente
Alamo
Moapa
Mesquite
Lake Mead
Las Vegas
Spring Valley
Snake Valley
Cave Valley
Dry Lake Valley
Delamar Valley
Tikaboo Valley North
Coyote Spring Valley
93
318
15
N

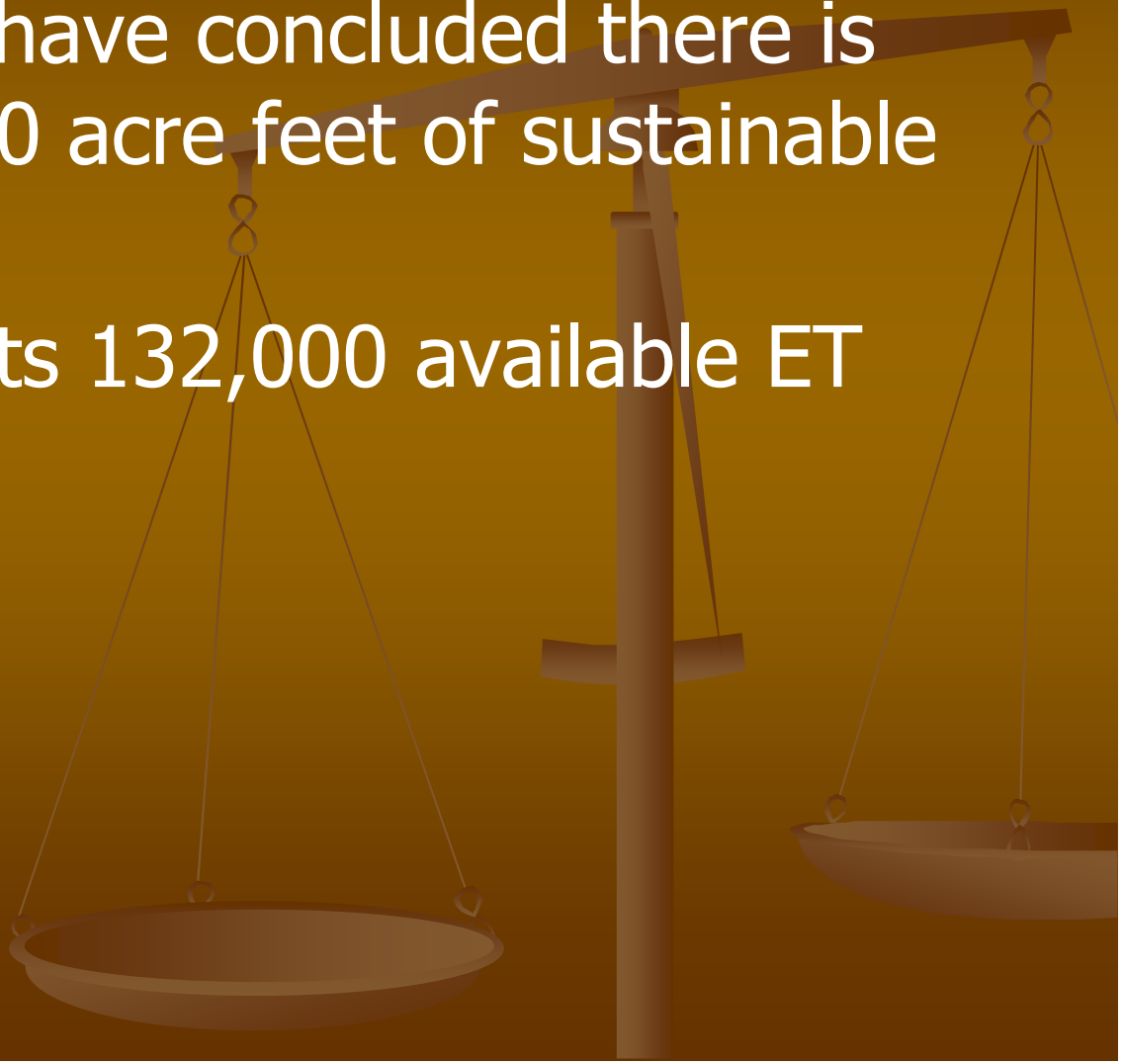

Great Salt Lake Desert
TOOELE
Butte Valley
Tippett Valley
Fish Springs
JUAB
Pleasant Valley
Fish Springs Flat
Steptoe Valley
WHITE PINE
NEVADA
UTAH
40%
Tule Valley
Snake Valley
MILLARD
Ely
Spring Valley
60%
Snake Valley, Nevada
Snake Valley, Utah
Baker
Garrison
White River Valley
Wah Wah Valley
Cave Valley
Lake Valley
Hamlin Valley, Nevada
Pine Valley
LINCOLN
BEAVER
NEVADA
UTAH
Spring Valley
Hamlin Valley, Utah
Eagle Valley
IRON
Dry Valley
Explanation
State Boundary
County Boundaries
Hydrographic Areas
N
0
25 Miles

Lincoln County Conservation, Recreation, and Development Act of 2004

(3) Agreement.—Prior to any transbasin diversion from ground-water basins located within both the State of Nevada and the State of Utah, the State of Nevada and the State of Utah shall reach an agreement regarding the division of water resources of those interstate ground-water flow system(s) from which water will be diverted and used by the project. The agreement shall allow for the maximum sustainable beneficial use of the water resources and protect existing water rights.

What is Snake Valley's Sustainable Yield?

