

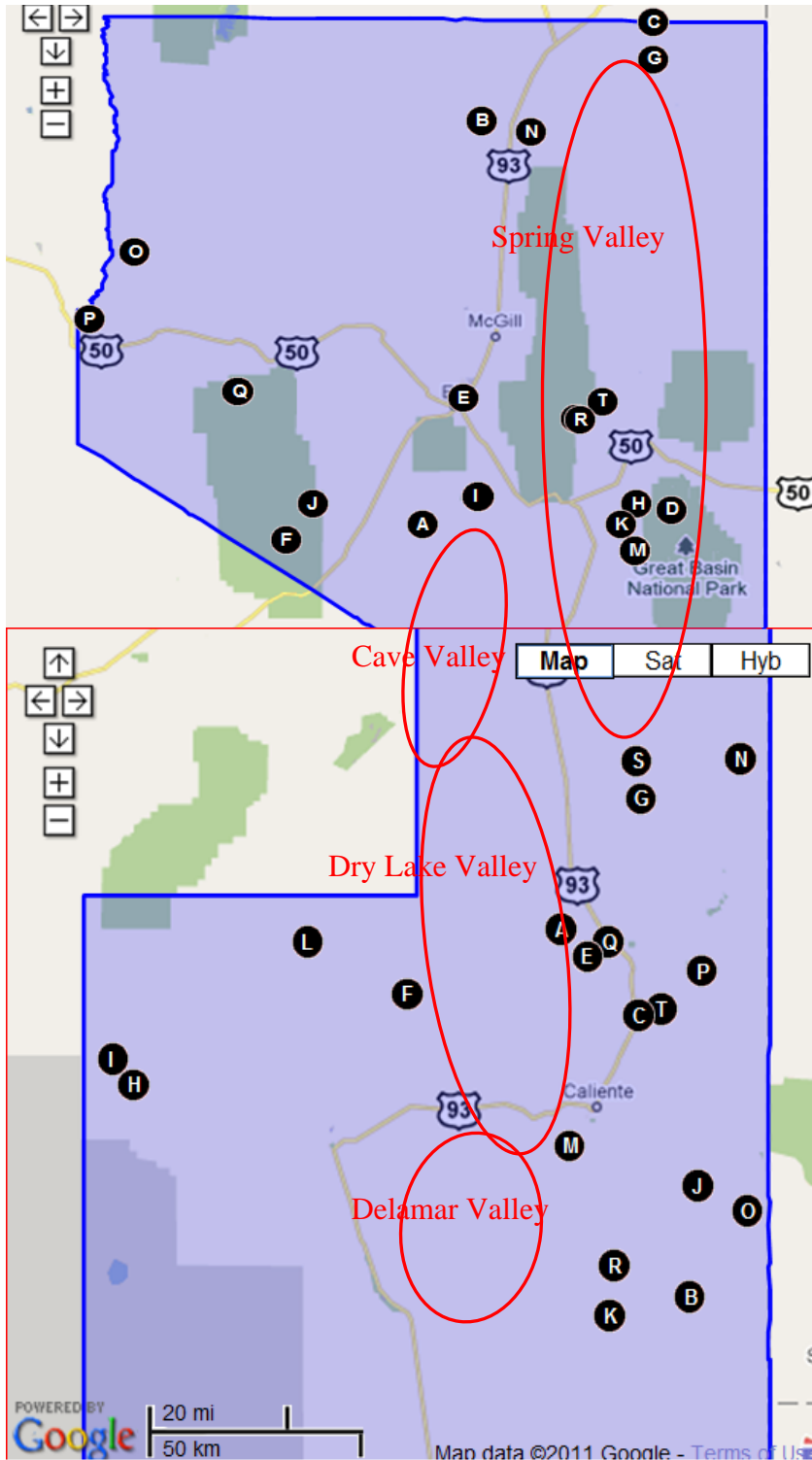
Spring, Cave, Dry Lake and Delamar Valleys



