

CWRE 2026

October 8, 2026

Jeremy Giffin

Deschutes Basin Watermaster
Oregon Water Resources Department

Bill Nashem

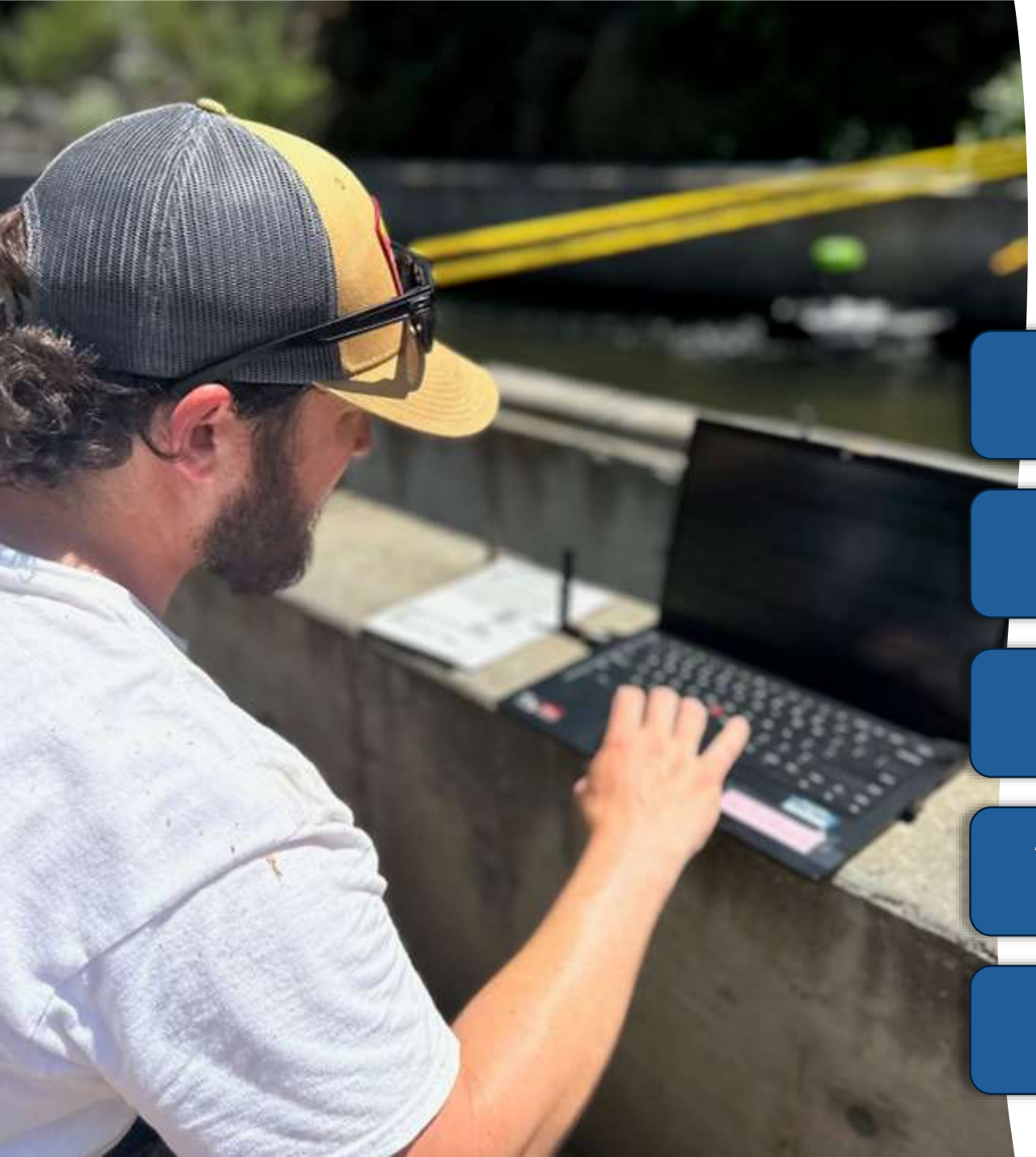
District 24 Watermaster
Oregon Water Resources Department

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OWRD Regional Role

- Distribution and regulation of surface water and groundwater
- Regulation and curtailment in times of shortage
- Monitor daily river flows and reservoir contents
- Dam Safety Inspections
- Well Inspections
- Groundwater Data Collection
- Water Rights research
- Watermaster reviews
- Basin Storage Report (Deschutes Specific)

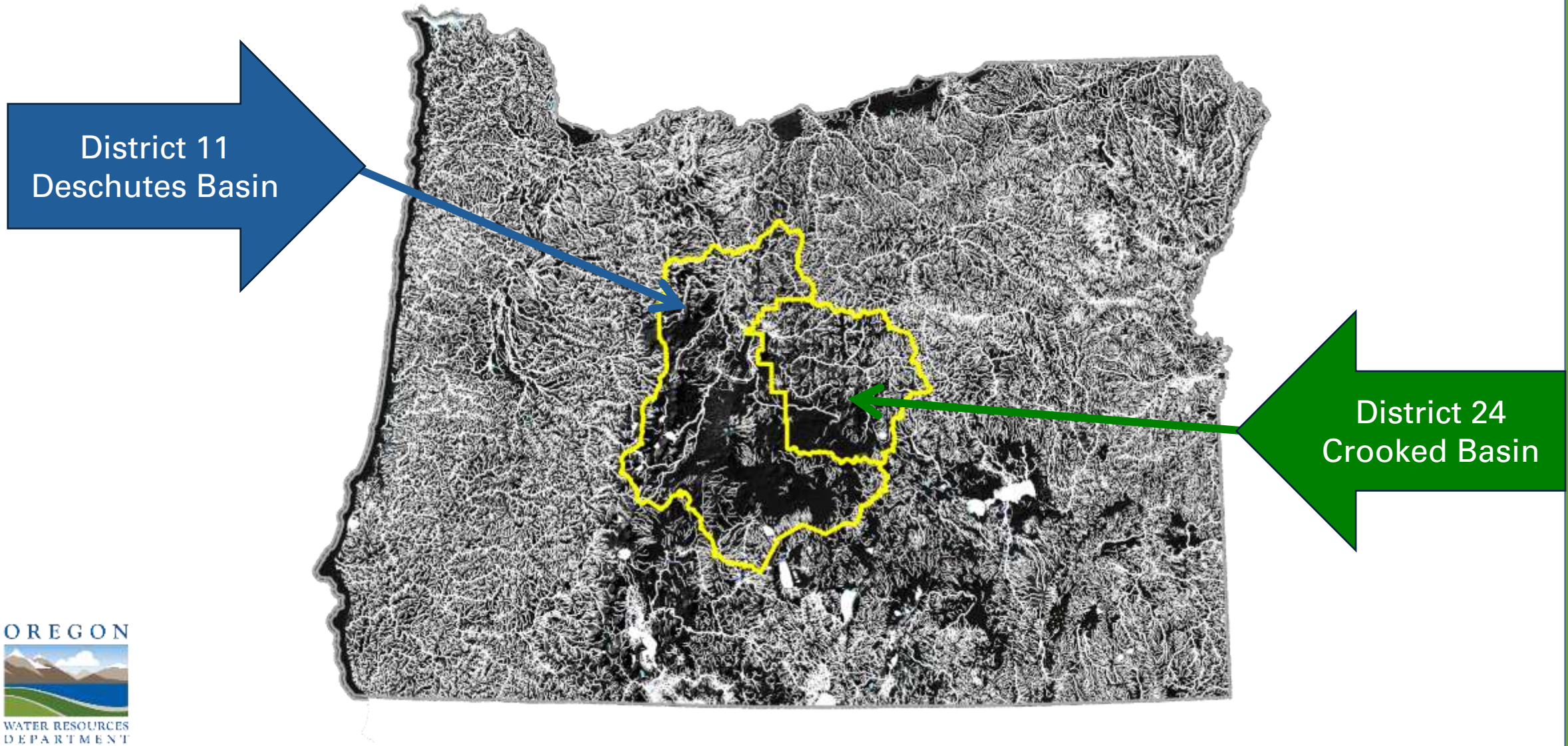




Central Region Overview

- **11,727** Square Miles
- **~3,500** Water rights
- **~125,000** acres of groundwater rights
- **~260,000** acres of surface water rights
- ~60 active gaging stations

Central Region Overview



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Hydrology of Central Oregon

Surface Water and Groundwater

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Geology and Geography

- High Cascades
  - 150 -200” precip/year
- High Desert
  - Young lavas, tuffs, sands, gravels (very transmissive)
- Large, porous “sponge” creates Deschutes aquifer
- Spring fed system
  - Attenuated spring flow = drought resiliency
  - Minimal surface water flows



Deschutes River

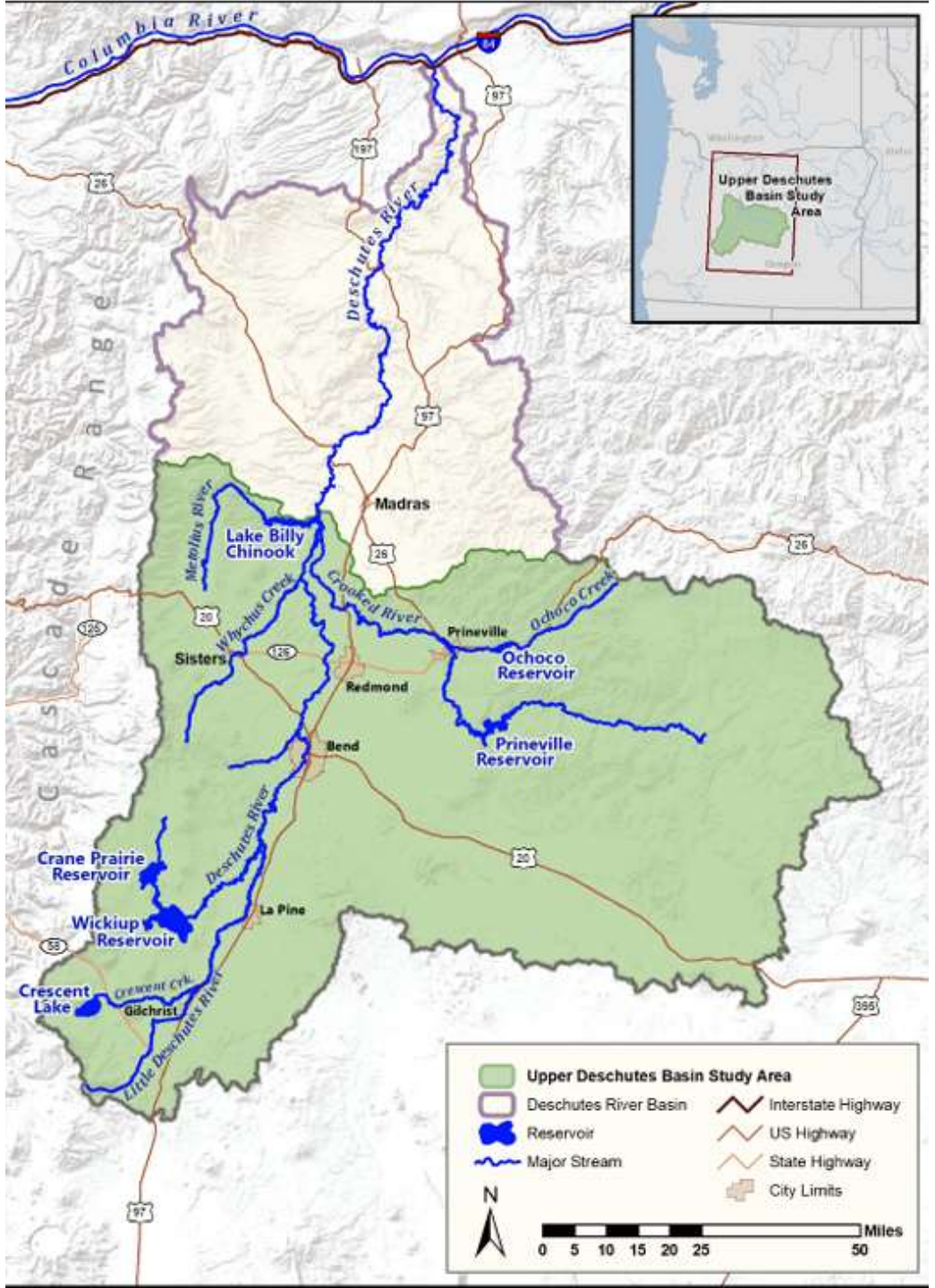
One of the largest, most stable, spring fed rivers in the world

Headwaters: Little Lava Lake

Spring systems that feed the Deschutes
- Fall River
- Quinn River
- Spring River
- Metolius River

Other contributing systems
- Little Deschutes
- Tumalo Creek
- Whychus Creek
- Crooked River

