Groundwater Transfer Review Summary Form

Transfer/PA # T- _14386_

GW Reviewer _Steve Ahlquist/Travis Brown_ Date Review Completed: _10/22/2024_

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-14386 Applicant Name: Robinson Farms LLC

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

Reviewer(s): Steve Ahlquist/Travis Brown Date of Review: 10/22/2024

Date Returned to WRSD: 10/30/2024

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 _____

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1. Basic description of the changes proposed in this transfer: The applicant proposes to change the POA for Claim GR-2000. Claim GR-2000 currently authorizes irrigation of up to 59 acres at a rate of 0.401 cfs from 3 authorized POAs: YAMH 6872, YAMH 57192, and "Stocks Well 2" (not yet constructed). The applicant proposes to replace one authorized POA (YAMH 57192) for 48.03 acres under GR-2000 with two proposed POAs: YAMH 453 and YAMH 59181. The proportional total maximum pumping rate for the proposed POAs under this GR modification would be 0.326 cfs, based on subject acreage.

   The proposed POAs have overlapping water rights not included in this GR modification application. Potential injury resulting from the proposed changes will be assessed for each well based on the total combined maximum pumping rate under all authorized and proposed water rights and claims. The overlapping proposed and authorized rights are summarized in the table below.

POA	Water Right	Use	Rate (cfs)
"Well 1" / YAMH 6872	Claim GR-2000	Irrig. (3.5 ac / 8.75 af)	0.0238
"Stocks Well 2"	Claim GR-2000	Irrig. (5.8 ac / 14.5 af)	0.0394
"Well 2" / YAMH 57192	Claim GR 2000	Irrig. (13.27 ac / 33.18 af) Suppl. Irrig. (36.43 ac / 91.08 af)	0.3377
"Well 3" / YAMH 453	Cert 97691	Nursery (66.6 ac / 333 af) [a]	0.47 [a]
	Claim GR 2000	Irrigation (11.6 ac / 29 af) [b,c] Suppl. Irrig. (36.43 ac / 91.08 af) [b,c]	0.326 [b,c]
	Cert 81063	Irrigation (45 ac / 112.5 af) [b]	0.35 [b]
	TOTAL	159.63 ac / 565.58 af [c]	1.146 [c,d]
"Well 4" / YAMH 59181	Cert 97691	Nursery (66.6 ac / 333 af) [a]	0.24 [a]
	Claim GR 2000	Irrigation (11.6 ac / 29 af) [b,c] Suppl. Irrig. (36.43 ac / 91.08 af) [b,c]	0.326 [b,c]
	TOTAL	114.63 ac / 453.08 af [c]	0.566 [c,d]

[a]Period of use: November 1 through May 31
[b]Period of use: March 1 through October 31
[c]Pending approval of this GR Modification (T-14386)
[d]Total maximum flow rates account for overlapping nursery use on Cert 97691 with irrigation use on other rights from March 1 to May 31.

Note: There are discrepancies between the metes and bounds location descriptions provided in the application and the locations depicted on the application map. For the purposes of this review, the location of the authorized and proposed POAs are as follows:

- YAMH 59181 is located approximately 190 feet northeast of the meets and bounds description - based on GPS coordinates provided in the well log and the application map.
- YAMH 453 is located approximately 120 ft east of the meets and bounds location description as visible in aerial imagery.
- YAMH 57192 is located 190 feet northeast of the meets and bounds description, as shown on the application maps.

2. Will the proposed POA develop the same aquifer (source) as the existing authorized POA?
☒ Yes ☐ No Comments: The authorized POA and proposed POAs produce water from sands and gravels of the semi-confined Willamette aquifer. Well logs for the area show approximately 60 feet of Willamette silt, underlain by approximately 40 feet of sand and gravel, which is the principal water bearing unit.

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.): _____

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 proposed To-POAs (YAMH 59181 & YAMH 453) are closer to several neighboring wells than the authorized From-POA (YAMH 57192). The reduced intervening distance will likely result in an increase in interference with these wells.

