DEPARTMENT OF ECOLOGY
State of Washington

Regional Water Level Trends in Eastern Washington

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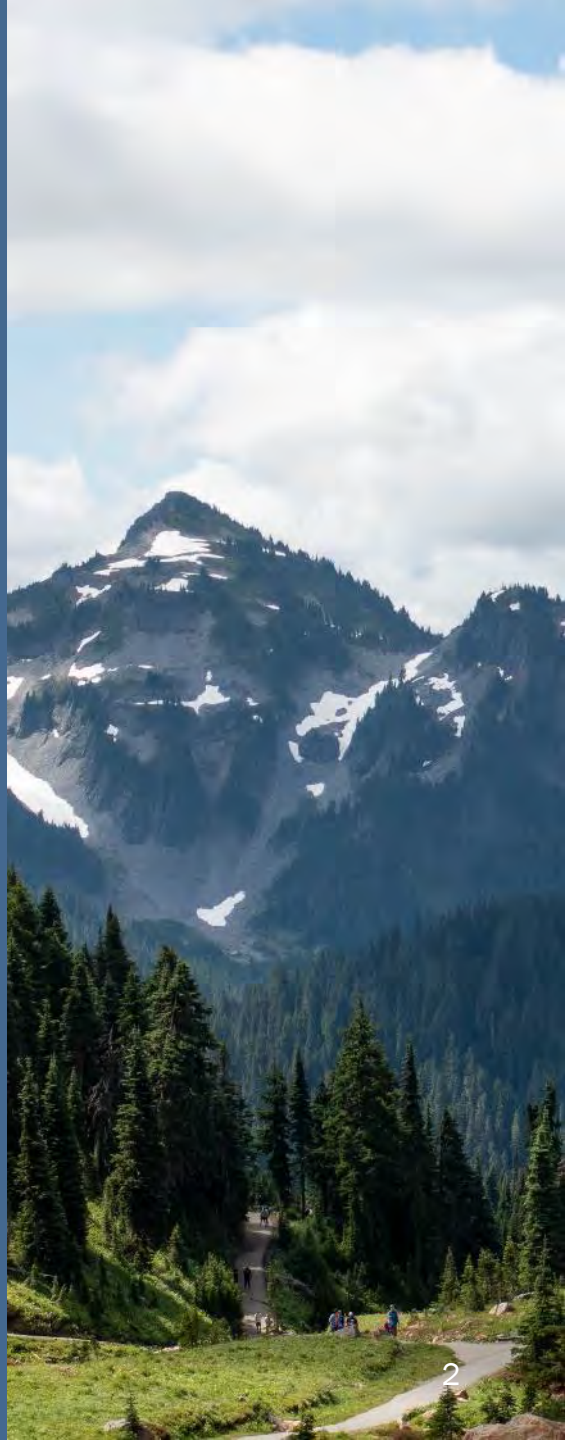
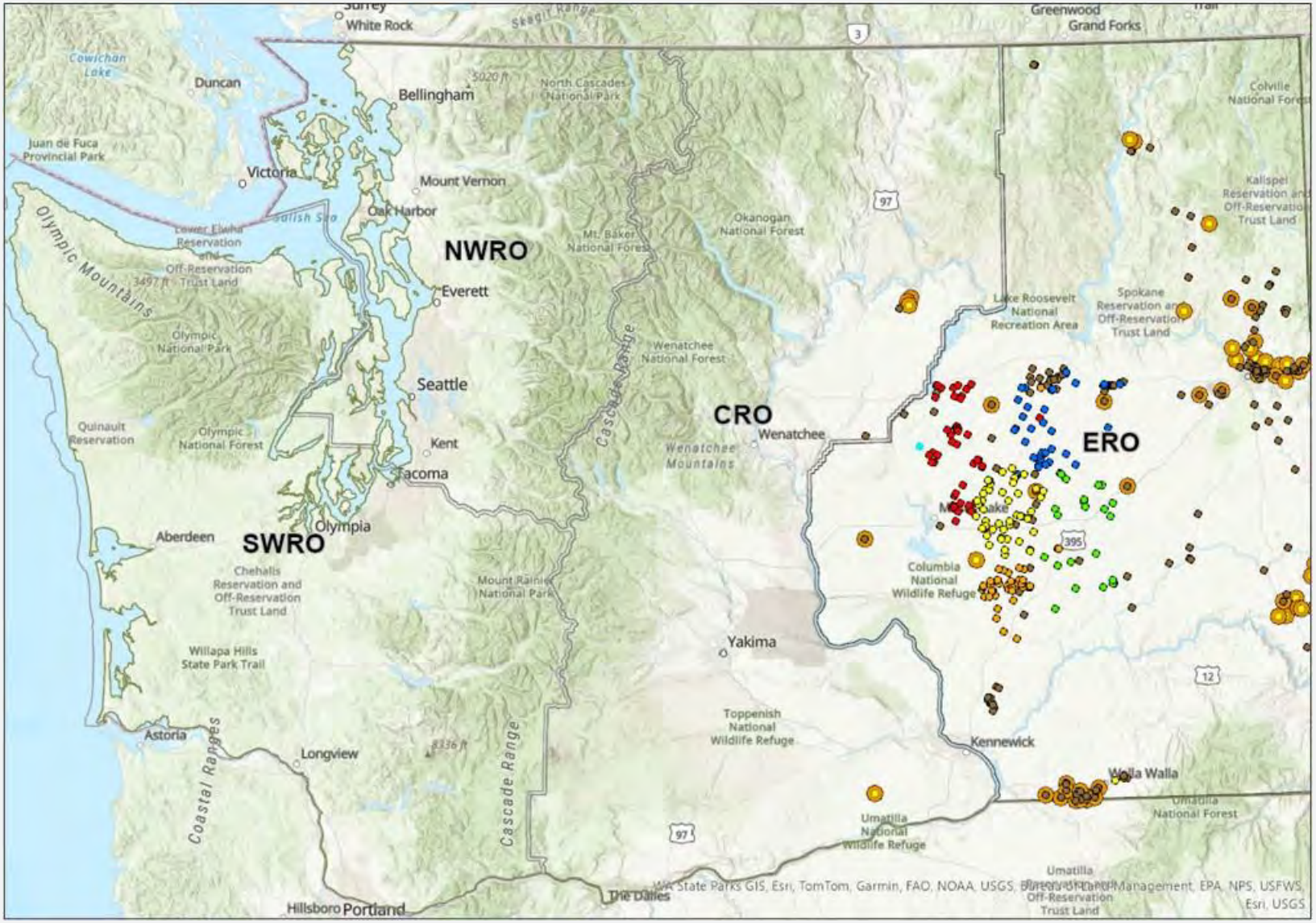
Washington State Department of Ecology, Water Resources Program

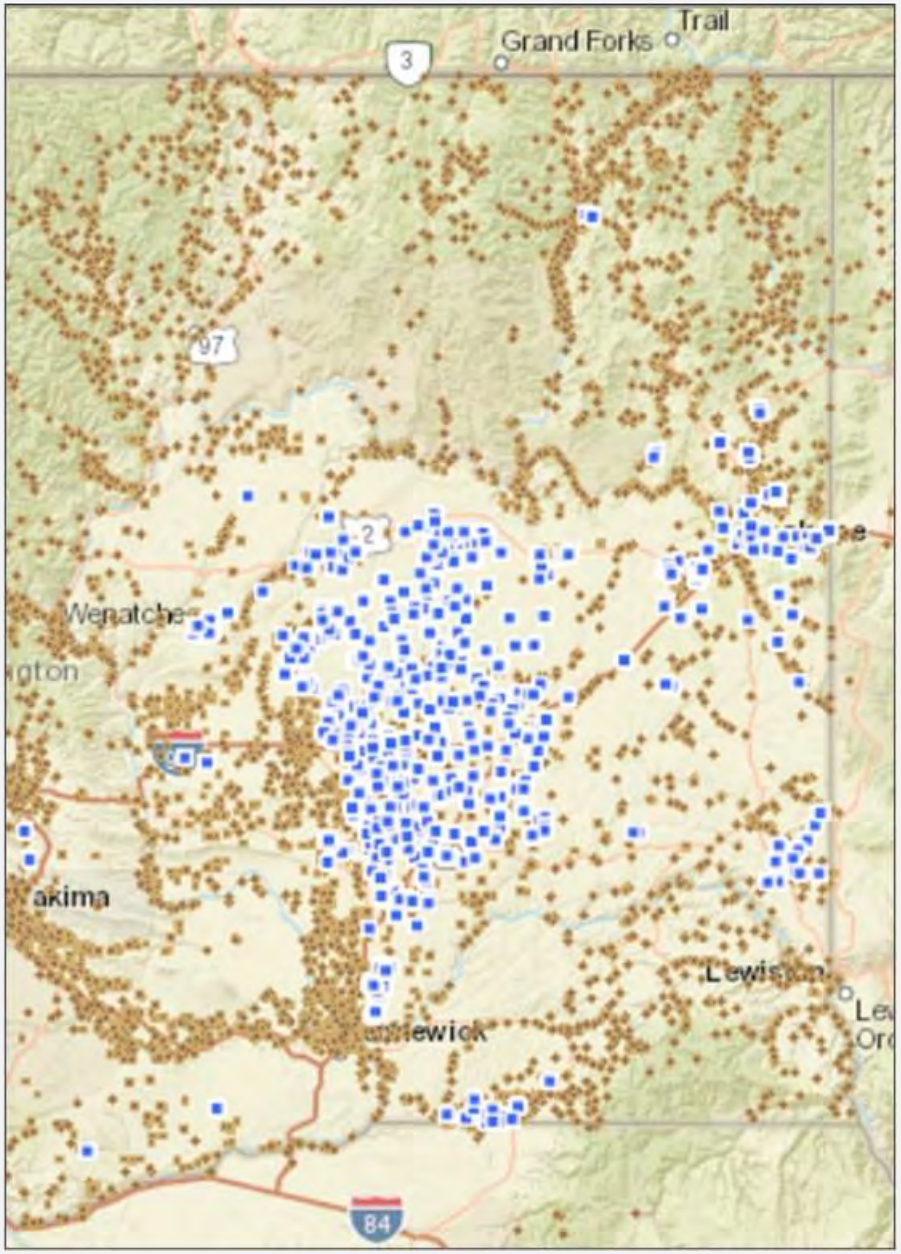
May 16, 2024

- Overview of Ecology groundwater monitoring network
- Wells and equipment
- Basin by basin summaries
- How we use data



Ecology's ERO Groundwater Network

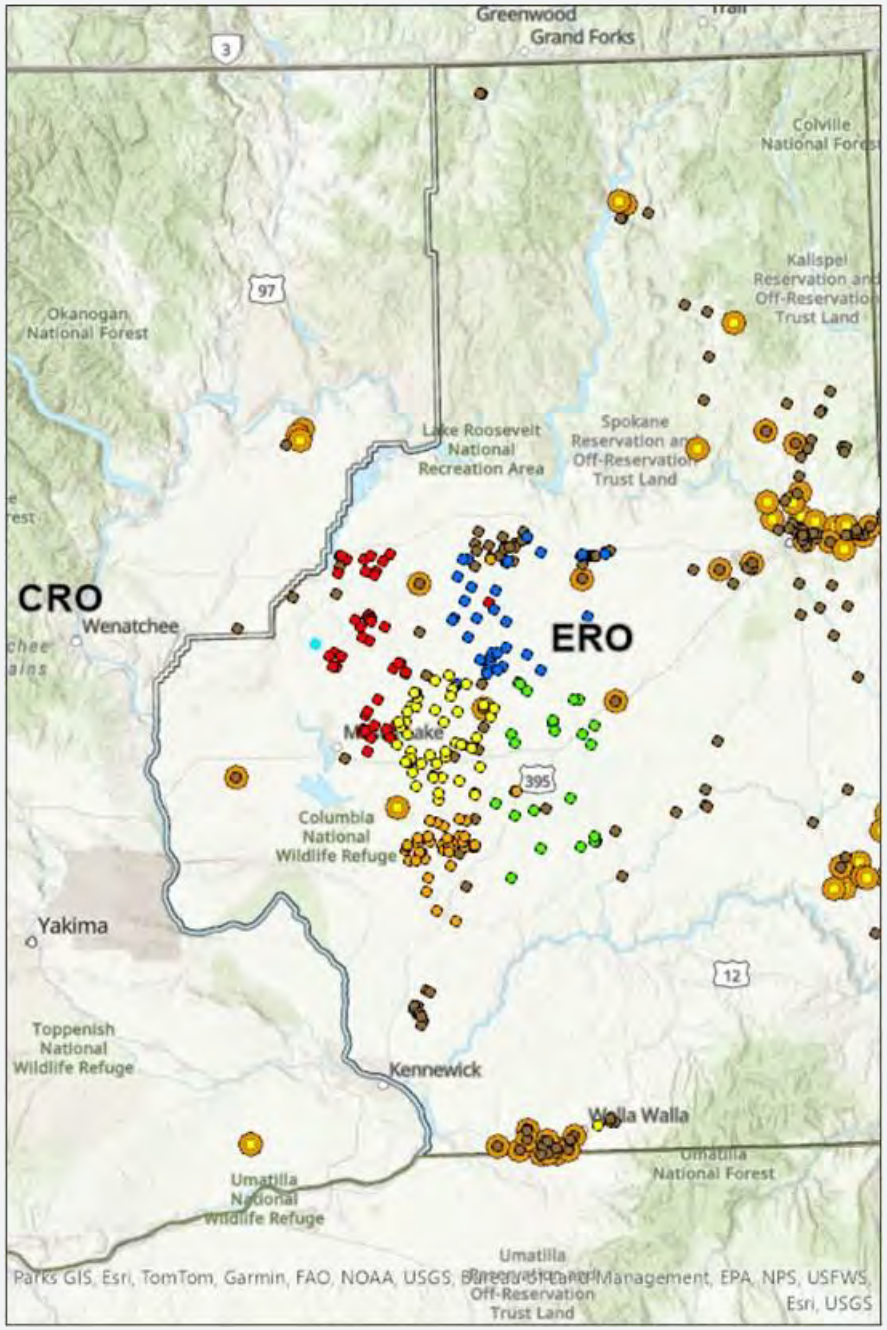




Historically ERO measured >400 wells annually

- Mostly operating ag wells
- Measure static water level each spring prior to irrigation
- Measure fall static in some

- Steel tape
- Air-line
- E-tape
- Sonic



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In the past ~30 years has dropped to ~100 wells

Why do we lose wells ?

