PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date **08/04/2015**

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

SUBJECT: Application G- **18008** 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: **Delma Sprauer** County: **Marion**

A1. Applicant(s) seek(s) **0.0977** cfs from **3** well(s) in the **Willamette** Basin, **Pudding River** subbasin

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	MARI 1978	1	Alluvium	0.44[a]	05S/01W-25 SW SW	180 ft N, 1310 ft E of SW cor S25
2	MARI 1979	2	Alluvium	0.49[a]	05S/01W-25 SW SW	400 ft N, 1295 ft E of SW cor S25
3	Proposed	3	Alluvium	0.45[a]	05S/01W-25 SW SW	0 ft N, 1310 ft E of SW cor S25

* 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	195	21	26	5/26/1978	245	0-25	+1-210		60-205	200		A
2	195		38	5/6/1957	85	0-20	0-85		50-51 69-80	175- 200		P
3	195				250[b]				200-250[b]			

Use data from application for proposed wells.

A4. **Comments:** [a]The "*well specific rate*" listed on the application for each well is greater than the "*total maximum rate requested*" of 0.0977 cfs. **The total maximum rate requested (0.0977 cfs) is what will be used in determining PSI in Section C and is what should be used as the rate if the permit is issued.**

[b]Well #3 is proposed and values given above are taken off of application.

***The applicant's requested annual duty is 203 acre-feet. At the maximum requested rate of 0.0977 cfs, pumped constantly for 1 year, the total water pumped would be only 70.78 acre-feet. If the permit is issued, the permitted annual duty should be limited to 70.78 acre-feet/year**

A5. ☐ **Provisions of the Willamette** 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: The proposed aquifer is confined and proposed wells are > ¼ mi from the nearest surface water source so pertinent basin rules OAR 690-502-0240 do not apply

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) **7c (7-year); Larger Water Use Reporting (totalizing flowmeter on each of the three wells)**;
   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 alluvium in the vicinity of the proposed POAs is composed of clays and silts with some interbedded sands and gravels. The most productive sands/gravels are at depths of approximately 40 ft and greater and their cumulative thickness may be less than 40 ft. This stratigraphy creates confined aquifer conditions (due to the thick silt/clay overlying the productive materials) and relatively low yields (generally < 200 gpm) for irrigation wells due to the thin and limited nature of the productive sand/gravel lenses. The density of irrigation and domestic wells that penetrate the same alluvial aquifer is low in the area and there are no data from nearby observations available to conclusively assess the stability of the aquifer (most observation wells nearby are deeper and produce from bedrock underlying the alluvium) but it is likely that the proposed use will not cause excessive interference or water level declines.

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**	☒	☐
2	**Alluvium**	☒	☐
3	**Alluvium**	☒	☐

Basis for aquifer confinement evaluation: The aquifer is overlain by 20-30 ft of saturated fine-grained materials referred to as the Willamette Silt by Woodward et al., (1998) which is considered a regional confining unit.

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**	**Butte Creek**	**180**	**130-170**	**2480**	☒	☐	☐	☐	☒
2	**1**	**Butte Creek**	**180**	**130-170**	**2400**	☒	☐	☐	☐	☒
3	**1**	**Butte Creek**	**180**	**130-170**	**2570**	☒	☐	☐	☐	☒

Basis for aquifer hydraulic connection evaluation: Butte Creek is locally the lowest-elevation perennial surface water and water table maps published by Gannett and Caldwell (1998) indicate that groundwater flows toward, and discharges to, Butte Creek.

Water Availability Basin the well(s) are located within: BUTTE CR > Pudding R – At Mouth (#69799). The proposed POAs are located in the Pudding River WAB but the closest hydraulically connected surface water has been determined to be Butte Cr (and thus will receive the majority of impacts caused by pumping). Therefore the proposed POAs were evaluated against the Butte Cr. WAB.

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**	☐	☐	**IS 69799**	**75**	☐	**9.78**	☒	**<< 25%**	☒ see comments
2	**1**	☐	☐	**IS 69799**	**75**	☐	**9.78**	☒	**<< 25%**	☒ see comments
3	**1**	☐	☐	**IS 69799**	**75**	☐	**9.78**	☐	**<< 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?
Although Q is distributed on the application the total rate requested is less than any single-well rate and was used to evaluate PSI on each well. The distributed rates listed above for any single well would immediately trigger PSI.										

