

# Groundwater Application Review Summary Form

Application # G- 19413

GW Reviewer Joe Kemper Date Review Completed: 7/31/2024

## Summary of GW Availability and Injury Review:

Groundwater for the proposed use is either over appropriated, will not likely be available in the amounts requested without injury to prior water rights, OR will not likely be available within the capacity of the groundwater resource per Section B of the attached review form.

## Summary of Potential for Substantial Interference Review:

There is the potential for substantial interference per Section C of the attached review form.

## Summary of Well Construction Assessment:

The well does not appear to meet current well construction standards per Section D of the attached review form. Route through Well Construction and Compliance Section.

*This is only a summary. Documentation is attached and should be read thoroughly to understand the basis for determinations and for conditions that may be necessary for a permit (if one is issued).*

**WATER RESOURCES DEPARTMENT**

**MEMO**

**7/31/2024**

**TO: Application G- 19413**

**FROM: GW: Joe Kemper**  
(Reviewer's Name)

**SUBJECT: Scenic Waterway Interference & General/Local Surface Water Evaluation for Deschutes Ground Water Study Area**

The source of appropriation is within or above the Deschutes Scenic Waterway

Use the Scenic Waterway condition (Condition 7J).

**PREPONDERANCE OF EVIDENCE FINDING UNDER ORS 390.835:**

Department has found that there is a preponderance of evidence that the proposed use of groundwater will measurably reduce the surface water flows necessary to maintain the free-flowing character of the Deschutes Scenic Waterway in quantities necessary for recreation, fish and wildlife.

**LOCALIZED IMPACT FINDING**

The proposed use of groundwater will have a localized impact to surface water in the [River Name] River/Creek Subbasin.

If the localized impact box above is checked, then the water use under any right issued pursuant to this application is presumed to have a localized impact on surface water within the identified subbasin. Mitigation of the impact, originating from within the Local Zone of Impact identified by the Department, will be required before a permit may be issued for the proposed use.

If the localized impact box above is not checked, then the water use under any right issued pursuant to this application is presumed to have a general (regional) impact on surface water. Mitigation of the impact, originating anywhere within the Deschutes Basin above the Madras gage, will be required before a permit may be issued for the proposed use.

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 7/31/2024  
 FROM: Groundwater Section Joe Kemper  
 Reviewer's Name  
 SUBJECT: Application G- 19413 Supersedes review of NA  
 Date of Review(s)

**PUBLIC INTEREST PRESUMPTION; GROUNDWATER**

**OAR 690-310-130 (1)** *The Department shall presume that a proposed groundwater use will ensure the preservation of the public welfare, safety and health as described in ORS 537.525.* Department staff review groundwater applications under OAR 690-310-140 to determine whether the presumption is established. OAR 690-310-140 allows the proposed use be modified or conditioned to meet the presumption criteria. **This review is based upon available information and agency policies in place at the time of evaluation.**

**A. GENERAL INFORMATION:** Applicant's Name: City of Bend County: Deschutes

A1. Applicant(s) seek(s) 6.2 cfs from 5 well(s) in the Deschutes Basin,  
Upper Deschutes subbasin

A2. Proposed use Municipal Seasonality: Year-Round

A3. Well and aquifer data (attach and number logs for existing wells; mark proposed wells as such under logid):

POA Well	Logid	Applicant's Well #	Proposed Aquifer*	Proposed Rate(cfs)	Location (T/R-S QQ-Q)	Location, metes and bounds, e.g. 2250' N, 1200' E fr NW cor S 36
1	DESC 52907	1 (Pilot Butte #3)	Deschutes Aquifer	6.2	17S/12E-33 NE-NE	145' N, 650' E fr SW cor NE-NE S 33
2	Proposed	2 (Neff Well)	Deschutes Aquifer	6.2	17S/12E-27 SW-SW	20' N, 690' E fr SW cor S 27
3	DESC 57760	3 (Outback Well 7)	Deschutes Aquifer	6.2	18S/11E-3 NE-NW	S85°37'0.5" W327.9' fr NE cor of NW q of S 3
4	Proposed	4 (Outback Well 8)	Deschutes Aquifer	6.2	17S/11E 34 SE-SW	85' N, 2140' E fr SW cor S 34
5	Proposed	5 (Outback Well 9)	Deschutes Aquifer	6.2	17S/11E 34 SW-SE	740' N, 2925' E fr SW cor S 34

