

# Groundwater Application Review Summary Form

Application # G 19139

GW Reviewer Joe Kemper

Date Review Completed: 7/10/2023

## 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 Deschutes Basin Rules.

## 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**

7/10/2023

**TO: Application G- 19139**

**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 Middle Deschutes 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 7/10/2023  
 FROM: Groundwater Section Joe Kemper  
 Reviewer's Name  
 SUBJECT: Application G- 19139 Supersedes review of 08/12/2021  
 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: Kameron DeLashmutt/Pinnacle Utilities, LLC  
 County: Deschutes

A1. Applicant(s) seek(s) 6.0 cfs from 7 well(s) in the Deschutes Basin,  
Upper Deschutes subbasin

A2. Proposed use Quasi-Municipal Seasonality: Year round

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

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	PROP	1	Deschutes Fm	6	15S/12E-28SENE	2519'S, 578'W fr NE cor S 28
2	PROP	2	Deschutes Fm	6	15S/12E-28NWSE	2958'S, 2316'W fr NE cor S 28
3	PROP	3	Deschutes Fm	6	15S/12E-28SENW	1752'S, 3044'E fr NE cor, S 28
4	PROP	4	Deschutes Fm	6	15S/12E-29NWSE	1677'N, 1466'W fr SE cor S 29
5	PROP	5	Deschutes Fm	6	15S/12E-20NESE	205'S, 434'W fr E1/4 cor S 20
6	PROP	6	Deschutes Fm	6	15S/12E-20SWNE	244'N, 1667'W fr E1/4 cor, S 20
7	PROP	7	Deschutes Fm	6	15S/12E-17SENW	2446'S, 1180'W fr N1/4 cor, S 17

\* Alluvium, CRB, Bedrock

Well	Well Elev ft msl	First Water ft bls	SWL ft bls	SWL Date	Well Depth (ft)	Seal Interval (ft)	Casing Intervals (ft)	Liner Intervals (ft)	Perforations Or Screens (ft)	Well Yield (gpm)	Draw Down (ft)	Test Type
1	3211	-	-	-	800-900	-	-2-18	-	-	-	-	-
2	3231	-	-	-	800-900	-	-2-18	-	-	-	-	-
3	3274	-	-	-	900-1000	-	-2-18	-	-	-	-	-
4	3213	-	-	-	900-1000	-	-2-18	-	-	-	-	-
5	3626	-	-	-	800-900	-	-2-18	-	-	-	-	-
6	3457	-	-	-	800-900	-	-2-18	-	-	-	-	-
7	3119	-	-	-	800-900	-	-2-18	-	-	-	-	-

Use data from application for proposed wells.

A4. **Comments:** This re-review reflects amendments to the original application, specifically removal of "Well 8", a reduction of the maximum rate from 9.28 cfs to 6.0 cfs, and a reduction in the total annual pumped volume from 2129 AF to 1460 AF. The POAs listed on this application are listed in application LL-1879 and T-13703. This application is requesting water as "backup to Permit G-17036," which is for six proposed wells in the same area.

A5.  **Provisions of the** Deschutes (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: The proposed POAs are within the Deschutes Ground Water Study Area

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;

(The appropriation of groundwater resources by all water rights does not exceed the average annual recharge to the groundwater source over the period of record. OAR 690-300-0100(57); OAR 690-400-0010(11)(a)(B).)

- 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;

(This finding assumes that the existing permit, G-17036, will not be used in conjunction with this use, as is stated in the application.)

- c.  will not or  will likely to be available within the capacity of the groundwater resource

(Water will not likely be available for the proposed use. OAR 690-300-0100(57); OAR 690-410-0070(1) and (2)(b));

or

- d.  will, if properly conditioned, avoid injury to existing groundwater rights or to the groundwater resource:

- i.  The permit should contain condition #(s) 7N, 7J, Large Water Use Reporting;
- 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:**

The applicant requests to pump 1460 AF/year at a maximum rate of 6.0 cfs from seven proposed (not yet drilled) wells. These wells would access the Deschutes regional groundwater system, which is hosted primarily in the high-permeability mixed volcanics, volcaniclastic sediments, and alluvium of the Deschutes Formation. The Deschutes regional groundwater system is predominately recharged by heavy precipitation in the Cascades, then transmits groundwater via long regional flowpaths towards large spring complexes that discharge to the Deschutes and Crooked rivers near their confluence. While there is geologic and hydrologic heterogeneity at local scales, the Deschutes regional groundwater system is considered to be a single aquifer.

