WATERWATCH

PROTECTING NATURAL FLOWS IN OREGON RIVERS

Harney Basin Case Study:

How the State Severely Over-appropriated Groundwater and Potential Tools and Challenges for Fixing it After the Fact

WaterWatch of Oregon is a 501(c)(3) non-profit river conservation group dedicated to protecting and restoring instream flows in Oregon rivers and streams.

Formed in 1985, WaterWatch secured passage of Oregon's landmark Instream Water Rights Act in 1987.

www.waterwatch.org

In Oregon, Groundwater, Along With Surface Water, Belongs to the Public

"All water within the state from all sources of water supply belongs to the public."

ORS 537.110, Public Ownership of Waters

Water Code Definition of Groundwater

"Ground water" means any water, except capillary moisture, beneath the land surface or beneath the bed of any stream, lake, reservoir or other body of surface water within the boundaries of this state, whatever may be the geological formation or structure in which such water stands, flows, percolates or otherwise moves." ORS 537.515(5)

Oregon 1955 Groundwater Act: Permits Required For Future GW Use (With Some Exceptions)

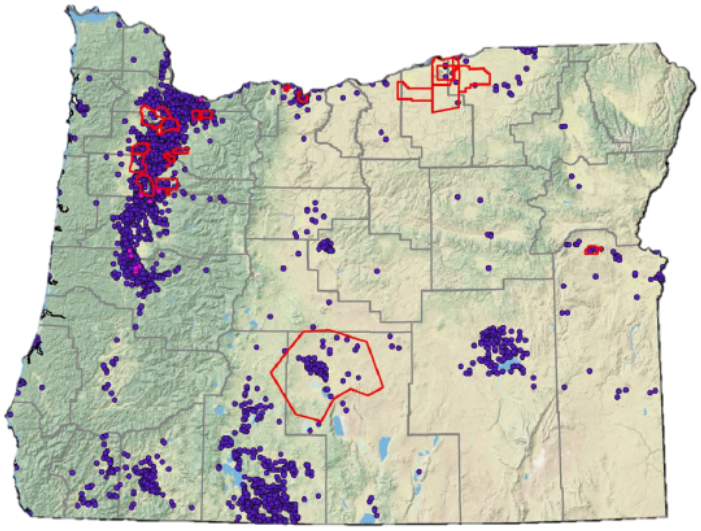
- 1909 Water Code already required permits for surface water use
- < 1955: distinctions between underground rivers and percolating groundwater; starting in 1927, between E vs. W of Cascades
- Groundwater Act: ORS 537.505-795

Most Prevalent Groundwater Uses Not Requiring a Water Permit

- Single or group domestic purposes in an amount not exceeding 15,000 gallons a day
- Stockwatering purposes
- Watering any lawn or noncommercial garden not exceeding one-half acre in area
- Any single industrial or commercial purpose in an amount not exceeding 5,000 gallons a day

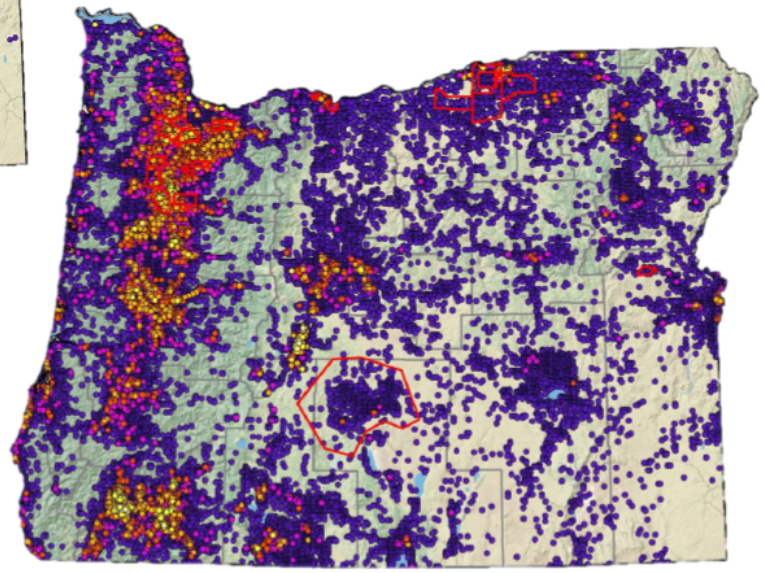
ORS 537.545(1) (includes 3 additional exempt uses)

