

Harney Basin Groundwater Study

Harney GW SAC Meeting

Burns, Oregon

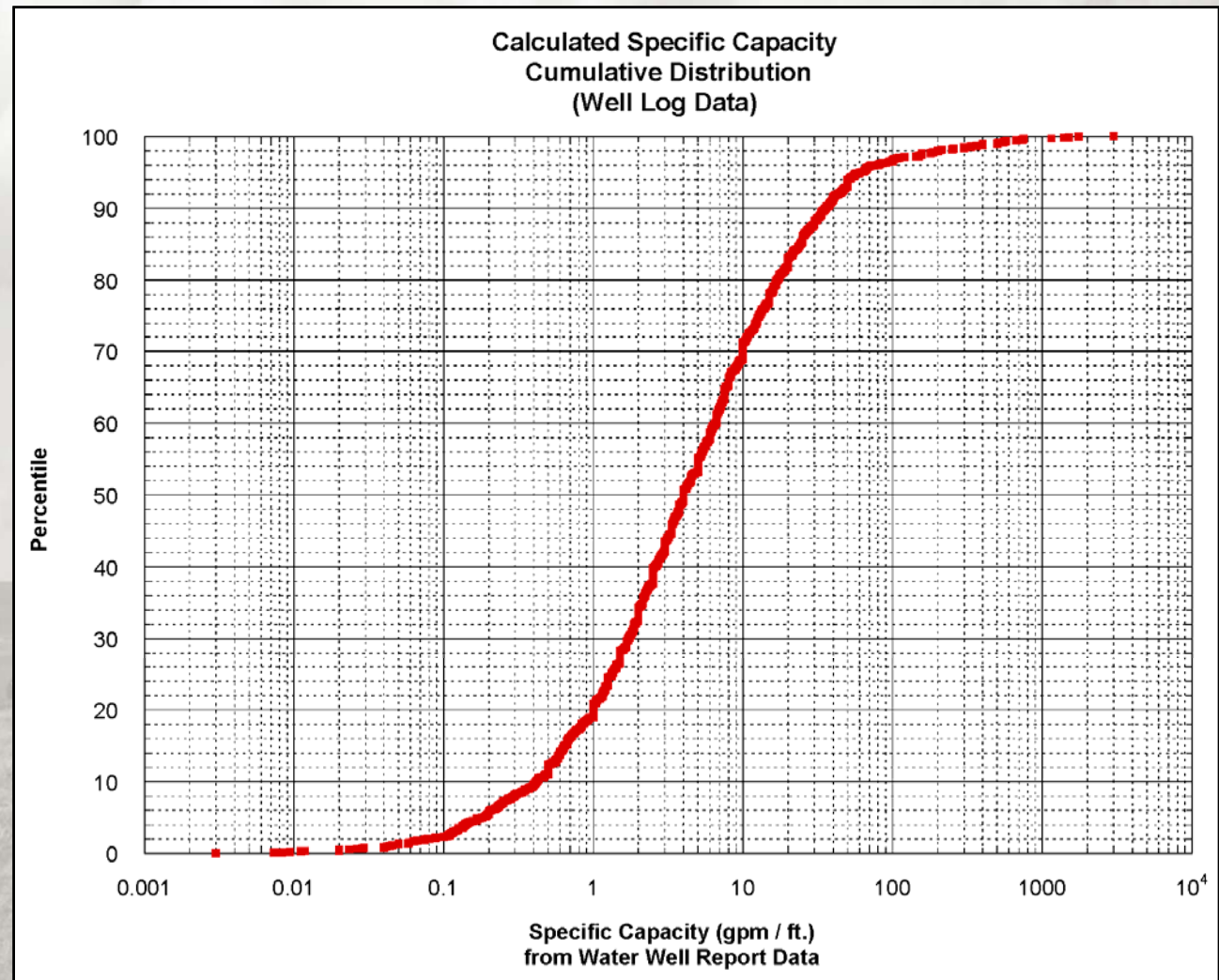
21 March 2019



Jerry Grondin
OWRD Hydrogeologist

Specific Capacity

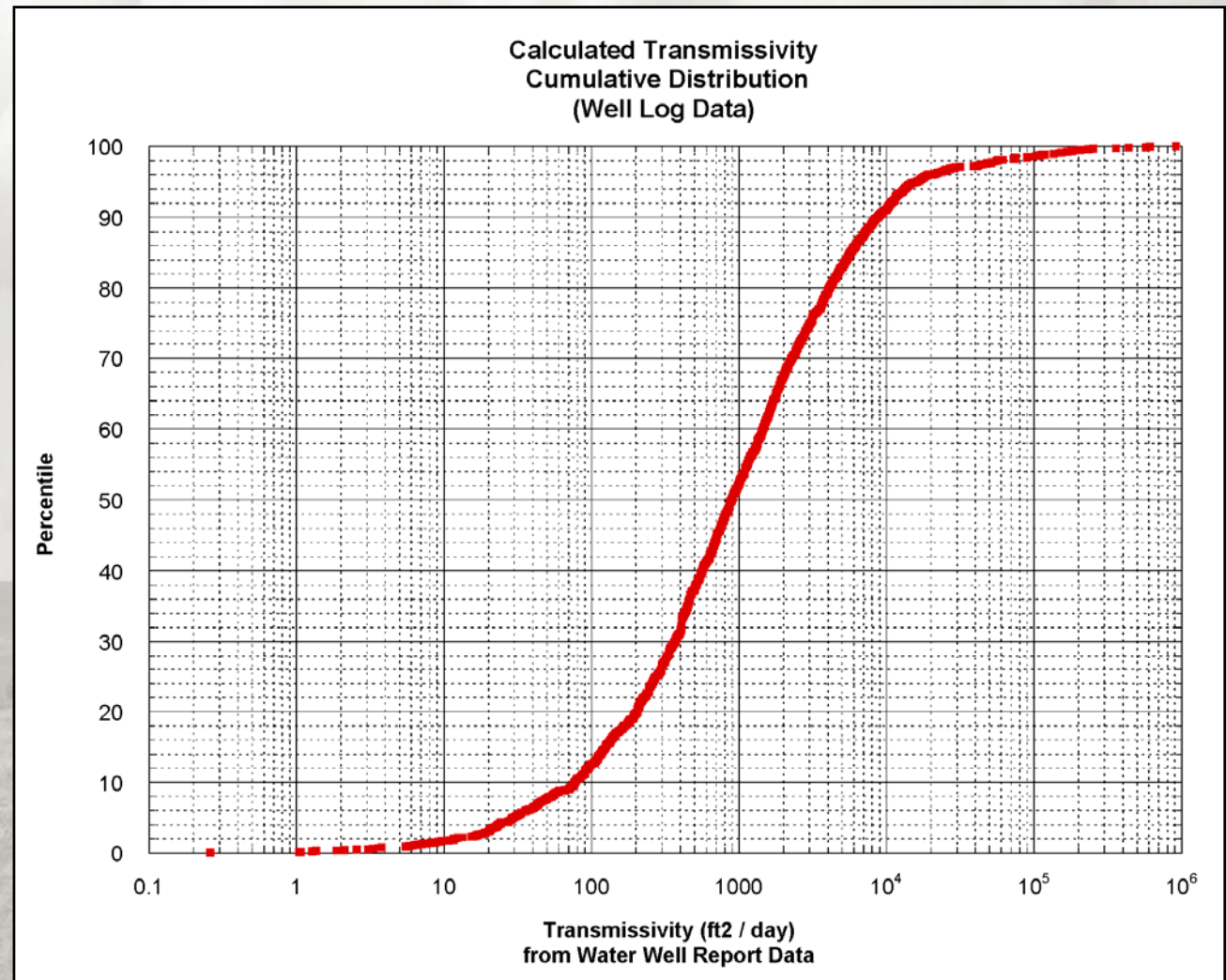
- Well Log Data
- >1,600 Well Logs



Preliminary...Subject to Change...Do Not Quote or Cite

Transmissivity

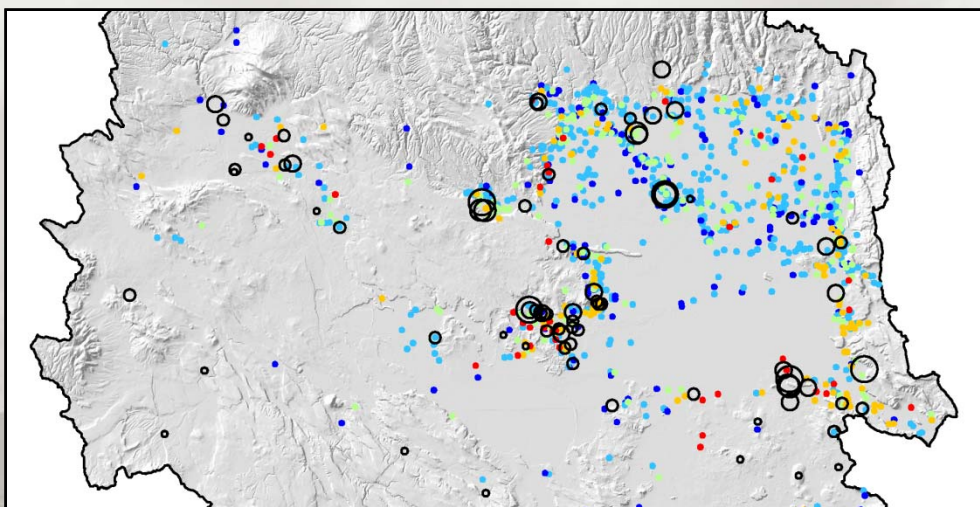
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Specific Capacity

- Well Log Data
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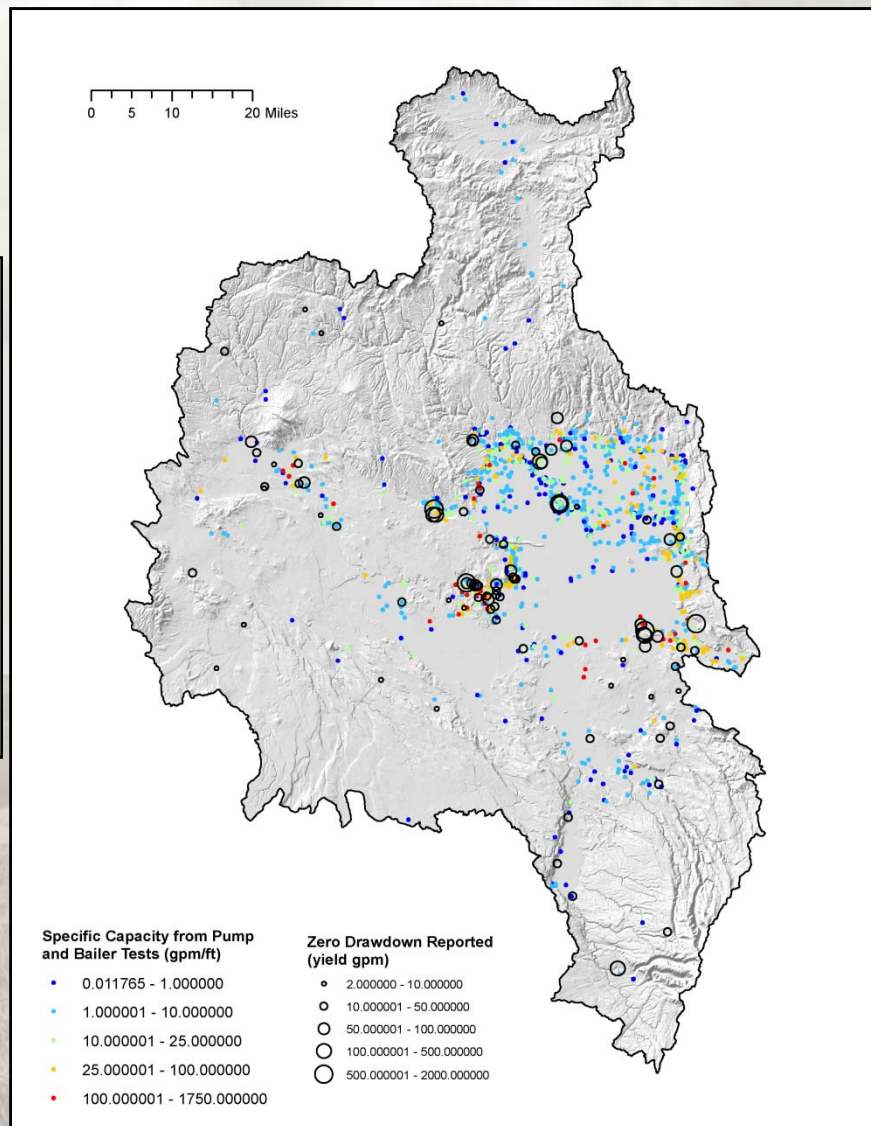


Specific Capacity from Pump and Bailer Tests (gpm/ft)

- 0.011765 - 1.000000
- 1.000001 - 10.000000
- 10.000001 - 25.000000
- 25.000001 - 100.000000
- 100.000001 - 1750.000000

Zero Drawdown Reported (yield gpm)

- 2.000000 - 10.000000
- 10.000001 - 50.000000
- 50.000001 - 100.000000
- 100.000001 - 500.000000
- 500.000001 - 2000.000000