The Sisters Fault Zone (SFZ) is a NNW-trending series of mapped faults that extend from Black Butte to Newberry Volcano. The SFZ is coincident with the steep recharge gradient in the Cascades and may slow groundwater flow from the Cascades towards the basin lowlands. Wells upgradient (southwest) of the SFZ show large decadal fluctuations that track with climatic cycles but do not show year-on-year declines beyond those climate cycles (e.g. DESC 3016). Climate

recharge appears to diminish from SW to NE across the SFZ as year-on-year declines increase from DESC 2929 to DESC 1957 and DESC 8626 in the Lower Bridge area.

In the basin lowlands from the SFZ to the Deschutes and Crooked Rivers confluence, nearly all long-term observation wells show continuous and significant year-on-year water level declines since the mid-1990s. The rate of decline increases steadily from the Lower Bridge area to the Bend-Redmond-Powell Buttes area. Since 1994, wells in Lower Bridge area have declined 12-14 feet, wells near Cline Buttes have declined 15-25 feet, wells between Bend, Powell Buttes, and Redmond have declined 33-38 feet (see Figure 5). Figure 5 also shows that water level declines in the Redmond area have accelerated from 1 ft/yr between 2004 and 2019 to 2 ft/yr from 2019 to 2023. Within the Redmond-Bend-Powell Buttes area where declines are the steepest, one well (DESC 5045) has exceeded more than 50 feet of total decline. A USGS report by Gannett, et. al., (2013) estimated that, of groundwater declines in the area between Cline Buttes and Redmond through 2008, 60-70% are caused by climate influences, 20-25% are due to increases in pumping, and 5-10% are caused by canal leakage reductions. The available data indicates that these stressors on the groundwater system have persisted or increased since that report was published.

The applicant's proposed wells are located in the Cline Buttes area that does exhibit some local hydrogeologic heterogeneity. Cline Buttes consists of an intrusive rhyolite dome (TdrCb in Sherrod et al., 2004) that interrupts the laterally extensive volcanics of the Deschutes Formation. Water level elevations in wells immediately adjacent to Cline Buttes cluster around 2570-2590 feet amsl, and water level elevations east of Cline Buttes through Redmond cluster between 2690-2710 feet amsl. There is a steeper hydraulic gradient between those two groups of wells that is roughly coincident with the Cline Buttes rhyolite contact. Because the applicant's wells are not yet constructed, there is some uncertainty about the exact hydraulic conditions that they will encounter (e.g., the 2570-2590 feet amsl cluster or the 2690-2710 feet amsl cluster). However, they will still be accessing the Deschutes regional groundwater system NE of the SFZ which, as noted above, has seen persistent year-on-year declines since the mid-1990s.

There are some conflicting water level trends within the wells immediately adjacent to Cline Buttes (DESC 378, DESC 1083, DESC 1198, DESC 3479, and DESC 54485). DESC 1083 and DESC 1198 have a stable water level trend, while DESC 3479 shows year-to-year declines since the mid-1990s. The measurements at DESC 3479 were taken by OWRD or USGS staff using e-tapes, which provide sufficient precision to demonstrate seasonal and interannual fluctuations. The measurements at DESC 1083 and DESC 1198 are airline measurements submitted to satisfy permit conditions, but these measurements are considered less reliable because of a history of mechanical failures in the airline system. Due to the higher reliability of the e-tape measurements at DESC 3479, it is concluded that DESC 3479 is most representative of groundwater level trends around Cline Buttes. Considering that water levels in the Deschutes regional aquifer system surrounding Cline Buttes have shown consistent declines since the mid-1990s (see Figure 5), it is far more likely that groundwater levels within the Cline Buttes area are trending downward with the rest of the adjacent groundwater system.

