

PUBLIC INTEREST REVIEW FOR GROUND WATER APPLICATIONS

TO: Water Rights Section Date November 13, 2008

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

SUBJECT: Application G- 16977 Supersedes review of July 24, 2008
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: Steve Dorn County: Clackamas

A1. Applicant(s) seek(s) 0.056* cfs from 1 well(s) in the Willamette Basin,
Clackamas subbasin Quad Map: Redland

A2. Proposed use: Nursery Seasonality: year-round

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	PROPOSED	1	Troutdale or Basalt**	0.056	3S/3E-16 SE-SW	680' N, 2050' W fr SE cor DLC 56

* 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	630				400'-800'	0-200' or 0-400'	0-200' or 0-400'					

Use data from application for proposed wells.

A4. **Comments:** * Original application requested 0.290 cfs. This application is requesting 0.056 cfs.

****The applicant indicates that the intention is to construct the wells in either the Troutdale Aquifer or a Basalt aquifer. In the area, basalts of both the Boring Lavas and the Columbia River Basalt Group are present. The proposed construction would likely encounter Boring lavas that occur in the area to depths of about 500 feet, rather than the Columbia River basalts, which are estimated to be much more than 800 feet below land surface. Typically, the Boring lavas are considered to be part of the Troutdale hydrogeologic unit (McFarland and Morgan, 1996; Swanson and others, 1993), so this review will assume that the proposed wells will be completed in the Troutdale aquifer, which includes basalts of the Boring lavas and fine-grained sediments of the Sandy River Mudstone (see section B3).**

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: Wells will be completed in a confined aquifer, 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, 7E, 7G_____;
 - 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 Troutdale (and/or) Boring Lava 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: SPECIAL CONDITION:**

Prior to using water on this permit, the permittee shall ensure that the well on this permit has an OWRD Well Identification Number (Well ID or Well tag number). If a well does not have a Well ID, the permittee shall apply for one from the Department. The Well ID shall be attached to the well and shall be used as a reference identification number for any correspondence regarding the well including any water use, water level, or pump test reports.

The area in the vicinity of the proposed wells is underlain by basalt flows of the Boring Lavas and sediments of the Troutdale Formation and the Sandy River Mudstone (Trimble, 1963). In the area of the applicant's proposed wells, basalt flows of the Boring Lavas occur at land surface (Trimble, 1963). The basalt flows are generally up to 200 feet thick in the area, except in areas near the eruption vents, where the basalts extend to much greater depths. A few wells in the area report Boring Lavas to depths of about 550 feet (see logs for CLAC 61545 and CLAC 61546). Beneath the Boring lava lies several hundred feet of older alluvium, which is generally fine-grained mudstone containing beds of sand and gravel. The Columbia River Basalts underlie the older sediments in the area, although the exact depth is uncertain. There are no known wells in the area that have encountered Columbia River Basalts, but the top of the basalts are estimated to be around 900-1000 feet below land surface in the area (Gannett and Caldwell, 1998).

Yields reported on well logs for wells completed similarly to the applicant's proposed well generally range up to 30 gpm, with one nearby well log reporting 100 gpm with a drawdown of 376 feet (see log CLAC 16746).

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	Troutdale	☒	☐
			☐
			☐
			☐
		☐	☐

Basis for aquifer confinement evaluation: Ground water in the area is confined beneath thick beds of saturated clay that overlie and are interbedded with coarser-grained productive zones.

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	Unn. Tributary to Abernathy Creek	325-375	380-550	2100	☒	☐	☐	☐	☒
1	2	Bargfeld Creek	325-375	380-590	2500	☒	☐	☐	☐	☒

Basis for aquifer hydraulic connection evaluation: Ground water elevations are based on heads from three nearby wells (CLAC 16746, CLAC 61546, and CLAC 20387) that are completed similarly to the applicant's proposed wells. Because these nearby wells are close to the applicant's proposed well and are completed similarly to the proposed construction, the heads are likely a reasonable estimate for heads in the applicant's wells. While a few other wells located to the west have deeper heads, the wells evaluated were chosen because they are closer in proximity to both the applicant's proposed wells and the streams evaluated for PSI. There are many other wells in the area that produce water from shallow zones in the alluvium and Boring lava, indicating that the water table is shallower than the heads in wells with deeper completion in the area. The lower-permeability beds are likely saturated and cause heads to deepen with deeper well completion. The nearby surface water sources are shown as perennial streams on the USGS 7.5-minute topographic map and have their headwaters in the alluvial aquifer. Ground water heads in wells with both shallow and deeper completion are near or above the elevation of perennial surface water sources in the area. This indicates that ground water discharges from the alluvium to the streams.

Water Availability Basin the well(s) are located within: 181 WILLAMETTE R > COLUMBIA R – AT MOUTH, 82 CLEAR CR > CLACKAMAS R - AT MOUTH

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	☐	☐	N/A	N/A	☐	4890	☐	<<25%	☐
1	2	☐	☐	N/A	N/A	☐	5.65	☐	<<25%	☐

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
		%	%	%	%	%	%	%	%	%	%	%	%
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													
		%	%	%	%	%	%	%	%	%	%	%	%
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: Assuming the proposed well will be constructed with the seal depth indicated in the condition described in section B2(b), the well will produce water from sediments that lie beneath the elevation of surface water sources within one mile. Due to the intervening low-permeability beds that likely lie between the streambed and the productive zones in the well, impacts are expected to be well below 25% after 30 days of pumping.

