

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 6/5/2015

FROM: Groundwater Section Michael J. Thoma
Reviewer's Name

SUBJECT: Application G- 18060 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: Gordon and Sherry Paine County: Lane

A1. Applicant(s) seek(s) 0.02 cfs from 1 well(s) in the Willamette Basin,
Lower Coast Fork Willamette subbasin

A2. Proposed use Pond Maintenance Seasonality: April - October

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	LANE 16503	1	Low-yield bedrock	0.02	18S/03W-25 SENE	1295' N, 690' W of E ¼ corner of S25
2						
3						

* 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	515	see comments	8 ^a	4/1/2015	99	0-21	0-91		84-88	15		

Use data from application for proposed wells.

A4. **Comments:** ^a The applicants' proposed well log does not list *First Water* or *SWL* information. SWL reported above was given on application. Well logs from nearby wells typically list SWL depths of 0-40 ft bls and indicate confined conditions. The applicants' well and nearby well logs describe the underlying geology as claystone, sandstone, or shale which is likely part of the Little Butte Volcanics Formation and/or volcanoclastic rocks of the Fisher Formation (Murray 2006) and would be considered low-yield bedrock aquifers.

A5. **Provisions of the Willamette (OAR 690-502-0010)** 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) 7E (Reference Level) _____;
 - 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 applicants’ well and POU are on the flanks of a small outcrop of Tertiary sediment and volcanic rocks of the Little Butte Volcanics and Fisher Formation (Murray 2006). These materials generally yield low to moderate amounts of water in the range of 10-50 gpm based on well logs in the vicinity, which is often sufficient for domestic supply. Most well logs indicate confined aquifer conditions with increasing confinement with depth – most wells are < 200 ft deep.

There are no observation wells with current or historical water levels within 3 mi of the proposed POA and observation wells > 3 mi are completed in different materials. Therefore it cannot be determined that groundwater is over-appropriated but the Southern Willamette Valley, on a broad scale, generally maintains stable water levels. The applicants’ requested rate of 10 gpm will likely be within the capacity of the resource and should not cause injury to existing users – which would primarily be limited to domestic well interference.

In addition to conditions stated in B1d, standard interference conditions should be applied to this permit.

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	Low-yield, fractured bedrock	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer confinement evaluation: SWLs reported on well logs from nearby wells are higher than reported First Water indicating confined conditions.

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	Coast Fork Willamette R.	470-500 ^a	480-490	4725	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer hydraulic connection evaluation: The applicants' well is producing from low-yield bedrock but is located at junction of the flat-lying lowlands flanking the Coast Fork Willamette R, which are underlain by alluvium up to 100 ft thick near the river, and the resistant bedrock. Groundwater in the shallow fractured bedrock is likely interacting with the alluvial deposits adjacent to the Coast Fk Willamette R, which thicken to the northeast toward the river.

Water Availability Basin the well(s) are located within: Coast Fk Willamette R > Willamette R. – At Mouth (ID# 532)

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 source. Limit evaluation to instream rights and minimum stream flows that are pertinent to that surface water source, and 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	<input type="checkbox"/>	<input type="checkbox"/>	IS 81887	200 ^a	<input type="checkbox"/>	65.6	<input type="checkbox"/>	N/A ^b	<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"/>

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"/>

Comments: ^a Instream Right IS 81887 only requires conditions of 200 cfs to be met from November thru March.

^b The assumptions of the analytical stream depletion model typically used for Section C3b (Hunt, 2003) cannot be met in this situation due to the nature of the fractured bedrock system. Therefore no model was applied. See comments in C6.

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													
(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 applicants' proposed POA will be producing from shallow fractured bedrock and will be intersecting groundwater that would likely be discharging to the younger alluvium flanking the Coast Fork Willamette R, hence the finding of hydraulic connection was made. This type of aquifer does not meet the assumptions of the standard analytical models used to determine interference but conceptually it is unlikely that the applicants' use will substantially interfere with the river due to the confined nature of the fractured-rock aquifer, the distance to the river, and the presence of thick alluvium between the well and the river, which ranges from < 10 ft to > 100 ft in the vicinity of the river near the well,

References Used: Murray, R. B. 2006. Preliminary Geologic Map of the Creswell 7.5' Quadrangle, Lane County, Oregon. Department of Geology and Mineral Industries. Open-File Report O-06-12.