Water Well Density



1955
4,660 wells

2016
256,800 wells



Density of Water Well Logs per 640 Acres

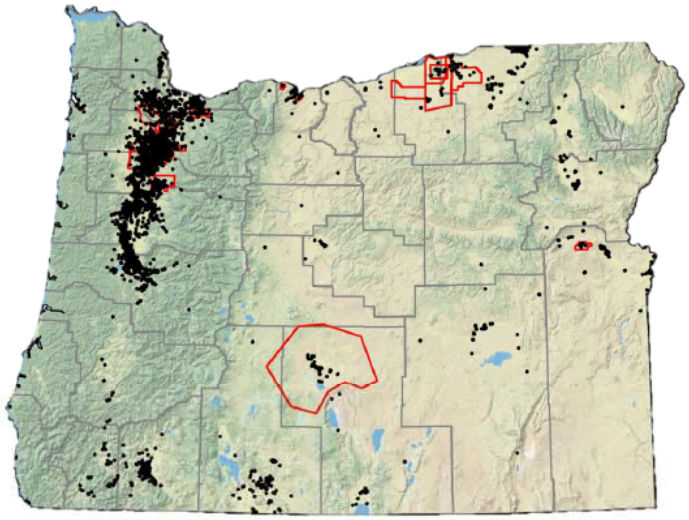
- 1 - 16 (<= 1 well / 40 acres)
- 17 - 32 (<= 1 well / 20 acres)
- 33 - 64 (<= 1 well / 10 acres)
- 65 - 128 (<= 1 well / 5 acres)
- 129 - 256 (<= 1 well / 2.5 acres)
- 257 - 320 (<= 1 well / 2.0 acres)
- >320 (<= 1 well / 1.0 acres)