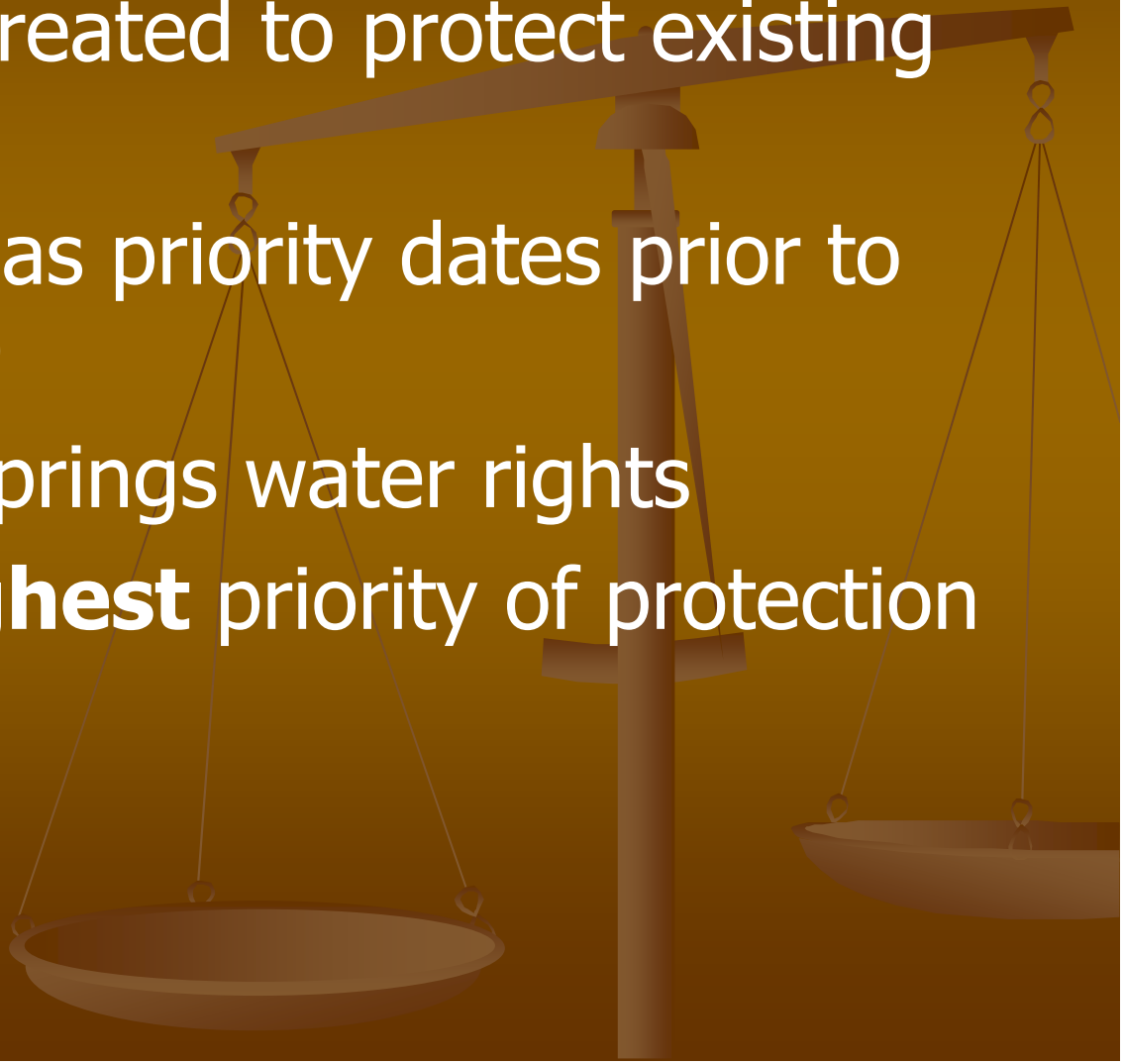
- Several studies have concluded there is 105,000-111,000 acre feet of sustainable yield
- BARCAS suggests 132,000 available ET




