Groundwater Application Review Summary Form

Application # G- 19255

GW Reviewer Darrick E. Boschmann Date Review Completed: 3/14/2023

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 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 **_3/14/2023_**

TO: **Application** G-**_19255_**

FROM: **GW:** **_Darrick E. Boschmann_**
(Reviewer's Name)

SUBJECT: Scenic Waterway Interference Evaluation

☒ **YES**
☐ **NO**

The source of appropriation is hydraulically connected to a State Scenic Waterway or its tributaries

☒ **YES**
☐ **NO**

Use the Scenic Waterway Condition (Condition 7J)

☒ Per ORS 390.835, the Groundwater Section is **able** to calculate ground water interference with surface water that contributes to a Scenic Waterway. The calculated interference is distributed below

☐ Per ORS 390.835, the Groundwater Section is **unable** to calculate ground water interference with surface water that contributes to a scenic waterway; **therefore, the Department is unable to find that there is a preponderance of evidence that the proposed use will measurably reduce the surface water flows necessary to maintain the free-flowing character of a scenic waterway**

DISTRIBUTION OF INTERFERENCE

Calculate the percentage of consumptive use by month and fill in the table below. If interference cannot be calculated, per criteria in 390.835, do not fill in the table but check the "unable" option above, thus informing Water Rights that the Department is *unable to make a Preponderance of Evidence finding.*

Exercise of this permit is calculated to reduce monthly flows in Deschutes Scenic Waterway by the following amounts expressed as a proportion of the consumptive use by which surface water flow is reduced.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 3/14/2023

FROM: Groundwater Section Darrick E. Boschmann
Reviewer's Name

SUBJECT: Application G- **19255** 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: **David Baker/Yreka Butte Enterprises/Oregon DSL** County: **Deschutes**

A1. Applicant(s) seek(s) 3.7876 cfs from 1 well(s) in the Deschutes Basin, Beaver-South Fork subbasin

A2. Proposed use 122.5 acres primary irrigation Seasonality: 4/15 – 10/15

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	DESC 59429	1	HLP volcanics	3.7876	21.00S-20.00E-33-SE NE	3950 FEET NORTH AND 1271 FEET WEST FROM SE CORNER, SECTION 33
2						
3						
4						

* 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	4420	240*	146.45	3/31/2021	460	0-26	+1-26	None	None	1750	10	P/A*

Use data from application for proposed wells.

A4. **Comments:**

The proposed well is located in southeast Deschutes County about five miles northwest of Hampton, Oregon. The area immediately underlying the well was mapped by Walker and others (1967) as Qs (lacustrine, fluviatile, and aeolian tuffaceous sedimentary rocks, ash-fall, ash-flow tuff, and unconsolidated ash, pumice, clay, sand, silt, and gravel). Underlying Qs in this area are a variety of basaltic lava flows (QTb), tuffaceous sedimentary rocks (Tst/Tsb), and ash-flow tuff (Twt). These deposits represent a variety volcanic rocks and interbedded sedimentary rocks of the High Lava Plains (HLP).

The well log for DESC 59429 reports 20 feet of topsoil and clay (0-20 ft), underlain by 300 feet of interbedded basalt and clay (20-320), which in turn is underlain by 140 feet of interbedded pumice, sand, and clay (320-460).

*First water reported on well log. Pump test type reported as both Pump and Air on well log.

A5. ☐ **Provisions of the** Deschutes 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 not within the Deschutes Groundwater Study Area

A6. ☐ **Well(s) #** _____ , _____ , _____ , _____ , _____ , tap(s) an aquifer limited by an administrative restriction.
Name of administrative area: _____
Comments: currently no administrative area.

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) _____;

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:** _____

Groundwater levels in the area of the proposed POA have been showing small but persistent declines since at least the early 2000s. Additional groundwater development in this area will likely contribute to those declines which could impair the function of the aquifer by precluding its perpetual use (i.e., additional appropriation could interfere with existing groundwater users abilities to exercise their senior water rights). Therefore, the new use is found to be not within the capacity of the resource as defined in OAR 690-400-0010.

