

Groundwater Application Review Summary Form

Application # G- 18721

GW Reviewer J. Hackett Date Review Completed: November 15, 2018

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.

di 11/14/18

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

To: Kristopher Byrd, Well Construction and Compliance Section Manager
From: Joel Jeffery, Well Construction Program Coordinator
Subject: Review of Water Right Application G-18721
Date: December 4, 2018

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 #2 (BENT 55311): Based on a review of the Well Report, Applicant's Well #2 seems to protect the groundwater resource.

The construction of Applicants Well #2 may not satisfy hydraulic connection issues.

BENT 55311

STATE OF OREGON WATER SUPPLY WELL REPORT (as required by ORS 537.765 & OAR 690-205-0210)

WELL I.D. LABEL# L 120681 START CARD # 1030080 ORIGINAL LOG #

(1) LAND OWNER Owner Well I.D. 5636 First Name Clarence & Rosetta Last Name Venell Company Address 30742 Venell Ln. City Corvallis State OR Zip 97333

(2) TYPE OF WORK [X] New Well [] Deepening [] Conversion [] Alteration (complete 2a & 10) [] Abandonment (complete 5a)

(2a) PRE-ALTERATION Dia + From To Gauge Stl Plstc Wld Thrld Casing: Material From To Amt sacks/lbs Seal:

(3) DRILL METHOD [X] Rotary Air [] Rotary Mud [] Cable [] Auger [] Cable Mud [] Reverse Rotary [] Other

(4) PROPOSED USE [] Domestic [X] Irrigation [] Community [] Industrial/ Commercial [] Livestock [] Dewatering [] Thermal [] Injection [] Other

(5) BORE HOLE CONSTRUCTION Special Standard (Attach copy) Depth of Completed Well 60 ft. BORE HOLE Dia From To Material SEAL From To Amt sacks/lbs

Table with columns: Dia, From, To, Material, SEAL, From, To, Amt, sacks/lbs. Row 1: 16, 0, 60, Bentonite, 0, 18.5, 60, S. Row 2: Calculated, 15.

How was seal placed: Method [] A [] B [] C [] D [] E [X] Other Poured dry Backfill placed from ft. to ft. Material Filter pack from ft. to ft. Material Size Explosives used: [] Yes Type Amount

(5a) ABANDONMENT USING UNHYDRATED BENTONITE Proposed Amount Pounds Actual Amount Pounds

(6) CASING/LINER Casing Liner Dia + From To Gauge Stl Plstc Wld Thrld Shoe [] Inside [] Outside [] Other Location of shoe(s) Temp casing [X] Yes Dia 16 From 0 To 59

Table with columns: Casing, Liner, Dia, +, From, To, Gauge, Stl, Plstc, Wld, Thrld. Row 1: 12, 1.5, 18.5, 250, 5, 5, 5, 5, 5. Row 2: 12, 58, 59, 250, 5, 5, 5, 5, 5.

(7) PERFORATIONS/SCREENS Perforations Method Screens Type Material Perf/S Casing/ Screen green Liner Dia From To Scrn/slot width Slot length # of slots Tele/ pipe size

Table with columns: Perf/S, Casing/ Screen, green, Liner, Dia, From, To, Scrn/slot width, Slot length, # of slots, Tele/ pipe size. Row 1: Screen, 12, 18.5, 58, 100, 5, 5, 5, 5.

(8) WELL TESTS: Minimum testing time is 1 hour [X] Pump [] Bailer [] Air [] Flowing Artesian Yield gal/min Drawdown Drill stem/Pump depth Duration (hr) Temperature 53 °F Lab analysis [] Yes By Water quality concerns? [] Yes (describe below) TDS amount 128

Table with columns: Yield gal/min, Drawdown, Drill stem/Pump depth, Duration (hr). Row 1: 1,000, 14, 4, 4. Temperature 53 °F Lab analysis [] Yes By Water quality concerns? [] Yes (describe below) TDS amount 128

(9) LOCATION OF WELL (legal description) County BENTON Twp 13 S N/S Range 4 W E/W WM Sec 7 SE 1/4 of the SW 1/4 Tax Lot 200 Tax Map Number Lot Lat " or " DMS or DD Long " or " DMS or DD [X] Street address of well [] Nearest address 28874 Dorr Rd. - Corvallis, OR 97333

(10) STATIC WATER LEVEL Date SWL (psi) + SWL (ft) Existing Well / Pre-Alteration Completed Well 03-31-2016 13.3 Flowing Artesian? [] Dry Hole? [] WATER BEARING ZONES Depth water was first found SWL Date From To Est Flow SWL (psi) + SWL (ft)

Table with columns: SWL Date, From, To, Est Flow, SWL (psi), +, SWL (ft). Row 1: 03-30-2016, 15, 18, 200, 13.3. Row 2: 03-31-2016, 20, 55, 1,500, 13.3.

