

Groundwater Transfer Review Summary Form

Transfer/PA # T- 14561 (RA)

GW Reviewer Travis Brown Date Review Completed: 12/12/2024

Summary of Same Source Review:

☐ The proposed change in point of appropriation is not within the same aquifer as per OAR 690-380-2110(2).

Summary of Water Level Decline Condition Review:

☐ Water levels at the original point(s) of appropriation have exceeded the allowed decline threshold defined by conditions in the originating water right.

Summary of Injury Review:

☐ The proposed transfer will result in another, existing water right not receiving previously available water to which it is legally entitled or result in significant interference with a surface water source as per 690-380-0100(3).

Summary of GW-SW Transfer Similarity Review:

☐ The proposed SW-GW transfer doesn't meet the definition of "similarly" as per OAR 690-380-2130.

This is only a summary. Documentation is attached and should be read thoroughly to understand the basis for determinations.



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Ground Water Review Form:

- ☐ Water Right Transfer
☒ Permit Amendment
☐ GR Modification
☐ Other

Application: T-14561

Applicant Name: Orchard Heights Water Assoc.

Proposed Changes: ☐ POA ☒ APOA ☐ SW→GW ☒ RA
☐ USE ☐ POU ☐ OTHER

Reviewer(s): Travis Brown

Date of Review: 12/12/2024

Date Returned to WRSD: 12/12/2024

The information provided in the application is insufficient to evaluate whether the proposed transfer may be approved because:

- ☐ The water well reports provided with the application do not correspond to the water rights affected by the transfer.
- ☐ The application does not include water well reports or a description of the well construction details sufficient to establish the ground water body developed or proposed to be developed.
- ☐ Other _____

1. Basic description of the changes proposed in this transfer: Applicant proposes to add an APOA – “Well 4” (not yet constructed) – to Permit G-10394, which originally authorized 0.33 cfs of year-round Group Domestic use from one well – “Well 3” (POLK 1984/1978). However, the most recent Extension of Time Final Order (dated 3/1/2024) limited development to no more than 0.254 cfs. On Page 9 of the application, the applicant requests the full authorized rate of 0.254 cfs for the proposed APOA, but anticipates that the sustainable yield of the APOA is more likely to be 50-75 gpm (0.111-0.167 cfs).
2. Will the proposed POA develop the same aquifer (source) as the existing authorized POA?
☒ Yes ☐ No Comments: Both the authorized and proposed POA would develop the Columbia River Basalt aquifer system.
3. a) Is the existing authorized POA subject to a water level decline condition?
☐ Yes ☒ No Comments: Permit G-10394 does not contain any decline conditions.
- b) If yes, for each POA identify the reference level, most recent spring-high water level, and whether an applicable permit decline condition has been exceeded: N/A
4. a) Is there more than one source developed under the right (e.g., basalt and alluvium)?
☐ Yes ☒ No Comments: The authorized POA produces groundwater only from the Columbia River Basalt aquifer system.
- b) If yes, estimate the portion of the right supplied by each of the sources and describe any limitations that will need to be placed on the proposed change (rate, duty, etc.): N/A

5. a) Will this proposed change, at its maximum allowed rate of use, likely result in an increase in interference with **another ground water right**?