Counties

Ground Water Restricted Areas

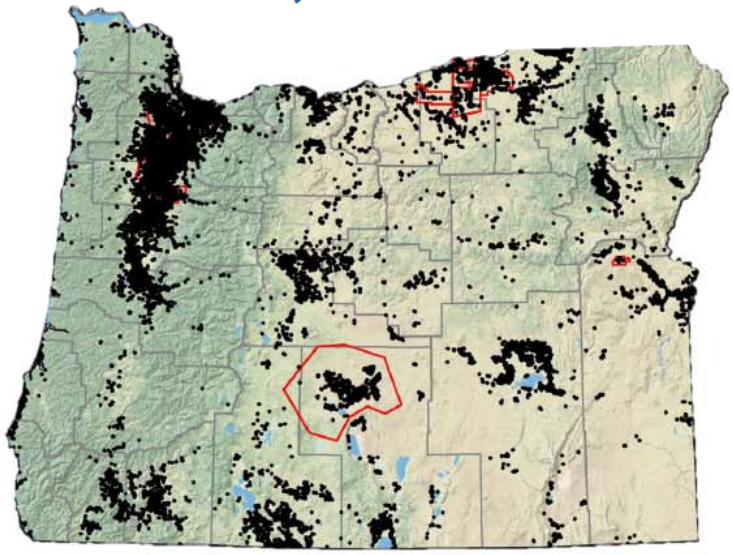
Credit OWRD

Water Right Wells



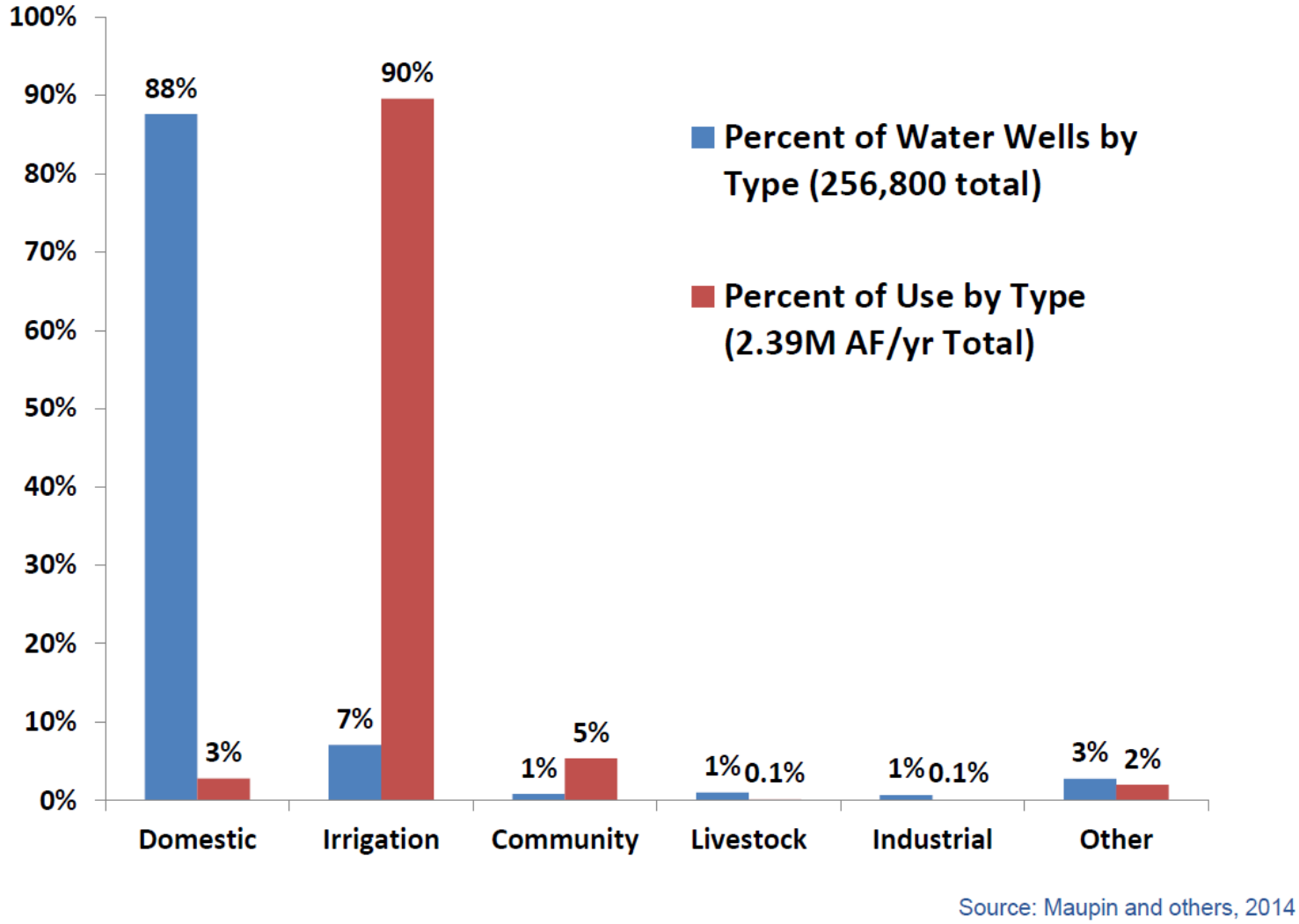
1955
4,400 wells

2016
25,000 wells



Credit OWRD

Estimated Oregon Groundwater Use



Source: Maupin and others, 2014

Credit OWRD

Oregon Court of Appeals' Description of Oregon Water Permitting Statute

"The water rights application process described in ORS chapter 537 is not a thing of beauty and is complex in the extreme."

Lentz v. State By and Through Its Water Resources Dept., 154 Or App 217, 220, 962 P2d 41 (1998).

Standard for Issuance of New Groundwater Permits

OWRD may only issue a new groundwater permit if it finds the proposed use will:

“preserve the public welfare, safety and health as described in ORS 537.525.”

ORS 537.625

ORS 537.525 - Key Provisions Re: Avoiding GW Over-allocation

(3) Beneficial use without waste, within the capacity of available sources, be the basis, measure and extent of the right to appropriate ground water

(7) Reasonably stable ground water levels be determined and maintained

(8) Depletion of ground water supplies below economic levels . . . be prevented or controlled within practicable limits.

Groundwater "Mining" Theory Rejected in Oregon

- In 1986, OWRD designated Butter Creek, in the Umatilla Basin, as a Critical Groundwater Area, placing limits on groundwater pumping due to declining groundwater levels
- Order was challenged by a group of irrigators, asserting in part that ORS 537.525(8)* mandated groundwater declines so long as the use was profitable at that time

* ("Depletion of ground water supplies below economic levels . . . be prevented or controlled within practicable limits")

Groundwater "Mining" Found Inconsistent With Groundwater Act

"We agree with the director and the Court of Appeals that ORS 537.525(8) does not mandate depletion to the lowest water level from which irrigation water may be profitably pumped today. A fair reading of subsection (8) casts it as a restriction on, rather than a justification for, depletion of ground water. The water-mining theory fails because it is inconsistent with the legislative act."

Doherty v. Oregon Water Resources Director, 308 Or. 543, 555, 783 P.2d 519 (1989) (*en banc*)

"Rebuttable Presumption" That New GW Use Meets The Welfare, Safety and Health Standard If:

1. Water is available (for the proposed use)
2. Will not injure other water rights
3. Allowed in applicable basin program rules
4. Complies with rules of the Water Resources Commission

ORS 537.621(2)

Definition of “Water is Available” (Relevant Portion)

"Water is Available," when used in [ ] and 690-310-0130,* means:

(a) The requested source is not over-appropriated under OAR 690-400-0010 and 690-410-0070 during any period of the proposed use; . . .”

OAR 690-300-0010(57)

* Mimics statutory presumption in rule

Definition of “Over-appropriated”

“The appropriation of groundwater resources by all water rights exceeds the average annual recharge to a groundwater source over the period of record or results in the further depletion of already over-appropriated surface waters.”

OAR 690-400-0010(11)(a)(B)

Water is Available for a New Groundwater Use If:

The appropriation of groundwater resources by all water rights does not exceed “the average annual recharge to a groundwater source . . . or result[] in the further depletion of already-over appropriated surface waters.”

