

Groundwater Application Review Summary Form

Application # G- 12632

GW Reviewer Devin C. Lowery Date Review Completed: Oct. 12, 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.

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
 FROM: Groundwater Section
 SUBJECT: Application G- 18632

Date October 12, 2018
 Dennis Orłowski
 Reviewer's Name
 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: Paul Brothers Inc. County: Clackamas

A1. Applicant(s) seek(s) 0.189 cfs from one (see A4 comments) well(s) in the Willamette Basin,
Johnson Creek subbasin

A2. Proposed use Nursery, Supplemental Irrigation Seasonality: Nursery: year-round Irrigation: 3/1-10/31

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	Proposed	3	Deep Troutdale	0.189	T1S/R4E-29	220'S, 1465'W of NE cor S29

* 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	545	TBD	TBD	TBD	~400	0->200	0->200	--	>200	TBD	TBD	TBD

Use data from application for proposed wells.

A4. **Comments:** The application is inconsistent and somewhat confusing with regard to the number of wells proposed for development. Specifically, Section 3, Well Development, lists only proposed "Well 3" in the page 4 table, but then includes two other existing domestic wells ("Well 1 and Well 2") in the page 5 table. Furthermore, all three wells are shown on the application map. WRIS also shows three wells as proposed POAs. However, the applicant's narrative on page 4 suggests that only a single proposed "Well 3" is intended "...to develop groundwater...for field and nursery irrigation use..."

Additionally, this location is within the Sandy-Boring Groundwater Limited Area (GWLA). Within this particular portion of the GWLA, groundwater for non-exempt uses can only be obtained from the Deep Troutdale aquifer (OAR 690-502-0170 & 690-503-050). This limitation is acknowledged in the application, and is implicit in the proposed sealing and completion depths for proposed "Well 3." However, neither well construction information nor well logs were provided for "Well 1" or "Well 2", and thus it is not possible to know whether or not those two wells obtain groundwater from the Deep Troutdale aquifer. Consequently, those two existing wells would not be able to be reviewed for compliance with GWLA provisions.

Despite some conflicting information within the application, it appears the applicant's intent was for only a single well, "Well 3", not yet drilled, to be evaluated for this application. Therefore, only proposed "Well 3" was evaluated for this review, and only that proposed well should be an authorized POA if this permit is granted.

A5. ☒ **Provisions of the** Willamette/Sandy 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: OAR 690-503-0050 Groundwater Classification: the groundwater resources of the Sandy Basin are classified for commercial, group domestic, industrial, irrigation, mining, municipal, and statutorily-exempt groundwater uses. Groundwater hydraulically connected to, and within 1/4 mile of, surface water shall be classified for the same uses as the surface water source and for uses exempted by ORS 537.545. The proposed well is greater than 1/4 mile from the nearest perennial stream reach, so this feature of the Basin rules is not activated.

- A6. ☐ Well(s) # 1, _____, _____, _____, _____, tap(s) an aquifer limited by an administrative restriction.
 Name of administrative area: Sandy-Boring Groundwater Limited Area (OAR 690-502-0170 & 690-503-050)
 Comments: Within the Sandy-Boring GWLA, groundwater from the Shallow Troutdale aquifer and the specially-designated portion of the Deep Troutdale aquifer in the Sandy-Boring area is classified for exempt uses only. The proposed POA, "Well 3", is located within this GWLA and is proposed to be completed within the Deep Troutdale aquifer. Therefore, the proposed POA, if constructed in accordance with the provisions of this review, will be in compliance with the Sandy-Boring GWLA rules.

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:
- ☐ 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;
 - ☐ 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;
 - ☐ will not or ☐ will likely to be available within the capacity of the groundwater resource; or
 - ☒ will, if properly conditioned, avoid injury to existing groundwater rights or to the groundwater resource:
 - ☒ The permit should contain condition #(s) 7g (Sandy Basin GW Cond.); medium water-use reporting;
 - ☒ The permit should be conditioned as indicated in item 2 below.
 - ☐ The permit should contain special condition(s) as indicated in item 3 below;
- B2.
 - ☐ Condition to allow groundwater production from no deeper than _____ ft. below land surface;
 - ☐ Condition to allow groundwater production from no shallower than _____ ft. below land surface;
 - ☒ Condition to allow groundwater production only from the Deep Troutdale groundwater reservoir between approximately 250 ft. and 400 ft. below land surface;
Proposed well is to be cased and sealed to a depth of at least 250 feet.
 - ☐ 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:** A thick sequence of water-bearing sands and gravels are present beneath the proposed POA location. A shallow water-bearing portion of these sediments has been designated as the Shallow Troutdale aquifer; the deeper portion has been designated as the Deep Troutdale aquifer (OWRD, 1991, 1992; these are equivalent to the Troutdale Gravel and the Troutdale Sandstone Aquifers, respectively, that have been defined by the USGS for the Portland Basin (Swanson and others, 1993 and McFarland and Morgan, 1996)). Groundwater heads in the Deep Troutdale Aquifer are generally at least 50 feet, and commonly greater than 100 feet, deeper than heads in the Shallow Troutdale Aquifer.