☒ Yes ☐ No Comments: The nearest neighboring well to the proposed APOA is POLK 688, ~1,070 ft north of the APOA and ~2,950 ft south of the authorized POA. Although the deepest water-bearing zone noted in POLK 688 (172-180 ft bls [~609-601 ft msl]) is above the proposed open interval of the APOA, the bottom of POLK 688 (282 ft bls [~499 ft msl]) is coincident with the proposed open interval of the APOA (see attached Well Construction Cross-Section). Furthermore, POLK 688 fully penetrates the basalt aquifer system at its location and extends ~110 ft into the underlying marine sedimentary bedrock, with its noted water bearing zone occurring at the apparent contact between the Columbia River Basalt Winter Water Member (Tgww) and the sedimentary bedrock (Tms). This contact appears to slope downward toward the south as evidenced by the mapped contact at ~700-710 ft msl (~100 ft above the elevation of the noted water-bearing zone in POLK 688) around Croft Reservoir and the much greater mapped thickness of the Columbia River Basalt to the south, with the Ortley Member (Tgo) mapped as present beneath the Winter Water Member around Glenn Creek but absent around Croft Reservoir (Beeson and Tolan, 2001). The sloped basalt-sedimentary contact likely is the result of the basalt having been emplaced upon the eroded and/or structurally-deformed topography of the sedimentary bedrock, since the contact between the Winter Water Member and the Ortley Member of the basalt appears to have a much more even grade and does not slope as steeply or in the same direction as the basalt-sedimentary contact, which is illustrated in the B-B' cross-section by Beeson and Tolan (2001) (attached). The water-bearing zone at the basalt-sedimentary contact in POLK 688 likely resulted from the rapid cooling and fracturing of the basalt as it was emplaced and, therefore, could be expected to exist at most (if not all) locations of basalt-sedimentary bedrock contact. Because of the expected near-ubiquity of the basalt-sedimentary contact water-bearing zone and its differing orientation from the interflow water-bearing zones within the basalt, these two types of water-bearing zones likely intersect at various locations throughout the area of interest. Therefore, hydraulic stresses from pumping groundwater in the basalt interflow water-bearing zones could be expected to propagate into the basalt-sedimentary contact water-bearing zones and vice versa. As such, it is likely that pumping the proposed APOA would likely cause interference with POLK 688 and, due to the proposed APOA's closer proximity to POLK 688 relative to the authorized POA, interference with POLK 688 would likely increase as a result of the proposed change.

- b) If yes, would this proposed change, at its maximum allowed rate of use, likely result in another groundwater right not receiving the water to which it is legally entitled?

☐ Yes ☒ No If yes, explain: Potential interference with POLK 688 from the proposed APOA was analyzed using the Theis (1935) solution for drawdown in a confined aquifer (see attached Well-to-Well Interference Analysis). Results of the analysis indicate that, while interference with POLK 688 from the proposed APOA may be significant, it will not likely result in injury to POLK 688.

6. a) Will this proposed change, at its maximum allowed rate of use, likely result in an increase in interference with **another surface water source**?

☐ Yes ☒ No Comments: The proposed APOA would be further from the nearest presumed point of hydraulic connection with surface water – the exposed contact between the Columbia River Basalt Winter Water Member (Tgww) and the underlying marine sedimentary bedrock (Tms) around Croft Reservoir, along the perennial stream at the bottom of Winslow Gulch. The proposed APOA would be closer than the authorized POA to Glenn Creek, with presumed points of hydraulic connection within the exposed Columbia River Basalt Ortley Member (Tgo) where Glenn Creek is first noted as perennial on the USGS topographic map (SW ¼ of the NW ¼ of Section 19, T7SR3W) or near the exposed contact between the Columbia River Basalt Ortley Member (Tgo) and the underlying marine sedimentary bedrock (Tms) in the NW ¼ of Section 20, T7SR3W. However, Glenn Creek is in the same Water Availability Basin (WAB) as Winslow Gulch, and Winslow Gulch is still closer to the proposed APOA than the perennial reach of Glenn Creek. Therefore, no significant increase in interference with surface water is anticipated from the proposed change.

- b) If yes, at its maximum allowed rate of use, what is the expected change in degree of interference with any **surface water sources** resulting from the proposed change?

Stream: _____ ☐ Minimal ☐ Significant

Provide context for minimal/significant impact: N/A

7. For SW-GW transfers, will the proposed change in point of diversion affect the surface water source similarly (as per OAR 690-380-2130) to the authorized point of diversion specified in the water use subject to transfer?
- ☐ Yes ☐ No Comments: N/A
8. What conditions or other changes in the application are necessary to address any potential issues identified above: None
9. Any additional comments: The proposed APOA is subject to the special area well construction standards for the Eola Hills Groundwater Limited Area (OAR 690-200-0028(3)).

