Groundwater Application Review Summary Form

Application # G- 19249

GW Reviewer Gabriela Ferreira / Dennis Orlowski Date Review Completed: May 25, 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 **_May 25, 2023_**

TO: **Application** G-**_19249_**

FROM: **GW:** **_Gabriela Ferreira / Dennis Orlowski_**
(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 May 25, 2023
FROM: Groundwater Section Gabriela Ferreira / Dennis Orlowski
Reviewer's Name
SUBJECT: Application G- **19249** 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: **Peterson Family Trust** County: **Columbia**

A1. Applicant(s) seek(s) 3.75 cfs from one well(s) in the North Coast Basin, subbasin

A2. Proposed use Irrigation Seasonality: March 1 – October 31

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	COLU 2248	1	Alluvial	3.75	7 N / 3 W – 1 SW-SE	120' N, 550' E fr SW cor S1

* 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	7[a]	17	-1.5-2[b]	6/16/1980	130	20	129.5	NA	60-66 69-80 100-105 109-120	1,500	4	Unk

Use data from application for proposed wells.

A4. **Comments:** The proposed POA/POU is approximately 3 miles northwest of Rainier, Oregon. Applicant proposes irrigation of 299.7 acres by one existing well, identified as COLU 2248.
[a] Land surface elevation from LIDAR at the proposed well location (OLC, 2016).
[b] The well log for COLU 2248 indicates that water was first encountered at 17 feet below land surface then stabilized at 1.5 – 2 feet above land surface. Water levels are reportedly affected by tidal fluctuations in the Columbia River and/or semi-confined conditions due to ~15 feet of clay near the surface.

A5. ☒ **Provisions of the** North Coast 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: North Coast Basin rules have no such provision.

A6. ☐ **Well(s) #** _____ , _____ , _____ , _____ , _____ , tap(s) an aquifer limited by an administrative restriction.
Name of administrative area:
Comments: N/A

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 condition**;

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 is located within quaternary alluvium deposited by the Columbia River. To the south and west, the river basin and former floodplains are flanked by the Goble Volcanic Series, which outcrop as steep cliffs rising approximately 600 feet in elevation near the POA (Warren et al., 1945).

Within two miles of the proposed POA location, there are at least two water rights for groundwater, one for industrial uses and producing from the Goble Volcanic Series, and the second for industrial, irrigation, and storage uses producing from the quaternary alluvium. Several more exempt (domestic) wells are also likely in the area. The reported yield for the proposed POA is 1500 gpm, which is near the requested rate of 3.75 cfs (~1680 gpm). Nearby alluvial wells report yields of 40 to 50 gpm (COLU 1908, COLU 55596, and COLU 54982).

No nearby wells with applicable water level data were identified. However, given the efficient hydraulic connection to the Columbia River as evidenced by the similar water elevations and proximity to the river, groundwater is not over-appropriated and the proposed use is within the capacity of the resource. No nearby wells fully penetrate alluvial aquifer in this area, and thus potential injury to nearby groundwater users was not assessed for this review. Permit condition 7N, Large Water Use Reporting is recommended to assess future injury concerns and long-term groundwater conditions in the area.

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: The well log for COLU 2248 reports first-encountered water at a depth of 17 feet bls, which stabilized at 1.5 to 2 feet above land surface. Semi-confining conditions may be present due the presence of ~15 feet of clay from 1 to 16 feet bls. However, considering the efficient connection with the Columbia River as reported in the well log, the aquifer is considered unconfined.

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**	**Columbia River**	**5**	**0 – 12[a]**	**750**	☐	☐	☒	☒	☐

Basis for aquifer hydraulic connection evaluation: The proposed well will access an unconfined aquifer and is less then ¼ mile from the Columbia River. This triggers assumed hydraulic connection and PSI under 690-009-040.
[a] Based on Columbia River stream gage height at Port Westward near Quincy, OR (monitoring location 14246900) over the past 12 months. (USGS, 2023).

Water Availability Basin the well(s) are located within: There is no WAB for this location.

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**	☒	☐	**No WAB**	**--**	☐	**No WAB**	☐	**>25%[a]**	☒

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: [a]Interference was estimated using a range of potential aquifer parameters for an unconfined sand and gravel aquifer. Conservative estimates of aquifer parameters predict stream depletion exceeds 25% of well discharge at 30 days. Model parameters were derived from similar aquifers in the region were used for the model (Freeze and Cherry, 1979; Conlon et al., 2005).

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:** _____

References Used:

Application File G-19294

Well reports COLU 1908, COLU 2248, COLU 54982, COLU 55596

Conlon, T.D., Wozniak, K.C., Woodcock, D., Herrera, N.B., Fisher, B.J., Morgan, D.S., Lee, K.K., and Hinkle, S.R., 2005, *Ground-water hydrology of the Willamette Basin, Oregon*, Scientific Investigations Report 2005-5168: U. S. Geological Survey, Reston, VA.

Freeze, R.A. and Cherry, J.A., 1979, Groundwater, Prentice Hall, Englewood Cliffs, New Jersey, 604 p.

Hunt, B., 1999, Unsteady Stream Depletion from Ground Water Pumping: Ground Water, January-February, Vol 37, p 98-102.

Oregon Lidar Consortium (OLC), 2016, OLC metro 2014 lidar project, Oregon Department of Geology & Mineral Industries, Portland, OR, November 30.

Warren, W.C., Norbisrath, Hans, and Grivetti, R.M., 1945, Geology of northwestern Oregon, west of Willamette River and north of Latitude 45 degrees 15 minutes, 1945: U.S. Geological Survey Oil and Gas Investigations Map, OM-42, 1 sheet, scale 1:200,000.