The available water level record does not meet the Division 8 definition of excessively declining or declined excessively (for the *storage* portion of the source of water to wells).

Even with the rate of decline occurring in this area it is not likely that any interference with nearby wells would meet the standard for substantial or undue interference.

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

C1. **690-09-040 (1):** Evaluation of aquifer confinement:

Well	Aquifer or Proposed Aquifer	Confined	Unconfined
1	**HLP volcanic rocks**	☐	☒
		☐	☐
		☐	☐
		☐	☐

Basis for aquifer confinement evaluation:

Most wells in the area report similar SWL depths regardless of total depth or reported "First Water" implying little confinement with depth.

C2. **690-09-040 (2) (3):** Evaluation of distance to, and hydraulic connection with, surface water sources. All wells located a horizontal distance less than ¼ mile from a surface water source that produce water from an unconfined aquifer shall be assumed to be hydraulically connected to the surface water source. Include in this table any streams located beyond one mile that are evaluated for PSI.

Well	SW #	Surface Water Name	GW Elev ft msl	SW Elev ft msl	Distance (ft)	Hydraulically Connected? YES	NO	ASSUMED	Potential for Subst. Interfer. Assumed? YES	NO
1	**1**	**South Fork Crooked River**	**4274**	**4130**	**84,500**	☒	☐	☐	☐	☒
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐

Basis for aquifer hydraulic connection evaluation:

The nearest point of hydraulic connection to surface water is likely the South Fork Crooked River where the river elevation is below the groundwater elevation; the straight-line distance to the nearest perennial reach is approximately 16 miles from the proposed POA.

Water Availability Basin the well(s) are located within: S FK CROOKED R > CROOKED R - AT MOUTH

C3a. **690-09-040 (4):** Evaluation of stream impacts for each well that has been determined or assumed to be **hydraulically connected and less than 1 mile** from a surface water (SW) source. Limit evaluation to instream rights and minimum stream flows that are pertinent to that SW source, not lower SW sources to which the stream under evaluation is tributary. Compare the requested rate against the 1% of 80% *natural* flow for the pertinent Water Availability Basin (WAB). If Q is not distributed by well, use full rate for each well. Any checked ☒ box indicates the well is assumed to have the potential to cause PSI.

Well	SW #	Well < ¼ mile?	Qw > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Qw > 1% ISWR?	80% Natural Flow (cfs)	Qw > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐

C3b. **690-09-040 (4):** Evaluation of stream impacts by total appropriation for all wells determined or assumed to be **hydraulically connected and less than 1 mile** from a surface water source. **Complete only if Q is distributed among wells**. Otherwise same evaluation and limitations apply as in C3a above.

	SW #		Qw > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Qw > 1% ISWR?	80% Natural Flow (cfs)	Qw > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
			☐			☐		☐		☐
			☐			☐		☐		☐

Comments:

C3a. No analysis here. All wells are located at a distance greater than 1 mile from perennial reaches of hydraulically connected surface water as identified above.

C3b. No distributed rate requested.

C4a. **690-09-040 (5):** Estimated impacts on **hydraulically connected surface water sources greater than one mile** as a percentage of the proposed pumping rate. Limit evaluation to the effects that will occur up to one year after pumping begins. This table encompasses the considerations required by 09-040 (5)(a), (b), (c) and (d), which are not included on this form. Use additional sheets if calculated flows from more than one WAB are required.

Non-Distributed Wells Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
Distributed Wells Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
(A) = Total Interf.													
(B) = 80 % Nat. Q													
(C) = 1 % Nat. Q													
(D) = (A) > (C)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
(E) = (A / B) x 100		%	%	%	%	%	%	%	%	%	%	%	%

(A) = total interference as CFS; (B) = WAB calculated natural flow at 80% exceed. as CFS; (C) = 1% of calculated natural flow at 80% exceed. as CFS; (D) = highlight the checkmark for each month where (A) is greater than (C); (E) = total interference divided by 80% flow as percentage.