OAR 690-300-0010(57); OAR 690-400-0010(11)(a)(B)

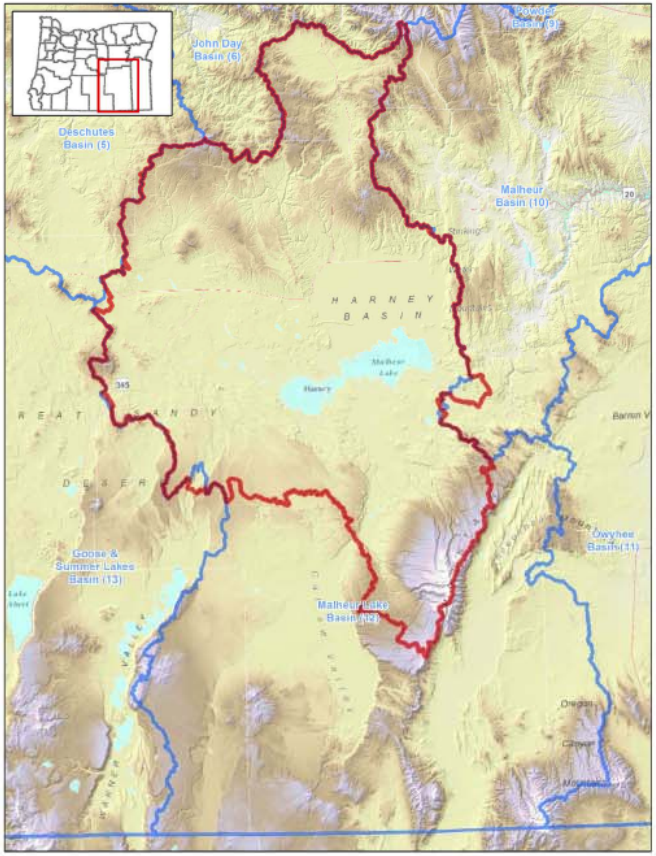
Presumption May be Overcome By a Preponderance of the Evidence That:

- One or more criteria for establishing the presumption are not satisfied
- Proposed use would not ensure preservation of the public welfare, safety and health as demonstrated in comments, a protest or a finding of OWRD (must ID specific aspect of ORS 537.525 and how it would be impaired or adversely affected)

ORS 537.621(2)

Harney Basin

OWRD basins
10 digit (watershed)
Harney Basin



The Harney basin represents the surface-water drainage area of Malheur and Harney Lakes, which are fed by the watersheds of Silver Creek, Silvies River and Donner und Blitzen River.

Basin delineation is based on USGS watershed boundaries.

