

Groundwater Transfer Review Summary Form

Transfer/PA # T- 12926

GW Reviewer M. Thoma

Date Review Completed: 12-10-18

Summary of Enlargement (Same Source) Review:

The proposed transfer fails to keep the original place of use from receiving water from the same source.

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.

Summary of Well Construction Assessment:

The proposed POA does not have a well log.

The proposed POA does not appear to meet current well construction standards. 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.



Oregon Water Resources Department
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Salem, Oregon 97301-1271
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Application: T-12926

Proposed Changes: POA APOA
 USE POU

Reviewer(s): Michael Thoma

Ground Water Review Form:

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

Applicant Name: Horsefly Irr. District

SW→GW RA
 OTHER

Date of Review: 12/11/2018

Date Reviewed by GW Mgr. and Returned to WRSD: 12/17/18

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 adding one additional POA to existing Certificates 42738 and 91296. Both existing certificates authorize use from the same well, KLAM 12457. Cert. 42738 authorizes 9.34 cfs and Cert. 91296 authorizes 2.77 cfs. The result of this transfer would allow a maximum of 12.11 cfs (5435 gpm) of appropriation from the new APOA.

Will the proposed POA develop the same aquifer (source) as the existing authorized POA?

Yes No Comments: A detailed well log for the existing well, KLAM 12457, does not exist but the well depth is reported as 470 or 550 ft (from well report and permit, respectively) and the reported yield of 1500 gpm implies that the well is producing primarily from volcanic-rock zones (often referred to as the “basalt” aquifer) underlying the sediment zones within the Yonna Valley Basin. The APOA proposes a completed depth of 400 ft and a seal depth of 400 ft which should also encounter the same volcanic-rock aquifer zones. The reported seal depth of 400 ft is inferred by this review to mean the well will be sealed to near the bottom.

The well report for the existing well (attached) does not describe well construction and only a description of “30 ft of casing” is reported on the permits that list this as the POA. Therefore, there is some difficulty in concluding that the APOA would be producing from the same aquifer or that a well-construction condition would be adequate to ensure the APOA is producing from the same source aquifer. However, reported well yields in the sedimentary aquifer zones are 10-50 gpm so only the volcanic-rock source would adequately provide the amount of water required for this use. Since the new well will be required to meet current well-construction standards it will likely be required to be completed into the volcanic-rock aquifer zones and so this review assumes production of the new well will be solely from the volcanic-rock aquifer zone.

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

Yes No Comments: The existing POA is reported to be cased to only 30 ft and so would be open to both the upper, sediment zone and a deeper volcanic-rock zone. The high well yield on the existing well implies that production is primarily from the deeper volcanic-rock aquifer zones but the sedimentary zones are productive as well.

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.): Although it is likely that nearly all of the production is supplied by the deeper volcanic-rock aquifer zone, this review finds that **in order to avoid enlargement of the water right** by increasing production from the upper sedimentary zone the new well should be continuously cased and sealed into the volcanic-rock, or "basalt" zones which should be encountered at approx. 250 ft depth (Grondin, 2004).

2. 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:

(1) The proposed APOA will be located approx. 0.5 miles closer to well Klam 13458 which is the POA on certificates 46871, 52214, 67509, 83017, and 83018. The closer distance with the new APOA will increase interference.

(2) The proposed change will also increase interference to Bonanza Big Springs where it has been documented that groundwater pumping in the area leads to back-flow of the springs (from Lost River into the aquifer) which can be a source of contamination to domestic well users in the town of Bonanza. Currently there are several water rights that are subject to regulation when groundwater levels in the vicinity of the springs drop close to river levels in the Lost River. Any **significant increase** in drawdown at the springs would lead to those groundwater users being regulated sooner, and thus would be considered injury per OAR 690-380-0010(3).

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:

(1) Transmissivity values for the deeper volcanic-rock aquifer zones are reported to be 10^4 - 10^5 ft²/day and drawdown modeling (see Attachment C) suggests that maximum increases in interference caused by the proposed transfer will be < 0.5 ft by the end of the irrigation season.

(2) Using the same model values, the increase in drawdown at Bonanza Big Springs caused by the proposed change would be < 0.1 ft by the end of the irrigation season (Attachment D). Day-to-day fluctuations in the stage-groundwater relationship at Bonanza Big Springs are approx. 0.1 ft and this review finds that the additional drawdown caused by the proposed change is **not significant**.

