

Groundwater Review Summary Form

Application # G- 10378

GW Reviewer M. Thoma Date Review Completed: 12/09/16

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).

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date December 9, 2016
 FROM: Groundwater Section Michael J Thoma
Reviewer's Name
 SUBJECT: Application G- 18378 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: Jeanette Garrison County: Josephine

A1. Applicant(s) seek(s) 0.05 cfs from 1 well(s) in the Rogue Basin,
Applegate R subbasin

A2. Proposed use Irrigation (22.3 ac) Seasonality: April 1 – Oct 31 (215 d)

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	JOSE 10480	1	Bedrock	0.05	38S/05W-15 SWSE	369'N, 1491'W of SE cor S 15*
2						

* 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	1420	80	28	4/27/81	125	0-22	0-80			22		A

Use data from application for proposed wells.

A4. **Comments:** *The original map accompanying the application switched the "north" and "west" directions. A corrected map was provided by District 14 Watermaster on 12/09/2016. Table A3 lists the corrected metes and bounds.

A5. **Provisions of the** Rogue (OAR 690-515) 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) 7J (Scenic); Medium water-use reporting;
 - 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:** There is an OWRD observation well (JOSE 19264) slightly over 1 mile to the northeast of the proposed POA that shows stable long-term groundwater levels. While this well is in the same watershed and geologic formation as the proposed POA it may not represent groundwater conditions for the entire fractured-rock aquifer of the area and so groundwater over-appropriation cannot be conclusively determined. There are two groundwater POAs (Cert. 66091 and Cert. 65571) within ¼ mile of the proposed POA. Both rights are for approx. 4 acres of irrigation. Interference is difficult to predict in fractured-rock aquifers, even over short distances, so the reviewer cannot determined if the proposed use will or will not likely result in injury to existing water rights.

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	Fractured bedrock of Grayback Pluton	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer confinement evaluation: The applicant's well log, along with most other well logs in the area, report SWL above 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	Powell Cr	~1390	1280-1360	~3890*	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	2	Horsehead Cr	~1390	1280-1320	~3615*	<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"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer hydraulic connection evaluation: GW elevations are estimated to be above SW elevations suggesting groundwater is flowing towards and discharging to surface water

*Distances measured are to the farthest upstream point where hydraulic connection is likely to occur. For Powel Cr this was slightly downstream and downslope of the shortest distance to the creek (which is perpendicular to the hillslope). For Horsehead Cr this was the confluence between Horsehead Cr and its northern tributary.

Water Availability Basin the well(s) are located within: Williams Cr > Applegate R – At Mouth (ID# 70981)

And hydraulically connected to: Powell Cr > Williams C – At Mouth (ID# 71026)

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"/>	IS71026	2.28	<input checked="" type="checkbox"/>	1.96	<input checked="" type="checkbox"/>	**	<input checked="" type="checkbox"/>
1	2	<input type="checkbox"/>	<input type="checkbox"/>	NA	NA	<input type="checkbox"/>	1.89	<input checked="" type="checkbox"/>	**	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>

Comments: **Interference @ 30 d could not be estimated because the terrain (high-relief slopes) and geology (fractured bedrock aquifer) do not meet model assumptions of the widely accepted techniques for determining stream depletion (e.g., Hunt 1999, 2003).

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"/>

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	No surface water sources beyond 1 mile were evaluated												
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 applicant's proposed POA would be producing from an aquifer that has been found to be hydraulically connected to surface waters (1) Powel Cr and (2) Horsehead Cr > Williams Cr at distances of < 1 mile. The proposed rate is > 1% of either the minimum monthly stream flow, the pertinent instream water right, or both so OAR 690-009 requires that the proposed use be assumed to have the Potential for Substantial Interference (PSI) with surface water. **If the requested rate were reduced below 0.02 cfs (9 gpm) then PSI would not be required to be assumed for this review.**

References Used:

Hunt, B. 1999. *Unsteady Stream Depletion from Ground Water Pumping*. Journal of Hydrologic Engineering, Vol 8(1), pp 12-19

Hunt, B. 2003. *Unsteady Stream Depletion when Pumping from a Semiconfined Aquifer*. Journal of Hydrologic Engineering, Vol 8(1), pp 12-19

OWRD Well Log Database – Accessed 12/9/2016.

Wiley, T. J. 2006. *Preliminary Geologic Map of the Sexton Mountain, Murphy, Applegate, and Mount Isabelle 7.5' Quadrangles, Jackson and Josephine Counties, Oregon*. Oregon Dept. of Geology and Mineral Industries. OFR O-06-11

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

Water Availability Analysis Detailed Reports							
POWELL CR > WILLIAMS CR - AT MOUTH ROGUE BASIN							
Water Availability as of 12/8/2016							
Watershed ID #: 71026 (Map)				Exceedance Level: 80% ▾			
Date: 12/8/2016				Time: 2:14 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	9.12	0.18	8.94	0.00	24.60	-15.70	
FEB	15.80	0.21	15.60	0.00	27.70	-12.10	
MAR	13.70	0.17	13.50	0.00	22.90	-9.37	
APR	9.96	0.42	9.54	0.00	17.20	-7.66	
MAY	6.36	0.65	5.71	0.00	8.53	-2.82	
JUN	3.98	0.90	3.08	0.00	5.86	-2.78	
JUL	3.42	1.19	2.23	0.00	4.62	-2.39	
AUG	2.73	0.99	1.74	0.00	3.66	-1.92	
SEP	2.25	0.65	1.60	0.00	2.62	-1.02	
OCT	1.96	0.22	1.74	0.00	2.28	-0.54	
NOV	1.98	0.04	1.94	0.00	3.65	-1.71	
DEC	3.52	0.13	3.40	0.00	15.20	-11.80	
ANN	8,330.00	348.00	7,980.00	0.00	8,330.00	0.00	

