

Groundwater Transfer Review Summary Form

Transfer/PA # T- 13728

GW Reviewer Joe Kemper Date Review Completed: 12/20/2021

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-13728

Applicant Name: Mike and Amy Anderson

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

Reviewer(s): Joe Kemper

Date of Review: 12/20/2021

Date Reviewed by GW Mgr. and Returned to WRSD: JTI 2/1/22

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 requests adding a sump (Sump 1), Well 1 (JOSE 60592), and Well 2 (JOSE 59861) as APOAs to a valid sump (JOSE 19409) under GR-4090.

It is noted that GR 4090 was modified in 2012 by T-11417, which distinguished 12 acres to be irrigated by separate sump located at 230' N, 3390' W from SE corner of section 9. That POA is not associated with the changes proposed in this requested GR modification.

2. Will the proposed POA develop the same aquifer (source) as the existing authorized POA?
☒ Yes ☒ No Comments: The current POA (JOSE 19409) is approximately 14 feet deep and produces groundwater from the upper extent of an aquifer hosted in unconsolidated alluvium (Qal and Qoa). These sediments were deposited over marine-sedimentary bedrock of the Galice Formation to a thickness of 175-200 feet. The aquifer appears to pinch out as it approaches the adjacent hillslopes formed by the Galice Formation. Water levels are reported to be 5-10 feet below land surface. The requested APOA Sump 1 is reportedly 10 feet deep, which should only access the unconsolidated target aquifer i.e. same source.

Well 1 (JOSE 60952) produces primarily from WBZs within the underlying Galice Formation, where water is stored and transmitted through secondary fractures and joints. The well report shows that JOSE 60952 is under flowing artesian conditions, indicating different hydraulic conditions than the alluvial aquifer. **This evidence indicates that Well 1 accesses a different aquifer system than the current permitted POA i.e. not same source.**

The well report submitted for Well 2 (JOSE 59861) is a deepening log and does not provide details regarding lithology encountered or complete well construction, specifically the surface seal. A review of well reports filed for the adjacent TRS do not indicate a conclusive match with an original log that would show encountered lithology and original construction. **Available information cannot confirm which aquifer Well 2 accesses and thus cannot be confirmed as accessing the same source.** Furthermore, the deepening log JOSE 59861 does indicate flowing artesian conditions, which suggests the well accesses the fractured bedrock aquifer i.e., not the same source as the current POA, JOSE 19409.

3. a) Is there more than one source developed under the right (e.g., basalt and alluvium)?
☒ Yes ☒ No APOA sump 1 accesses the alluvial aquifer only. Well 1 is constructed so that it is open to both the alluvial aquifer and the bedrock aquifer. Well 2 has unknown construction.
 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.): The well report for Well 1 (JOSE 60592) indicates that bedrock aquifer is the primary (>50%) source of water to each well but still can receive water from the overlying sediments. A finding cannot be made for Well 2.
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 several permitted sumps that are 1500-2000 feet to the west of the proposed APOAs which may see a some increase in interference. Adjacent tax lots (701, 702, and 791) within 150-500 feet likely obtain water from exempt wells which will likely see an increase in interference from the proposed changes.
 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: APOA sump 1 may be able to pump at a high rate from the alluvial aquifer, but its shallow construction will limit its ability to draw other wells down. Adjacent wells that fully penetrate the alluvial aquifer would not be injured by this limited drawdown. Adjacent wells constructed into the underlying Galice Formation may be impacted by Well 1. Well 1 is located 150-300 feet from JOSE 54006, which supplies TL 701 and is at the highest risk of injury. A Theis distance drawdown model is used to estimate the impacts of maximum use from Well 1 on JOSE 54006. Results shown below indicate that the proposed changes will not likely cause injury to JOSE 54006 or other wells in the area, largely because Well 1 has a low yield. Findings cannot be made about Well 2.

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 changes would move groundwater pumpage approximately 1650 feet further from Deer Creek which will reduce the resulting interference with those surface water flows.

