

Groundwater Application Review Summary Form

Application # G- 18600

GW Reviewer Ben Scandella, Dennis Orlawski Date Review Completed: 4/17/18

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.
u 4/17/18

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

OK.
HJE

To: File
From: Joel Jeffery, Well Construction Coordinator
Subject: Review of Water Right Application G-18600
Date: September 19, 2018

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

Applicant's Well #1 (YAMH 50585): Based on a review of the Well Report, Applicant's Well #1 seems to protect the groundwater resource.

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

yamh
50585

WATER RESOURCES DEPT.
 SALEM, OREGON
 MAR 28 1997
 RECEIVED

(1) OWNER: Well No. 1654
 Name JACK PARSONS
 Address 25460 SW BAKER RD
 City SHERWOOD St OR Zip 97140

(2) TYPE OF WORK: NEW WELL
 (3) DRILL METHOD: ROTARY AIR
 (4) PROPOSED USE: DOMESTIC

(5) BORE HOLE CONSTRUCTION:
 Special Construction Approval NO _____ Depth of Compl. Well 292 ft
 Explosives used NO _____ Type _____ Amount _____

HOLE			SEAL			
Diam.	From	To	Material	From	To	Amount
10	0	138	BENTONITE	0	25	9 SAX
6	138	300	CEMENT W/GEL	25	138	36 SAX

Seal placement method C
 Backfill: from _____ ft to _____ ft Material _____
 Gravel: from _____ ft to _____ ft Size _____

(6) CASING/LINER:

	Diam.	From	To	Gauge	Material	Connection
Casing	6	+2	138	.25	STEEL	WELDED
Liner	4	0	292	SDR26	PLASTIC	WELDED

Final Location of shoe(s) 138

(7) PERFORATIONS/SCREENS:
 Perf. Method ELECTRIC SAW
 Screens Type _____ Material _____

From	To	Slot Size	Number	Diam.	Tele/pipe Size	Casing/liner
252	292	6"	72			LINER

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

Yield GPM	Draw-down	Drill stem at	Time
75		292	1 hr.
75		280	1

Temperature of water 52 Depth Artesian Flow Found _____
 Was water analysis done? NO By whom _____
 Reason for water not suitable for use _____
 Depth of strata _____

(9) LOCATION OF WELL by legal description:
 County YAMHILL Lat. ' ' ' Long. ' ' '
 Township 4 S Range 3 W WM.
 Section 9 NW 1/4 SW 1/4
 Tax Lot 4309 Lot 0600 Block _____ Subdivision _____
 Street Address of Well (or nearest Address)
 3005 DAYTON BYPASS DAYTON, OR

(10) STATIC WATER LEVEL:
 91 ft. below land surface. Date 03/25/97
 Artesian pressure _____ lb per square in. Date _____

(11) WATER BEARING ZONES:
 Depth at which water was first found 209

From	To	Est Flow Rate	SWL
209	217	25	NA
265	285	50	91

(12) WELL LOG:

Material	Ground elevation		SWL
	From	To	
TOP SOIL	0	4	
BROWN CLAY	4	30	
BLUE CLAY	30	85	
GRAY CLAY	85	109	
DECAYED BASALT	109	123	
HARD GRAY BASALT	123	175	
LIGHT DECAY, MEDIUM GRAY BASALT	175	181	
MEDIUM GRAY BASALT	181	209	
DECAYED BASALT	209	217	WB
HARD GRAY BASALT	217	265	
DECAYED BASALT, VESICULAR	265	285	91
DECAYED BASALT, SOME CLAY, UNSTABLE	285	300	

DAVE PAYSINGER, BLUE WATER DRILLING CO.
 DAYTON, OR.