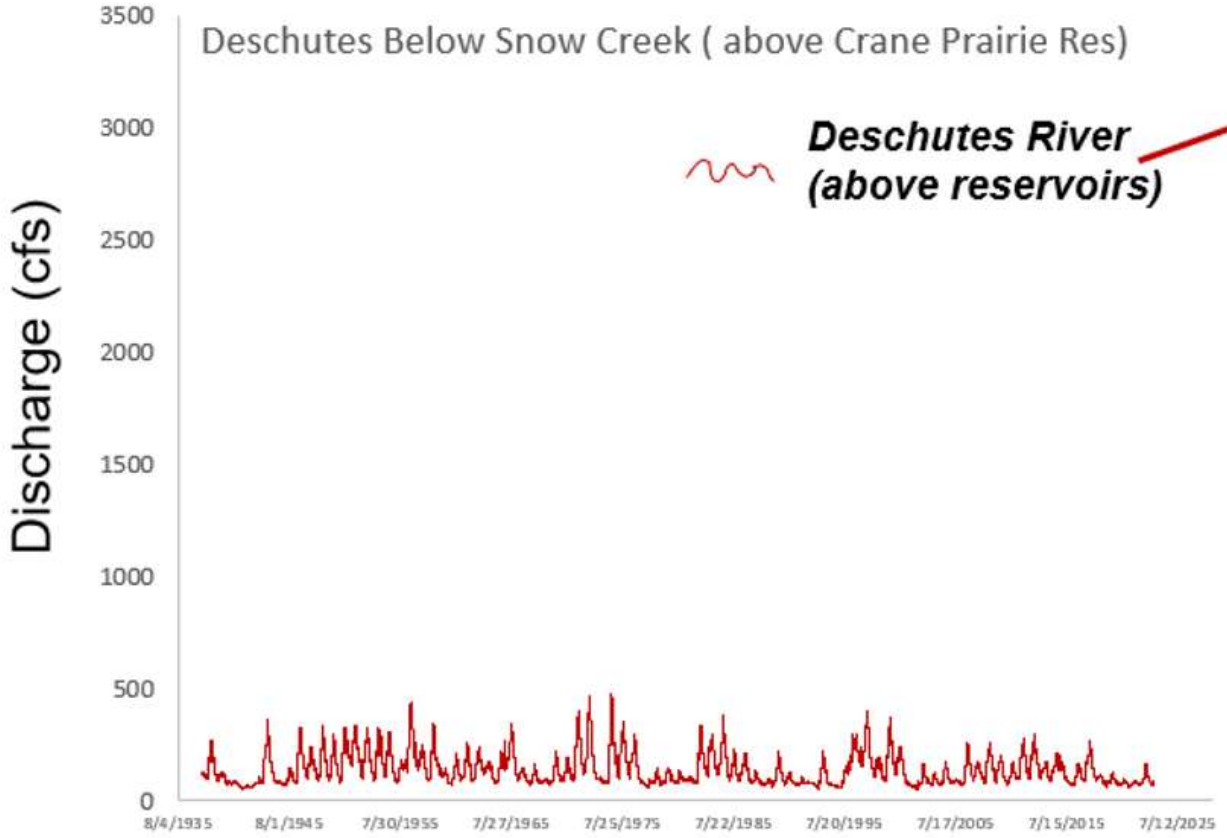
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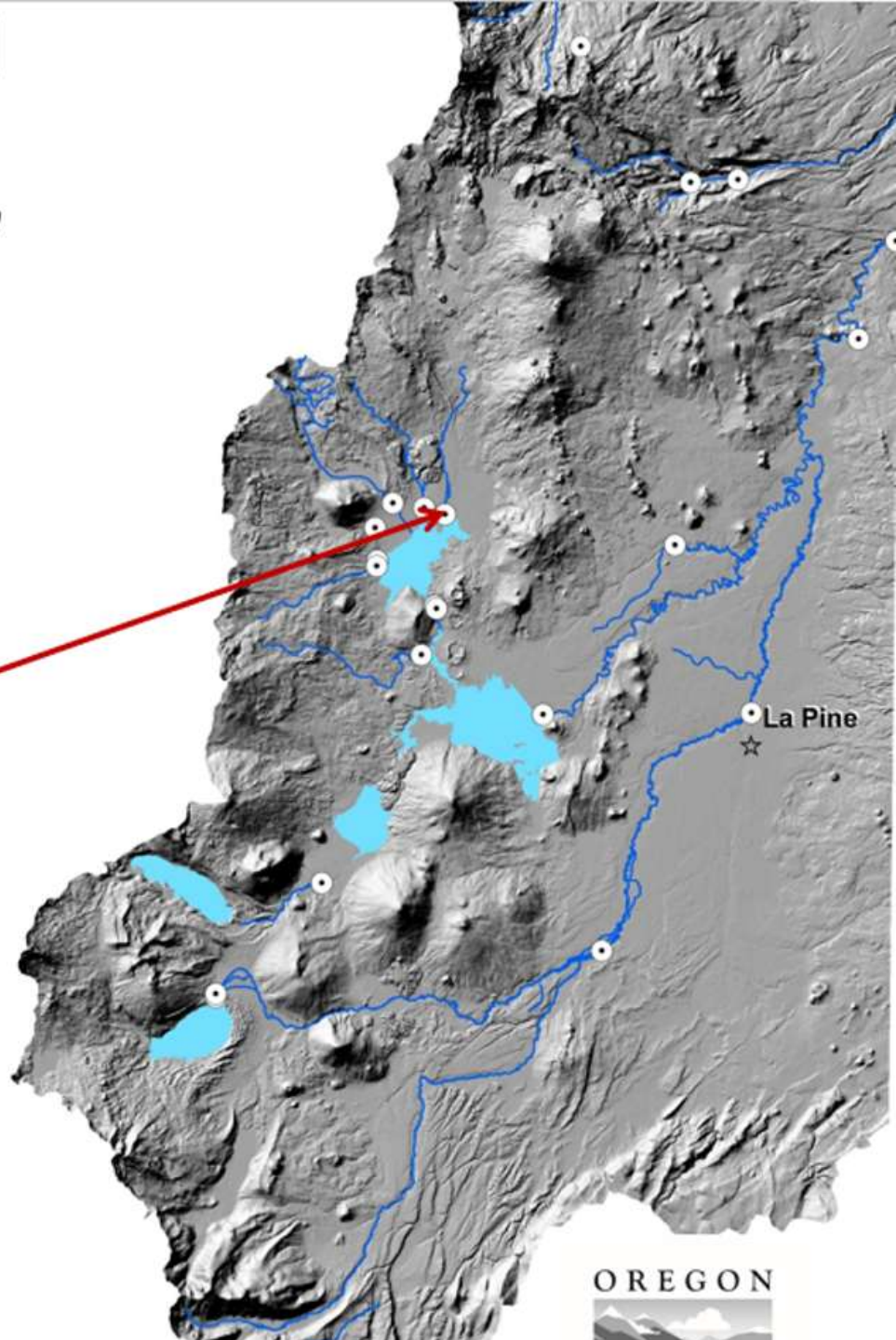


Extremely uniform flow year-round and year to year

"The flow of the River is more remarkably uniform than that of any other river in the United States comparable with it in size,…"

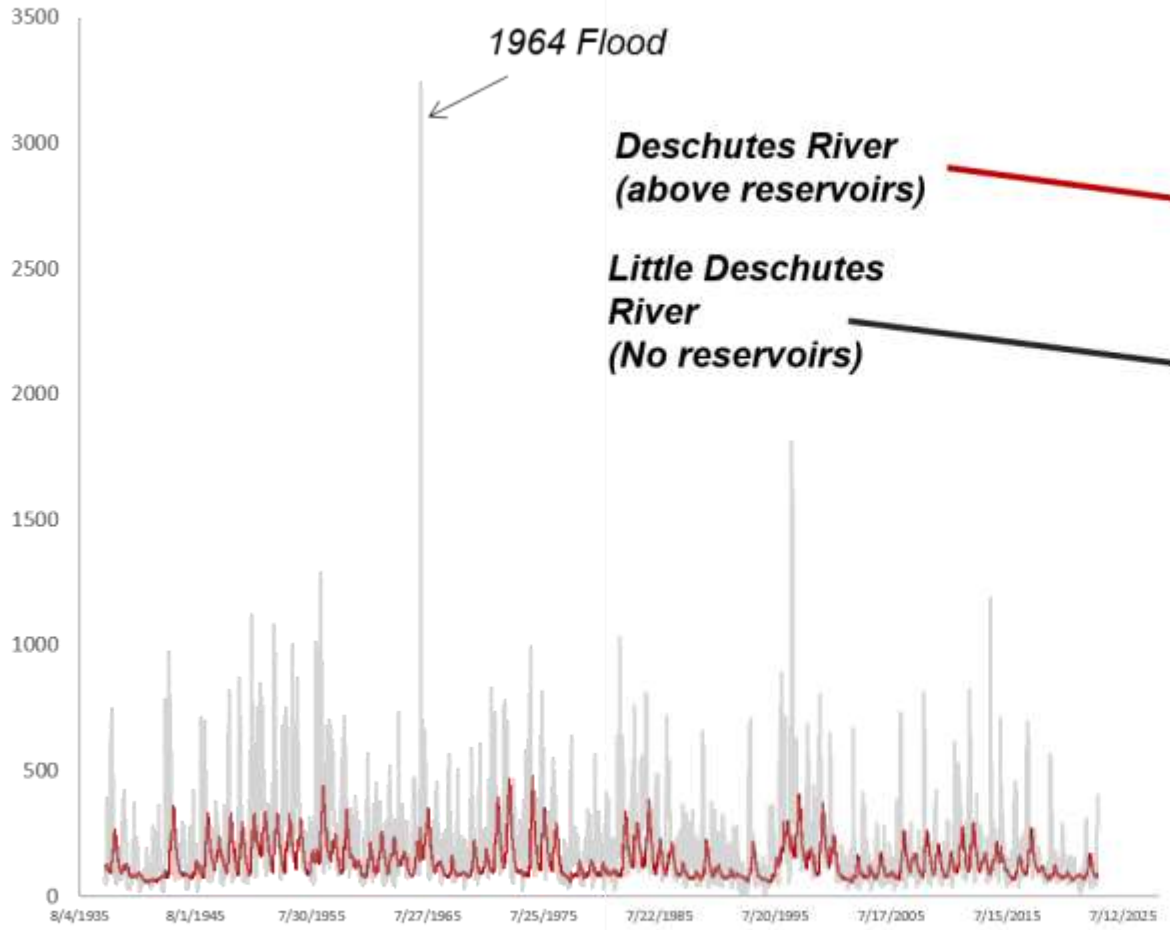
Deschutes River, Oregon and Its Utilization , Henshaw, Lewis and McCaustland, 1914

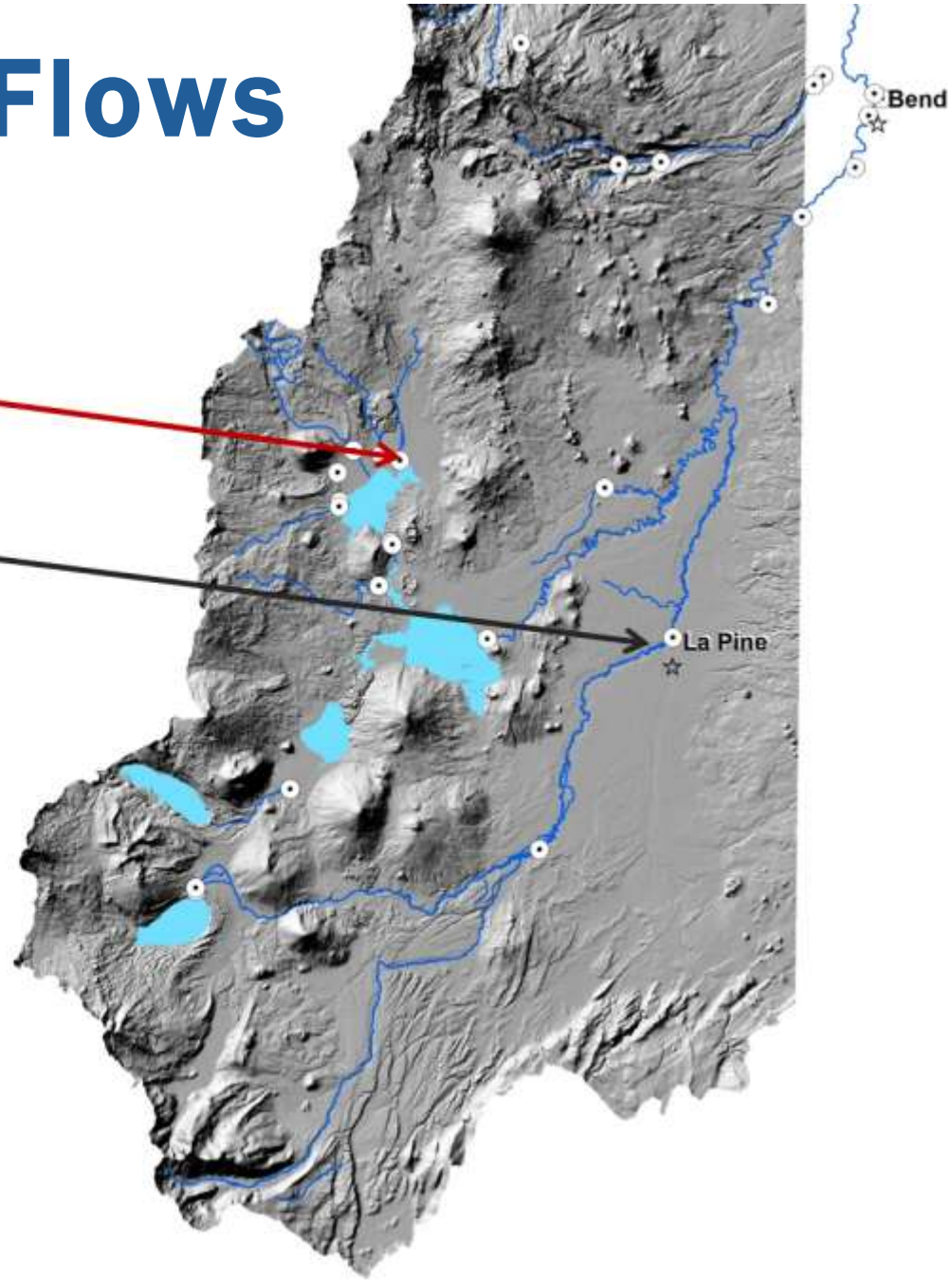




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Deschutes River Surface Flows





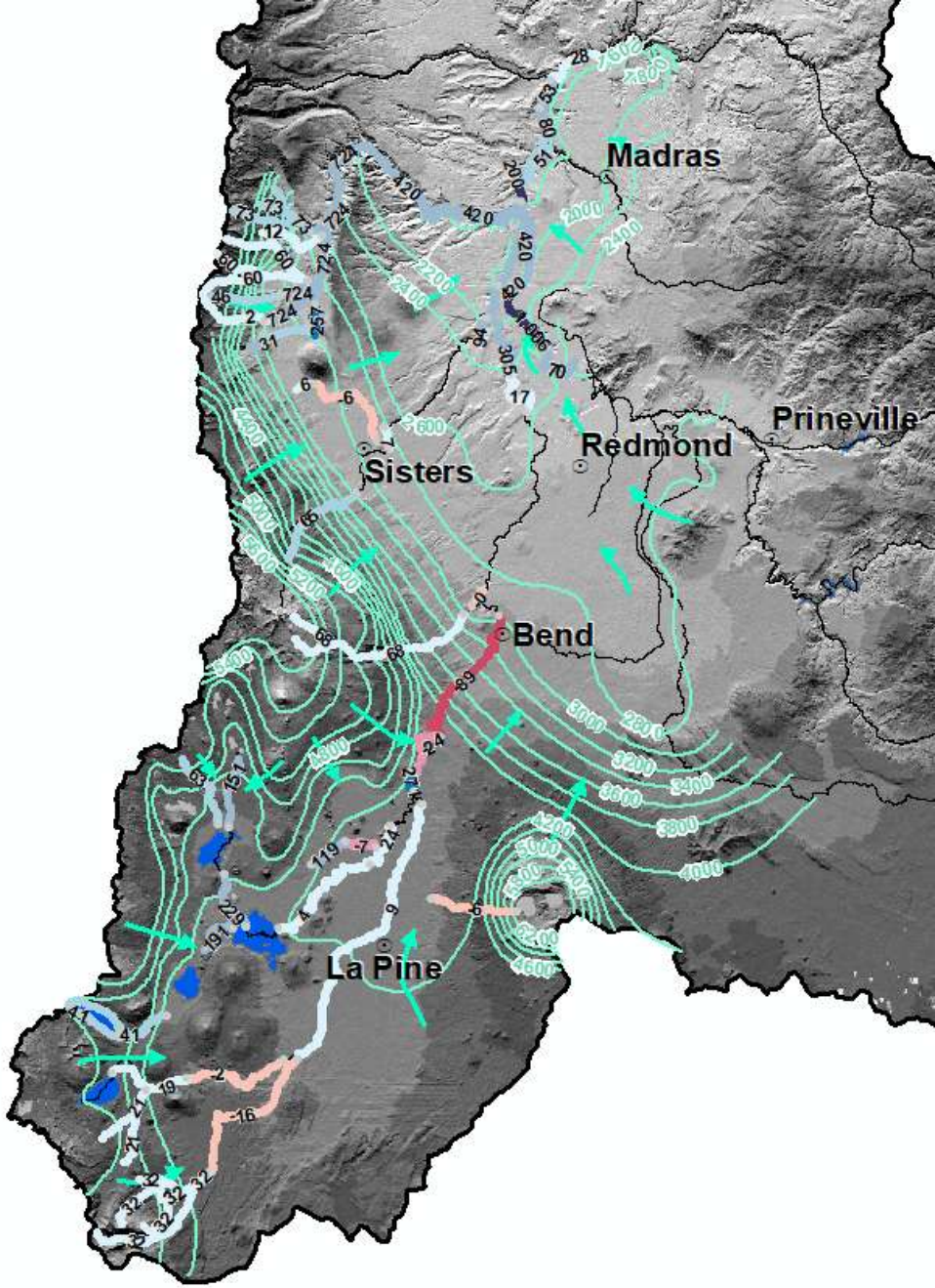
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Deschutes River:

Surface and groundwater interaction

Estimated ground water gain & loss (cfs/mile)

- -5 to -6
- -1 to -5
- 0 to -1
- 0 to 5
- 5 to 10
- 10 to 50
- 50 to 100
- 100 to 150

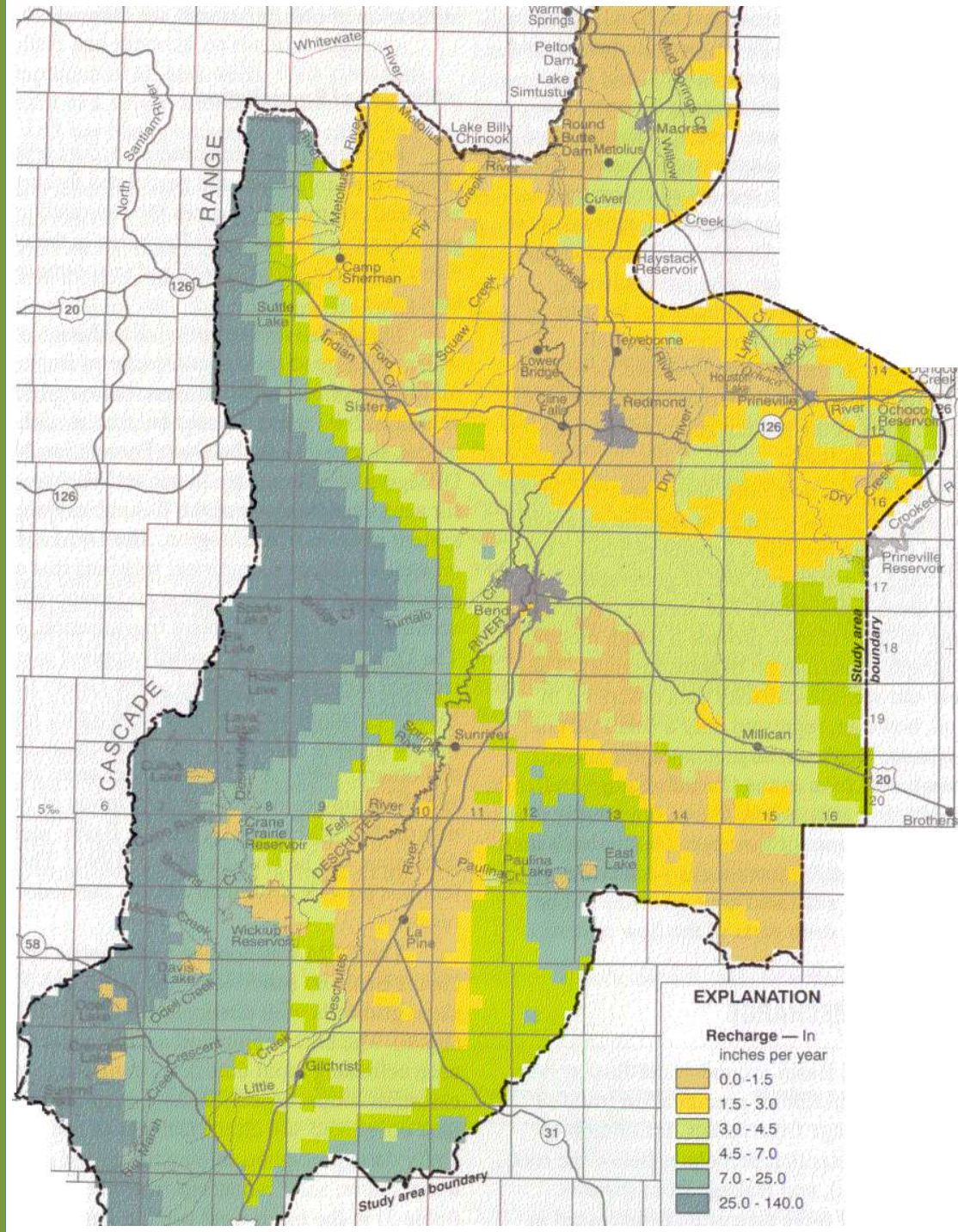


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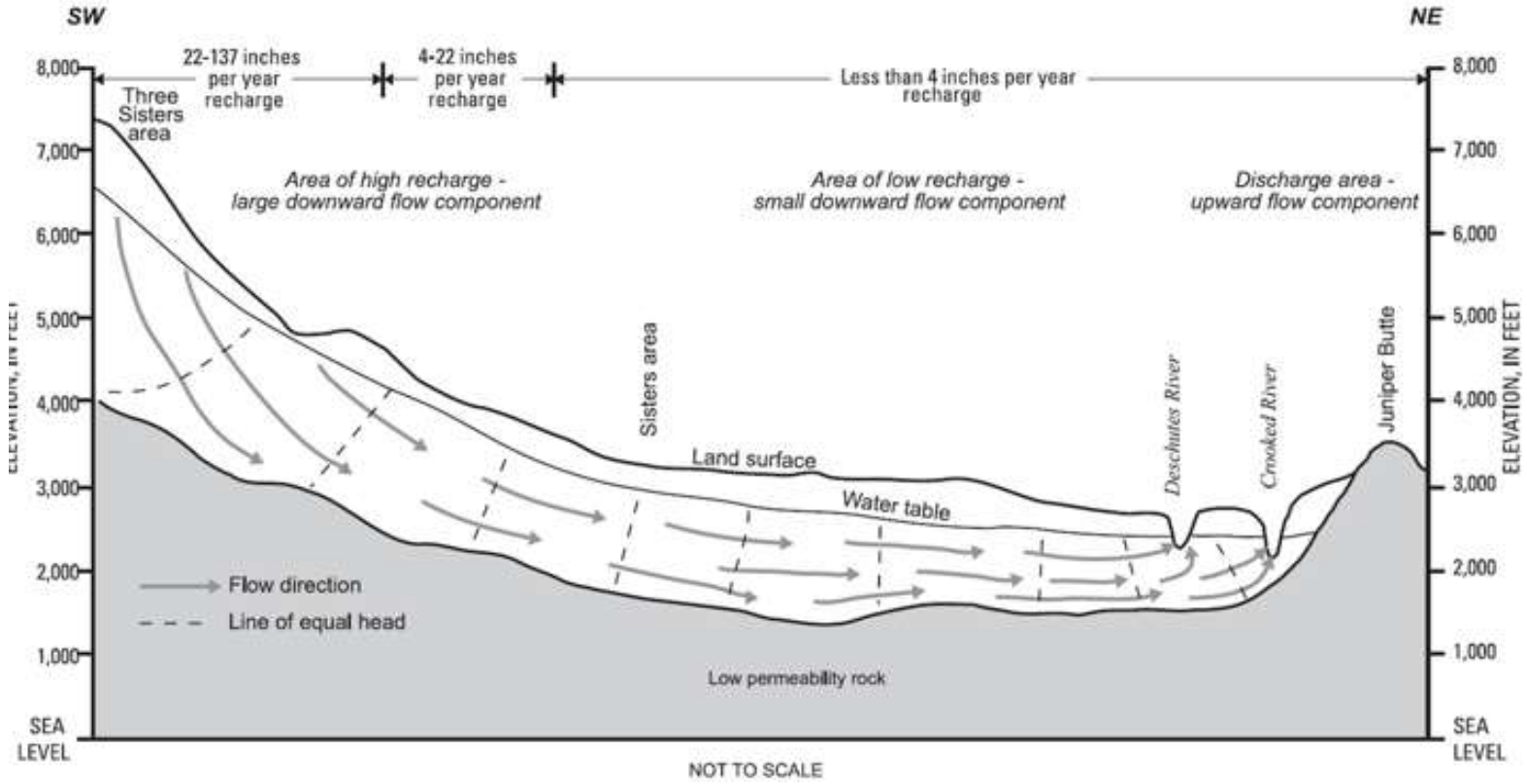
Groundwater Recharge

Where does aquifer recharge happen to give us our Deschutes River and robust aquifer?

- Gains and Losses surface-groundwater in the upper watershed to Bend.
- Groundwater reemerges around Crooked River Ranch, Opal Springs area