\* Alluvium, CRB, Bedrock

POA Well	Well Depth (ft)	Seal Interval (ft)	Casing Intervals (ft)	Liner Intervals (ft)	Perforations Or Screens (ft)	Well Yield (gpm)	Drawdown (ft)	Test Type
1	1140	0-150, 822-862	0-862		860-1140	1000+	30	Pump
2	1200	0-250	0-800		800-1200	NA	NA	NA
3	860.5	0-160, 160-612	0-860		610-860	1470	0.8	Pump
4	860 (est.)	0-612 (est.)	0-610 (est.)		610-860 (est.)	NA	NA	NA
5	860 (est.)	0-612 (est.)	0-610 (est.)		610-860 (est.)	NA	NA	NA

POA Well	Land Surface Elevation at Well (ft amsl)	Depth of First Water (ft bls)	SWL (ft bls)	SWL Date	Reference Level (ft bls)	Reference Level Date
1	3785	815	786	2/15/2000	786	3/12/2009
2	3684	NA	NA	NA	NA	NA
3	3984	456	469.5	10/17/2006	469.5	10/17/2006
4	3987	NA	NA	NA	NA	NA
5	3983	NA	NA	NA	NA	NA

Use data from application for proposed wells.

A4. **Comments:** Reference levels at Well 2, Well 4, and Well 5 will be set after they are drilled and SWLs have been reported.

A5.  **Provisions of the** OAR-690-505 Basin rules relative to the development, classification and/or management of groundwater hydraulically connected to surface water  **are**, or  **are not**, activated by this application. (Not all basin rules contain such provisions.)  
 Comments: Impacts to surface water are addressed by the Mitigation program as defined in basin rule.

A6.  **Well(s) #** \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, tap(s) an aquifer limited by an administrative restriction.  
 Name of administrative area: \_\_\_\_\_  
 Comments: \_\_\_\_\_

**B. GROUNDWATER AVAILABILITY CONSIDERATIONS, OAR 690-310-130, 400-010, 410-0070**

B1. **Based upon available data**, I have determined that groundwater\* 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 groundwater 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 groundwater 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 groundwater resource; or
- d.  will, if properly conditioned, avoid injury to existing groundwater rights or to the groundwater resource:
- i.  The permit should contain condition #(s) Large Water Use Reporting, 7RLS (March, 25);
  - 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 groundwater production from no deeper than \_\_\_\_\_ ft. below land surface;
- b.  **Condition** to allow groundwater production from no shallower than \_\_\_\_\_ ft. below land surface;
- c.  **Condition** to allow groundwater production only from the \_\_\_\_\_ groundwater 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 issuance of the permit until evidence of well reconstruction is filed with the Department and approved by the Groundwater Section.

**Describe injury** –as related to water availability– that is likely to occur without well reconstruction (interference w/ senior water rights, not within the capacity of the resource, etc): \_\_\_\_\_

- B3. **Groundwater availability remarks:** All five POAs would access the Deschutes regional aquifer. Well 1 (DESC 52907) and Well 2 (Proposed) are located immediately adjacent to Pilot Butte within Bend city limits. DESC 52907 is drilled to a similar depth and has a similar water level elevation (2990-3025 feet AMSL) as wells adjacent to Pilot Butte (DESC 8499 & DESC 58778) through the Knott Landfill southeast of Bend (see Hydrograph 3). The proposed Neff Well will likely encounter similar hydraulic conditions as the applicant's Pilot Butte well field. Available water level records indicate that this group of wells declined approximately 10-15 feet since the mid-1990s. This decline is notable but is less than the 40-45 feet of declines between Bend and Redmond that has raised Capacity of the Resource issues.