SOUTHERN NEVADA
WATER AUTHORITY

Presentation for
Kilkenny Cross

APPENDIX: Maps of the Counties, Watersheds, Communities, and Relevant Sites

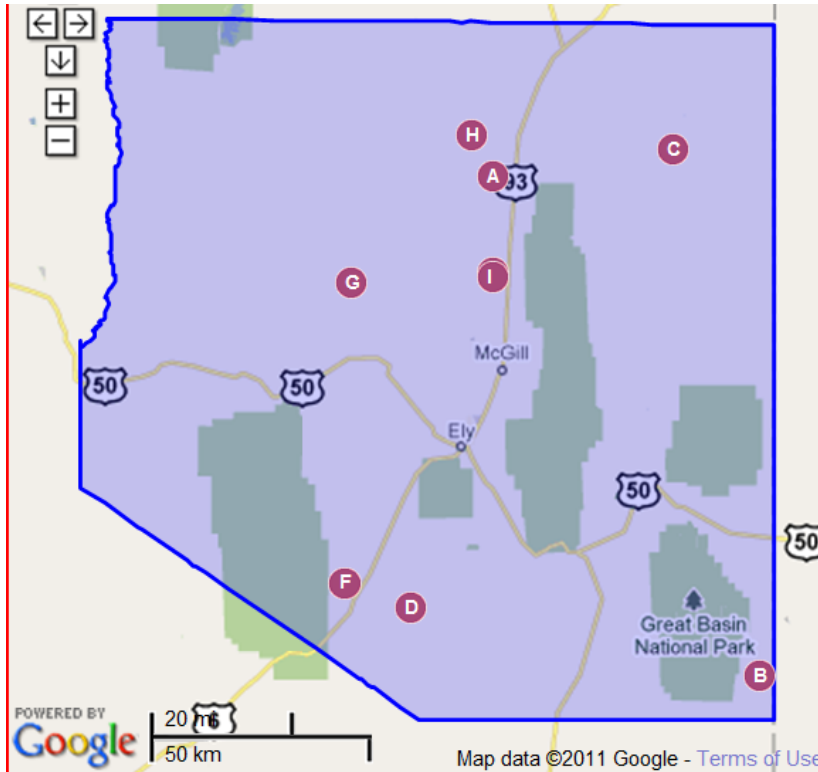


WHITE PINE COUNTY: Water Canyon Holding Corral (A), Cherry Creek Station (B), Western Marble Mining Camp (C), Wheeler Peak Campground (D), White Pine Golf Course (E), White River Campground (F), Chin Creek Ranch (G), Willard Creek Ranch (H), Willow Creek Ranch (I), Willow Grove (J), Yelland Ranch (K), Yelton Ranch (L), Ziege Ranch (M), Zips Cabin (N), Circle Ranch (O), Angelo Belli Cabin (P), Illipah Campground (Q), Cleve Creek Administrative Site (R), Cleve Creek Campground (S under R), Cleveland Ranch (T).

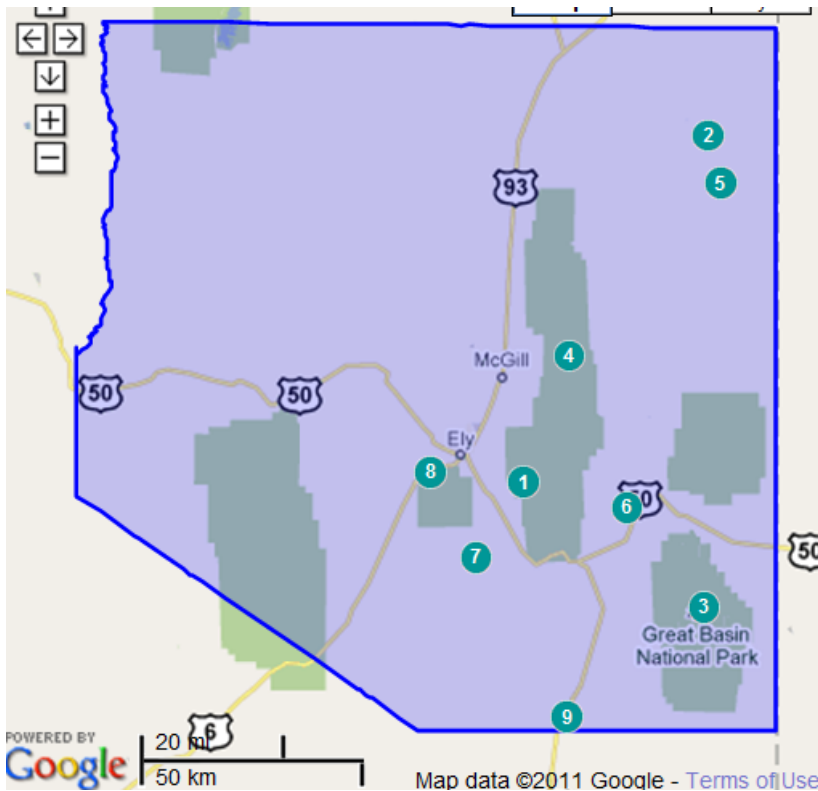
LINCOLN COUNTY: Abbotts Fork (A), West's Camp (B), Chicago Mill (C), Wheeler Mill (D), Wheeler Ranch (E), White River Petroglyphs Archeological Site (F), Wilson Creek VORTAC Station (G), Windmill Number One (H), Windmill Number Two (I), Wood Ranch (J), Cloud (K), Coal Valley Holding Field (L), Coburn Ranch (M), Johnson Ranch (N), Ash Spring Enclosure (O), Flatnose Ranch (P), Atlanta (Q), Kiernan Ranch (R), Cole and Dolan Ranch (S), Landmark Letter (T).