References

Application File: G-10455 (Permit G-10394), T-14561

Water Well Reports: POLK 298, 387, 688, 1700, 1766, 1782, 1785, 1806, 1962, 1981, 1983, 1984/1978, 51176, 51680, 52802, 54706

Beeson, M.H., and Tolan, T.L., 2001, DRAFT Geologic Map of the Salem West Quadrangle, Oregon [map], 1:24,000, U.S. Geological Survey, Reston, VA.

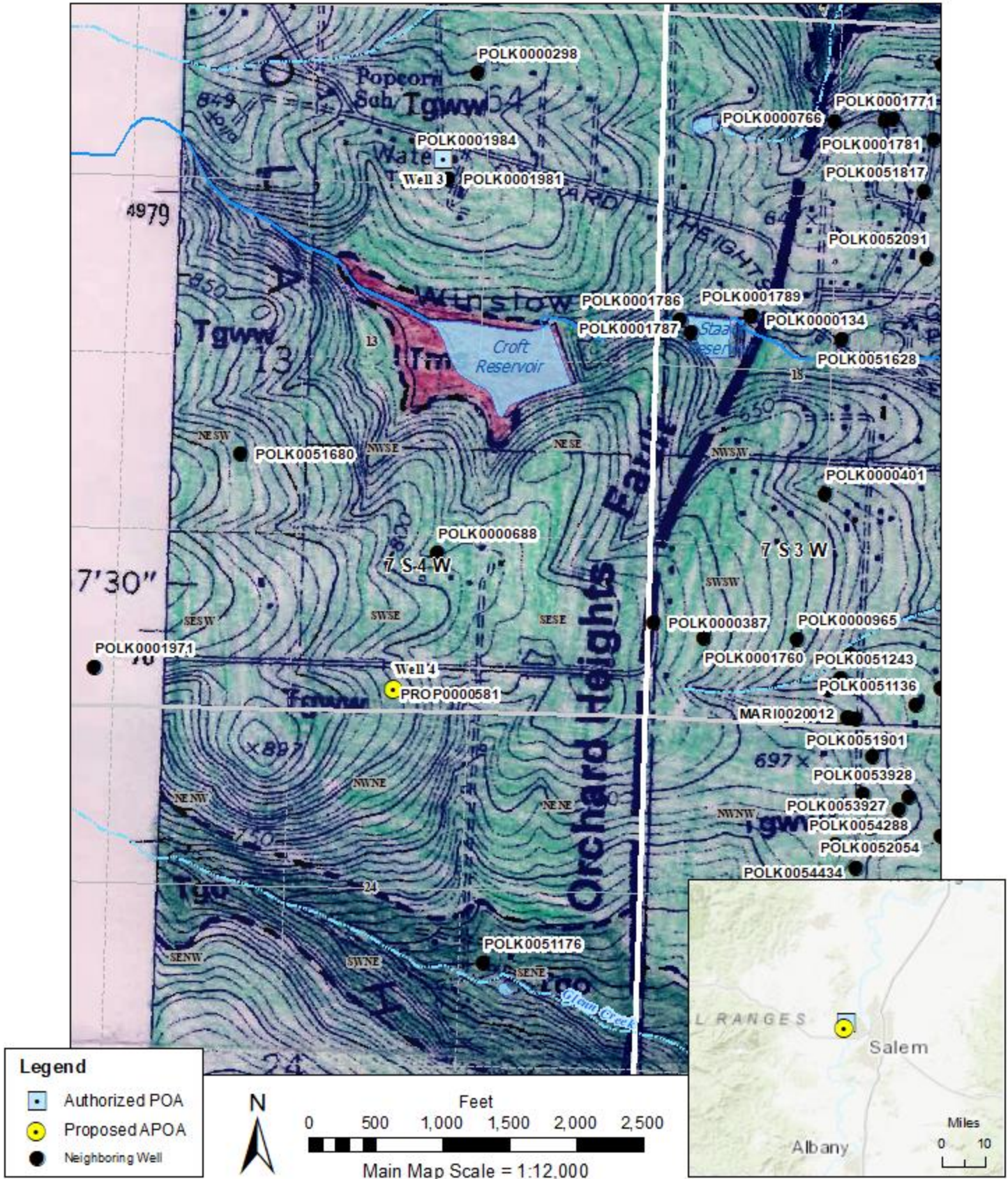
Conlon, T.D., Wozniak, K.C., Woodcock, D., Herrera, N.B., Fisher, B.J., Morgan, D.S., Lee, K.K., and Hinkle, S.R., 2005, Ground-water hydrology of the Willamette Basin, Oregon, Scientific Investigations Report 2005-5168: U. S. Geological Survey, Reston, VA.