APOA Sump 1 is located approximately the same distance (1850 feet) from Crooks Creek as the valid sump. However, moving groundwater pumpage to APOA Sump 1 is expected to increase interference with Crooks Creek because the stream depletion from the current valid sump is concentrated almost wholly on Deer Creek, located just 100 feet to the south.

APOA Well 1 accesses a confined aquifer buffered from adjacent surface water by the target alluvial aquifer. Production from those wells is expected to decrease interference with both Crooks Creek and Deer Creek. Findings cannot be made about Well 2.

- 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: Crooks Creek

☒ Minimal ☐ Significant

Provide context for minimal/significant impact: The Hunt (1999) model is used to estimate stream depletion from APOA Sump 1 on Crooks Creek. These results indicate that moving groundwater pumpage to APOA Sump 1 will result in interference with Crooks Creek. The results cannot quantify the exact change in interference because of the presence of multiple streams and wells. There is not a preponderance of evidence that the requested changes will significantly increase interference with adjacent surface water sources. Moving groundwater pumpage from the valid sump to APOA Sump 1 should reduce stream depletion overall because it moves production further from Deer Creek.

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: Well 2 (JOSE 59861) does not conclusively match with an original well report. JOSE 10403, the closest match) was drilled to a depth of 180 feet, but the location is reportedly on a different tax lot and was cased and sealed to a depth of 60 feet. JOSE 59861 indicates different hydraulic conditions, suggests a seal of 18 feet, and does not indicate casing depth. The current available information for Well 2 would not likely meet current Well Construction standards.

8. Any additional comments: _____

References

Hunt, B. 1999. Unsteady Stream Depletion from Ground Water Pumping. Journal of Hydrologic Engineering, Vol 8(1), pp 12-19

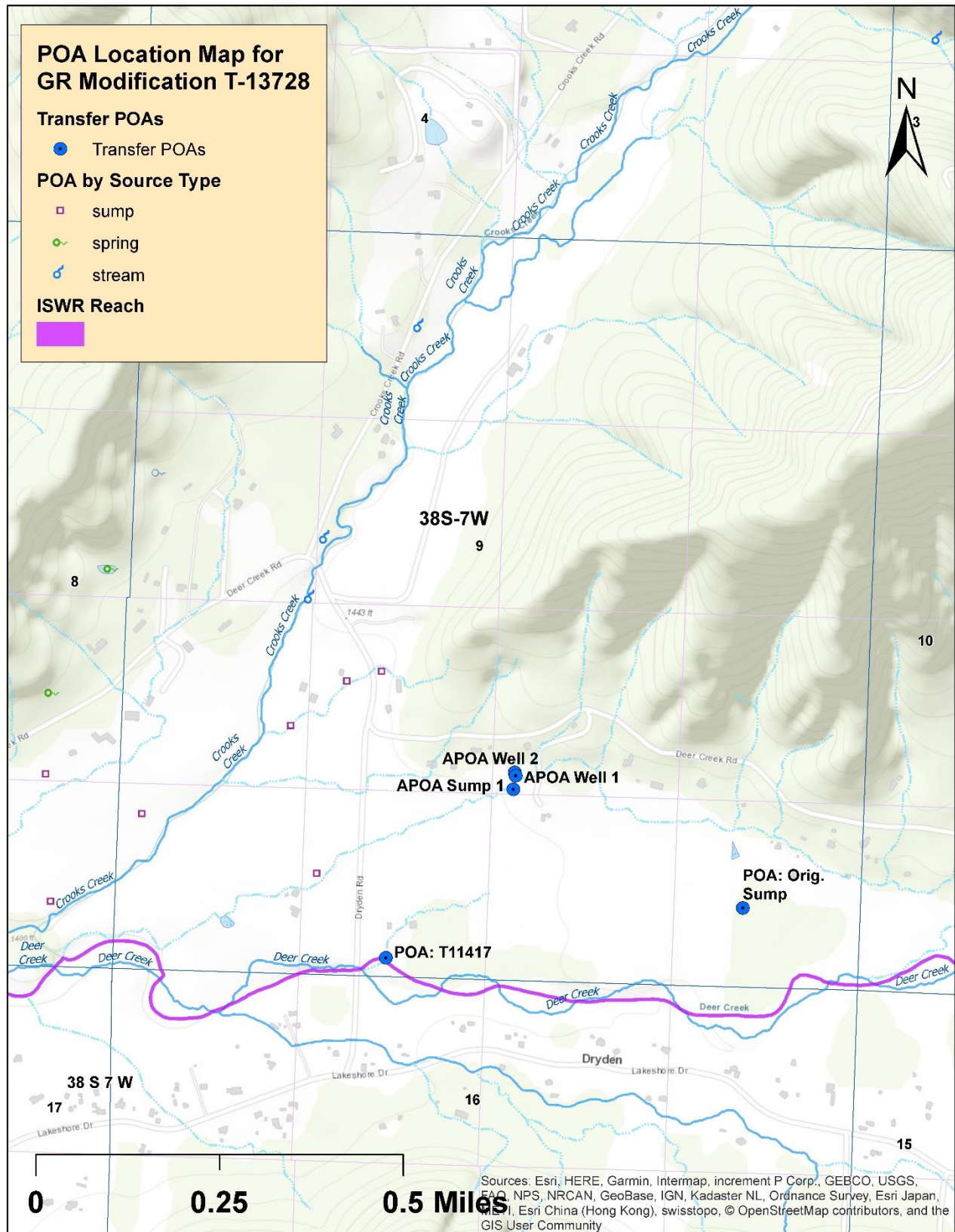
OWRD Groundwater Information System (GWIS) Database – Accessed 12/20/2021