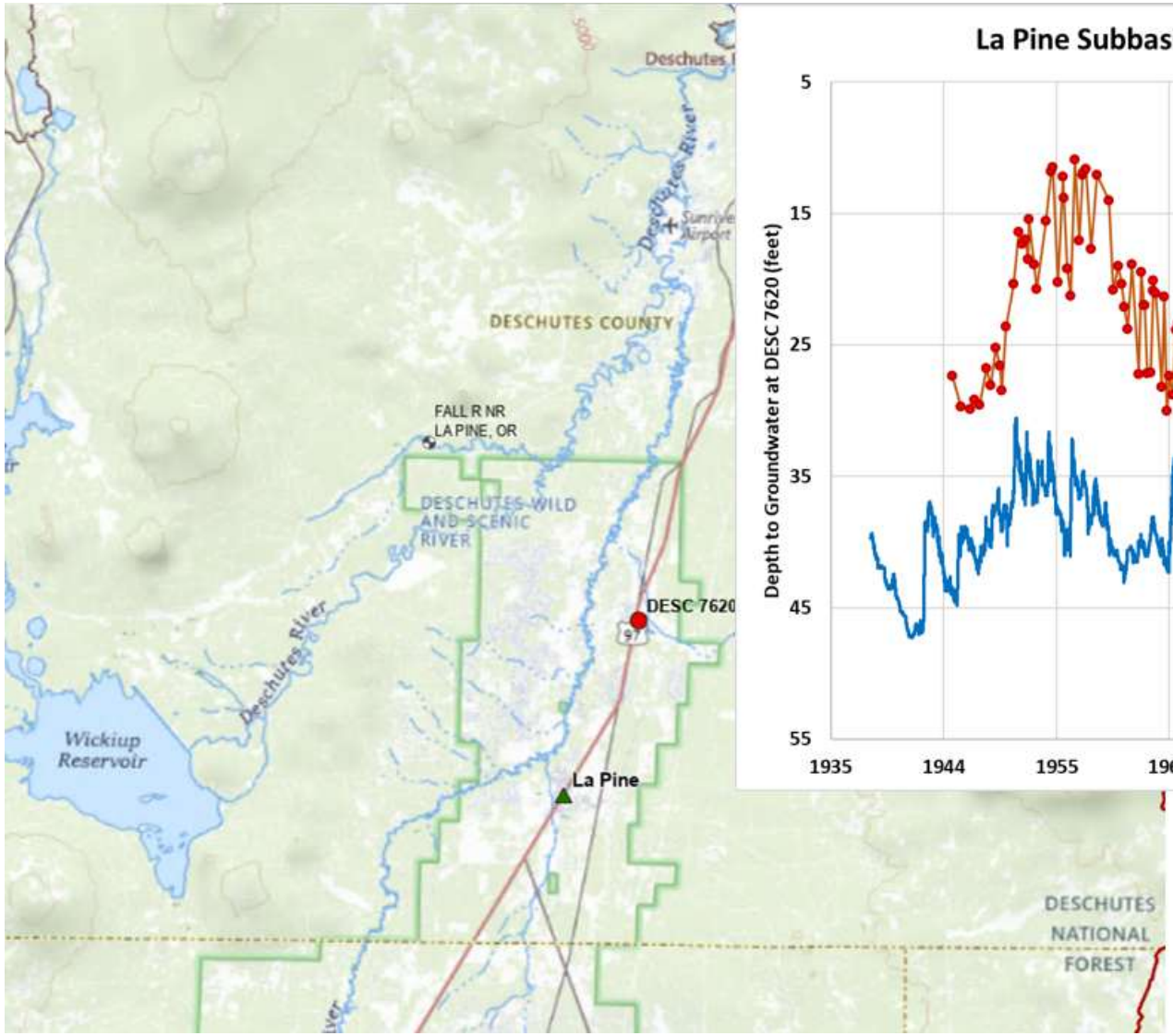
Deschutes Groundwater System

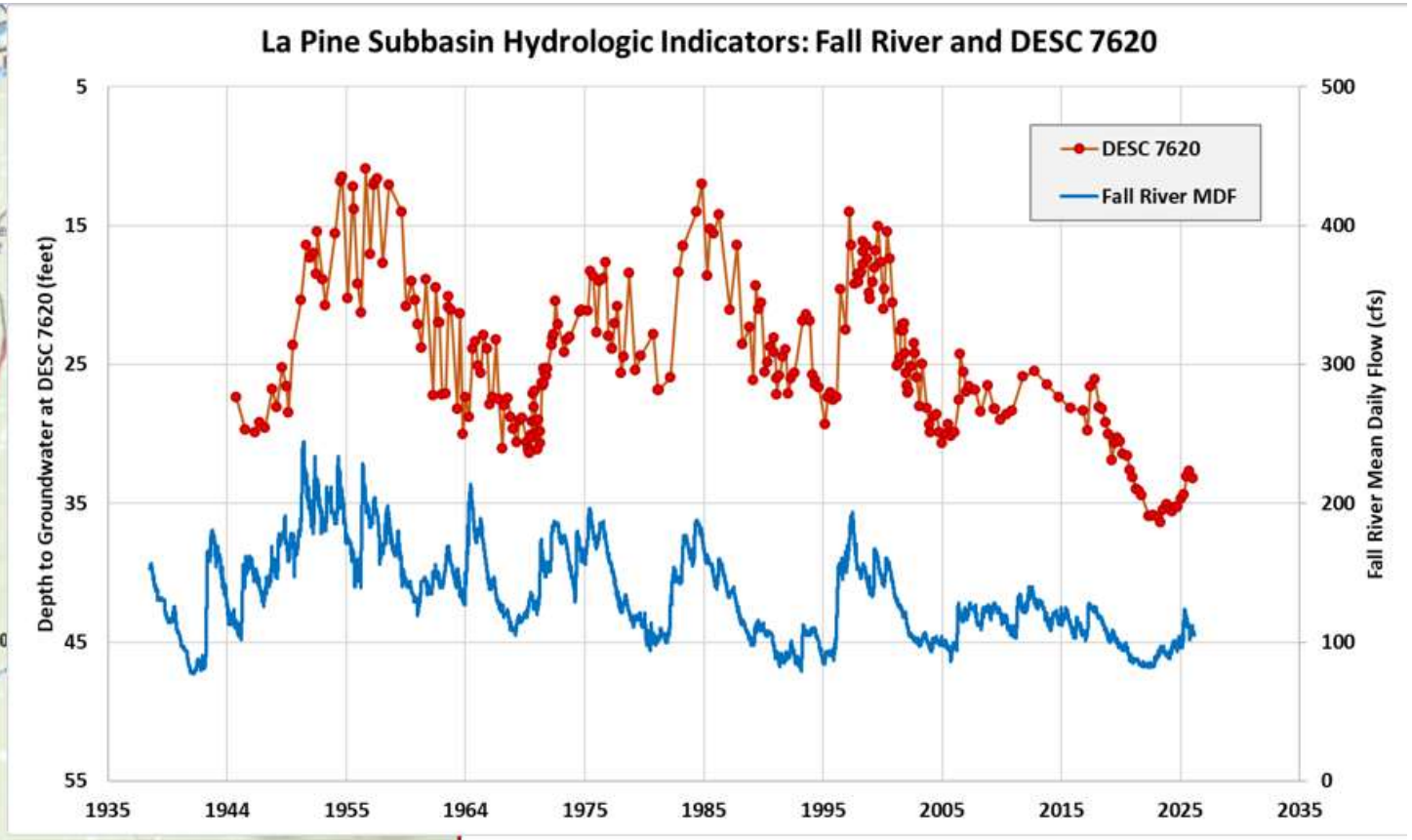


Source: Gannett, M.W., Lite, Jr., K.E., Morgan, D.S., and Collins, C.A., 2001, Ground-water hydrology of the upper Deschutes Basin, Oregon: U.S. Geological Survey Water-Resources Investigations Report 00-4162, 74 p.

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Surface Water and Groundwater Interaction





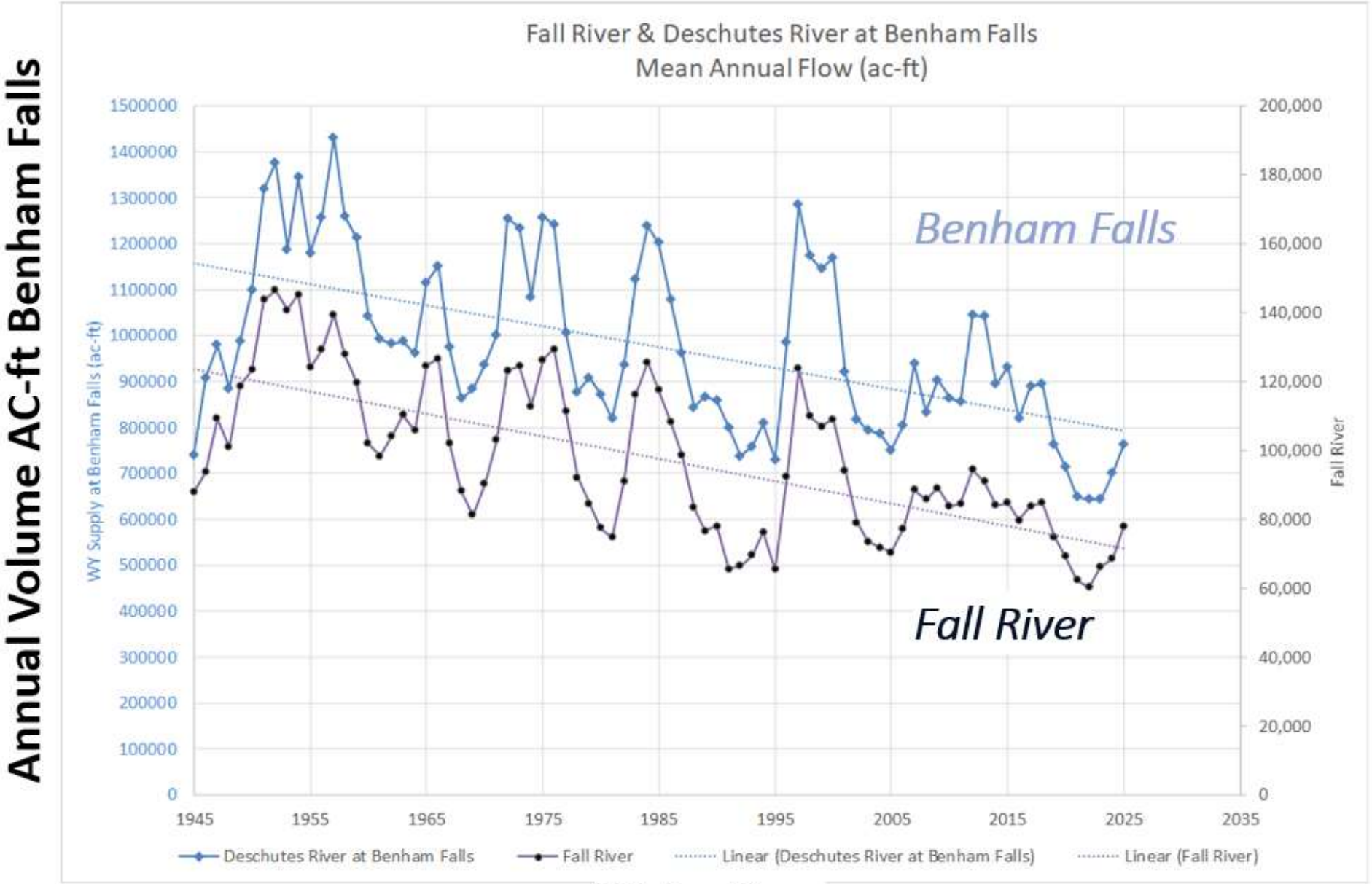
La Pine Area

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Current Conditions

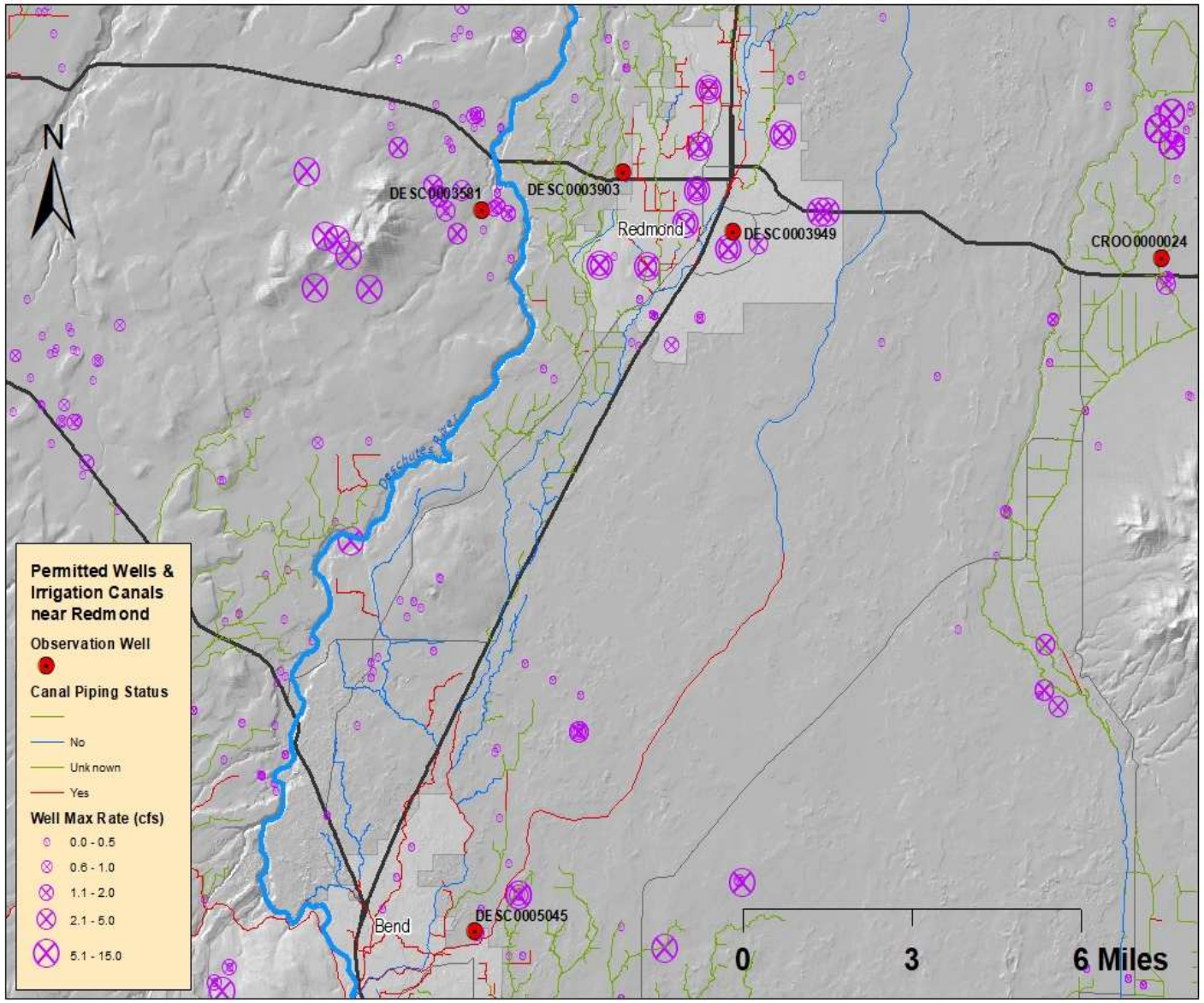
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Surface Water Declines

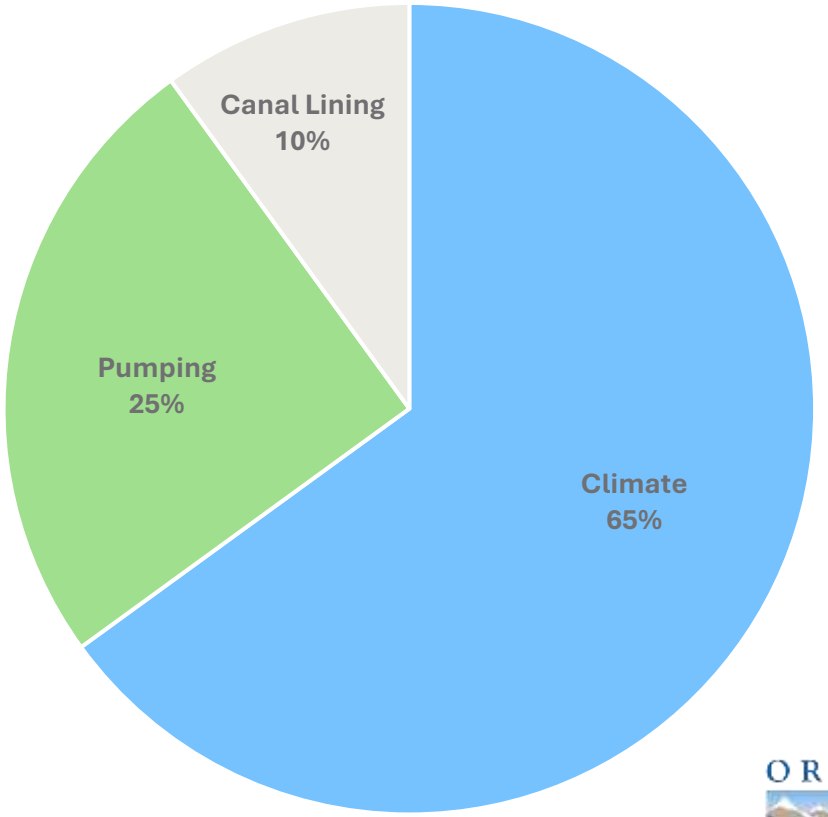


LW1

Groundwater Declines



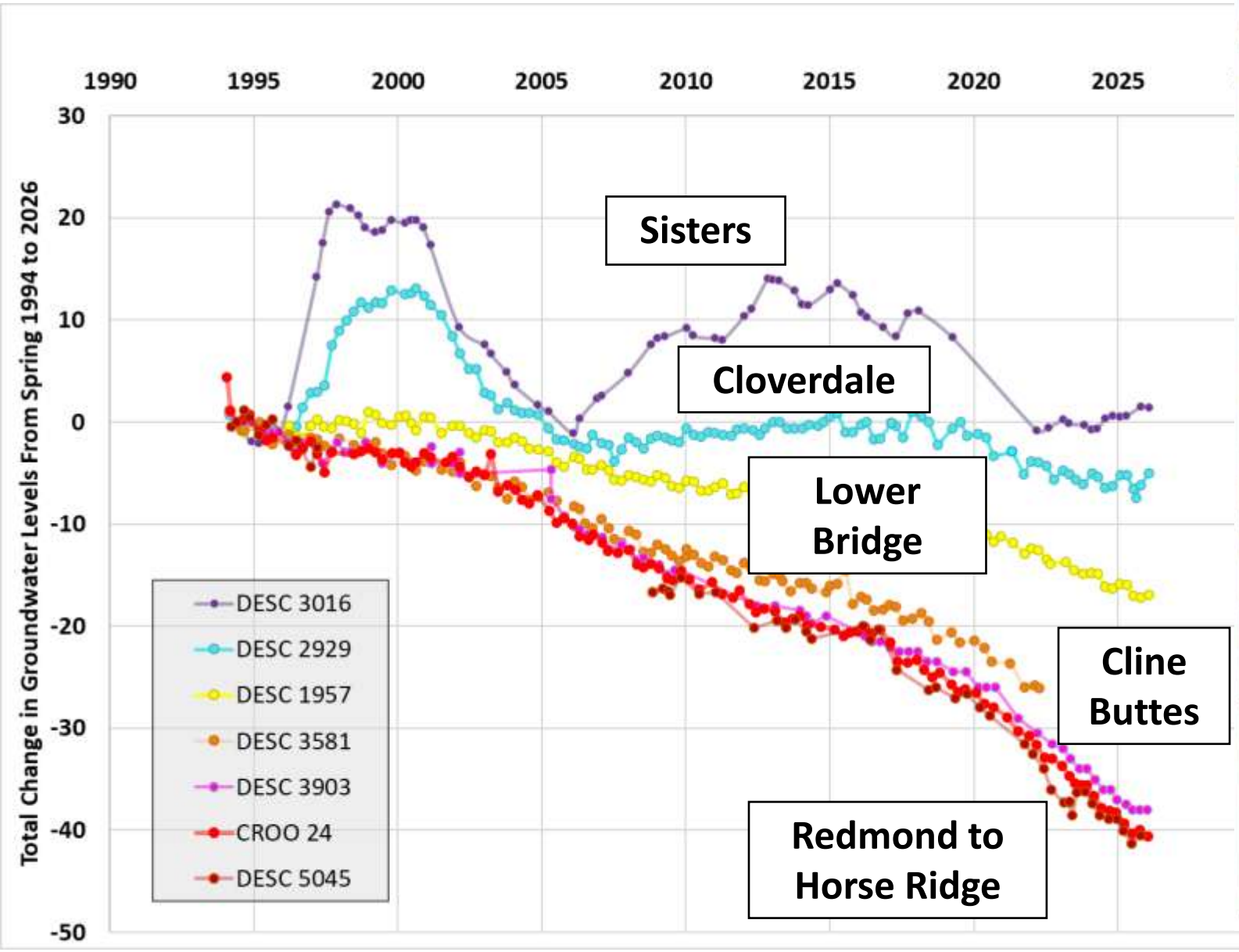
Estimated Relative Contribution to Groundwater Declines in Redmond Area (Gannett and Lite, 2013)