The agreement creates three categories of Snake Valley water

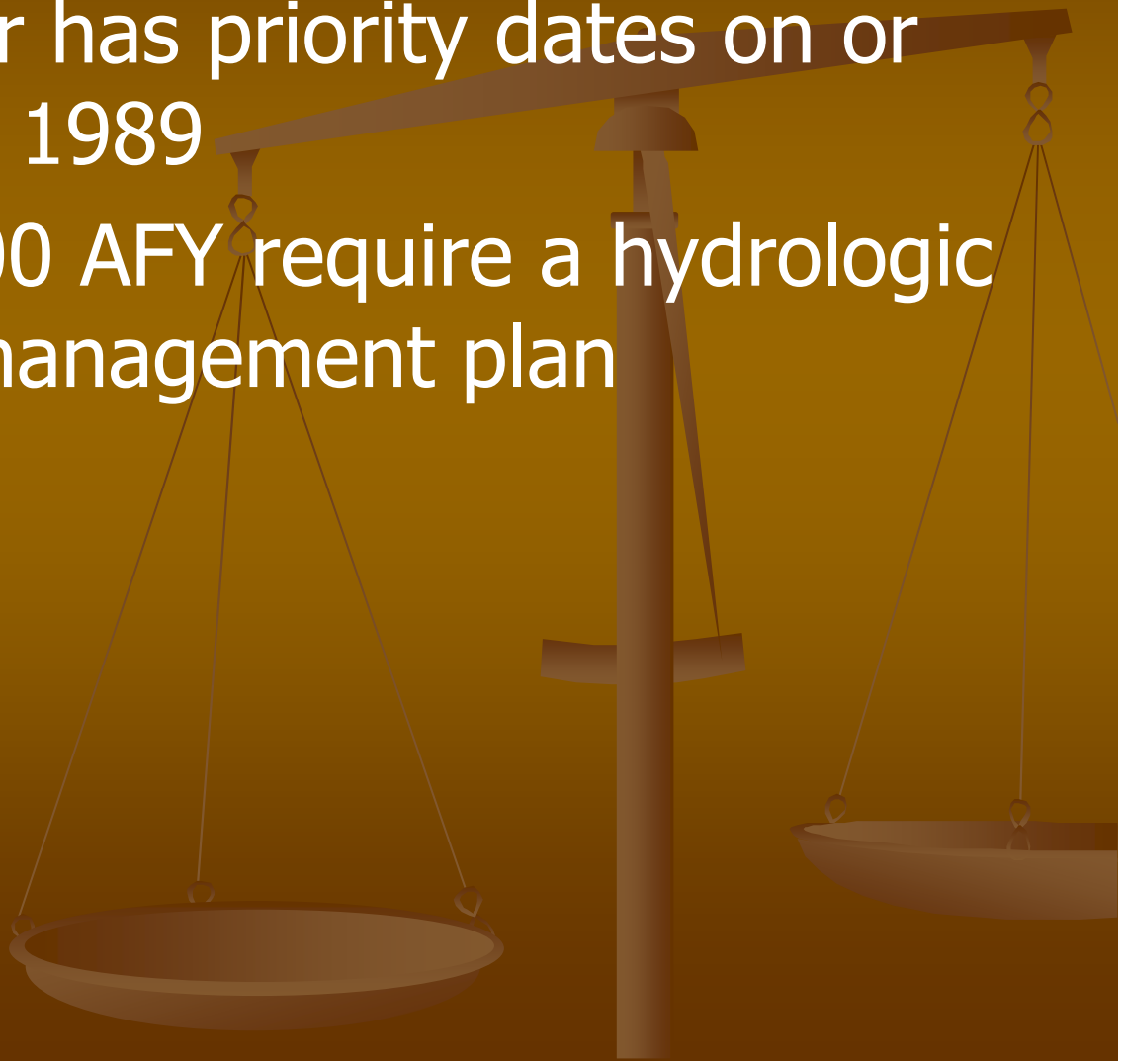
Category 1: Allocated

- Category 1 was created to protect existing rights
- Allocated water has priority dates prior to October 17, 1989
- It includes Fish Springs water rights
- Allocated has **highest** priority of protection



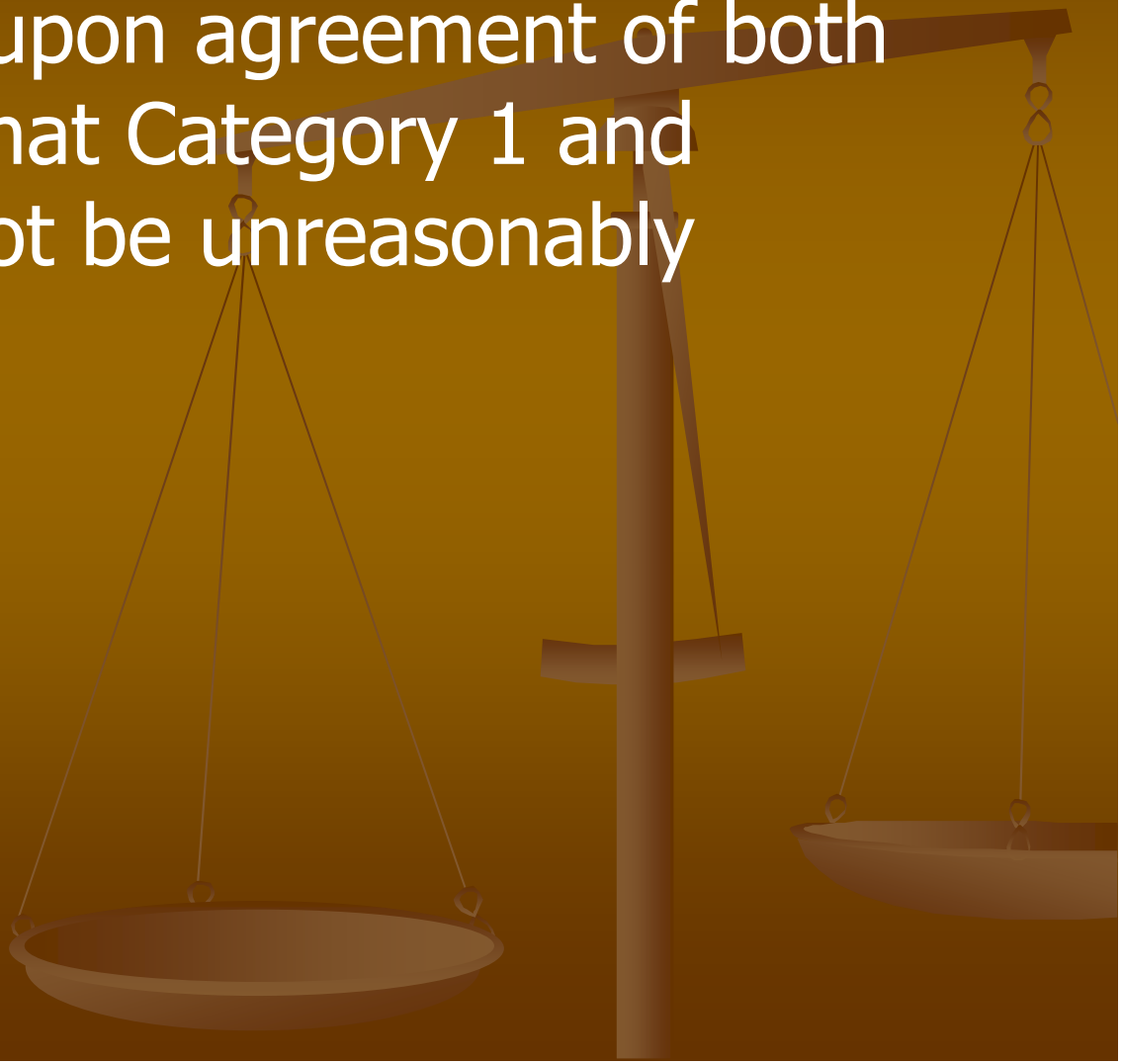
Category 2: Unallocated

- Unallocated water has priority dates on or after October 17, 1989
- Approvals of 1,000 AFY require a hydrologic monitoring and management plan