#### Specific findings.

- There is one well (DESC 5045) within the Bend-Powell Buttes-Redmond zone in which the most recent annual high-water level has declined more than 50 feet from the highest known water level, so that zone of the aquifer system has been found to have declined excessively as per OAR 690-008-0001(4)(d). If current trends continue, DESC 3903 will exceed 50 feet of total decline within 3 to 4 years.
- Two adjacent wells (DESC 9857 on certificate 90819 and DESC 51680 on certificate 96053) have currently exceeded decline conditions as outlined in their water rights. Assuming that observed water level trends continue, DESC 55844 (on certificate 87589) and DESC 51967 (on certificate 98507) will exceed their decline conditions by 2025.
- If constructed, the applicant's proposed wells would access the Deschutes regional groundwater system in an area that has shown continuous and significant year-on-year water level declines between 0.5 and 1 foot per year since the mid-1990s.

In summary, observation wells in the targeted aquifer zone have seen continuous and significant year-on-year water level declines since the mid-1990s. Wells in the vicinity have exceeded decline conditions in their water rights. There is one well located 10 miles to the southeast where declines are steepest that has declined excessively. Because groundwater pumping contributes meaningfully to groundwater declines, the requested use would exacerbate declines that will increase the number of triggered decline conditions and wells that will have declined excessively. This will preclude the perpetual use of the resource. As such, the proposed use is determined to be not within the capacity of the resource.

*If the application is approved, the permit conditions indicated in B.1.d.i. are recommended.*

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

Analysis in Section C is omitted in leu of the Deschutes Mitigation Rules

**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., Risle, 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>.

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.