Credit OWRD 2015

Harney Basin Groundwater Development

Photo credit WaterWatch 2017

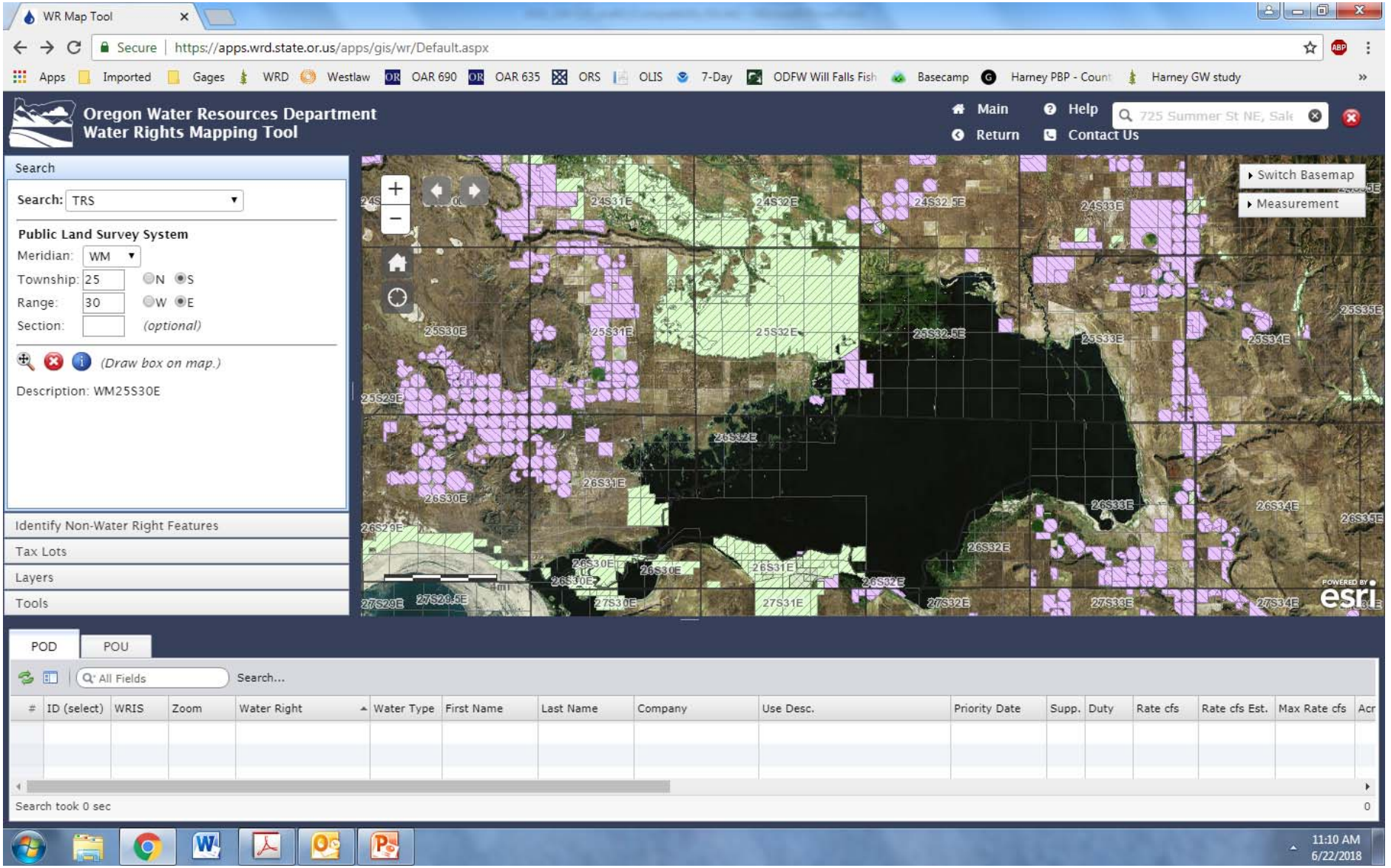
Harney Basin Groundwater Development

Photo credit WaterWatch 2017

Harney Basin Groundwater Development

Photo credit WaterWatch 2017

Groundwater Permits Near Malheur Lake (purple)



2014: WaterWatch Filed Protests to Proposed Issuance of 5 Groundwater Irrigation Permits in Harney Basin

- OWRD's Groundwater Reviews: "Cannot be Determined" whether the groundwater was already over-appropriated; often concern over nearby declining groundwater levels
- WaterWatch asserted that lack of affirmative findings that water is available, not over-appropriated and available with the capacity of the resource means OWRD should not issue the permit
- OWRD undertook review of existing data

B. GROUND WATER AVAILABILITY CONSIDERATIONS, OAR 690-310-130, 400-010, 410-0070

B1. **Based upon available data**, I have determined that ground water* for the proposed use:

a. ☐ **is** over appropriated, ☐ **is not** over appropriated, *or* ☒ **cannot be determined to be** over appropriated during any period of the proposed use. * This finding is limited to the ground water portion of the over-appropriation determination as prescribed in OAR 690-310-130;

b. ☐ **will not** *or* ☐ **will** likely be available in the amounts requested without injury to prior water rights. * This finding is limited to the ground water portion of the injury determination as prescribed in OAR 690-310-130;

c. ☐ **will not** *or* ☐ **will** likely to be available within the capacity of the ground water resource; or

d. ☒ **will, if properly conditioned**, avoid injury to existing ground water rights or to the ground water resource:
   i. ☒ The permit should contain condition #(s) **7N** _____;
   ii. ☐ The permit should be conditioned as indicated in item 2 below.
   iii. ☒ The permit should contain special condition(s) as indicated in item 3 below;

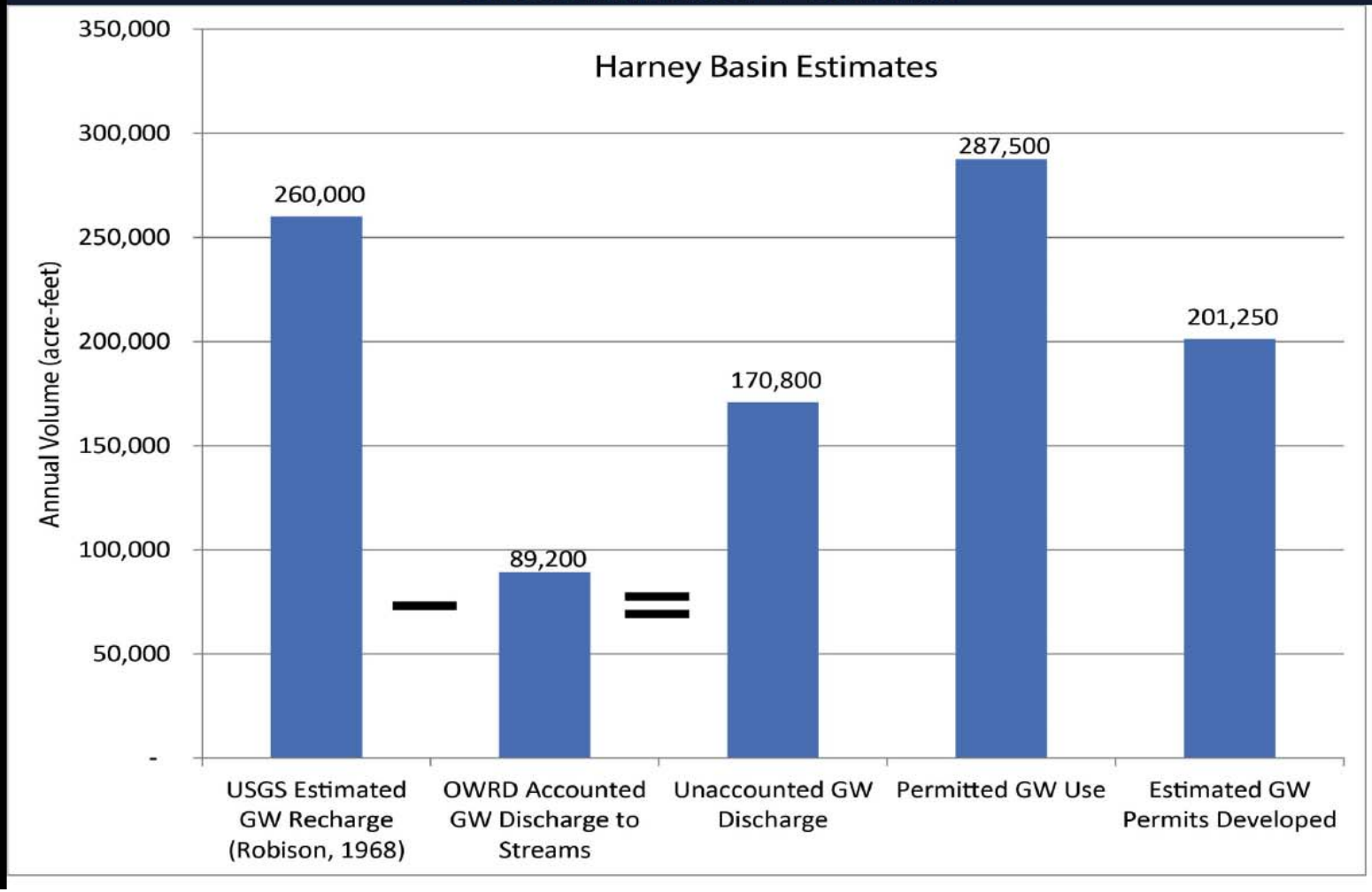
B2. a. ☐ **Condition** to allow ground water production from no deeper than _____ ft. below land surface;