(11) WELL LOG Ground Elevation Material From To Topsoil 0 3 Sand and small gravel 3 7 Sand and large gravel 7 10 Gray sand 10 13 Sand and small gravel 13 20 Sand and medium gravel 20 30 Cemented sand and gravel 30 37 Sand and small gravel 37 50 Cemented sand and medium gravel 50 55 Gray clay with sand 55 57 Gray claystone 57 60 Allowed to naturally cave between 18.5 to 60' Jones Drilling Co., INC. 29400 Santiam Hwy Lebanon, OR 97355 541-367-2560 541-451-2686

Date Started 03-30-2016 Completed 03-31-2016

(unbonded) Water Well Constructor Certification I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. License Number 1688 Date 04-07-2016 Signed Ken Gillett RECEIVED

(bonded) Water Well Constructor Certification I accept responsibility for the construction, deepening, alteration, or abandonment work performed on this well during the construction period. License Number 1684 Date 04-07-2016 Signed Jones Drilling Co. Contact Info (optional) jonesdrilling@hotmail.com

BENT 55311

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765 & OAR 690-205-0210)

WELL I.D. LABEL# L 120681
START CARD # 1030080
ORIGINAL LOG #

(1) LAND OWNER
Owner Well I.D. 5636
First Name Clarence & Rosetta Last Name Venell
Company Venell Farms
Address 30742 Venell Ln.
City Corvallis State OR Zip 97333

(2) TYPE OF WORK
[X] New Well [] Deepening [] Conversion
[] Alteration (complete 2a & 10) [] Abandonment (complete 5a)

(2a) PRE-ALTERATION
Dia + From To Gauge Stl Plstc Wld Thrd
Casing:
Material From To Amt sacks/lbs
Seal:

(3) DRILL METHOD
[X] Rotary Air [] Rotary Mud [] Cable [] Auger [] Cable Mud
[] Reverse Rotary [] Other

(4) PROPOSED USE
[] Domestic [X] Irrigation [] Community
[] Industrial/ Commercial [] Livestock [] Dewatering
[] Thermal [] Injection [] Other

(5) BORE HOLE CONSTRUCTION
Special Standard [] (Attach copy)
Depth of Completed Well 60 ft.

Table with columns: Dia, From, To, Material, From, To, Amt, Sacks/lbs. Row 1: 10, 0, 60, Bentonite, 0, 18.5, 60, S. Row 2: Calculated, 15.

How was seal placed: Method [] A [] B [] C [] D [] E
[X] Other Poured dry

Backfill placed from ft. to ft. Material
Filter pack from ft. to ft. Material Size

Explosives used: [] Yes Type Amount

(5a) ABANDONMENT USING UNHYDRATED BENTONITE
Proposed Amount Pounds Actual Amount Pounds

(6) CASING/LINER
Table with columns: Casing, Liner, Dia, From, To, Gauge, Stl, Plstc, Wld, Thrd. Row 1: 12, 1.5, 18.5, 250, X. Row 2: 12, 58, 59, 250, X.

Shoe [] Inside [] Outside [] Other Location of shoe(s)
Temp casing [X] Yes Dia 16 From 0 To 59

(7) PERFORATIONS/SCREENS
Perforations Method

Table with columns: Perf/S, Casing/Screen, Dia, From, To, Scrn/slot width, Slot length, # of slots, Telc/pipe size. Row 1: 12, 18.5, 58, 100, 5.

(8) WELL TESTS: Minimum testing time is 1 hour
[] Pump [] Bailer [] Air [] Flowing Artesian

Table with columns: Yield gal/min, Drawdown, Drill stem/Pump depth, Duration (hr). Row 1: 1,000, 14, 4.

Temperature 53 °F Lab analysis [] Yes By

Table with columns: Water quality concerns?, From, To, Description, Amount, Units. Row 1: 128.

(9) LOCATION OF WELL (legal description)
County BENTON Twp 13 S N/S Range 4 W E/W WM
Sec 7 SE 1/4 of the SW 1/4 Tax Lot 200
Tax Map Number Lot

Lat " or " DMS or DD
Long " or " DMS or DD
[] Street address of well [] Nearest address
28874 Dorr Rd. - Corvallis, OR 97333

(10) STATIC WATER LEVEL
Date SWL(psi) + SWL(ft)
Existing Well / Pre-Alteration
Completed Well 03-31-2016 13.3
Flowing Artesian? [] Dry Hole? []

WATER BEARING ZONES
Table with columns: SWL Date, From, To, Est Flow, SWL(psi), + SWL(ft). Row 1: 03-30-2016, 15, 18, 200, 13.3. Row 2: 03-31-2016, 20, 55, 1,500, 13.3.