YAMH 59181 is located approximately 510 feet southeast from the closest known domestic well (YAMH 56818), whereas the authorized From-POA (YAMH 57192) is approximately 1,240 feet southeast of YAMH 56818. YAMH 59181 is also approximately 240 feet closer than YAMH 57192 to neighboring well YAMH 6869, which is an authorized POA under Certificate 61999.

YAMH 453 is approximately 940 feet west of the residential property at Tax Lot 800, which is likely supplied by a domestic well, whereas YAMH 57192 is approximately 2,700 west of Tax Lot 800.

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: To assess potential injury at nearby wells due to the proposed use, drawdown from pumping at the proposed To-POAs (YAMH 453 & YAMH 59181) were estimated using the Theis (1935) solution for drawdown in a confined aquifer (see attached Theis Drawdown Analysis).

Results of the Theis analysis indicate that the proposed use would likely result in injury to YAMH 6869 if YAMH 59181 were pumped at the maximum combined rate of 0.566 cfs over the period of overlapping nursery and irrigation use (91 days; March 1 – May 31) under Certificate 97691 and Claim GR-2000. However, it is unlikely that YAMH 6869 could yield the combined maximum rate allowed under the proposed use. Based on drawdown data recorded for a pumping test at YAMH 59181, the maximum achievable pumping rate is likely less than 0.397 cfs (178 gpm) which will not cause injury to neighboring wells.

Results of the Theis analysis indicate that the proposed use would likely result in injury to nearby domestic wells (i.e. Tax Lot 800) if YAMH 453 were to pump at the maximum combined pumping rate over the period of overlapping nursery and irrigation use from March through May. However, it is highly unlikely that YAMH 453 could yield the maximum combined pumping rate allowed under the proposed use. The maximum reported well yield for the area is 250 gpm (0.56 cfs) and the yield reported in the log for YAMH 453 is 200 gpm. Based on pumping test data collected at YAMH 453, the maximum achievable pumping rate for YAMH 453 is less than 276 gpm (0.615 cfs). Results of the Theis analysis indicate that, at a maximum pumping rate of 0.615 cfs, YAMH 453 is unlikely to cause injury to neighboring wells.

Based on the estimated maximum well yields for the proposed To-POAs, the proposed use is not likely to cause another groundwater right to not receive 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 proposed To-POAs are not closer than the authorized From-POA to Salt Creek, which is the closest surface water source. Proposed To-POA YAMH 59181 is closer (~2,970 ft) to the South Yamhill River than the authorized POA (YAMH 57192)(~3,650 ft). The reduced intervening distance could cause an increase in interference with the South Yamhill River.

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: South Yamhill River ☒ Minimal ☐ Significant

Stream: _____ ☐ Minimal ☐ Significant

Provide context for minimal/significant impact: The potential increase in interference with the South Yamhill River due to the proposed transfer was estimated using a streamflow depletion analytical model for a confined aquifer (Hunt 2003). The South Yamhill River is incised into the Willamette Silt and likely fully penetrates the confining silt unit in this area. Results indicate that stream depletion due to pumping could likely increase by 1.5 percent of the average rate of withdrawal after 245 days of continuous pumping at YAMH 59181 as a result of the proposed change. Assuming YAMH 59181 were to pump the full duty authorized under Claim GR-2000 (120.08 af) over the irrigation season at an average rate of 0.2481 cfs, the proposed change would result in less than 0.01 cfs of additional depletion to the South Yamhill River. Interference with Salt Creek, the closest surface water source to YAMH 59181, is expected to further attenuate stream depletion to the South Yamhill River. Therefore, the change in degree of interference with surface water resulting from the proposed change is expected to be minimal.

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: N/A

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

8. Any additional comments: N/A

References:

Application File: T-14386

Claim File: GR-2000

Certificates: 97691, 81063

Driscoll, F.G., 1986, Groundwater and Wells, Second Edition, Johnson Division, St Paul , Minnesota, 1,109 p.