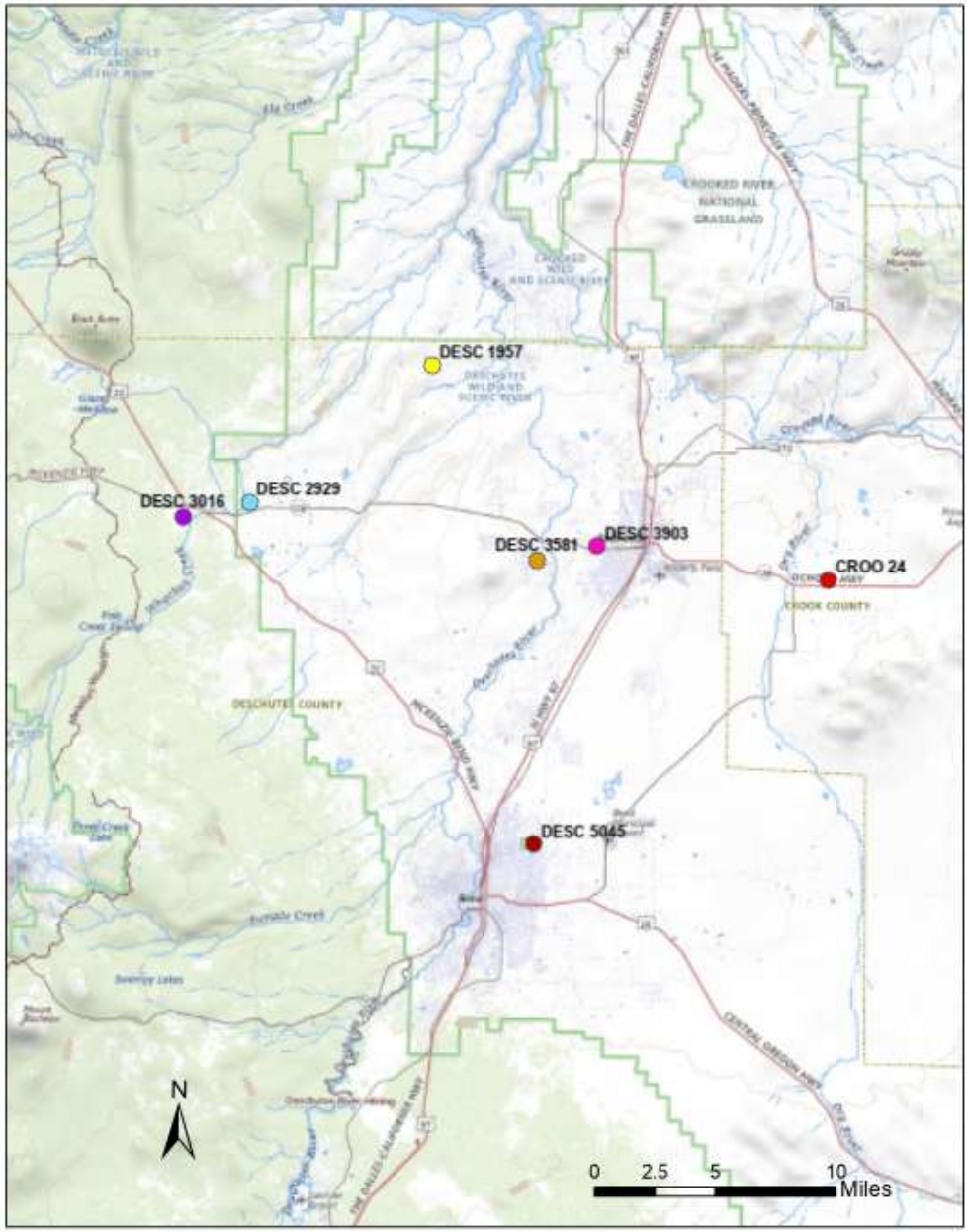


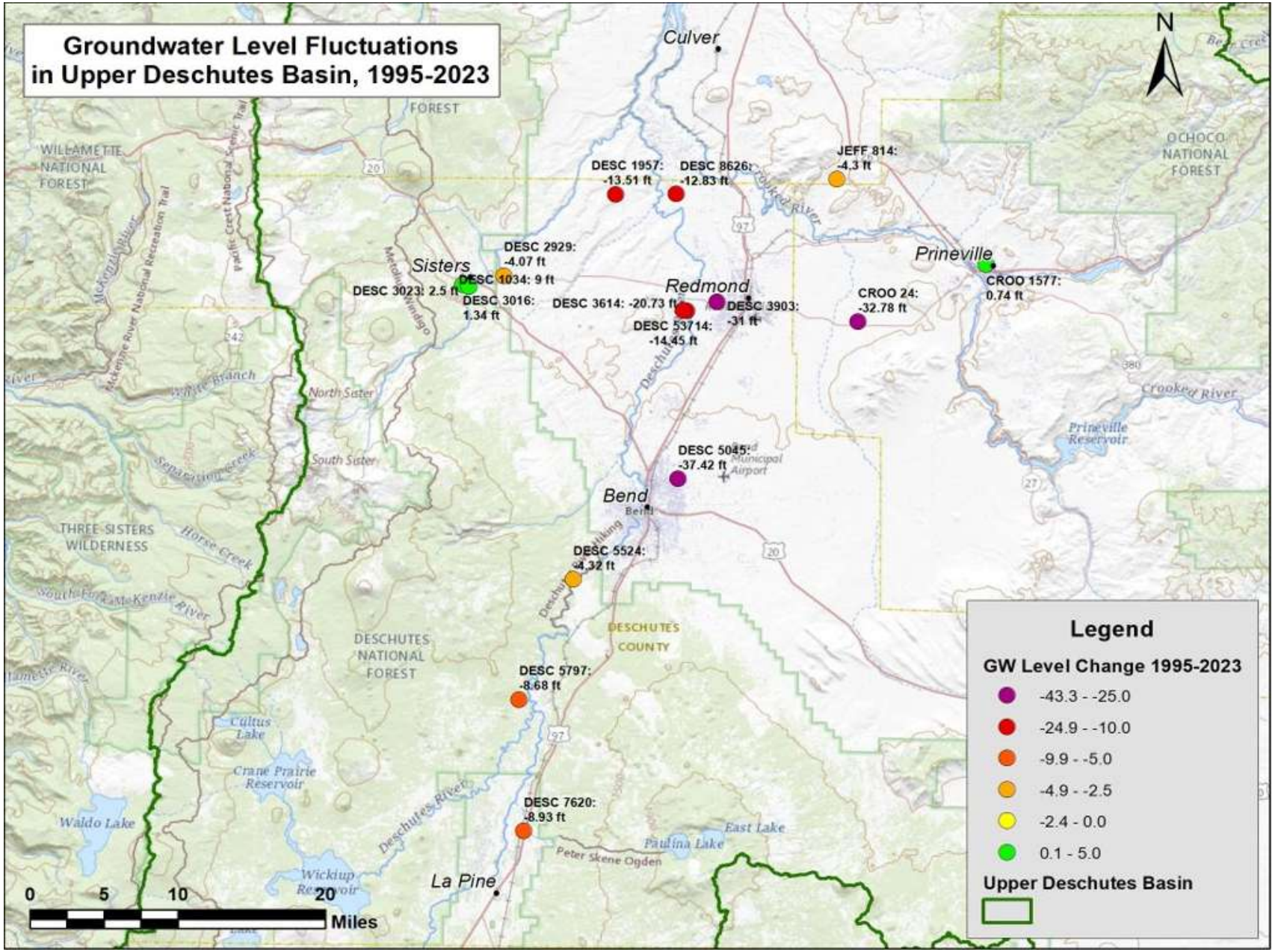
*Canal lining as of 2016

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Groundwater Declines







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What Does This Mean?

- Surface water is over-allocated = no new surface water rights
- Groundwater rights are hard to get
  - Deschutes Basin Mitigation Program
  - New groundwater allocation rules (2024)
- Existing, senior water rights are incredibly valuable

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History of water use in Central Oregon

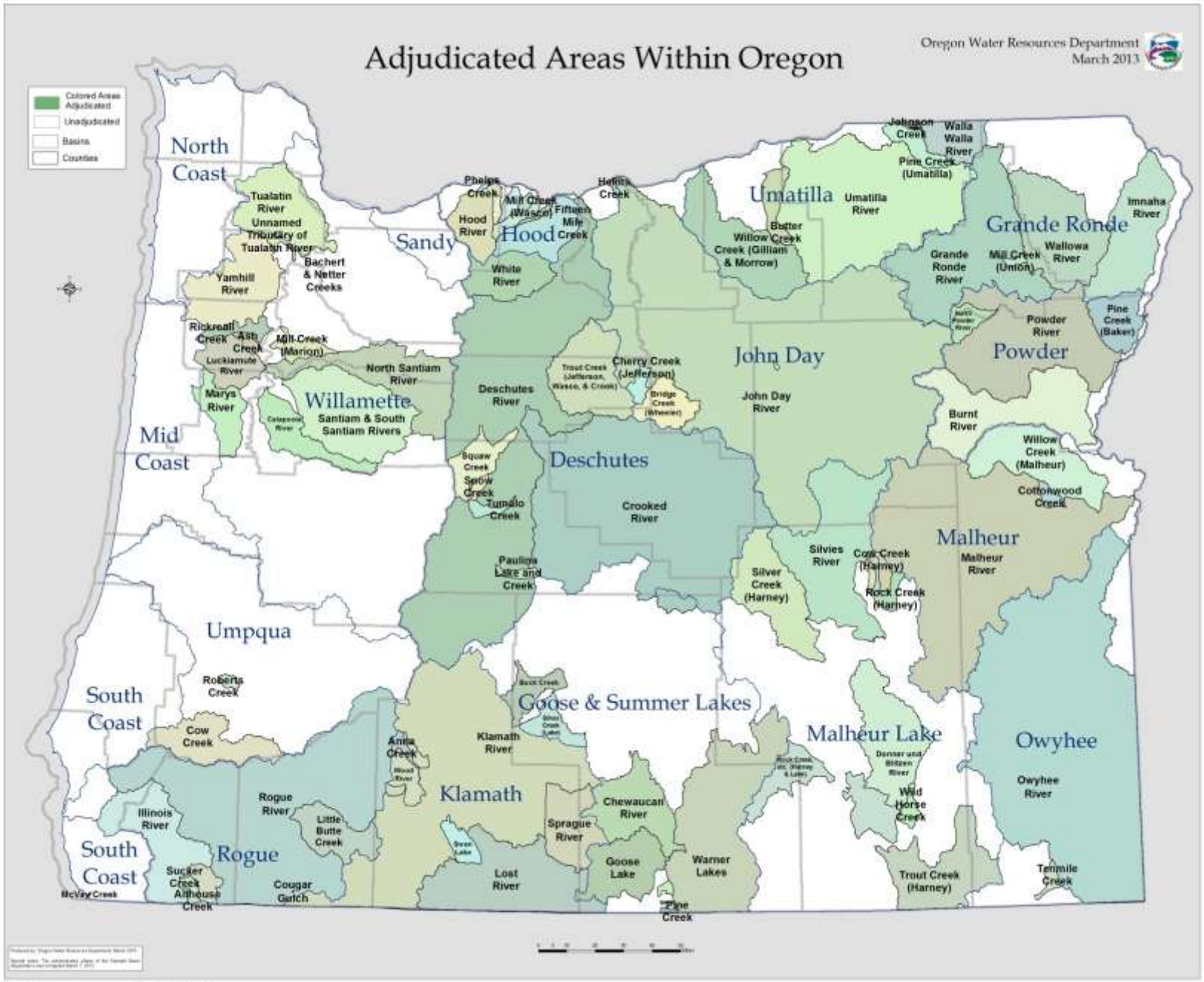
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Deschutes History

- Central Oregon largely passed by
- Carey Act (1894)
- Reclamation Act (1902)
- Deschutes River fully appropriated (1913)
- Reservoir development(1922-1949)
- Gentleman's agreement (1962)
- Instream water rights act (1987)
- Shift from timber and agriculture to scenic recreation in modern times



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Well ID Program Requirements ORS 537.789-537.793



