

Groundwater Application Review Summary Form

Application # G- 19435

GW Reviewer Phillip I. Marcy Date Review Completed: 06/20/2024

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

June 20, 2024

TO: Application G- 19435

FROM: GW: Phillip I. Marcy
(Reviewer's Name)

SUBJECT: Scenic Waterway Interference Evaluation

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

☐ NO

☒ YES Use the Scenic Waterway Condition (Condition 7J)

☐ NO

☐ 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 Grande Ronde 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 06/20/2024
 FROM: Groundwater Section Phillip I. Marcy
 Reviewer's Name
 SUBJECT: Application G- 19435 Supersedes review of _____
 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: CTA Farms/Clayton Todd Arnoldus County: Union

A1. Applicant(s) seek(s) 2.99 cfs from 1 well(s) in the Grande Ronde Basin,
 _____ subbasin

A2. Proposed use Irrigation (235.5 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):

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	UNIO 173	1	Bedrock	2.99	1S/38E-36 SW-NW	1320'S, 1290'E fr NW cor S 36
2						

* 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	1394	0-18, 26-340	0-1026	1026-1294	1294-1394	1700	NA	Artesian
2								

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	2750	Unknown	-73.92	12/11/1978	-57.77	03/10/2005
2						

Use data from application for proposed wells.

A4. **Comments:** The proposed POA well (UNIO 173) produces groundwater from volcanic rock, likely limited to interflow zones of Columbia River Basalt Group (CRBG) lava flows. It has been documented that flows of Powder River Volcanics overlie the CRBG sequence in nearby wells, with thicknesses of greater than 900' in some cases (UNIO 52415) but is documented in nearby City of Imbler well UNIO 208 to be only 664' feet in thickness. UNIO 173 is an authorized POA on 3 existing groundwater rights, Certificate 51170 (1.09 cfs), and Permits G-15644 (0.74 cfs) and G-16963 (1.33 cfs) for a total pumping rate of 3.16 cfs. Projected impacts of groundwater pumping at this location will incorporate previous allocations in addition to what is being proposed on this application (3.16 + 2.99 cfs = 6.15 cfs). Permit G-16963 requires annual measurements, therefore a reasonably long-term water level record exists for 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:** Since 2003, when water level measurements began under permit condition, the basalt hosted aquifer producing groundwater in UNIO 173 has remained reasonably stable. It is uncertain to what degree the productive aquifer is hydraulically connected to the overlying sedimentary sequence or nearby surface water, but available data indicate that annual recharge occurs within this and other wells of similar depth and construction. This is demonstrated by seasonal fluctuations and lack of significant declines within this system (see attached multi-well hydrograph). Based upon this information, the aquifer does not display evidence for over-appropriation and the proposed use is likely within the capacity of the resource to sustain without causing significant declines. There are several nearby wells that appear to share the same aquifer as the proposed POA well (see map below). The nearest of these is UNIO 174, at a distance of 3,260'. Time-drawdown calculations given the distance between these two wells and a range of aquifer properties constrained by local pump tests and values for confined aquifers result in a range of predicted drawdowns between 16-54 feet after 245 days of continuous pumping.

Special Condition: To ensure the sustainability of the source aquifer and avoid undue interference with nearby groundwater users in the basalt aquifer, the permittee shall grant OWRD staff access to the well upon reasonable notice to allow for water level measurements.

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	CRBG	☒	☐
		☐	☐
		☐	☐
		☐	☐

Basis for aquifer confinement evaluation: Water levels within the well are significantly above land surface, let alone above the productive aquifer horizons.

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?			Potential for Subst. Interfer. Assumed?	
						YES	NO	ASSUMED	YES	NO
1	1	Grande Ronde River	2805	~2700	13500	☐	☒	☐	☐	☒
1	2	Tributary to Willow Creek	2805	~2700	6600	☐	☒	☐	☐	☒
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐

Basis for aquifer hydraulic connection evaluation: The elevation of groundwater in the proposed aquifer is vastly above that of local surface water, illustrating a very poor connection at best. No significant surface water exists within one mile.

Water Availability Basin the well(s) are located within: GRANDE RONDE R > SNAKE R - AB WILLOW CR

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

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													
(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:** The connection between local artesian flowing wells producing groundwater from the basalt aquifer here and local surface water is poorly understood. While likely that this aquifer contributes to surface water within the basin or downstream, an evaluation of impacts to the scenic waterway are speculative in terms of both timing and magnitude.