http://www.city-data.com/county/Lincoln_County-NV.html#ixzz1PlaDKLLL

Source: Google Maps



White Pine County streams, rivers, and creeks: Schell Creek (A), Chokecherry Creek (B), Chin Creek (C), Eph Creek (D), Third Creek (E-under I), Ellison Creek (F), Thirtymile Wash (G), Cherry Creek (H) Second Creek (I).



Parks in White Pine County include: Cave Lake State Park (1), Pony Express Historical Monument (2), Great Basin National Park (3), Schell Creek State Game Refuge Number 7 (4), State Game Refuge Number Twelve for Antelope (5), Swamp Cedar Natural Area (6), Ward Charcoal Ovens State Park (7), Ward Mountain Recreation Area (8), North Creek Scenic Area (9).

Table 1. Summary: Market and Non-Market Value of Water in the Four Basins

activity	type			Measure or approach	Annual value
Agriculture	Use	market	direct	production revenue	\$30,511,000
			interindustry	Input-Output	\$22,273,030
Hunting	Use	market	direct	expenditures	\$4,900,000
			interindustry	input-Output	\$3,000,000
Park Visitation	Use	market	direct	expenditures	\$6,750,000
			interindustry	Input-Output	\$4,000,000
Recreation	Use	non-market	direct	benefit transfer	\$756,000
Existence	non-use	non-market	direct	benefit transfer /meta regression	\$2,000,000
Total:					\$74,190,030

Source: tabulated by author

White Pine County Employment

5,074

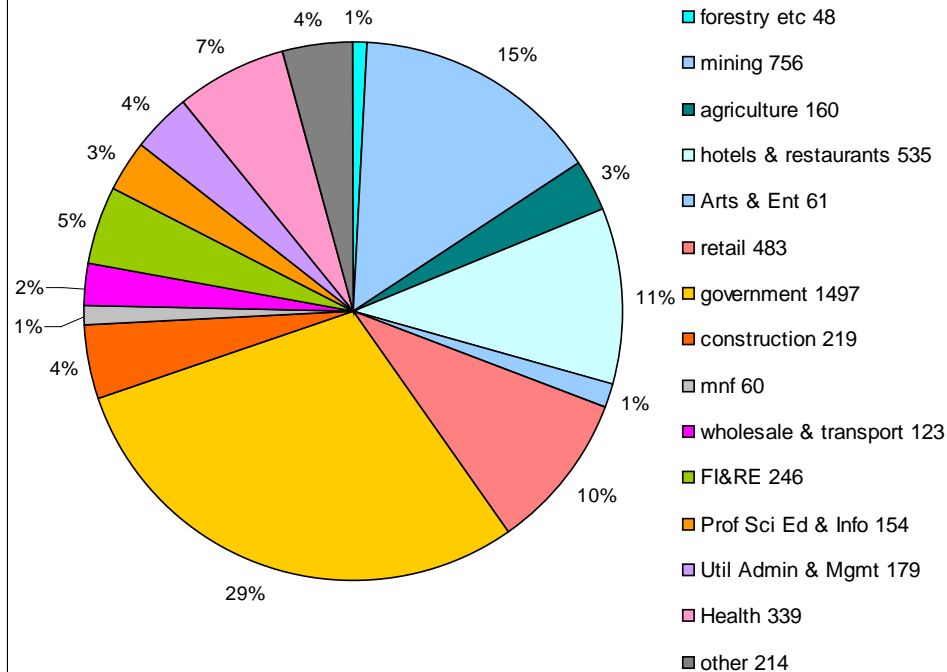


Figure 2. White Pine County employment by sector, 2009

Data Sources (reconciled by authors & used to estimate non-disclosed counts)