- Wells go offline
- Airline is plugged, crimped, broken off
- No safe/suitable access to well
- Unsafe conditions

Data entered into EIM

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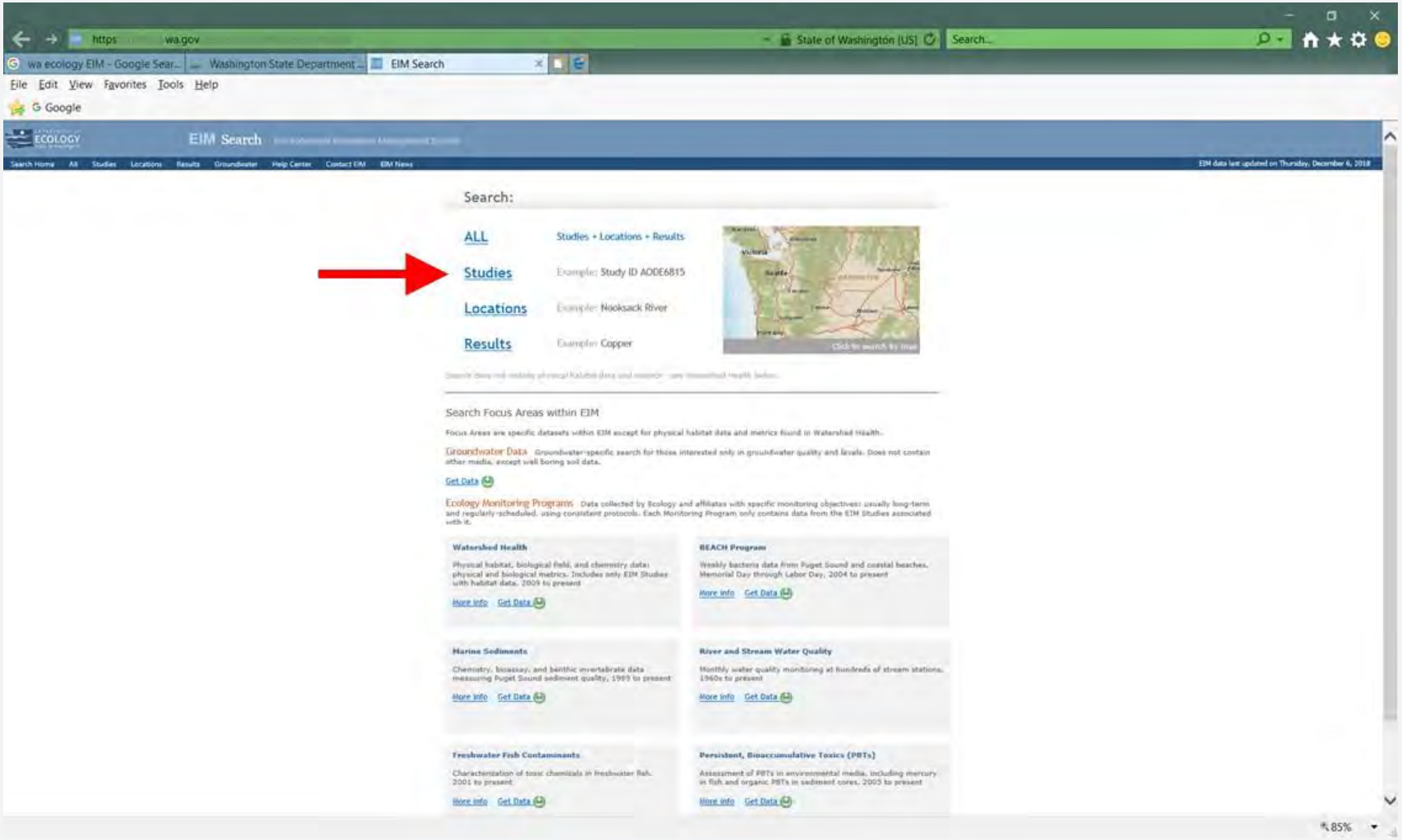
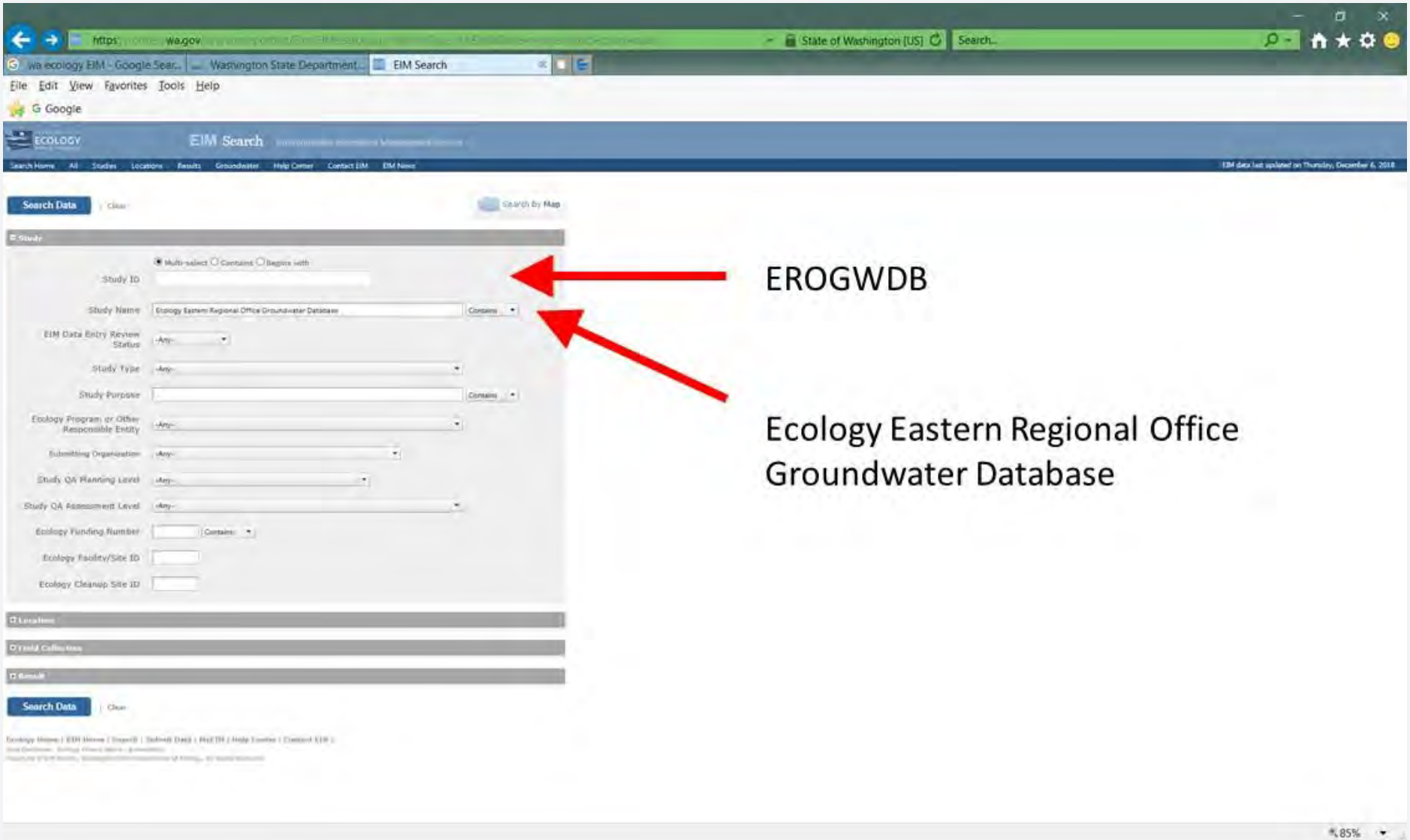
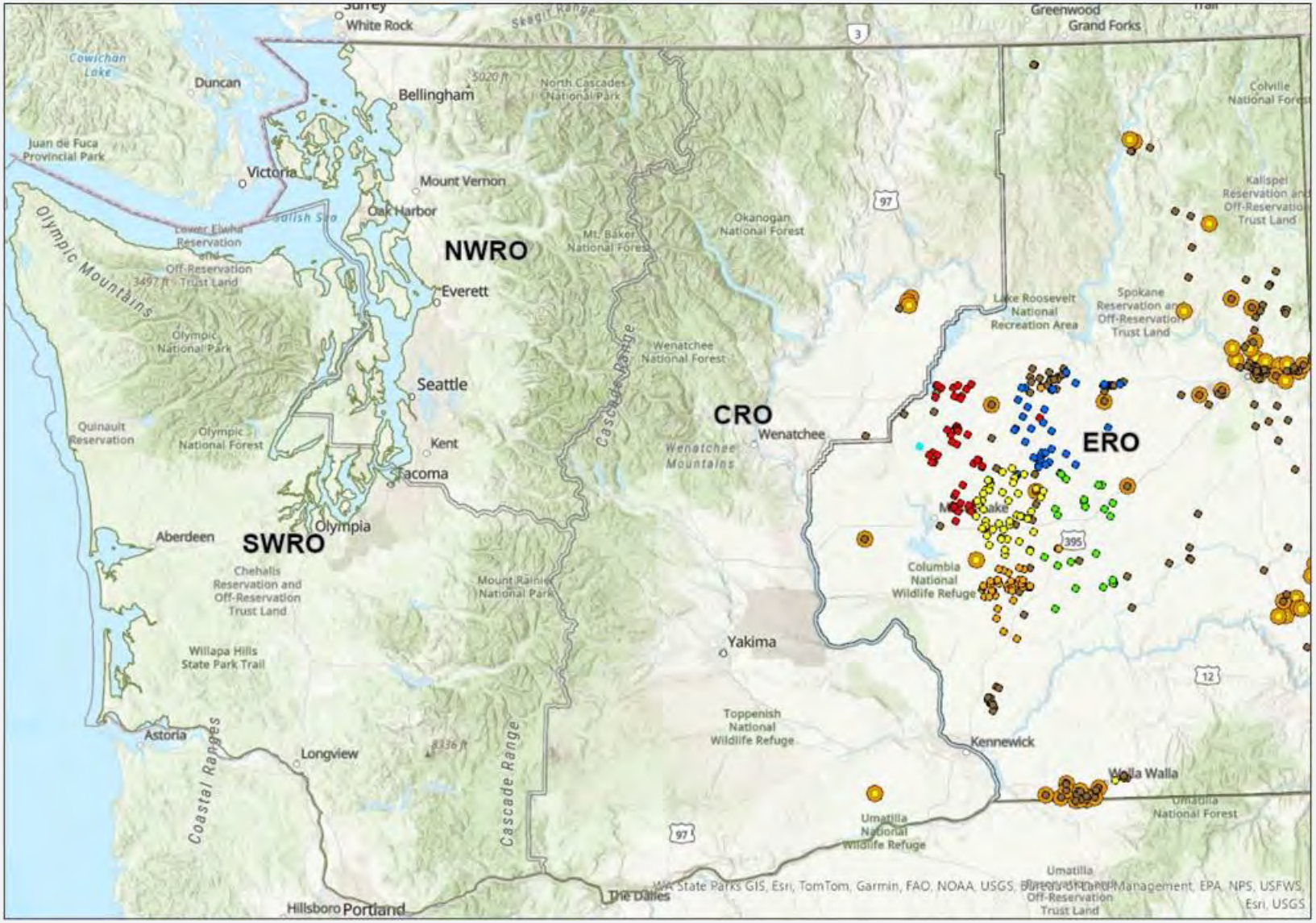
Ecology's Environmental Information Management System (EIM)




EIM Search
Search Data
Study
Study ID
Study Name
Ecology Eastern Regional Office Groundwater Database
EIM Data Entry Review Status
Study Type
Study Purpose
Ecology Program or Other Responsible Entity
Submitting Organization
Study QA Planning Level
Study QA Assessment Level
Ecology Funding Number
Ecology Facility/Site ID
Ecology Cleanup Site ID
Locations
Field Collection
Results
Search Data
EROGWDB
Ecology Eastern Regional Office Groundwater Database