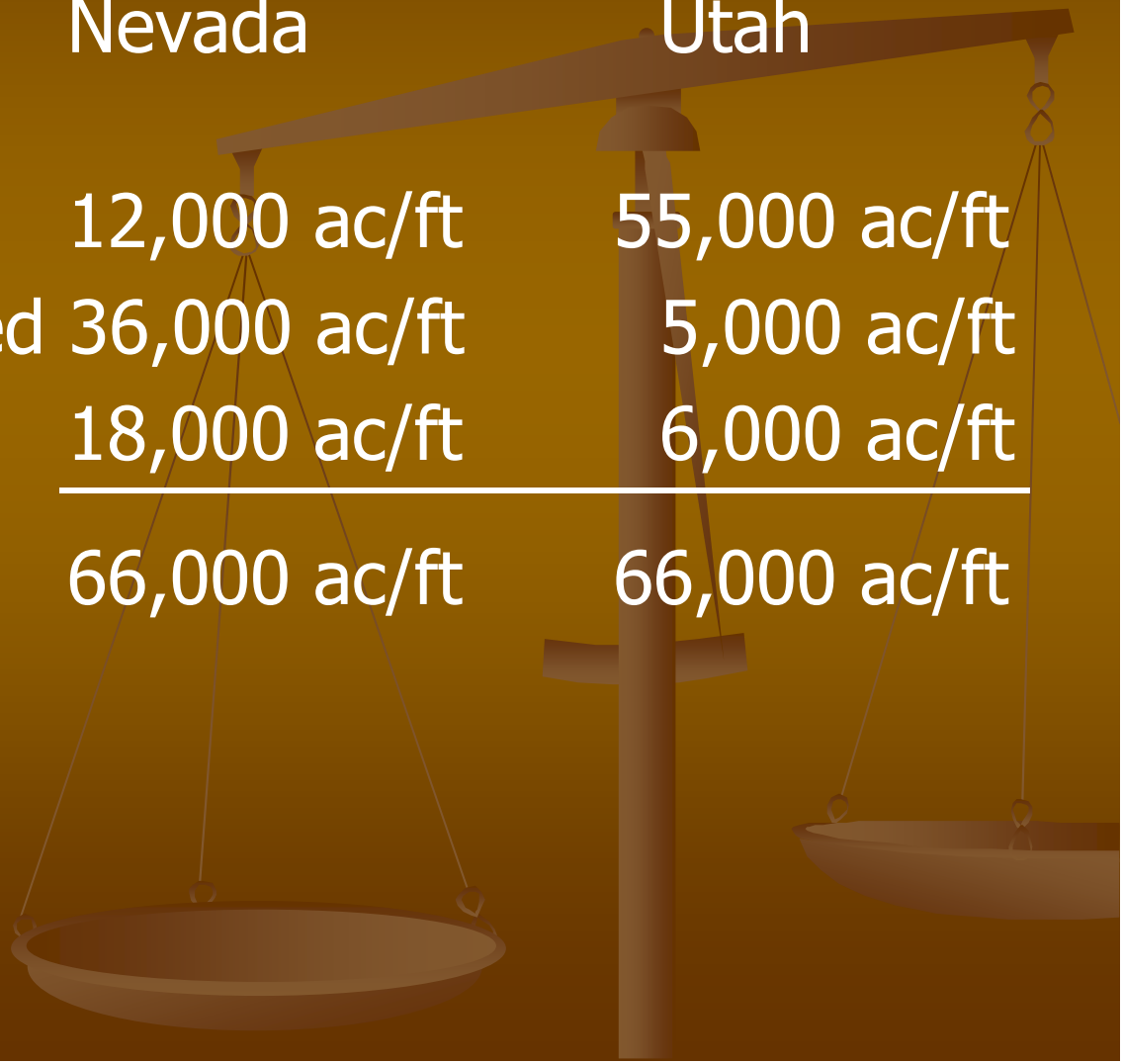
Category 3: Reserved

- Is only available upon agreement of both state engineers that Category 1 and Category 2 will not be unreasonably affected