Figure 1. Well Location Map

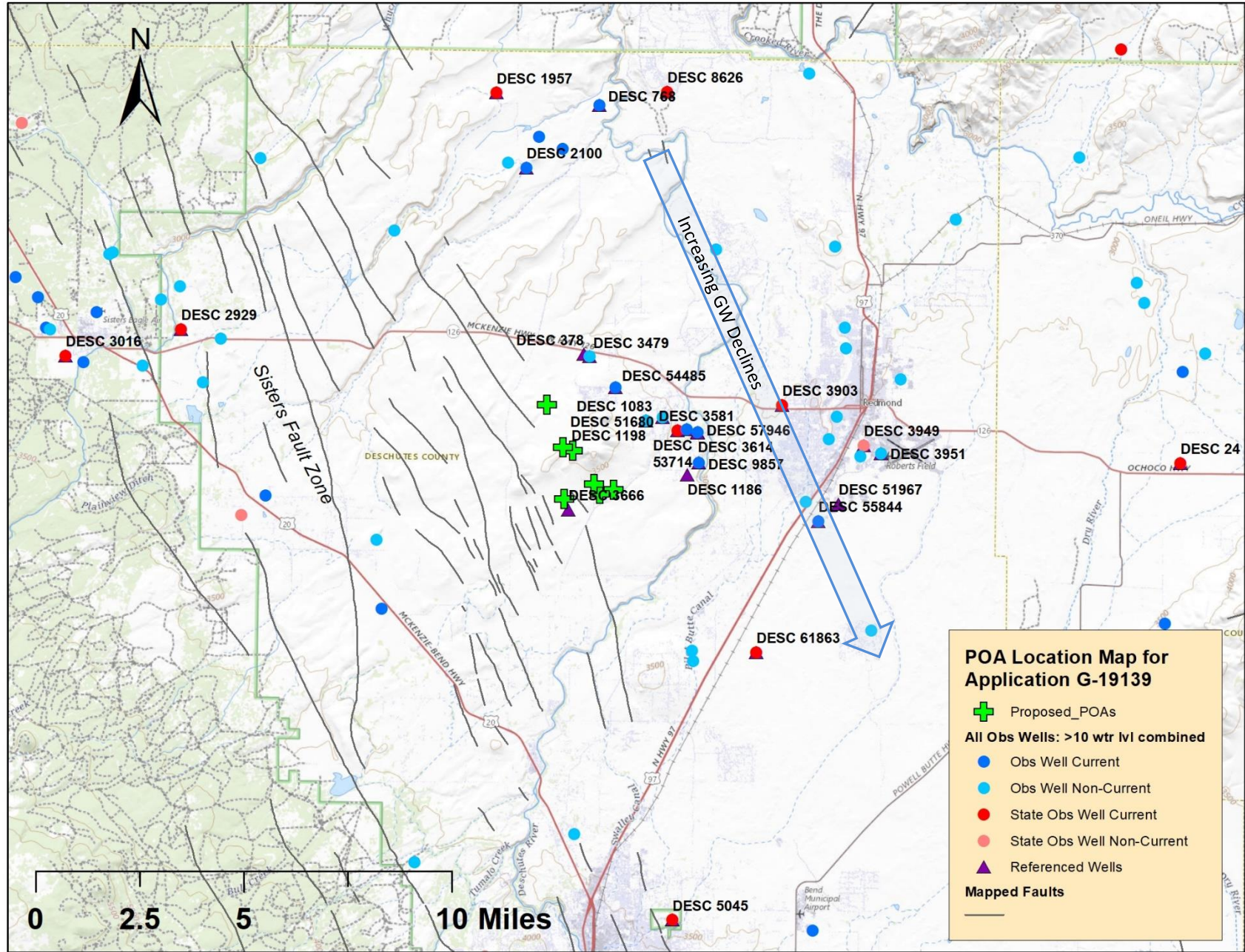




Figure 2. Application Review Map showing water-level wells, proposed well locations, and geology (from Sherrod et al., 2004)

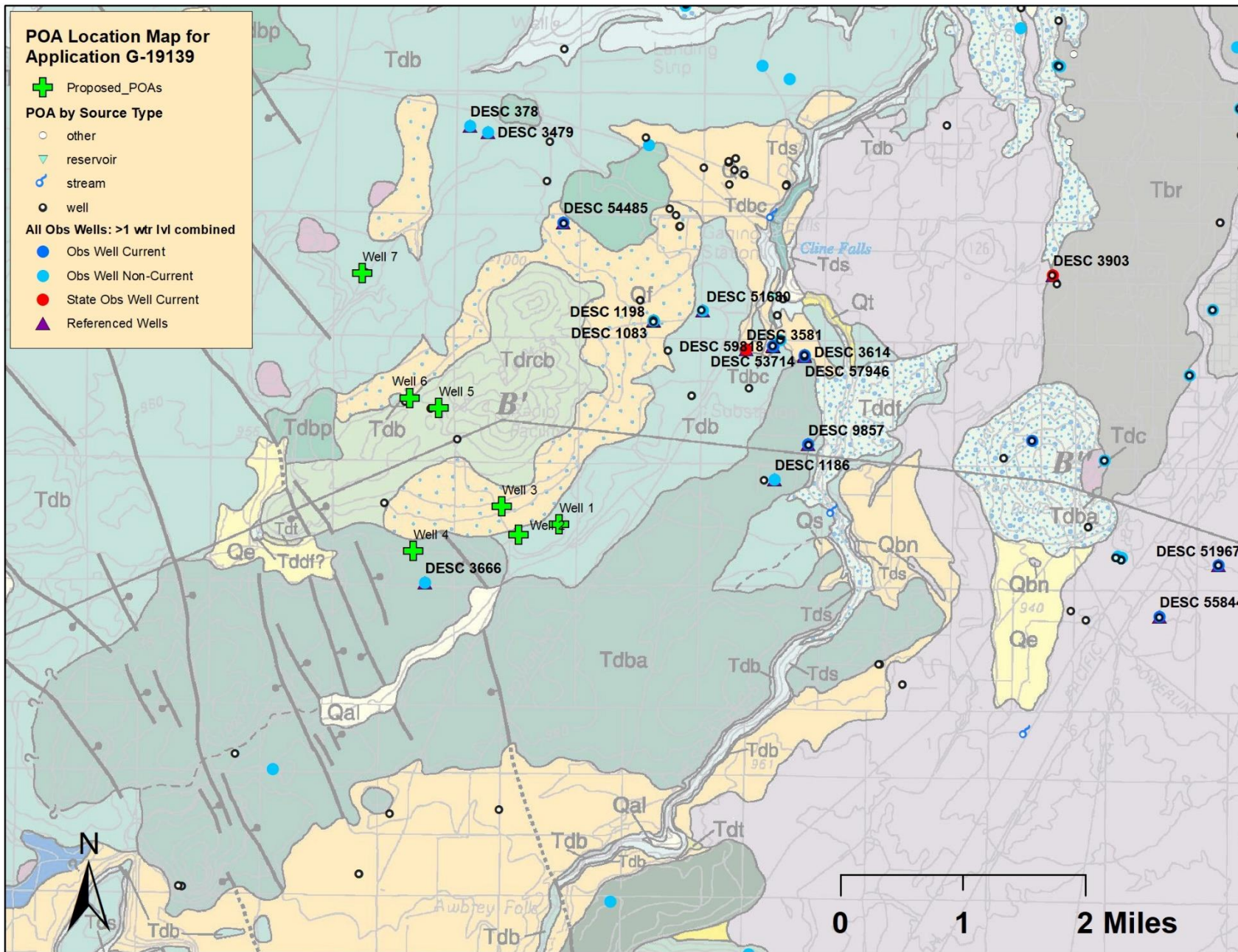




Figure 3. Water-Level Measurements of Groundwater Elevations Across the Deschutes Regional Groundwater System

