

Groundwater Transfer Review Summary Form

Transfer/PA # T- 13804

GW Reviewer Stacey Garrison/Travis Brown Date Review Completed: 10/20/2023

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 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-13804

Applicant Name: Eileen M Clark Living Trust

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

Reviewer(s): Stacey Garrison/Travis Brown

Date of Review: 10/20/2023

Date Returned to WRSD: 10/20/2023

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 change to new POA for irrigation of 39.8 acres of irrigation and 48.2 acres of supplemental irrigation under Wells 1 and 2 of Certificate 95020. The From-POAs are **Well 1 (MARI 3193/3187)** and **Well 2 (MARI 3179)** and the To-POA is a proposed new well. **Certificate 95020** authorizes irrigation of 62 acres from **Well 1 (MARI 3193/3187)** and **Well 2 (MARI 3179)**; 48.2 acres of supplemental irrigation from **Well 1 (MARI 3193/3187)** and **Well 2 (MARI 3179)**; supplemental irrigation of 167.3 acres **Well 1 (MARI 3193/3187)** and **Well 2 (MARI 3179)**. The maximum rate for **Well 1 (MARI 3193/3187)** is 1.545 cfs, and the maximum rate for **Well 2 (MARI 3179)** is 1.545 cfs. Wells 1 and 2 (**MARI 3193/3187** and **MARI 3179**) would continue to irrigate the remaining 22.2 ac of POU on Certificate 95020, and **Well 2 (MARI 3179)** would continue to be used to supplementally irrigate the remaining 167.3 ac on Certificate 95020.

The applicant's map does not appear to accurately depict the authorized POU vs non-authorized land on tax lot 1700. There are 3 'carve-outs' not authorized, and the applicant's map is not of sufficient detail to confirm that the carve-out on the east side of their tax lot is incorporated. It is assumed that this is an error in the applicant's map, and that a POU transfer is not included with this application.

2. Will the proposed POA develop the same aquifer (source) as the existing authorized POA?
☒ Yes ☐ No Comments: The proposed To-POA is anticipated to be drilled to 700 ft bls [-503 ft msl] and utilize the Columbia River Basalt Group, CRBG, aquifer. **Well 2 (MARI 3179)** is drilled to 700 ft bls [-523 ft msl] with a water-bearing zone recorded from 552 to 556 ft bls [-375 to -379 ft msl] and is cased and sealed to 540 ft bls [-363 ft msl]; MARI 3179 utilizes the CRBG. **Well 1 (MARI 3193/3187)** was originally drilled in March 1967 with a static water level of 18 ft bls, and developed the alluvial aquifer with perforations in the 12 inch steel casing recorded from 33 to 38 ft bls, 44 to 130 ft bls, and 150 to 255 ft bls [178 to -44 ft msl] correlating to sands, clays, and conglomerates. **Well 1** was deepened per **MARI 3187** in May 1969 to 673 ft bls and a 10 inch steel casing installed to a depth of 548 ft bls; the well now utilizes the Columbia River Basalt Group (CRBG) aquifer with an open borehole from 548 to 673 ft bls [-337 to -462 ft msl] correlating to basalts with a static water level of 24 ft bls [187 ft msl]. Per well logs and Department Memo (August 10 2009), the deepening modification on MARI 3193 allows for commingling of the alluvial and CRBG aquifers.
3. a) Is there more than one source developed under the right (e.g., basalt and alluvium)?
☒ Yes ☐ No Per well logs and Department Memo (August 10 2009), the deepening modification on **Well 1 (MARI 3193/3187)** allows for commingling of the alluvial and CRBG aquifers.
- 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.):
Assuming the proposed To-POA is properly constructed to not commingle in accordance with OAR 690-210, the apportionment of **Certificate 95020** by source would be based on the source aquifer for the From-POAs:
- Well 1: 25% alluvial, 75% CRBG; this is based on the yields recorded on MARI 3193 (150 gpm) and deepening log MARI 3187 (600 gpm); it is assumed the additional 450 gpm is from the CRBG, and the alluvial portion continues to supply 150 gpm.
- Well 2: 100% CRBG, this well does not commingle.
- Further apportionment should apply due to the reduced acreage to be irrigated as proposed in this Transfer application; 39.8 acres of the 62 acres allowed to be irrigated by Wells 1 and 2 is 64%.
- Based on the apportionment for the source, the reduced acreage, and the maximum rate for Well 1 and Well 2 of 1.545 cfs, the **apportioned rate for the proposed To-POA should be 1.736 cfs (780 gpm).**