(11) WELL LOG
Ground Elevation

Table with columns: Material, From, To. Rows: Topsoil (0-3), Sand and small gravel (3-7), Sand and large gravel (7-10), Gray sand (10-13), Sand and small gravel (13-20), Sand and medium gravel (20-30), Cemented sand and gravel (30-37), Sand and small gravel (37-50), Cemented sand and medium gravel (50-55), Gray clay with sand (55-57), Gray claystone (57-60).

JONES DRILLING CO., INC. RECEIVED BY OWF
29400 SANTIAM HWY.
LEBANON, OR 97355
541-367-2560 541-451-2686
1-800-915-8388
APR 15 2016
SALEM, OR

Date Started 03-30-2016 Completed 03-31-2016

(unbonded) Water Well Constructor Certification
I certify that the work I performed on the construction, deepening, 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.

License Number 1888 Date 04-07-2016
Signed [Signature]

(bonded) Water Well Constructor Certification
I accept responsibility for the construction, deepening, 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.

License Number 1684 Date 04-07-2016
Signed [Signature]
Contact Info (optional) jonesdrilling@hotmail.com

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date November 15, 2018
 FROM: Groundwater Section J. Hackett Reviewer's Name
 SUBJECT: Application G- 18721 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: Clarence & Rosetta Venell County: Benton

A1. Applicant(s) seek(s) 1.11 cfs from 2 well(s) in the Willamette Basin, _____ subbasin

A2. Proposed use Agriculture/Commercial 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	BENT 55311	2	Alluvium	1.11	13S/4W-7 NE-SW	2760' S, 1600' E fr NW cor S 7
2	Proposed	3	Alluvium	1.11	13S/4W-7 NE-SW	2760' S, 1900' E fr NW cor S 7
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	245	15	13.3	3/30/2016	60	0-18.5	0-18.5		18.5-58	1000	14	P
2	245				55 est.	0-19	0-25		25-55			

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: Applicant's wells are not within 1/4 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. 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:** The applicant’s wells are approximately 60 feet deep and produce from unconfined mixed-grained alluvial sediments. Locally, the sediment package is contains mostly sands and gravels with thin clay and silt lenses. Local well yields are high (500-100 gpm) and drawdowns are small. Nearby water level data is sparse, so I recommend a water level measurement condition be included if a permit is issued.

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	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	Alluvium	<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"/>

Basis for aquifer confinement evaluation: Water-bearing zones in applicant’s wells are not overlain by fine-grained sediments, and static water levels are coincident with depth of first water encountered. These factors indicate the wells produce from an unconfined aquifer.

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	Albany Channel	235	235	1640	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	1	Albany Channel	235	235	1640	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	2	Willamette River	235	227	3390	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	2	Willamette River	235	227	3150	<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"/>
						<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: Applicant’s wells produce from an unconfined aquifer adjacent to nearby streams and water levels in the local aquifer system are coincident with nearby stream elevations. These factors indicate the groundwater system is hydraulically connected to nearby streams.

Water Availability Basin the well(s) are located within: 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?
1	1	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	2540	<input type="checkbox"/>	<25%	<input type="checkbox"/>
2	1	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	2540	<input type="checkbox"/>	<25%	<input type="checkbox"/>
1	2	<input type="checkbox"/>	<input type="checkbox"/>	MF184A	1750	<input type="checkbox"/>	2540	<input type="checkbox"/>	<25%	<input type="checkbox"/>
2	2	<input type="checkbox"/>	<input type="checkbox"/>	MF184A	1750	<input type="checkbox"/>	2540	<input type="checkbox"/>	<25%	<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"/>		<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>

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"/>
		<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"/>		<input type="checkbox"/>		<input type="checkbox"/>

Comments: Interference was calculated for closest well/stream pair (BENT 55311 to Albany Channel). Impacts were calculated with the Hunt 1999 analytical model using parameters appropriate for a highly productive (T = 10,000 ft²/d) unconfined aquifer. Calculated impacts were approximately 5% of the pumping rate after 30 days of pumping (see attached model form).

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													
(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:** _____

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

Gannett, M. W. and R. R. Caldwell. 1998. *Geologic Framework of the Willamette Lowland Aquifer System, Oregon and Washington.* USGS Professional Paper 1424-A.