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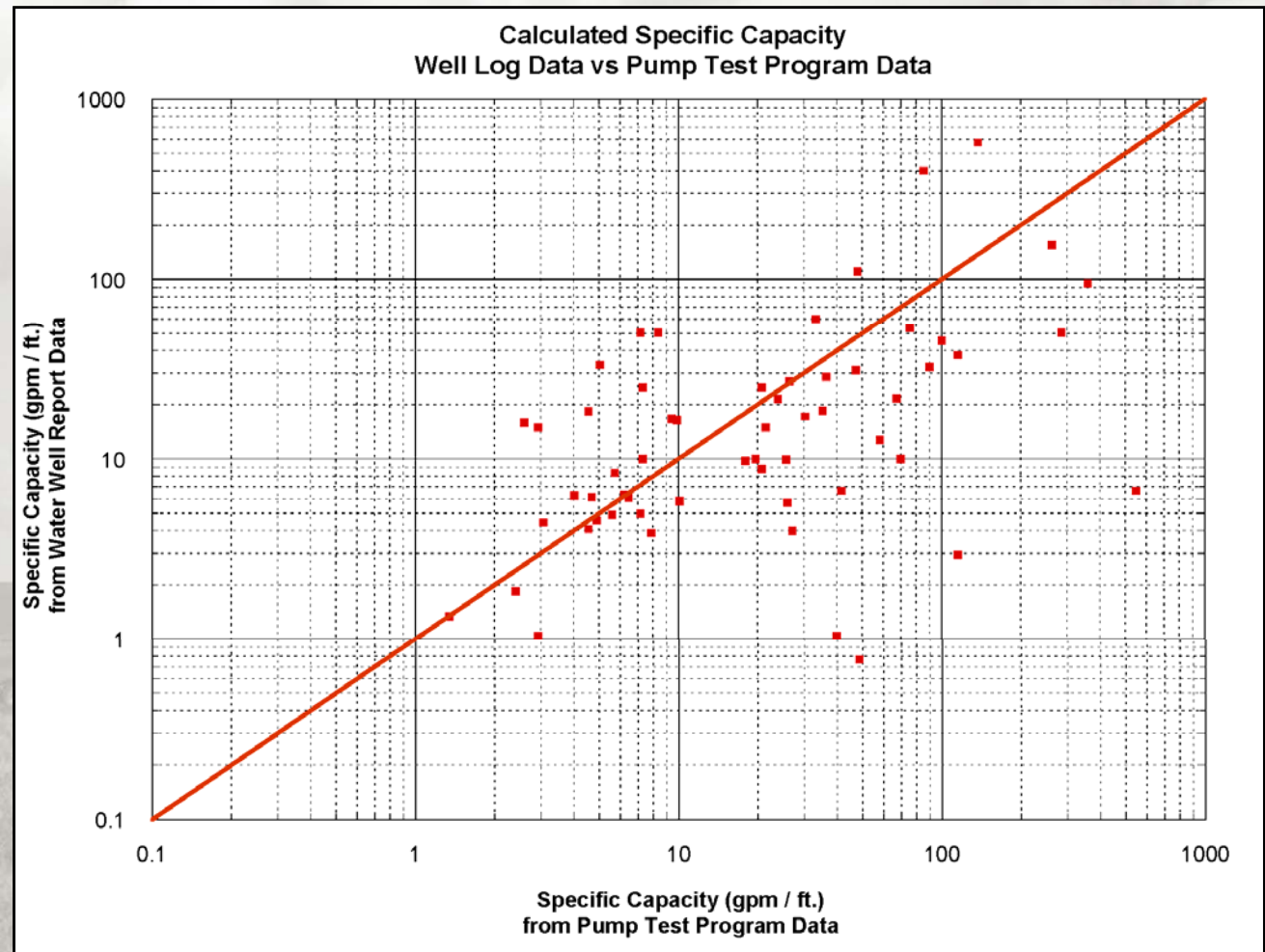
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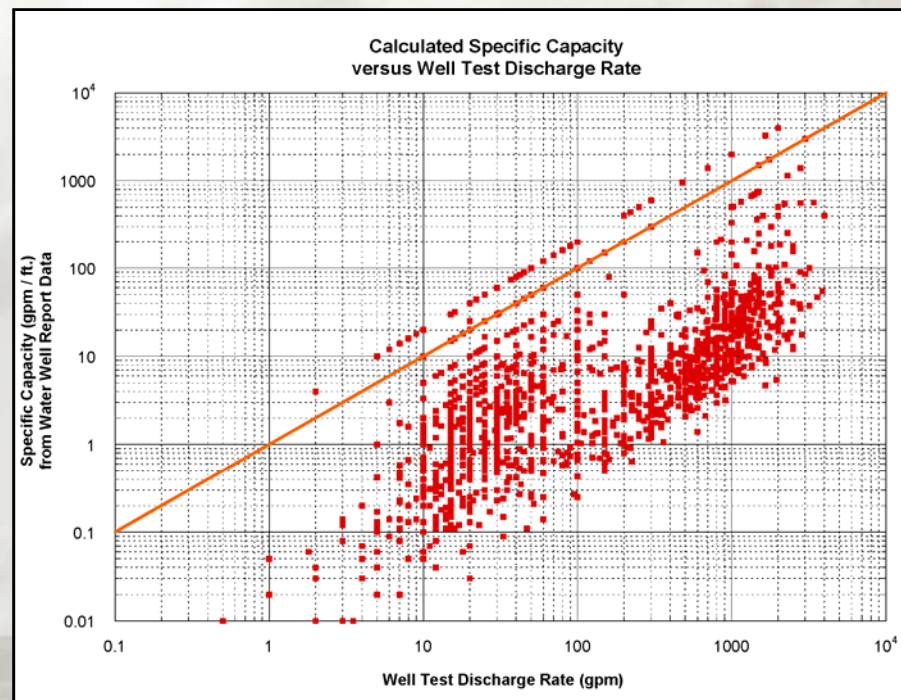
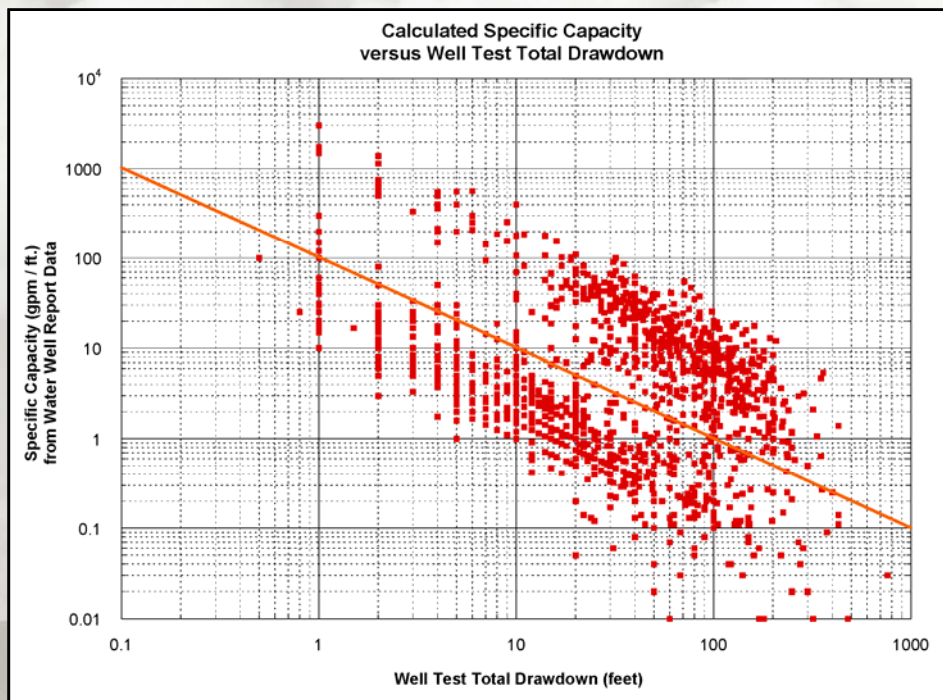
Preliminary...Subject to Change...Do Not Quote or Cite

Specific Capacity

- Well Log Data
- Pump Test Data
- Some Correlation



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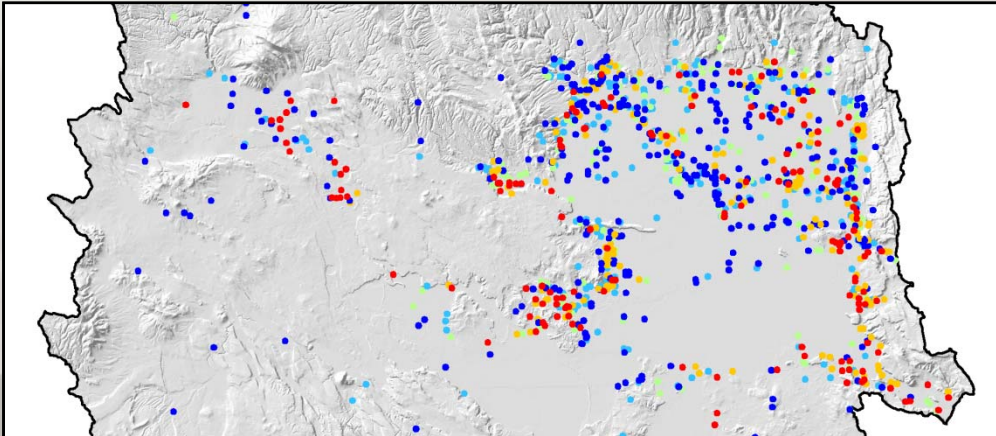
Specific Capacity

- Some Correlation: Test Drawdown & Test Pumping Rate
- No Correlation: Well Depth, Well Diameter, Well Open Interval

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Well Yield

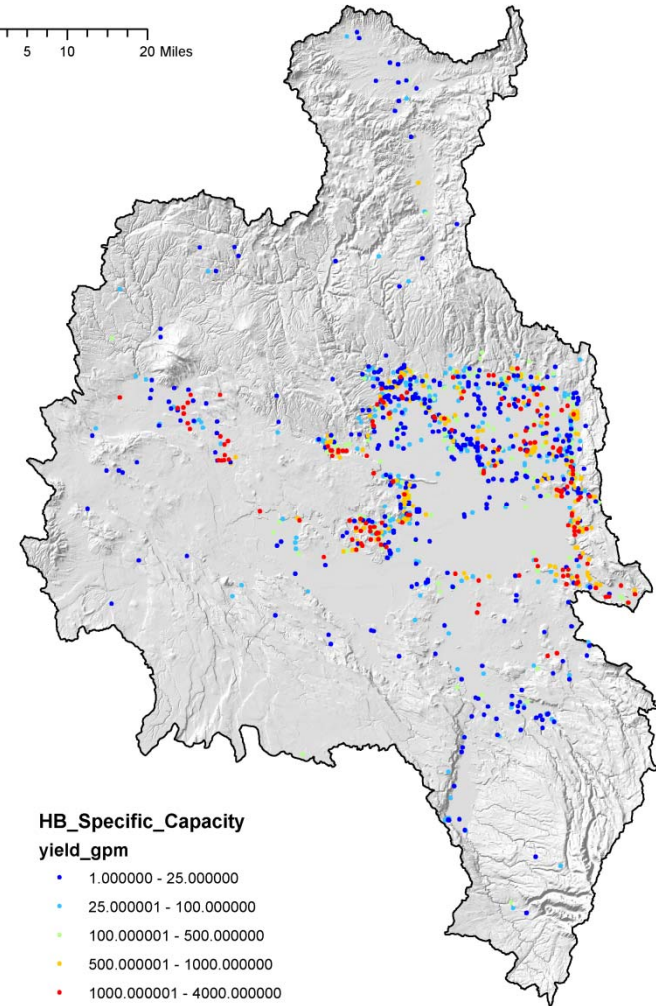
- Well Log Data
- >1,600 Well Logs



HB_Specific_Capacity yield_gpm

- 1.000000 - 25.000000
- 25.000001 - 100.000000
- 100.000001 - 500.000000
- 500.000001 - 1000.000000
- 1000.000001 - 4000.000000

0 5 10 20 Miles



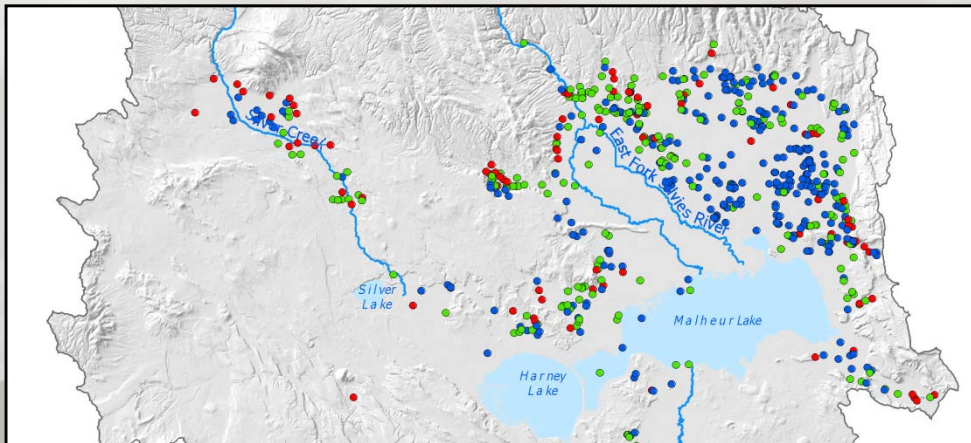
HB_Specific_Capacity yield_gpm

- 1.000000 - 25.000000
- 25.000001 - 100.000000
- 100.000001 - 500.000000
- 500.000001 - 1000.000000
- 1000.000001 - 4000.000000

