

Oregon Water Resources Department
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Ground Water Review Form:

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

Application: T-12944

Applicant Name: Margaret & Thomas Barnett

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

Reviewer(s): Travis Brown, Dennis Orłowski

Date of Review: February 19, 2019

Date Reviewed by GW Mgr. and Returned to WRSD: _____

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: The applicant proposes to add an additional POA and change the POU for **Certificate 36301**.

Certificate 36301 is for irrigation of 68.2 acres using "one well" (Well 1 = MARI 286). The authorized maximum rate for Certificate 36301 is 0.550 cfs (~247 gpm), at a rate of 1/80th cfs/acre and duty of 2.5 af/acre.

The applicant proposes to:

- Transfer 1.0 acres of the irrigation POU in 4S/1W-4 NE-NE from Certificate 36301 to 4S/1W-3 NE-NW, approximately 0.5 miles to the northeast, for use inside a 1.0-acre greenhouse during the irrigation season (March 1-October 31).
- Add POA (Well 2 = MARI 62290) for irrigation of the transferred POU acreage (use within the greenhouse). Well 2 is approximately 2,400 ft east-southeast of Well 1 (see Well Location Map, attached).
- Currently-authorized Well 1/MARI 286 will continue to be used to irrigate the non-transferred portion of the POU for Certificate 36301.

2. Will the proposed POA develop the same aquifer (source) as the existing authorized POA?
 Yes No Comments: Well 1/MARI 286 and Well 2/MARI62290 are located in the French Prairie region of the Deer Creek/Mill Creek/Pudding River sub-basin. The land surface elevations at both locations are within approximately 5 ft of each other (Well 1 ~185 ft above msl; Well 2 ~182 ft above msl). Both wells tap confined sand and gravel deposits of the alluvial aquifer system below the Willamette silt (Gannett and Caldwell, 1998; Woodward et al., 1998). Well 1/MARI 286 is reportedly 206 ft deep, with perforated intervals at 136-139 ft bls and 189-205 ft bls (generally); Well 2/MARI 62290 is 240 ft deep, with perforated intervals from approximately 196-235 ft bls.

Well 1/MARI 286 has 1 reported static water level of 45 ft bls (3/21/1962); Well 2/MARI 62290 has 1 reported static water level of 53 ft bls (1/5/2009). Reported water levels for other water wells completed in the alluvium in this area range from 15 to 90 ft bls, approximately (OWRD Well Log Query Report).

3. a) Is there more than one source developed under the right (e.g., basalt and alluvium)?

Yes No _____

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

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: There are two permitted groundwater rights near the proposed APOA:

- Permit G-13102 (Femrite Nursery): priority date 11/20/1995; single well POA (no well log available) located approximately 700 ft to the north-northwest of the proposed APOA (Well 2/MARI 62290) and approximately 2,100 ft to the east-northeast of the authorized POA (Well 1/MARI286).
- Permit G-15740 (Femrite Farms, LLC): priority date 7/21/2000; single well POA (MARI 18911) located approximately 1,250 ft to the northwest of the proposed APOA (Well 2/MARI 62290) and approximately 1,400 ft to the east-northeast of the authorized POA (Well 1/MARI 286).

Additionally, there appears to be an exempt well near the proposed APOA:

- MARI 54092 (Lockwood, domestic well): priority date (implied) June 18, 1999; single well located approximately 650-900 ft (location is approximate) to the northeast of the proposed APOA (Well 2/MARI 62290) and approximately 2,950-3,200 ft east of the authorized POA (Well 1/MARI 286).

Interference analyses were done for these wells, as detailed in the next section.

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: For a conservative analysis of interference with the nearby permitted wells, it was assumed that both the POA (Well 1/MARI 286) and the proposed APOA (Well 2/MARI 62290) would be used to continuously pump the entire volume of 170.5 acre-feet (af) (= 2.5 af/acre x total 68.2 acres) at the maximum combined instantaneous pumping rate of 0.55 cfs (~247 gpm) authorized by certificate 36301. Both the total duty and maximum pumping rate were apportioned between the authorized POA (remaining POU = 67.2 acres) and the proposed APOA (transferred POU = 1.0 acres) according to their available acreage relative to the total. Under this scenario, both the POA (Well 1/MARI 286) and the APOA (Well 2/MARI 62290) could pump continuously for 156.5 days at 0.542 cfs (~243 gpm) and 0.008 cfs (~3.7 gpm), respectively, before achieving their respective volumes of 168 af (Well 1/MARI 286) and 2.5 af (Well 2/MARI 62290). (Note: The reported well yield for Well 2/MARI 62290 is 600 gpm [~1.34 cfs].)

