

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 03/09/2023
 FROM: Groundwater Section Phillip I. Marcy
 Reviewer's Name
 SUBJECT: Application G- 18894 Supersedes review of 02/14/2020
 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: Gregory L. Bingaman County: Union

A1. Applicant(s) seek(s) 5.18 cfs from 1 well(s) in the Grande Ronde Basin,
 subbasin

A2. Proposed use Irrigation (310.89 acres) Seasonality: March 1st – October 1st (214 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	UNIO 50684	1	Basalt	5.18	2S/38E-12 SE-SW	84°N, 1994°E fr SW cor, S 12
2						
3						
4						
5						

* 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	2775	154	-30.03	03/24/2008	3138	0-197; 1772- 1872	0-1772	NA	1772-1952; 2352-2472; 2417-2457; 2587-2687; 2697-2767; 2817-3138	1700	36' in 7 hours	Pump

Use data from application for proposed wells.

A4. **Comments:** The proposed POA well is constructed to produce from Powder River Volcanics and associated volcaniclastic lithologies at depths below 1872' below land surface. This well is an authorized POA on three existing water rights, Certificate 89503, Permit G-12738, and Permit G-15160, for a total authorized rate of 6.7 cfs. The reported yield of the POA well is 1700 gpm (3.79 cfs), far below what is already authorized.

This application proposing 5.18 CFS. was submitted at the same time as application G-18895, which proposes additional 3.85 CFS from the same POA (UNIO 50684), for a total combined rate of 15.73 CFS if these new applications are approved.

This re-review is being conducted in order to assess the capacity of the resource at the proposed POA.

A5. **Provisions of the** Grande Ronde 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; "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 proposed POA well, UNIO 50684, produces from volcanic flow rocks and associated volcanoclastics of the Powder River Volcanics and likely the upper portions of the Grande Ronde Basalt of the Columbia River Basalt Group. Based on construction and similar head elevations, two nearby wells appear to produce water from the same source aquifer. UNIO 2046 lies about 3 miles NNE of the proposed POA, is authorized for irrigation use under certificate 90496, and belongs to the applicant. UNIO 173 is located 2.75 miles due north of the proposed POA, is authorized under certificate 51170 and permits G-15644 and G-16963, and is not owned by the applicant, and therefore likely represents the most likely target of possible well to well interference.

Calculations of expected drawdown at neighboring UNIO 173 include all currently authorized pumping, in addition to the proposed rate herein and application G-18895, a total of 15.73 cfs. Using a range of transmissivity values derived from nearby pump tests in basalt wells, and a range of storativity values appropriate for confined aquifers, a series of Theis drawdown calculations were performed. Expected impacts at UNIO 173 from pumping UNIO 50684 at 15.73 cfs for a period of 214 days fall between 34 and 59 feet under the most likely scenarios (using transmissivity from pump test performed on the POA well).

The substantial increase in pumping proposed under applications G-18894 (this application) and G-18895 raises concerns about the long-term sustainability of the productive aquifer utilized by UNIO 50684. Using the identical parameters as used to calculate drawdown in UNIO 173, the calculated drawdown in the production well ranges between 241 and 266 feet after 245 days of continuous pumping. Due to the high transmissivity in the target aquifer, the well is expected to recover quickly, returning to near 16 feet below pre-pumping levels within 60 days after pumping ceases. This assumes that adequate sources of recharge exist for this aquifer, an assumption that cannot be confirmed with available data. The highly confined nature of the aquifer, and its anticipated degree of compartmentalization have led to determinations of a lack of connection to nearby water sources, including surface water and other wells. However, these factors also carry negative implications regarding the ability of groundwater to migrate into the productive aquifer. Due to the large degree of uncertainty surrounding this question, further development should be approached with caution. The substantial increase in pumping proposed would more than double the currently authorized production rate (2.35 times) and therefore presents an unreasonable risk without further data to support that this level of development is sustainable.

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?
			<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
			<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
			<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
			<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>

Comments: This section does not apply.

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													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
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: This section does not apply.

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:**

Special Condition: If a permit is issued, OWRD staff shall be granted access to the POA well in order to conduct static water level measurements in addition to yearly static water level measurements in March required by Condition 7N in Section B1 above.

References Used: Development Potential of Ground Water in the Grande Ronde Valley, Union County, Oregon, Ham, 1966

Ferns, M. L., McConnell, V. S., Madin, I. P., and Johnson, J. A., 2010, Geology of the upper Grande Ronde River basin, Union County, Oregon; Oregon Department of Geology and Mineral Industries Bulletin 107, scale 1:100,000, 65 p.

OWRD water level database.

Groundwater reviews G-17558, G-18895

Theis, C.V., 1941, The effect of a well on the flow of a nearby stream: Am. Geophysical Union Trans., v. 22, pt.3, p. 734-738.