Theis, C.V., 1935, The relation between the lowering of the piezometric surface and the rate and duration of discharge of a well using groundwater storage, American Geophysical Union Transactions, vol. 16, p. 519-524.

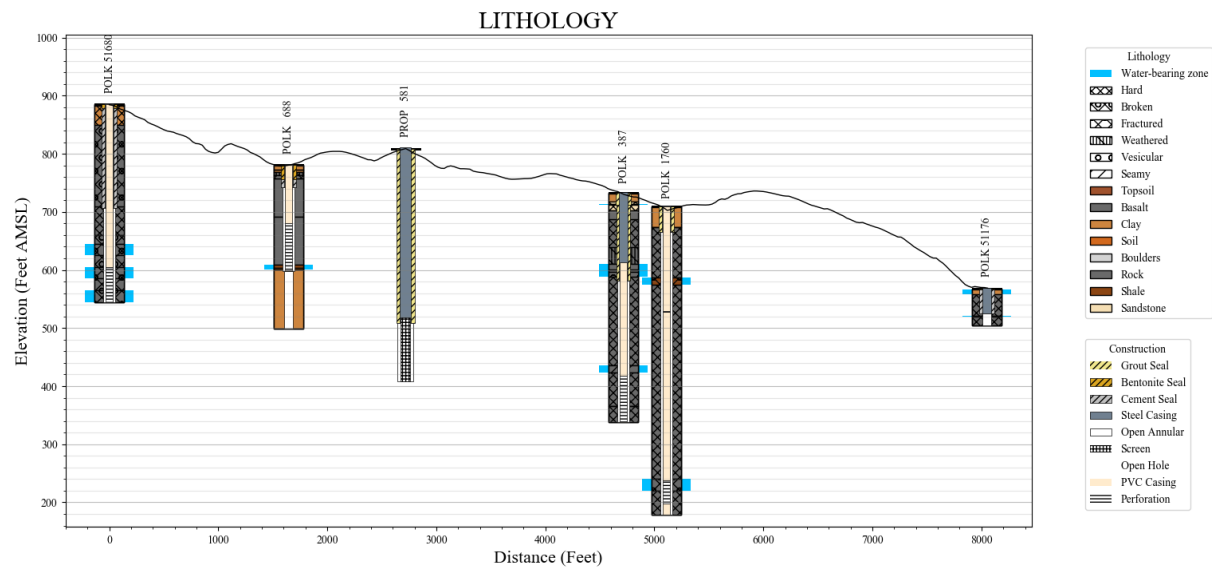
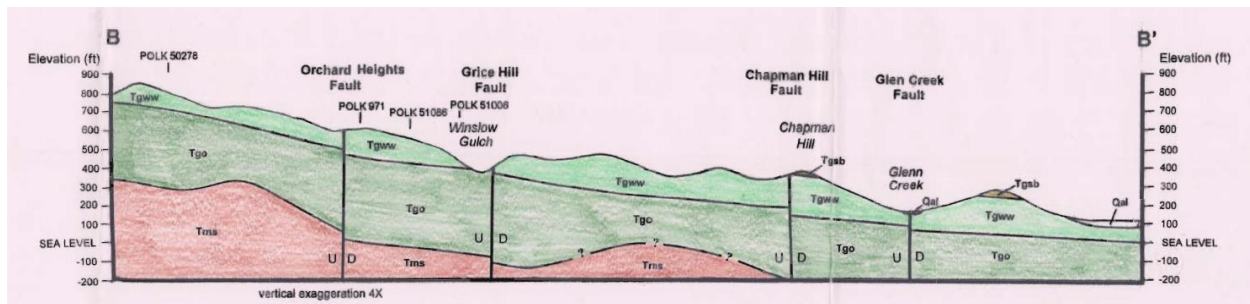
Vorhis, R.C., 1979. Transmissivity from pumped well data. Well Log, National Water Well Association newsletter, vol. 10, no. 11, Dec. 1979, pg. 50-52.