This approach is very conservative because, although it is unlikely that any irrigation well would actually be pumped continuously for such an extended period, continuous pumping would result in the greatest cumulative interference with nearby wells. However unlikely, this continuous pumping scenario would be permissible under the proposed transfer and has thus been evaluated to provide a conservative analysis.

Pumping tests from nearby wells (MARI 154, MARI 160, MARI 163, MARI 172, MARI 250, MARI 52448, MARI 56999) yielded transmissivities ranging from 500 to 4,300 ft²/day, with a median transmissivity of 3,700 ft²/day. A storativity value typical of local confined aquifer conditions, 0.0001, was used for this analysis (Conlon et al., 2005).

Under the most conservative parameters (transmissivity of 500 ft²/day, storativity of 0.0001, pumping regime as described above), use of the APOA (Well 2/MARI 62290) is projected to result in less than 1 foot of additional drawdown at the nearest other groundwater use, MARI 54092. The maximum cumulative

interference at MARI 54092 due to pumping of both the POA (Well 1/MARI 286) and APOA (Well 2/MARI 62290) is projected to be less than 41 ft. MARI 54092 is reportedly 156 ft deep with a static water level of 59 ft bls and yield of approximately 25 gpm. As such, there is presumably sufficient available drawdown in MARI 54092, that an additional 1 ft from the proposed transfer (likely a conservatively-high estimate) should not be problematic. Other nearby groundwater right POAs (G-13102 and G-15740/MARI 18911), which are at greater distance from the proposed APOA, would be presumed to experience similarly minimal impacts.

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 proposed APOA (Well 2/MARI 62290) is approximately 160 feet closer to Deer Creek than is the authorized POA (Well 1/MARI 286), at about 880 feet compared to 1,040 feet, respectively. The APOA's closer proximity to Deer Creek means there is the potential for an increase in interference with Deer Creek.

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: Deer Creek Minimal Significant
Stream: N/A Minimal Significant

Provide context for minimal/significant impact: Because the aquifer is confined, pumping cones of depression are laterally extensive but thin, relative to unconfined conditions. Thus, although a greater reach of Deer Creek will be intersected by the cones of depression from both the POA and the APOA, **the overall hydraulic stress (interference) on the creek will not be appreciably greater than pumping from only the authorized POA.** Furthermore, confining layers between the stream bed and the underlying water-bearing zones tapped by the POA/APOA will buffer any potential impacts such that any increase in stream interference should be negligible.

6. What conditions or other changes in the application are necessary to address any potential issues identified above: None
7. Any additional comments: None