References Used:

Local well logs, GWIS water level database, Groundwater review for application G-17508.

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

Geology of the Upper Grande Ronde River Basin, Union County, Oregon, by Ferns, et al, 2010, DOGAMI Bulletin 107

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) _____

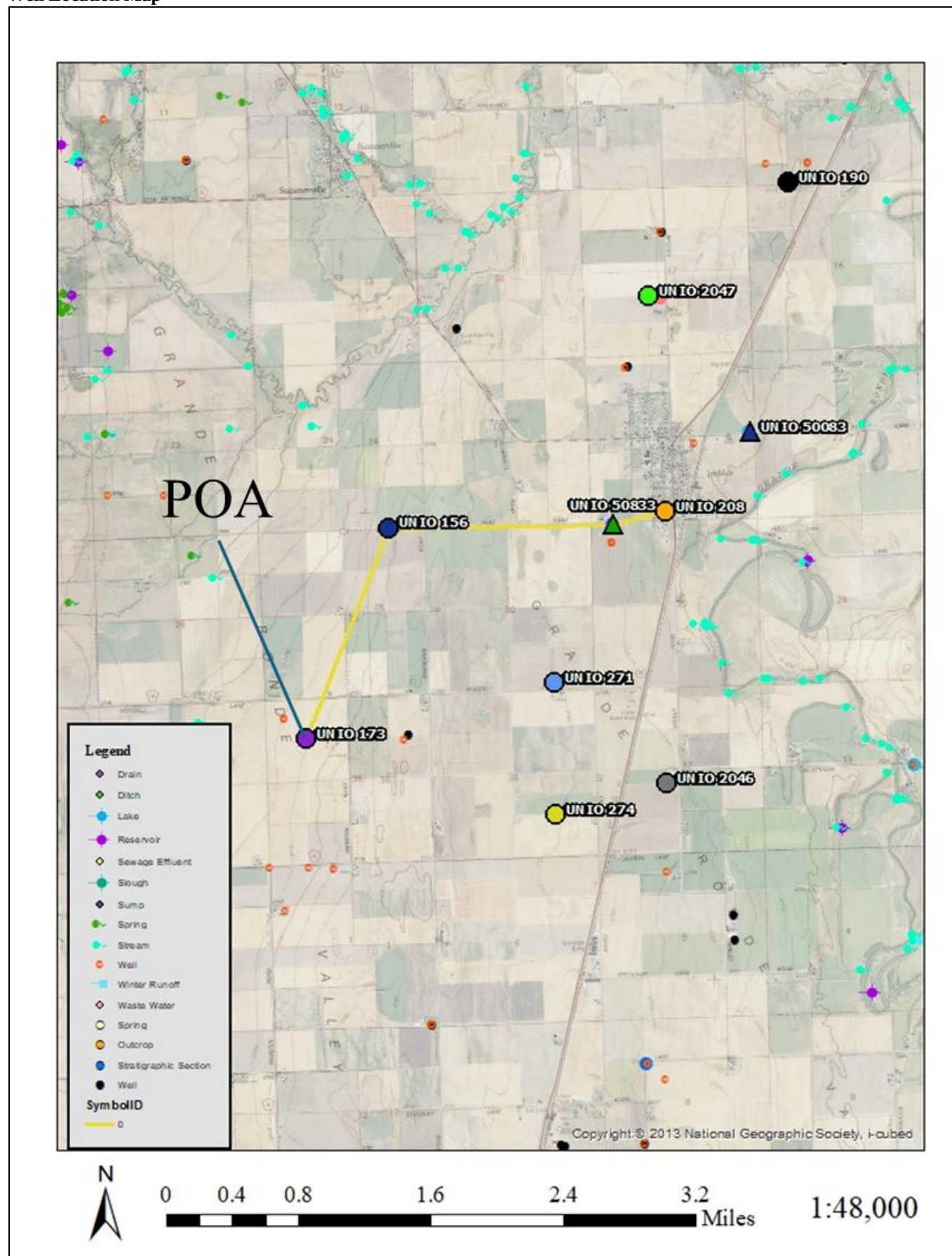
D3. THE WELL construction deficiency or other comment is described as follows: _____