The Deep Troutdale aquifer is underlain by a thick, widespread sequence of fine-grained sediments, Confining Unit 2 (CU2) (the Sandy River Mudstone of Trimble, 1963). CU2 is exposed in the Sandy River valley about 2 ½ miles to the east, below elevations of about 200 feet and beneath the bed of the river. These relationships indicate that the two aquifers are truncated by erosion in the hillsides of the Sandy River drainage. This lateral boundary limits the capacity of the aquifer because recharge and capture zones from wells cannot extend beyond the Sandy River drainage.

Over the past approximately 20 years, groundwater level trends in nearby Deep Troutdale aquifer wells have been generally stable (see attached hydrographs) (note that MULT 58958 and MULT 67824 are indeed associated with wells in this area, despite this being Clackamas county). Moderate declines (~6-8 ft) from 2014-2018 in some wells (e.g., CLAC 63486, CLAC 57896) likely reflected exceptionally hot and dry summers, and thus increased irrigation pumping, during that period. Prior to this recent period, wetter years resulted in stabilized, or even increasing, groundwater levels in the Deep Troutdale aquifer

(e.g., 2010-2012). However, the alluvial aquifers within the Sandy-Boring GWLA are sensitive to overdraft. Furthermore, in this area the Sandy River valley to the east has truncated the lateral extent of both Troutdale aquifers, further limiting the capacity of the groundwater system. **For these reasons, and despite the apparent groundwater stability shown in other wells, the above-noted permit conditions are strongly recommended to protect the existing resource and groundwater users.**

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	Deep Troutdale	☒	☐

Basis for aquifer confinement evaluation: Static groundwater levels in area Deep Troutdale wells rise above the principal water-bearing zones, indicating confined aquifer 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	Sandy River	400-450	140-150	12,800	☐	☒	☐	☐	☒

Basis for aquifer hydraulic connection evaluation: Because the Sandy River (SW1) is incised into Confining Unit 2, below the base of the Deep Troutdale aquifer, the river is not in physical contact with the aquifer within several miles of the proposed POA. Therefore, the river is not hydraulically connected to the aquifer in nearby reaches. However, seepage (as springs or as diffuse seepage) from the truncated margins of the aquifer may contribute tributary water to the flow of the Sandy River. If so, nearby pumping from the aquifer is likely to reduce any such tributary flow. However, no specific data is available that documents the existence of tributary flow from springs or seeps into the Sandy River in the vicinity of the proposed POA.

Although the proposed POA is located very near the headwaters of Johnson Creek, the USGS 7.5 minute topographic quadrangle map (Sandy, Oregon) shows that Johnson Creek and its tributaries in this area are ephemeral, with the nearest mapped perennial reach located several miles to the west. A comparison of groundwater levels (both Shallow and Deep Troutdale) with the elevations of local reaches of Johnson Creek confirms that the creek has not incised to the level of the water table in the area near the proposed POA. Similarly, other than the Sandy River, all other streams within at least 1.5 miles of the POA location are also shown by the USGS as being ephemeral, and thus were not evaluated for this review.

Water Availability Basin the well(s) are located within: WID 71554: Johnson Creek > Willamette River – 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?
		☐	☐			☐		☐		☐

- 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: Not applicable: as discussed in Section C2, there are no hydraulically-connected, perennial stream reaches within at least 1.5 miles of the proposed POA location.

- 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: Not applicable.

- 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: None

References Used: Application G-18632 file.

McFarland, W.D. and D.S. Morgan, 1996. Description of the Ground-Water Flow System in the Portland Basin, Oregon and Washington. USGS Water Supply Paper 2470-A.

OWRD, 1991, Sandy Basin Report

OWRD, 1992, Willamette Basin Report

Swanson and others, 1993. A Description of Hydrogeologic Units in the Portland Basin, Oregon and Washington. USGS Water Resources Investigations Report 90-4196.

Trimble, 1963, Geology of Portland, Oregon and Adjacent Areas: U.S. Geological Survey Bulletin 1119, 119p.