References

Application File: T-12463, T-12944

Well Logs: MARI 175/176, 286, 18911, 54092, 62290

Pumping Tests: MARI 154, 160, 163, 172, 250, 52448, 56999

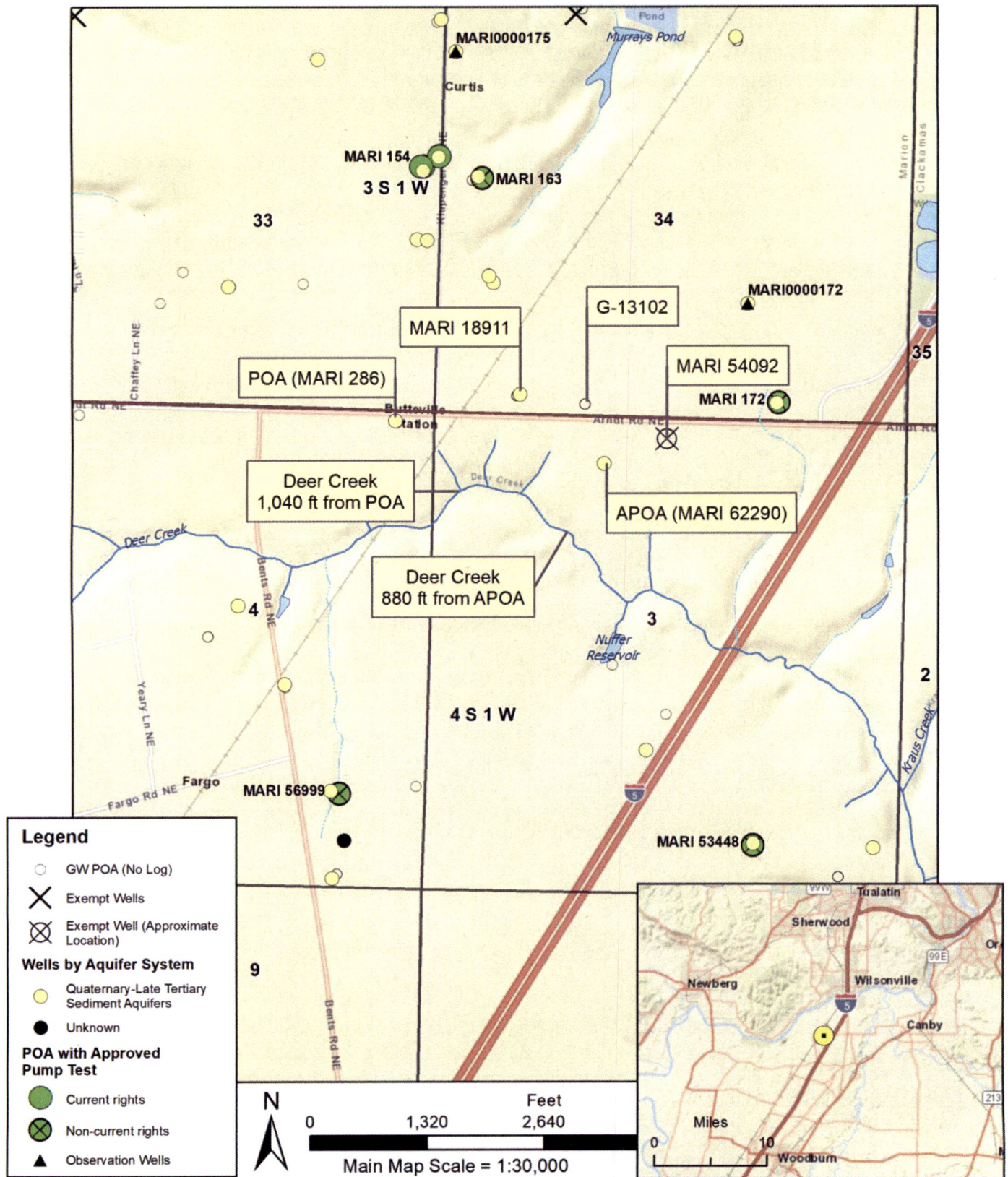
Conlon, T.D., Wozniak, K.C., Woodcock, D., Herrera, N.B., Fisher, B.J., Morgan, D.S., Lee, K.K., and Hinkle, S.R., 2005, Ground-Water Hydrology of the Willamette Basin, Oregon: U.S. Geological Survey Scientific Investigations Report 2005-5168.

Gannett, M.W., and Caldwell, R.R., 1998, Geologic framework of the Willamette lowland aquifer system, Oregon and Washington: U.S. Geological Survey Professional Paper 1424-A, 32p.

Woodward, D.G., Gannett, M.W., and Vaccaro, J.J., 1998, Hydrogeologic framework of the Willamette Lowland Aquifer system, Oregon and Washington: U.S. Geological Survey Professional Paper 1424-B, 82p.

Well Location Map

T-12944 Barnett



NOTE: This is not a survey document and should not be used as such.