Well 3 (DESC 57760), Well 4 (proposed), and Well 5 (proposed) are located west of Bend in the Outback site. This site is upgradient in the flow system with water level elevations between 3420-3520 feet AMSL. Water level trends are somewhat varied, with stable water levels in some observation wells while other wells show 20+ feet of decline. As noted above, the declines are concerning but are lower in magnitude than the declines in the center of the basin that had raised Capacity of the Resource issues. Gannett and Lite (2013) showed that declines across the basin in 2008 were caused (in varying proportions) by decreased climate recharge, increased pumping, and canal piping projects.

All five POAs in this application are within close proximity to other POAs owned and operated by the City of Bend. Those POAs are not considered for injury in this review because the applicant owns those senior water rights. Wells 1 and 2 are located within city limits, but the closest senior groundwater users are more than one mile away. Wells 3, 4, and 5 are also more than one mile from any senior groundwater user. Because the target aquifer is highly transmissive and has a high saturated thickness, it is unlikely that the groundwater use proposed here would cause enough well-to-well interference beyond one mile that would be considered injury to a senior groundwater user.

**C. GROUNDWATER/SURFACE WATER CONSIDERATIONS, OAR 690-09-040**

C6. **SW / GW Remarks and Conditions:** Impacts to surface water are addressed through the Mitigation program as defined in basin program rules.

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**References Used:**

Gannett, M. W. and Lite, K. E., 2004, Simulation of Regional Ground-Water Flow in the Upper Deschutes Basin, Oregon, USGS Water Resources Investigation Report 2003-4195, 84 p., <https://pubs.er.usgs.gov/publication/wri034195>

Gannett, M. W. and Lite, K. E., 2013, Analysis of 1997-2008 Groundwater Level Changes in the Upper Deschutes Basin, Central Oregon, USGS Scientific Investigations Report 2013-5092, 34p., <https://pubs.er.usgs.gov/publication/sir20135092>

Gannett, M. W., Lite Jr, K. E., Morgan, D. S., and Collins, C. A., 2001, Ground-Water Hydrology of the Upper Deschutes Basin, Oregon, USGS Water-Resources Investigations Report 00-4162, 74 p., <https://pubs.usgs.gov/wri/wri004162/pdf/WRIR004162.pdf>

Gannett, M.W., Lite, K.E., Jr., Risley, J.C., Pischel, E.M., and La Marche, J.L., 2017, Simulation of groundwater and surface-water flow in the upper Deschutes Basin, Oregon: U.S. Geological Survey Scientific Investigations Report 2017-5097, 68 p., <https://doi.org/10.3133/sir20175097>.

Groundwater Information System (GWIS). Oregon Water Resources Department. [https://apps.wrd.state.or.us/apps/gw/gw\\_info/gw\\_info\\_report/gw\\_search.aspx](https://apps.wrd.state.or.us/apps/gw/gw_info/gw_info_report/gw_search.aspx) Accessed 7/22/2024

Lite, K. E. and Gannett, M. W., 2002, Geologic Framework of the Regional Ground-Water Flow System in the Upper Deschutes Basin, Oregon. USGS Water-Resources Investigation Report 02-4015, 44 p., <https://pubs.er.usgs.gov/publication/wri024015>

Sherrod, D. R., Taylor, E. M., Ferns, M. L., Scott, W. E., Conrey, R. M. and Smith, G. A., 2004, Geologic Map of the Bend 30-x-60-Minute Quadrangle, Central Oregon. U. S. Geological Survey Geologic Investigations Series Map I-2683. 49p., <https://pubs.usgs.gov/imap/i2683/>