3. 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 nearest surface water source to the POAs is the Lost River, which is over 3 miles from the POAs. At that distance and given the hydrogeologic parameters (see #4) and complex geologic structure between the POAs and the river, any increase in interference will not be significant enough to be considered here.

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
Stream: _____ Minimal Significant

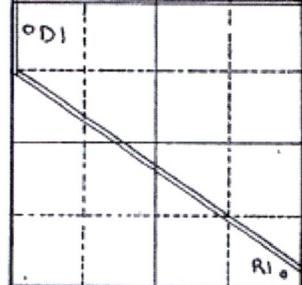
Provide context for minimal/significant impact: _____

4. What conditions or other changes in the application are necessary to address any potential issues identified above: _____

5. Any additional comments: The well report for the existing POA, KLAM 12457, is insufficient to interpret well construction and provides no record that minimum well-construction standards have been met. Also the reported 30 ft of casing is likely allowing for comingling between the shallow sedimentary aquifer zone and deeper volcanic-rock aquifer zones.

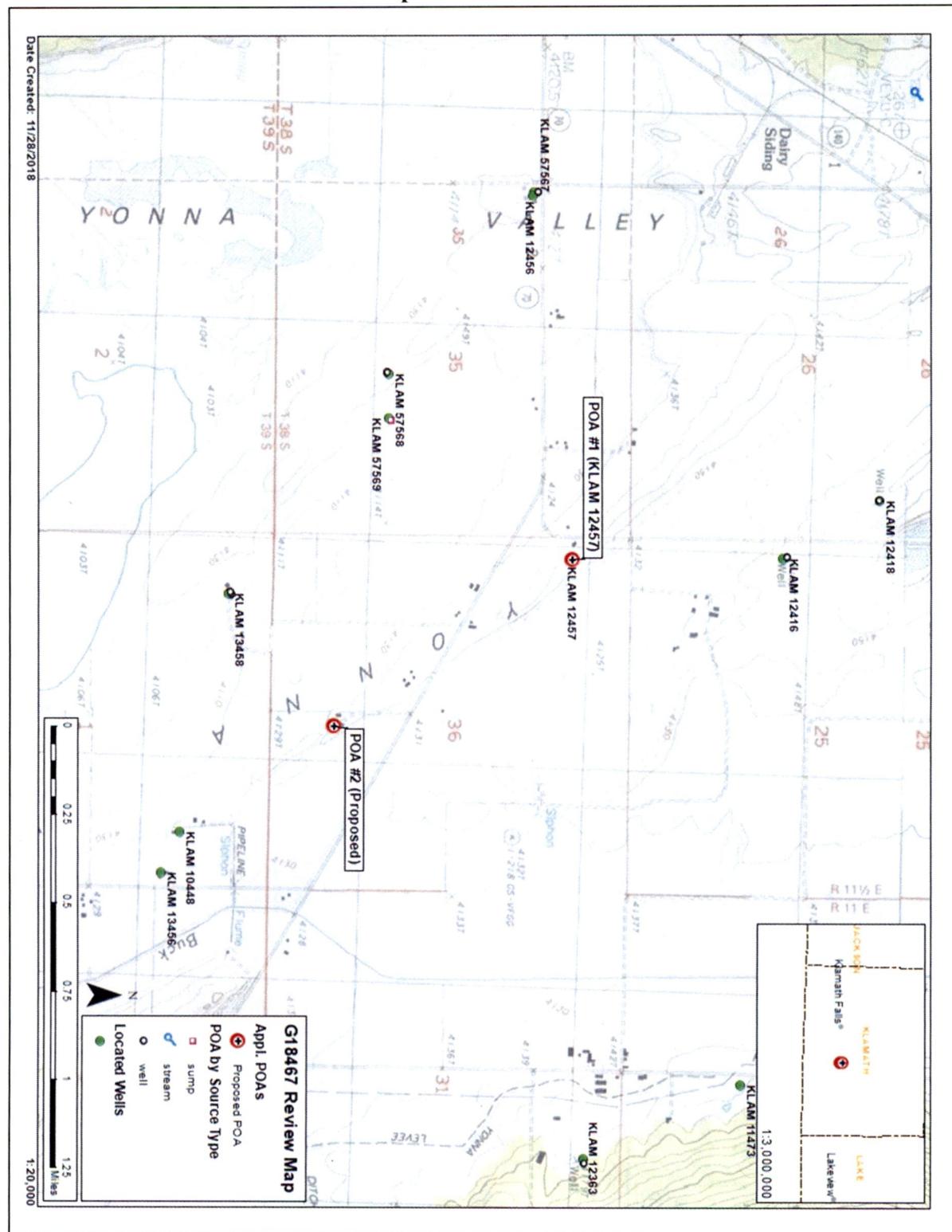
Grondin, G. H. 2004. Ground water in the Eastern Lost River Sub-Basin, Langell, Yonna, Swan Lake, and Poe Valleys of Southeastern Klamath County, Oregon. Oregon Water Resources Dept. Ground Water Report No. 41.