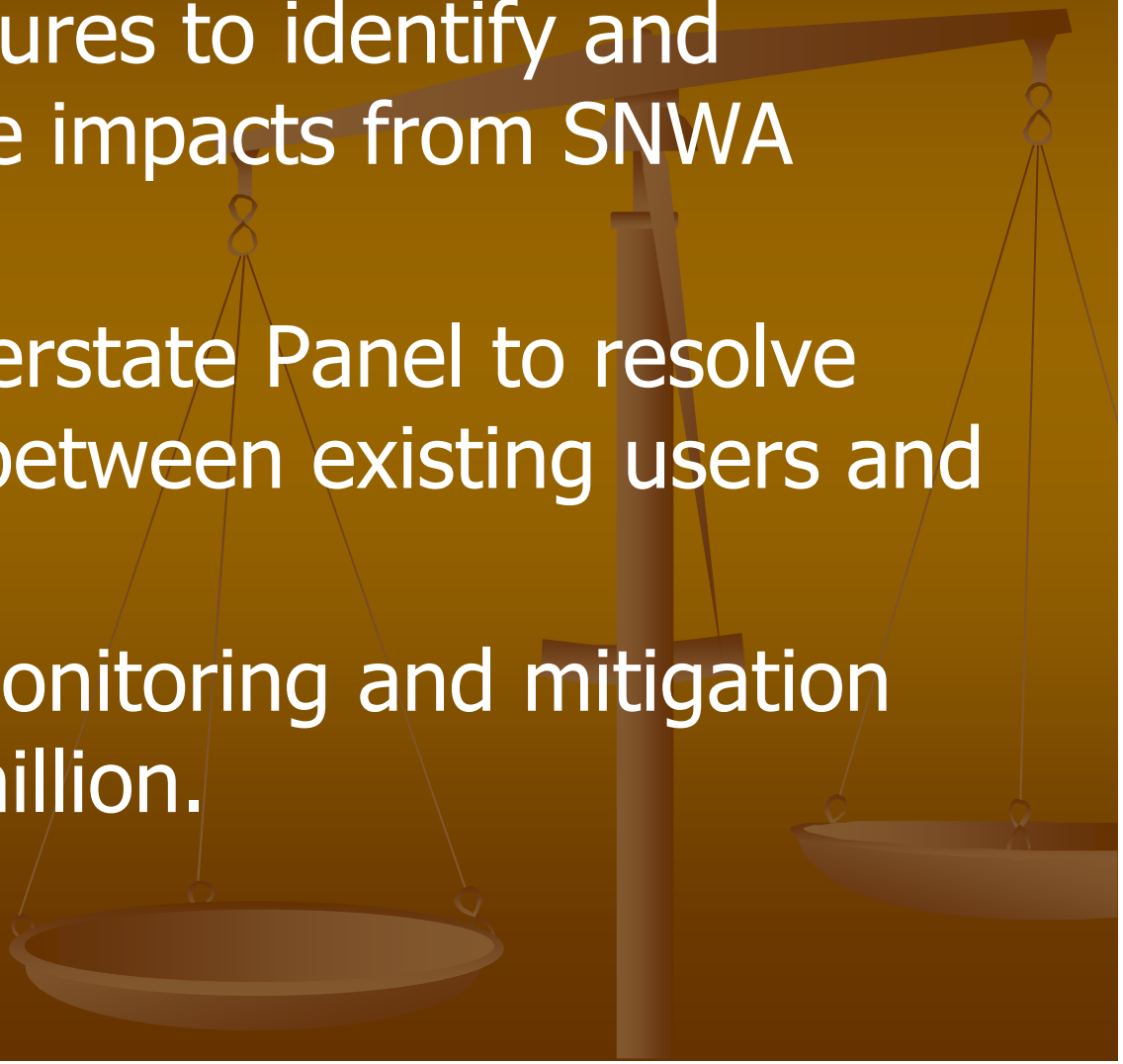
Proposed Water Division

	Nevada	Utah
Category 1-Allocated	12,000 ac/ft	55,000 ac/ft
Category 2-Unallocated	36,000 ac/ft	5,000 ac/ft
Category 3-Reserved	18,000 ac/ft	6,000 ac/ft
Total	66,000 ac/ft	66,000 ac/ft



Agreement protects existing users by:

- Creating procedures to identify and mitigate adverse impacts from SNWA withdrawals.
- Establishing Interstate Panel to resolve disputes rising between existing users and SNWA.
- Maintaining a monitoring and mitigation account of $3 million.



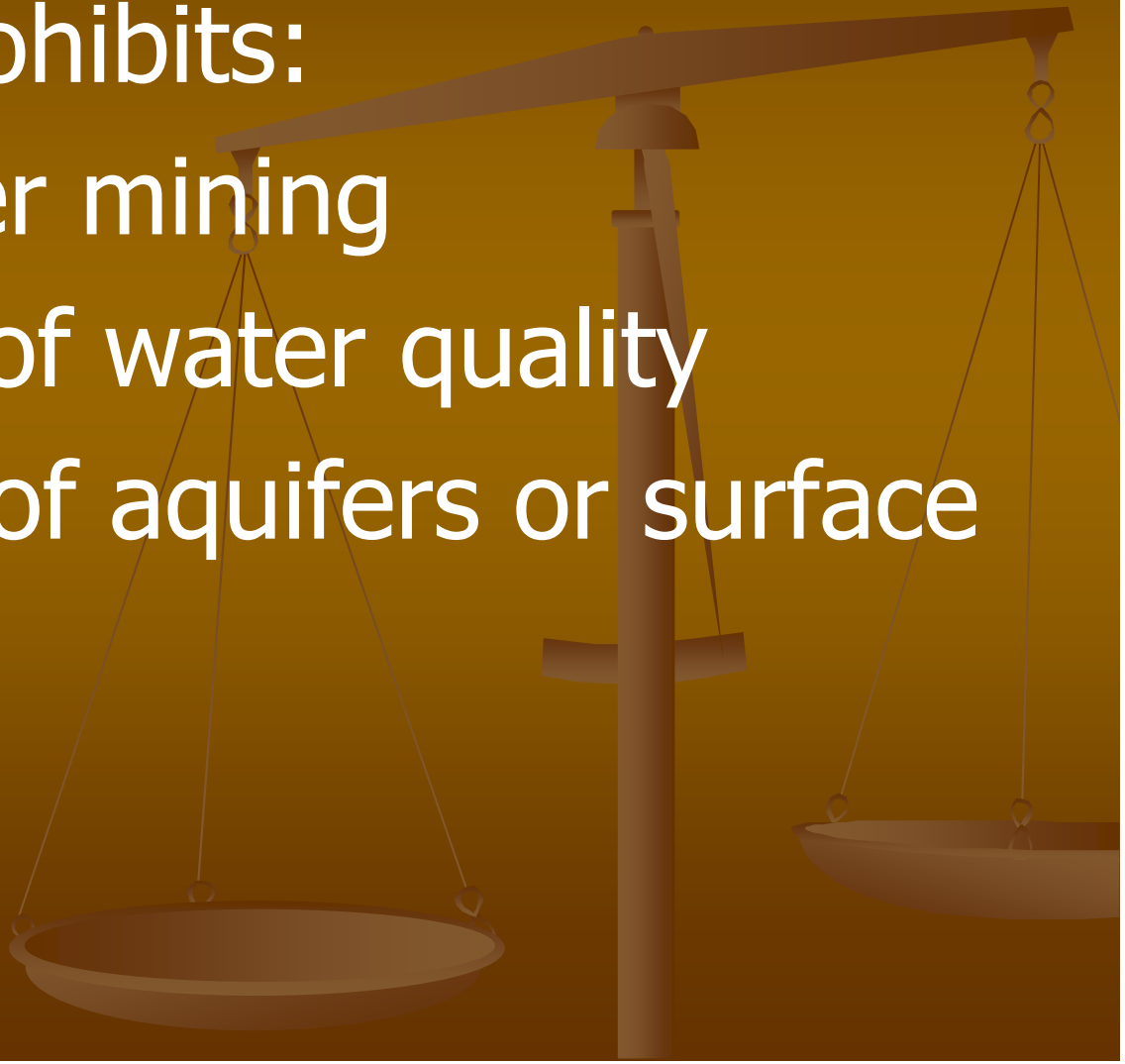
- The State Engineers will confer as necessary to evaluate water availability in light of new data.
- All collected data will be made available for public review.


