

Groundwater Application Review Summary Form

Application # G- 18785

GW Reviewer J. Hockett Date Review Completed: 4/19/2019

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.

4/19/19

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).

MEMO

April 19, 2019

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

☐ YES

☒ YES ☐ NO

☐ YES

☒ YES ☐ NO

☐ Per ORS 390.835, the Groundwater 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.**

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
				.							

MEMO

OK
[Signature]

To: Kristopher Byrd, Well Construction and Compliance Section Manager
From: Joel Jeffery, Well Construction Program Coordinator
Subject: Review of Water Right Application G-18785
Date: April 22, 2019

The attached application was forwarded to the Well Construction and Compliance Section by Water Rights. Josh Hackett reviewed the application. Please see Josh's Groundwater Review and the Well Log.

Applicant's Well #1 (LINN 55793): Based on a review of the Well Report, Applicant's Well #1 seems to protect the groundwater resource.

The construction of Well #1 may not satisfy hydraulic connection issues.

Instructions for completing this report are on the last page of this form.

(START CARD) # 161506

(1) OWNER: Well Number 3881

(1) OWNER: Well Number 3881

Name **Matthew Powell**
Address **41210 Upper Calapoola Dr.**
City **Sweet Home** State **Oregon** Zip **97386**

(2) TYPE OF WORK
☒ New Well ☐ Deepening ☐ Alteration (repair/recondition) ☐ Abandonment

(3) **DRILL METHOD:**

☒ Rotary Air ☐ Rotary Mud ☐ Cable ☐ Auger

☐ Other

(4) PROPOSED USE:

☒ Domestic	☐ Community	☐ Industrial	☐ Irrigation
☐ Thermal	☐ Injection	☐ Livestock	☐ Other _____

(5) BORE HOLE CONSTRUCTION:
Special Construction approval ☐ Yes ☒ No Depth of Completed Well 93 ft.
Explosives used ☐ Yes ☒ No Type _____ Amount _____

HOLE			SEAL			
Diameter	From	To	Material	From	To	Sacks or pounds
10	0	19	Bentonite	0	19	9 sacks
6	19	93				

How was seal placed: Method ☐ A ☐ B ☐ C ☐ D ☐ E
☒ Other **Poured dry**
 Backfill placed from _____ ft. to _____ ft. Material _____
 Gravel placed from _____ ft. to _____ ft. Size of gravel _____

(6) CASING/LINER:								
	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	5"	+1	19	250	☒	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
Liner:	4-1/2"	0	93	160	☐	☒	☐	☐
					☐	☐	☐	☐

Final location of shoe(s)

(7) PERFORATIONS/SCREENS:

☒ Perforations ☐ Screens		Method <u>Drilled</u> Type _____		Material _____ Tele/pipe size _____		Casing ☐	Liner ☒
From 33	To 93	Slot size	Number 1000	Diameter 1/4"		☐	☐
						☐	☐
						☐	☐
						☐	☐
						☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour

☐ Pump Yield gal/min	☐ Bailer Drawdown	☒ Air Drill stem at	☐ Flowing Artesian Time
60		93	1 hr.

Temperature of water 52 Depth Artesian Flow Found

Was a water analysis done? ☐ Yes By whom

Did any strata contain water not suitable for intended use? ☐ Too little

☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other

Depth of strata: _____

(9) LOCATION OF WELL by legal description:

County Linn Latitude _____ Longitude _____
Township 14 S Range 1 W WM.
Section 25 NW 1/4 NE 1/4
Tax Lot 500 Lot _____ Block _____ Subdivision _____
Street Address of Well (or nearest address) 41210 Upper Catapoola Dr.
Sweet Home, OR 97386

(10) **STATIC WATER LEVEL:**

<u>13</u> ft. below land surface.	Date <u>10/23/2003</u>
Artesian pressure _____ lb. per square inch.	Date _____

(11) WATER BEARING ZONES:

Depth at which water was first found 60'

From	To	Estimated Flow Rate	SWI
60	80	60 gpm	13

(12) WELL LOG:

Ground Elevation

Material	From	To	SWL
Gravel fill	0	1	
Brown clay	1	10	
Broken brown sandstone	10	12	
Blue gray sandstone	12	93	
RECEIVED			
OCT 3 1 2003			
WATER RESOURCES DEPT.			
SALEM, OREGON			
JONES DRILLING CO., INC.			
29400 SANTIAM HWY.			
LEBANON, OR 97355			
541-367-2560 541-451-2686			
1-800-915-8388			

Date started **10/22/2003** Completed **10/22/2003**

(unbonded) Water Well Constructor Certification:

I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

Signed K. D. M. WWC Number 1411 Date 10/24/2003

(bonded) Water Well Constructor Certification:

I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.