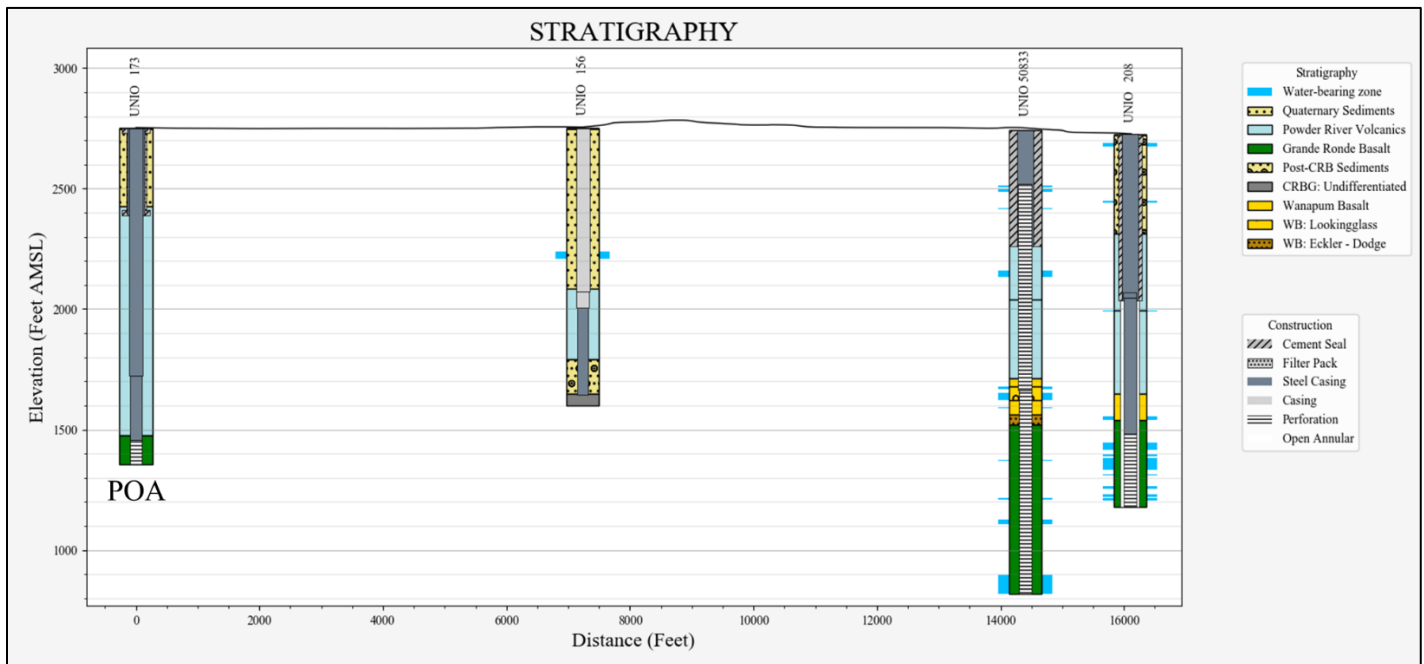
D4. ☐ Route to the Well Construction and Compliance Section for a review of existing well construction.