Basis for impact evaluation:

Stream depletion was not estimated because the complex geology and large distance between the proposed POA and the stream would result in very low confidence in the modeled results. However, given the distance, stream depletion is likely to be very low and significantly lower than 1% of the 80%-exceedance natural flows

C4b. **690-09-040 (5) (b) The potential to impair or detrimentally affect the public interest is to be determined by the Water Rights Section.**

C5. ☐ **If properly conditioned**, the surface water source(s) can be adequately protected from interference, and/or groundwater use under this permit can be regulated if it is found to substantially interfere with surface water:

i. ☐ The permit should contain condition #(s)_____;

ii. ☐ The permit should contain special condition(s) as indicated in "Remarks" below;

C6. **SW / GW Remarks and Conditions:**

The applicant's proposed POAs would be producing from an aquifer that has been found to be hydraulically-connected to surface water – specifically to South Fork Crooked River. The proposed POAs are hydraulically connected to a tributary of the Deschutes State Scenic Waterway and will have a long-term impact on flows necessary for the scenic waterway. Given the distance between the POAs and the Deschutes State Scenic Waterway, along with the reservoirs in between, the impact from the proposed use on the scenic waterway will likely be evenly distributed throughout the entire year (see Scenic Waterway Memo on page 2).

Note: Potentiometric contours from Miller (1986) depict groundwater flow from this area to the northeast and northwest. While a portion of the groundwater flow may be to the northwest into the adjacent WAB, the contours depict all groundwater flow into and within the Deschutes Basin.

References Used:

Miller, D.W., 1986. Ground water conditions in the Fort Rock Basin, Northern Lake County, Oregon. Oregon Water Resources Department Groundwater Report No. 31.

Walker, G.W., Peterson, N.V., Greene, R.C., 1967. Reconnaissance geologic map of the east half of the Crescent quadrangle, Lake, Deschutes, and Crook Counties, Oregon. U.S. Geological Survey Miscellaneous Geologic Field Investigations Map I-493. Scale 1:250,000.