Bureau of Economic Analysis, 2009 Total Employment by NAICS Sector, Table CA25N

<http://www.bea.gov/iTable/iTable.cfm?reqid=70&step=1&isuri=1&acrdrn=5>

2008 County Business Patterns <http://censtats.census.gov/cgi-bin/cbpnaic/cbpsect.pl>

2008 Non-Employer Statistics <http://censtats.census.gov/cgi-bin/nonemployer/nonsect.pl>

2007 Census of Agriculture http://quickstats.nass.usda.gov/?source_desc=CENSUS

Lincoln County Employment

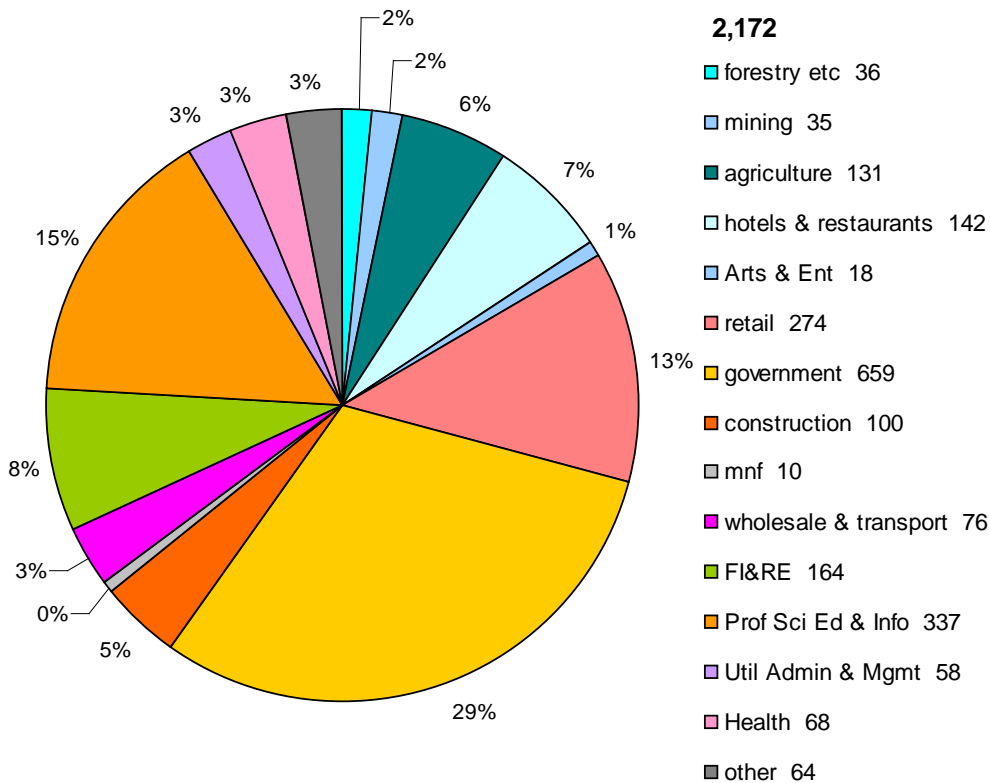
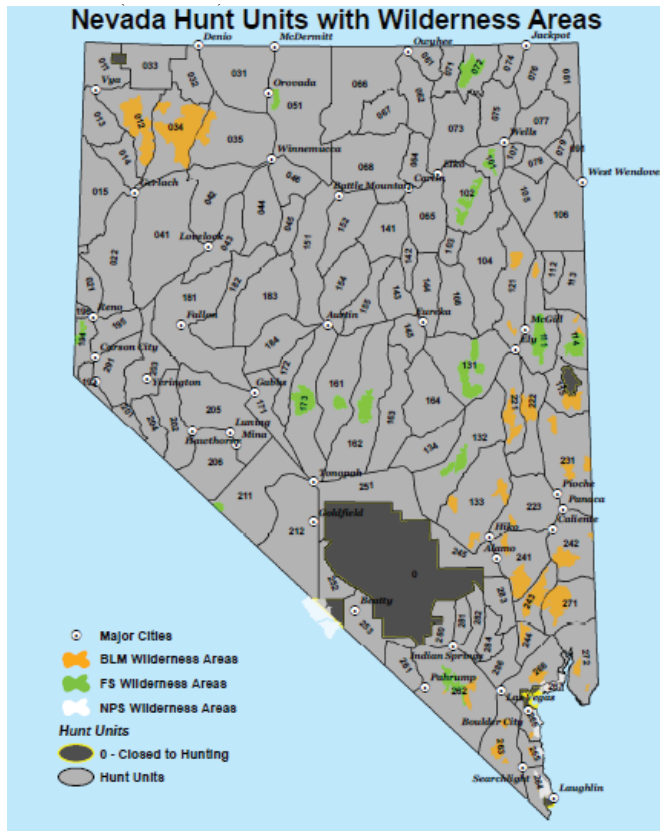