Water Availability Tables

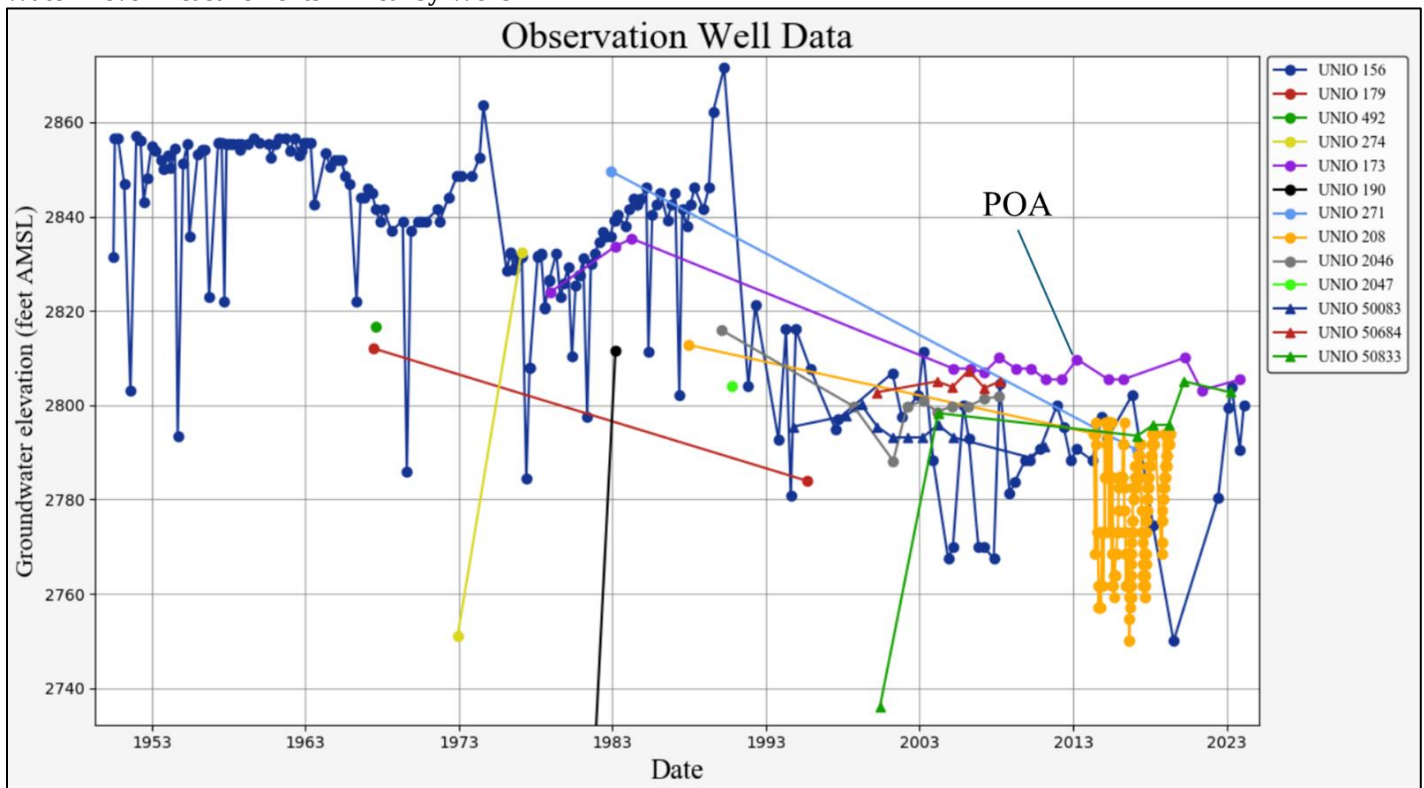
DETAILED REPORT ON THE WATER AVAILABILITY CALCULATION						
Watershed ID #: 30810407			GRANDE RONDE R > SNAKE R - AB WILLOW CR		Exceedance Level: 80	
Time: 3:50 PM			Basin: GRANDE RONDE		Date: 06/18/2024	
Month	Natural Stream Flow	Consumptive Use and Storage	Expected Stream Flow	Reserved Stream Flow	Instream Requirements	Net Water Available
Monthly values are in cfs. Storage is the annual amount at 50% exceedance in ac-ft.						
JAN	138.00	17.20	121.00	23.70	0.00	97.10
FEB	246.00	21.20	225.00	62.30	0.00	162.00
MAR	431.00	23.00	408.00	118.00	0.00	290.00
APR	966.00	147.00	819.00	131.00	0.00	687.00
MAY	1,100.00	331.00	769.00	187.00	0.00	581.00
JUN	530.00	292.00	238.00	58.40	0.00	179.00
JUL	257.00	138.00	119.00	0.00	0.00	119.00
AUG	185.00	89.80	95.20	0.00	0.00	95.20
SEP	127.00	63.10	63.90	0.00	0.00	63.90
OCT	85.60	22.80	62.80	1.55	0.00	61.20
NOV	93.10	14.60	78.50	0.00	0.00	78.50
DEC	111.00	16.40	94.60	13.00	0.00	81.60
ANN	429,000	71,200	358,000	35,900	0	322,000