Ecology's ERO Groundwater Network



Active agricultural wells

Active agricultural wells

Active agricultural wells

Active agricultural wells

Active agricultural wells

Dedicated Monitoring wells

Dedicated Monitoring wells

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Dedicated Monitoring wells

Repurposed wells

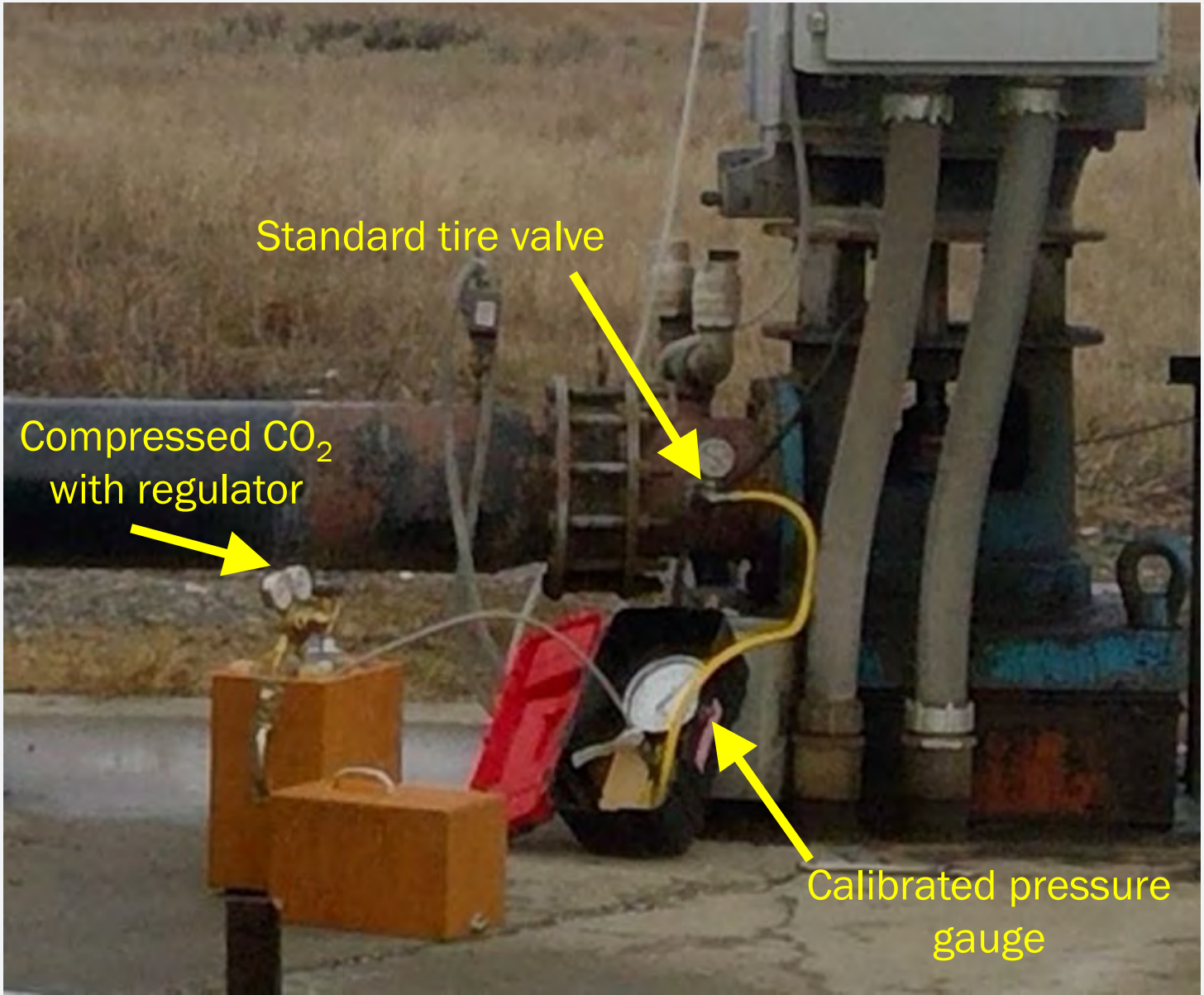
Repurposed wells

Repurposed wells

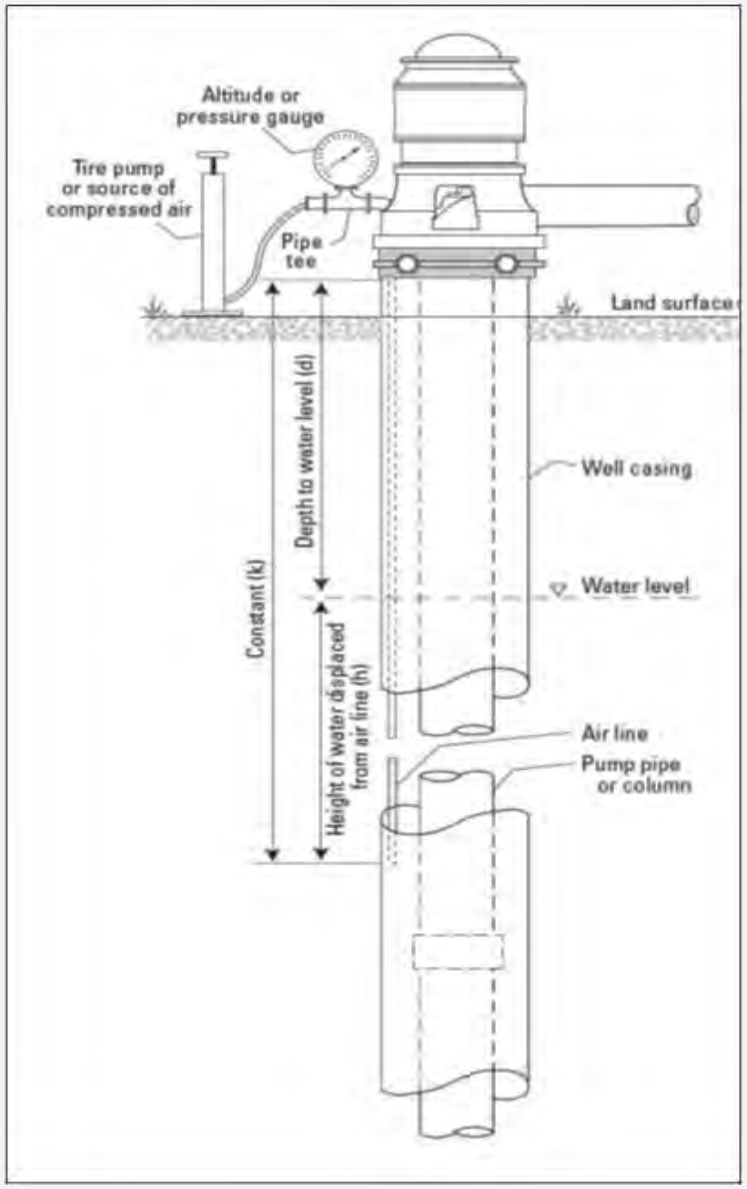
Repurposed wells

What tools do we use?

What tools do we use?



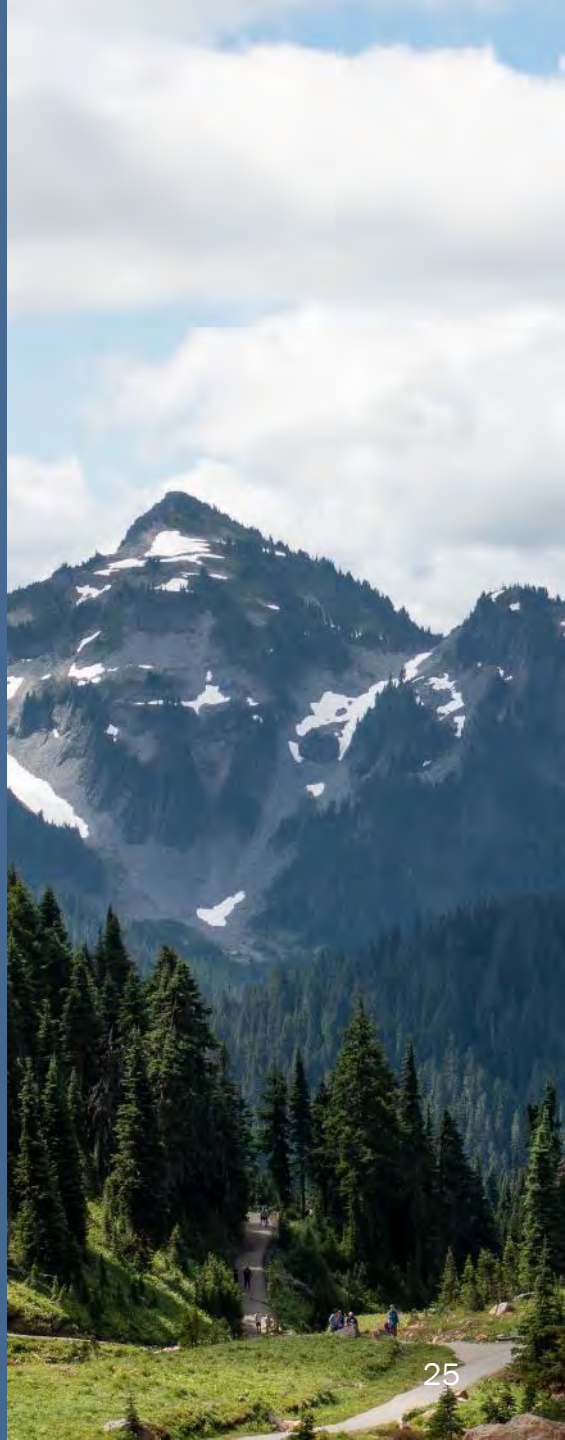
Airline Measurements



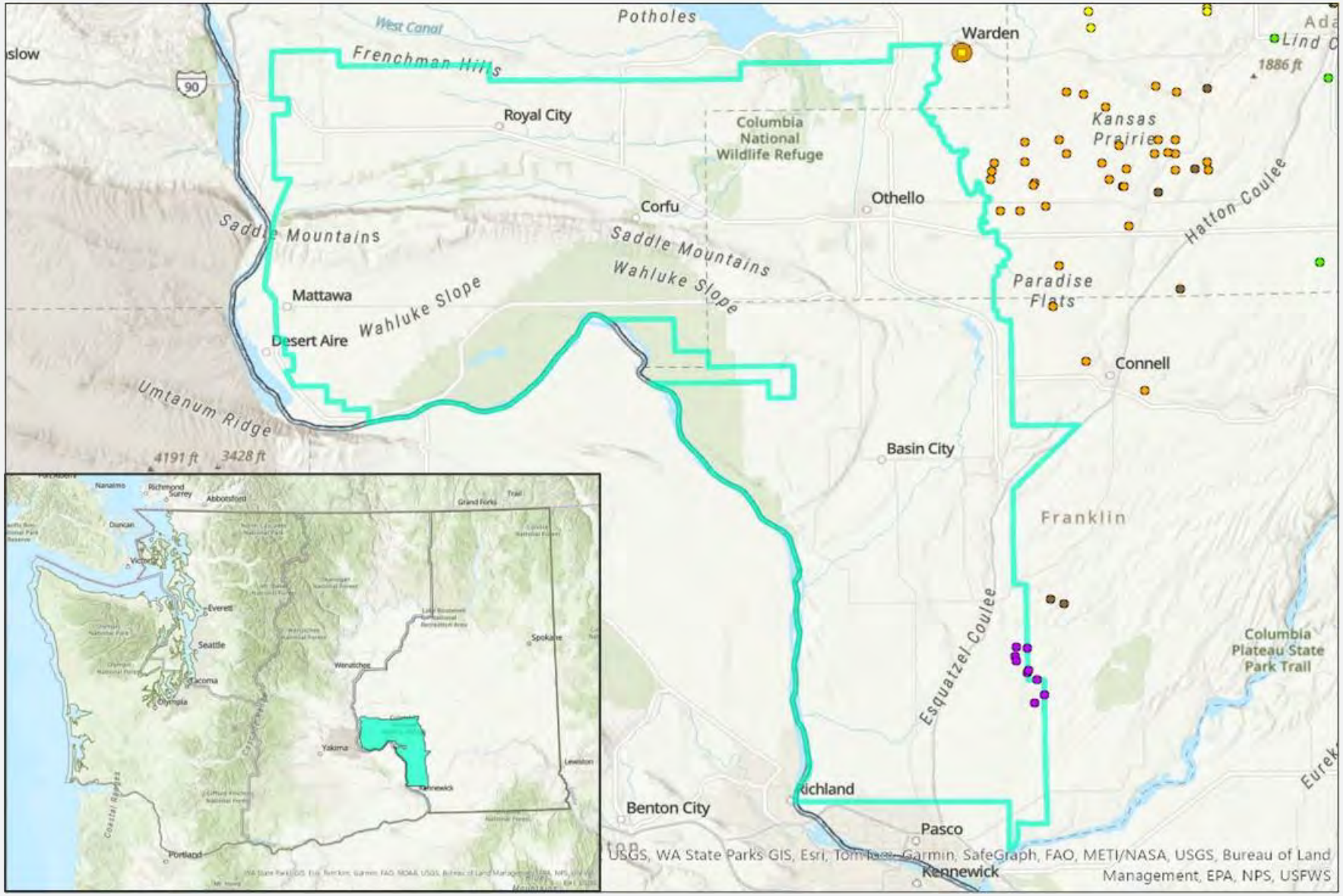
- Use gauge to measure how many psi of air it takes to push water completely out of airline
- Multiply psi reading by 2.31 ft/psi
- Subtract the result (ft) from the total vertical length of airline
- This gives the depth to the water (from the gauge)

Groundwater Monitoring Trends

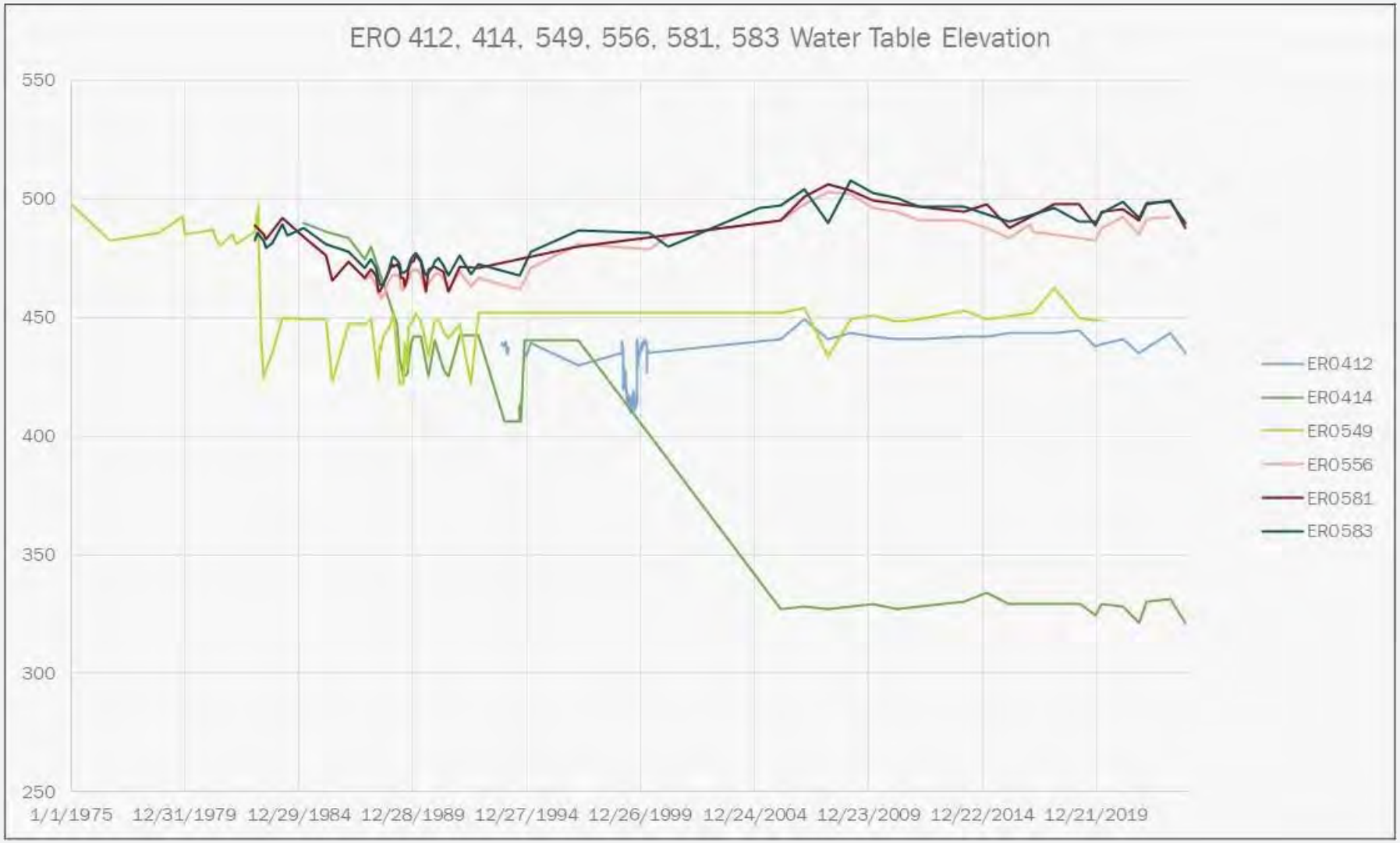
- Pasco Basin
- Odessa Subarea
- Quincy Basin
- Spokane Valley Rathdrum Prairie
- Palouse Basin
- Walla Walla Basin