**D. WELL CONSTRUCTION, OAR 690-200**

D1. **Well #:** \_\_\_\_\_ **Logid:** \_\_\_\_\_

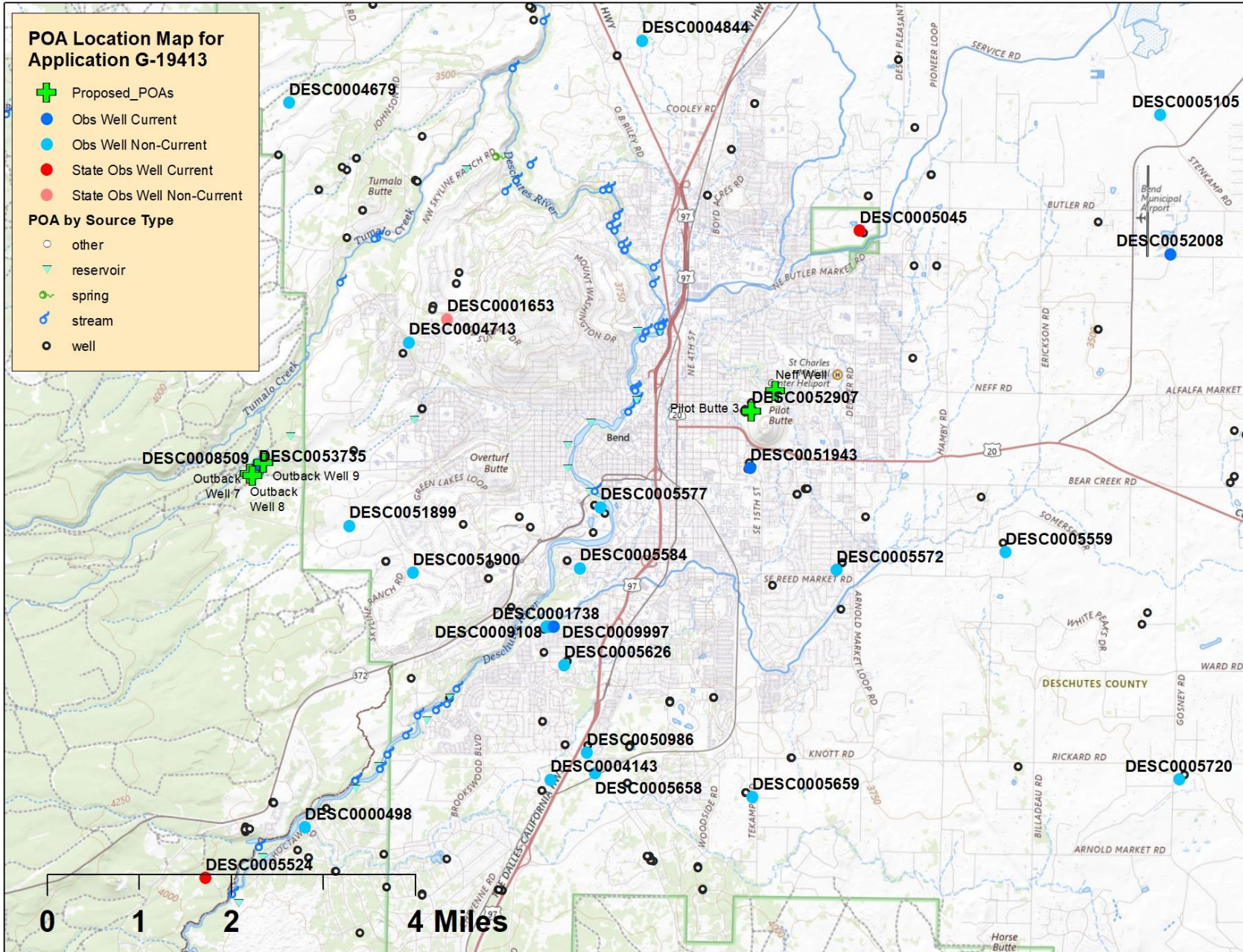
D2. **THE WELL does not appear to meet current well construction standards based upon:**

- a.  review of the well log;
- b.  field inspection by \_\_\_\_\_;
- c.  report of CWRE \_\_\_\_\_;
- d.  other: (specify) \_\_\_\_\_

D3. **THE WELL construction deficiency or other comment is described as follows:** \_\_\_\_\_