Preliminary...Subject to Change...Do Not Quote or Cite

Coarser Grained Deposits

- Similar to Specific Capacity
- Similar to Well Yield

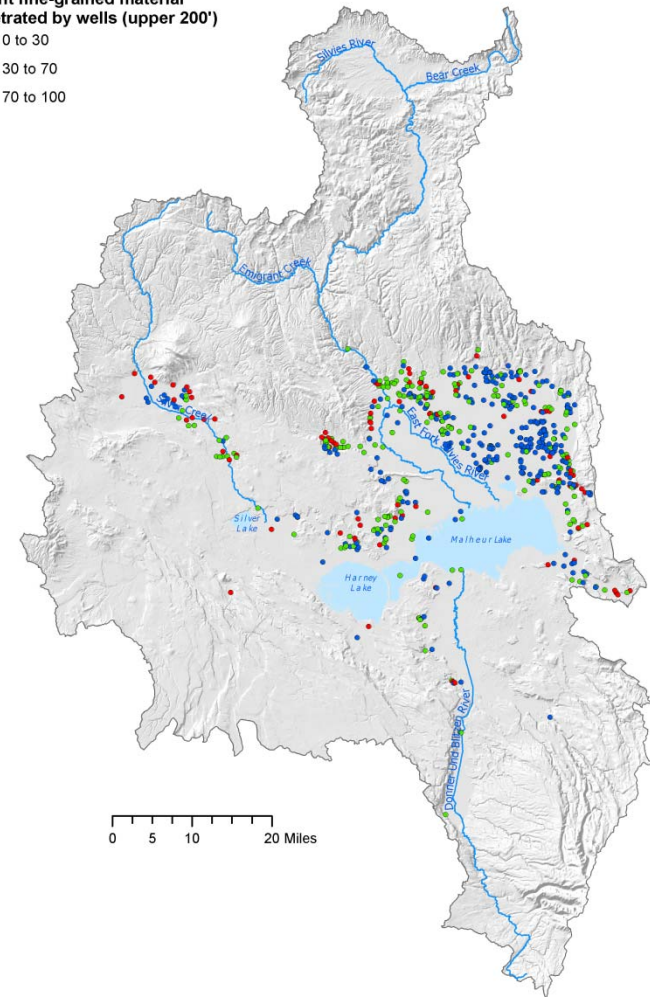


Percent fine-grained material penetrated by wells (upper 200')

- 0 to 30
- 30 to 70
- 70 to 100

Percent fine-grained material penetrated by wells (upper 200')

- 0 to 30
- 30 to 70
- 70 to 100



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Harney Basin Groundwater Study

Harney GW SAC Meeting

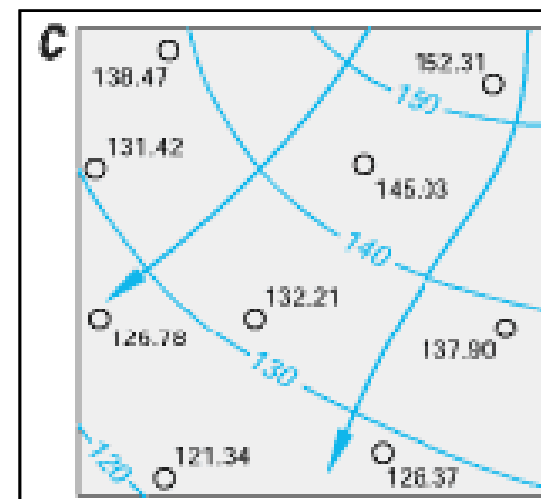
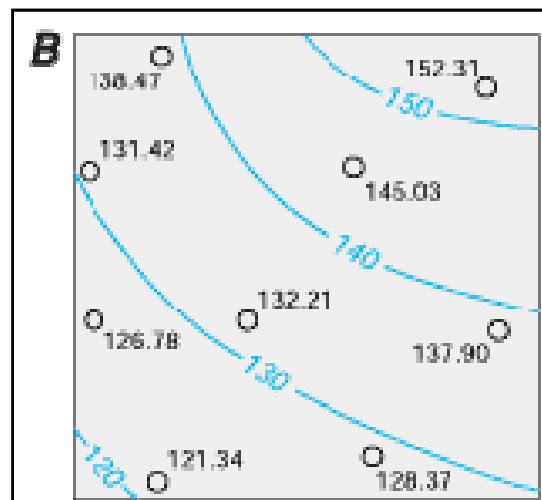
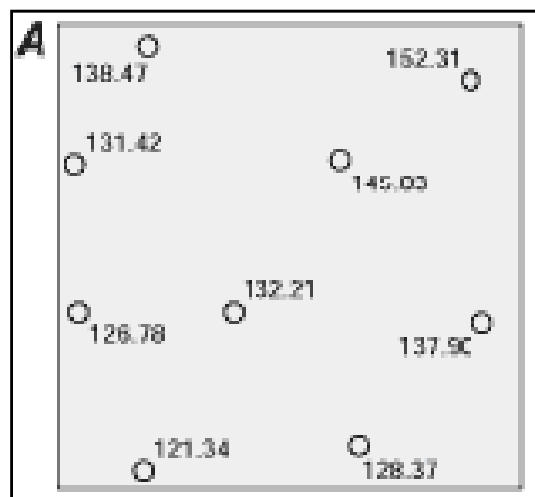
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Groundwater Level Contouring



o 152.31
LOCATION OF WELL AND
ALTITUDE OF WATER
TABLE ABOVE SEA
LEVEL, IN FEET

-- 130 --
WATER-TABLE CONTOUR—
Shows altitude of water
table. Contour interval 10
feet. Datum is sea level

→
GROUND-WATER FLOW
LINE

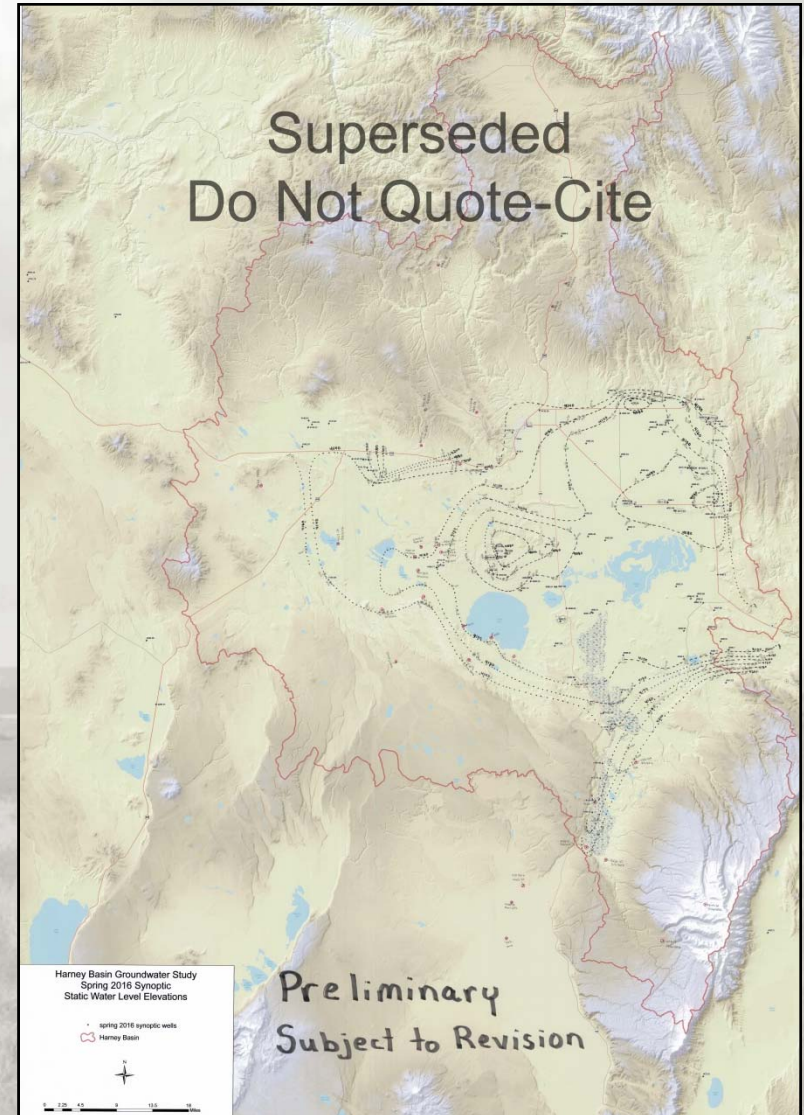
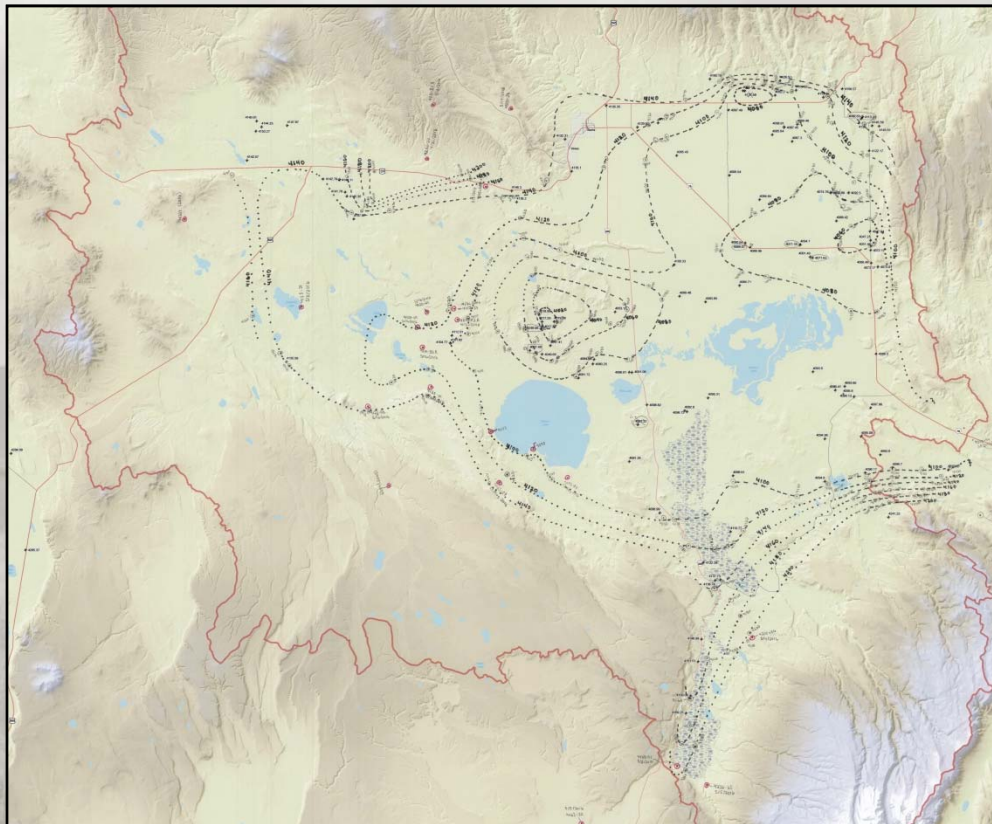
Source: Winter and others 1998, USGS Circular 1139

Superseded...Do Not Quote or Cite

Harney Basin GW Study: Potentiometric Map

2016 Map (Superseded)

- ~150 Wells: March 2016
- Preliminary Data Assessment



Superseded...Do Not Quote or Cite



Harney Basin GW Study: Potentiometric Map

2018 Map Chronology

- February-March 2018: Synoptic GW Level Measurements
- June-November 2018: GPS Project Well Elevation Surveying
- December 2018: Update 194 Permit Condition Well Elevation
- December 2018: Contour 2018 Synoptic Data
- December 2018 – January 2019: Federal Shutdown (35 days)
- Feb. – March 2019: Four OWRD – USGS Map Meetings (40 hrs.)
- March 2019: Updating Map
 - 2 Maps (Water Column Top (Water Table) & Deeper Zone)
 - Use ~2550 Springs (NHD data) for additional control
 - Use ~2120 OWRD GWIS Wells for additional control
 - Use DOGAMI OLC Lidar for additional control
 - Use Geologic Map & 1-Foot Imagery

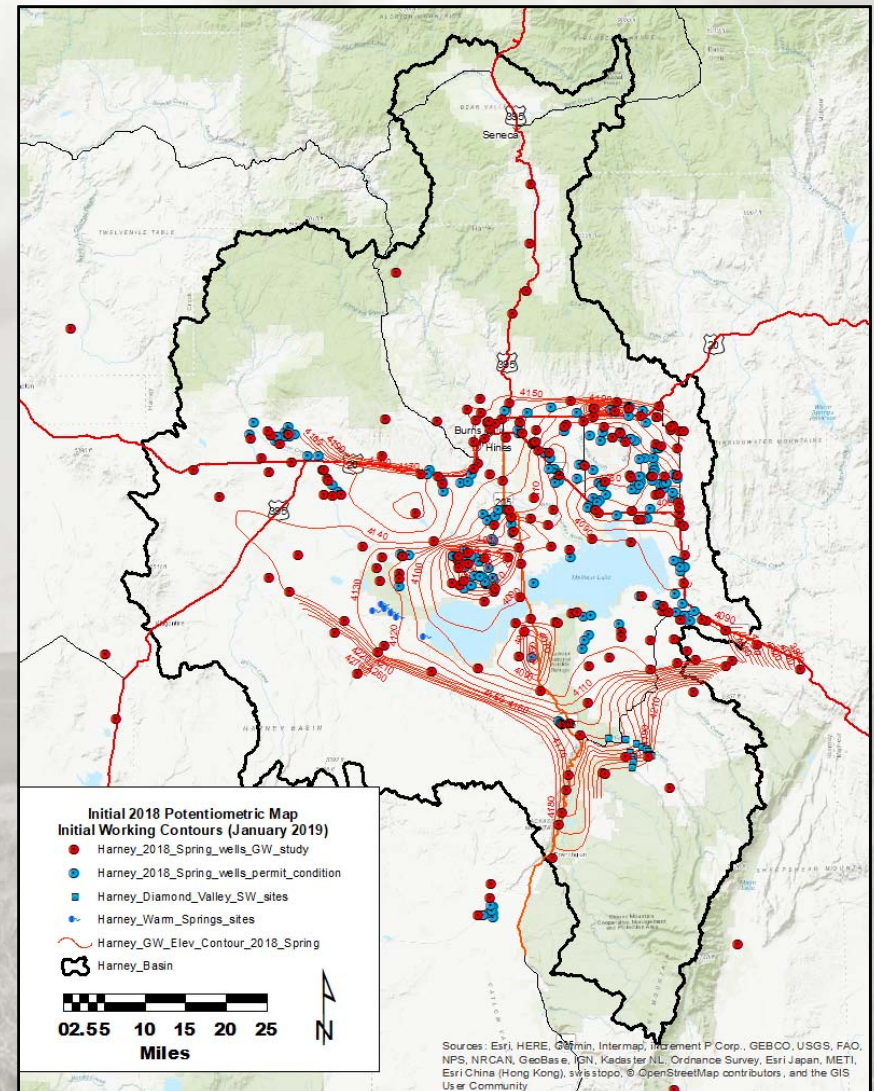
Superseded...Do Not Quote or Cite

2018 Map (Superseded)

- Completed January 2019
- February-March 2018 GW Data
- 196 of 221 Project Wells
- 194 Permit Condition Wells
- 6 Warm Springs Valley springs
- 13 Diamond Valley SW Sites

