Groundwater Application Review Summary Form

Application # G- 19191

GW Reviewer Phillip I. Marcy Date Review Completed: 02/03/2023

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 **_02/03/2023_**

TO: **Application** G-**_19191_**

FROM: **GW:** **_Phillip I. Marcy_**
(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 _[Enter]_ 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

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 02/03/2023

FROM: Groundwater Section Phillip I. Marcy
Reviewer's Name

SUBJECT: Application G- **19191** Supersedes review of 11/22/2021
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: **Bill Clonts** County: **Baker**

A1. Applicant(s) seek(s) 1.5 cfs from 1 well(s) in the Powder Basin, subbasin

A2. Proposed use: Supplemental Irrigation (79.1 acres) Seasonality: March 1st – October 31st (245 days)

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	Proposed	1	Alluvium	1.5	8S/40E-23 SE-SW	25' N, 2225' E fr SW cor S 23
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	3360	NA	NA	NA	200	0-40	0-100	Unknown	50-100	NA	NA	NA

Use data from application for proposed wells.

A4. **Comments:** The applicant proposes to construct a new well to appropriate groundwater for supplemental irrigation of 79.1 acres covered under Certificate 82727.

This re-review is being conducted to address the finding of "Cannot be determined" concerning over-appropriation in Section B1(a) of this review form.

A5. ☒ **Provisions of the** Powder 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:

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) **7N; 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:** Available data do not suggest notable declines in the area near the proposed POA, though no long-term continuous record exists (see attached hydrograph). Available data suggest the unconfined alluvial aquifer here is an area of discharge below the range front, where shallow groundwater proceeds to move through the relatively coarse-grained materials toward local surface water bodies to the west, including Baldock Slough and the Powder River. Considering this, the rate of recharge and the elevations of surface water drains are anticipated to be the key controlling factors of water levels in the shallow alluvial aquifer here. The nearest POA well is greater than ½ mile from the proposed well location. In addition, the storativity and conductivity of the unconfined aquifer here is expected to minimize induced drawdown at nearby well locations.

The finding in Section B1(a) has been amended to reflect that there is insufficient evidence at the present time for a positive determination that the groundwater source proposed for development by this application is over-appropriated. This finding does not address possible changes in groundwater storage or increased rates of stream capture as a result of increased pumping from a hydraulically connected aquifer. These impacts to the conjunctive resource are, instead, addressed in Section C below.

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	**Alluvium**	☐	☒
		☐	☐
		☐	☐
		☐	☐

Basis for aquifer confinement evaluation: Nearby well reports do not report static water levels that rise well above the respective water-bearing zones within boreholes of similar depth to the proposed POA well.

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**	**Baldock Slough**	**~3355**	**3349-3365***	**2900**	☒	☐	☐	☐	☒
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐

Basis for aquifer hydraulic connection evaluation: There is not sufficient evidence to determine there are any significant barriers to vertical migration of groundwater within the local sedimentary sequence. This conceptual framework is supported by the lack of confinement exhibited in nearby alluvial wells.
*Elevations within one mile of proposed POA.
Water Availability Basin the well(s) are located within: BALDOCK SL > POWDER 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?
1	**1**	☐	☐	**NA**	**NA**	☐	**0.06**	☒	**<<25%**	☒
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐

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: This application has triggered PSI for the proposed use due to the proposed pumping rate being greater than 1% of the 80% exceedance rate of the WAB which the POA is hydraulically connected to.

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:

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 proposed use has triggered PSI under Division 9 rules (OAR 690-09-040(4)(c)), due to the proposed pumping rate being greater than 1% of the 80% exceedance rate for Baldock Slough (0.06 cfs). If supplemental irrigation water is sought to make up a deficiency in surface water received under primary right Certificate 82727, there may be other avenues to pursue, such as a surface water to groundwater transfer or attempting to develop the underlying bedrock aquifer, which at this location is encountered at an unknown depth.

In respect to consideration of Baldock Slough as a natural and perennial stream, the language in Division 9 (OAR 690-09-040(4)(c)) requires that the Department consider interference with **surface water sources** within one mile of the proposed POA well. Considering the function of the slough as a conveyance of water to and from the Powder River, it is logical to conclude that this is a surface water source to those rights that depend on this conveyance. In addition, our conceptual understanding of groundwater in this area includes the movement of groundwater in the Baldock Slough WAB to support flows in downstream reaches of the Powder River. It has been acknowledged by the local Watermaster (personal communication 10/13/2021) that diminished flows in the Powder River have led to it being regulated more often and earlier in the season in recent years. Continued allocation of hydraulically connected groundwater from the valley-fill alluvium in the Baker Valley is anticipated to further exacerbate this trend.

References Used:

Brooks, H.C., McIntyre, J.R., Walker, G.W., 1976. Geology of the Oregon Part of the Baker 1^0 by 2^0 Quadrangle. Oregon Department of Geology and Mineral Industries Geological Map Series 7.

OWRD Ground Water Report #6.

Hunt, B., 1999, Unsteady stream depletion from ground water pumping: Ground Water, v. 37, no. 1, p. 98-102.

Nearby well logs, pump test data, and application reviews.