Attachment A: Water Well Report for KLAM 12457

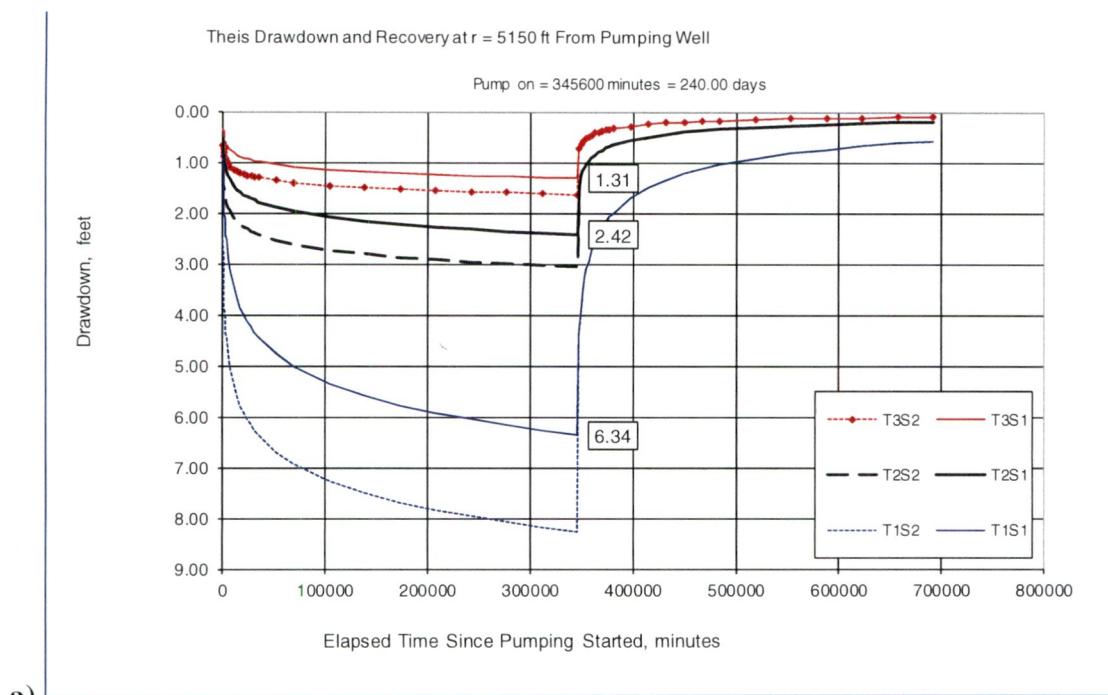
STATE ENGINEER Salem, Oregon	KLAM 12457	Well Record	STATE WELL NO. 38/111-36D(1) COUNTY APPLICATION NO. 0291, Con. II, 1 6-39064pl. G-3670 A-1
OWNER: R. Hoeffler	MAILING ADDRESS:	CITY AND STATE:	
LOCATION OF WELL: Owner's No. NW NW 36 38 X. 11 1/2 E. 1/4 Sec. T. S. R. W. W.M.	Bearing and distance from section or subdivision corner		
Altitude at well 4,158			
TYPE OF WELL: Drilled Date Constructed	Depth drilled 470 Depth cased		
CASING RECORD: 18 inches			
FINISH:			
AQUIFERS:			
WATER LEVEL: 45.66 feet below land surface, August 22, 1949			
PUMPING EQUIPMENT: Type H.P. Capacity G.P.M.			
WELL TESTS: Drawdown ft. after hours G.P.M. Drawdown ft. after hours G.P.M.			
USE OF WATER Irrigation Temp. °F. 19 SOURCE OF INFORMATION USGS			
DRILLER or DIGGER			
ADDITIONAL DATA: Log Water Level Measurements Chemical Analysis Aquifer Test			
REMARKS: Hardness 225ppm, chloride 9ppm. Drilled for oil prospect; 30-in. hole to 1,580 ft.; now cleaned out to 470 foot depth; reported yield 1,500 gpm; chemical tests made on a dipped sample.			