United States Geological Survey (USGS), 2023, National Water Information System data accessed May 24, 2023 at https://waterdata.usgs.gov/monitoring-location/14246900/

D. WELL CONSTRUCTION, OAR 690-200

D1. **Well #**: **1** **Logid: COLU 2248**

D2. **THE WELL does not appear to meet current well construction standards based upon:**

a. ☐ review of the well log;

b. ☐ field inspection by _____;

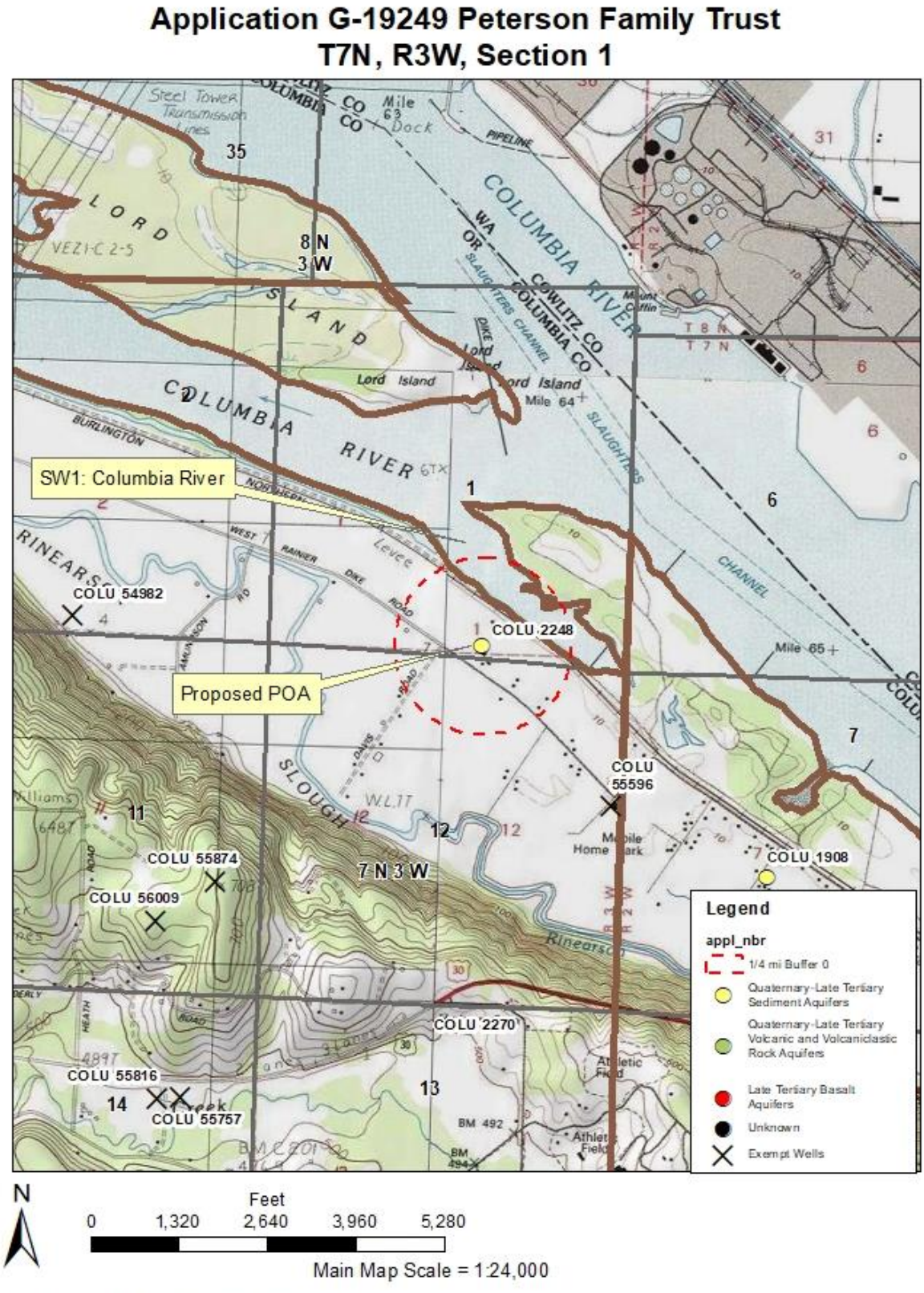
c. ☐ report of CWRE _____;

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.**

Well Location Map



Stream Depletion (Hunt) Model Analysis

Application type:	G
Application number:	19249
Well number:	1
Stream Number:	1
Pumping rate (cfs):	3.75
Pumping duration (days):	244.0
Pumping start month number (3=March)	3.0

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	750	750	750	ft
Aquifer transmissivity	T	2000	10000	20000	ft2/day
Aquifer storativity	S	0.1	0.1	0.1	-
Aquitard vertical hydraulic conductivity	Kva	0.1	0.05	0.01	ft/day
Not used		10.0	20.0	30.0	
Aquitard thickness below stream	babs	5	10	15	ft
Not used		0.2	0.2	0.2	
Stream width	ws	4900	4900	4900	ft

Stream depletion for Scenario 2:

Days	10	330	360	30	60	90	120	150	180	210	240	270	300
Depletion (%)	49	9	7	68	77	81	84	85	87	87	88	23	13
Depletion (cfs)	1.83	0.34	0.26	2.57	2.90	3.05	3.14	3.20	3.24	3.28	3.31	0.85	0.49