4. 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 From-POAs are further from the closest CRBG well than the To-POA: **Well 1 (MARI 3193/3187)** is 1,914 ft north of MARI 19510 but there is a northwest trending fault between them; **Well 2 (MARI 3179)** is 1,502 ft southwest of MARI 18408 but the Mt Angel Fault is between them; the proposed To-Well location is 1,138 ft northwest of **MARI 19510 (Certificate 95019, priority date 2/11/1987)** and there is no known fault between them. **Wells 1 (MARI 3193/3187) and 2 (MARI 3179)** are 1,887 ft north and 4,483 ft northeast of MARI 19510, respectively. There is a northwest trending fault separating Wells 1 and 2 from MARI 19510; this fault terminates 1,082 ft northwest of Well 1 and 1,954 ft southeast of Well 2. The reduced intervening distance and the lack of hydraulic barrier* is anticipated to result in an increase in interference.

*MARI 19510 was used as an observation well for aquifer testing; based on observations of static water level in MARI 19510, the fault to the northeast appears to function as a hydraulic 'no-flow' barrier.

- 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: The potential for Substantial or Undue Interference (SUI) per OAR 690-008-0001(8)(c) with MARI 19510 due to the proposed change was assessed using the Theis (1935) solution for drawdown in a confined aquifer assuming the fault to the northeast of the proposed To-POA and MARI 19510 acts as a no-flow boundary (hydraulic barrier). Results of this analysis indicate that the anticipated change in well-to-well interference at MARI 19510 due to the proposed change will increase, with interference from the proposed To-POA exceeding 15 ft within 2 weeks and a maximum of 23 ft (see Theis Drawdown Analysis, attached). In aquifers where permeability is not relatively uniform, full penetration may not be required; therefore, interference with MARI 19510 cannot be discarded based on its construction not penetrating the full depth of the CRBG. Pumping at the rate identified in this review (1.736 cfs) at the proposed To-POA is not anticipated to result in MARI 19510 not receiving the water to which it is legally entitled.

5. 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 CRBG is not anticipated to be hydraulically connected to surface water sources in the area. Nearby surface water sources are 140 to 230 ft msl and the shallowest CRBG aquifers utilized by the From-POAs (MARI 3193/3187 and MARI 3179), the CRBG well closest to the To-POA (MARI 19510), and likely to be used by the To-POA are greater than -200 ft msl. Well 1 utilizes the alluvial aquifer that is in connection with local surface water sources, so a reduction in interference with nearby surface water sources is more likely to occur as a result of the proposed transfer to a properly constructed CRBG well (i.e., cased and sealed into the hard dense basalt).

- 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? NA

Provide context for minimal/significant impact: NA

6. 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: NA
7. What conditions or other changes in the application are necessary to address any potential issues identified above: NA
8. Any additional comments: _____

References

Application File: T-13804, T-13130, G-11504

Water Well Reports: MARI 3193, MARI 3187, MARI 3179, MARI 18408, MARI 19510

Pumping Test Reports: MARI 3197, MARI 17908, MARI 19801

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.