Water Availability Analysis Detailed Reports

WILLIAMS CR > APPLGATE R - AT MOUTH
ROGUE BASIN

Water Availability as of 12/8/2016

Watershed ID #: 70981 ([Map](#))

Exceedance Level:

Date: 12/8/2016

Time: 1:30 PM

Water Availability Calculation

Consumptive Uses and Storages

Instream Flow Requirements

Reservations

Water Rights

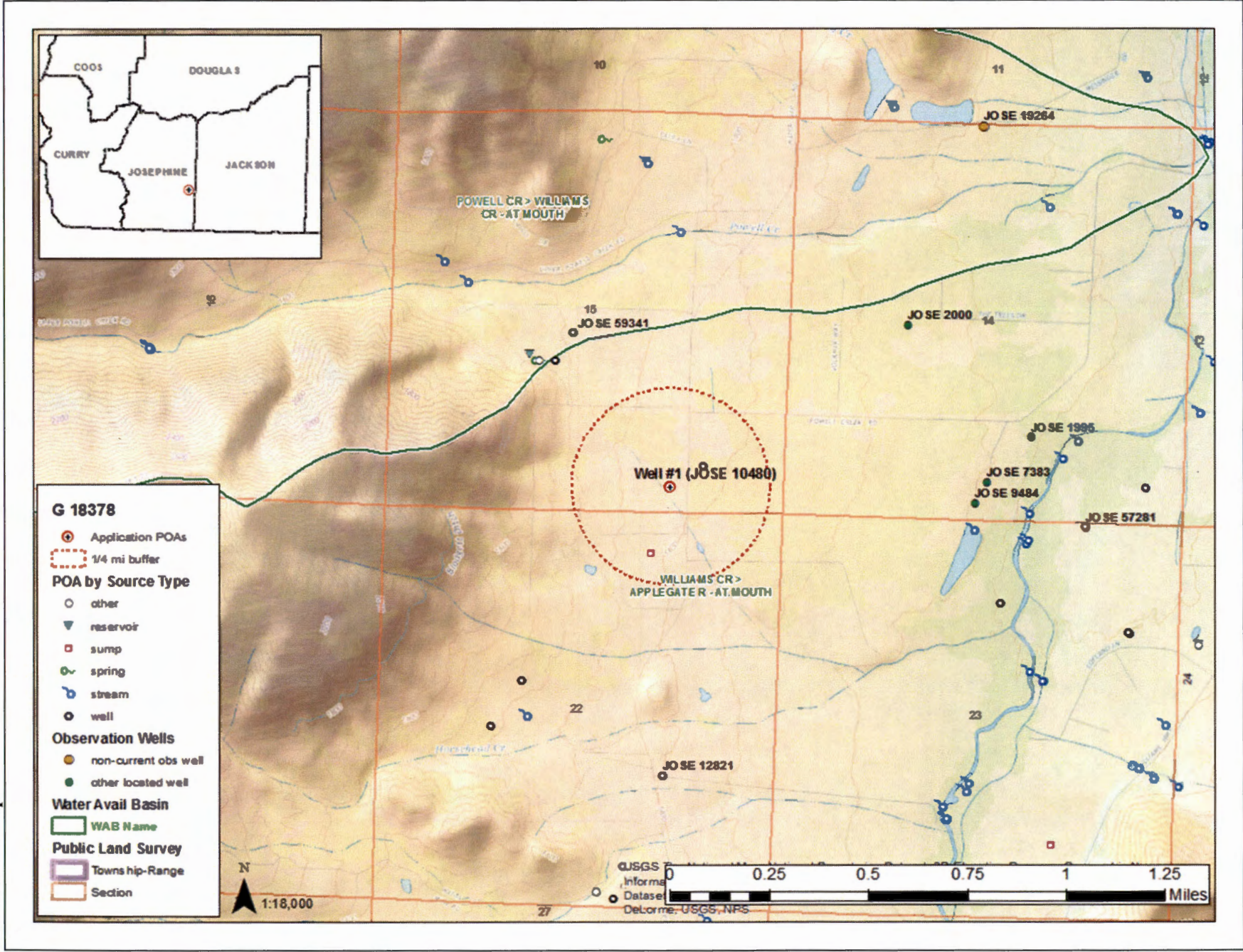
Watershed Characteristics

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	67.30	1.16	66.10	0.00	110.00	-43.90
FEB	110.00	1.56	108.00	0.00	110.00	-1.56
MAR	107.00	1.16	106.00	0.00	110.00	-4.16
APR	62.70	3.75	59.00	0.00	110.00	-51.00
MAY	29.50	5.82	23.70	0.00	85.00	-41.30
JUN	10.30	8.11	2.19	0.00	40.00	-37.80
JUL	4.24	10.80	-6.56	0.00	15.00	-21.60
AUG	2.68	8.94	-6.26	0.00	5.00	-11.30
SEP	1.89	5.92	-4.03	0.00	50.00	-54.00
OCT	2.28	2.06	0.22	0.00	80.00	-79.80
NOV	6.60	0.38	6.22	0.00	80.00	-73.80
DEC	32.30	0.82	31.50	0.00	110.00	-78.50
ANN	54,800.00	3,060.00	52,600.00	0.00	53,300.00	15,200.00

Well Location Map



Water-Level Trends in Nearby Wells