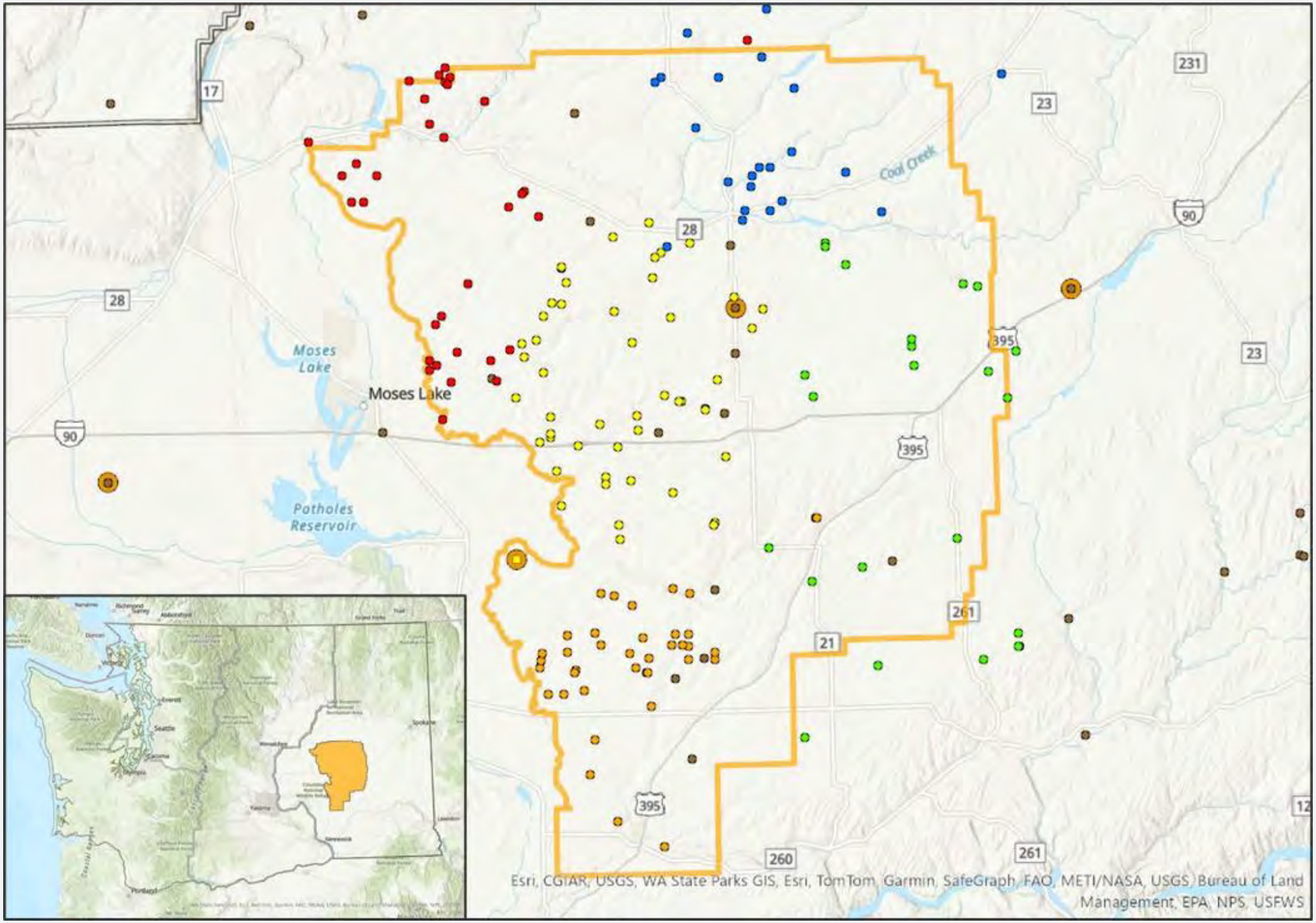
Pasco Basin


West Canal
Potholes
Warden
Frenchman Hills
90
Royal City
Columbia
National
Wildlife Refuge
Kansas
Prairie
1886 ft
Corfu
Othello
Saddle Mountains
Saddle Mountains
Wahluke Slope
Wahluke Slope
Hatton Coulee
Mattawa
Paradise
Flats
Desert Aire
Connell
Umtanum Ridge
4191 ft
3428 ft
Basin City
Franklin
Esquatzel Coulee
Columbia
Plateau State
Park Trail
Benton City
Pasco
Kennewick
USGS, WA State Parks GIS, Esri, TomTom, Garmin, SafeGraph, FAO, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USFWS
Everett
Seattle
Tacoma
Olympia
Spokane
Wenatchee
Yakima
Portland

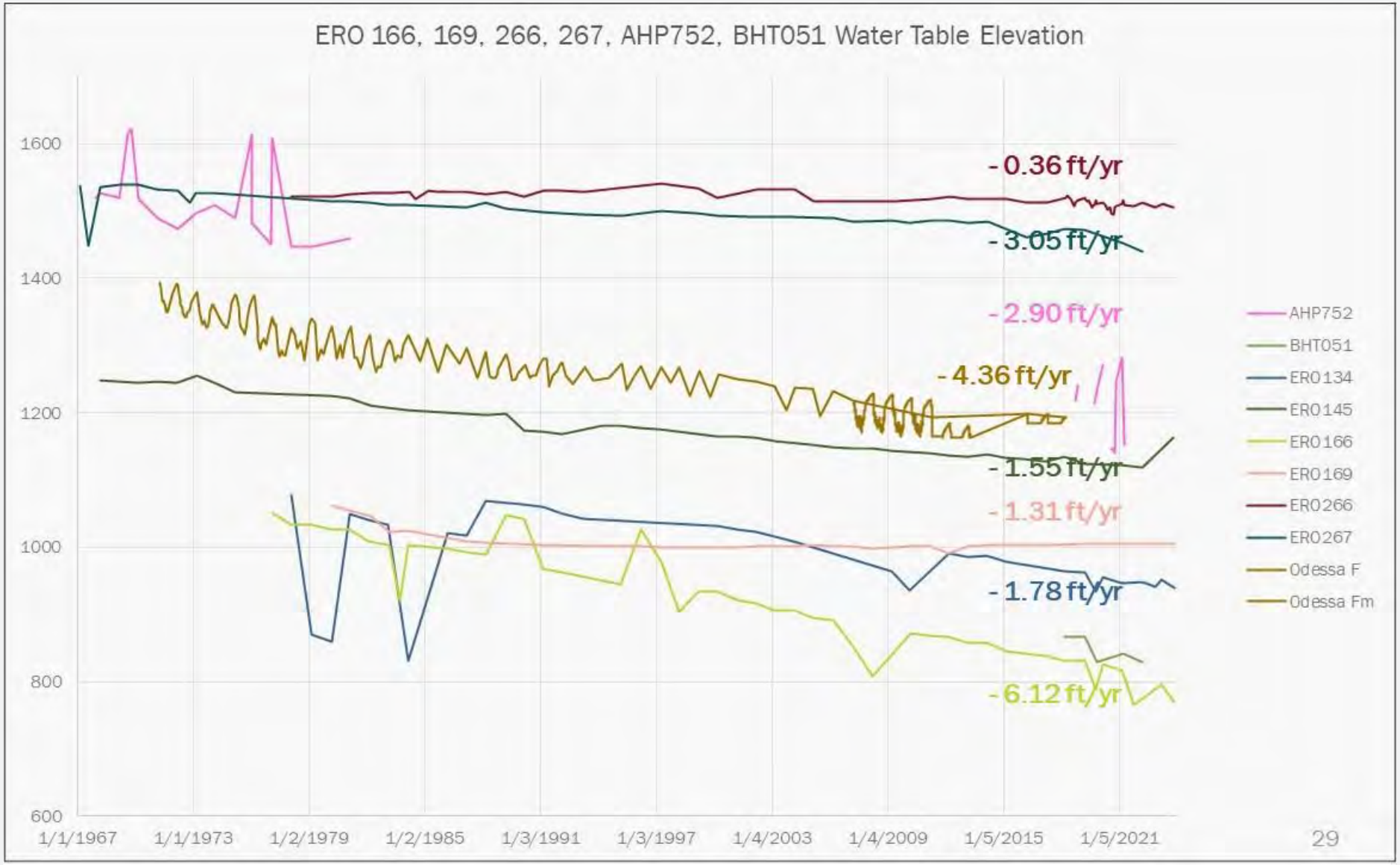
Pasco Basin


ERO 412, 414, 549, 556, 581, 583 Water Table Elevation
550
500
450
400
350
300
250
1/1/1975
12/31/1979
12/29/1984
12/28/1989
12/27/1994
12/26/1999
12/24/2004
12/23/2009
12/22/2014
12/21/2019
ER0412
ER0414
ER0549
ER0556
ER0581
ER0583