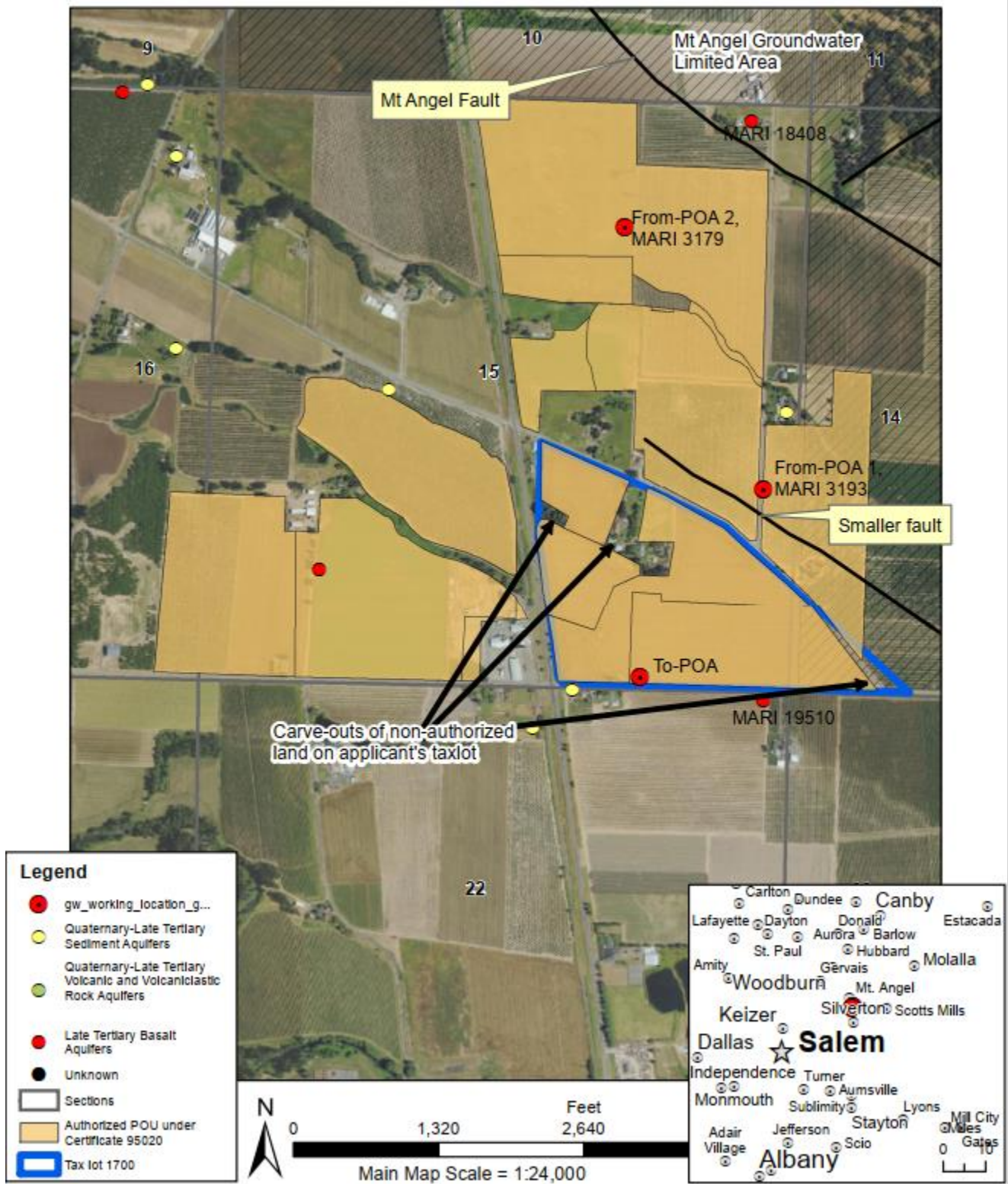
Driscoll, F.G., 1986, *Groundwater and Wells*, Second Edition: Johnson Filtration Systems Inc.

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.