Date started 03/24/97 Completed 03/25/97

(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 my best knowledge and belief.
 Signed _____ WWC Number _____
 Date _____

(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 *David L. Paysinger* WWC Number 1438
 Date 03/25/97

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 9/17/2018
 FROM: Groundwater Section Benjamin Scandella, Dennis Orlovski
Reviewer's Name
 SUBJECT: Application G-18600 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: CLIFF PARSONS; PARSONS FAMILY TRUST
 County: YAMHILL

- A1. Applicant(s) seek(s) 0.446 CUBIC FOOT PER SECOND from 1 well(s) in the Willamette Basin,
Yamhill subbasin
- A2. Proposed use IRRIGATION Seasonality: JANUARY 1 THROUGH DECEMBER 31
- 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	YAMH 50585	1	CRB	0.446	4S/3W-9 SW-NE	1360'S, 460' E fr NW cor DLC 43

* 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	160	209	91	3/25/1997	300	0-138	+2-138	0-292	252-292	75	N/A	Air

Use data from application for proposed wells.

- A4. **Comments:** The well log for YAMH 50585 lists the quarter-quarter as 4S/3W-9 NW-SW, but the tax lot and street address of well more closely match the location in the application map, in 4S/3W-9 SW-NE. Therefore, the mapped location was evaluated in this review.

The well has 162 feet of open interval in the Columbia River Basalt. The well log reports water-bearing zones from 209-217' and 265-285', but a static water level was reported only for the deeper of these two. Nearby well logs showing water levels in multiple basalt interflow zones in similar depth ranges report no differences in head to suggest multiple aquifers.

The application requests 200 gpm (0.446 cfs) for irrigation of 35 acres, but the maximum allowed for 35 acres at 1/80 cfs/acre is 0.438 cfs. Therefore, this maximum, lower rate was evaluated in this review. The maximum annual volume allowed for 35 acres is 87.5 AF, slightly below the 90 AF requested, so this slightly lower total annual volume was evaluated in this review.

- 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: 690-502-0240 classifies use from unconfined alluvial aquifers. This application proposes use from a confined aquifer in the CRBG, so this rule is not activated.
- A6. **Well(s) #** _____, _____, _____, _____, _____, tap(s) an aquifer limited by an administrative restriction.
 Name of administrative area: _____
 Comments: N/A

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) 7I, Large Water Use Reporting Condition;
 - 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 basalt 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 proposed well produces from one or more water-bearing zones in the Columbia River Basalt Group (CRBG), a series of lava flows with a composite thickness that ranges from 100 to 300 feet in this area (Conlon et al., 2005). Each flow is characterized by a series of internal features, including a thin rubble zone at the contact between flows and a thick, dense, low porosity and low permeability interior zone. In some cases, sedimentary layers were deposited during the time between basalt flow emplacements. A flow top, sedimentary interbed and flow bottom are collectively referred to as an interflow zone. Unconfined groundwater occurs near the weathered top of the basalts, but most water occurs in interflow zones at the contacts between lava flows. CRBG flow features result in a series of stacked, thin aquifers that are confined by dense flow interiors. The low permeability of the basalt flow interiors usually results in little connection between stacked aquifers, which generally results in tabular aquifers with unique water level heads.

Nearby well logs show typical yields of <50 gpm, with a median of 21 gpm out of 79 wells. The well log for YAMH 50585 shows a yield of 75 gpm on an air test, but it is unlikely that the well can support the requested rate of 200 gpm. Water level data from nearby basalt wells with similar water-bearing zones and static water level elevations show relatively stable trends (See Figure 1), suggesting that the resource is not yet over-appropriated. However, condition 7I (Willamette Basin Basalt Groundwater Condition) is recommended to monitor the resource.

Well logs show many nearby wells completed between 100 and 300 feet below land surface, suggesting that the water-bearing zones accessed by Well #1 may be shared by other groundwater users. Using aquifer parameters appropriate for the basalts, it can be shown that the cone of depression from a pumped well can produce measureable impacts at a distance of 1 mile within minutes. Therefore, hydraulic interference with nearby wells, springs, and streams will likely occur rapidly once pumping begins if nearby streams and wells are connected to the same aquifer that is open in the well. For these reasons, the potential for the proposed use to interfere with senior groundwater rights, both permitted and exempt, is significant. To protect existing users, condition 7I (Willamette Basin Basalt Groundwater Condition) is recommended.

