Pershing County Water Conservation District's Water Issues in the Humboldt River Basin

EXHIBIT H - WATER
Document consists of 17 pages.
Entire exhibit provided.
Meeting Date: 3-9-16

Pershing County Water Conservation District (PCWCD)

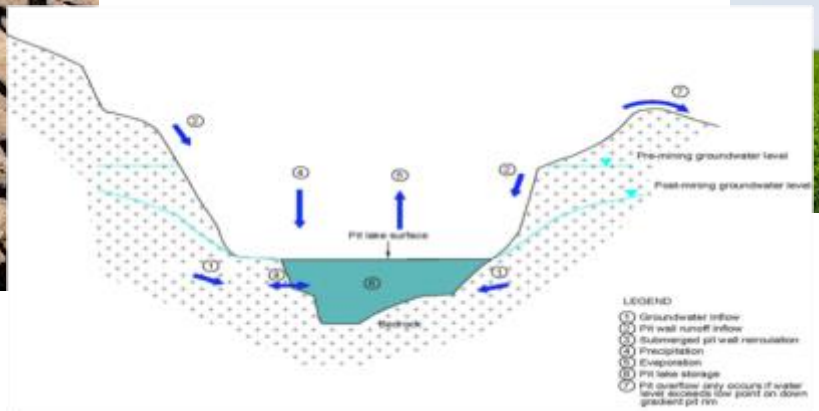
- Located at the Terminus of the Humboldt River.
- Approximately 40,000 acres within the district boundaries.
- Main crops produced include alfalfa, wheat, corn, and alfalfa seed.
- Livestock produced include cattle, goats, and sheep.
- The Humboldt River and precipitation are our only sources of water.
- Ground water quality is too poor for supplemental wells.

PCWCD's Concerns and Issues

- River flows from Palisade to Imlay are decreasing percentage wise
  - i.e. May 16, 2015 the river flows at Palisade – 161 c.f.s,
    Comus – 91 c.f.s and Imlay – 26 c.f.s

Factors Affecting Decreasing River Flow Percentages

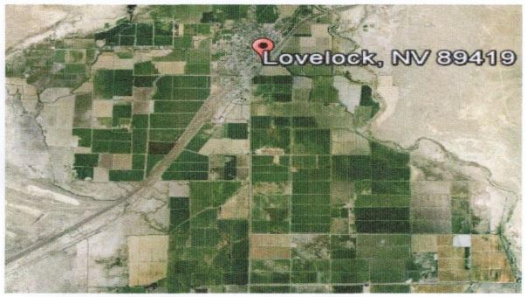
- Drought
- Mine Dewatering
- Ground water pumping for agriculture production



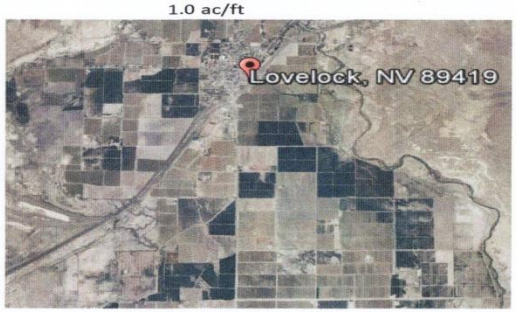
Landsat and Drought Monitoring

Lovelock, Nevada – Humboldt River Basin

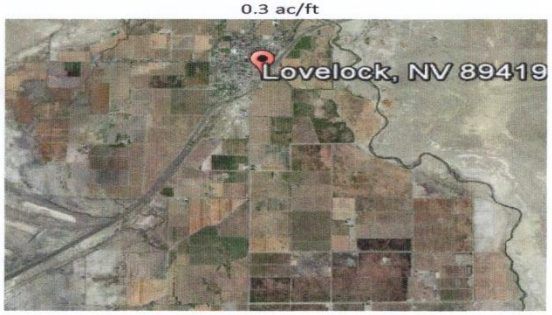
Oct 2006
3 ac/ft



Sept 2010
1.0 ac/ft



Aug 2013
0.3 ac/ft



July 2015
0 ac/ft

Drought

P.C.W.C.D. Water Allotments

Maximum Allotment Allowed by Humboldt River Decree is 3.0 Ac/Ft/Ac

YEAR	ALLOTMENT AC/FT/AC
2011	3.0
2012	2.4
2013	.305
2014	-0-
2015	-0-
2016	?