Tolan, Terry L. and Beeson, Marvin H., 1999, *Geologic Map of the Silverton and Scotts Mills NE 7.5 Minute*

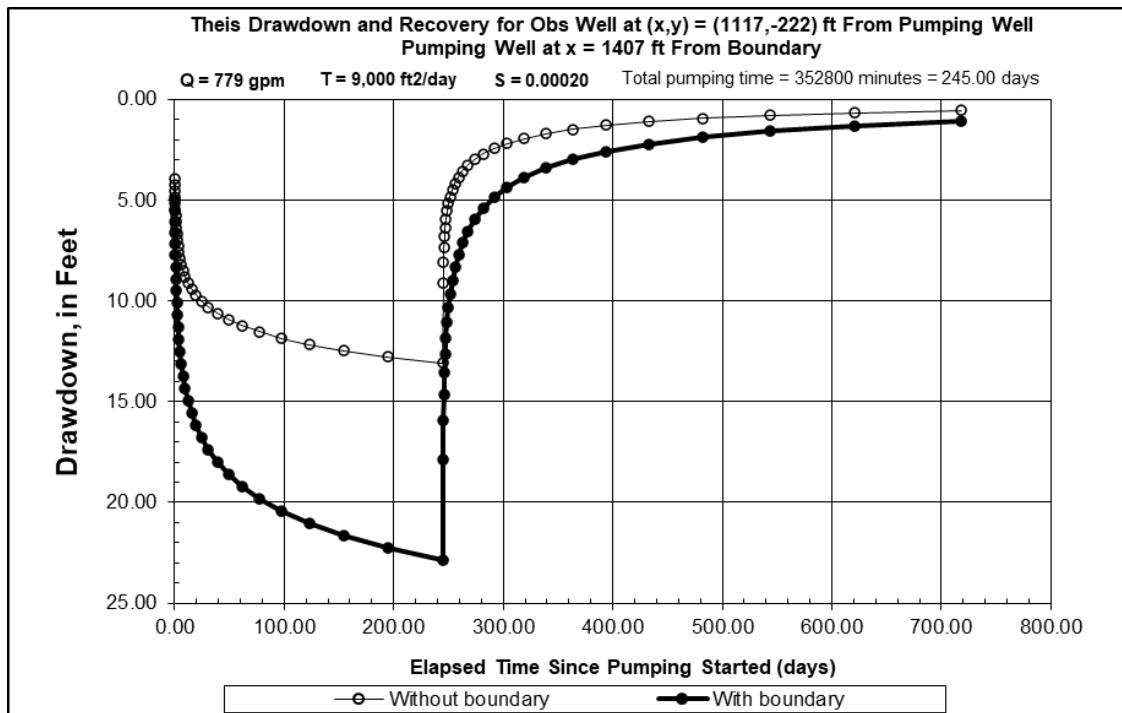
Quadrangles, Northwest Oregon [map], 1:24,000, Open File Report 99-141: U.S. Geological Survey, Reston, VA.

Wozniak, K. C., 2009, *Status of wells listed as POAs, Permit G-10828, Interoffice Memorandum*, Water Resources Department, State of Oregon, August 10.

T-13804 Eileen Clark Living Trust

Service Layer Credits:

Interference proposed To-POA with MARI 19510



- Transmissivity: 9,000 ft²/day [median for nearby pumping tests]
- Storativity of Aquifer: 0.0002 [Conlon et al., 2005]
- Total Pumping Time: 245 days [irrigation season, March 1 through October 31]
- Pumping Rate: 1.73563 (799 gpm)
- Distance to MARI 19510: 1,117 ft east, 222 ft south
- Distance to No-flow boundary (fault): 1,407 ft east

MARI 19510: Certificate 95019, 0.51 cfs, 1 POA

SWL	56.96	ft	OWRD measurement (4/27/1998)
Aquifer Bottom	626	ft	MARI 19510
Available Drawdown	569	ft	Aquifer Bottom - SWL
Pump Height Above Bottom	5	ft	Estimate
NPSHa	5	ft	Estimate
Estimated Drawdown	51	ft	at 229 gpm (0.51 cfs), estimated using Spec Cap (4.5 gpm/ft) from transmissivity per Driscoll (1989) w/70% efficiency
Minimum Water Column	61	ft	Estimated Drawdown + NPSHa + Pump Height
SUI	508	ft	Maximum Water Column-Minimum Water Column