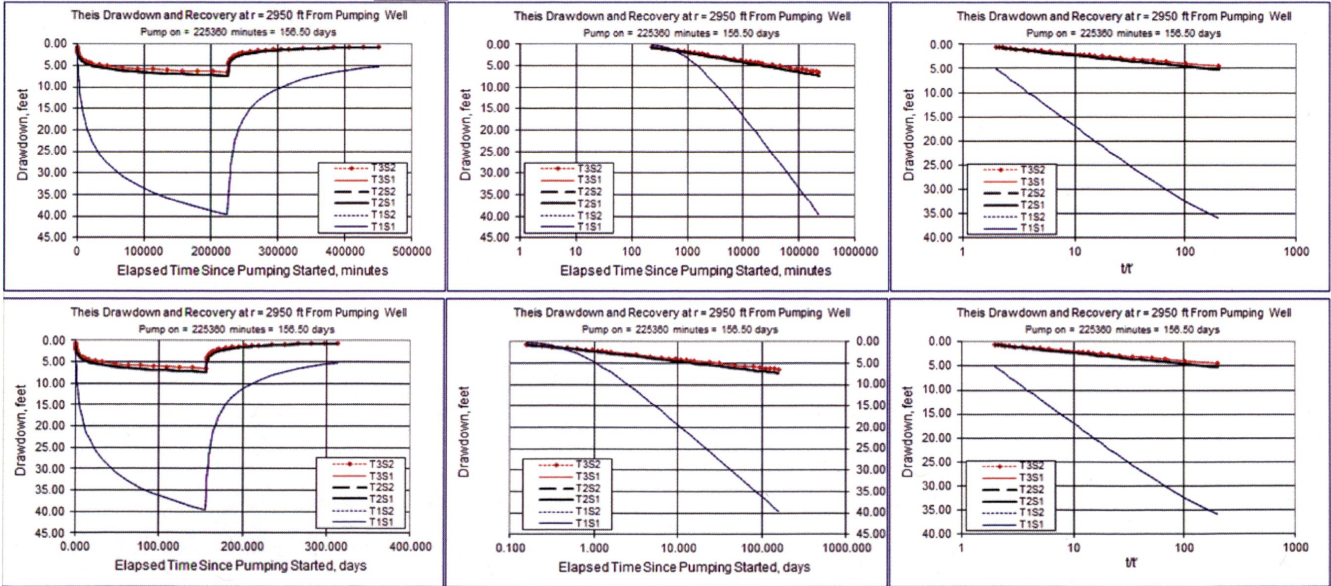
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This Time-Drawdown Worksheet v.3.00

Calculates Theis nonequilibrium drawdown and recovery at any arbitrary radial distance, r, from a pumping well for 3 different T values and radial distance, r, from a pumping well for 3 different T values and 2 different S values.
 Written by Karl C. Wozniak September 1992. Last modified December 30, 2014

Input Data:	Var Name	Scenario 1	Scenario 2	Scenario 3	Units
Total pumping time	t		156.5		d
Radial distance from pumped well:	r		2950.00		ft
Pumping rate	Q		243.0		gpm
Hydraulic conductivity	K	13	97	113	ft/day
Aquifer thickness	b		38		ft
Storativity	S ₁		0.00010		46,780.75 cfd
	S ₂		0.00010		1.07 afd
Transmissivity Conversions	T _{ftpd}	500	3,700	4,300	ft ² /day
	T _{ft²/pm}	0.3473	2.5695	2.9862	ft ² /min
	T _{gpd/ft}	3.741	27.676	32.165	gpd/ft

Recalculate Use the Recalculate button if recalculation is set to manual



This Time-Drawdown Worksheet v.3.00

Calculates Theis nonequilibrium drawdown and recovery at any arbitrary radial distance, r, from a pumping well for 3 different T values and radial distance, r, from a pumping well for 3 different T values and 2 different S values.
 Written by Karl C. Wozniak September 1992. Last modified December 30, 2014

Input Data:	Var Name	Scenario 1	Scenario 2	Scenario 3	Units
Total pumping time	t		156.5		d
Radial distance from pumped well:	r		650.00		ft
Pumping rate	Q		3.7		gpm
Hydraulic conductivity	K	13	97	113	ft/day
Aquifer thickness	b		38		ft
Storativity	S_1		0.00010		712.30 cfd
	S_2		0.00010		0.02 afd
Transmissivity Conversions	T_ftpd	500	3,700	4,300	ft ² /day
	T_ft2pm	0.3473	2.5695	2.9862	ft ² /min
	T_gpdft	3.741	27.676	32.165	gpd/ft

Recalculate Use the Recalculate button if recalculation is set to manual