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

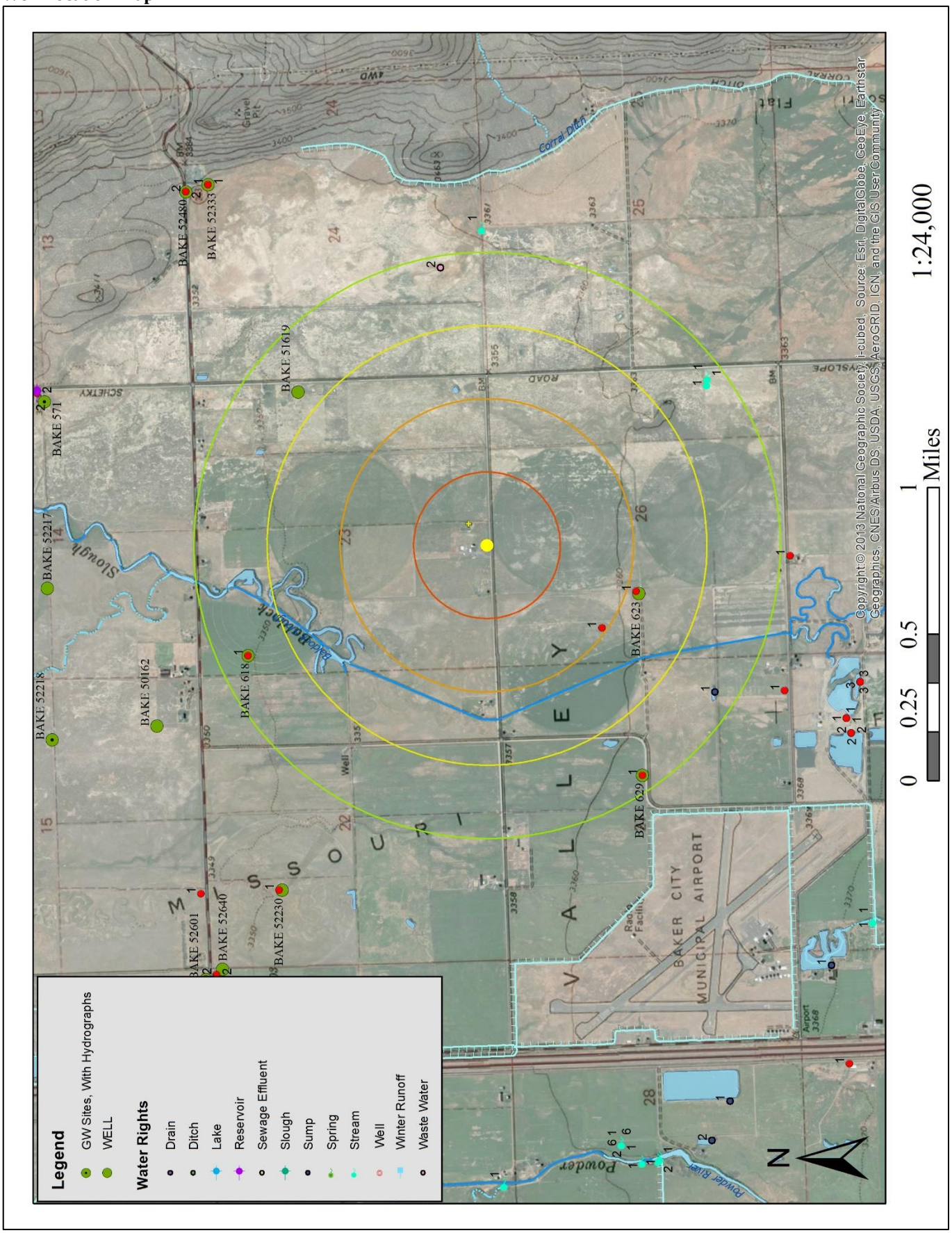
BALDOCK SL > POWDER R - AT MOUTH

Watershed ID #: 30920330 Basin: POWDER Exceedance Level: 80

Time: 6:54 PM Date: 11/18/2021

Month	Natural Stream Flow	Consumptive Use and Storage	Expected Stream Flow	Reserved Stream Flow	Instream Requirements	Net Water Available
	Monthly values are in cfs. Storage is the annual amount at 50% exceedance in ac-ft.					
JAN	0.58	0.24	0.34	0.00	0.00	0.34
FEB	2.18	0.24	1.94	0.00	0.00	1.94
MAR	4.32	0.28	4.04	0.00	0.00	4.04
APR	10.90	3.12	7.78	0.00	0.00	7.78
MAY	3.49	4.70	-1.21	0.00	0.00	-1.21
JUN	0.75	5.31	-4.56	0.00	0.00	-4.56
JUL	0.17	3.02	-2.85	0.00	0.00	-2.85
AUG	0.07	1.30	-1.23	0.00	0.00	-1.23
SEP	0.06	0.83	-0.77	0.00	0.00	-0.77
OCT	0.06	0.49	-0.43	0.00	0.00	-0.43
NOV	0.17	0.24	-0.07	0.00	0.00	-0.07
DEC	0.35	0.24	0.11	0.00	0.00	0.11
ANN	3,770	1,210	3,090	0	0	3,090

Well Location Map



Water-Level Measurements in Nearby Wells