State Printing 1935

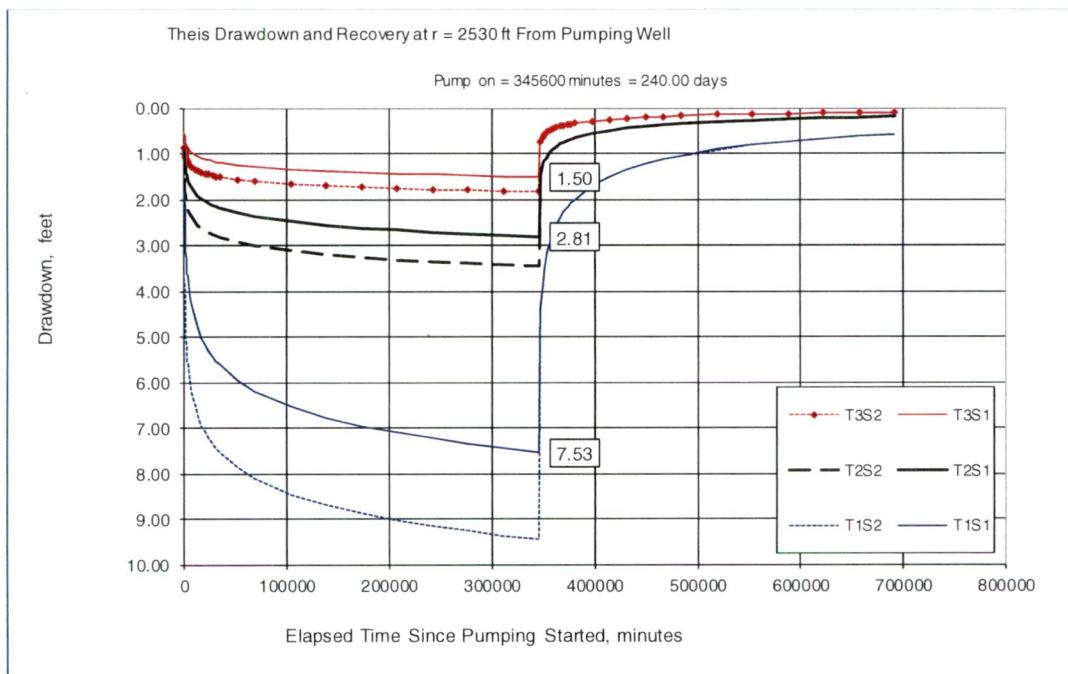
Attachment B: Transfer Review Map



Attachment C: Modeled interference to nearby well KLAM 13458 from a) the existing POA and b) the APOA. Scenario T2S1 represents optimal model parameters.