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: _____

Trimble, Donald E., 1963, Geology of Portland, Oregon and Adjacent Areas, Geological Survey Bulletin 1119, 119 p., 1 pl.

McFarland, William D., and Morgan, David S., 1996, Description of the Groundwater Flow System in the Portland Basin, Oregon and Washington: U.S. Geological Survey Water-Supply Paper 2470-A, 58p, 7 plates.

Swanson, R.D., McFarland, W.D., Gonthier, J.B., and Wilkinson, J.M, 1993, A Description of Hydrogeologic Units in the Portland Basin, Oregon and Washington: U.S. Geological Survey Water-Resources Investigations Report 90-4196, 56 p., 10 sheets, scale 1:100,000.

Gannett, Marshall W., and Caldwell, Rodney R., 1998, Geologic Framework of the Willamette Lowland Aquifer System, Oregon and Washington: U. S. Geological Survey Professional Paper 1424-A, 32p, 8 plates.

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**DETAILED REPORT ON THE WATER AVAILABILITY CALCULATION**

Water Availability as of 7/21/2006 for
WILLAMETTE R > COLUMBIA R - AT MOUTH

Watershed ID #: 181 Basin: WILLAMETTE Exceedance Level: 80
Time: 11:10 Date: 07/21/2006

Month	Natural Stream Flow	Consumptiv Use and Storage	Expected Stream Flow	Reserved Stream Flow	Instream Require- ments	Net Water Available
1	27500.00	2490.00	25000.00	0.00	1500.00	23500.00
2	30000.00	7780.00	22200.00	0.00	1500.00	20700.00
3	28500.00	7400.00	21100.00	0.00	1500.00	19600.00
4	25400.00	7090.00	18300.00	0.00	1500.00	16800.00
5	20700.00	4390.00	16300.00	0.00	1500.00	14800.00
6	11000.00	2590.00	8410.00	0.00	1500.00	6910.00
7	6280.00	2540.00	3750.00	0.00	1500.00	2250.00
8	4890.00	2310.00	2590.00	0.00	1500.00	1090.00
9	4930.00	1930.00	3000.00	0.00	1500.00	1500.00
10	5990.00	734.00	5260.00	0.00	1500.00	3760.00
11	12700.00	954.00	11700.00	0.00	1500.00	10200.00
12	24800.00	1170.00	23600.00	0.00	1500.00	22100.00
Stor-50%	19700000	2478000	17300000	0	1090000	16200000

DETAILED REPORT OF INSTREAM REQUIREMENTS

Water Availability as of 7/21/2006 for
WILLAMETTE R > COLUMBIA R - AT MOUTH

Watershed ID #: 181 Basin: WILLAMETTE Exceedance Level: 80
Time: 11:10 Date: 07/21/2006

-----ISWRs-----									
APP #	MF	181	0	0	0	0	0	0	MAXIMUM
Status	Cert.								
1	1500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1500.00
2	1500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1500.00
3	1500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1500.00
4	1500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1500.00
5	1500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1500.00
6	1500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1500.00
7	1500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1500.00
8	1500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1500.00
9	1500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1500.00
10	1500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1500.00
11	1500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1500.00
12	1500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1500.00

DETAILED REPORT ON THE WATER AVAILABILITY CALCULATION

Water Availability as of 7/21/2006 for

CLEAR CR > CLACKAMAS R - AT MOUTH

Watershed ID #:

82

Basin: WILLAMETTE

Exceedance Level: 80

Time: 11:11

Date: 07/21/2006

Month	Natural Stream Flow	Consumptiv Use and Storage	Expected Stream Flow	Reserved Stream Flow	Instream Require- ments	Net Water Available
1	126.00	1.14	125.00	0.00	0.00	125.00
2	128.00	1.05	127.00	0.00	0.00	127.00
3	128.00	0.65	127.00	0.00	0.00	127.00
4	131.00	0.79	130.00	0.00	0.00	130.00
5	111.00	2.39	109.00	0.00	0.00	109.00
6	48.10	3.38	44.70	0.00	40.00	4.72
7	19.00	5.90	13.10	0.00	40.00	-26.90
8	8.02	4.80	3.22	0.00	20.00	-16.80
9	5.65	2.00	3.65	0.00	20.00	-16.40
10	6.23	0.74	5.49	0.00	0.00	5.49
11	21.50	0.73	20.80	0.00	0.00	20.80
12	103.00	1.21	102.00	0.00	0.00	102.00
Stor-50%	99100	1509	97500	0	7260	93400

DETAILED REPORT OF INSTREAM REQUIREMENTS

Water Availability as of 7/21/2006 for

CLEAR CR > CLACKAMAS R - AT MOUTH

Watershed ID #:

82

Basin: WILLAMETTE

Exceedance Level: 80

Time: 11:11

Date: 07/21/2006

--ISWRs--								
APP #	MF	82	0	0	0	0	0	MAXIMUM
Status	Cert.							
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	40.00	0.00	0.00	0.00	0.00	0.00	0.00	40.00
7	40.00	0.00	0.00	0.00	0.00	0.00	0.00	40.00
8	20.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00
9	20.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Well Location Map

Application G-16977, Dorn