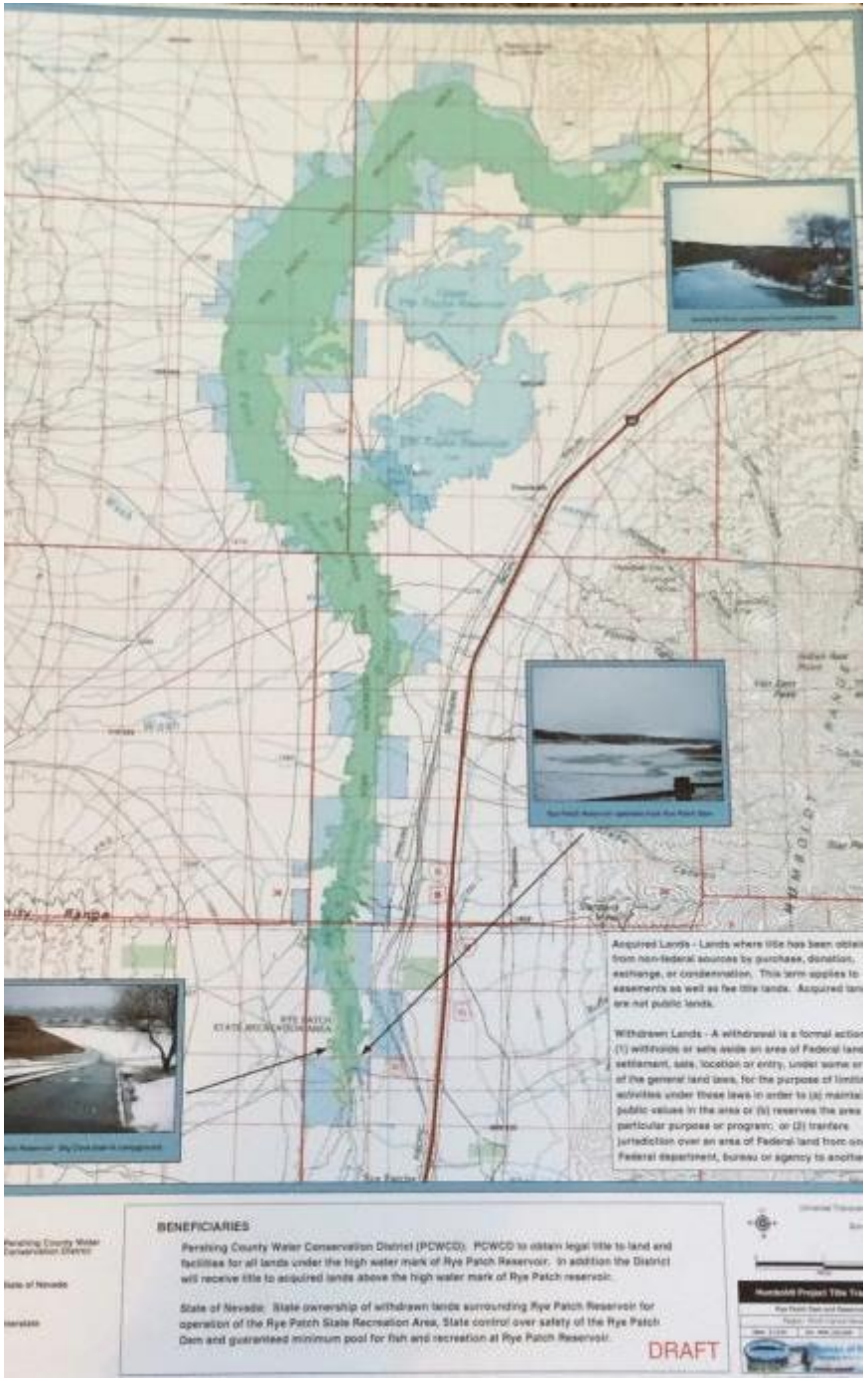
Mine Dewatering

- New permits for mine dewatering are considered "temporary" in the state of Nevada.
- Nevada needs to define "temporary".
  - Some "temporary" permits can last four or five family generations.
  - In the state of Oregon the "temporary" permit limit is five years.
- Many basins are over appropriated due to "temporary" permits.
  - i.e. Kelly Creek, Clovers, and Pumpernickel Valley, Grass Valley, Paradise Valley, Winnemucca

Pit Lakes

Pit lakes are reservoirs without storage permits which other reservoirs require.

i.e. Rye Patch and Pitt Taylor.