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

Woodward, D. G., M. W. Gannett, and J. J. Vaccaro. 1998. *Hydrogeologic Framework of the Willamette Lowland Aquifer System, Oregon and Washington.* USGS Professional Paper 1424-B.

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

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

WILLAMETTE BASIN

Water Availability as of 11/15/2018

Watershed ID #: 30200321 ([Map](#))

Exceedance Level:

80% ▼

Date: 11/15/2018

Time: 11:18 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	10,100.00	1,370.00	8,730.00	0.00	1,750.00	6,980.00
FEB	11,600.00	4,290.00	7,310.00	0.00	1,750.00	5,560.00
MAR	11,000.00	4,560.00	6,440.00	0.00	1,750.00	4,690.00
APR	9,760.00	4,260.00	5,500.00	0.00	1,750.00	3,750.00
MAY	8,430.00	2,560.00	5,870.00	0.00	1,750.00	4,120.00
JUN	5,360.00	855.00	4,510.00	0.00	1,750.00	2,760.00
JUL	3,270.00	662.00	2,610.00	0.00	1,750.00	858.00
AUG	2,560.00	601.00	1,960.00	0.00	1,750.00	209.00
SEP	2,540.00	516.00	2,020.00	0.00	1,750.00	274.00
OCT	2,860.00	269.00	2,590.00	0.00	1,750.00	841.00
NOV	4,170.00	354.00	3,820.00	0.00	1,750.00	2,070.00
DEC	8,150.00	379.00	7,770.00	0.00	1,750.00	6,020.00
ANN	7,460,000.00	1,240,000.00	6,230,000.00	0.00	1,270,000.00	4,960,000.00

Detailed Report of Instream Flow Requirements

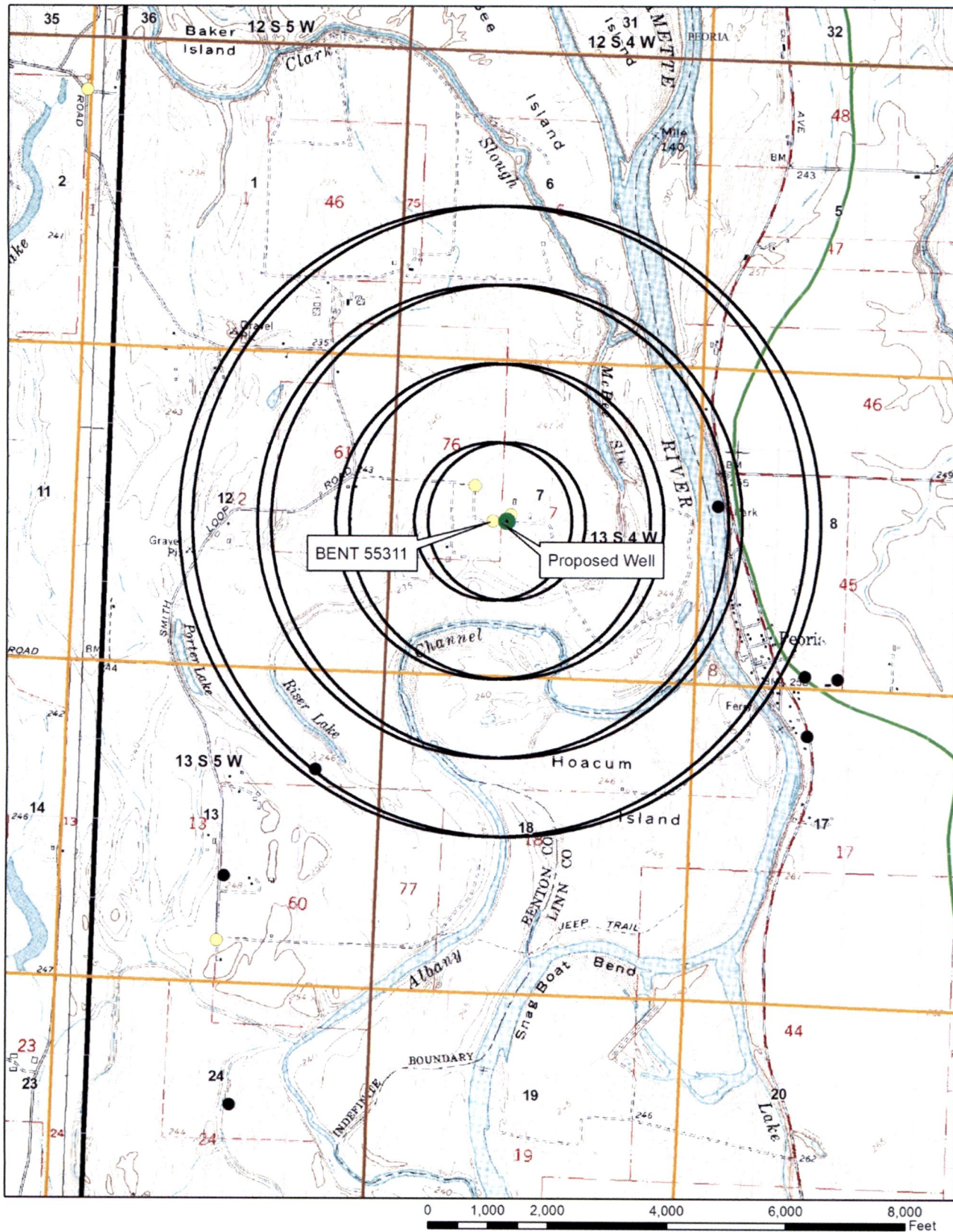
Instream Flow Requirements in Cubic Feet per Second