Figure 3. Lincoln County Employment by sector, 2009.

**Table 2. Census of Agriculture
Lincoln and White Pine Counties**

	White Pine Co.	Lincoln Co.	units
Total Land Area	5,680,349	6,804,896	acres
Pasture Land	167,266	21,877	acres
Area In Farm Operations	113,147	44,648	acres
Irrigated	30,877	18,320	acres
Cropland	23,756	17,903	acres
Ag Woodland	1,551	368	acres
Total Commodity Sales	\$15,172,000	\$15,339,000	dollars
Total Animal Sales	\$10,836,000	\$7,649,000	dollars
Avg. Net Cash Farm Income	\$32,131	\$21,063	dollars/op
Hired Labor	193	120	workers
Ag Operations	97	98	operations

Source: USDA National Agricultural Statistics Service (NASS) http://quickstats.nass.usda.gov/?source_desc=CENSUS
tabulated by author



Source: NDoW http://ndow.org/hunt/maps/hunt_unit_wilderness.pdf

GBWN_Exh_066, p.8

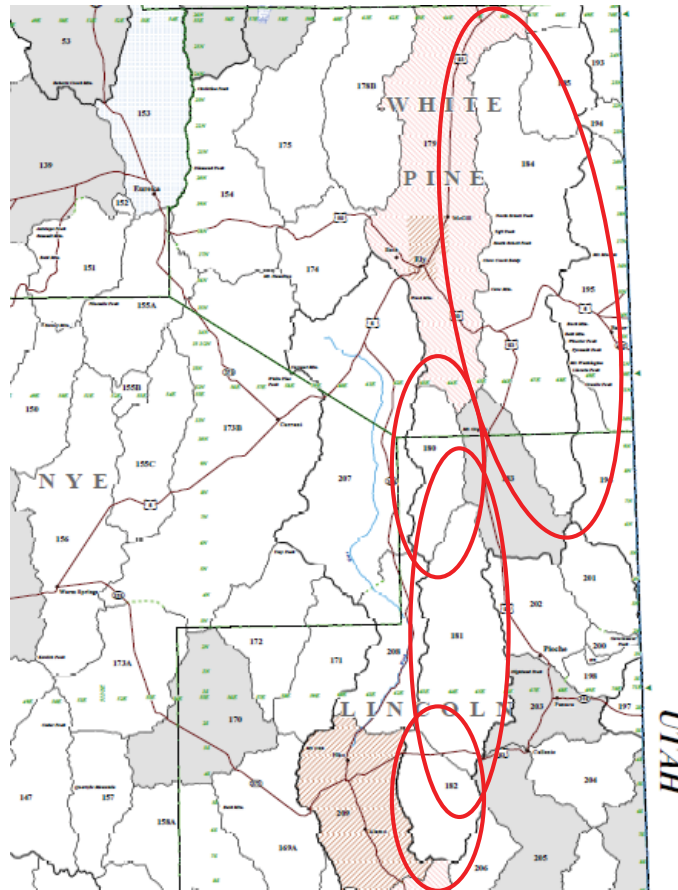


Figure 1. Spring (184), Cave (180), Drylake (181) and Delamar (182) Valley Basins
 Source: State of Nevada http://water.nv.gov/mapping/maps/designated_basinmap.pdf.