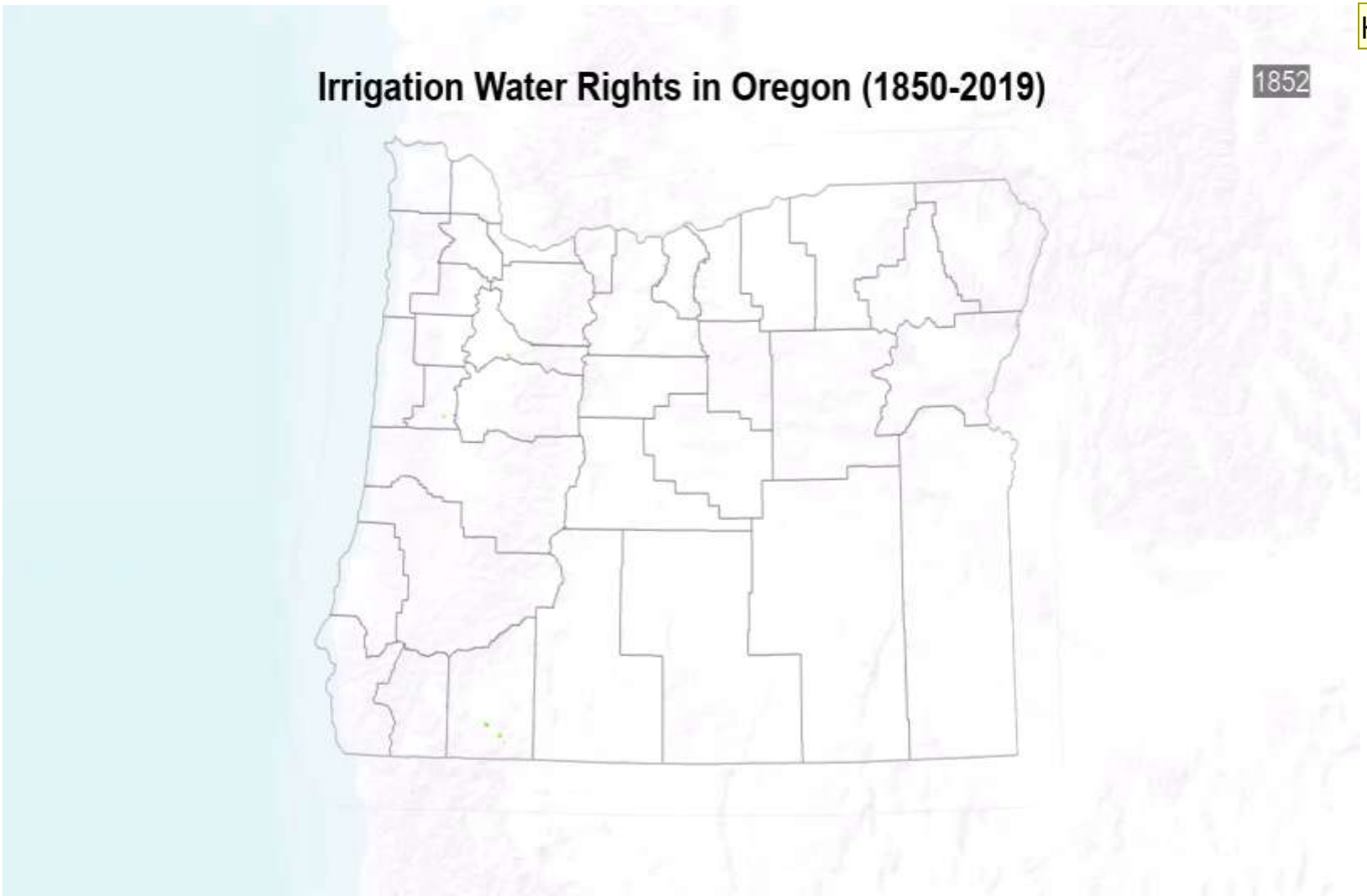
- Required since 1996
- Required to be installed when properties sell
- No fee for a well ID tag
- Unique to each well
- Helps in future searches and water rights
- Must provide map with start card
- Fee to maintain well log database
- Shared well agreements

KFO1

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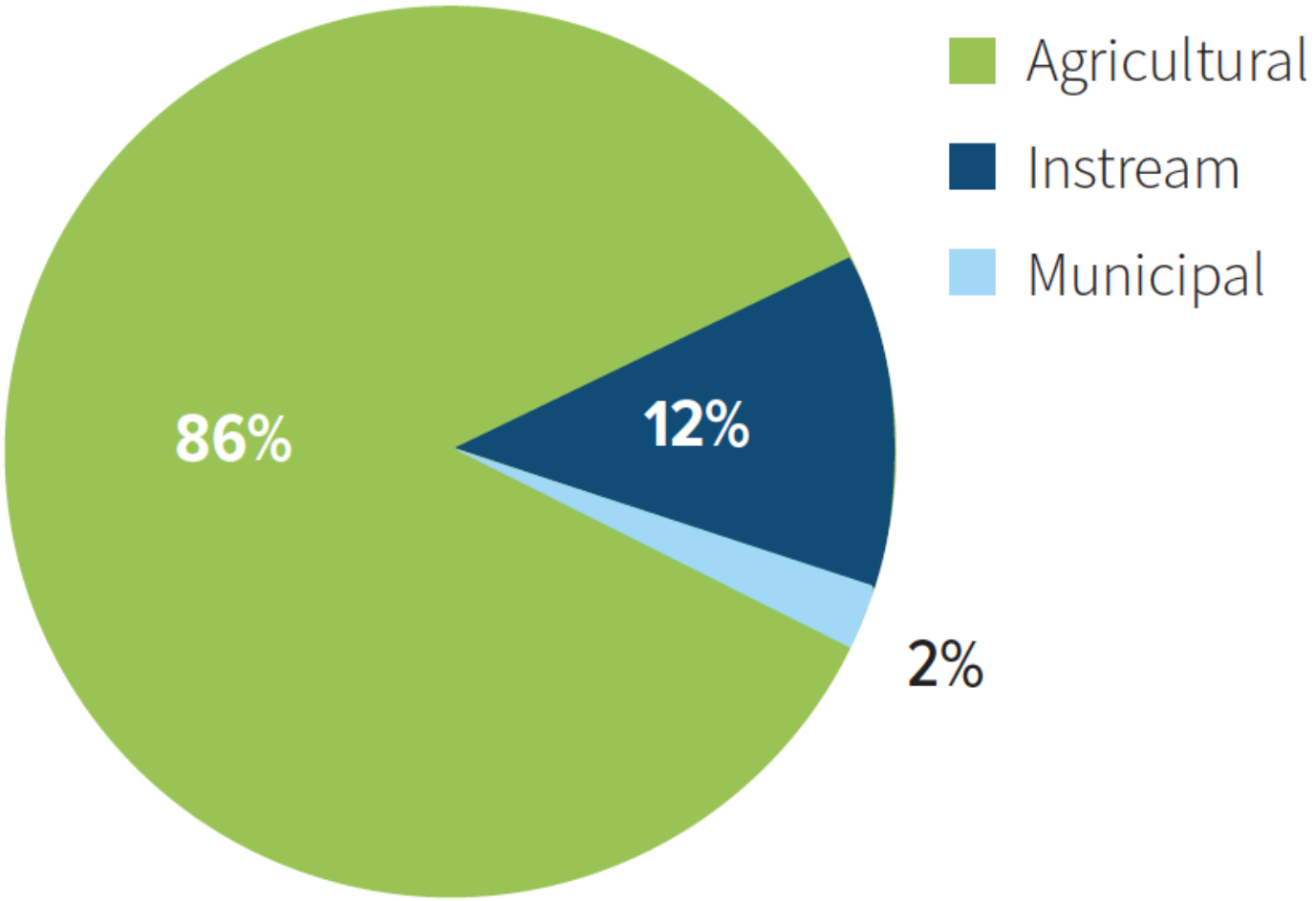
Water development across Oregon

KFO1



Agriculture in the High Desert

KFO1

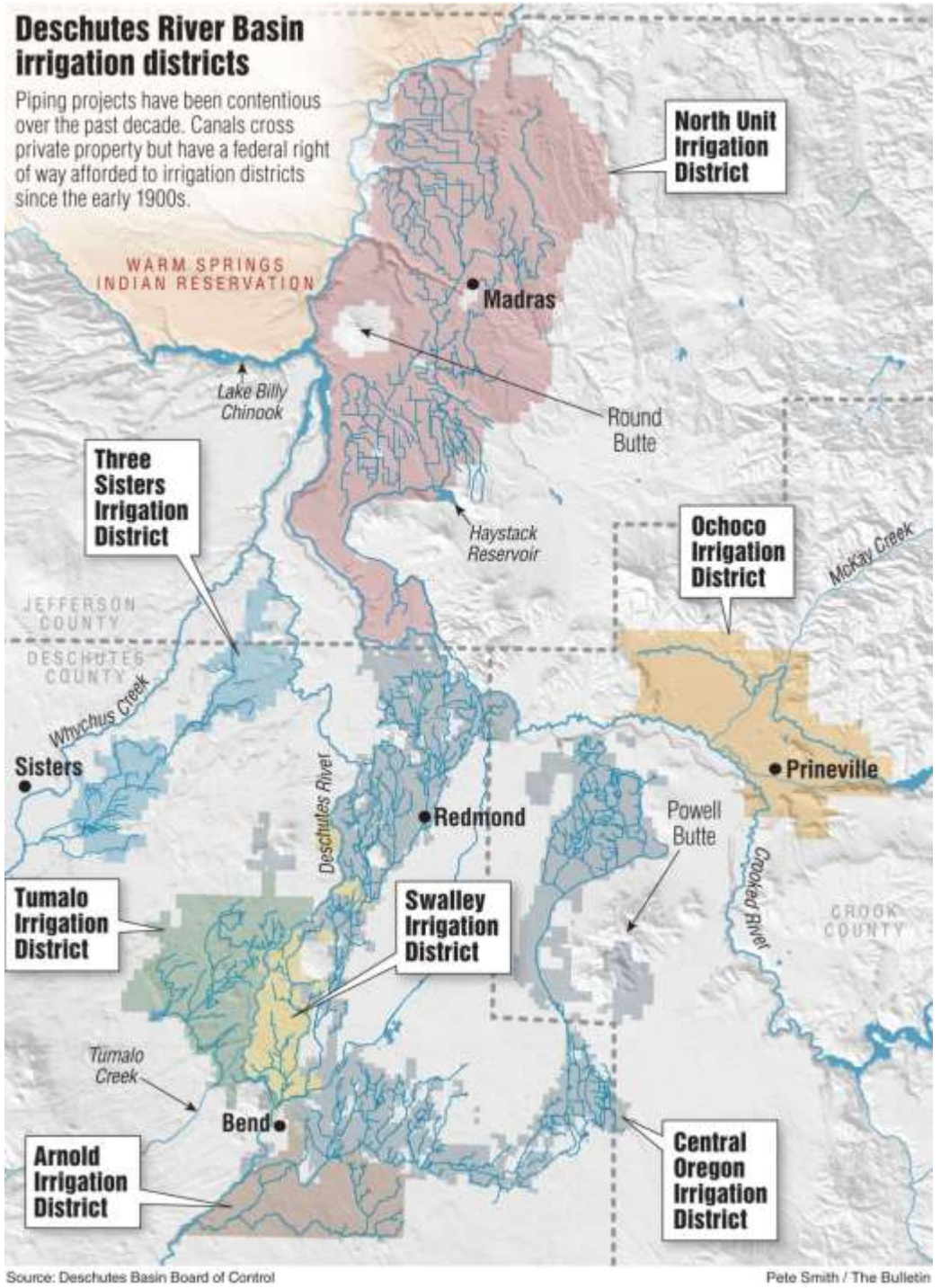


Upper Deschutes Basin Study, 2018

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Irrigation Districts

- 8 Districts in Central Oregon
  - Divert about 95% of water
- Diversions have been decreasing since 1960's
  - Sprinklers, measurement, piping, lining, instream transfers and leases & conservation
- Most of leasing is with irrigation districts



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Basin Conservation Programs

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Upper Deschutes Groundwater Study and Mitigation

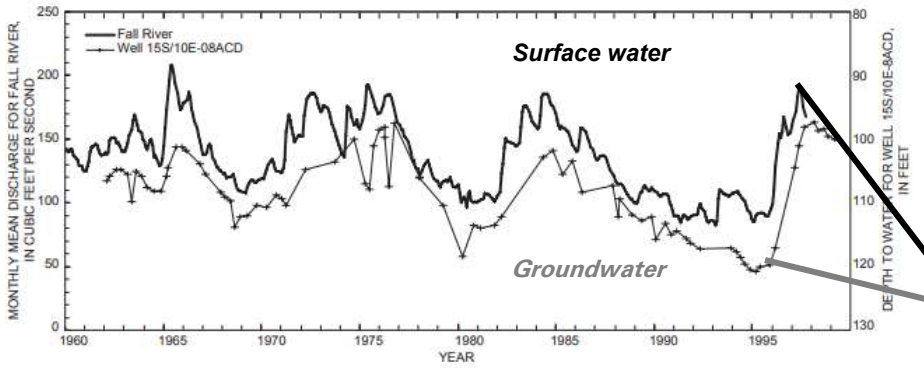
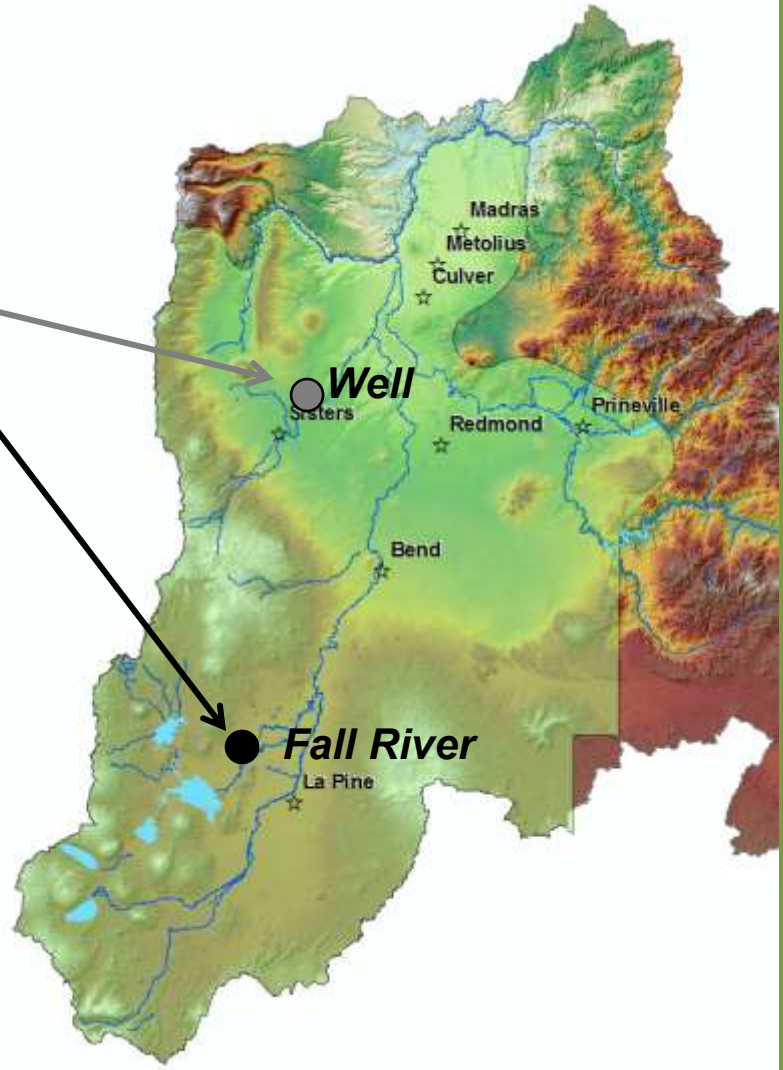


Figure 38. Relation between monthly mean discharge of Fall River and static water-level variation in a well near Sisters, Oregon, 1962–97.