Pumping Test Reports: YAMH 453, YAMH 6869, YAMH 6876, YAMH 59181

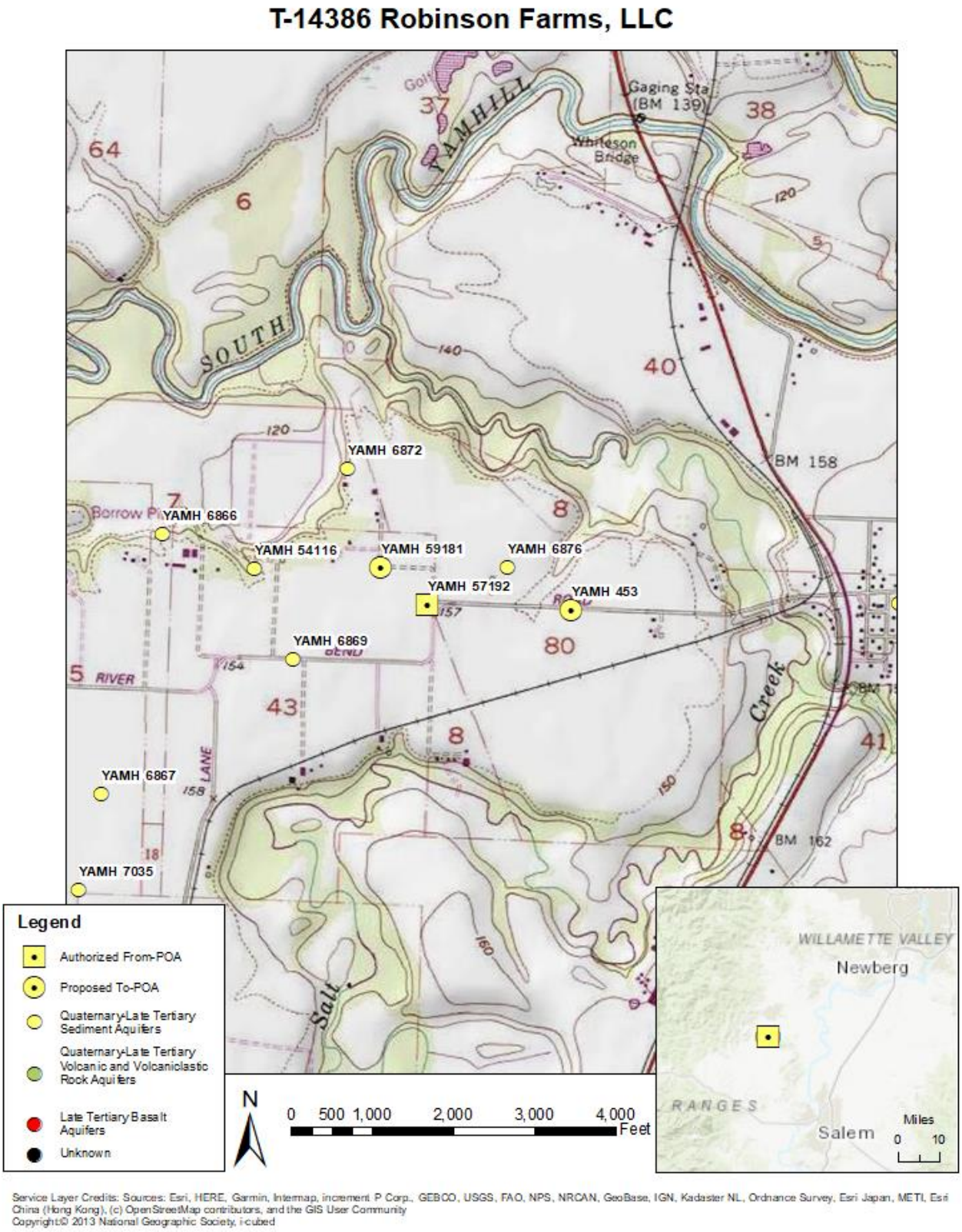
Gannett, M.W. and Caldwell, R., 1998, Geologic framework of the Willamette Lowland aquifer system, Oregon and Washington, Professional Paper 1424-A, 32 p: U. S. Geological Survey, Reston, VA.