Well Location Map

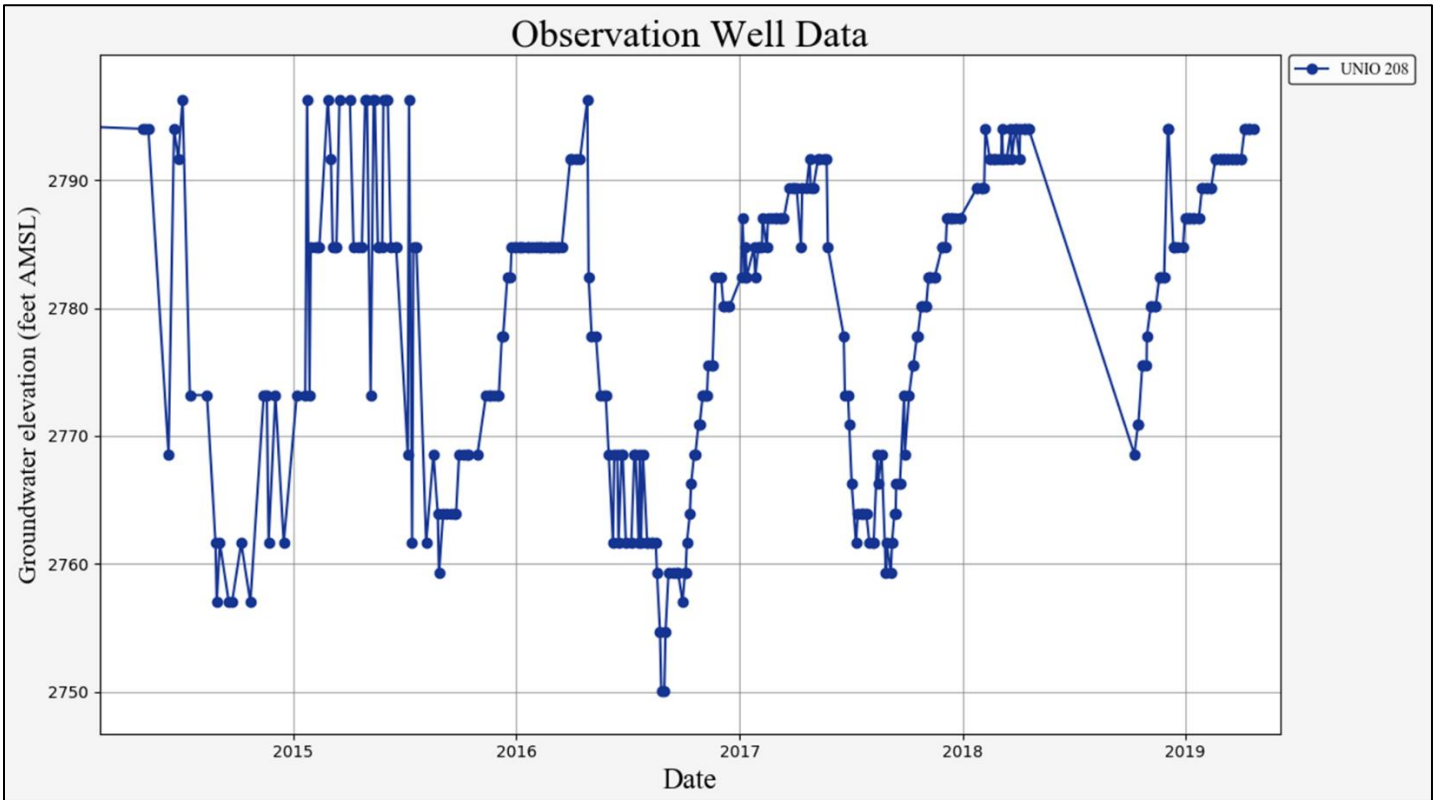


Cross-Section

The proposed POA, UNIO 173 produces groundwater from CRBG, and shares similar water level trends with nearby wells completed into CRBG, and those open to both CRB and Powder River Volcanics, such as UNIO 50833.

Water-Level Measurements in Nearby Wells

Available data from nearby wells producing from basalt display reasonably stable water levels since the early 1990's. Seasonal fluctuations of about 40' suggest that increased use in the summer months is balanced by recovery in the winter and spring. More frequent water level measurements may be useful in determining the timing of recharge.



A closer look at data from City of Imbler municipal well UNIO 208 collected by City staff displays that most of the annual recovery occurs between September and December, well ahead of peak runoff season in the spring. This behavior suggests that hydraulic connection to surface water occurs in long flow paths and the total storage of the basalt aquifer utilized by the POA well is reasonably high.

Theis Interference Analysis

Input Data:	Var Name	Scenario 1	Scenario 2	Scenario 3	Units
Total pumping time	t		245		d
Radial distance from pumped well:	r		3260		ft
Pumping rate	Q		4.99		cfs
Hydraulic conductivity	K	10	20	30	ft/day
Aquifer thickness	b		500		ft
Storativity	S_1		0.0005		
	S_2		0.0001		
Transmissivity Conversions	T_ft2pd	5000	10000	15000	ft2/day
	T_ft2pm	3.47222222	6.94444444	10.4166667	ft2/min
	T_gpdft	37400	74800	112200	gpd/ft