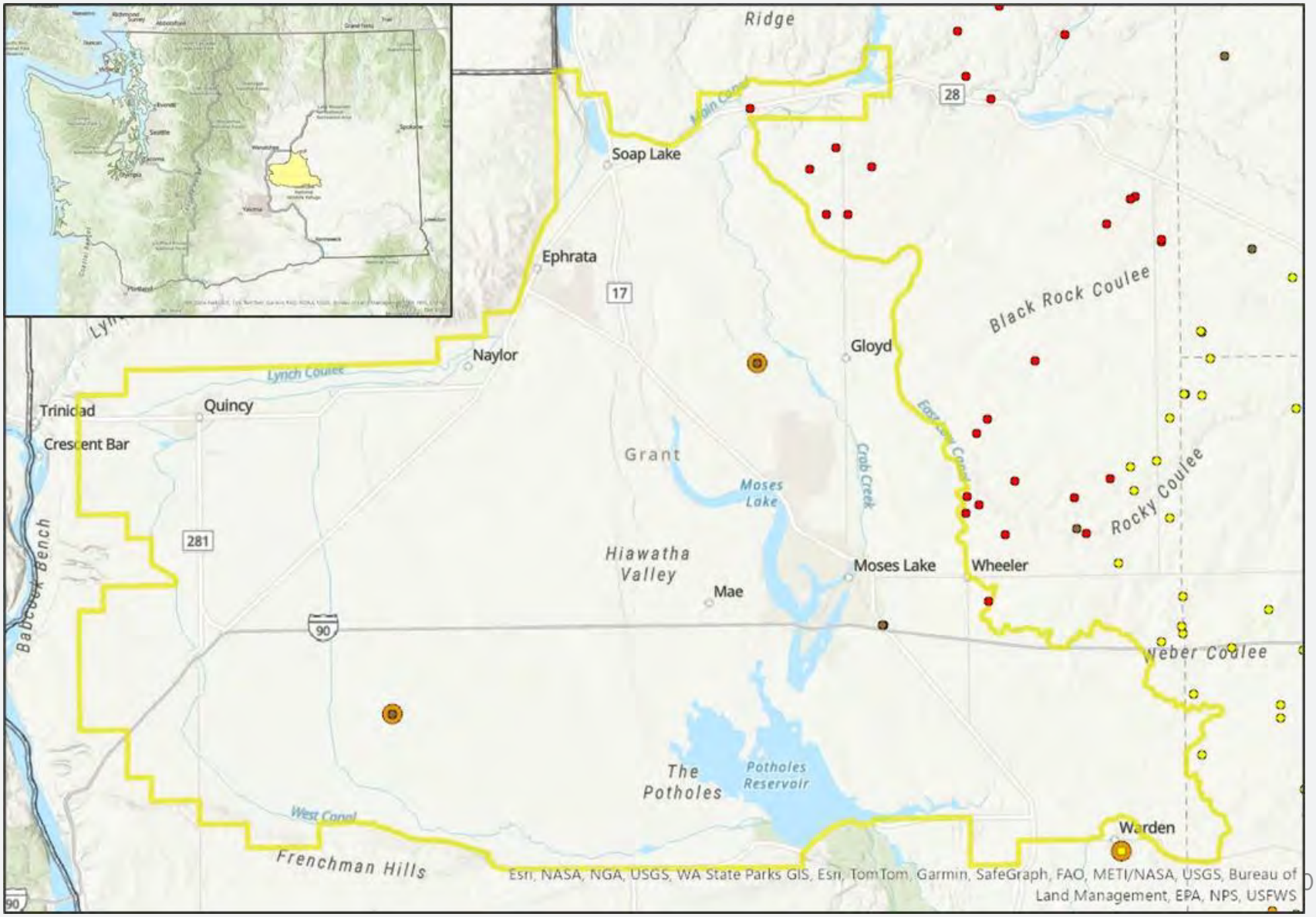
Odessa Subarea



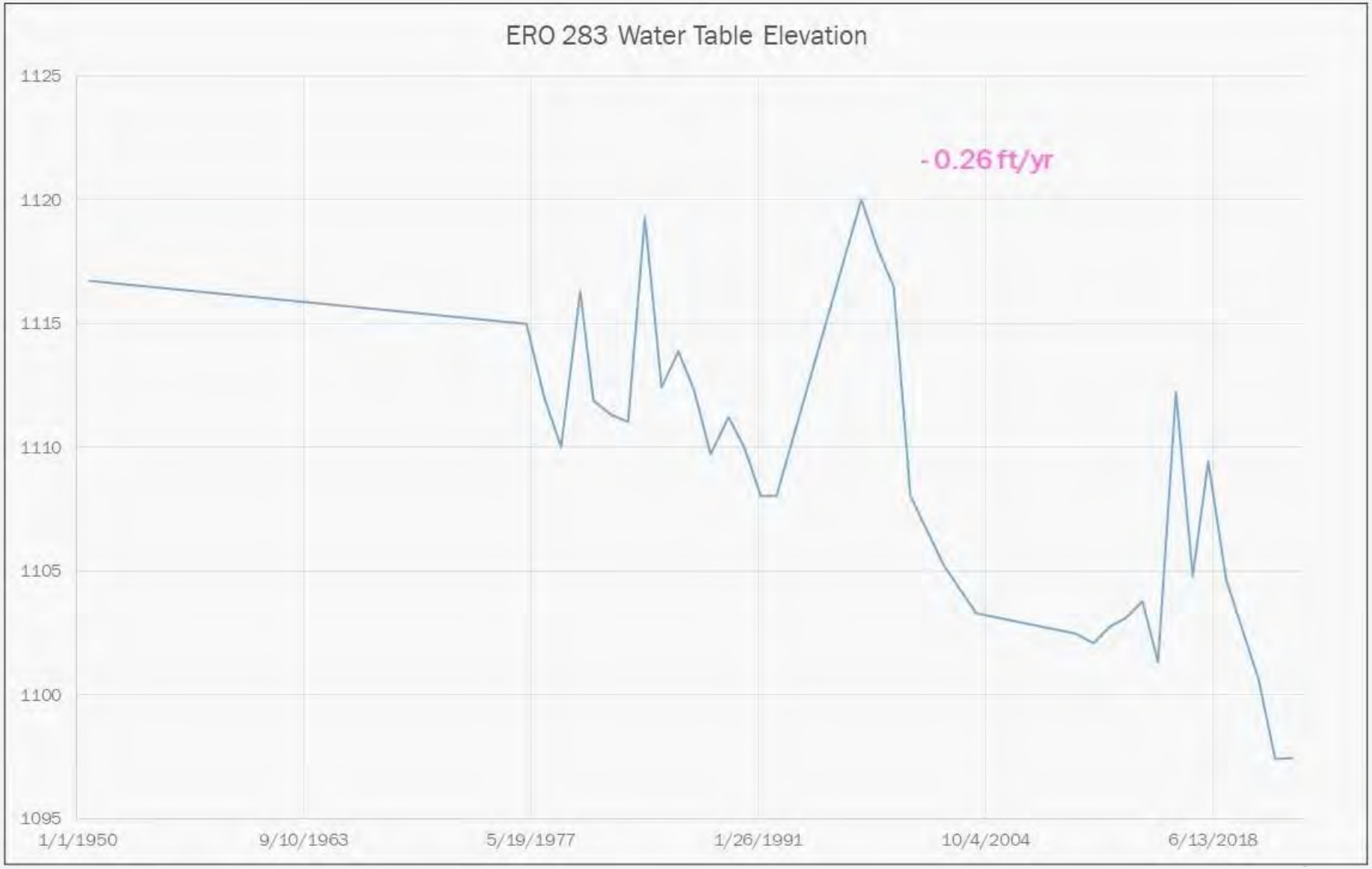
Odessa Subarea



Quincy Basin

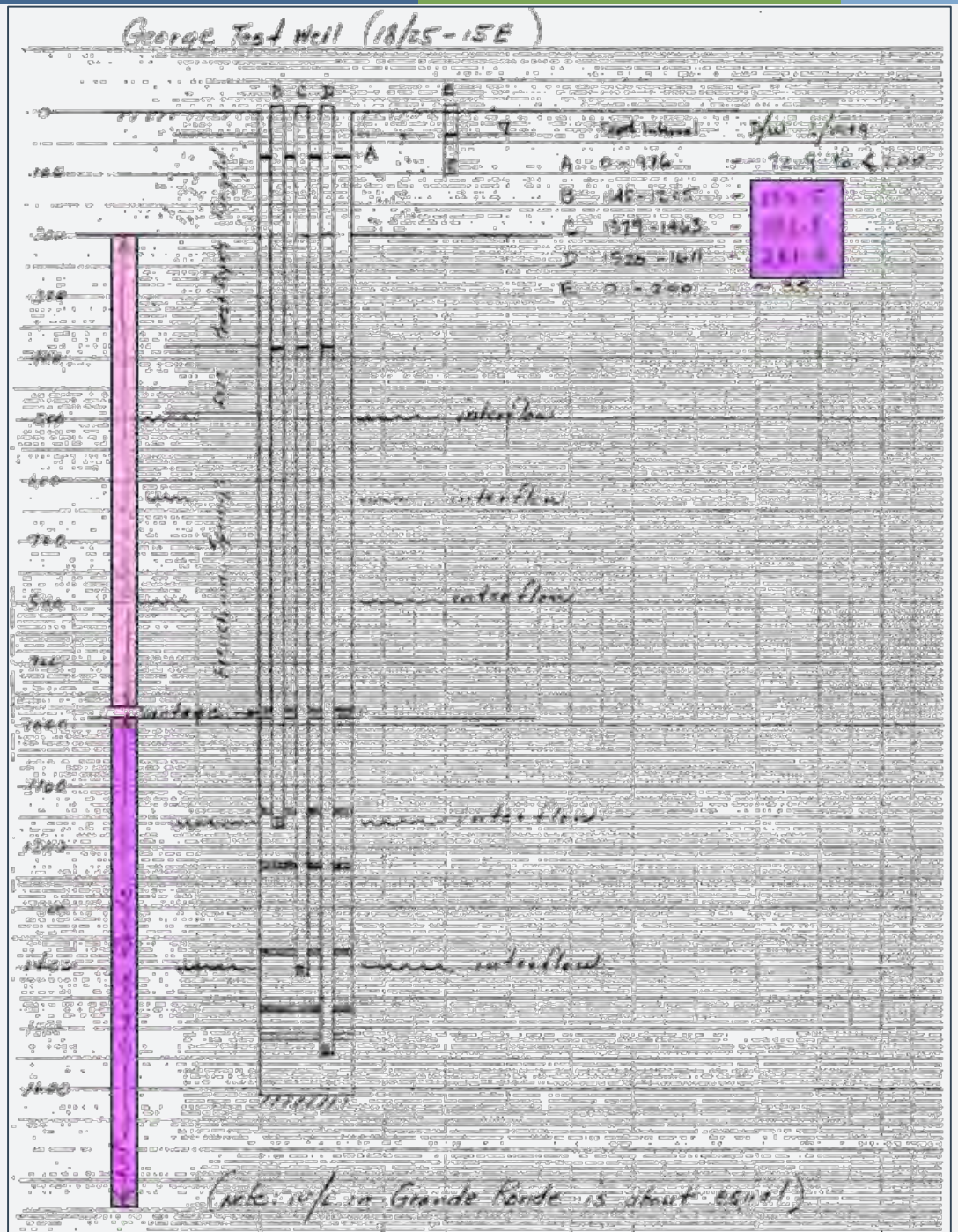


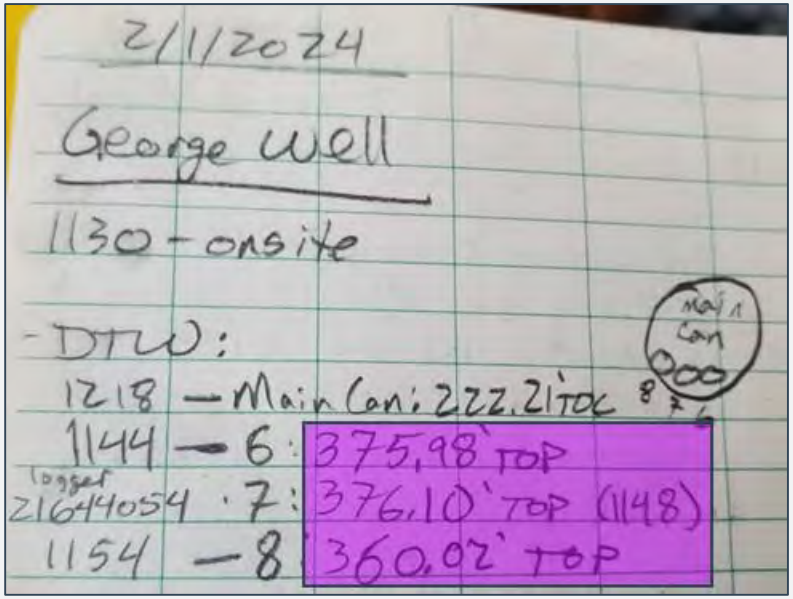
Quincy Basin



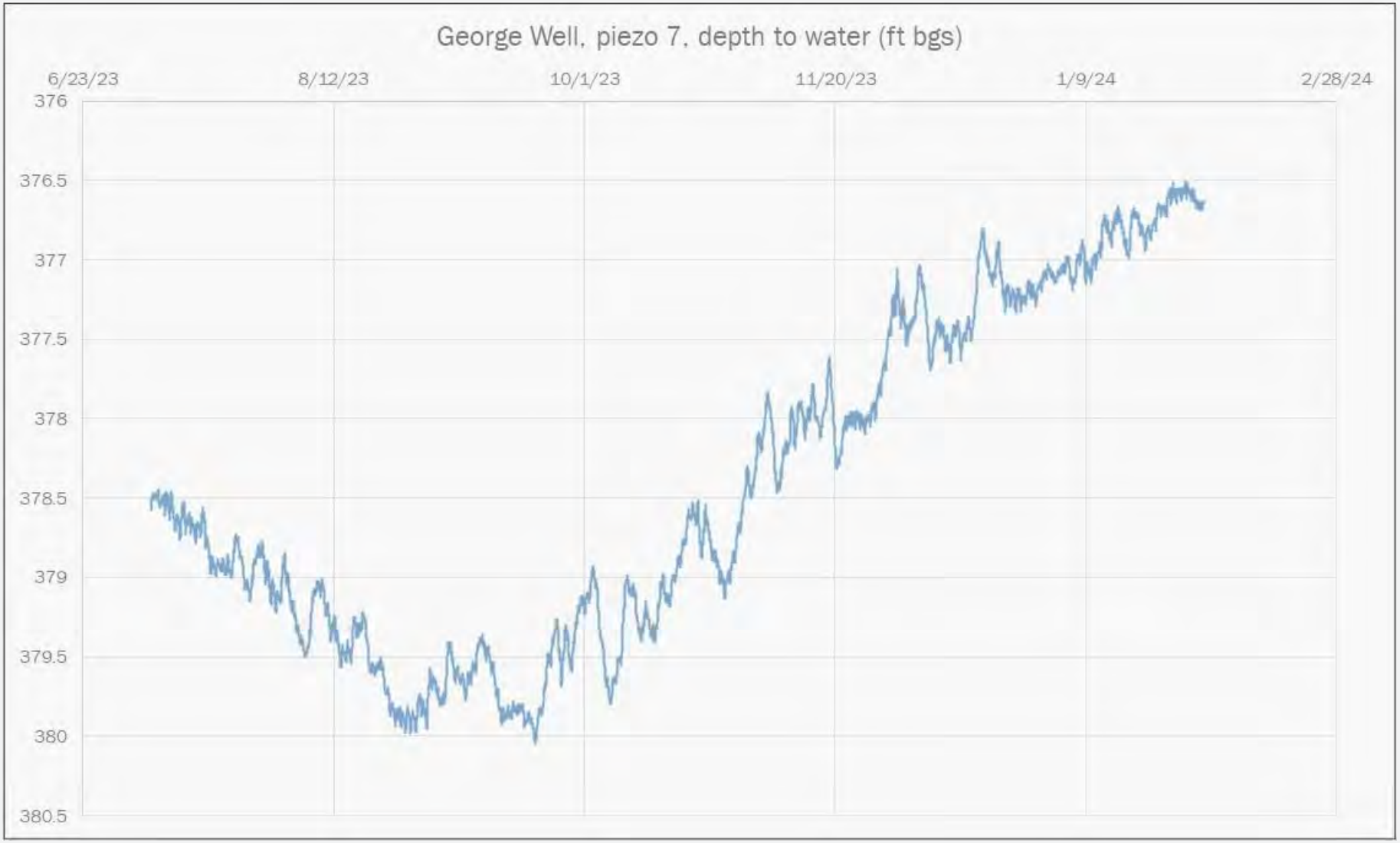
Quincy Basin

Quincy Basin

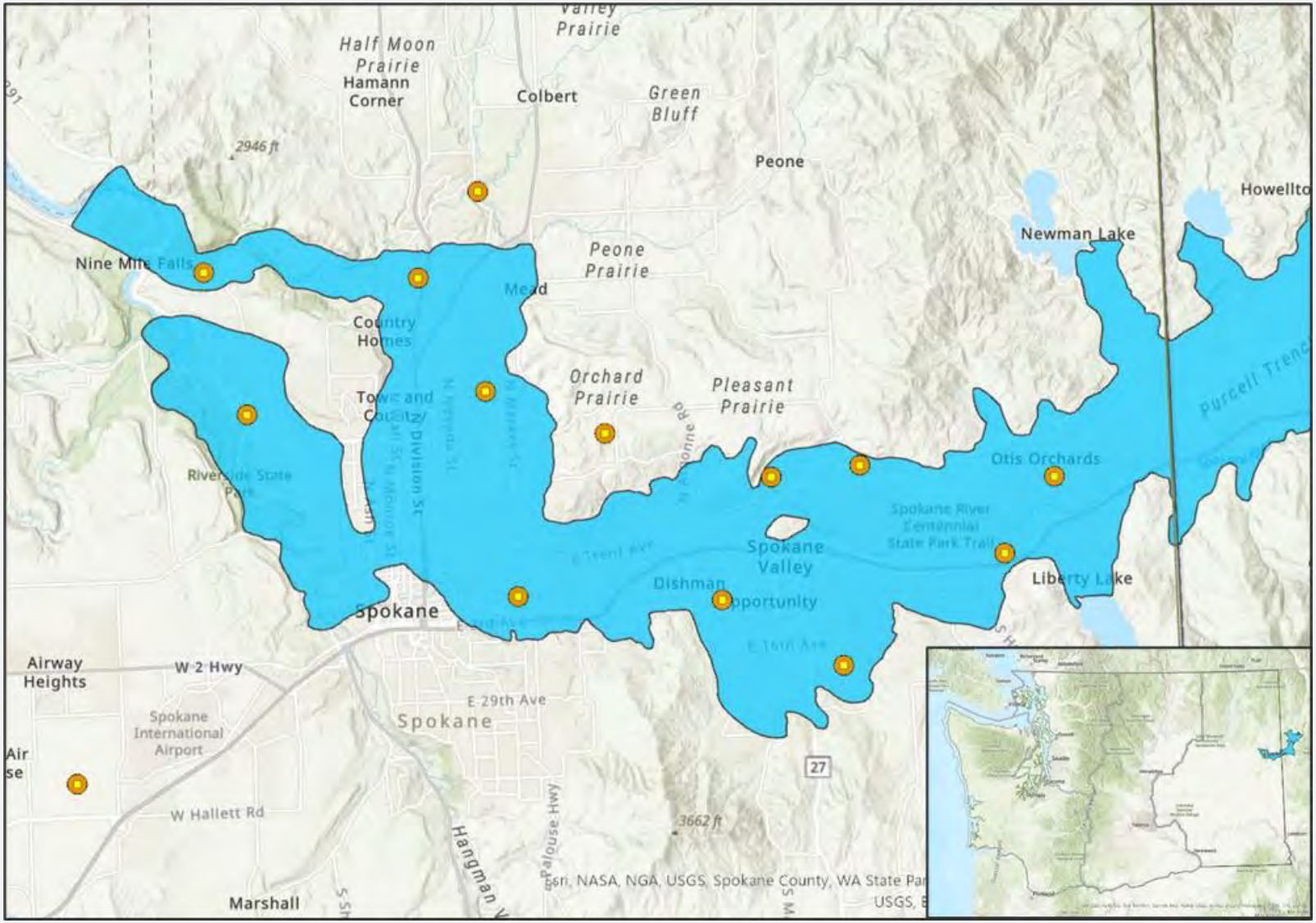




Quincy Basin



Spokane Valley Rathdrum Prairie Aquifer



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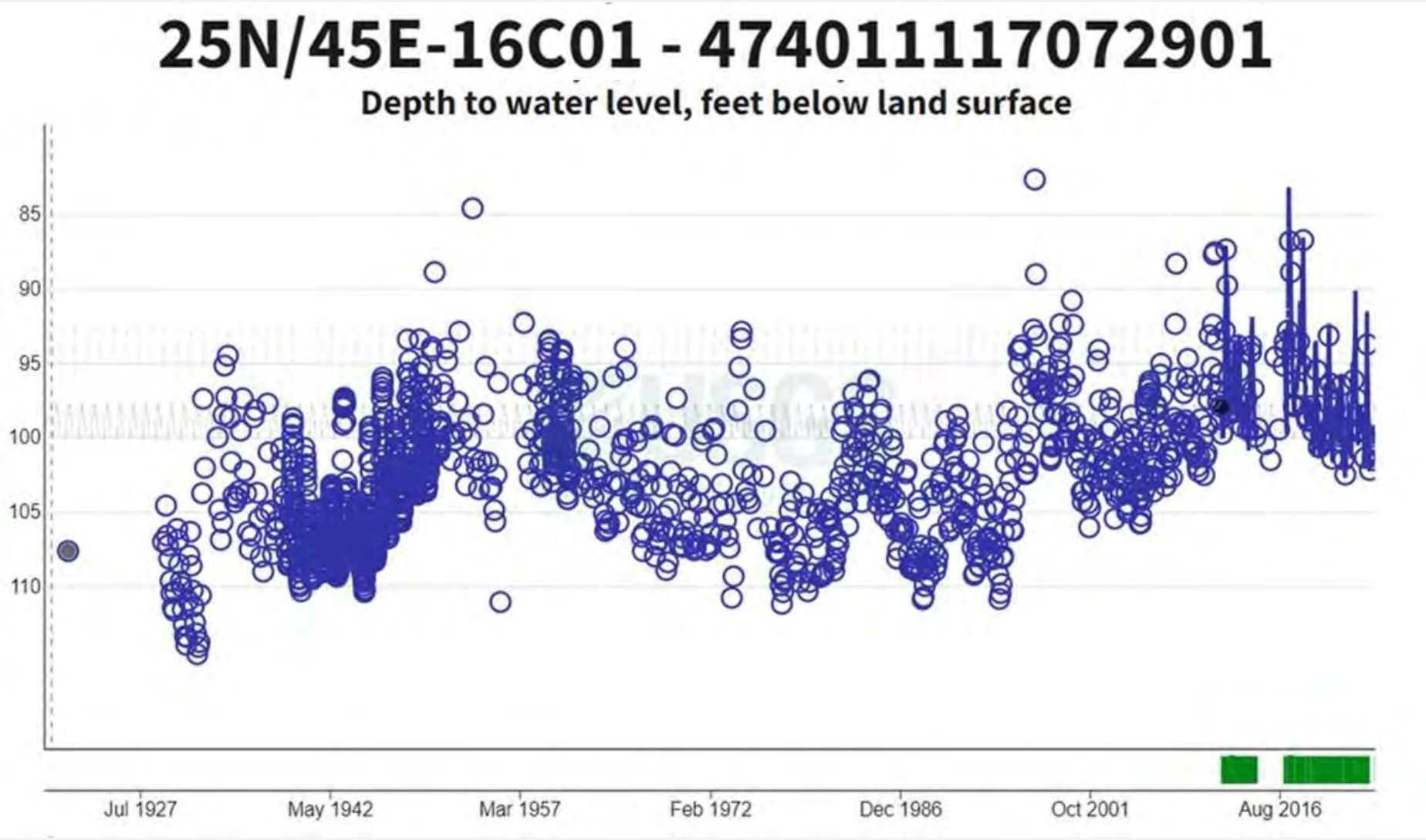