Jenkins, C.T. 1968. Techniques for computing rate and volume of stream depletion by wells. Ground Water, v. 6, no. 2. p. 37-46

Hunt, B. 2003. Unsteady stream depletion when pumping from semiconfined aquifer. Journal of Hydrologic Engineering, January/February, 2003.

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-Level Trends in Nearby Wells

No Water-Level Trends are available

Figure 1: Water Availability Tables

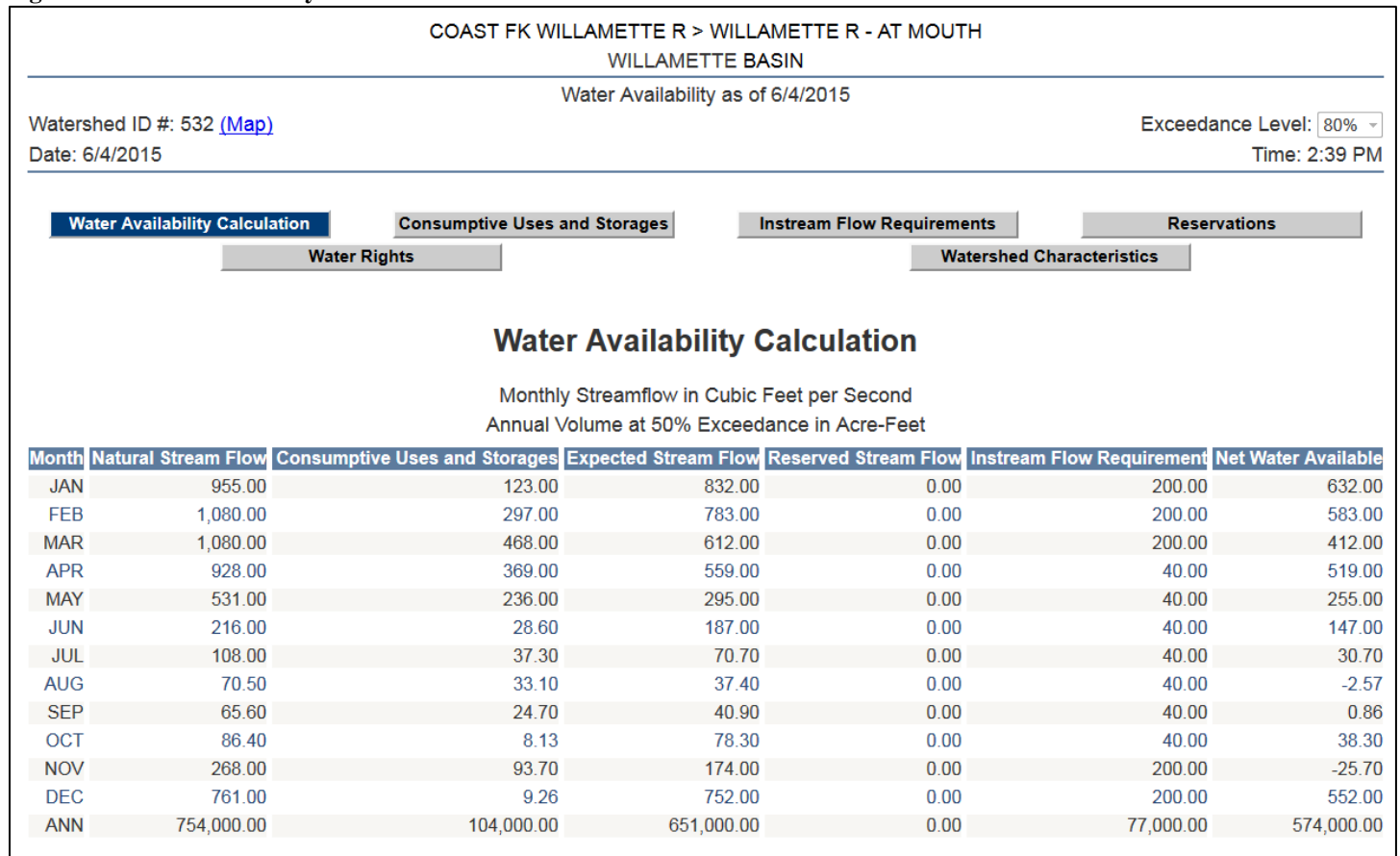


Figure 2: Well Location Map