Hunt, B., 2003, Unsteady stream depletion when pumping from semiconfined aquifer: Journal of Hydrologic Engineering, January/February, Vol 8, p. 12-19.

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.

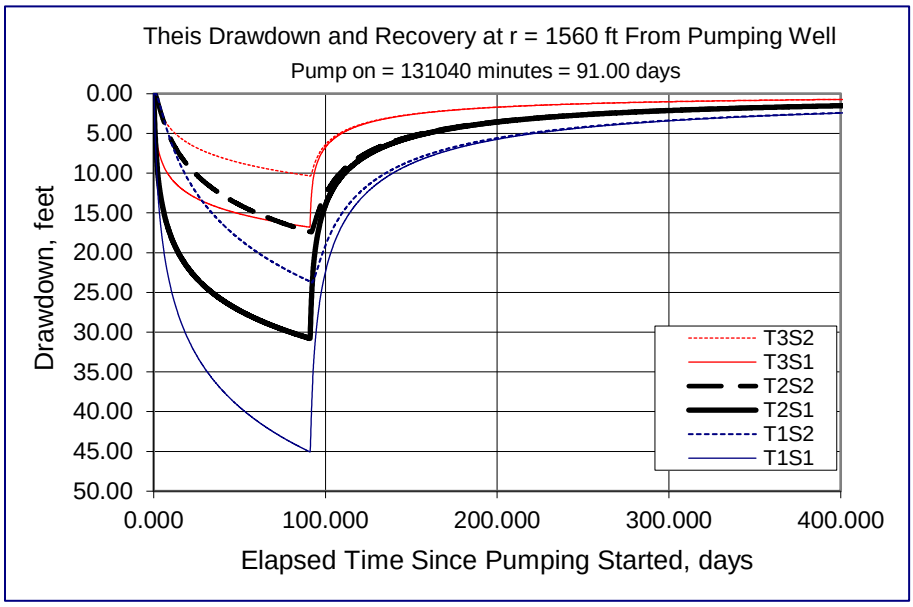
Woodward, D.G., Gannett, M.W., and Vaccaro, J.J., 1998, Hydrogeologic framework of the Willamette Lowland aquifer system, Oregon and Washington: U.S. Geological Survey Professional Paper 1424-B, 82 p.

Well Location Map



Theis Drawdown Analysis – YAMH 59181 Interference with YAMH 6869

Maximum Combined Rate (0.566 cfs) Scenario



Transmissivity: T1=410 ft^2/day | T2=660 ft^2/day | T3=1,380 ft^2/day [pumping test data]

Storativity: S1=0.0003 | S2=0.003 [estimated range]

Total Pumping Time = 91 days [overlapping period (3/1-5/31) under Cert 97691 and GR-2000]

Pumping Rate = 0.566 cfs [maximum combined pumping rate]