b. ☐ **Condition** to allow ground water production from no shallower than _____ ft. below land surface;

c. ☐ **Condition** to allow ground water production only from the _____ ground water reservoir between approximately_____ ft. and_____ ft. below land surface;

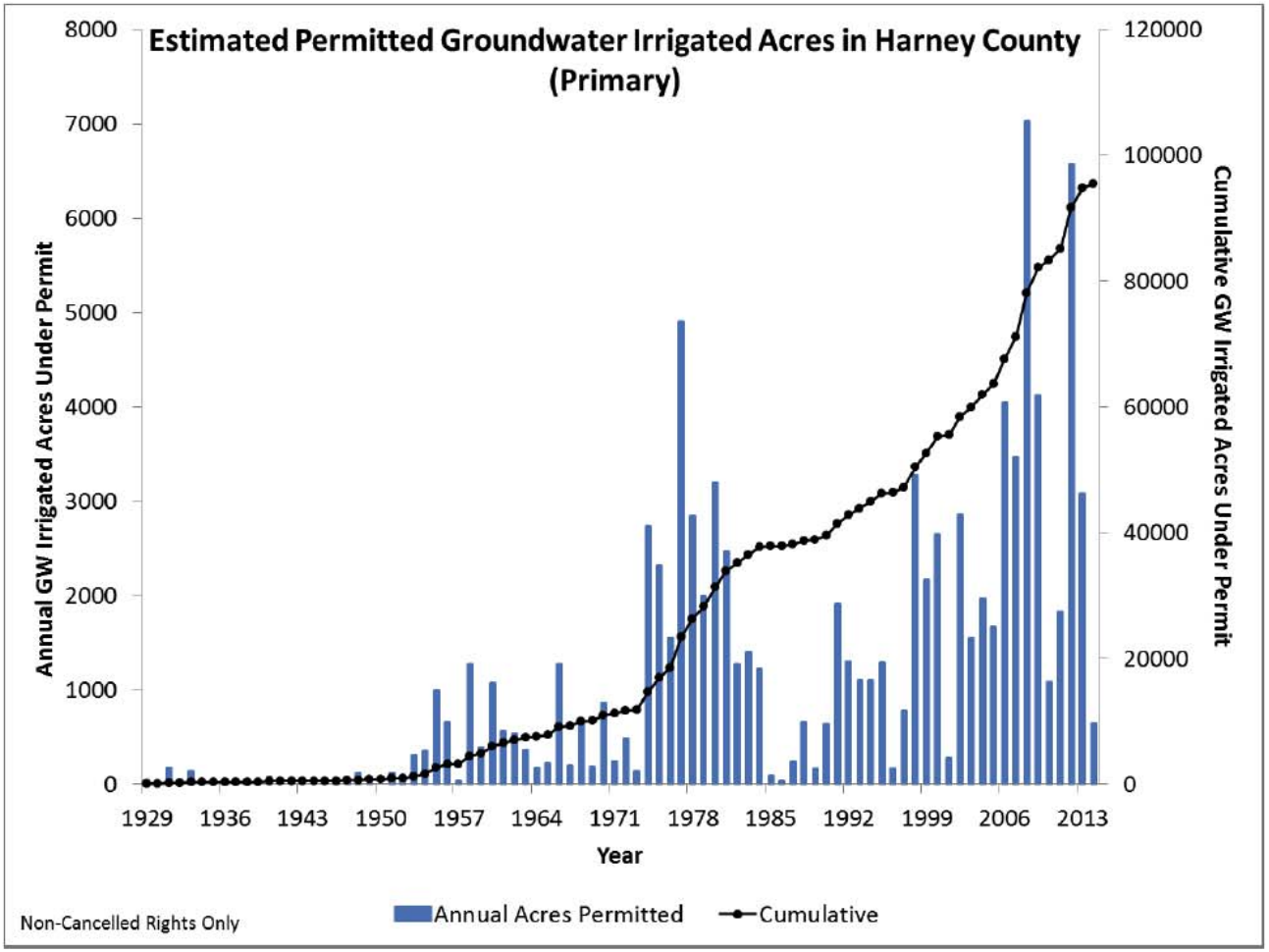
d. ☐ **Well reconstruction** is necessary to accomplish one or more of the above conditions. The problems that are likely to occur with this use and without reconstructing are cited below. Without reconstruction, I recommend withholding