- USGS/OWRD Ground Water Study 1998
  - ***direct connection between surface water and groundwater, thus Scenic Waterway would be affected by any new ground water rights.***
- Mitigation required for new ground water rights in the Deschutes Basin study area.
  - Division 505 and 521

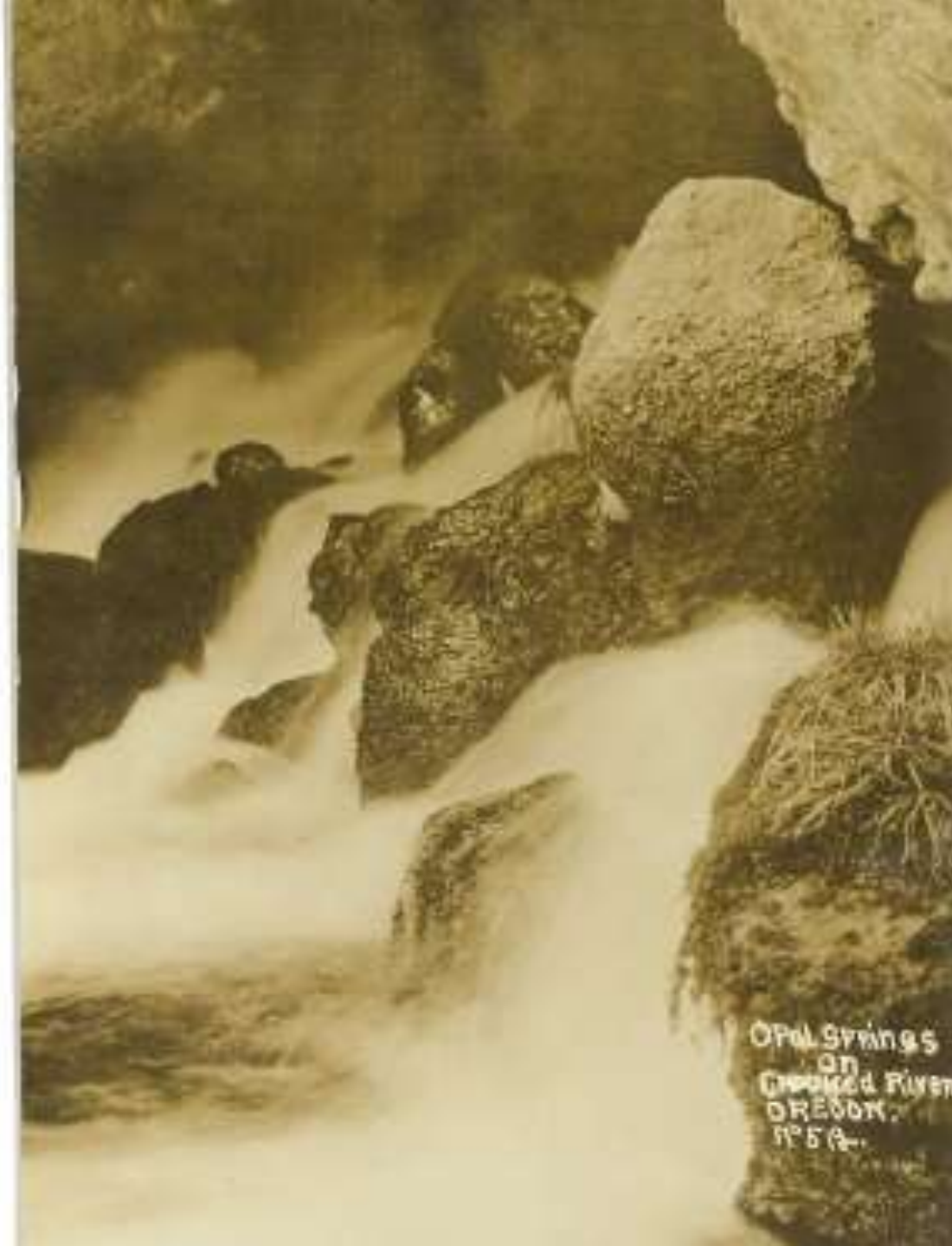


Upper Deschutes Zone of Impact

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Deschutes Basin Mitigation Program

- Any new water right use in the “zone of impact” must be offset (i.e., mitigated)
- Mitigate for the consumptive use only (“bucket taken out, bucket put back in”)
- Domestic (exempt) wells are not included
- Offset new consumptive use with existing surface water right
- 2005 appeals ruling overturns rules
- HB 3494
- Originating surface water flow need to be present at least 50% of the time
- Established zones of impact
- 200 CFS mitigation cap

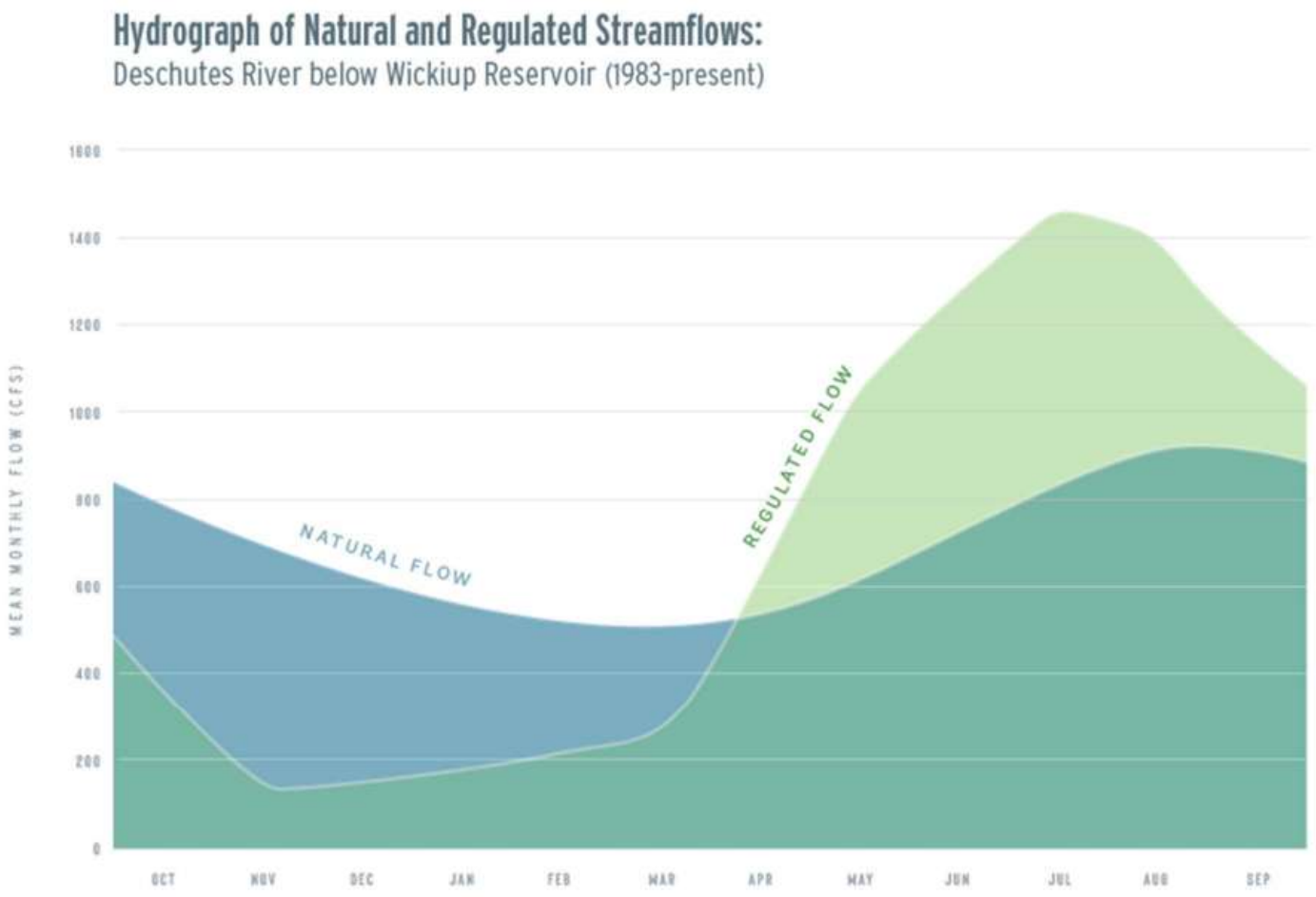


The DBHCP

- **Deschutes Basin Habitat Conservation Plan sets instream flow targets**
  - 30 year plan
- **Reservoir operations aligned with biological needs**
- **Quantified habitat actions (restoration, screening, passage)**
- **Monitoring & adaptive management**
- **ESA coverage for participating districts**
  - OR Spotted Frog, bull trout, steelhead



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DBHCP Impacts: Restoring Balance

- **Wickup winter flows**
  - 2020-2028: **100 cfs**
  - 2028-2032: **300 cfs**
  - 2032+: **400-500 cfs**
- **Restoring river to natural flow conditions will aid in ODF recovery**
- **Wickiup stores the majority of NUID's irrigation water**
  - NUID is one of the most productive farming areas in the basin
  - NUID is also the most junior district- relies on Wickiup storage
- **Also includes the Crooked River**
  - Steelhead and bull trout

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Crooked River Basin

- Prineville Reservoir Storage Accounting
  - Fully Allocated Surface Water
  - Weekly accounting
  - 14 gages: monthly/bi-weekly measuring throughout the irrigation season
- New Gaging
  - Three main diversions (Peoples Canal, Rice-Baldwin Ditch, and Crooked River Central Diversion)
  - Mainstem gage on Crooked River at O'Neil
- McKay Switch
  - 11.2 cfs of McKay Creek water rights going instream in exchange for pressurized water from Ochoco Irrigation District
  - Ochoco and McKay Minimum flow requirements

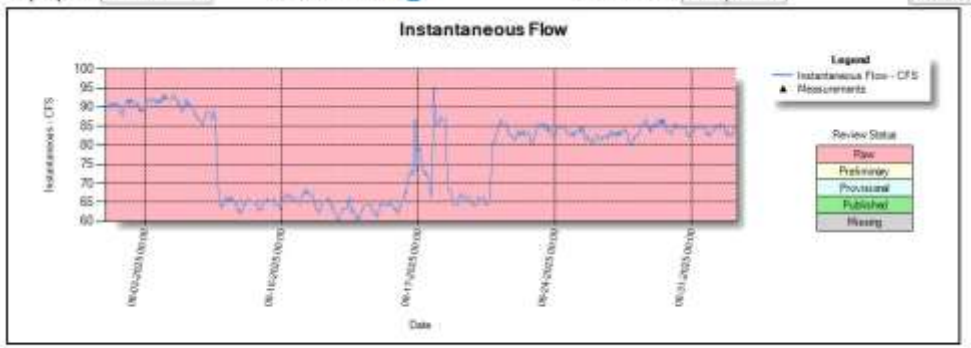
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Prineville Reservoir Storage Accounting



Station ID: 14081500 View: Map - Driving Directions - Station Info - Historical Stats - Rating Curve
Name: CROOKED R AT PRINEVILLE, OR
Operator: OWRD Status: Near Real Time Drainage Area:
Latitude: 44° 18' 1.613" Longitude: -120° 51' 32.234" Datum: NAD83
Period of Operation: Unknown – Present
Most Recent Values: Mean Daily Flow: 84.0 cfs @ 09/01/2025
Instantaneous Flow: 84.6 cfs @ 09/02/2025 06:15
Instantaneous Stage: 4.80 ft @ 09/02/2025 06:15

Starting Date: 8/1/2025 Ending Date: 9/2/2025 Dataset: Instantaneous Flow Refresh Graph
Graph Options: Linear Axis Show Measurements: Download Format: Tab Separated Download Data



	Allocated Storage (AF)	Running Total of Adjusted Storage Used (AF)	Allocated Storage Remaining (AF)	Percent remaining
USBR Total (Above CAPO)	137449	47942	89507	65
OID	55562	29705	25857	47
Peoples ID	3356	1935	1421	42
Ulupalakua	2088	901	1187	57
QV-1	1193	464	729	61
QV-2	1156	344	813	70
[illegible] Water	59603	4913	54690	92