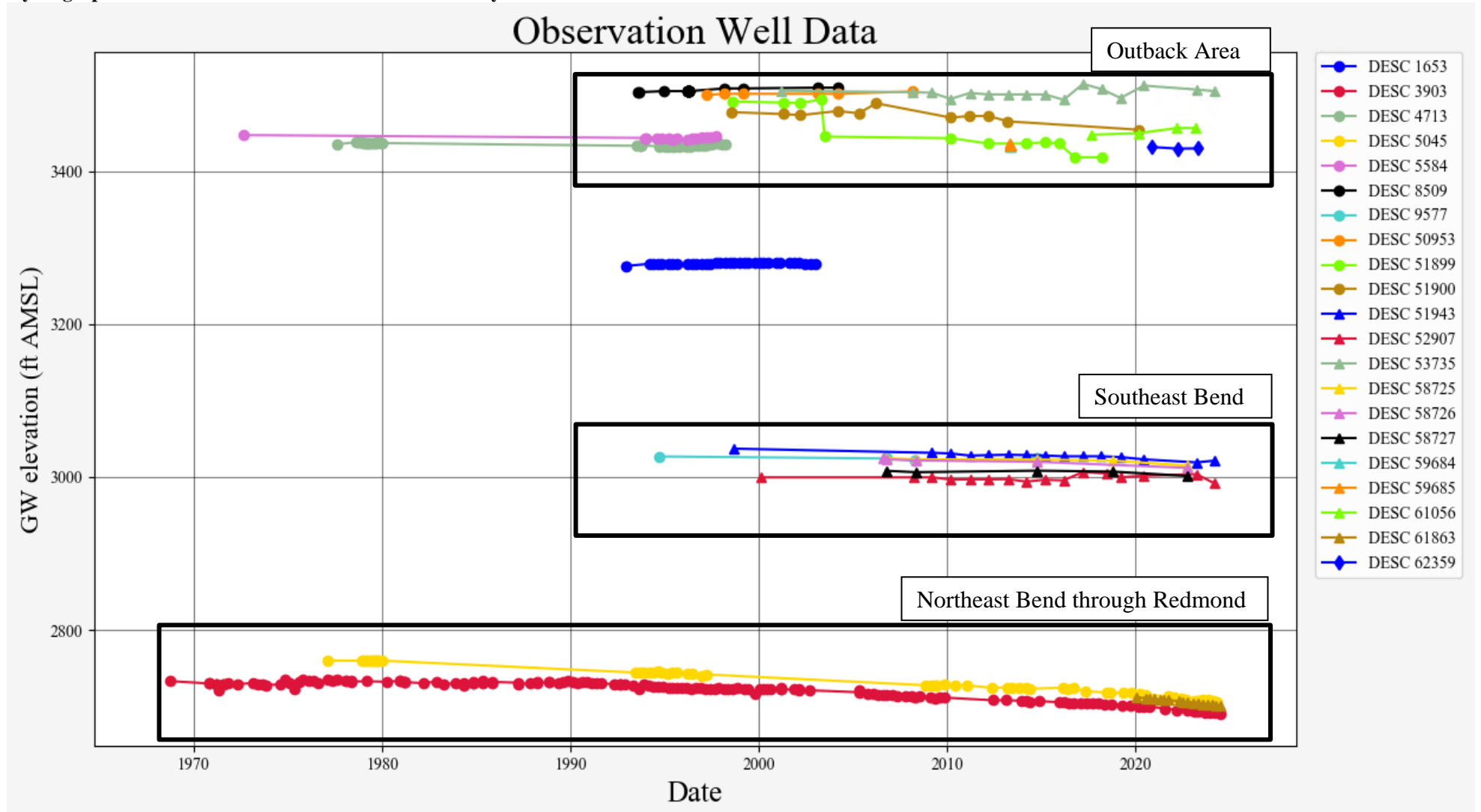
D4.  **Route to the Well Construction and Compliance Section for a review of existing well construction.**