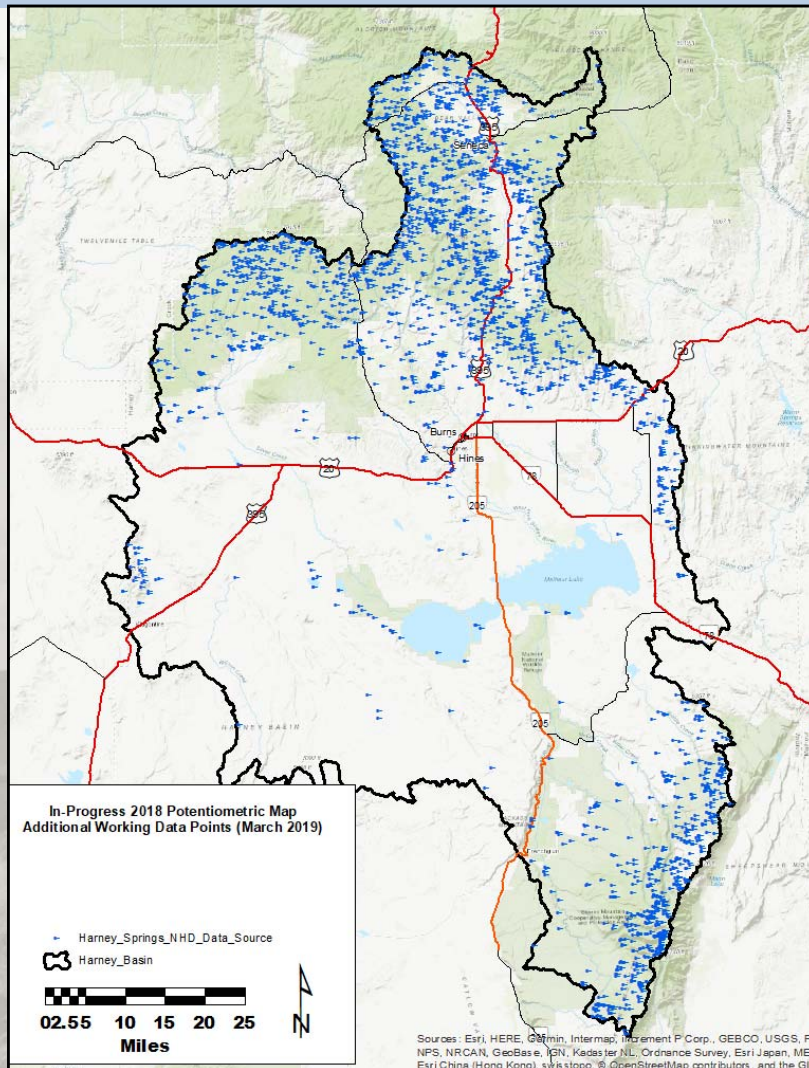
Purpose

- Initial Contours
- Limited to Vetted Data
- Recognized More is Needed

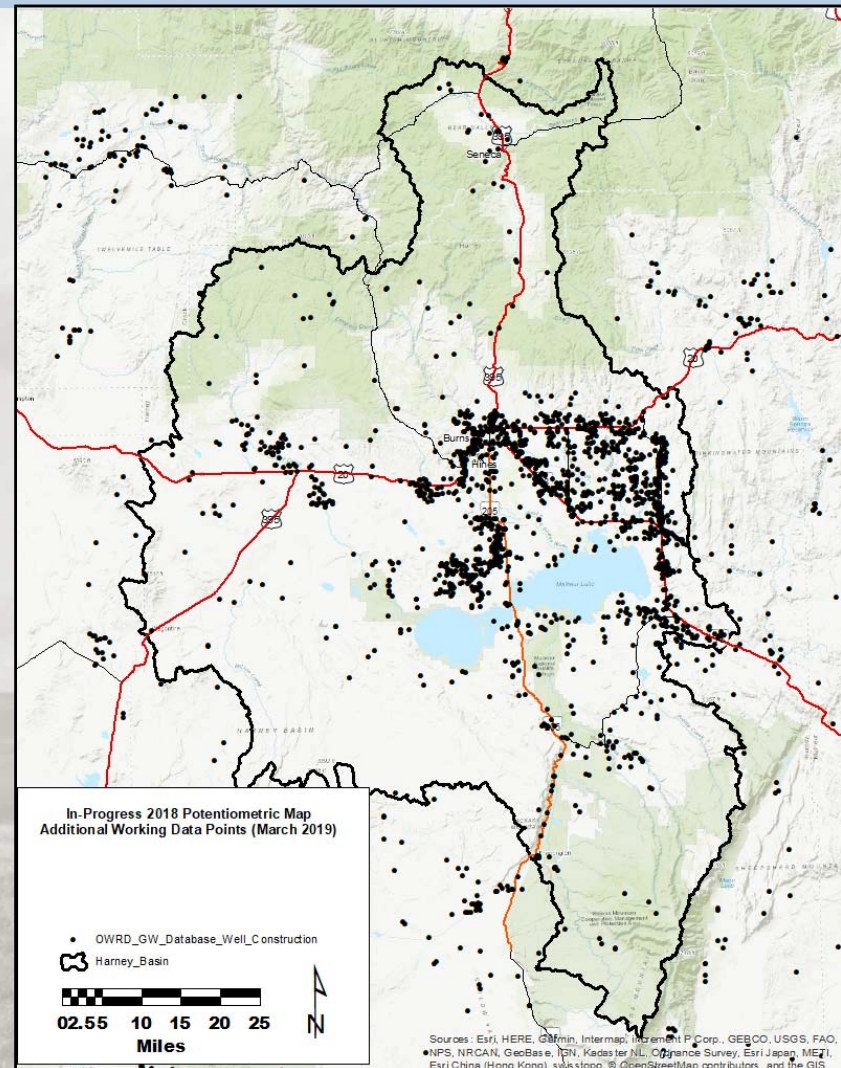


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Harney Basin GW Study: Potentiometric Map