New Gaging

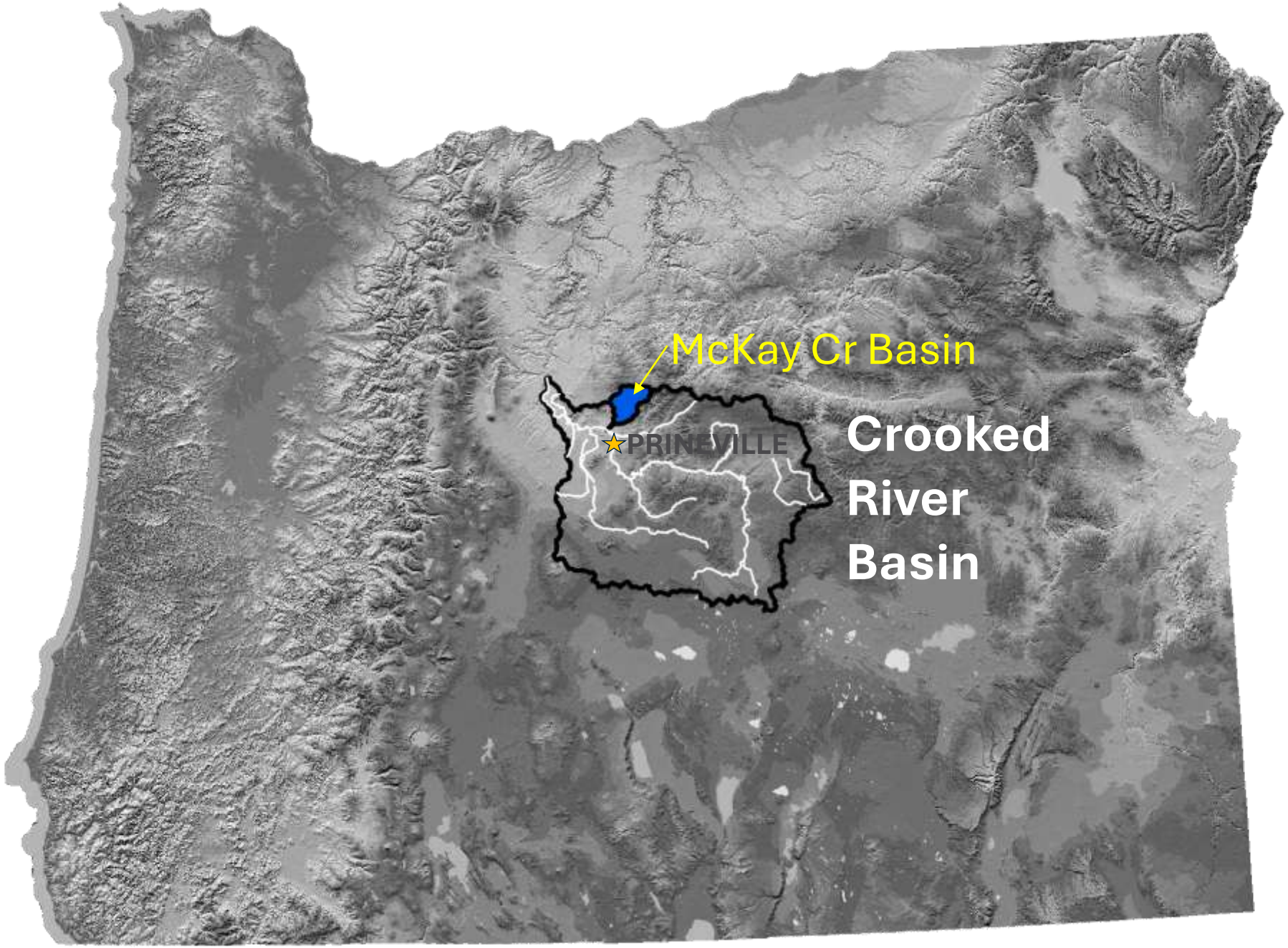
- Rice Baldwin
- Peoples Canal
- Crooked River Central Canal
- Crooked River at O'Neil







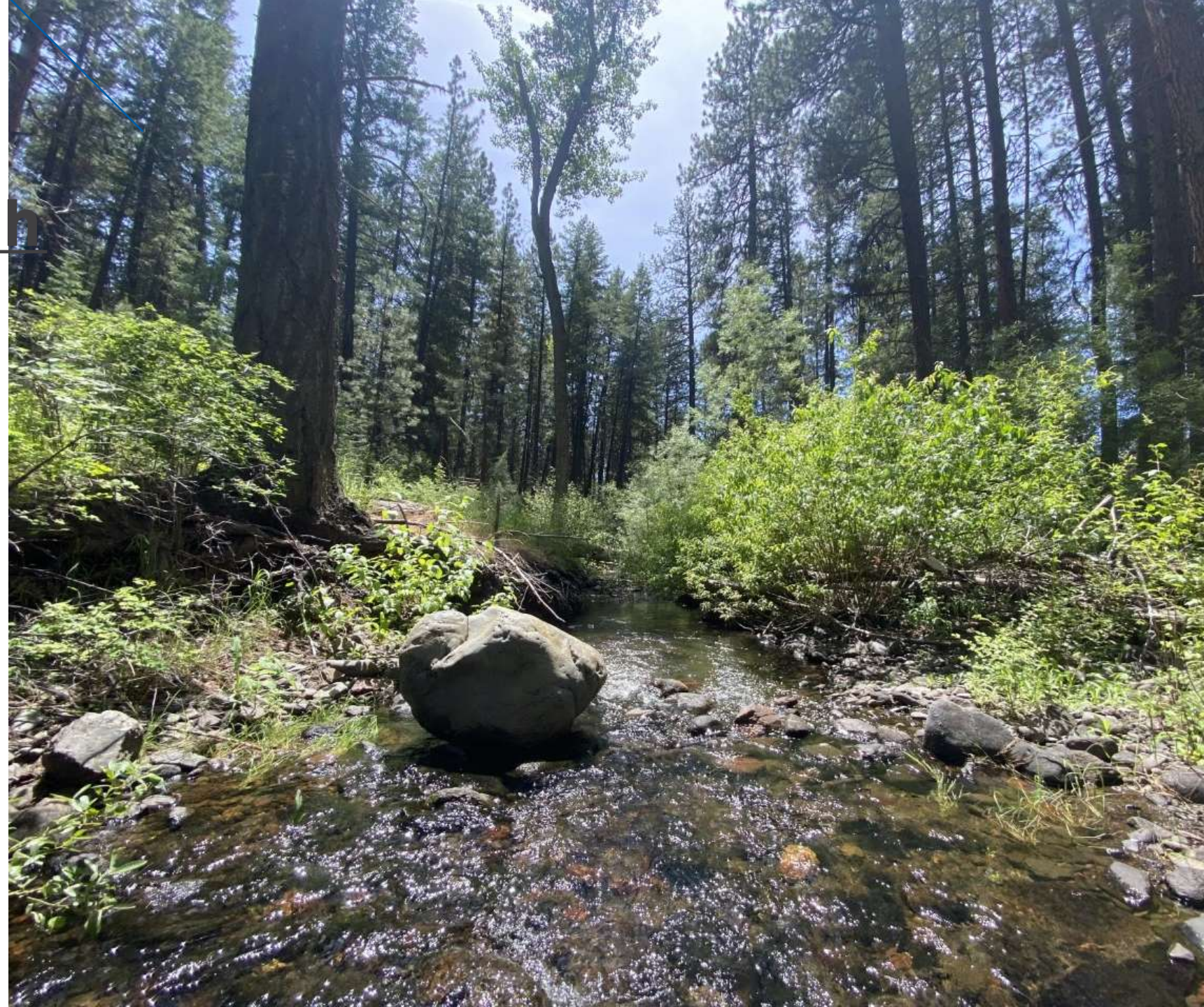



McKay Cr Basin
PRINEVILLE
Crooked
River
Basin

The McKay Switch

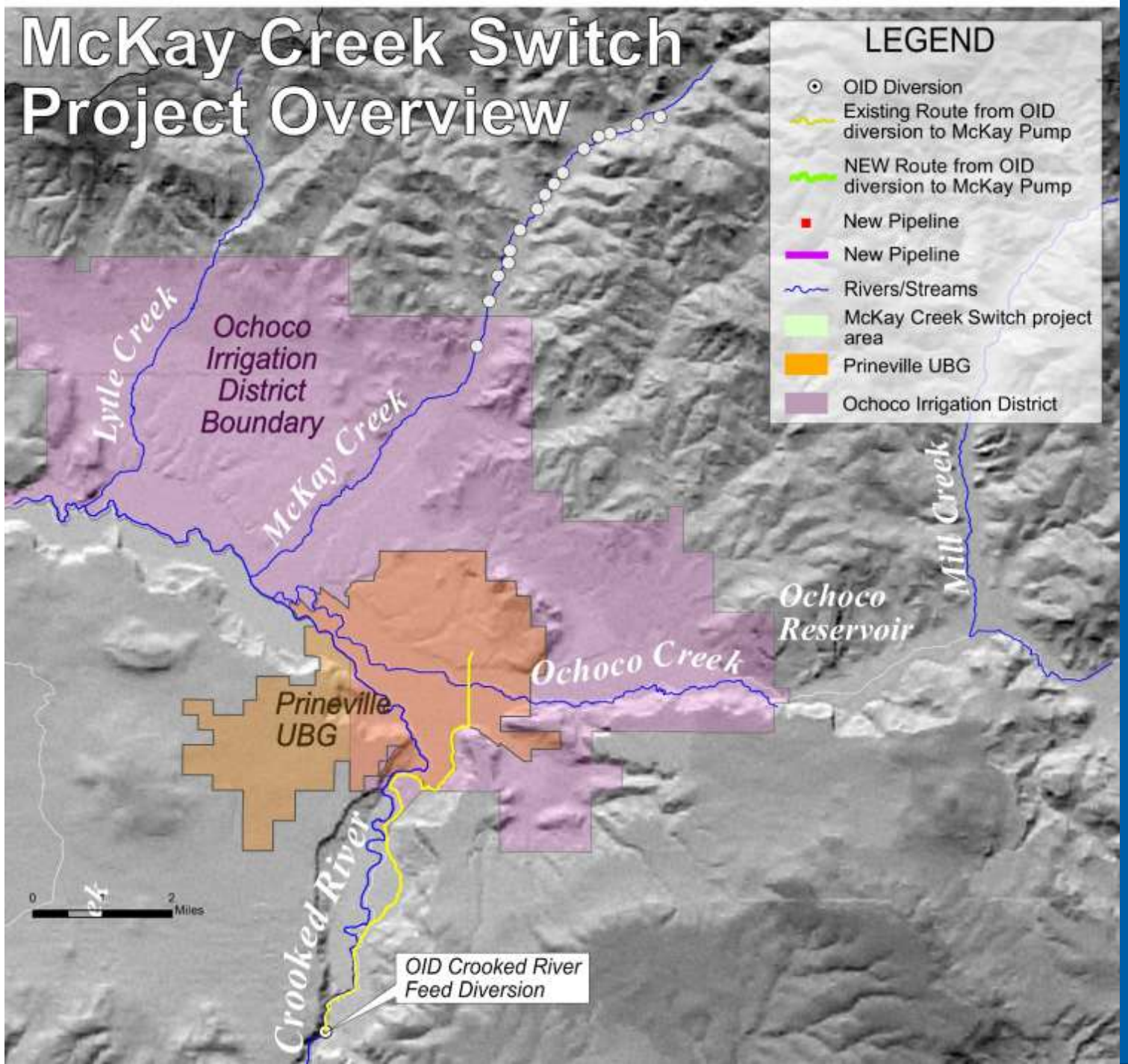
- **McKay Creek water right holders provide:**
- Pressurized OID water
- Modernized on-farm infrastructure

- **OID and the DRC provide:**
  - Up to 11.2 cfs of surface water rights permanently transferred instream
  - Habitat restoration



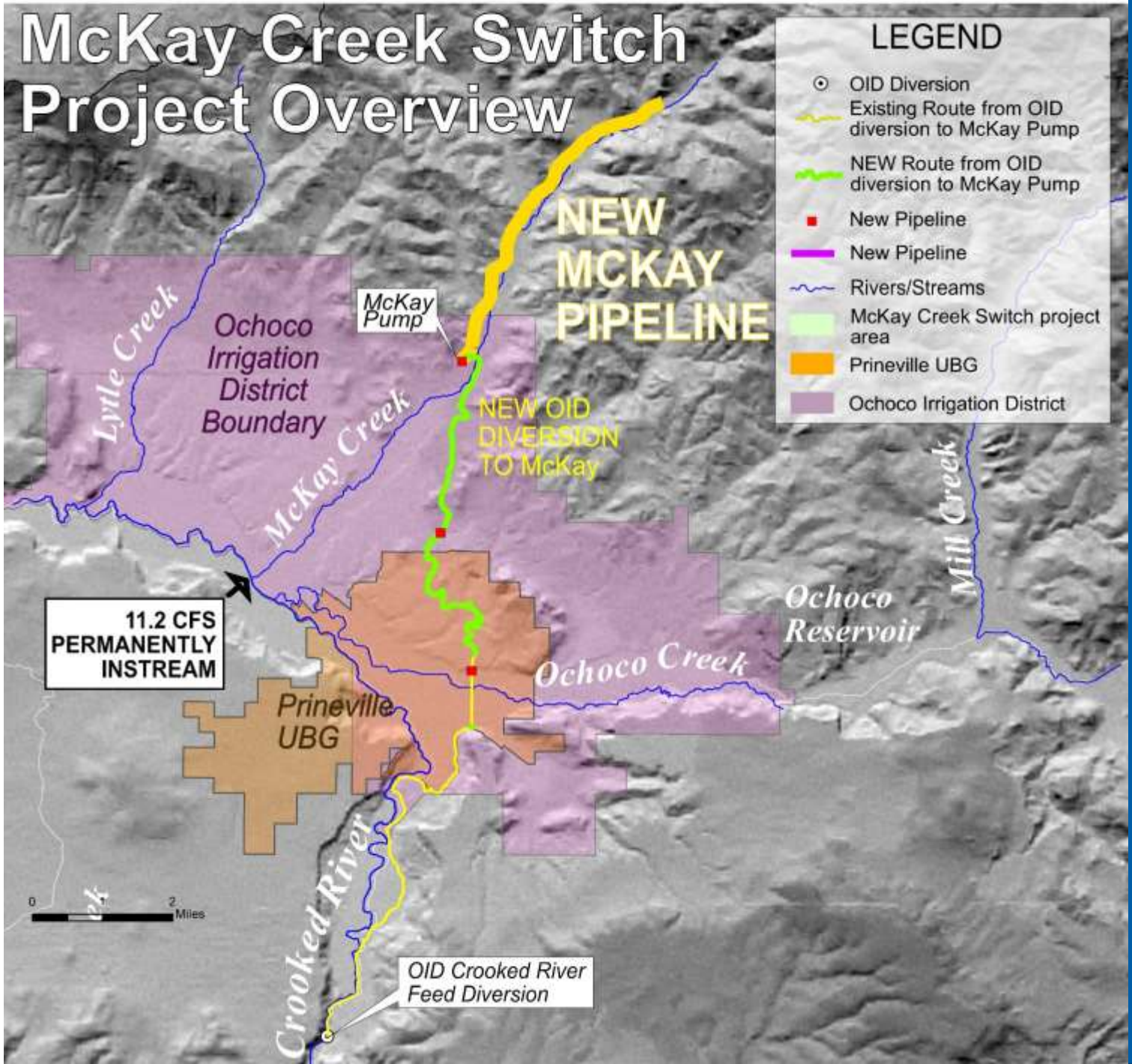
McKay Switch

- Water diverted from the Crooked River in OID Feed Canal
- Existing McKay Creek PODs to be abandoned
- 100% Landowner Participation



McKay Switch

- Water conveyed to via new pump station in Prineville to new McKay Creek pump station
- Pressurized, reliable irrigation water
- **11.2 cfs of surface water rights permanently transferred instream**



Questions?

www.oregon.gov/owrd (our website)

https://apps.wrd.state.or.us/apps/sw/hydro_near_real_time/ (NRT)

www.or.nrcs.usda.gov/snow/data/current.html *(SNOTEL)*

www.usbr.gov/pn/hydromet/destea.html *(Deschutes Basin Interactive Gages)*



Aubrey Perry (Watermaster 1933-1960) and Jack Frost (NRCS) measuring snowpack in Dutchman Flat area Circa 1940-1945.

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