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:** _____

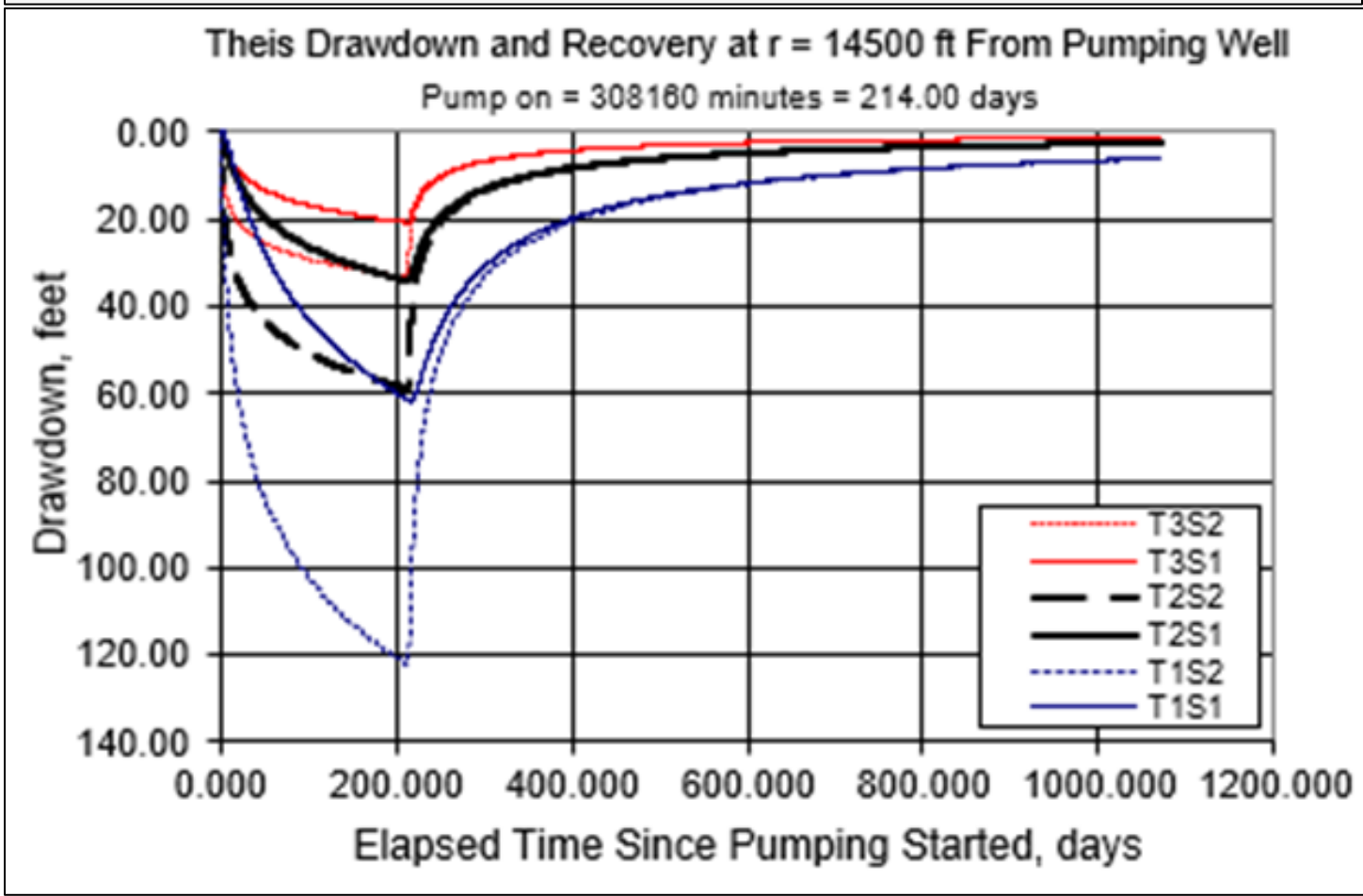
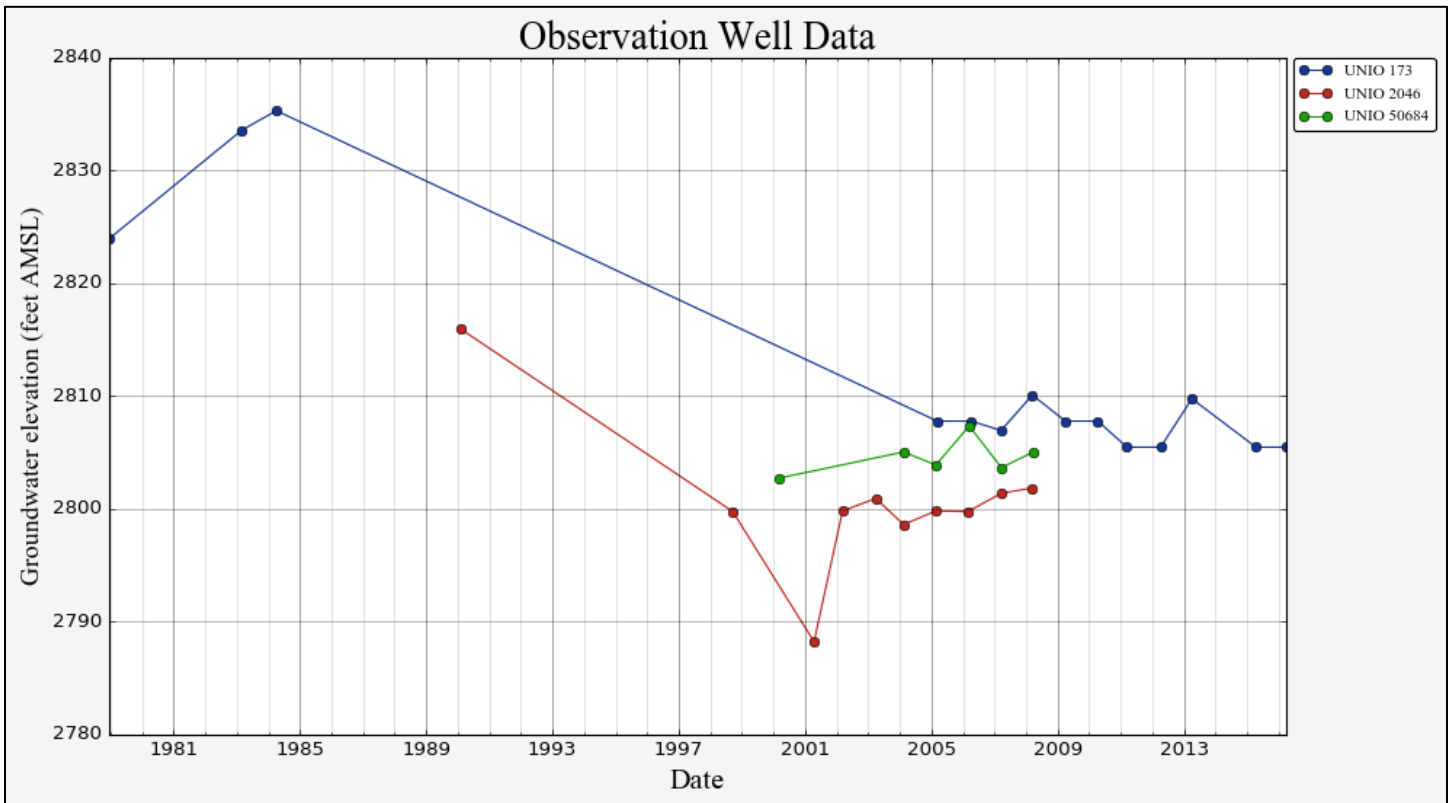
D4. **Route to the Well Construction and Compliance Section for a review of existing well construction.**