GBWN_Exh_066, p. 2

Table 5. 2005 Hunter & Angler Days and Economic Impact in the 4 Basins

	Hunter days	Spending @\$70/hunter day
Mule Deer	6,351	\$444,570
Elk	11,395	\$797,650
Pronghorn Antelope	114	\$7,980
Small game and fowl	1,484	\$103,880
Angling	51,107	\$3,577,490
Total	70,451	\$4,931,570
<i>Economic Impact</i>		\$ 7,890,512

Sources: Rajala (2006), Harris, et al (1994), tabulated by author

Mule Deer: Hunting activity is reported for units 111-113 with a total of 4,545 hunter days and 114-115 with a total of 1,806 hunter days. Based on the assumption that half of the units 111 and 113 and none of 112 are in Spring Valley, it was estimated that Spring Valley represents one-third of the hunter days reported for units 111-113 or 1,515 hunter days. Because approximately half of units 114 and 115 are in Spring Valley, it is estimated that half of the hunter activity reported for units 114-115 or 903 hunter days took place in Spring Valley for a total of 2,418 hunter days for mule deer in Spring Valley in 2005.

Table 5. 2005 Hunter & Angler Days and Economic Impact in the 4 Basins

	Hunter days	Spending @\$70/hunter day
Mule Deer	6,351	\$444,570
Elk	11,395	\$797,650
Pronghorn Antelope	114	\$7,980
Small game and fowl	1,484	\$103,880
Angling	51,107	\$3,577,490
Total	70,451	\$4,931,570
<i>Economic Impact</i>		\$ 7,890,512

Sources: Rajala (2006), Harris, et al (1994), tabulated by author

Elk: Hunting activity is reported for units 111-115, 221 and 222 together and shows 11,395 hunter days for elk hunting in those units for 2005. Based on the fact that none of Units 112, 221, and 222 are in Spring Valley and half of units 111, 113, 114, and 115 are in Spring Valley, it is estimated that Spring Valley represents approximately 30 percent of the hunter activity reported, 3,418 hunter days.

Table 5. 2005 Hunter & Angler Days and Economic Impact in the 4 Basins

	Hunter days	Spending @\$70/hunter day
Mule Deer	6,351	\$444,570
Elk	11,395	\$797,650
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Small game and fowl	1,484	\$103,880
Angling	51,107	\$3,577,490
Total	70,451	\$4,931,570
<i>Economic Impact</i>		\$ 7,890,512

Sources: Rajala (2006), Harris, et al (1994), tabulated by author

Antelope: Hunting activity for antelope is reported for units 111-114 as one group with 311 hunter days and units 115, 231 and 242 as another group with 83 hunter days. Based on the estimate that half of units 111, 113, and 114 and none of unit 112 are in Spring Valley, it was estimated that Spring Valley represents approximately 40 percent of the reported antelope hunting activity for the first group, or 124 hunter days. Because half of unit 115 and none of units 231 and 242 are in Spring Valley, it was estimated that 20 percent of the reported hunting activity in the second group occurred in Spring Valley, 17 hunter days. The total reported Antelope hunting activity in Spring Valley in 2005 is estimated at 141 hunter days.

Table 5. 2005 Hunter & Angler Days and Economic Impact in the 4 Basins

	Hunter days	Spending @\$70/hunter day
Mule Deer	6,351	\$444,570
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Sources: Rajala (2006), Harris, et al (1994), tabulated by author

Small Game, Upland Game Birds, and Waterfowl Hunting:

NDOW reports a total of 1,484 hunter days for upland game birds, rabbits, and waterfowl. The majority of the hunters are from White Pine County. Fifty percent (138) of the out-of-area hunters reported they traveled from Eureka County to the western border of White Pine County to hunt Chukars and do not represent hunting activity in Spring Valley. To determine an estimate of economic benefit from small game and bird hunting in Spring Valley, it was estimated that approximately one-eighth of the hunting activity took place in Spring Valley based on an estimate of the percentage of the land area in the County. Total estimated direct economic benefit from Small Game, Upland Game Bird, and Waterfowl Hunting, in White Pine County is based on 1,484 hunter days at \$70 per day, for a total of \$103,880. The direct economic benefit from small game, upland game bird, and waterfowl hunting in Spring Valley is \$11,777 which represents approximately 10.34 percent of the county's total direct economic benefit from small game and bird hunting..