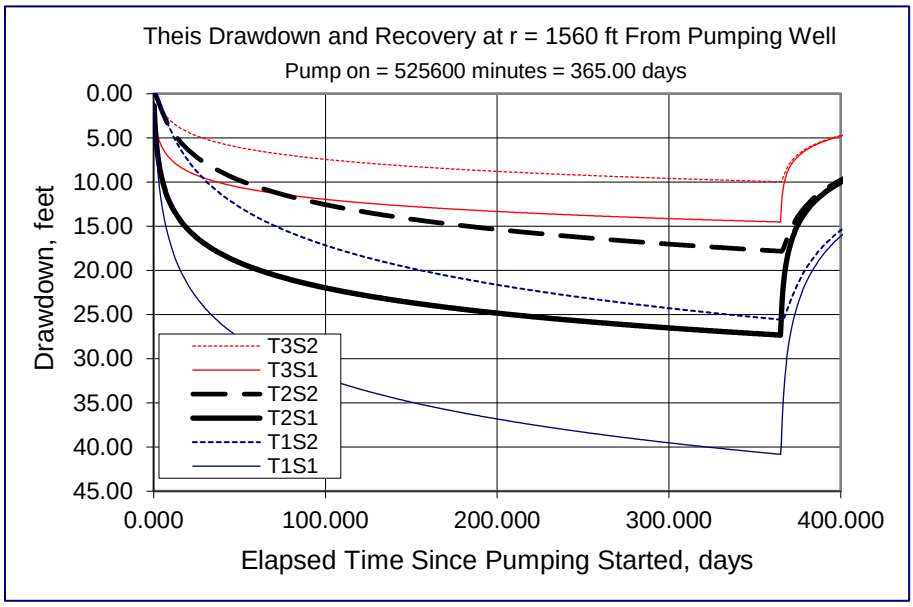
Radial Distance = 1,560 ft

YAMH 6869 (Cert 61999, 0.36 cfs, 1 POA)

SWL	24	ft bls	OWRD measurement (10/6/1983)
Aquifer Bottom	110	ft bls	Estimated based on well logs
Available Drawdown	86	ft	Aquifer Bottom - SWL
Pump Height Above Bottom	5	ft	Estimate
Required NPSH	5	ft	Estimate
Estimated Drawdown	45	ft	@ 162 gpm (based on spec cap of 3.61 gpm/ft estimate from transmissivity per Driscoll (1986) w/70% efficiency)
Minimum Water Column	55	ft	Estimated Drawdown + NPSH + Pump Height
Injury Interference Level	**31**	**ft**	**Available Drawdown - Minimum Water Column**

Theis Drawdown Analysis – YAMH 59181 Interference with YAMH 6869

Well-Limited Rate (0.397 cfs) Scenario



Transmissivity: T1=410 ft^2/day | T2=660 ft^2/day | T3=1,380 ft^2/day [pumping test data]

Storativity: S1=0.0003 | S2=0.003 [estimated range]

Total Pumping Time = 365 days

Pumping Rate = 0.397 cfs [estimated maximum well yield based on pump test drawdown data]

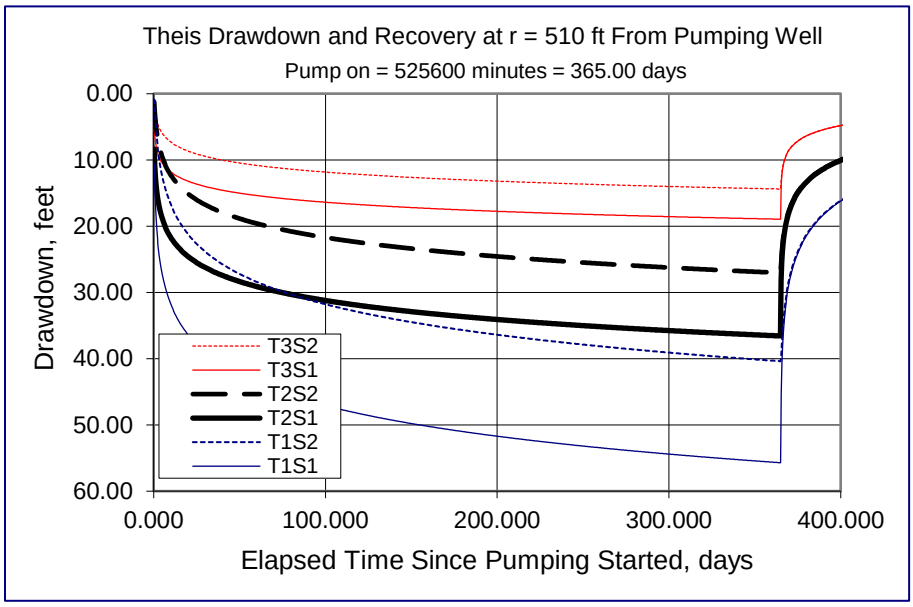
Radial Distance = 1,560 ft

YAMH 6869 (Cert 61999, 0.36 cfs, 1 POA)