D. WELL CONSTRUCTION, OAR 690-200

D1. Well #: _____ Logid: _____

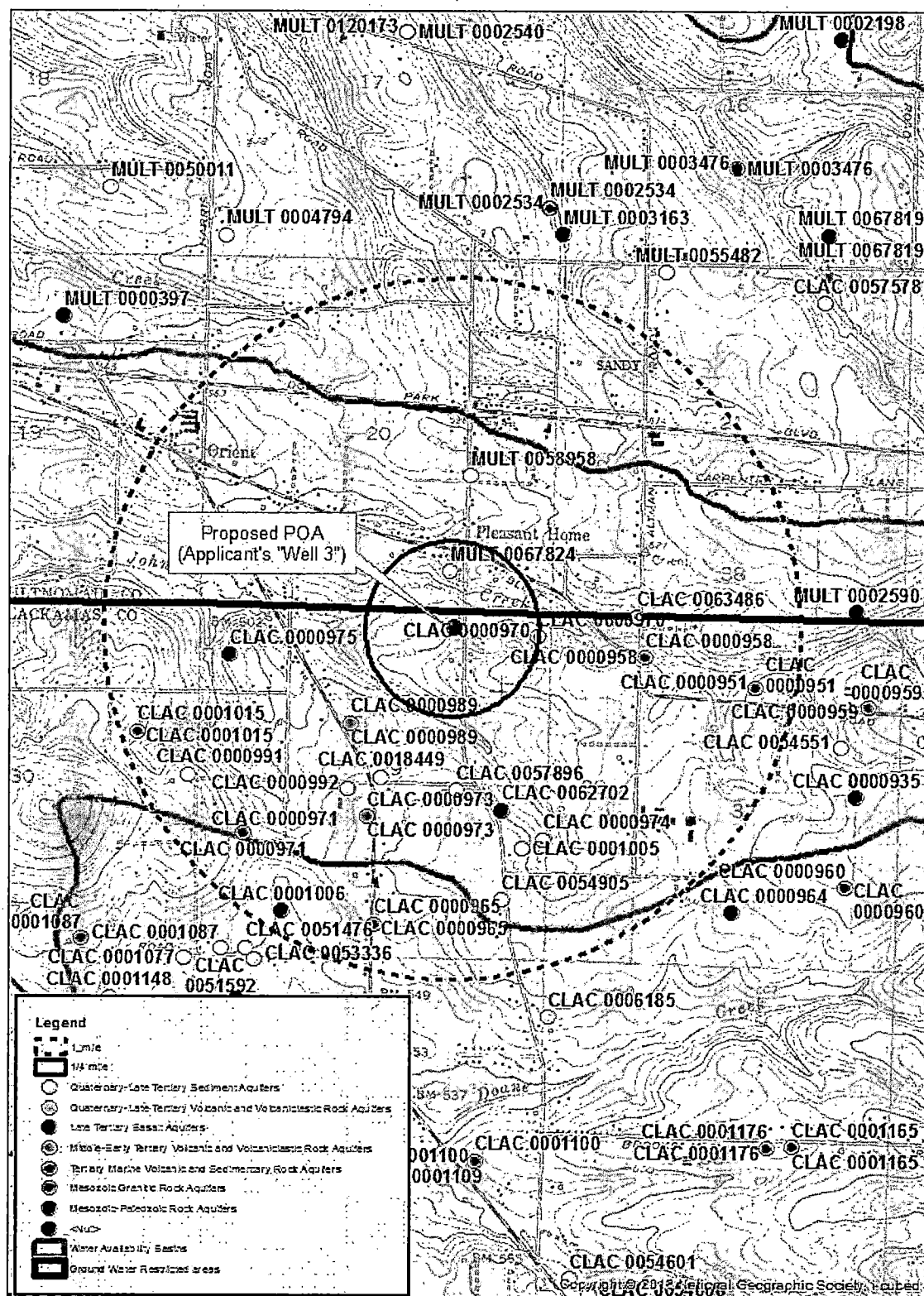
D2. **THE WELL does not appear to meet current well construction standards based upon:**

- 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.

Application G-18632 Paul Brothers Inc. T1S, R4E - Section 29



Water Availability Table

Water Availability Analysis

Detailed Reports

JOHNSON CR > WILLAMETTE R - AT MOUTH
WILLAMETTE BASIN

Watershed ID #: 71654 ([Map](#))
Date: 10/12/2018

Water Availability as of 10/12/2018

Exceedance Level: 80%
Time: 10:31 AM

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	55.20	1.72	53.50	0.00	25.00	28.50
FEB	60.90	1.70	59.20	0.00	25.00	34.20
MAR	52.10	1.41	50.70	0.00	25.00	25.70
APR	33.40	1.69	31.70	0.00	24.00	7.71
MAY	19.60	2.42	17.20	0.00	10.00	7.19
JUN	15.00	2.69	12.30	0.00	5.00	7.31
JUL	13.60	3.26	10.30	0.00	4.00	6.34
AUG	12.80	2.97	9.83	0.00	3.00	6.83
SEP	12.10	2.15	9.95	0.00	2.00	7.95
OCT	12.10	1.43	10.70	0.00	2.00	8.67
NOV	18.50	1.44	17.00	0.00	9.00	8.46
DEC	49.40	1.69	47.70	0.00	25.00	22.70
ANN	41,200.00	1,490.00	39,800.00	0.00	9,560.00	30,200.00

Water-Level Trends in Nearby Wells