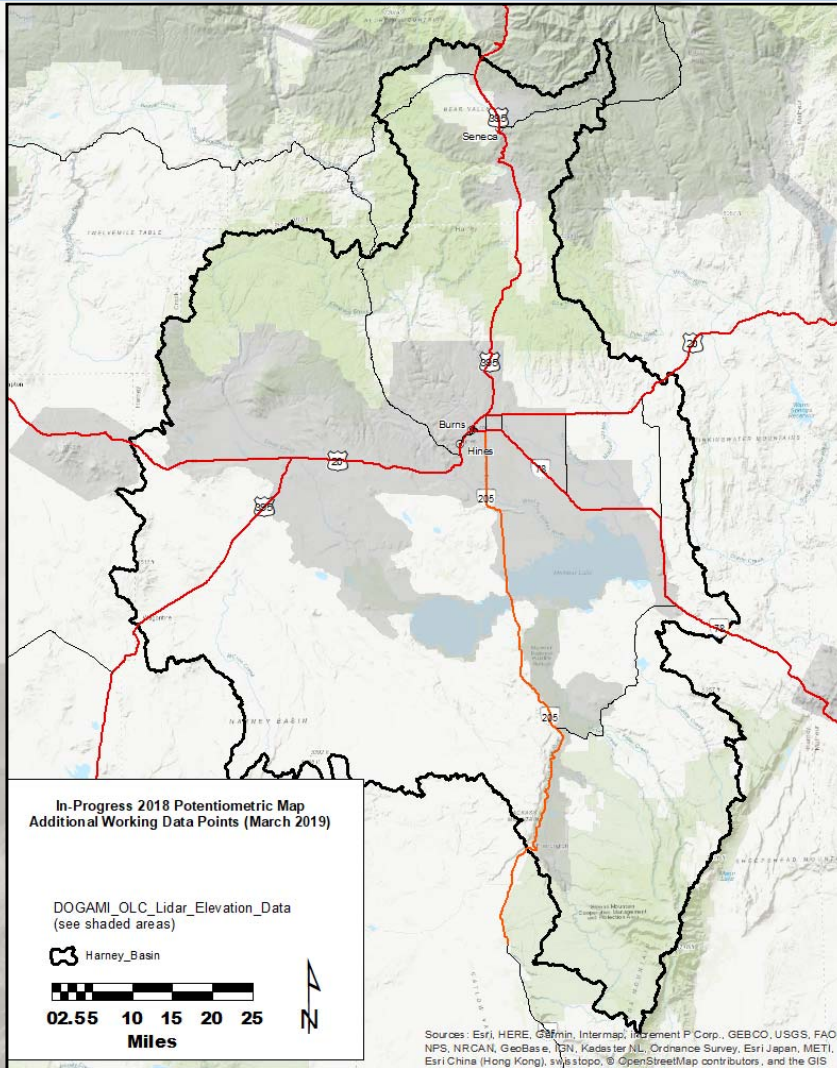
~2550 Springs



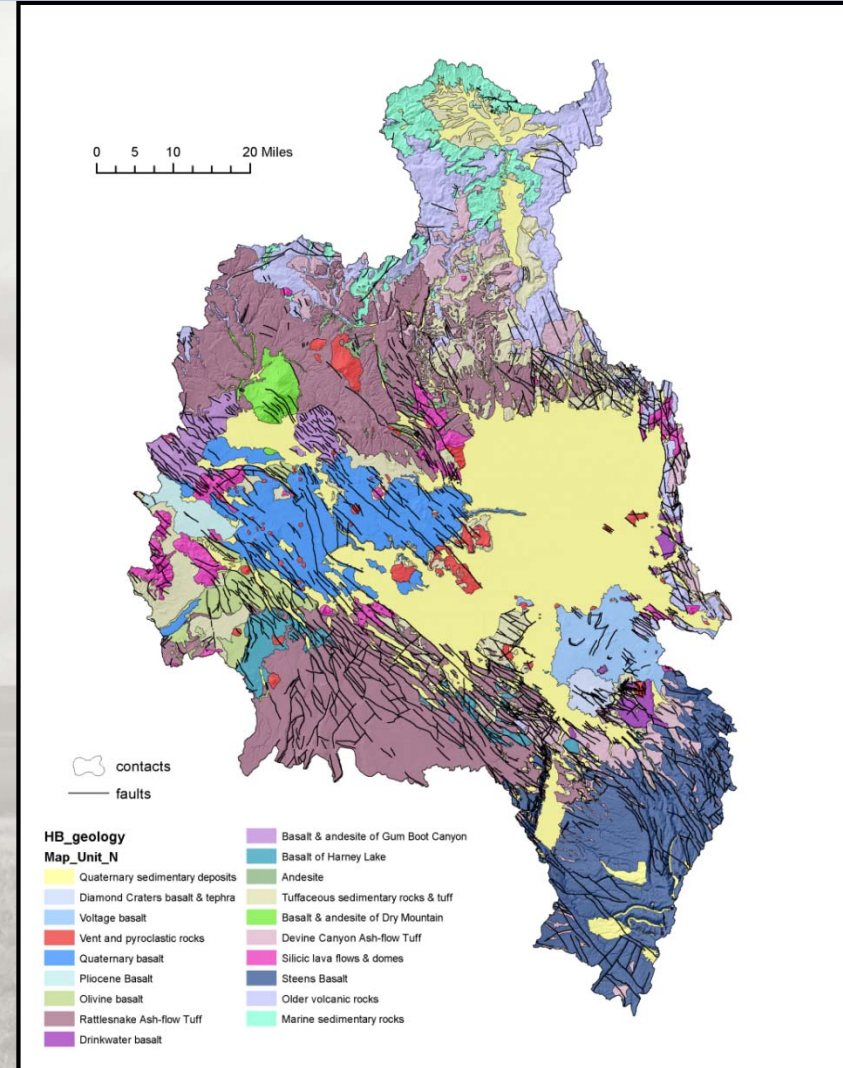
~2120 OWRD GWIS Wells

Superseded...Do Not Quote or Cite

Harney Basin GW Study: Potentiometric Map

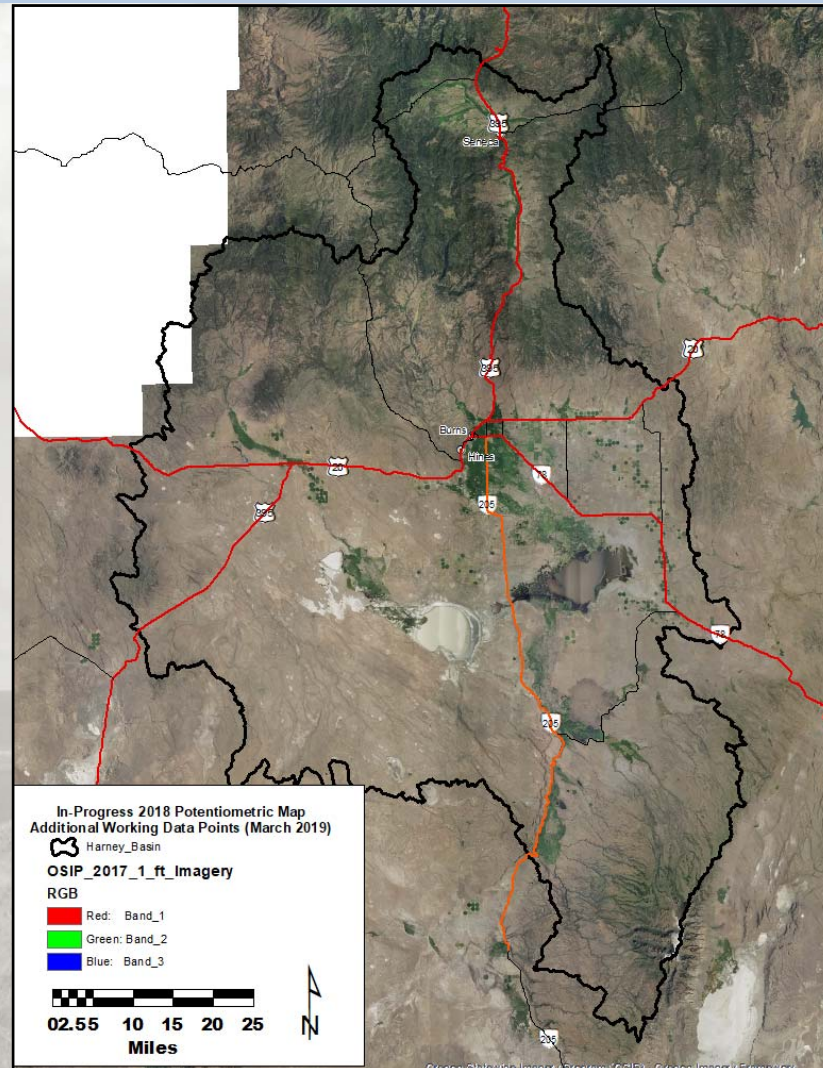


DOGAMI OLC Lidar



Geology

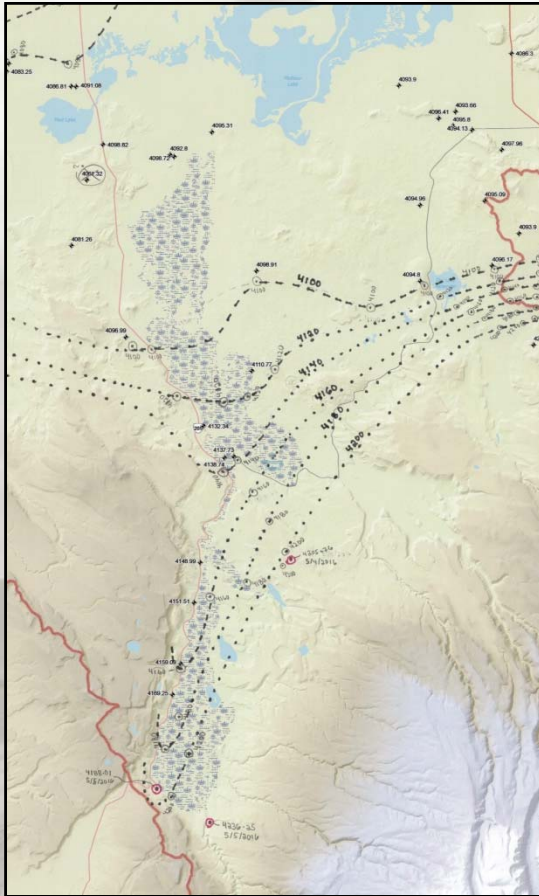
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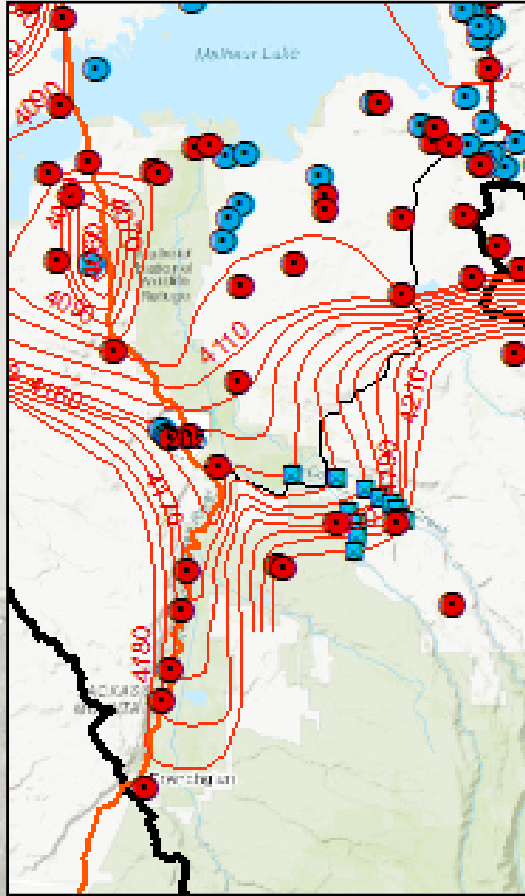
1-Foot Imagery

Superseded...Do Not Quote or Cite

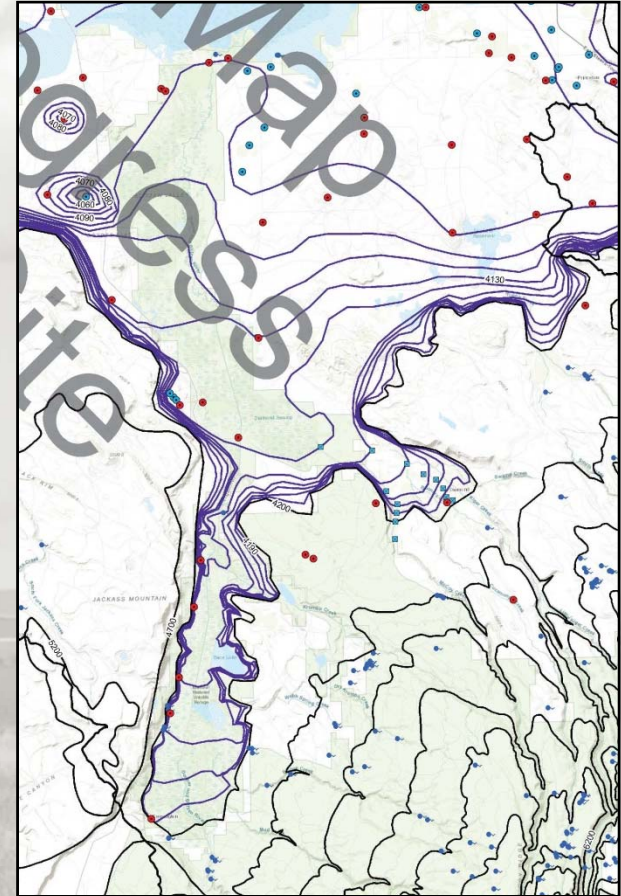
Harney Basin GW Study: Potentiometric Map



2016



January 2019



2019 Updating

Superseded or Update in Progress...Do Not Quote or Cite

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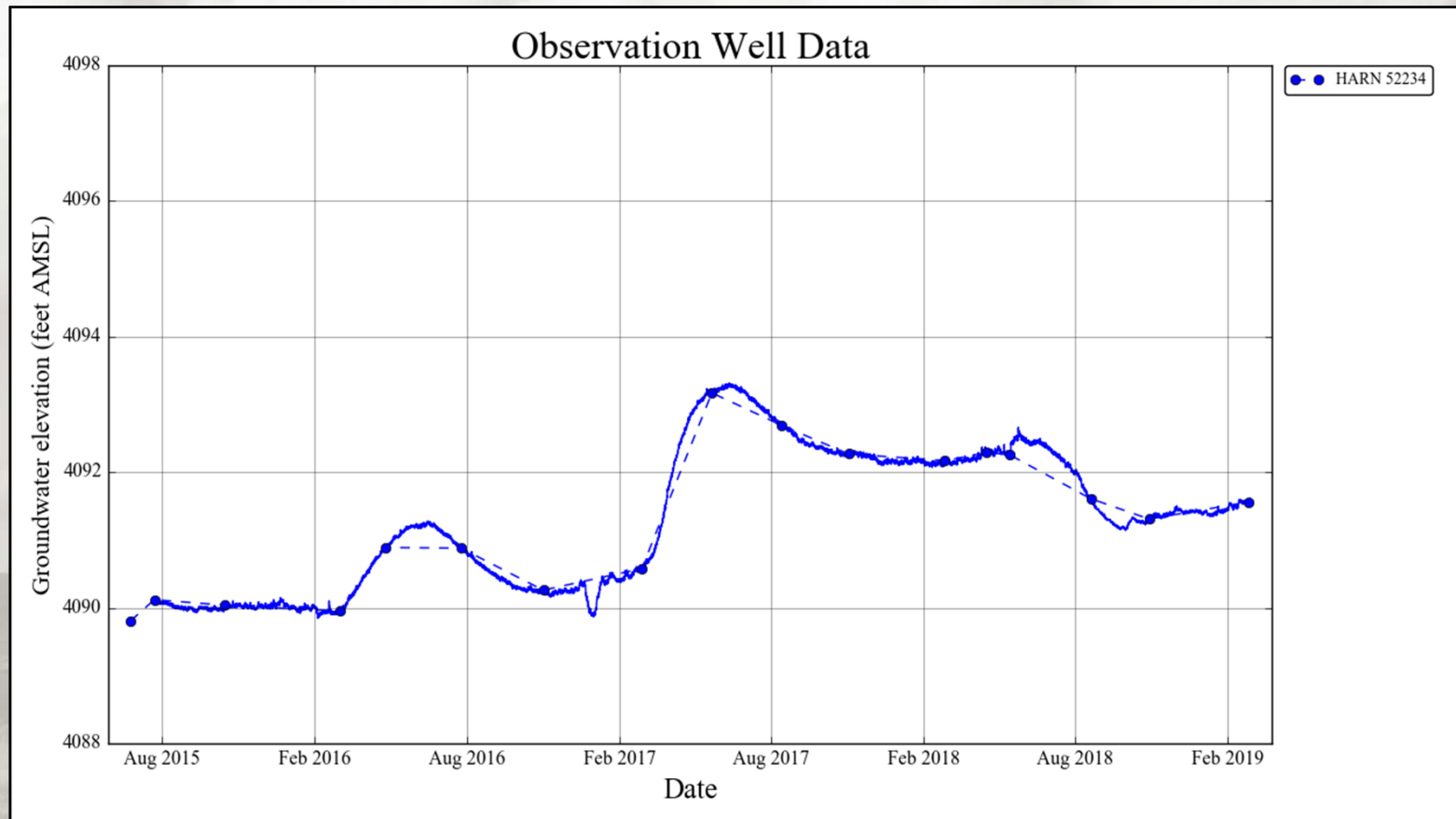
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Harney Basin GW Study: Hydrographs

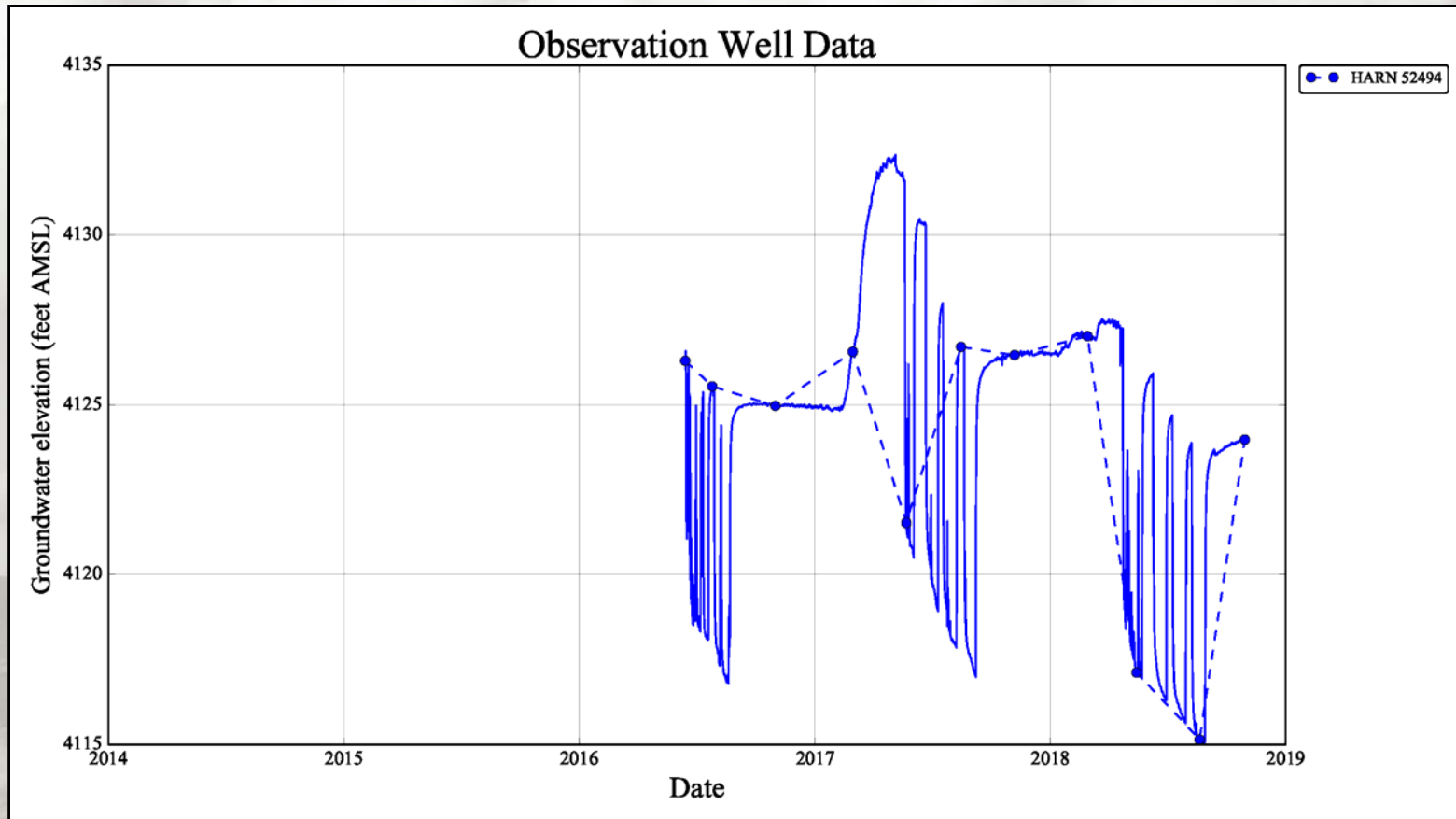


GW Response to SW

2016 & 2017 Freshets (Lawen Shallow Obs Well)