SWL	24	ft bls	OWRD measurement (10/6/1983)
Aquifer Bottom	110	ft bls	Estimated based on well logs
Available Drawdown	86	ft	Aquifer Bottom - SWL
Pump Height Above Bottom	5	ft	Estimate
Required NPSH	5	ft	Estimate
Estimated Drawdown	45	ft	@ 162 gpm (based on spec cap of 3.61 gpm/ft estimate from transmissivity per Driscoll (1986) w/70% efficiency)
Minimum Water Column	55	ft	Estimated Drawdown + NPSH + Pump Height
Injury Interference Level	**31**	**ft**	**Available Drawdown - Minimum Water Column**

Theis Drawdown Analysis – YAMH 59181 Interference with YAMH 56818

Well-Limited Rate (0.397 cfs)



Transmissivity: T1=410 ft^2/day | T2=660 ft^2/day | T3=1,380 ft^2/day [pumping test data]

Storativity: S1=0.0003 | S2=0.003 [estimated range]

Total Pumping Time = 365 days

Pumping Rate = 0.397 cfs [estimated maximum well yield based on pump test drawdown data]

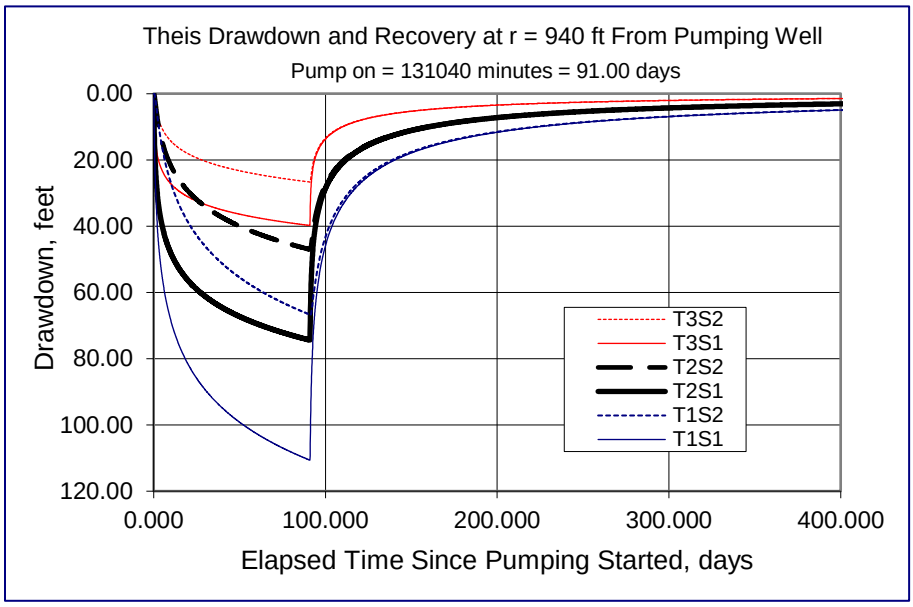
Radial Distance = 510 ft

YAMH 56818 (Exempt Domestic Well)

SWL	19	ft bls	Estimated from nearby well measurements
Aquifer Bottom	104	ft bls	Estimated based on well logs
Available Drawdown	85	ft	Aquifer Bottom - SWL
Pump Height Above Bottom	5	ft	Estimate
Required NPSH	5	ft	Estimate
Estimated Drawdown	21	ft	@ 35 gpm (based on spec cap of 1.7 gpm/ft estimate from transmissivity per Driscoll (1986) w/70% efficiency)
Minimum Water Column	31	ft	Estimated Drawdown + NPSH + Pump Height
Injury Interference Level	**54**	**ft**	**Available Drawdown - Minimum Water Column**

Theis Drawdown Analysis – YAMH 453 Interference with Tax Lot 800

Maximum Combined Rate (1.146 cfs) Scenario



Transmissivity: T1=410 ft^2/day | T2=660 ft^2/day | T3=1,380 ft^2/day [pumping test data]

Storativity: S1=0.0003 | S2=0.003 [estimated range]