Table 5. 2005 Hunter & Angler Days and Economic Impact in the 4 Basins

	Hunter days	Spending @\$70/hunter day
Mule Deer	6,351	\$444,570
Elk	11,395	\$797,650
Pronghorn Antelope	114	\$7,980
Small game and fowl	1,484	\$103,880
Angling	51,107	\$3,577,490
Total	70,451	\$4,931,570
<i>Economic Impact</i>		\$ 7,890,512

Sources: Rajala (2006), Harris, et al (1994), tabulated by author

Fishing:

Data from NDOW's annual 10 Percent Angler Census are not compiled in a detailed report, but the Fisheries, Habitat, and Wildlife Diversity Bureaus staff queried the database for the twenty fishable streams in Spring Valley. According to their records, fishermen reported activity in two of the creeks: 743 angler days at Cleve Creek and 3 at Kalamazoo Creek in 2004. Fishing activity in Spring Valley represents approximately \$52,220 in economic benefit. Based on an estimated total angler days of 51,107, at \$70 per day, the total direct economic benefit from fishing in White Pine County is \$3,577, 490 and Spring Valley represents 1.5 percent.

The Swamp Cedar Natural Area (SCNA) is a marshy ecosystem with natural ponds and meadows in Spring Valley that is approximately 23 air miles east of the town of Ely, NV. It contains 3200 acres of public land administered by the Bureau of Land Management. The SCNA area supports a large stand of Rocky Mountain Junipers (*Juniperus scopulorum*), commonly referred to as "Swamp Cedars." The Spring Valley Cedars merit recognition as their own unique variety (Lanner, 2006). The SCNA can be reached via dirt roads branching from Highway 50. It offers recreational opportunities for hiking, primitive camping, nature and wildlife viewing (BLM, 1980).

GBWN_Exh_066, p.15

The Swamp Cedar Natural Area (SCNA), a marshy ecosystem with natural ponds and meadows, is located in Spring Valley approximately 23 air miles east of the town of Ely. It contains 3200 acres of public land administered by the Bureau of Land Management (BLM). It also supports a large stand of Rocky Mountain Junipers (*Juniperus scopulorum*), commonly referred to as "Swamp Cedars". These Spring Valley Cedars have been described as "globally unique" as they have adapted to a distinctly different environment than is characteristic for the main population of their species (Charlet, 2006, Lanner, 2006). While the Swamp Cedars of Spring Valley have not yet received extensive genetic study, experts hypothesize that they may merit recognition as their own unique variety (Lanner, 2006). The SCNA can be reached via dirt roads branching from Highway 50. It offers recreational opportunities for hiking, primitive camping, and wildlife viewing, although it does not feature a designated access road, parking area, developed trail system or established campgrounds (BLM, 1980).

GBWN_Exh_068, p. 3

The Swamp Cedar Natural Area (SCNA) is a marshy ecosystem with natural ponds and meadows in Spring Valley that is approximately 23 air miles east of the town of Ely, NV. It contains 3200 acres of public land administered by the Bureau of Land Management. The SCNA area supports a large stand of Rocky Mountain Junipers (*Juniperus scopulorum*), commonly referred to as "Swamp Cedars." The Spring Valley Cedars merit recognition as their own unique variety (Lanner, 2006). The SCNA can be reached via dirt roads branching from Highway 50. It offers recreational opportunities for hiking, primitive camping, nature and wildlife viewing (BLM, 1980).

GBWN Exh 066, p. 15

The Swamp Cedar Natural Area (SCNA), a marshy ecosystem with natural ponds and meadows, is located in Spring Valley approximately 23 air miles east of the town of Ely. It contains 3200 acres of public land administered by the Bureau of Land Management (BLM). It also supports a large stand of Rocky Mountain Junipers (*Juniperus scopulorum*), commonly referred to as "Swamp Cedars". These Spring Valley Cedars have been described as "globally unique" as they have adapted to a distinctly different environment than is characteristic for the main population of their species (Charlet, 2006, Lanner, 2006). While the Swamp Cedars of Spring Valley have not yet received extensive genetic study, experts hypothesize that they may merit recognition as their own unique variety (Lanner, 2006). The SCNA can be reached via dirt roads branching from Highway 50. It offers recreational opportunities for hiking, primitive camping, and wildlife viewing, although it does not feature a designated access road, parking area, developed trail system or established campgrounds (BLM, 1980).

