Water Right Conditions Tracking Slip

Groundwater/Hydrology Section

FILE # # G-17563

ROUTED TO: Water Rights

TOWNSHIP/
RANGE-SECTION: 15S/4W-20

CONDITIONS ATTACHED?: [✓] yes [ ] no

REMARKS OR FURTHER INSTRUCTIONS:
see conditions on p 2.

Reviewer: J. Hackett

WATER RESOURCES DEPARTMENT

MEMO August 1, 2012

TO: **Application G-** 17563

FROM: **GW:** J. Hackett
(Reviewer's Name)

SUBJECT: **Scenic Waterway Interference Evaluation**

_____YES
__✓__NO
The source of appropriation is within or above a Scenic Waterway

_____YES
__✓__NO
Use the Scenic Waterway condition (Condition 7J)

_____Per ORS 390.835, the Ground Water 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 Ground Water 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 _____ 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 GROUND WATER APPLICATIONS

TO: Water Rights Section Date **August 1, 2012**

FROM: Ground Water/Hydrology Section J. Hackett
Reviewer's Name

SUBJECT: Application G- 17563 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 ground water 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: **Peter Graepel** County: **Lane**

A1. Applicant(s) seek(s) 0.85 cfs from 1 well(s) in the Willamette Basin, subbasin Quad Map: Junction City

A2. Proposed use Irrigation Seasonality: May - September

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 55179	POD# 2	alluvium	0.85	15S/4W-20 SW-SE	5003' S, 2296' W fr NE cor S 20
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	315	20	10	09/10/1998	39	0-18	+1 to 39		20-38	200+		A

Use data from application for proposed wells.

A4. **Comments:**

A5. ☒ **Provisions of the** Willamette Basin rules relative to the development, classification and/or management of ground water hydraulically connected to surface water ☐ **are**, *or* ☒ **are not**, activated by this application. (Not all basin rules contain such provisions.)
Comments: The applicant's well is not within ¼ mile of the nearest surface water source, so the pertinent basin rules do not apply.

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

B. GROUND WATER AVAILABILITY CONSIDERATIONS, OAR 690-310-130, 400-010, 410-0070

B1. **Based upon available data**, I have determined that ground water* 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 ground water 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 ground water 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 ground water resource; or

d. ☒ **will, if properly conditioned**, avoid injury to existing ground water rights or to the ground water resource:
   i. ☒ The permit should contain condition #(s) **7B, 7C**;
   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 ground water production from no deeper than _____ ft. below land surface;

b. ☐ **Condition** to allow ground water production from no shallower than _____ ft. below land surface;

c. ☐ **Condition** to allow ground water production only from the _____ ground water 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 Ground Water 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. **Ground water availability remarks:** _____

The applicant's well is located in an area that contains coarse-grained alluvial sediments from land surface to a depth of approximately 40 feet. More than 300 feet of mostly fine-grained alluvial sediments underlies the coarse-grained sediments. Water levels in nearby wells completed in the shallow coarse-grained alluvium are stable.

C. GROUND WATER/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 coarse-grained sedimentary aquifer is not overlain by fine-grained confining units.

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**	**Willamette River**	**300**	**300**	**5500**	☒	☐	☐	☐	☒
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐

Basis for aquifer hydraulic connection evaluation: Groundwater levels in the shallow alluvial aquifer are essentially equivalent to the elevation of the local reach of the Willamette River.

Water Availability Basin the well(s) are located within: 30200321: WILLAMETTE R > COLUMBIA R – AB PERIWINKLE CR AT GAGE 14174

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?
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐

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: ______________________________

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
1	**1**	**19.3 %**	**16.2 %**	**13.9 %**	**12.1 %**	**2.5 %**	**11.2 %**	**19.5 %**	**26.2 %**	**31.5 %**	**33.5 %**	**28.4 %**	**23.2 %**
Well Q as CFS		**0**	**0**	**0**	**0**	**0.85**	**0.85**	**0.85**	**0.85**	**0.85**	**0**	**0**	**0**
Interference CFS		**0.164**	**0.138**	**0.118**	**0.103**	**0.021**	**0.095**	**0.166**	**0.222**	**0.268**	**0.284**	**0.241**	**0.198**
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													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
(A) = Total Interf.		**0.164**	**0.138**	**0.118**	**0.103**	**0.021**	**0.095**	**0.166**	**0.222**	**0.268**	**0.284**	**0.241**	**0.198**
(B) = 80 % Nat. Q		**10,100**	**11,600**	**11,000**	**9,760**	**8,430**	**5,360**	**3,270**	**2,560**	**2,540**	**2,860**	**4,170**	**8,150**
(C) = 1 % Nat. Q		**101**	**116**	**110**	**97.6**	**84.3**	**53.6**	**32.7**	**25.6**	**25.4**	**28.6**	**41.7**	**81.5**
(D) = (A) > (C)													
(E) = (A / B) x 100		**.001 %**	**.001 %**	**.001 %**	**.001 %**	**0 %**	**.001 %**	**.005 %**	**.009 %**	**.010 %**	**.010 %**	**.006 %**	**.002 %**