Signed [Signature] WWC Number 1684
Date 10/24/2003

ORIGINAL & FIRST COPY-WATER RESOURCES DEPARTMENT SECOND COPY-CONSTRUCTOR THIRD COPY-CUSTOMER

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date April 19, 2019
 FROM: Groundwater Section J. Hackett
 SUBJECT: Application G- 18785 Supersedes review of _____
 Reviewer's Name
 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: Matthew Powell County: Linn

A1. Applicant(s) seek(s) 0.6 cfs from 1 well(s) in the Willamette Basin,
 _____ 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	LINN 55793	1	Bedrock	0.6	14S/1W-25 NE-NE	1010' S, 1195' W fr NE cor S 25
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	634	60	13	10/23/2003	93	0-19	0-19	0-93	33-93	60		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 groundwater 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 does not produce from an unconfined 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. 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) 7N; large 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 are no Observation Well data in the area of the applicant's well so groundwater over-appropriation cannot be determined. There are also no permitted groundwater rights in the area so injury to existing groundwater rights is unlikely.

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	Mehama Formation volcanics/volcaniclastics	☒	☐
		☐	☐
		☐	☐
		☐	☐
		☐	☐

Basis for aquifer confinement evaluation: The proposed aquifer typically exhibits confined aquifer conditions where well log and SWL data are available.

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	Calapooia River	620	655-577	250	☒	☐	☐	☐	☒
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐

Basis for aquifer hydraulic connection evaluation: GW elevations are coincident with or above SW elevations suggesting groundwater is flowing towards and discharging to surface water.

Water Availability Basin the well(s) are located within: 77: CALAPOOIA R > WILLAMETTE R – AB JOHNSON CR AT GAGE 14172000

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	☒	☐	MF77A	30.00	☒	26.60	☒	12%	☒
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐

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: Interference @ 30 days was estimated using the Hunt (2003) stream-depletion model and aquifer property values in the range of what would be expected for materials in this area. Total stream depletion was estimated at 12% of the pumping rate after 30 days of pumping.

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: _____

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:
- ☐ The permit should contain condition #(s) _____;
 - ☐ The permit should contain special condition(s) as indicated in "Remarks" below;

C6. **SW / GW Remarks and Conditions:** The applicant's well produces from an aquifer that has been found to be hydraulically connected to surface water at a distance of < 1 mile. The requested pumping rate exceeds 1% of both the natural flow and the instream water right in the WAB, triggering a finding of PSI.

References Used: _____

Herrera, N. B., Burns, E. R., and T. D. Conlon. 2014. *Simulation of Groundwater Flow and the Interaction of Groundwater and Surface Water in the Willamette Basin and Central Willamette Subbasin*, Oregon. USGS Scientific Investigations Report 2014-5136.

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

McClaghry, J. D., T. J. Wiley, M. L. Ferns, and I. P. Madin. 2010. *Digital Geologic Map of the Southern Willamette Valley, Benton, Lane, Linn, Marion, and Polk Counties, Oregon*. Oregon Dept. of Geology and Mineral Industries. Open File Report O-10-13.

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

CALAPOOIA R > WILLAMETTE R - AB JOHNSON CR AT GAGE 14172000 WILLAMETTE BASIN

Water Availability as of 4/19/2019

Watershed ID #: 77 ([Map](#))