Page, N.J., Moring, Barry, Gray, Floyd, Cannon, Jerome, and Blair, W.N., 1981, Reconnaissance geologic map of the Selma quadrangle, Josephine County, Oregon: U.S. Geological Survey, Miscellaneous Field Studies Map MF-1349, scale 1:62,500

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, Am. Geophys. Union Trans., vol. 16, pp. 519-524.

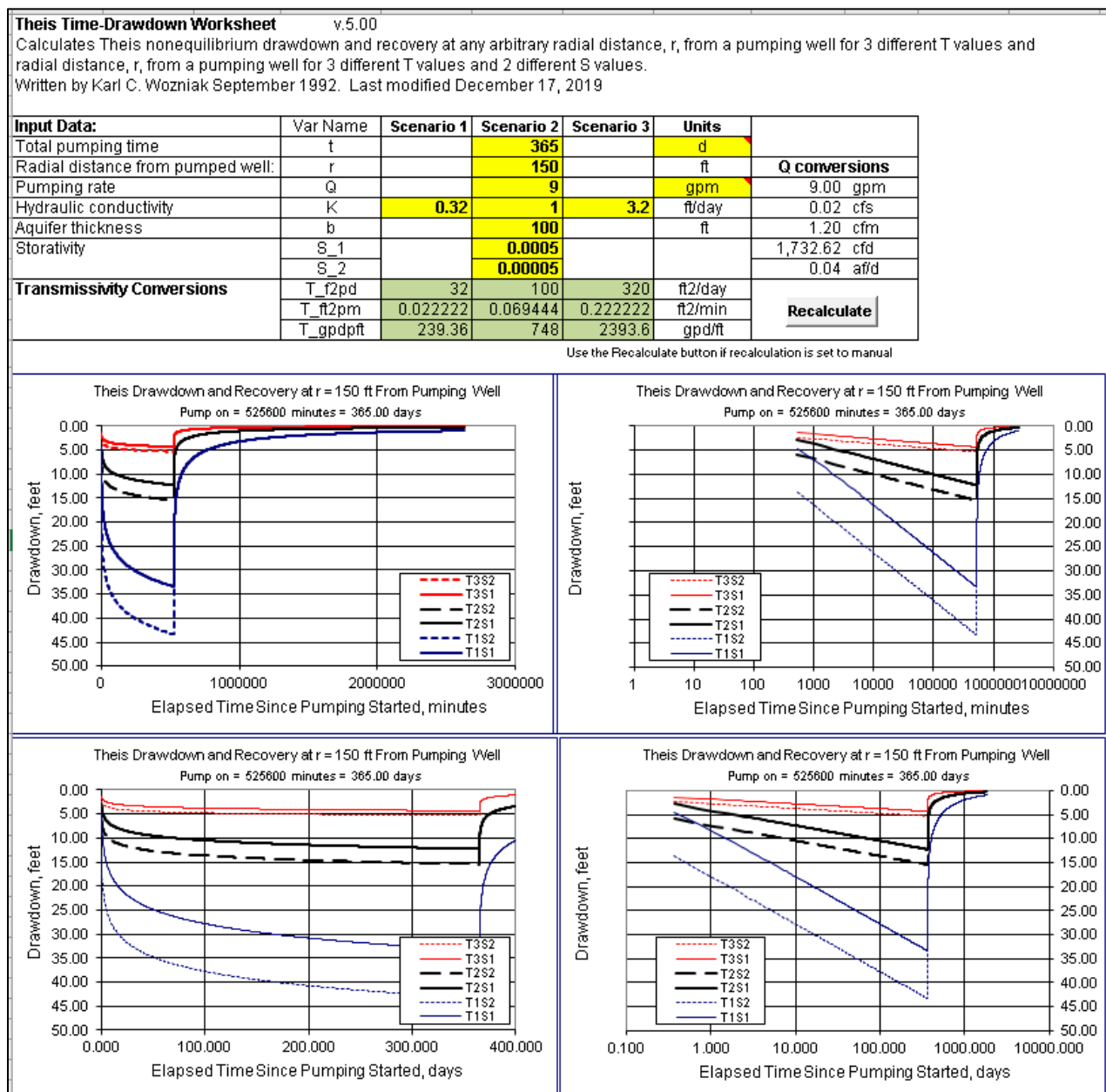
Wells, F.G., Hotz, P.E., and Cater, F.W., Jr., 1949, Preliminary description of the geology of the Kerby quadrangle: Oregon Department of Geology and Mineral Industries, Bulletin 40, scale 1:96,000

Transfer Map



Theis Distance Drawdown Modeling

The scenario below simulates the effects of Well 1 pumping at its maximum rate. Model parameters approximate bulk aquifer properties. This model represents the maximum well-to-well interference, and actual drawdowns are likely to be less.



Stream Depletion Modeling

The below scenario assumes that the applicant would pump their maximum rate 0.334 cfs from APOA sump 1 for 203 days until they reach their permitted volume (54 acres with a 2.5 foot duty or 135 acre feet). Aquifer parameters are representative of estimated bulk properties from the heterogenous sediment package at shallow depths.

Application type:	T
Application number:	13728
Well number:	1
Stream Number:	1
Pumping rate (cfs):	0.334
Pumping duration (days):	203
Pumping start month number (3=March)	3.0

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	1850	1850	1850	ft
Aquifer transmissivity	T	320	1000	3200	ft ² /day
Aquifer storativity	S	0.05	0.01	0.005	-
Aquitard vertical hydraulic conductivity	Kva	0.01	0.05	0.1	ft/day
Not used		1	1	1	
Aquitard thickness below stream	babs	4.0	3.0	2.0	ft
Not used		1	1	1	
Stream width	ws	15	15	15	ft

Stream depletion for Scenario 2:

Days	10	330	360	30	60	90	120	150	180	210	240	270	300
Depletion (%)	1	14	13	7	13	18	22	25	27	29	23	19	17
Depletion (cfs)	0.00	0.05	0.04	0.02	0.04	0.06	0.07	0.08	0.09	0.10	0.08	0.06	0.06