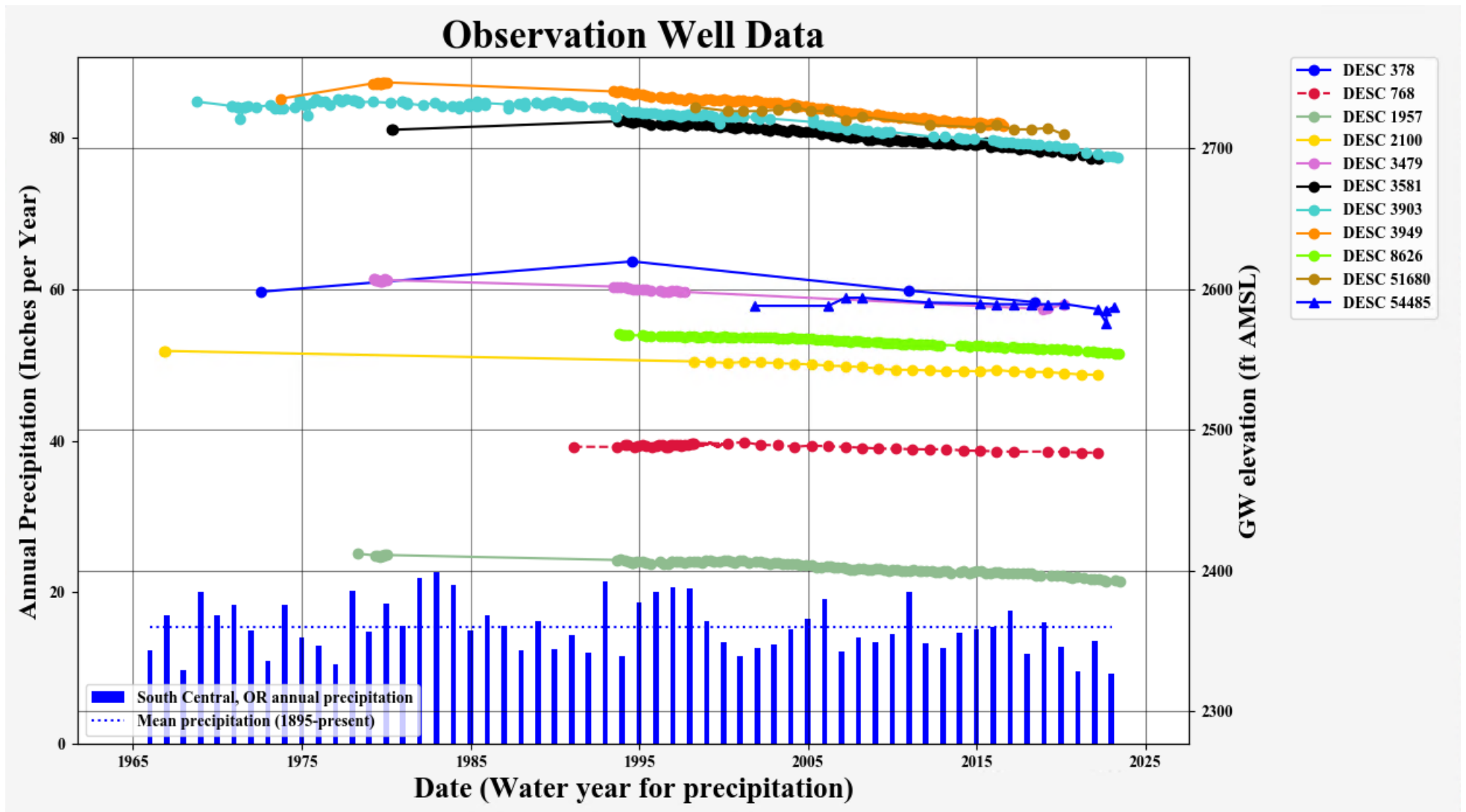


Figure 4. Water-Level Measurements of Groundwater Elevations Adjacent to Cline Buttes and Redmond