Nevada agrees to hold SNWA Snake Valley water applications in abeyance until
September 2019.
Additional hydrologic and biologic data may be gathered before any decisions are made.

Section 5.4

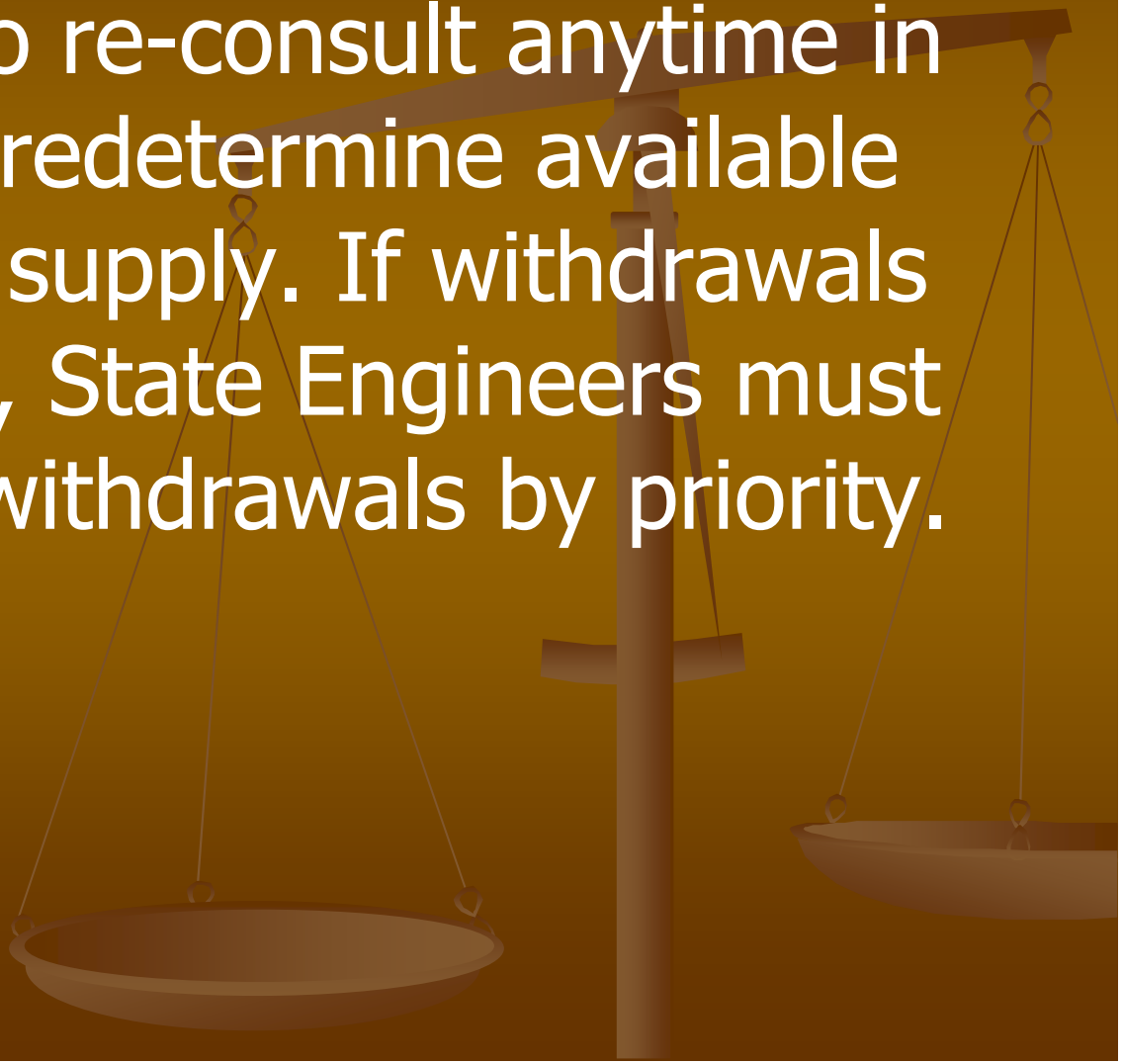
Agreement prohibits:

- Ground-water mining
- Impairment of water quality
- Compaction of aquifers or surface instability