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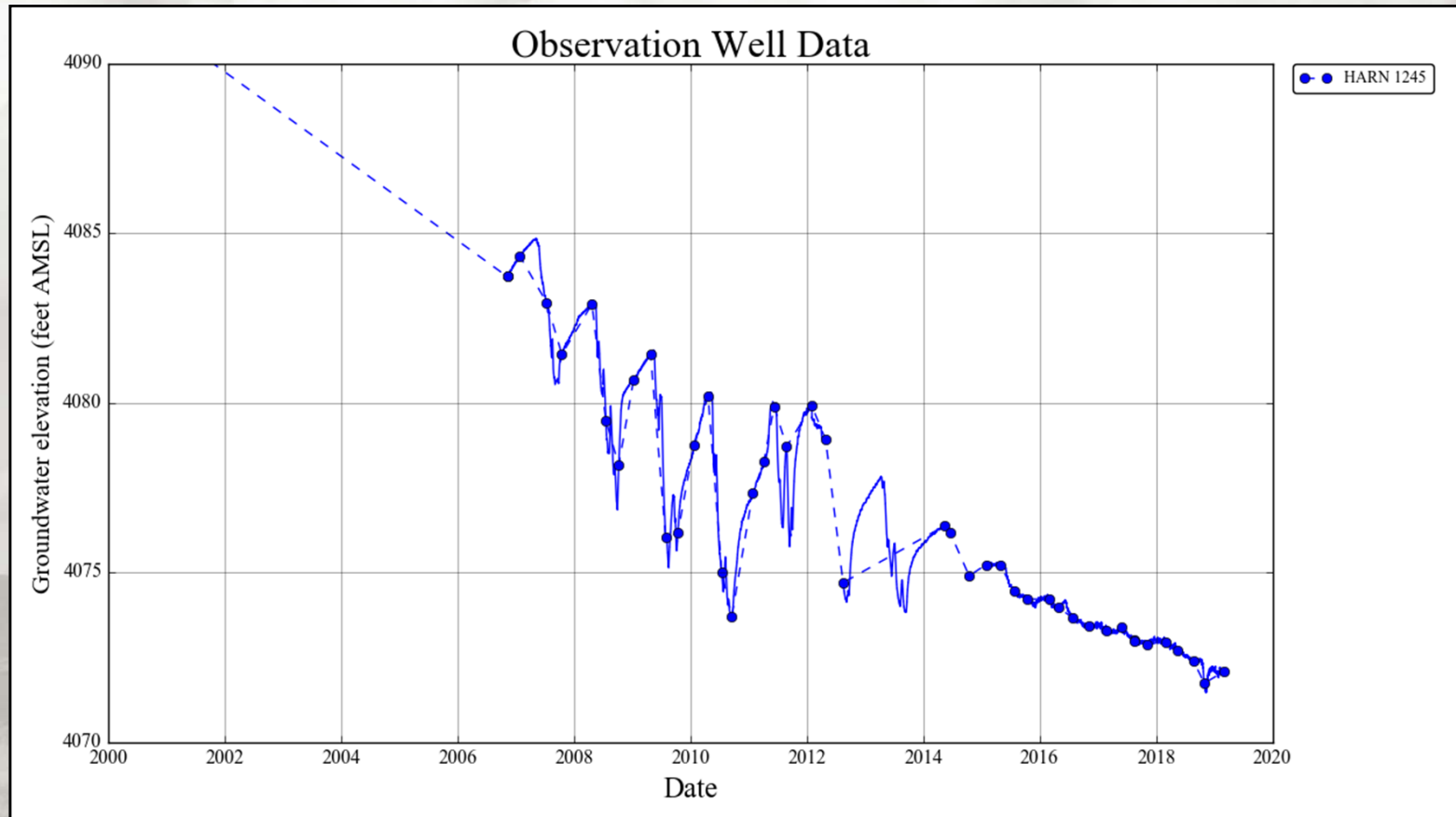
Harney Basin GW Study: Hydrographs



GW Response to Pumping
Bentz – Owens Obs Well (NE Harney Valley)

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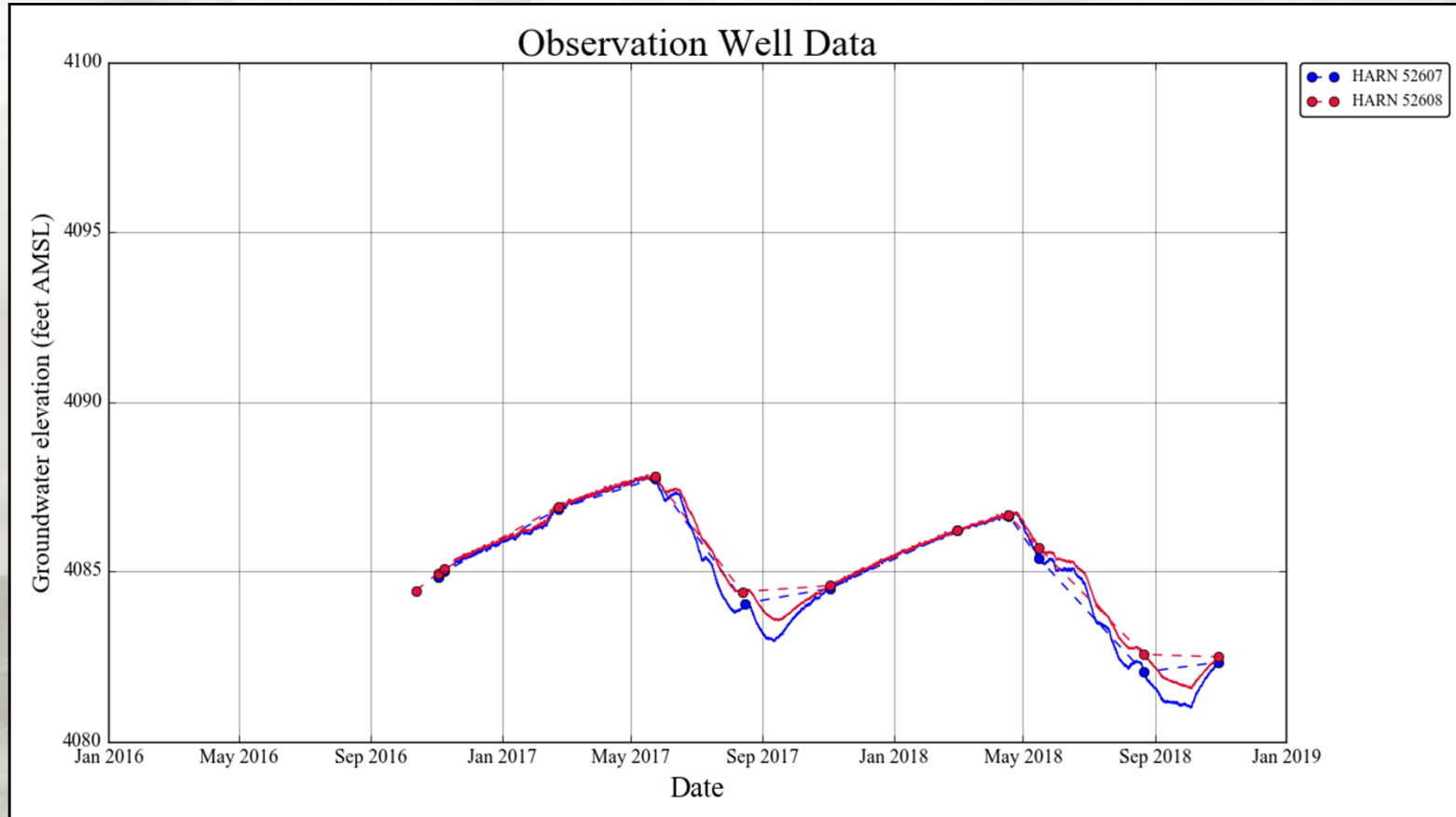
Harney Basin GW Study: Hydrographs



GW Response to Pumping
Mims Obs Well (Crane north)

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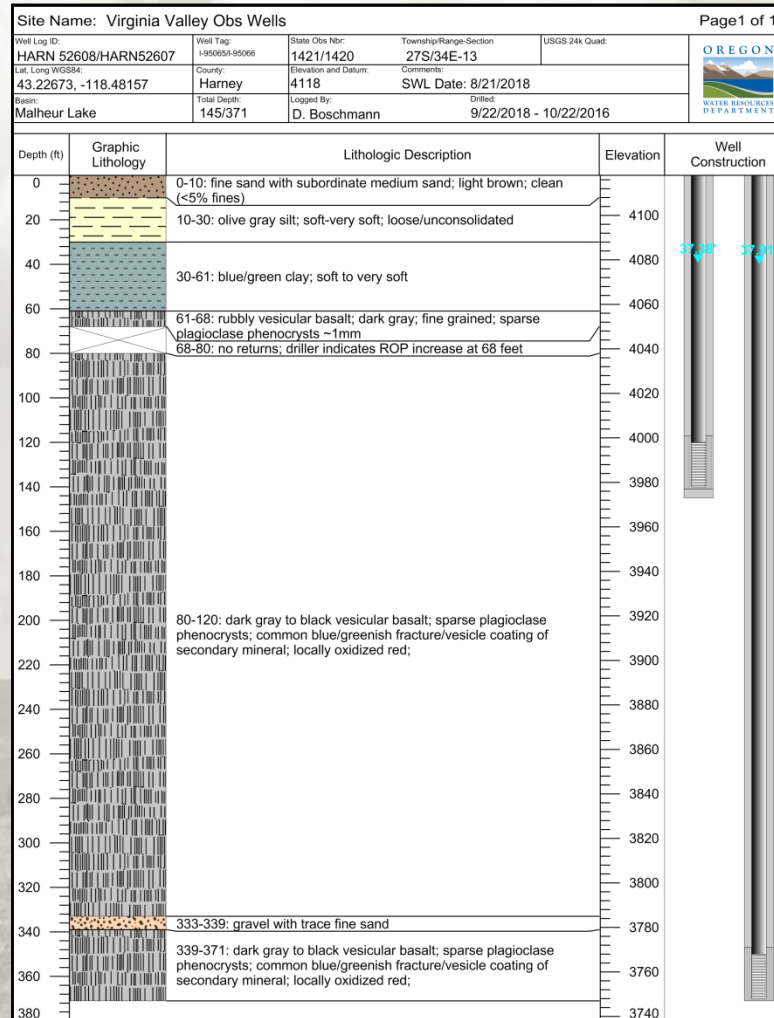
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GW Response to Pumping
Shallow vs. Deep Obs Well Pair (Virginia Valley)

Preliminary...Subject to Change...Do Not Quote or Cite

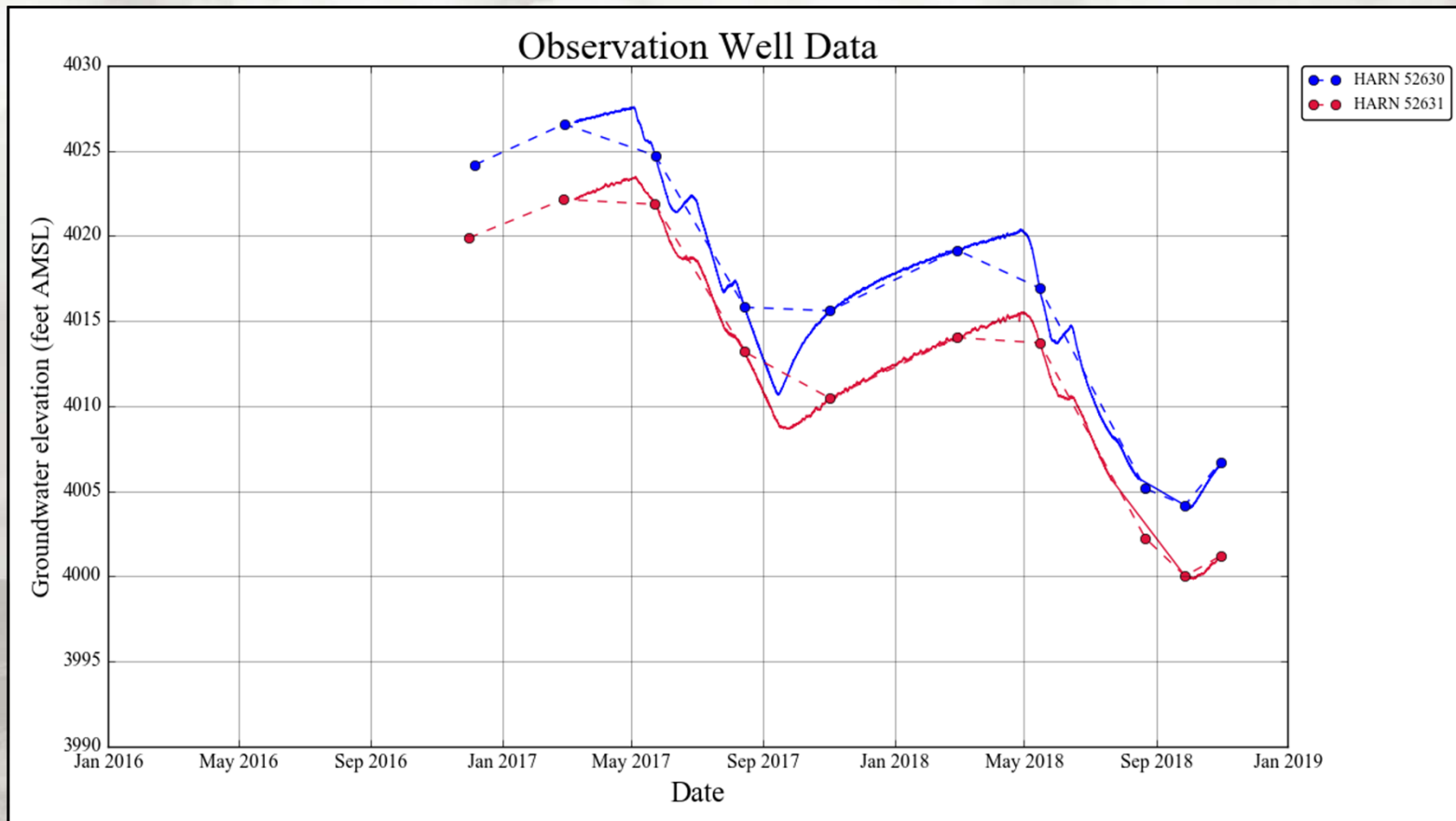
Harney Basin GW Study: Hydrographs



Shallow vs. Deep Obs Well Pair (Virginia Valley)