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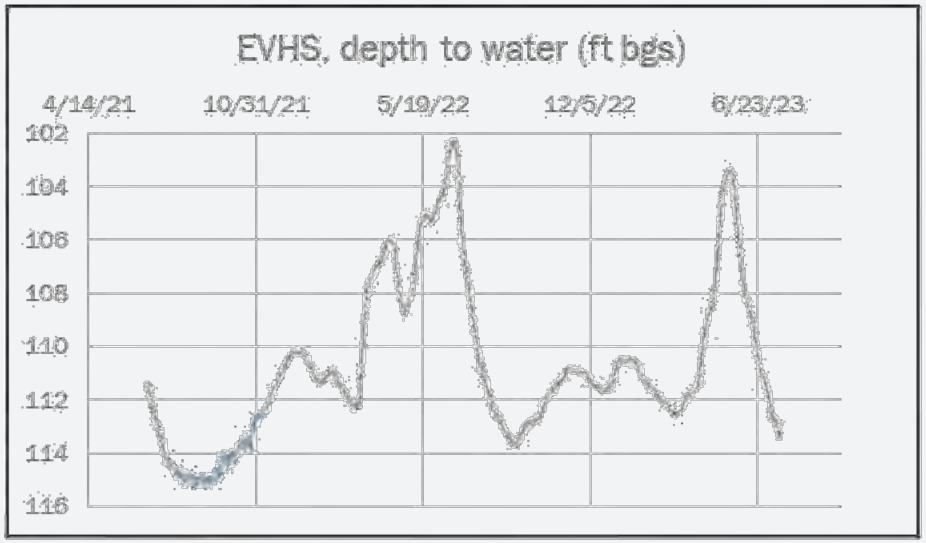
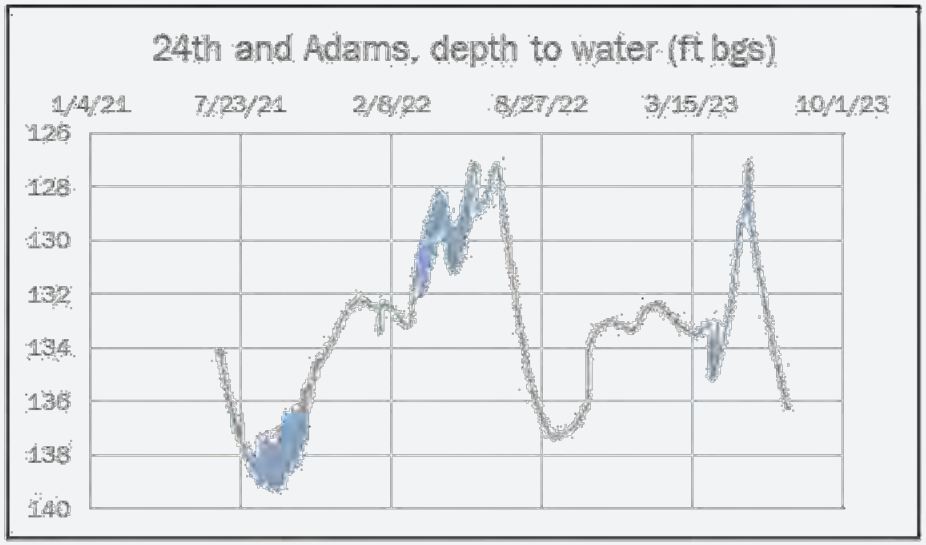
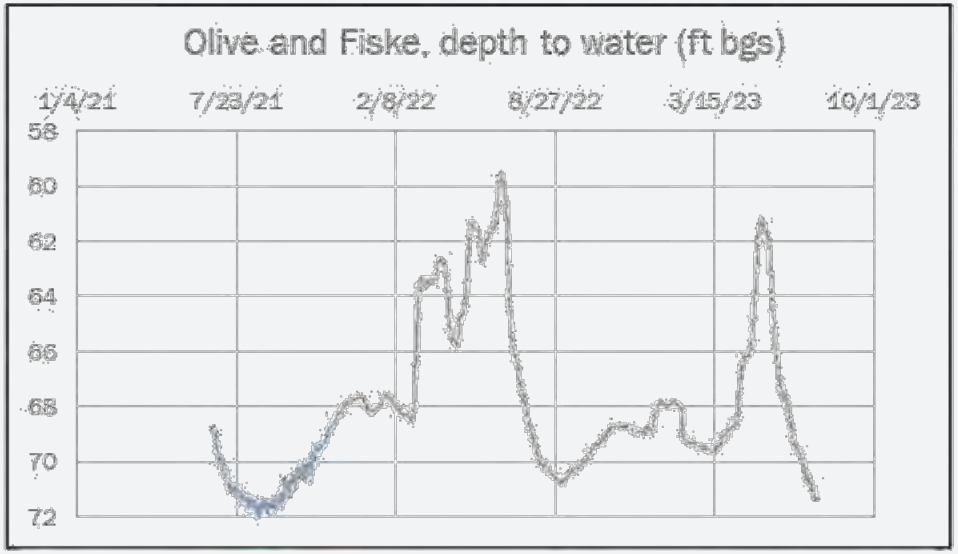
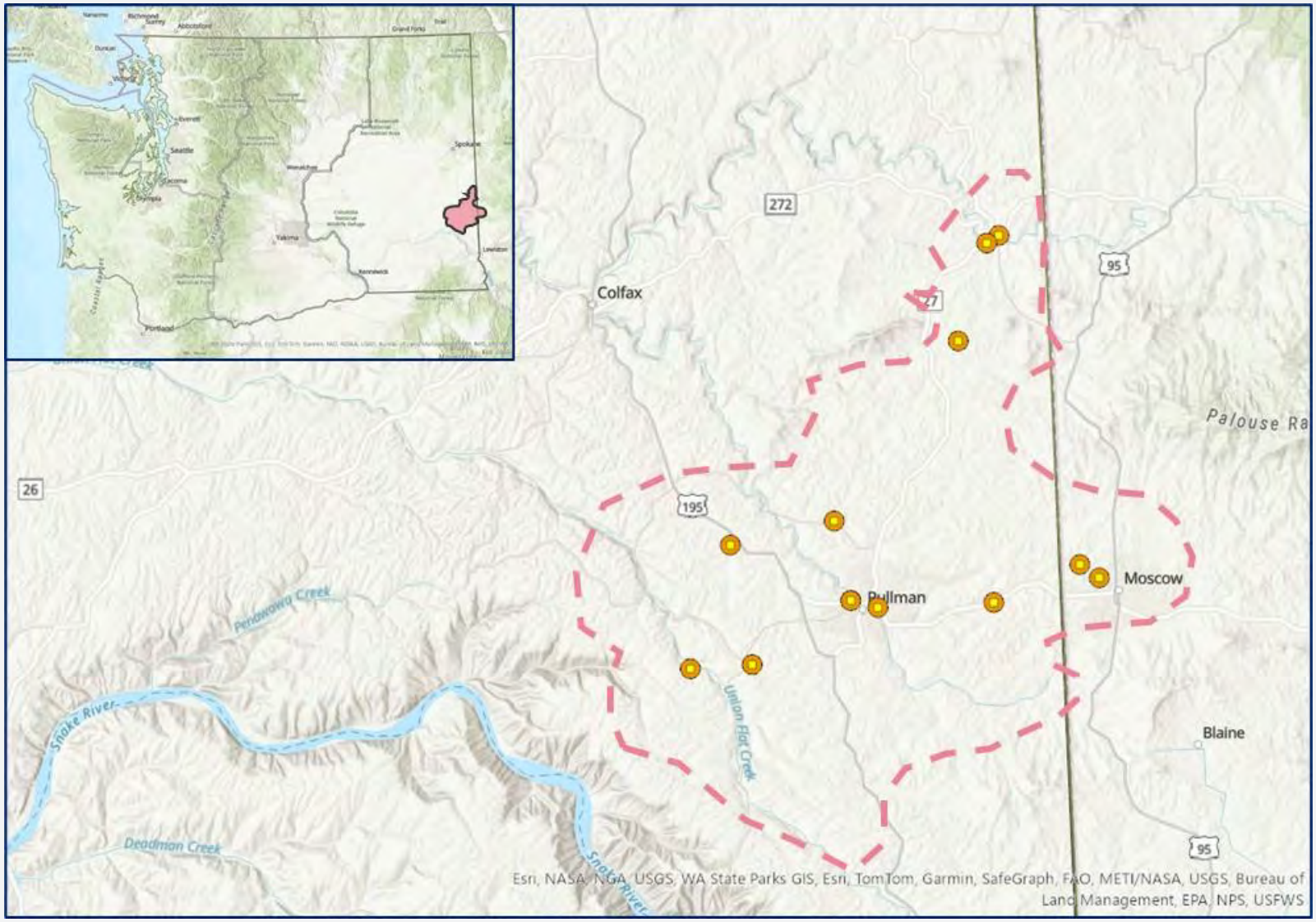