(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: The Hunt (1999) analytical model was used to calculate pumping impacts to the Willamette River during the first year of pumping. The model takes into account aquifer transmissivity, distance between the well and the river, streambed conductance, stream width, and pumping rate and duration. Calculated impacts during the first year of pumping were much less than 1% of the natural streamflow during any given month (see attached model output).

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 ground water 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:

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: U.S. Geological Survey Scientific Investigations Report 2005-5168.

Gannett, M. W. and Caldwell, R.R., 1998, Geologic framework of the Willamette lowland aquifer system, Oregon and Washington: U.S. Geological Survey Professional Paper 1424-A, 32p.

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

Woodward, D.G., Gannett, M.W., and Vaccaro, J.J., 1998, Hydrogeologic framework of the Willamette Lowland Aquifer system, Oregon and Washington: U.S. Geological Survey Professional Paper 1424-B, 82p.

D. WELL CONSTRUCTION, OAR 690-200

D1. **Well #:** _____ **Logid:** _____

D2. **THE WELL does not 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**:
- a. ☐ constitutes a health threat under Division 200 rules;
- b. ☐ commingles water from more than one ground water reservoir;
- c. ☐ permits the loss of artesian head;
- d. ☐ permits the de-watering of one or more ground water reservoirs;
- e. ☐ other: (specify) _____

D4. **THE WELL construction deficiency is described as follows:** _____

D5. **THE WELL**
- a. ☐ **was**, *or* ☐ **was not** constructed according to the standards in effect at the time of original construction or most recent modification.
- b. ☐ I don't know if it met standards at the time of construction.

D6. ☐ **Route to the Enforcement Section.** I recommend withholding issuance of the permit until evidence of well reconstruction is filed with the Department and approved by the Enforcement Section and the Ground Water Section.

THIS SECTION TO BE COMPLETED BY ENFORCEMENT PERSONNEL

D7. ☐ Well construction deficiency has been corrected by the following actions: _____

_____ _____, 200____.
(Enforcement Section Signature)

D8. ☐ **Route to Water Rights Section (attach well reconstruction logs to this page).**