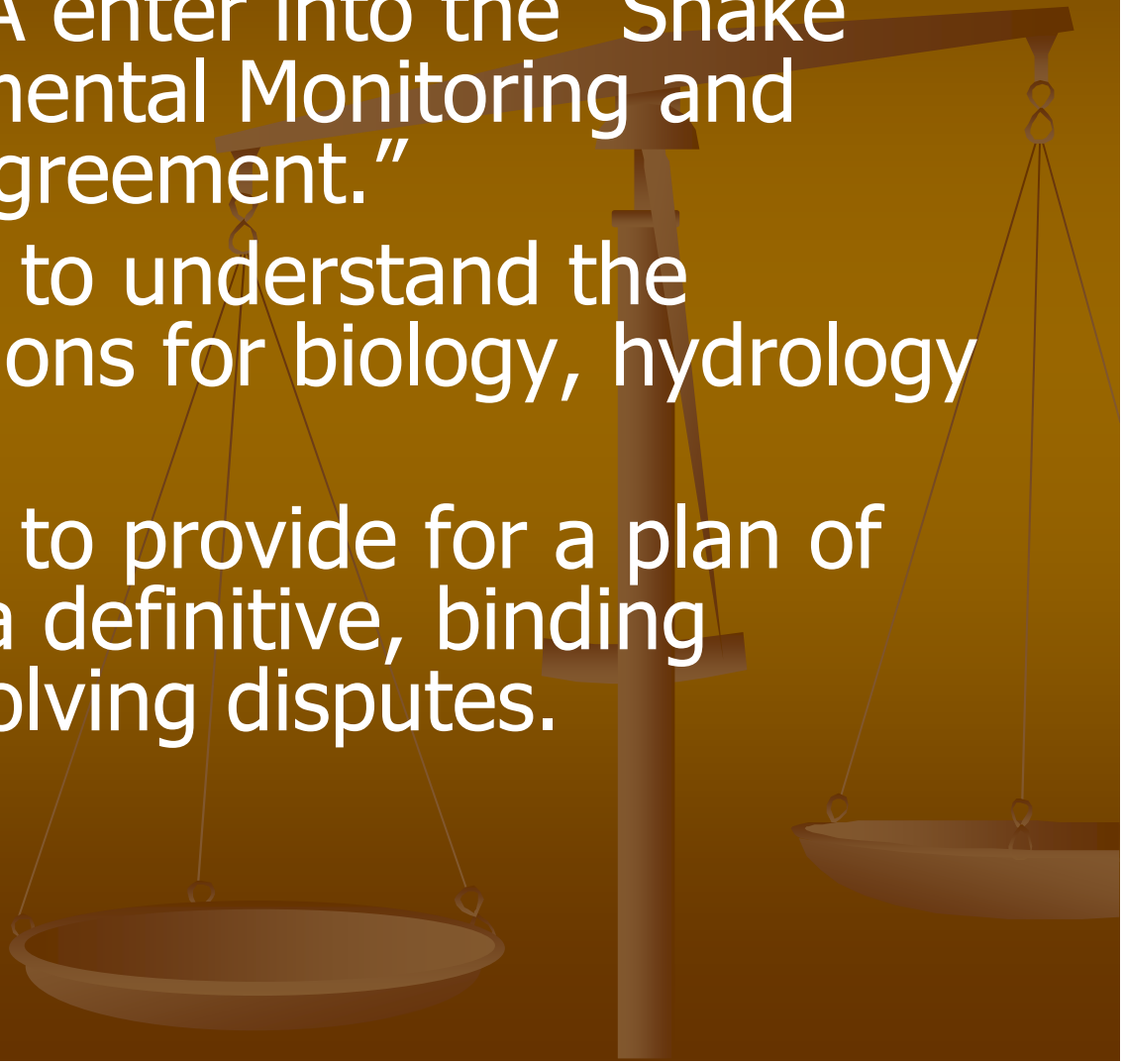
Section 5.4 (continued)

States agree to re-consult anytime in the future to redetermine available ground-water supply. If withdrawals exceed supply, State Engineers must act to reduce withdrawals by priority.



Environmental Agreement

- Utah and SNWA enter into the "Snake Valley Environmental Monitoring and Management Agreement."
- Objective #1 is to understand the baseline conditions for biology, hydrology and air quality.
- Objective #2 is to provide for a plan of operation and a definitive, binding process for resolving disputes.