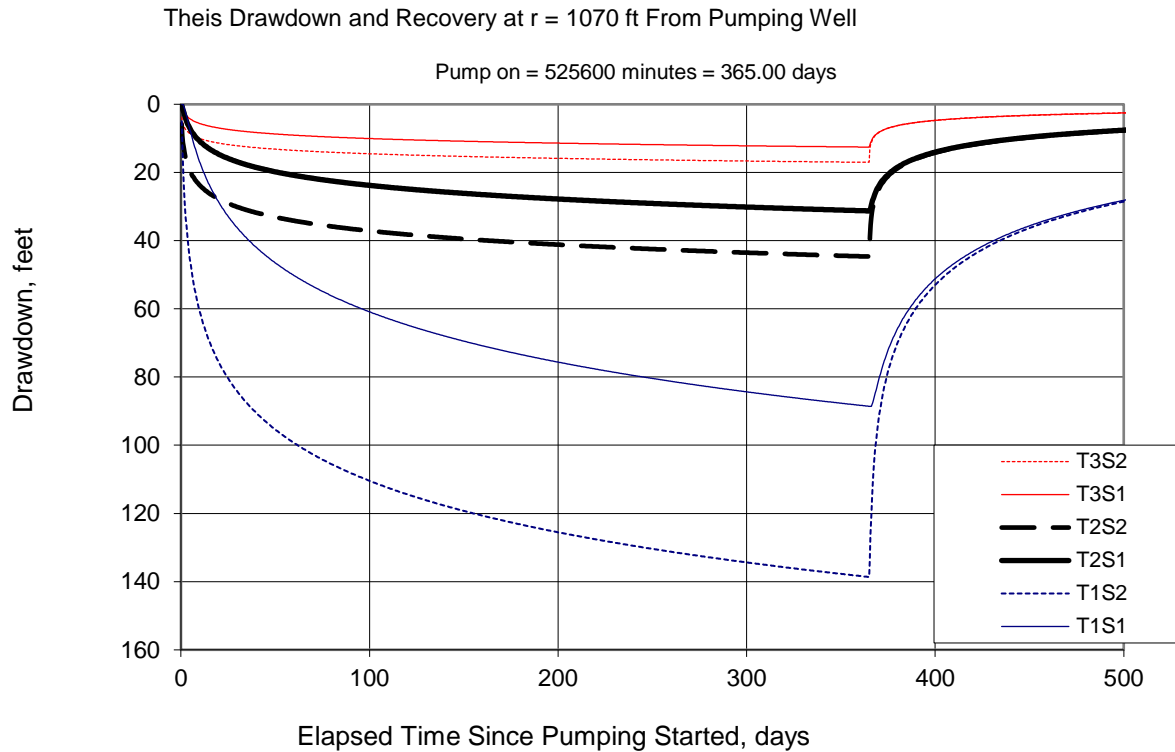
Well Location Map

T-14561



Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Well Construction Cross-Section**Beeson and Tolan (2001) B-B' Cross-Section**

Well-to-Well Interference Analysis – APOA to POLK 688

Pumping rate, $Q = 0.254$ cfs [maximum developable rate]

Pumping time, $t_{\text{pump}} = 365$ days [year-round]

Radial distance, $r = 1,070$ ft [approximate distance from proposed APOA to POLK 688]

Transmissivity: $T1 = 80 \text{ ft}^2/\text{day} \mid 300 \text{ ft}^2/\text{day} \mid 900 \text{ ft}^2/\text{day}$ [Estimated from water well report specific capacities via Vorhis (1979) method]

Storativity: $S1 = 0.001 \mid S = 0.0001$ [Conlon et al., 2005]

Estimated Available Water Column in POLK 688 = 256 ft = 26 ft bls [Static Water Level, 11/23/1994] – 282 ft bls [total well depth per water well report]