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Harney Basin GW Study: Hydrographs

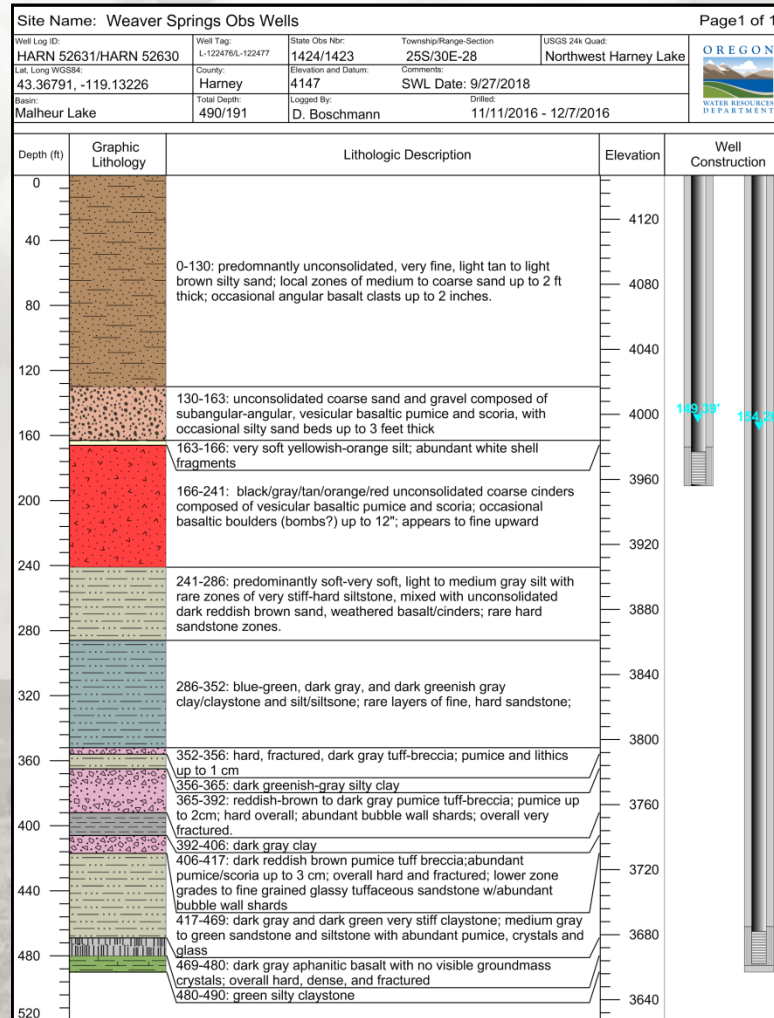


GW Response to Pumping

Shallow vs. Deep Obs Well Pair (Weaver Springs)

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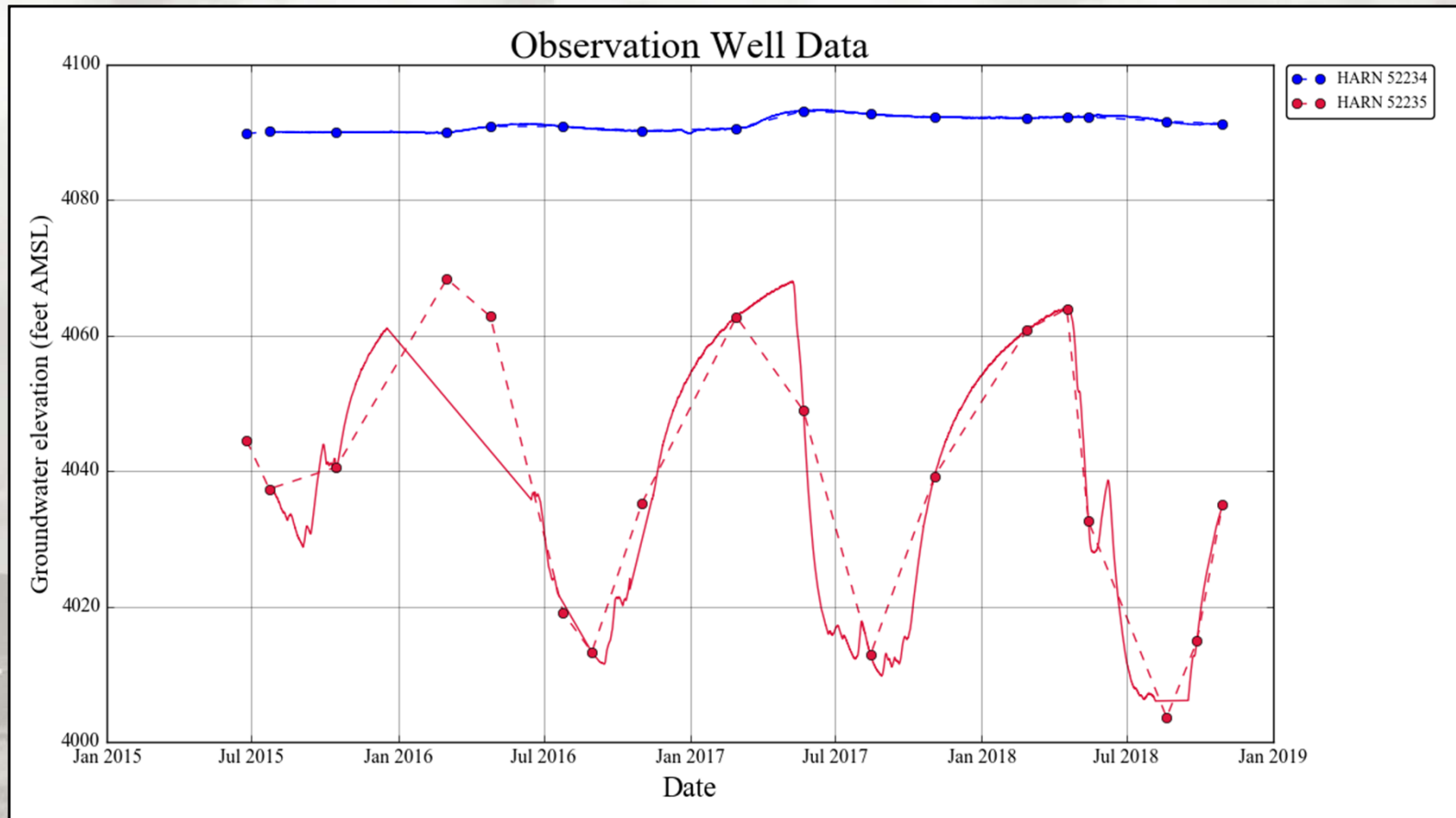
Harney Basin GW Study: Hydrographs



Shallow vs. Deep Obs Well Pair (Weaver Springs)

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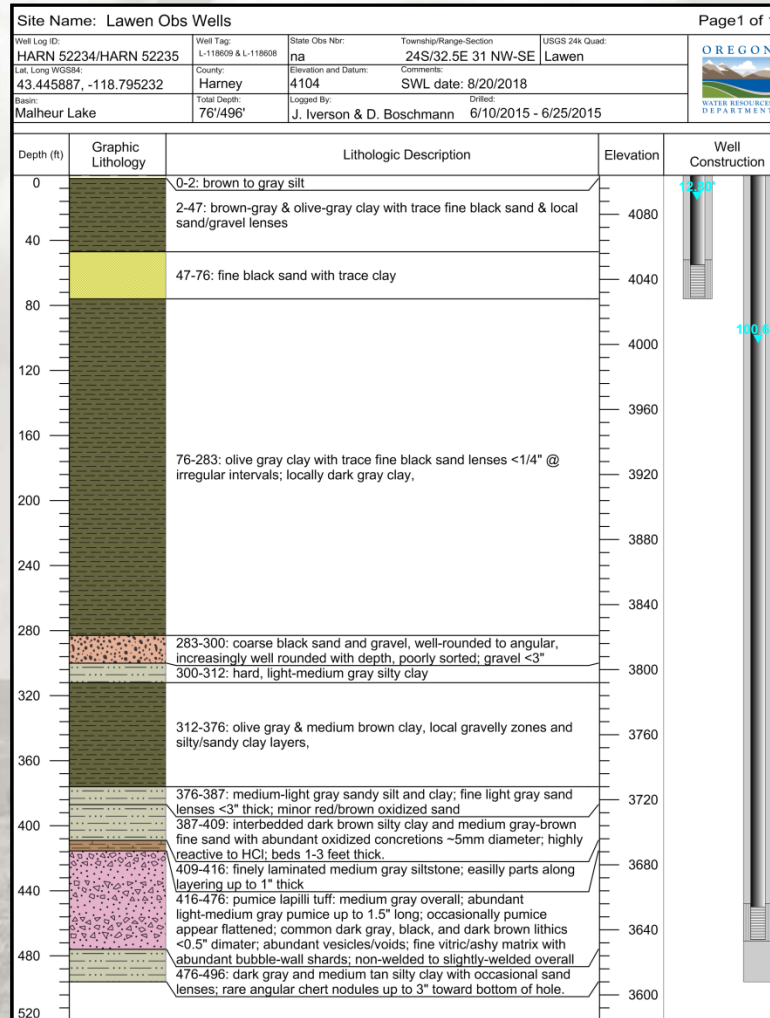
Harney Basin GW Study: Hydrographs



GW Response to Pumping
Shallow vs. Deep Obs Well Pair (Lawen)

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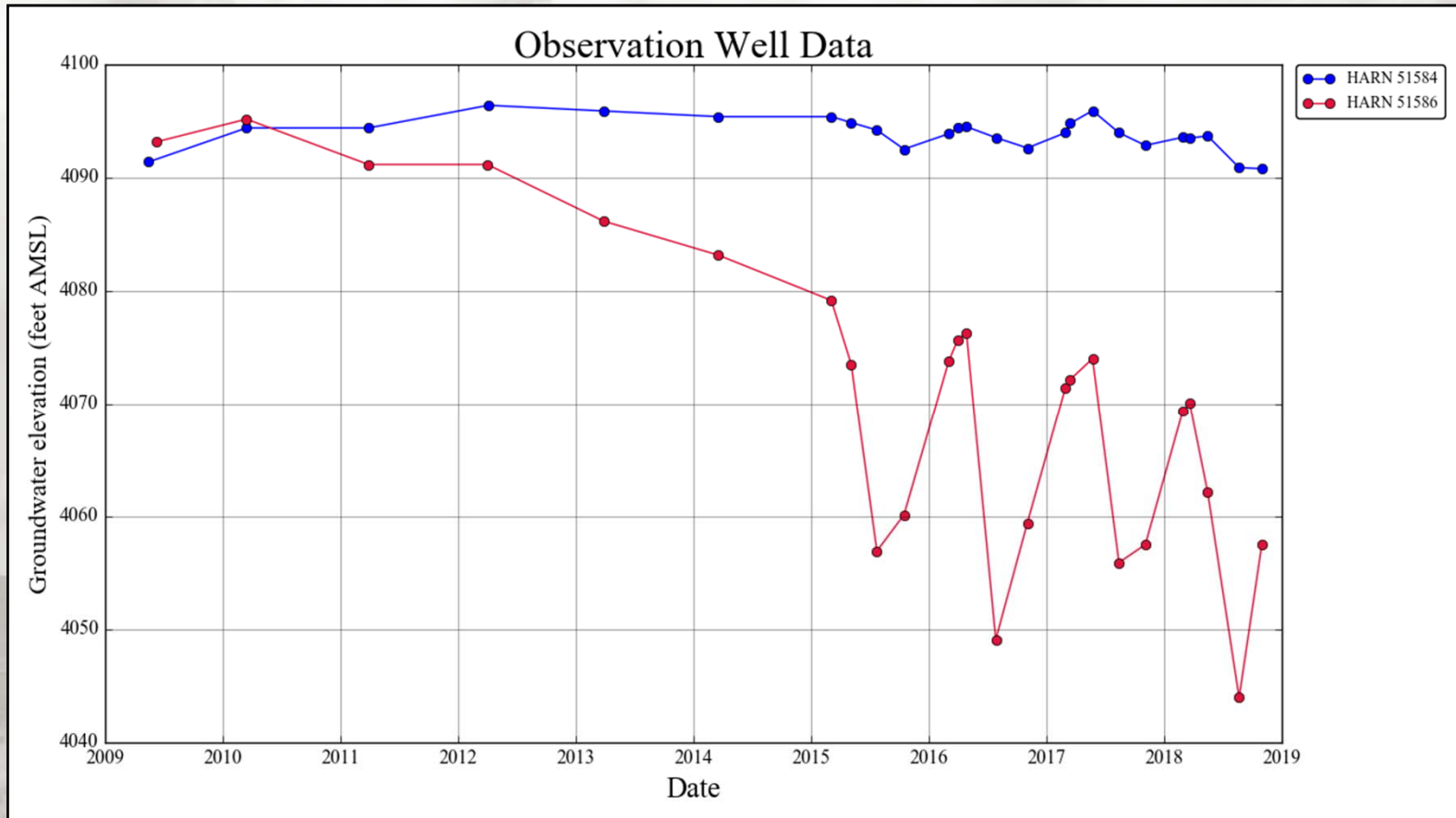
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Shallow vs. Deep Obs Well Pair (Weaver Springs)