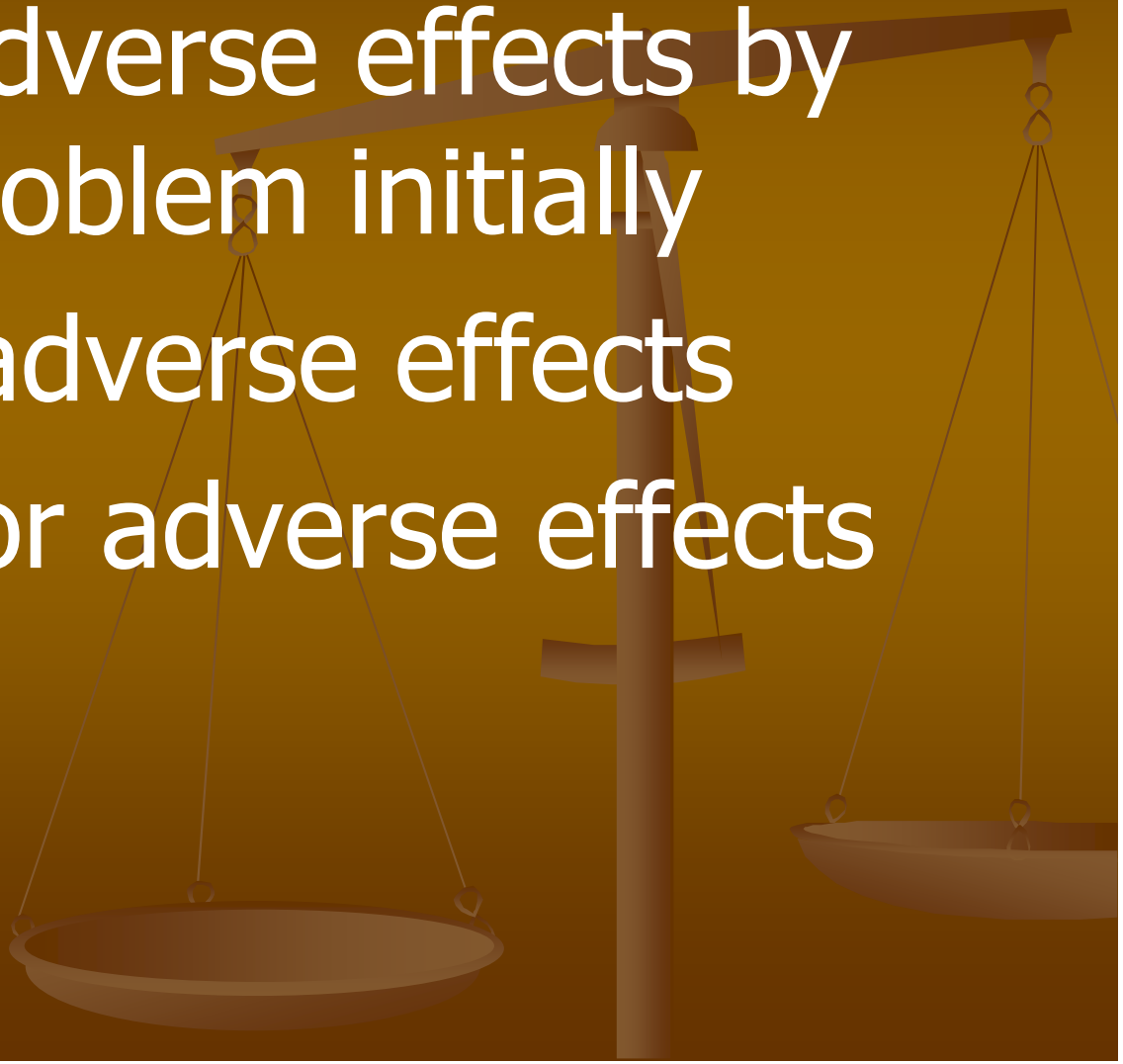


Environmental Agreement (continued)

Terms of this agreement become a condition of any water application approval made by Nevada State Engineer.

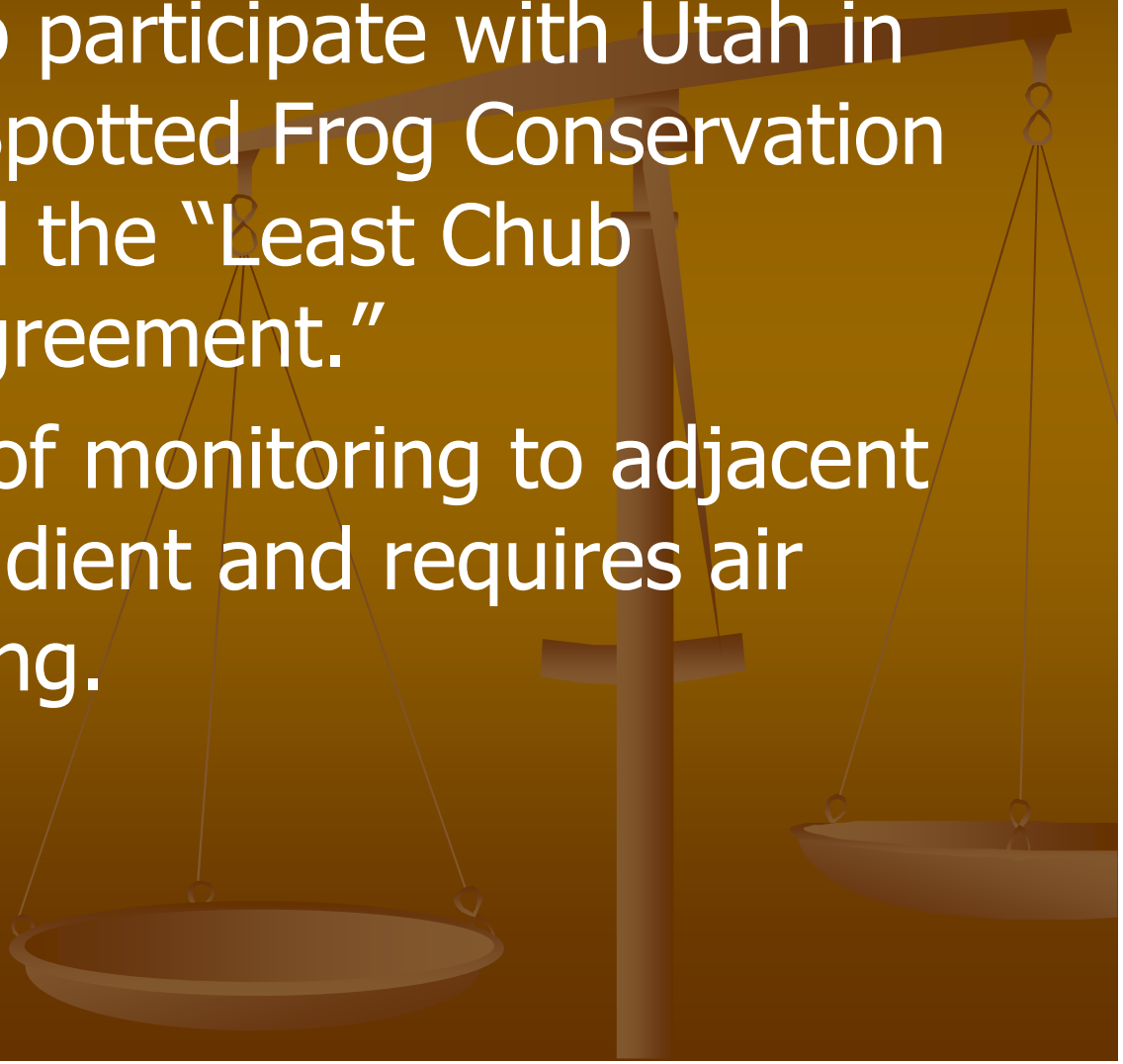
Environmental Agreement (continued)

- Counters adverse effects by avoiding problem initially
- Minimizes adverse effects
- Mitigates for adverse effects



Environmental Agreement (continued)

- SNWA agrees to participate with Utah in the "Columbia Spotted Frog Conservation Agreement" and the "Least Chub Conservation Agreement."
- Expands scope of monitoring to adjacent valleys downgradient and requires air quality monitoring.



Utah/Nevada Agreement:

LIMITS use of Snake Valley water resources 60,000 af (Utah) to 48,000 af (Nevada).

POSTPONES SNWA water right applications before the Nevada State Engineer until 2019.

DEFINES environmental protocol to protect air quality and sensitive species.

INCLUDES environmental protections in Utah as a condition of any SNWA water right granted by the Nevada State Engineer.

PROVIDES a simplified mitigation process for any Utah water user impacted by SNWA.

DOES NOT sell or give water to Las Vegas or authorize any Nevada pumping or pipeline in Utah.