Comments: The applicant's proposed rate exercised from any of the three proposed POAs would not trigger PSI based on the criteria laid out in table C3a. **However, Well #1 (MARI 1978) and Well #2 (MARI 1979) are listed as POAs for Permit G13340 and Cert. 29557, respectively.** The permitted rates for these two wells on those two rights are 0.056 cfs for MARI 1978 and 0.18 cfs for MARI 1978. These uses were established before the implementation of ORS 690-009-0040 and so PSI was not previously established for either well. ORS 690-009-0040(1)(4) states that "*All wells that produce water from an aquifer that is determined to be hydraulically connected to a surface water source shall be assumed to have the potential to cause substantial interference with the surface water source if the* ***existing or proposed groundwater appropriation*** *is within one of the following categories: … (c) The rate of appropriation is greater than one percent of the pertinent adopted minimum perennial streamflow…*". **The full rate of appropriation from the applicant's Well #1 would be that of Permit G13340 (0.056 cfs) plus the proposed rate from this application (0.0977 cfs – totaling 0.154 cfs) and would exceed 1% of the minimum perennial streamflow. Similarly, the rate of appropriation for applicant's Well #2 (MARI 1979) would be that of Certificate 29557 (0.18 cfs) plus the proposed rate from this application (0.0977 cfs – totaling 0.278 cfs) and would also exceed 1% of the minimum perennial streamflow. Thus the total appropriation (current and proposed use) from either Well #1 or Well #2 would trigger PSI.** The applicant's Well #3 (proposed) is not tied to a water right so the full rate of 0.0977 cfs exercised from that well would not exceed 1% of the minimum perennial streamflow and thus would not trigger PSI.

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.

THE TABLE ASSOCIATED THIS SECTION HAS BEEN OMITTED SINCE NO WELLS ARE > 1 MI FROM SURFACE WATER

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:** See Comments under C3b.
The proposed rate extracted from the applicant's Well #1 or Well #2 would trigger PSI because of existing permitted rates for those wells. The applicant's Well #3 is not on any previous rights so the full rate extracted from that well would NOT trigger PSI.

References Used:

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

Iverson, J., 2002, Investigation of the hydraulic, physical, and chemical buffering capacity of Missoula flood deposits for water quality and supply in the Willamette Valley of Oregon: Unpublished M.S. thesis, Oregon State University, 147 p.

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, 82 p.

OWRD Well Log Database. Accessed 07/02/2015

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

BUTTE CR > PUDDING R - AT MOUTH
WILLAMETTE BASIN

Water Availability as of 7/2/2015

Watershed ID #: 69799 (Map) Exceedance Level: 80%

Date: 7/2/2015 Time: 3:37 PM

Water Availability Calculation | Consumptive Uses and Storages | Instream Flow Requirements | Reservations | Water Rights | Watershed Characteristics

Water Availability Calculation

Monthly Streamflow in Cubic Feet per Second
Annual Volume 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	169.00	3.93	165.00	0.00	75.00	90.10
FEB	181.00	3.76	177.00	0.00	75.00	102.00
MAR	172.00	2.82	169.00	0.00	75.00	94.20
APR	142.00	2.34	140.00	0.00	75.00	64.70
MAY	89.20	5.61	83.60	0.00	75.00	8.59
JUN	39.00	10.30	28.70	0.00	75.00	-46.30
JUL	15.10	17.00	-1.87	0.00	25.00	-26.90
AUG	9.90	13.60	-3.70	0.00	12.00	-15.70
SEP	9.78	6.97	2.81	0.00	20.00	-17.20
OCT	15.10	1.00	14.10	0.00	75.00	-60.90
NOV	66.00	1.90	64.10	0.00	75.00	-10.90
DEC	170.00	4.09	166.00	0.00	75.00	90.90
ANN	121,000.00	4,440.00	117,000.00	0.00	44,100.00	78,900.00

Well Location Map