Water Availability Tables

DETAILED REPORT ON THE WATER AVAILABILITY CALCULATION						
Watershed ID #: 30810407 Time: 3:52 PM		GRANDE RONDE R > SNAKE R - AB WILLOW CR Basin: GRANDE RONDE			Exceedance Level: 80 Date: 02/11/2020	
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	138.00	17.70	120.00	23.70	0.00	96.60
FEB	246.00	21.70	224.00	62.30	0.00	162.00
MAR	431.00	23.50	408.00	118.00	0.00	290.00
APR	966.00	148.00	818.00	131.00	0.00	687.00
MAY	1,100.00	332.00	768.00	187.00	0.00	581.00
JUN	530.00	293.00	237.00	58.40	0.00	179.00
JUL	257.00	138.00	119.00	0.00	0.00	119.00
AUG	185.00	90.20	94.80	0.00	0.00	94.80
SEP	127.00	63.60	63.40	0.00	0.00	63.40
OCT	85.60	23.30	62.30	1.55	0.00	60.80
NOV	93.10	15.00	78.10	0.00	0.00	78.10
DEC	111.00	16.80	94.20	13.00	0.00	81.20
ANN	429,000	71,500	358,000	35,900	0	322,000

Summary of Authorized and Proposed Use from UNIO 50684

Application	Permit	Certificate	Priority Date	Rate (CFS)	Status
G-13878	G-12738		11/17/1994	2.00	Authorized
G-15464	G-15160		4/2/2001	3.79	Authorized
G-15919	G-15504	89503	1/31/2003	0.91	Authorized
G-18894			12/16/2019	5.18	Proposed
G-18895			12/16/2019	3.85	Proposed
				15.73	



Expected drawdown (using T2 curves) at UNIO 173 is between roughly 34 and 59 feet after pumping UNIO 50684 for 214 days at a rate of 15.73 cfs, the combined rate of current authorizations and the proposed rate on this application and G-18895.