Harney Basin: Groundwater Budget Compared to Groundwater Permits



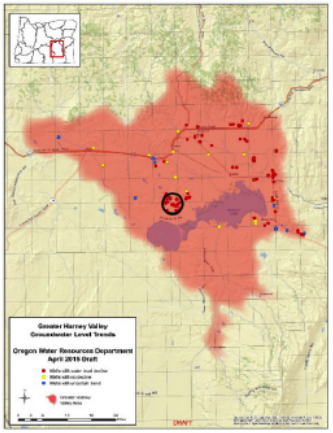
Credit OWRD 2015

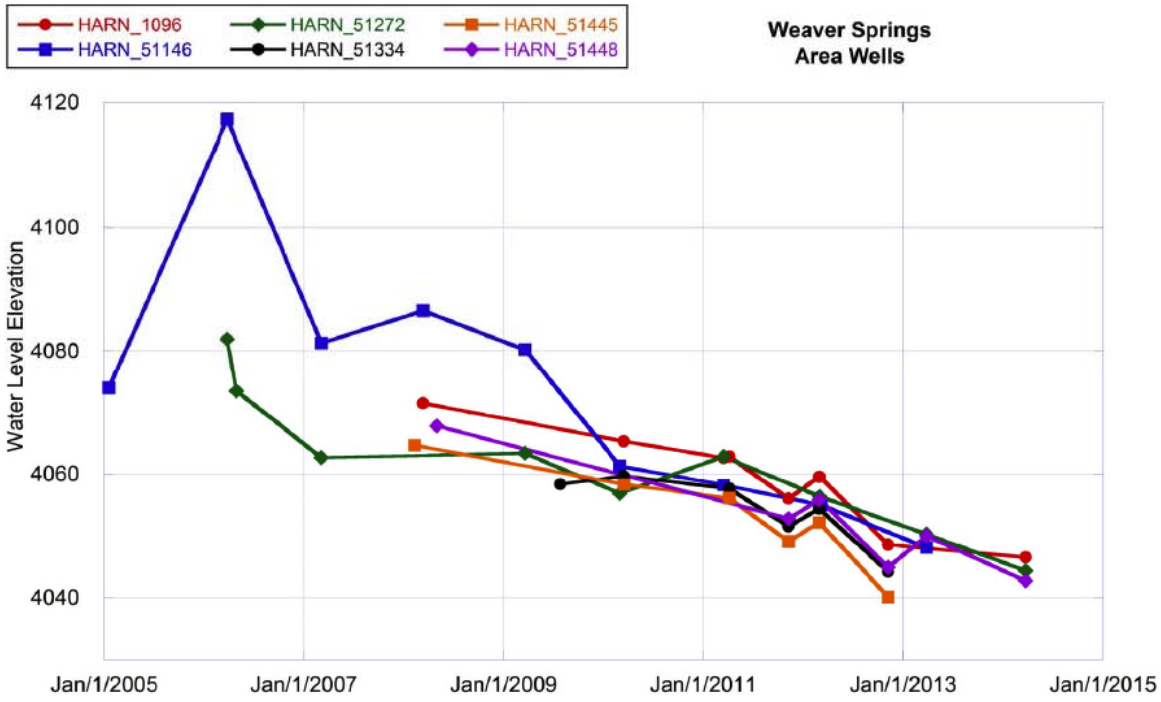
Permitted Irrigated Acres



Credit OWRD 2015

Groundwater Level Trends: Weaver Springs Area



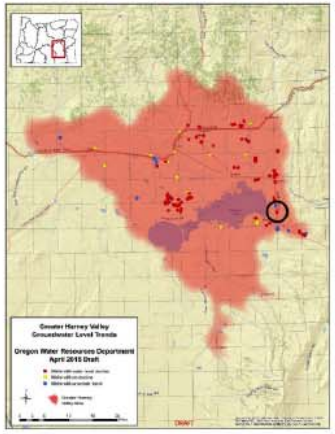


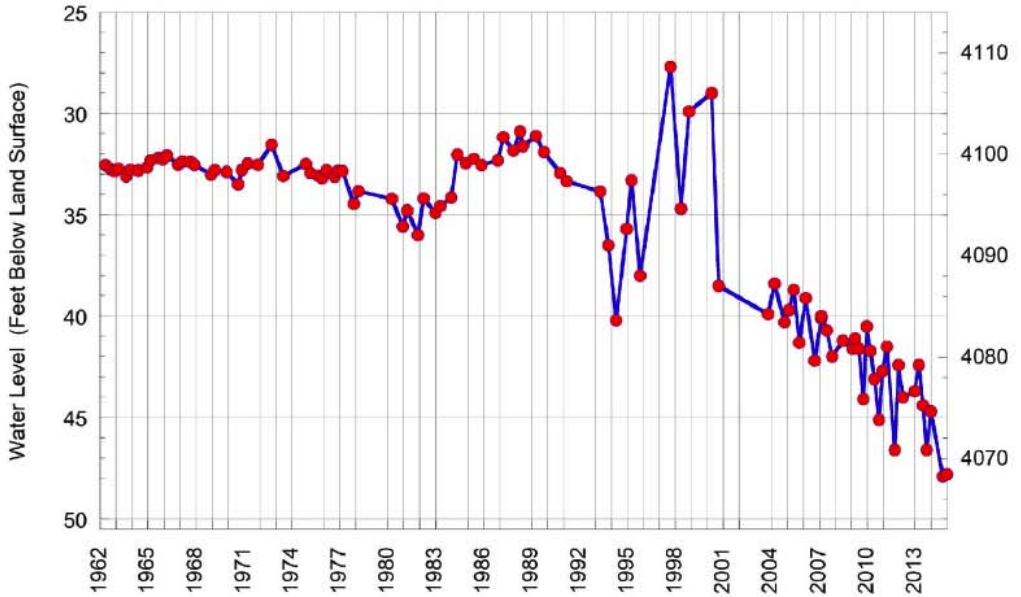
Credit OWRD 2015

Groundwater Level Trends: State Obs. Well 180

HARN 1387
Land surface elevation: 4132'
Well Depth: 108'

State Obs Well 180
OWRD LOGID HARN 1387
Harney County
26S/33E - 13daa





Credit OWRD 2015

Areas of Potential Ecological Impacts of the Aquifer Drawdown

- Groundwater dependent ecosystems (springs, seeps, wetlands, cold water inputs to streams and associated species))
- Streamflow in hydraulically connected streams (including redband trout)
- Malheur National Wildlife Refuge, including Malheur Lake (including birds and other wildlife)

Domestic Well Impacts from Declining Aquifer Levels

- Domestic wells tend to be more shallow than agricultural wells -- thus are often the first to experience effects of aquifer drawdown
- Significant concern among and reports by domestic well owners regarding declining water levels and declining groundwater quality in Harney County
- OWRD: a well (including domestic) cannot be regulated for until it “fully penetrates the aquifer” (*citing* OAR 690- 008(8)(c)), *i.e.* everyone must chase the water down to the bottom

Post-2014 Harney Basin Developments

OWRD rules adopted in 2016 (OAR 690-512-0020)

- no new groundwater permits in a portion of basin
- limited permits allowed in some portions of basin
- already pending applications could be issued if offset with cancellation of permitted water (even if undeveloped)

USGS/OWRD/DOGAMI Groundwater Study

- developing understanding of the hydrologic system in Harney Basin, including water budget and improved conceptual model of groundwater flow
- local Groundwater Study Advisory Committee

Place Based Planning (SB 266, 2015)

- collaborative process - solutions within existing law

Examples of Potential Tools

- Enforcement of drawdown conditions in permits
- Regulation based on priority dates
- SWAMPA (Serious Water Management Problem Area, ORS 540.435)
  - Water Resources Commission can require measurement of water use
  - recently established in the Walla Walla sub-basin due to concerns over declining groundwater levels
- Critical Groundwater Area designation (ORS 537.735)
  - WRC can set the permissible total withdrawal of groundwater in the critical area (by day, month, year)

Examples of Potential Tools (con't)

- Revise Basin Program Rules (ORS 536.300)
  - including classification of uses (ORS 536.340)
  - mainly forward looking
- Water banking generally
  - source/amounts of banked water?
  - who administers and how?
  - how would it address groundwater dependent ecosystems, impacts to lakes, domestic wells, etc.?

Of the 153 New Groundwater Permits Issued Statewide in 2017

- 121 (79%) had an OWRD Groundwater Review that stated it “cannot be determined” whether groundwater is over-appropriated
- 29 (19%) stated groundwater was not over-appropriated
- 2 stated that groundwater was over-appropriated
- 1 left the question blank.

WATERWATCH

PROTECTING NATURAL FLOWS IN OREGON RIVERS

For more information:

OWRD 2015 PPT re: Harney groundwater:

https://apps.wrd.state.or.us/apps/misc/wrd_notice_view/Default.aspx?notice_id=41

Harney Place Based Planning website:

http://hcwatershedcouncil.com/community-based-water-planning/

Harney Groundwater Study website:

https://www.oregon.gov/owrd/Pages/Place/Malheur_Lake_Basin.aspx#Groundwater_Study

Oregonian series “Draining Oregon” (2016)

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