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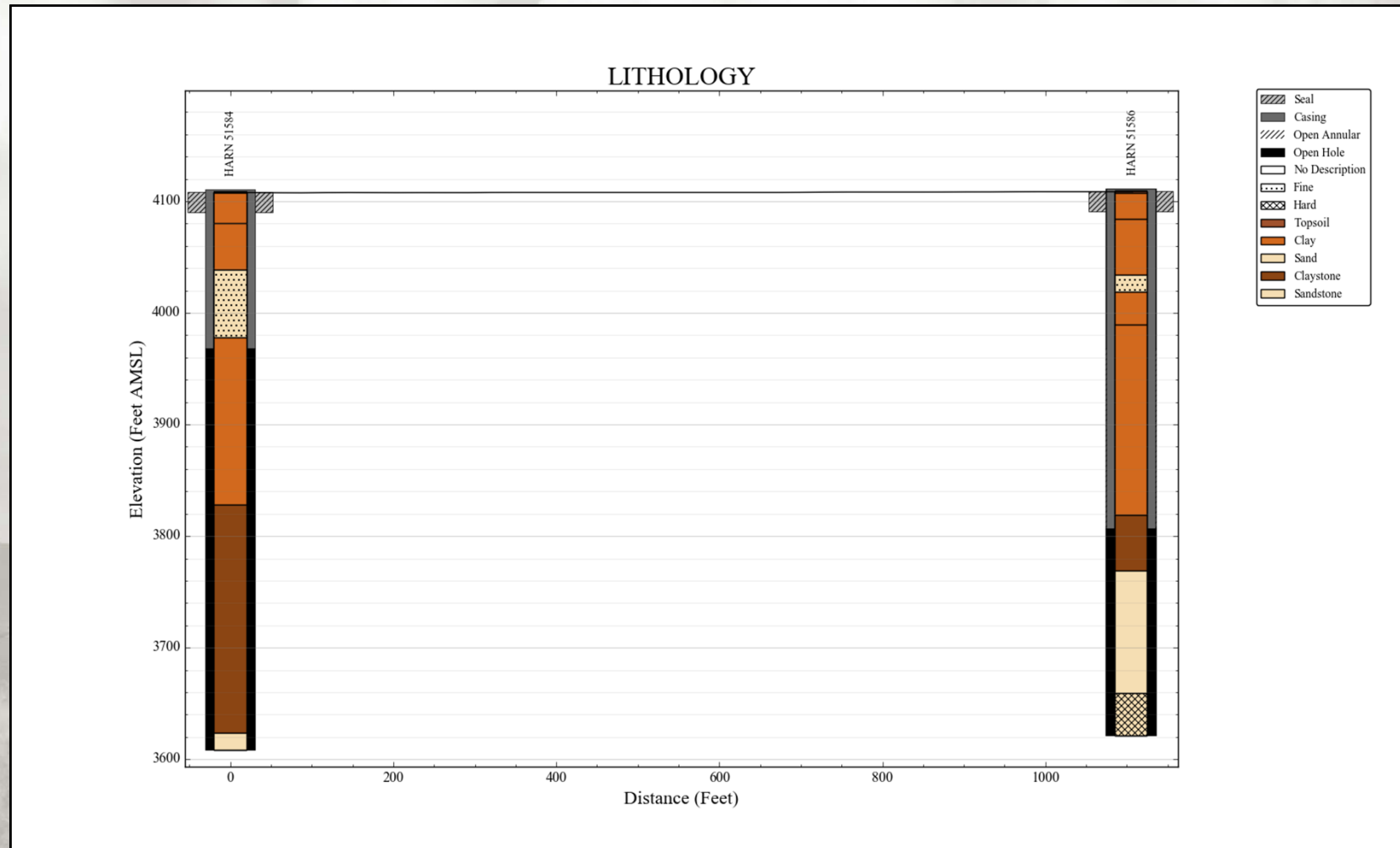
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GW Response to Pumping
Shallow vs. Deep Zone Well Pair (Hwy 78)

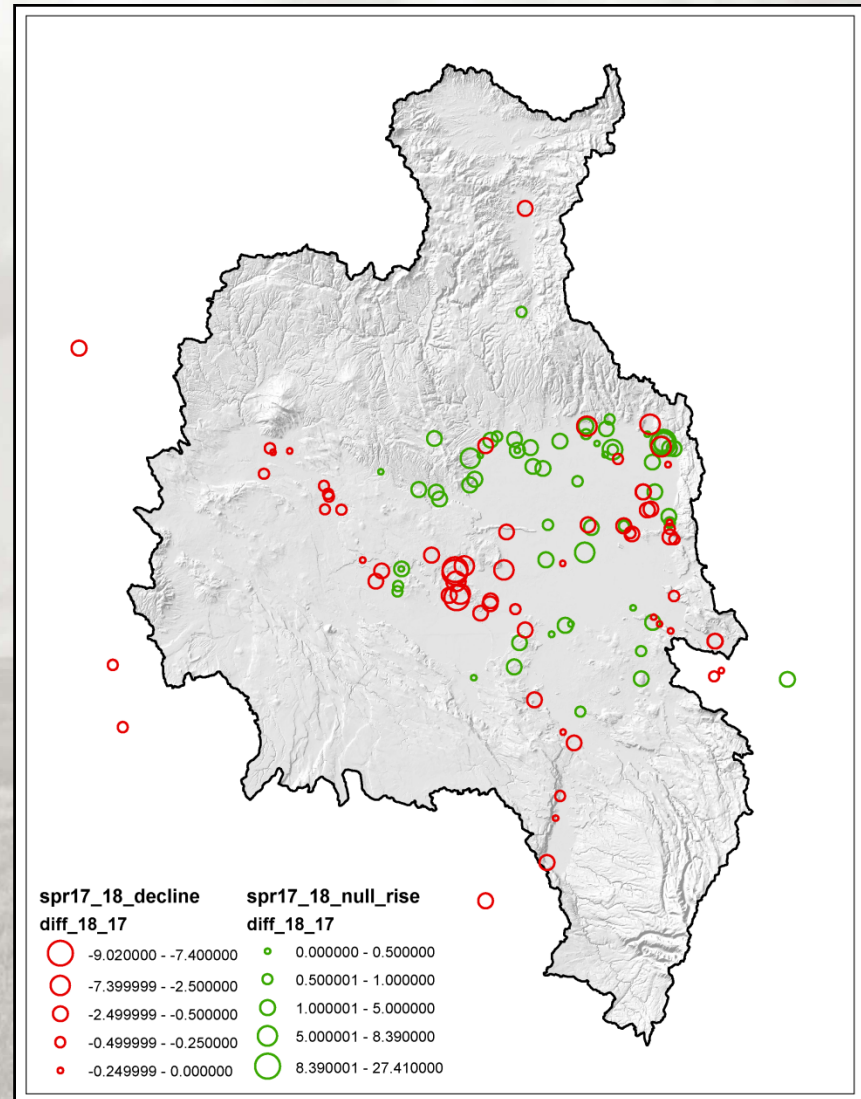
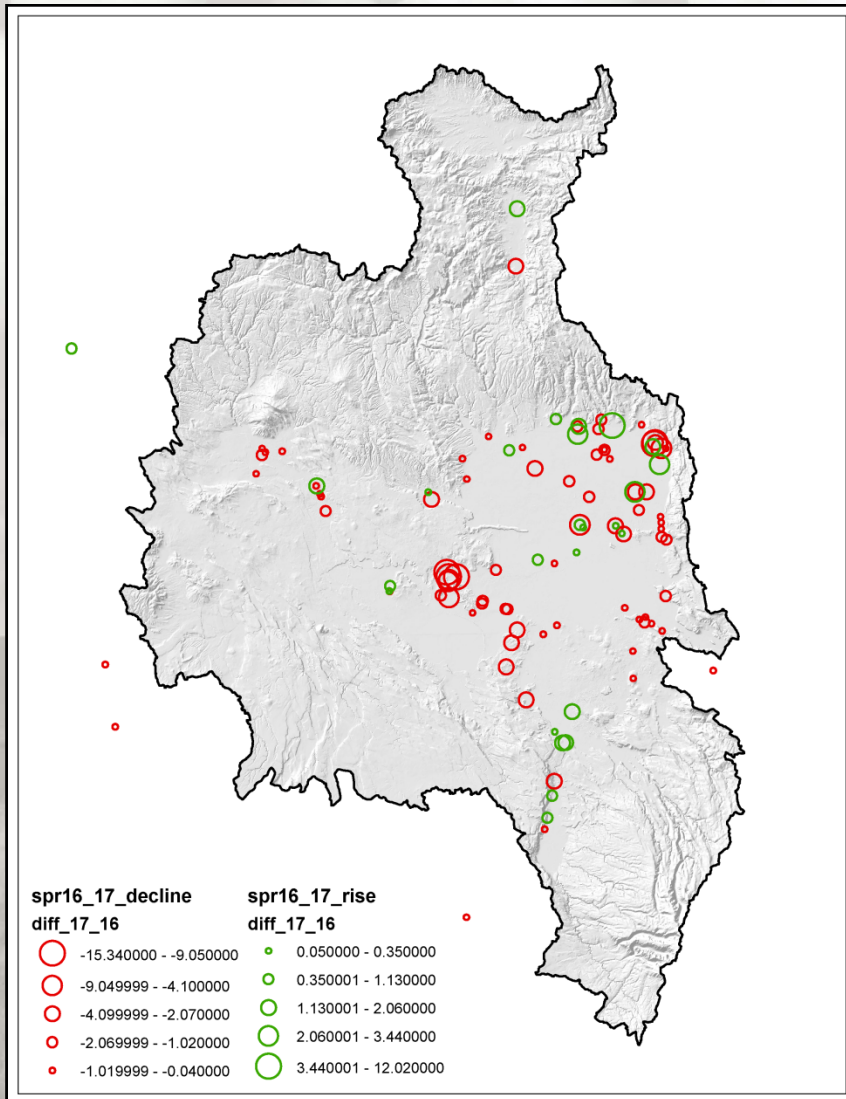
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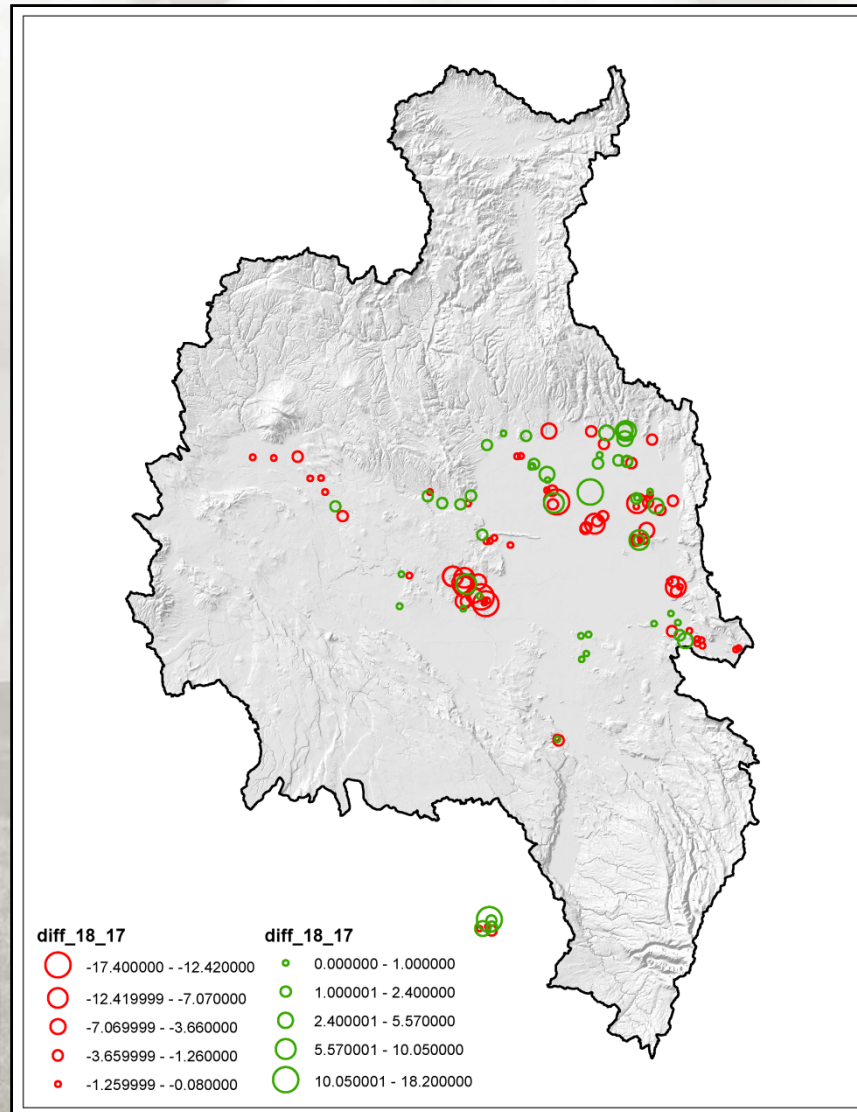
Shallow vs. Deep Obs Well Pair (Hwy 78)

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Harney Basin GW Study

Thank You