OWRD Well Log Database

OWRD Groundwater Information System Database

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.**

Water Availability Tables

DETAILED REPORT ON THE WATER AVAILABILITY CALCULATION

S FK CROOKED R > CROOKED R - AT MOUTH

Watershed ID #: 70358 Basin: DESCHUTES Exceedance Level: 80

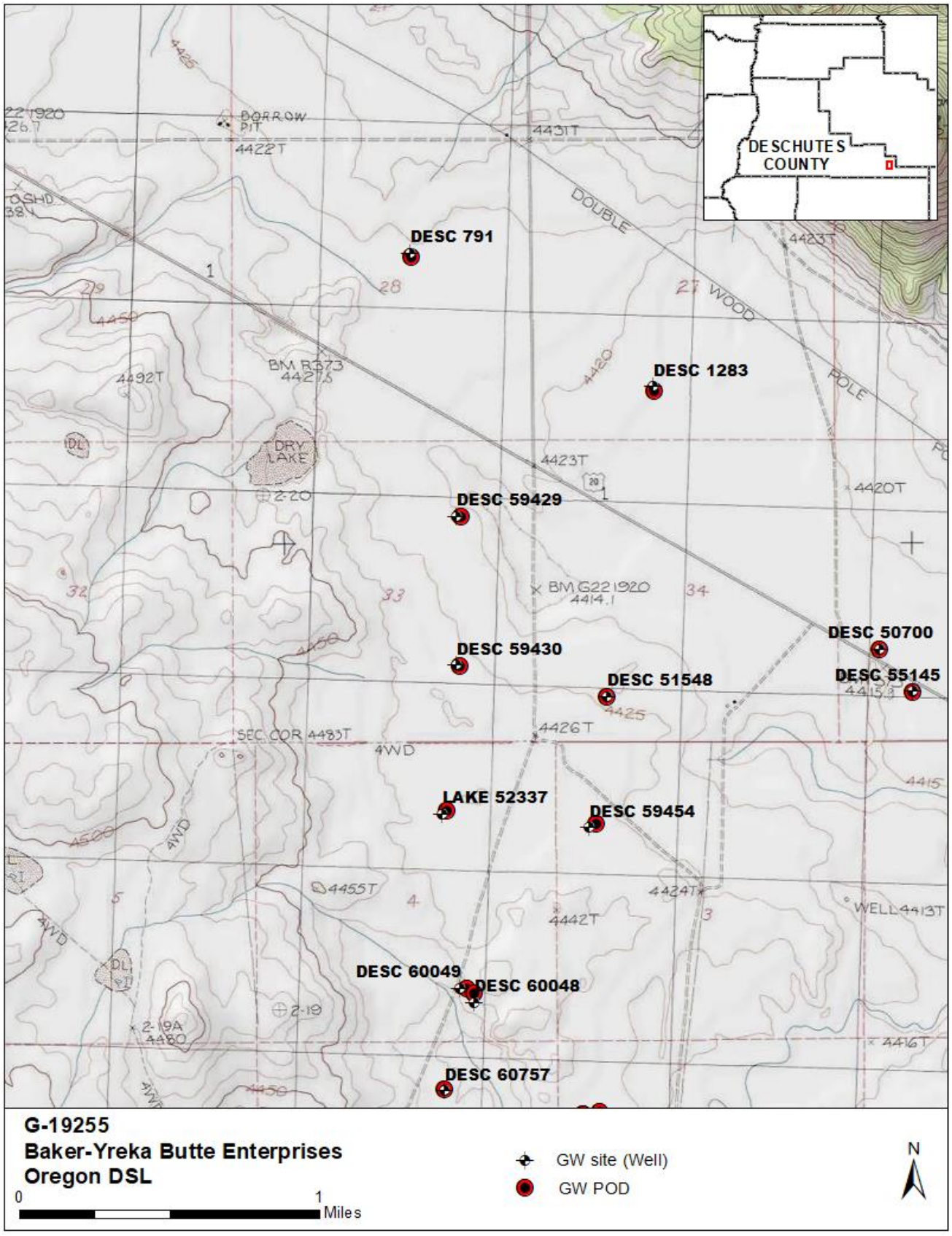
Time: 9:56 AM Date: 05/10/2022

Monthly values are in cfs.

Storage is the annual amount at 50% exceedance in ac-ft.

Month	Natural Stream Flow	Consumptive Use and Storage	Expected Stream Flow	Reserved Stream Flow	Instream Requirements	Net Water Available
JAN	29.20	1.37	27.80	0.00	4.00	23.80
FEB	62.50	2.85	59.60	0.00	15.00	44.60
MAR	87.70	15.80	71.90	0.00	21.00	50.90
APR	96.80	24.20	72.60	0.00	21.00	51.60
MAY	36.40	44.80	-8.41	0.00	21.00	-29.40
JUN	19.10	36.40	-17.20	0.00	15.00	-32.20
JUL	7.49	10.60	-3.10	0.00	4.00	-7.10
AUG	4.84	5.42	-0.58	0.00	4.00	-4.58
SEP	7.86	5.72	2.14	0.00	4.00	-1.86
OCT	18.30	3.20	15.10	0.00	4.00	11.10
NOV	29.10	0.94	28.20	0.00	4.00	24.20
DEC	33.30	1.24	32.10	0.00	4.00	28.10
ANN	36,300	9,230	27,800	0	7,270	22,800

Well Location Map



Water-Level Measurements in Nearby Wells