Water Availability Tables

WILLAMETTE R > COLUMBIA R - AB PERIWINKLE CR AT GAGE 14174

WILLAMETTE BASIN

Water Availability as of 8/1/2012

Watershed ID #: 30200321

Exceedance Level: 80%

Date: 8/1/2012

Time: 7:28 AM

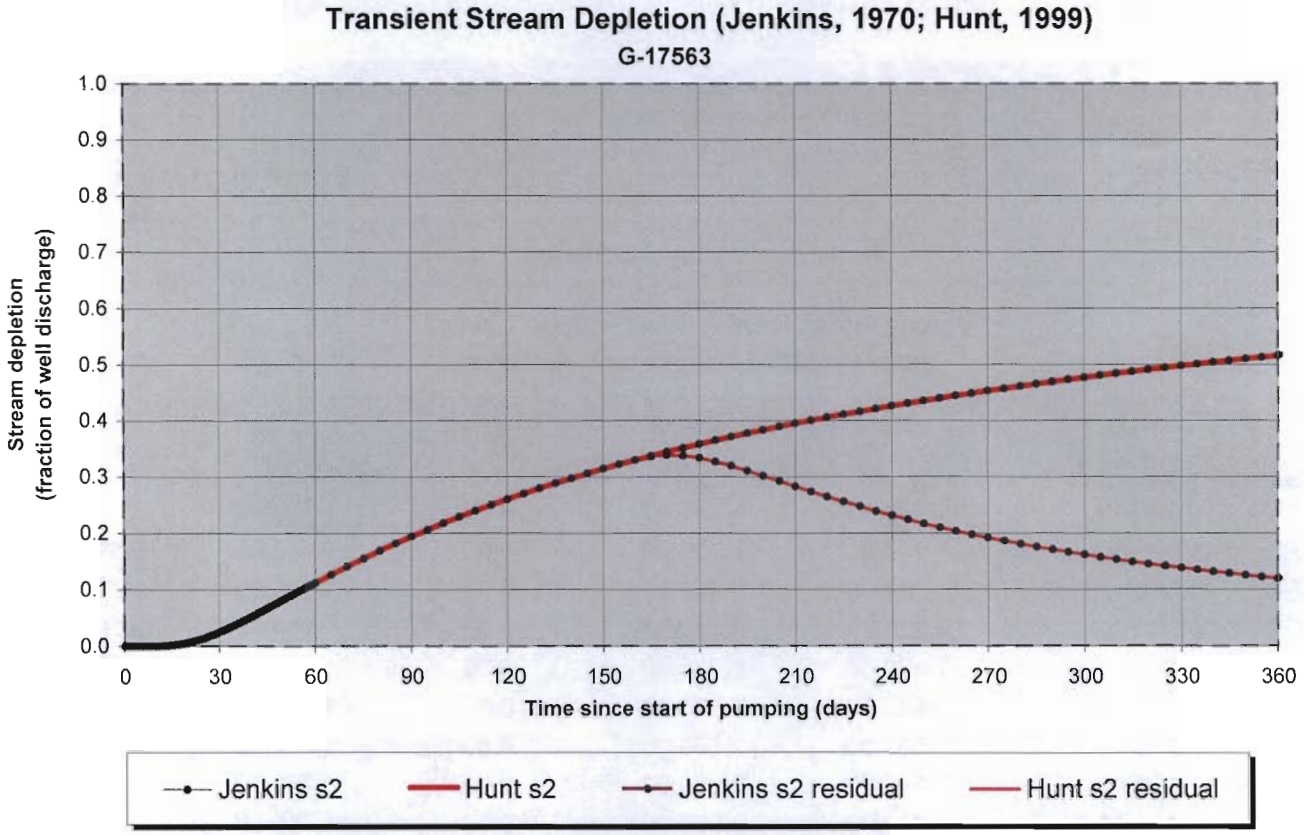
Water Availability Calculation

Monthly Streamflows in Cubic Feet per Second

Storage at 50% Exceedance in Acre-Feet

Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	10,100.00	1,330.00	8,770.00	0.00	1,750.00	7,020.00
FEB	11,600.00	4,240.00	7,360.00	0.00	1,750.00	5,610.00
MAR	11,000.00	4,520.00	6,480.00	0.00	1,750.00	4,730.00
APR	9,760.00	4,220.00	5,540.00	0.00	1,750.00	3,790.00
MAY	8,430.00	2,490.00	5,940.00	0.00	1,750.00	4,190.00
JUN	5,360.00	790.00	4,570.00	0.00	1,750.00	2,820.00
JUL	3,270.00	592.00	2,680.00	0.00	1,750.00	928.00
AUG	2,560.00	540.00	2,020.00	0.00	1,750.00	270.00
SEP	2,540.00	460.00	2,080.00	0.00	1,750.00	330.00
OCT	2,860.00	230.00	2,630.00	0.00	1,750.00	880.00
NOV	4,170.00	314.00	3,860.00	0.00	1,750.00	2,110.00
DEC	8,150.00	336.00	7,810.00	0.00	1,750.00	6,060.00
ANN	7,460,000.00	1,200,000.00	6,260,000.00	0.00	1,270,000.00	5,000,000.00

Hunt (1999) Stream Depletion Model



Output for Hunt Stream Depletion, Scenerio 2 (s2): Time pump on = 150 days

Days	30	60	90	120	150	180	210	240	270	300	330	360
Qw, cfs	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850
Jenk SD %	0.025	0.112	0.195	0.262	0.315	0.335	0.284	0.232	0.193	0.162	0.139	0.121
Jen SD cfs	0.021	0.095	0.166	0.222	0.268	0.284	0.241	0.198	0.164	0.138	0.118	0.103
Hunt SD %	0.025	0.112	0.195	0.262	0.315	0.335	0.284	0.232	0.193	0.162	0.139	0.121
Hunt SD cfs	0.021	0.095	0.166	0.222	0.268	0.284	0.241	0.198	0.164	0.138	0.118	0.103

Parameters:		Scenario 1	Scenario 2	Scenario 3	Units
Net steady pumping rate	Qw	0.85	0.85	0.85	cfs
Distance to stream	a	5500	5500	5500	ft
Aquifer hydraulic conductivity	K	200	500	200	ft/day
Aquifer thickness	b	40	40	40	ft
Aquifer transmissivity	T	8000	20000	8000	ft*ft/day
Aquifer storage coefficient	S	0.2	0.2	0.2	
Stream width	ws	350	350	350	ft
Streambed hydraulic conductivity	Ks	1	1	1	ft/day
Streambed thickness	bs	3	3	3	ft
Streambed conductance	sbc	116.6666667	116.6666667	116.6666667	ft/day
Stream depletion factor (Jenkins)	sdf	756.25	302.5	756.25	days
Streambed factor (Hunt)	sbf	80.20833333	32.08333333	80.20833333	

Well Location Map