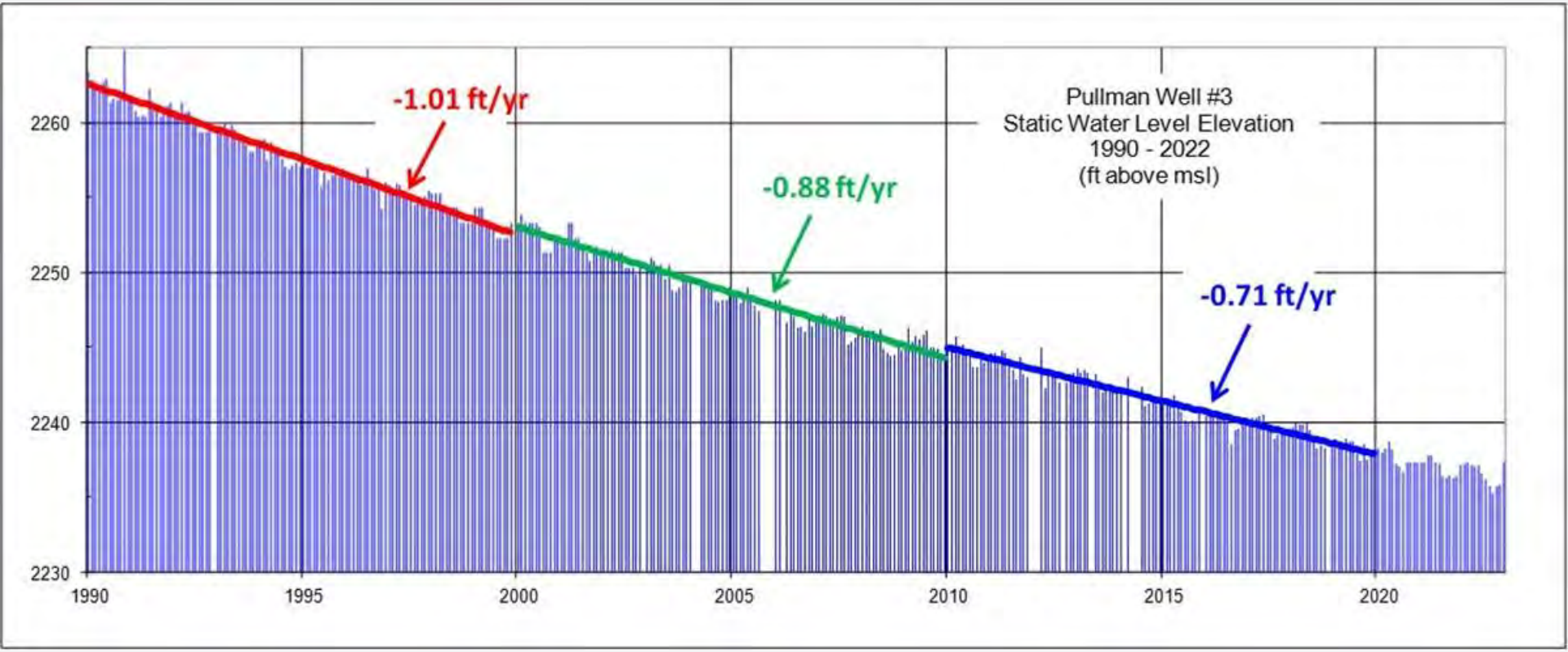




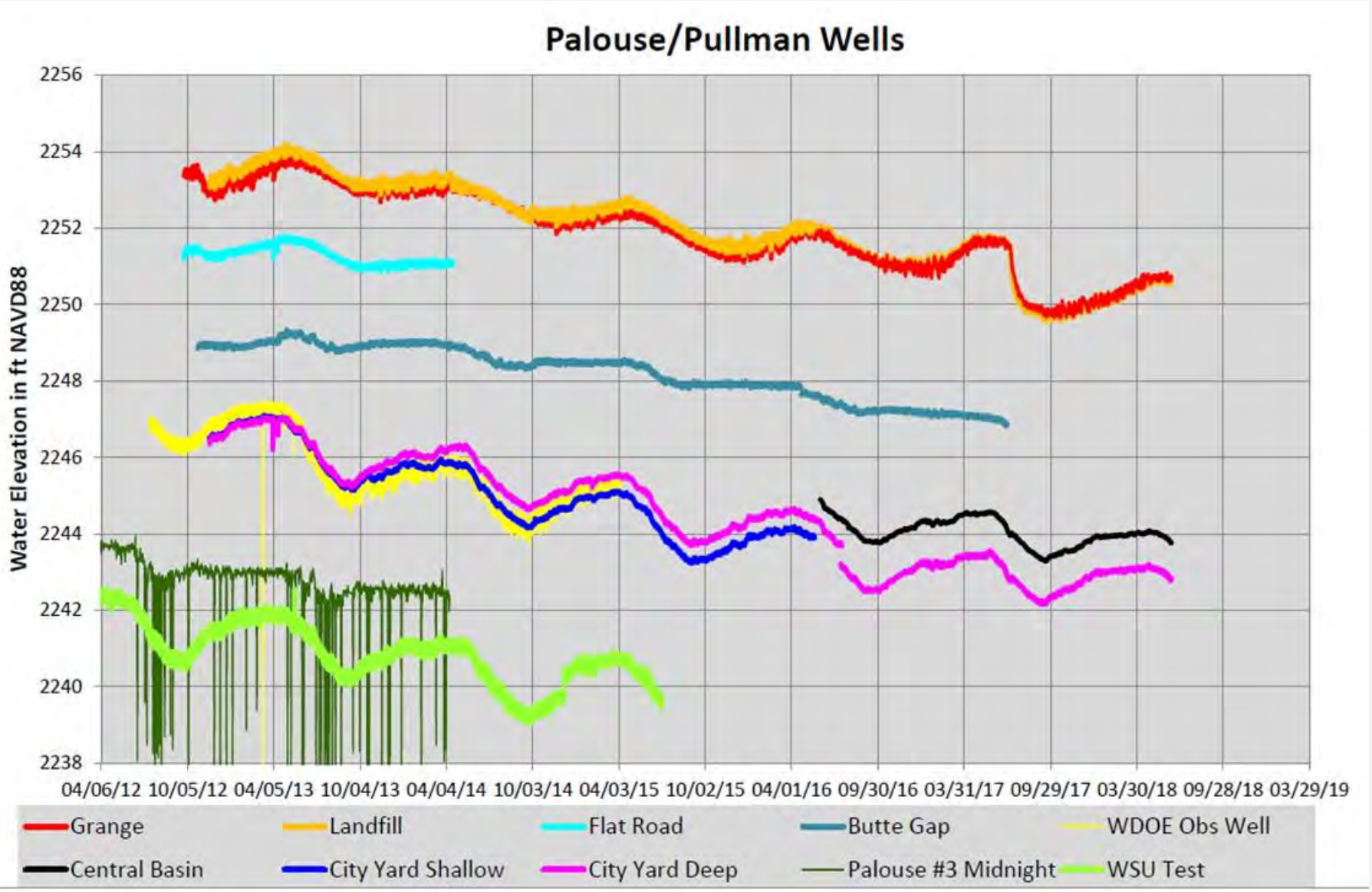
Palouse Basin



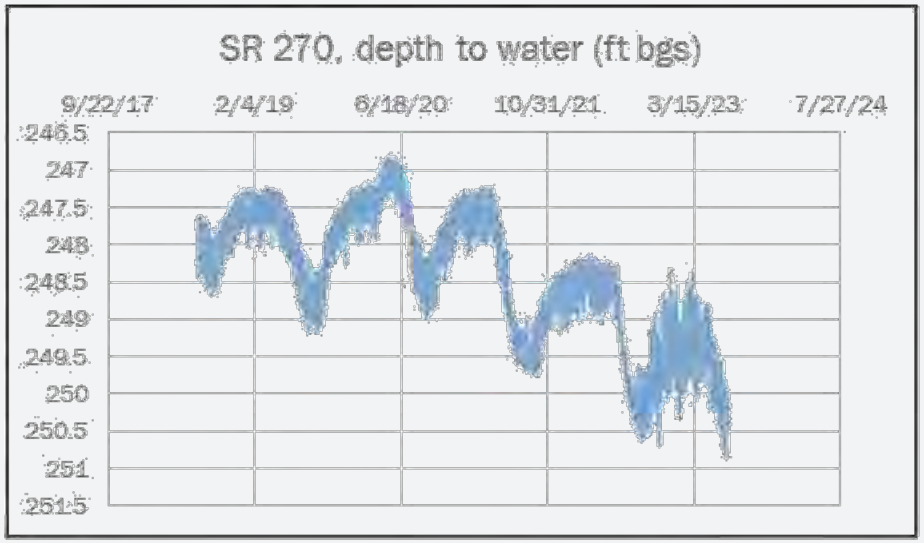
Palouse Basin

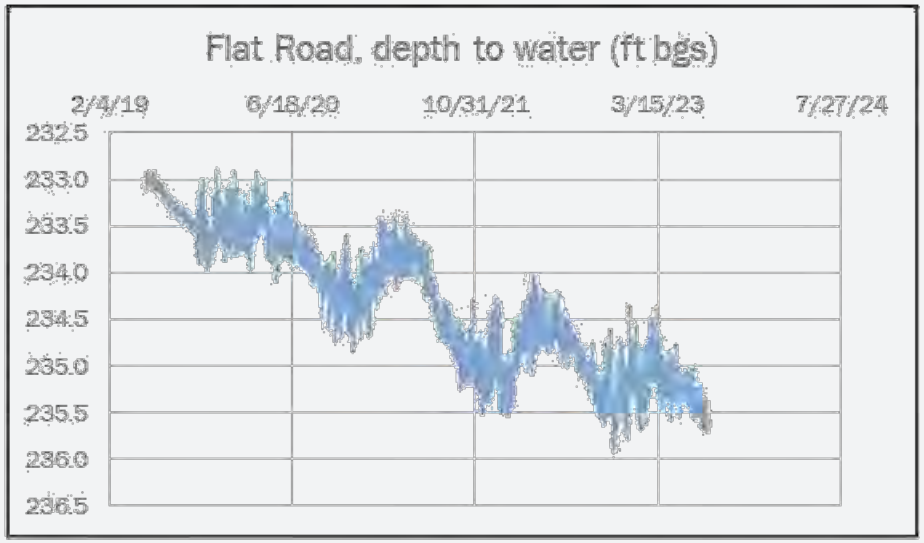


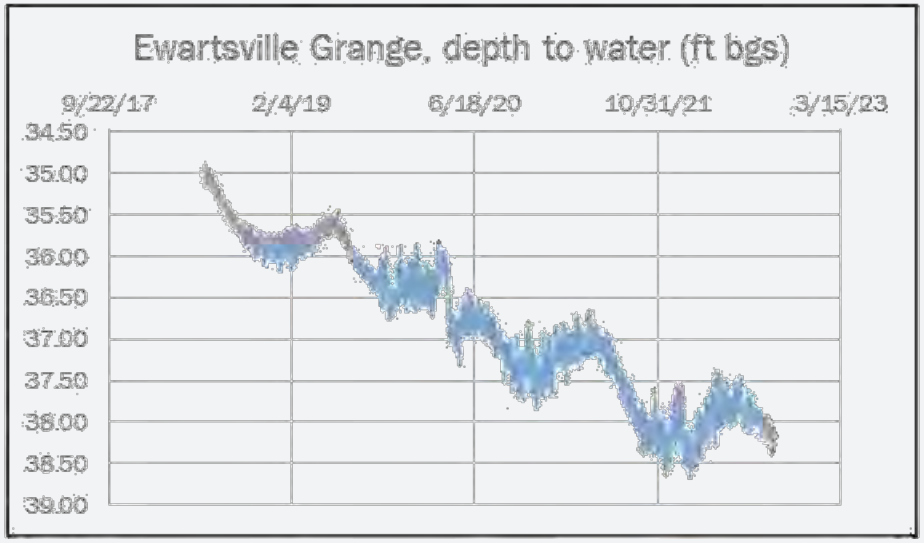
Palouse Basin



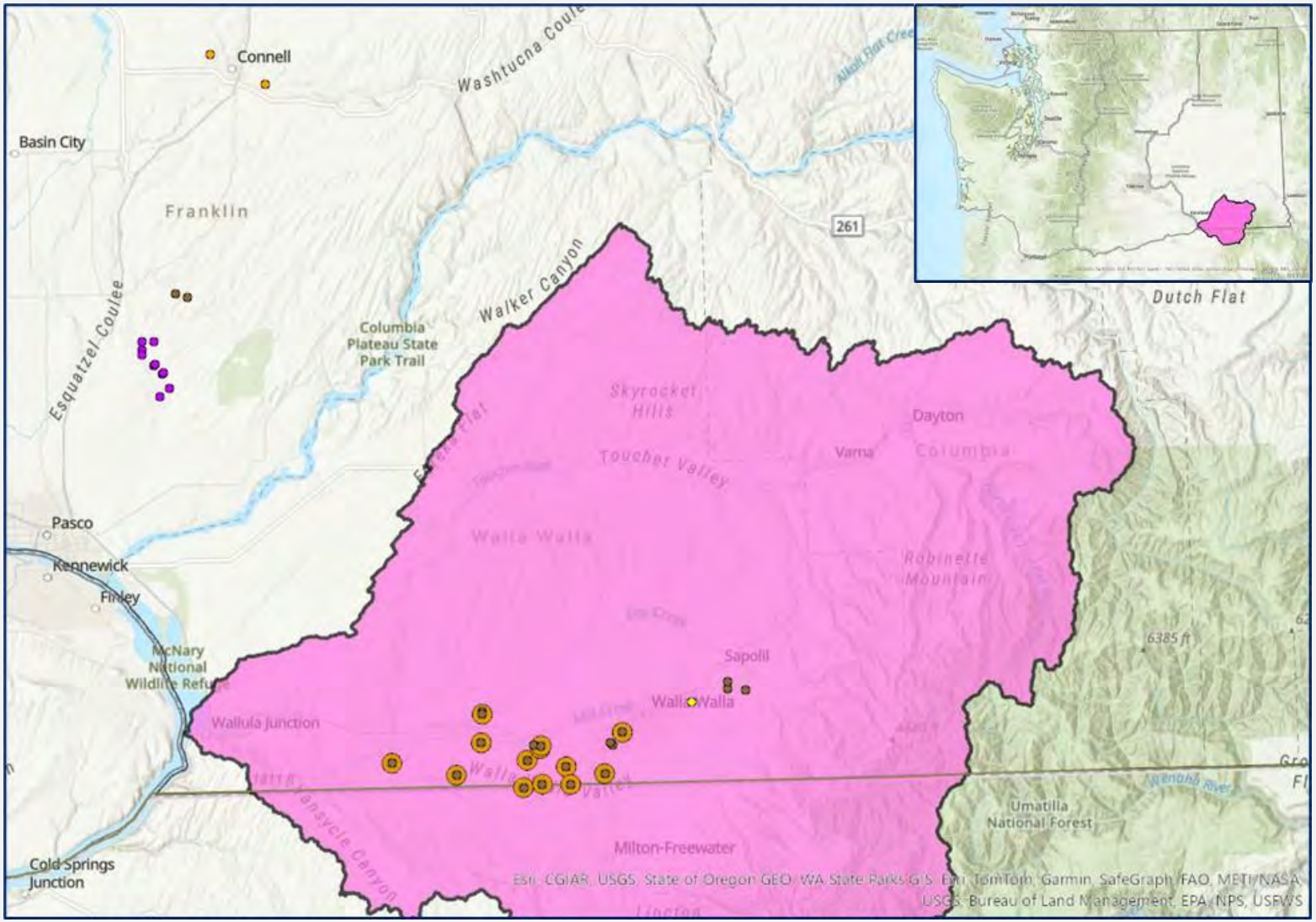
Palouse Basin



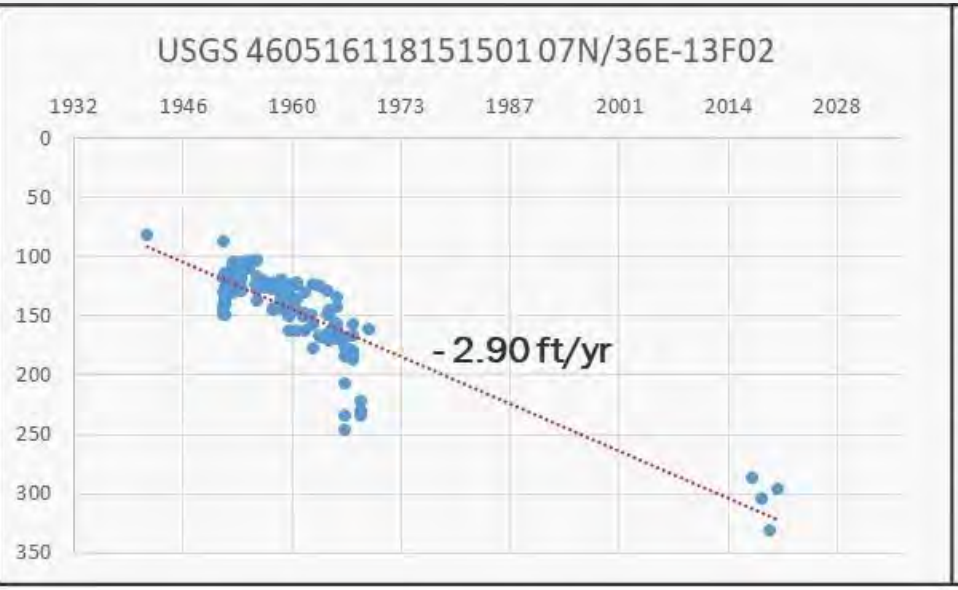


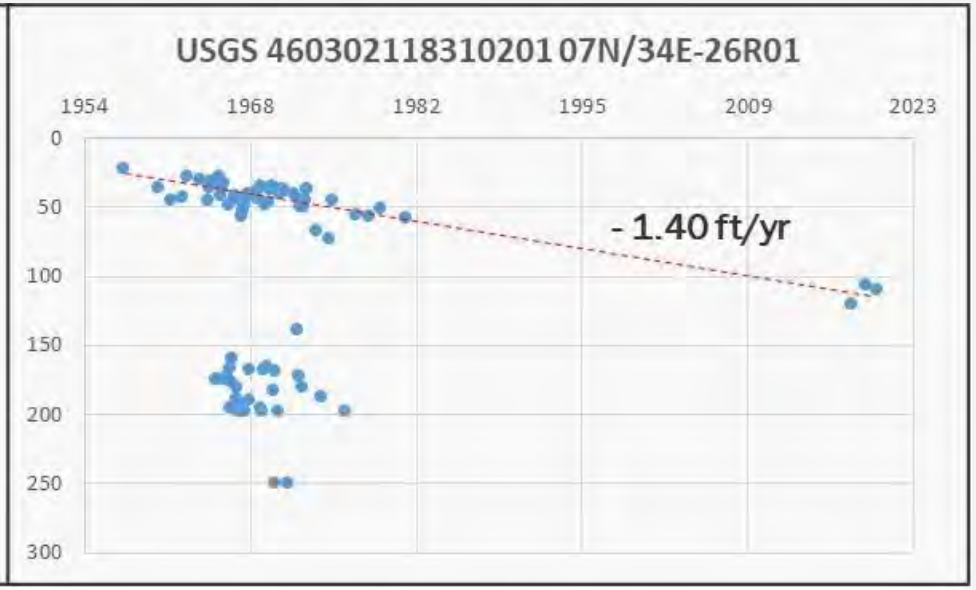


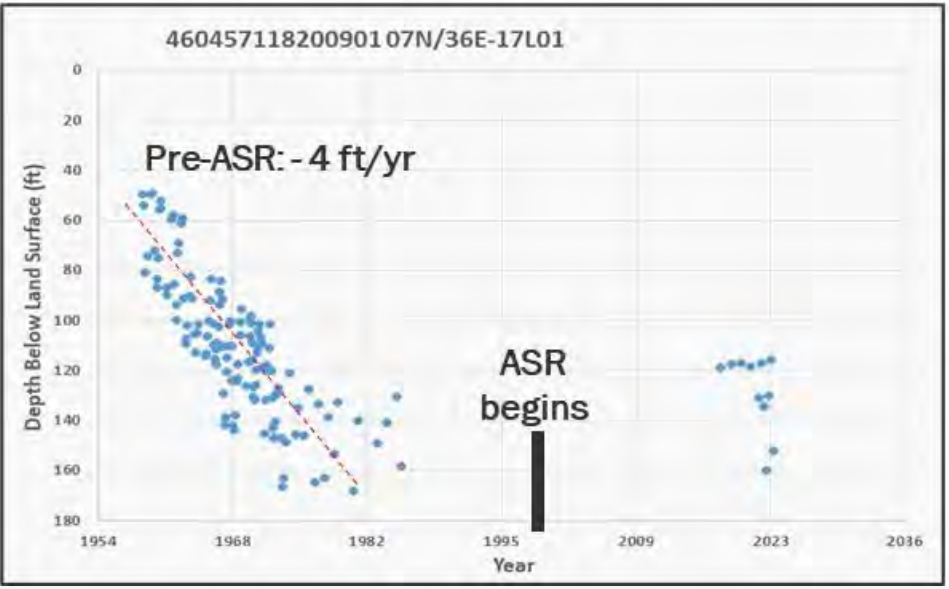
Walla Walla Basin

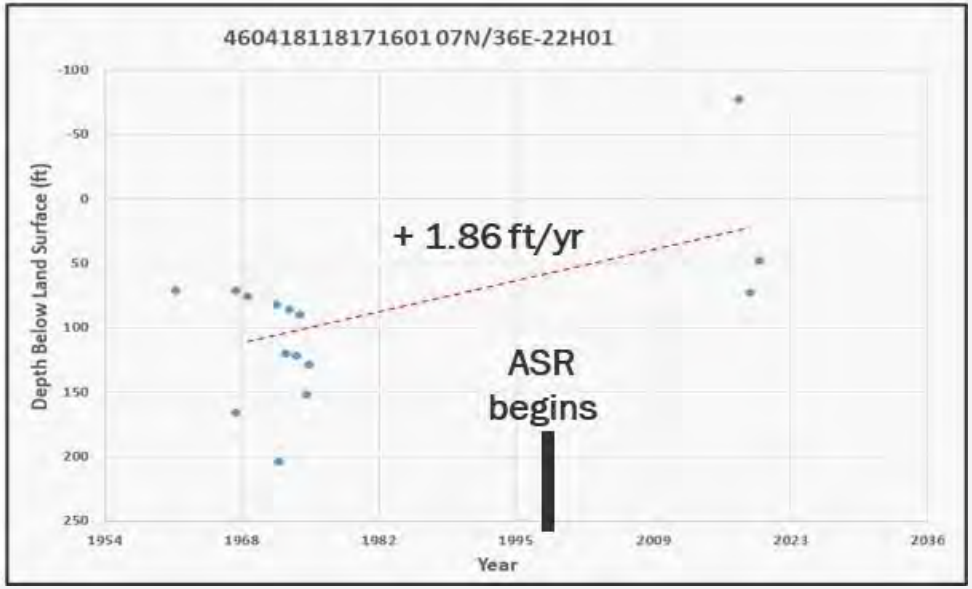


Walla Walla Basin

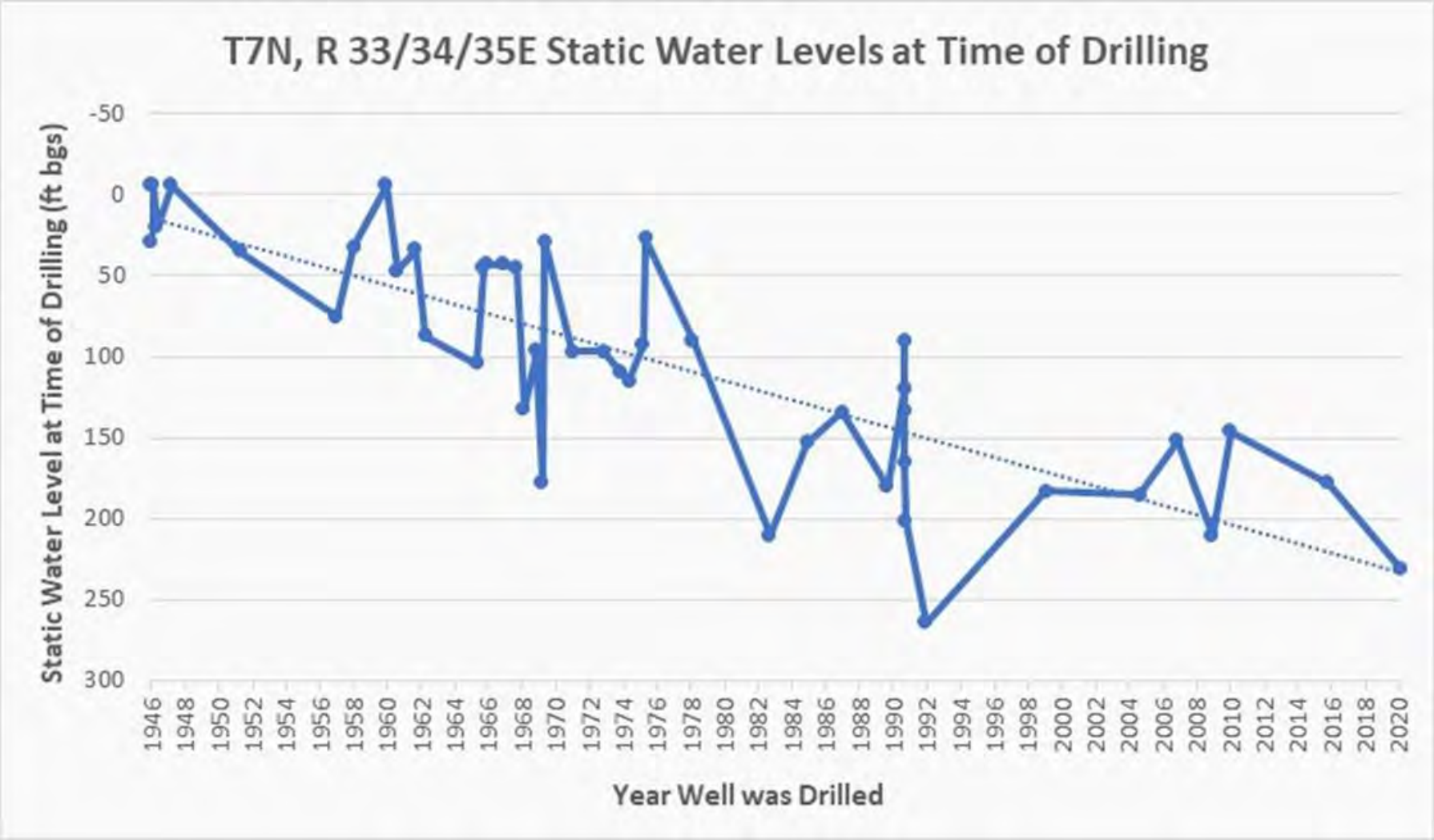








Walla Walla Basin

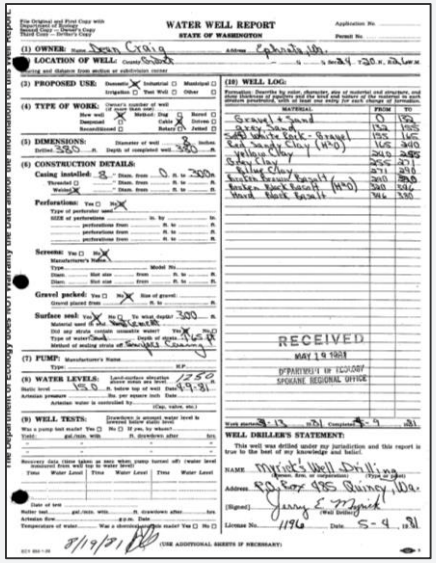


How do we use monitoring data?

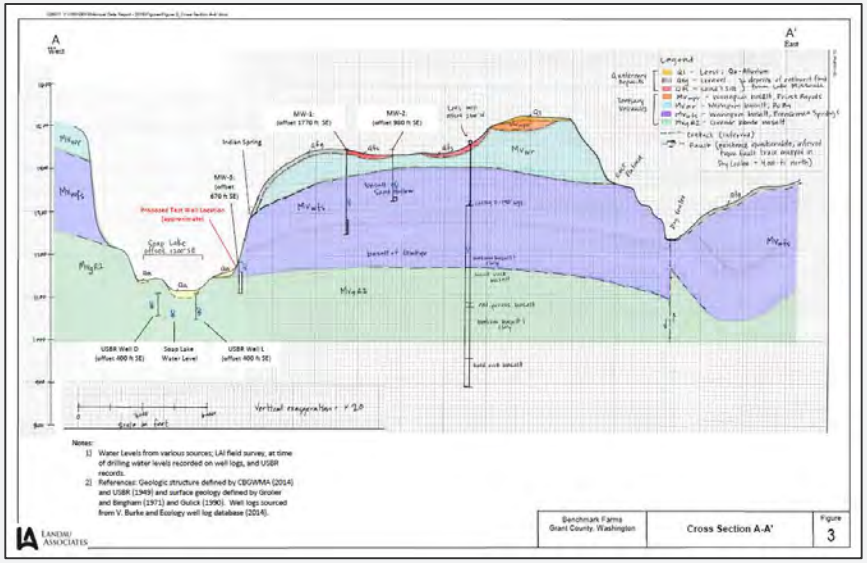
- Review of water right applications
  - New applications
  - Applications for change
  - Location specific, done on a case-by-case basis
- Local or regional groundwater studies
  - White paper for a basin or sub-basin
  - Cooperative studies with other agencies/partners