Exceedance Level: 80% ▼

Date: 4/19/2019

Time: 8:57 AM

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	308.00	0.18	308.00	0.00	30.00	278.00
FEB	346.00	0.18	346.00	0.00	30.00	316.00
MAR	339.00	0.18	339.00	0.00	30.00	309.00
APR	287.00	0.17	287.00	0.00	30.00	257.00
MAY	179.00	0.38	179.00	0.00	30.00	149.00
JUN	89.60	0.61	89.00	0.00	30.00	59.00
JUL	44.40	0.97	43.40	0.00	30.00	13.40
AUG	28.60	0.80	27.80	0.00	30.00	-2.20
SEP	26.60	0.45	26.10	0.00	30.00	-3.85
OCT	30.50	0.12	30.40	0.00	30.00	0.38
NOV	123.00	0.16	123.00	0.00	30.00	92.80
DEC	299.00	0.19	299.00	0.00	30.00	269.00
ANN	228,000.00	267.00	228,000.00	0.00	21,700.00	206,000.00

Detailed Report of Instream Flow Requirements

Instream Flow Requirements in Cubic Feet per Second

Application #	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MF77A	CERTIFICATE	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
Maximum		30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00

Well Location Map

G-18785, Powell

1:24,000 scale



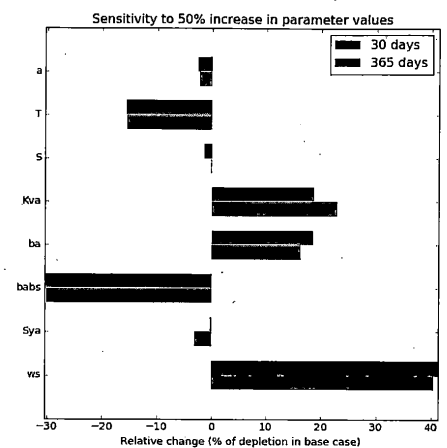
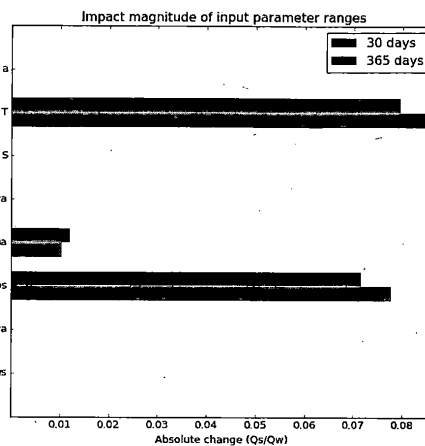
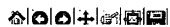
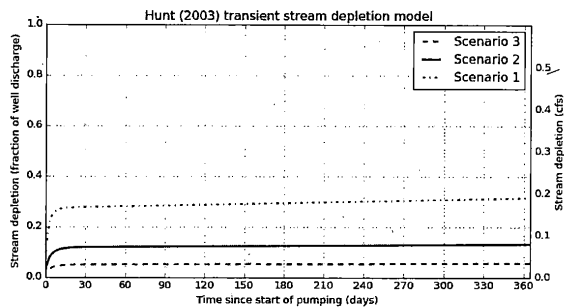
Stream-depletion Model Results

Application type: G
 Application number: 18785
 Well number: 1
 Stream Number: 1
 Pumping rate (cfs): 0.5
 Pumping duration (days): 365
 Pumping start month number (3=March): 1

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	250	250	250	ft
Aquifer transmissivity	T	500	3000	5000	ft ² /day
Aquifer storativity	S	.001	.001	.001	-
Aquitard vertical hydraulic conductivity	Kva	.01	.01	.01	ft/day
Aquitard saturated thickness	ba	50	75	75	ft
Aquitard thickness below stream	babs	3	5	10	ft
Aquitard specific yield	Sya	0.2	0.2	0.2	-
Stream width	ws	90	90	90	ft

Stream depletion for Scenario 2:

Days	10	30	60	90	120	150	180	210	240	270	300	330	360
Depletion (%)	11	11.8	12	12	12	12	12	13	13	13	13	13	13
Depletion (cfs)	0.06	0.07	0.07	0.07	0.07	0.07	0.07	0.08	0.08	0.08	0.08	0.08	0.08



Model: ☐ Jenkins (1968): aquifer only
☐ Hunt (1999): streambed
☒ Hunt (2003): overlying aquitard

Show popup warnings: ☒ Yes ☐ No

Percent change for sensitivity test (%): 50

Read disclaimer and instructions	Copy parameters from Scenario 2 to 1 and 3	Run model with current parameters	Quit
	Edit parameters in Excel		
Open folder with parameter refs	Reload parameters from file for this app, well, and stream	Open results spreadsheet	