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	Columbia River Basalt Group Aquifer (CRBG)	<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"/>

Basis for aquifer confinement evaluation: According to the well log, static water levels rise above water-bearing zones, indicating the aquifer is confined.

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	Unnamed tributary to the Yamhill River	60-70	75-350	210	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	2	Yamhill River	60-70	60-80	2530	<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"/>

Basis for aquifer hydraulic connection evaluation: Neither SW source intersects the elevation of the water-bearing zones noted in the well log for Well #1, but mapped faulting in the area suggests that faults could provide vertical connectivity between water-bearing zones within the basalt. Multiple nearby wells also note identical water levels in separate water-bearing zones, suggesting that separate aquifers may be connected. SW #1 remains above the water level in Well #1, indicating that Well #1 is not hydraulically connected with SW #1. However, the elevation of SW #2 within 1 mile is nearly coincident with the level in Well #1, suggesting that Well #1 is connected with SW #2.

Water Availability Basin the well(s) are located within: YAMHILL R > WILLAMETTE 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	2	<input type="checkbox"/>	<input type="checkbox"/>	IS73547 A	31.70	<input checked="" type="checkbox"/>	56.50	<input type="checkbox"/>	*	<input checked="" 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.

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

Comments: *There is no appropriate model to estimate streamflow depletion from pumping in CRBG interflow zones that are hydraulically connected to surface water features. Therefore, the percentage of interference at 30 days was not calculated.

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													
(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: PSI was assumed between Well #1 and SW #2, because they are hydraulically connected and the evaluated rate, 0.438 cfs, is greater than 1% of the Instream Water Right, 31.70 cfs.

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:

Conlon, T.D., Wozniak, K.C., Woodcock, D., Herrera, N.B., Fisher, B.J., Morgan, D.S., Lee, K.K., and Hinkle, S.R., 2005, Ground-water hydrology of the Willamette Basin, Oregon: U.S. Geological Survey Scientific Investigations Report 2005-5168.

US Geological Survey Topographic Map, Dundee Quadrangle.

OWRD water level and well log databases, including reported water levels, accessed 9/14/2018.

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

DETAILED REPORT ON THE WATER AVAILABILITY CALCULATION						
watershed ID #: 30200801 Time: 10:16 AM		YAMHILL R > WILLAMETTE R - AT MOUTH Basin: WILLAMETTE			Exceedance Level: 80 Date: 09/17/2018	
Month	Natural Stream Flow	Consumptive Use and Storage	Expected Stream Flow	Reserved Stream Flow	Instream Requirements	Net water Available
Monthly values are in cfs. Storage is the annual amount at 50% exceedance in ac-ft.						
JAN	1,840.00	67.90	1,770.00	0.00	31.70	1,740.00
FEB	2,070.00	65.70	2,000.00	0.00	31.70	1,970.00
MAR	1,760.00	41.50	1,720.00	0.00	31.70	1,690.00
APR	1,060.00	49.60	1,010.00	0.00	31.70	979.00
MAY	523.00	66.20	457.00	0.00	31.70	425.00
JUN	232.00	88.60	143.00	0.00	31.70	112.00
JUL	108.00	112.00	-3.96	0.00	31.70	-35.70
AUG	66.90	99.50	-32.60	0.00	31.70	-64.30
SEP	56.50	64.40	-7.95	0.00	31.70	-39.60
OCT	72.50	17.00	55.50	0.00	31.70	23.80
NOV	462.00	38.60	423.00	0.00	31.70	392.00
DEC	1,670.00	64.70	1,610.00	0.00	31.70	1,570.00
ANN	1,180,000	46,900	1,130,000	0	23,000	1,110,000

Figure 1: Water-Level Trends in Nearby Wells