- Respond to public inquiries
- Provide technical assistance

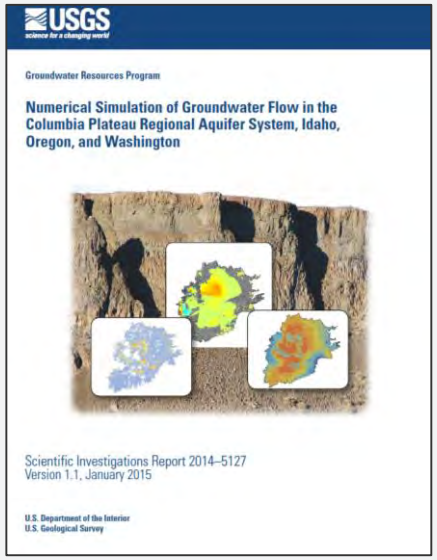
What if we don't have data?

- Nearby well logs (water level at time of drilling)
- Project-specific monitoring data (provided by applicant or consultants)
  - Preliminary Permits
- Other nearby data in EIM
- Data from published reports/models


WATER WELL REPORT
STATE OF WASHINGTON

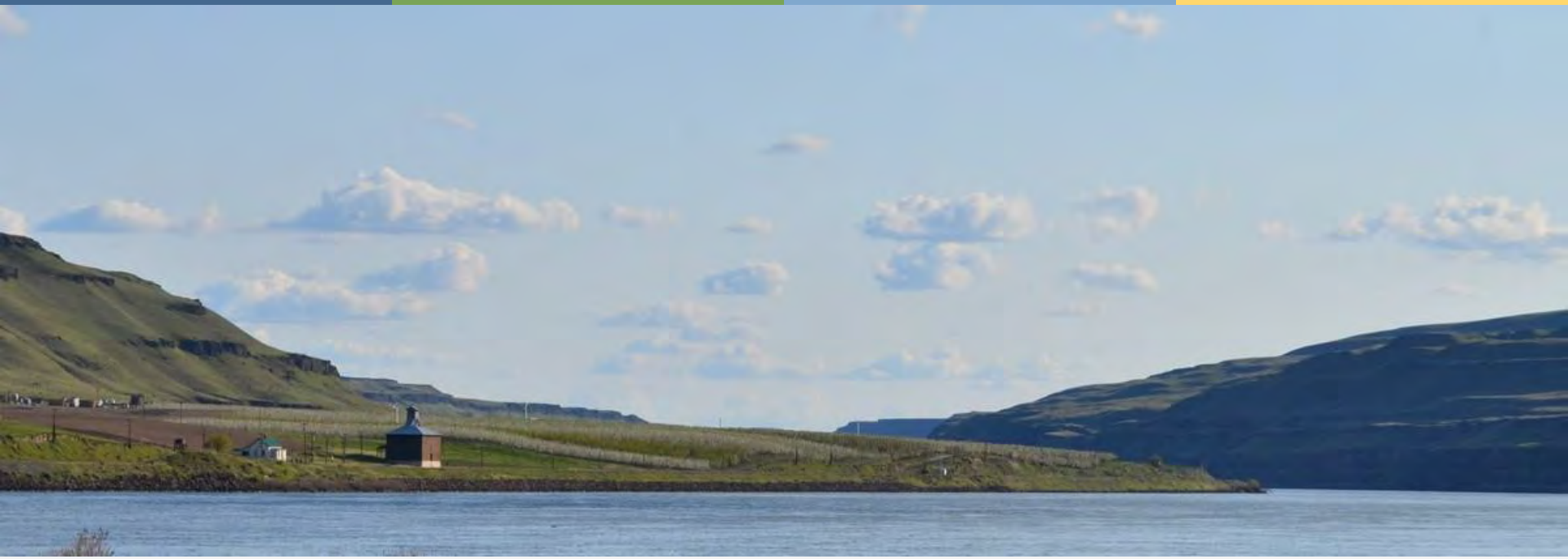
RECEIVED
MAY 19 1981
DEPARTMENT OF ECOLOGY
SPOKANE REGIONAL OFFICE





Goals for Ecology's Groundwater Monitoring

- Bring wells back into our synoptic water level measurement network
- Expand/grow our transducer network
- Work through backlog of transducer data entry in EIM
- Drill or repurpose wells for monitoring needs:
  - Quincy Basin, both Wanapum and Grande Ronde
  - Walla Walla basalt wells



Thank you!

Patrick Cabbage

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(509) 834-9985