Well Location Map

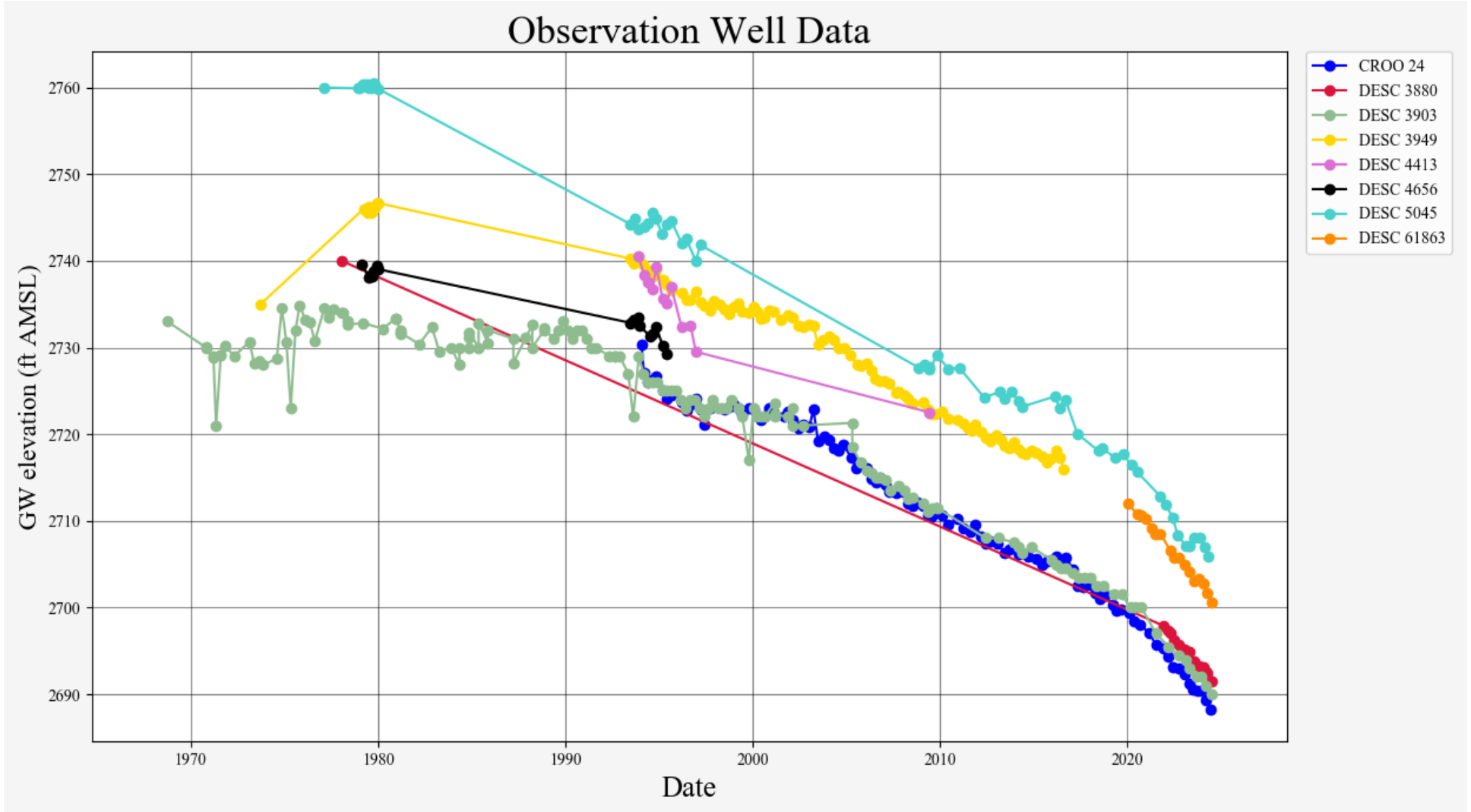


Water-Level Measurements in Nearby Wells

Hydrograph One: Water Level Elevations Across the City of Bend



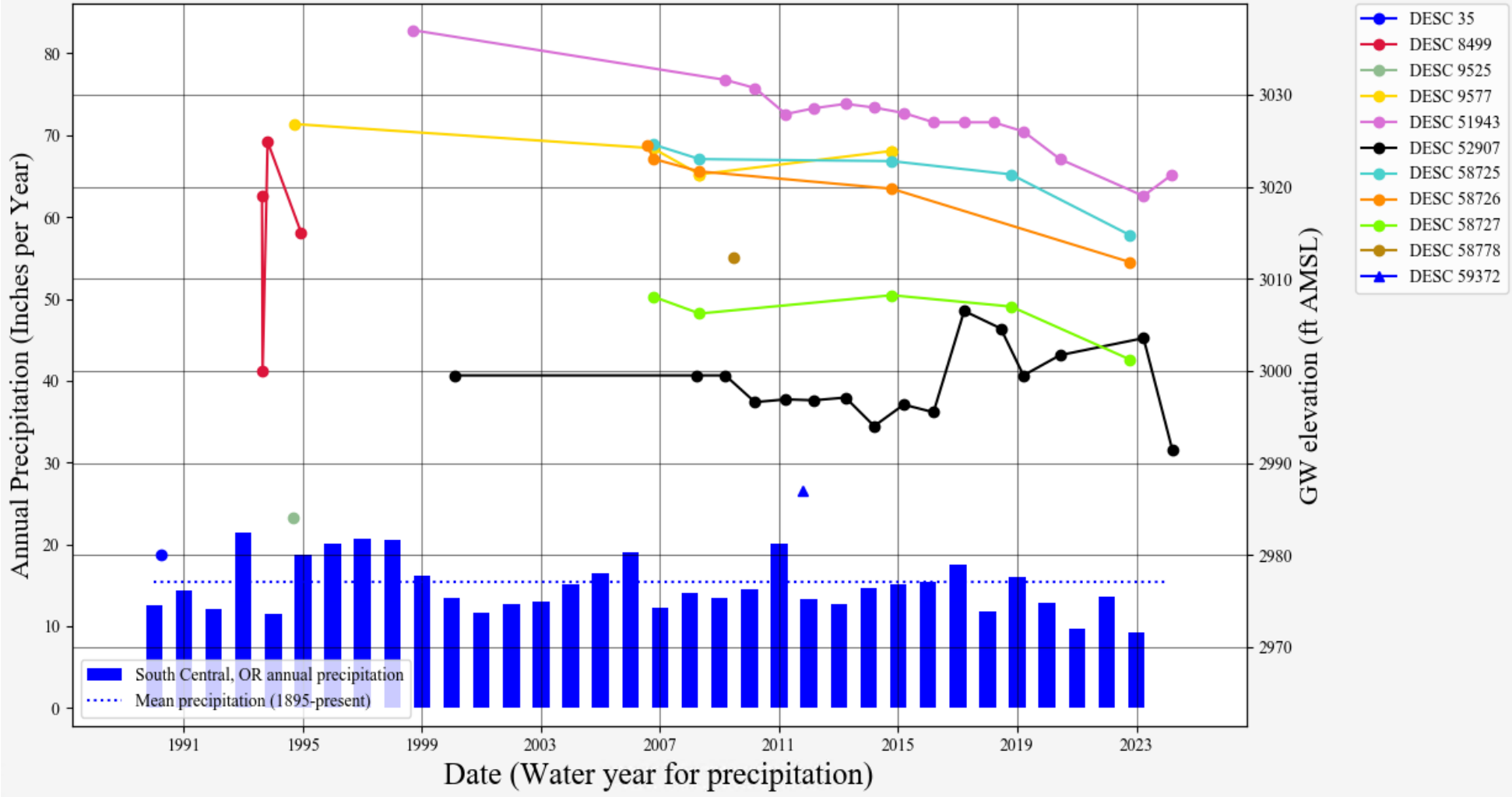
Hydrograph Two: Water Level Trends From Pine Nursery Park to Redmond Area





Hydrograph Three: Southeast Bend Area (Pilot Butte to Knott Landfill)

### Observation Well Data



Hydrograph Four: Outback Wells