A few boring statistics about the pit lakes

Over a million acre feet in the lakes.

Some are doing more backfill now, so the eventual amount may be less.

Evaporation lost from pit lakes will be close to the amount of water SNWA requests from Cave Valley.

	Volume When Full	Area When Full (ac)	Approximate Depth When full	Source	Evaporation (af/y)
McCoy Cove	35000	165.4		HCI, 2001	645.2
Goldstrike	360000	710.0	1120	Schaeffer, 2007	2769.0
Gold Quarry	175000	371.0		HCI, 1997	1446.9
Lone Tree	129900	400.2		WMC, 2008	1560.9
Twin Creeks	128558	393.0	852	Geomega, 2007b	1532.7
Crossroad	143220	269.0	870	Geomega, 2007a	1049.1
Cortez Hill	79931	179.0	840	Geomega, 2007a	698.1
Total	1051609				9701.9


MINING PIT LAKES IN NEVADA, 2010
Elko
Winnemucca
Explanation
Pit Lakes in 2010
Yes
No
Unknown
Label Definition
Study Area
Miles

Underground Pumping

- Long term over pumping of ground water basins is impacting base flows of the Humboldt River.
- There is approximately 469,900 acre feet of perennial ground water yield in the Humboldt River Basin.
- There is approximately 757,758 acre feet of committed ground water rights in the Humboldt River Basin.
- Total over appropriation of 287,858 acre feet of ground water in Humboldt River Basin.

Water Basins

	PERENNIAL YIELD	COMMITTED
Grass Valley	13,000 ac/ft/yr	42,578 ac/ft/yr
Winnemucca Segment	17,000 ac/ft/yr	42,129 ac/ft/yr
Paradise Valley		114,124 ac/ft/yr
Little Humboldt	34,000 ac/ft/yr	10,225 ac/ft/yr
Hard Scrable		-0- ac/ft/yr
Clovers		44,169 ac/ft/yr
Pumpernickel	72,000 ac/ft/yr	14,631 ac/ft/yr
Kelly Creek		21,602 ac/ft/ac
Totals	136,000 ac/ft/yr	289,458 ac/ft/yr

Water Basins cont.

TOTAL COMMITTED	289,458 AC/FT/YR
PERENIAL YIELD	136,000 AC/FT/YR
OVER APPROPRIATED	**153,458 AC/FT/YR**

Mining & Milling	
Kelly Creek	15,740 ac/ft/yr
Pumpernickel	6,397 ac/ft/yr
Clovers	8,975 ac/ft/yr
Total	31,112 ac/ft/yr

Surface Flows of Humboldt River Surface Annual Flow (Based on NRCS 30 yr avg.)

- Palisade gauge – 225,000 acre feet
- Imlay gauge – 188,000 acre feet
- Rye Patch Flows

	2013	2014	2015
In Priority for	9,047	18,613	14,187
Received	6,511	4,334	7,617
PCWCD Due	2,536	14,279	6,570

Underground Pumping needs to be Connected to Surface Water Flows

- U.S.G.S studies show groundwater and surface water are connected.
- U.S.G.S studies show over pumping is affecting the middle and lower reaches of the Humboldt River Basin.
- Because mine dewatering is temporary, it is not factored into a basin's water budget.
  - This has created a situation where many river basins (Humboldt River Basin) are vastly over appropriated. 23 of 34
- Idaho and Colorado have a conjunctive use system where surface and groundwater users can borrow and payback each other in times of drought and surplus water.

Conclusion

Statistics

- Groundwater over pumping is affecting Humboldt river flows.
- In the last 20 years, the Lovelock Valley has had 10 years where the allotment received has been 50% or less of a full allotment. Yet, year after year producers with underground rights have had a full allotment.
- In the Humboldt River Basin the most junior surface right is still senior to the most senior underground right.

Solutions

- Put time limits on "temporary" mining permits. Follow Prior Appropriation Doctrine. (first in time, first in right)
- Reduce junior underground pumping rights that are affecting senior surface rights. Factor mine dewatering numbers into water basin water budget.
- Mines should use water rights they own, both surface and underground, to address pit lake storage and evaporation.

Photo Credits

- Pershing County Water Conservation District
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- Tom Meyers, Ph.D. Hydrologic Consultant