GBWN_Exh_068, p. 3

The Shoshone Pond Natural Area (SPNA) contains 1240 acres of public land managed by the BLM. It features two important natural resources: (i) a second stand of "Swamp Cedars" of the same ecotypical variety as those found in the SCNA, and (ii) three manmade, spring-fed pools and a stockpond that harbor two rare species of fish, the Relict Dace (*Relictus solitarius*) and the Pahrump poolfish (*Empetrichthys latos*). The Relict Dace is listed by the Nevada Natural Heritage database as "imperiled and vulnerable in Nevada and globally", while the Pahrump poolfish, for which the Shoshone ponds constitute one of only three remaining habitats, has been federally listed as an endangered species since 1969. The SPNA has a designated access road off of Highway 93. The SPNA also offers recreational opportunities for hiking, primitive camping, nature and wildlife viewing (BLM, 1980(b)).

GBWN_Exh_066, p. 15

The Shoshone Pond Natural Area (SPNA) is located approximately 13 miles south of the SCNA in Southern Spring Valley. It contains 1240 acres of public land managed by the BLM. It features two important natural resources: (i) a second stand of "Swamp Cedars" of the same ecotypical variety as those found in the SCNA, and (ii) three manmade, spring-fed pools and a stockpond that harbor two rare species of fish, the relict dace (*Relictus solitarius*) and the Pahrump poolfish (*Empetrichthys latos*). The relict dace is listed by the Nevada Natural Heritage database as "imperiled and vulnerable in Nevada and globally", while the Pahrump poolfish, for which the Shoshone ponds constitute one of only three remaining habitats, has been federally listed as an endangered species since 1969. The SPNA has a designated access road off of Highway 93. While lacking maintained hiking trails or established campsites, the SPNA offers recreational opportunities for hiking, primitive camping, and wildlife viewing (BLM, 1980(b)).

GBWN_Exh_068, p. 3

The State Engineer should consider the area in general in order to adjudicate equitably and to avoid using a double standard. For the Applicant to argue that the focus should be only on the targeted valleys themselves would be disingenuous. The Applicant has stated that “the impacts on water resources will likely be in the developed areas such as Ely, Baker, and Caliente, where visitor and guest services are available, and not in the basins themselves.” SNWA Exhibit 241, at p. 5 (June 2011).

GBWN_Exh_114, p. 4

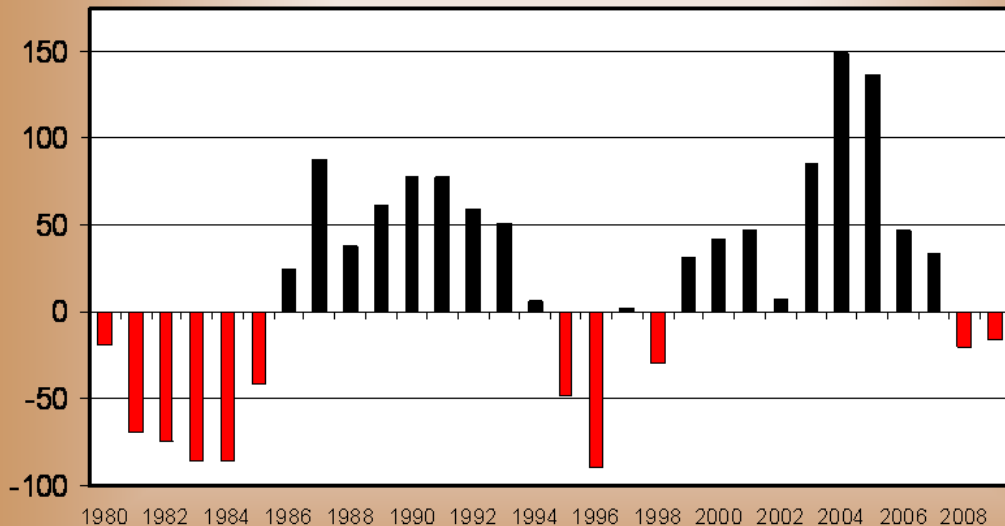
The potential for new economic development from tourism, including from hunting and fishing, is limited in the Basins. Even if there is some expansion of recreation activity in the Basins, the impacts on water resources will likely be in developed areas such as Ely, Baker, and Caliente where visitor and guest services are available, and not in the Basins themselves.

SNWA_Exh_281, p. 5-1

ESTIMATED AVERAGE COW CALF RETURNS

Returns Over Cash Cost (Includes Pasture Rent), Annual

\$ Per Cow



Source: Livestock Marketing Information Center *Chart of the Week*;
<http://www.lmic.info/memberspublic/pubframes.html> date accessed: May, 2008.



Figure 2-1
Proximity to Major Metropolitan Centers