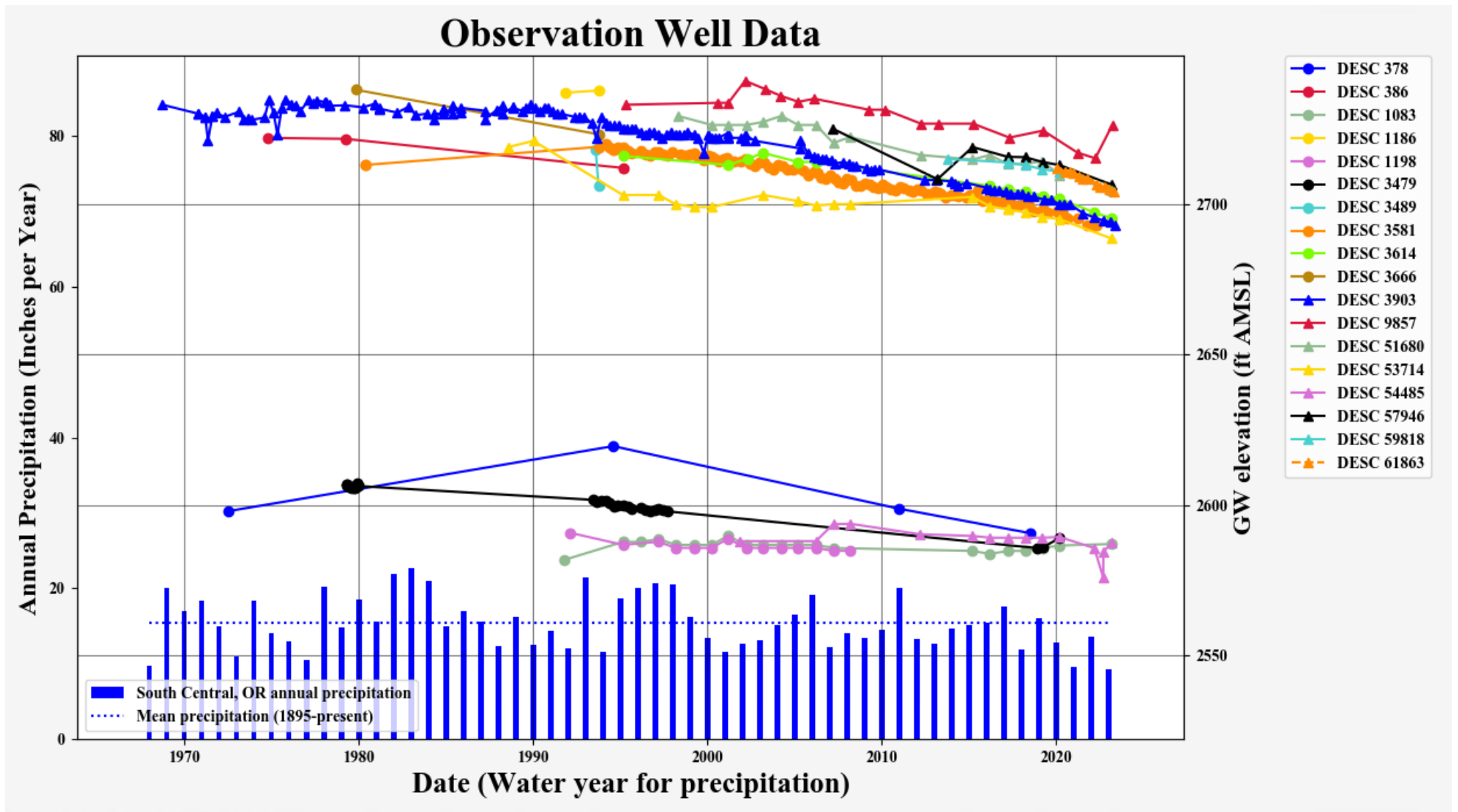


Figure 5. Hydrograph Depicting Absolute Water Level Changes from Spring 1994 To 2023 in OWRD Observation Wells Across the Deschutes Basin.