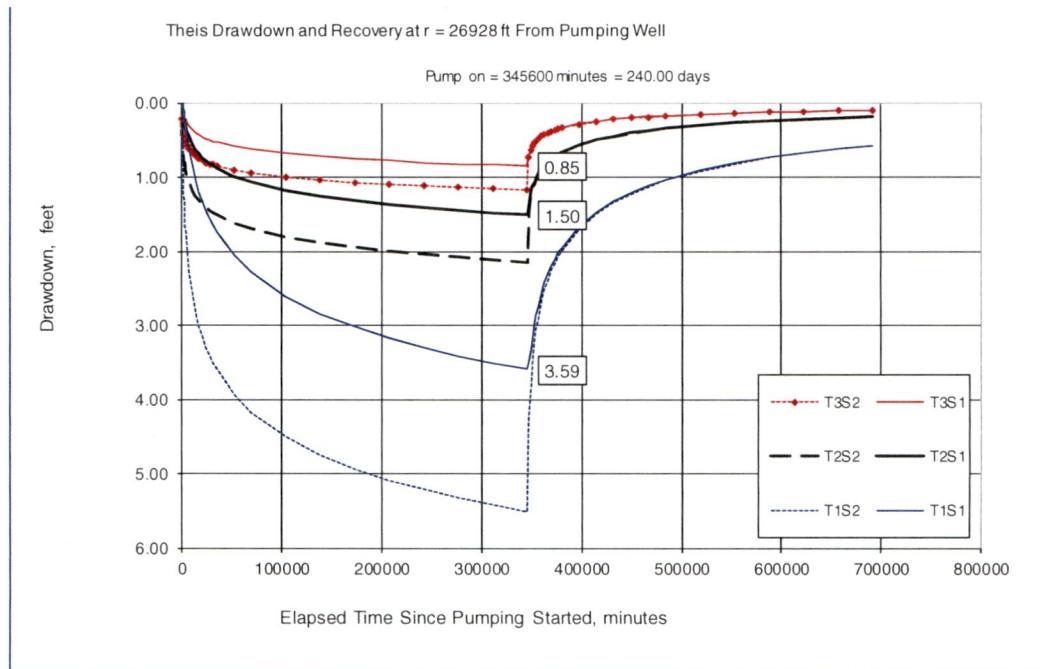
a)



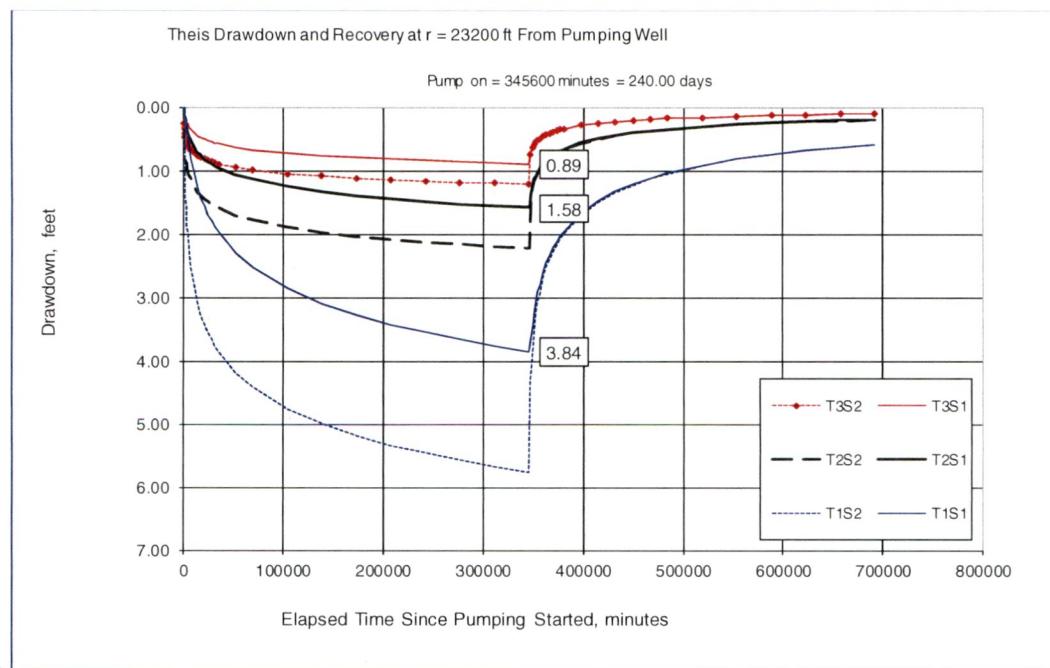
b)

Attachment D: Modeled interference near Bonanza Big Springs

The following figures present modeling results of drawdown near Bonanza Big Springs from a) the existing POA and b) from the proposed APOA. The model uses three different transmissivity values and two different storage values that capture the range of values reported by Grondin (2004). According to Grondin (2004), interference to the actual springs is about 0.75 of the modeled drawdown. Note that differences in drawdowns between (a) and (b) are less than 0.1 for Scenario T2S1 – which represents the optimal model parameters, and less than 0.25 for Scenario T1S2 – which represents the most-exaggerated model parameters (largest drawdown)



a)



b)