Application #	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MF184A	APPLICATION	1,750.00	1,750.00	1,750.00	1,750.00	1,750.00	1,750.00	1,750.00	1,750.00	1,750.00	1,750.00	1,750.00	1,750.00
Maximum		1,750.00	1,750.00	1,750.00	1,750.00	1,750.00	1,750.00	1,750.00	1,750.00	1,750.00	1,750.00	1,750.00	1,750.00

Well Location Map

G-18721, Venell

1:24,000 scale



Stream Depletion Model

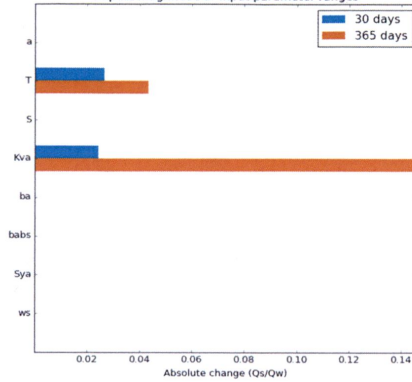
Application type: G
 Application number: 18721
 Well number: 1
 Stream Number: 1
 Pumping rate (cfs): 1.11
 Pumping duration (days): 365

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	1640	1640	1640	ft
Aquifer transmissivity	T	5000	10000	15000	ft ² /day
Aquifer storativity	S	0.2	0.2	0.2	-
Aquitard vertical hydraulic conductivity	Kva	0.05	.1	.1	ft/day
Not used		20.0	20.0	20.0	
Aquitard thickness below stream	babs	3.0	3.0	3.0	ft
Not used		0.2	0.2	0.2	
Stream width	ws	100	100	100	ft

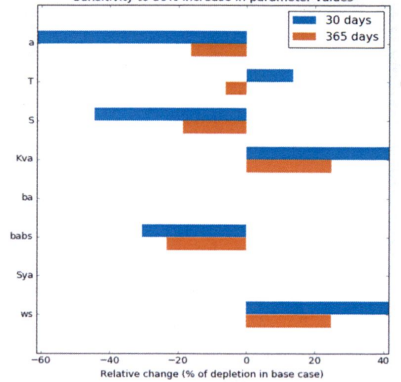
Stream depletion for Scenario 2:

Days	10	30	60	90	120	150	180	210	240	270	300	330	360
Depletion (%)	1	5	10	14	18	21	24	26	28	30	32	33	34
Depletion (cfs)	0.01	0.05	0.11	0.16	0.20	0.23	0.26	0.29	0.31	0.33	0.35	0.37	0.38

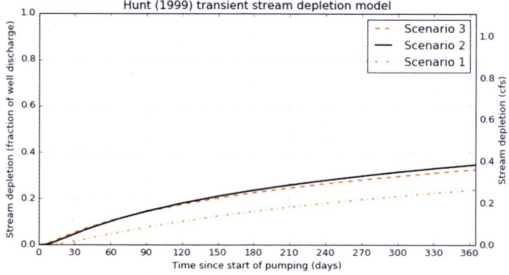
Impact magnitude of input parameter ranges



Sensitivity to 50% increase in parameter values



Hunt (1999) transient stream depletion model



Model: Jenkins (1966): 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 Edit parameters in Excel	Run model with current parameters	Quit
Open folder with parameter refs	Reload parameters from file for this app, well, and stream	Open results spreadsheet	

Values > threshold may yield negative results: Dimensionless streambed conductance