Total Pumping Time = 91 days [overlapping period under Certs 97691, 81063, and GR-2000]

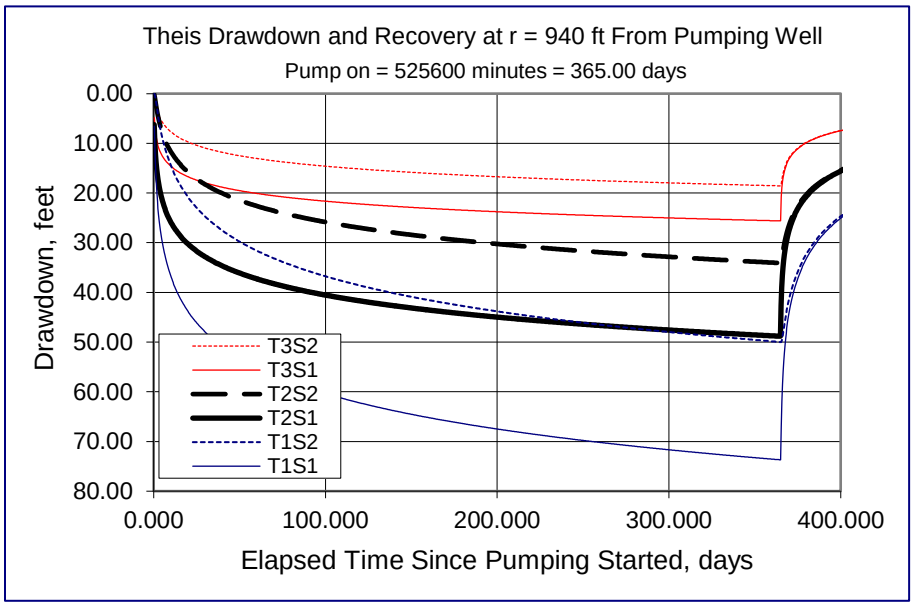
Pumping Rate = 0.615 cfs [maximum combined pumping rate]

Radial Distance = 940 ft

SWL	26	ft bls	Inferred from YAMH 453 and YAMH 55952 SWL measurement
Aquifer Bottom	133	ft bls	based on YAMH 453 well log
Available Drawdown	107	ft	Aquifer Bottom - SWL
Pump Height Above Bottom	5	ft	Estimate
Required NPSH	5	ft	Estimate
Estimated Drawdown	27	ft	@ 45 gpm (median well yield for area and spec cap of 1.7 gpm/ft estimated from transmissivity per Driscoll (1986) w/ 70% efficiency)
Minimum Water Column	37	ft	Estimated Drawdown + NPSH + Pump Height
Injury Interference Level	**70**	**ft**	**Available Drawdown - Minimum Water Column**

Theis Drawdown Analysis – YAMH 453 Interference with Tax Lot 800

Well-Limited Rate (0.615 cfs) Scenario



Transmissivity: T1=410 ft^2/day | T2=660 ft^2/day | T3=1,380 ft^2/day [pumping test data]

Storativity: S1=0.0003 | S2=0.003 [estimated range]

Total Pumping Time = 365 days

Pumping Rate = 0.615 cfs [estimated maximum well yield based on pump test drawdown data]

Radial Distance = 940 ft

SWL	26	ft bls	Inferred from YAMH 453 and YAMH 55952 SWL measurement
Aquifer Bottom	133	ft bls	based on YAMH 453 well log
Available Drawdown	107	ft	Aquifer Bottom - SWL
Pump Height Above Bottom	5	ft	Estimate
Required NPSH	5	ft	Estimate
Estimated Drawdown	27	ft	@ 45 gpm (median well yield for area and spec cap of 1.7 gpm/ft estimated from transmissivity per Driscoll (1986) w/ 70% efficiency)
Minimum Water Column	37	ft	Estimated Drawdown + NPSH + Pump Height
Injury Interference Level	**70**	**ft**	**Available Drawdown - Minimum Water Column**

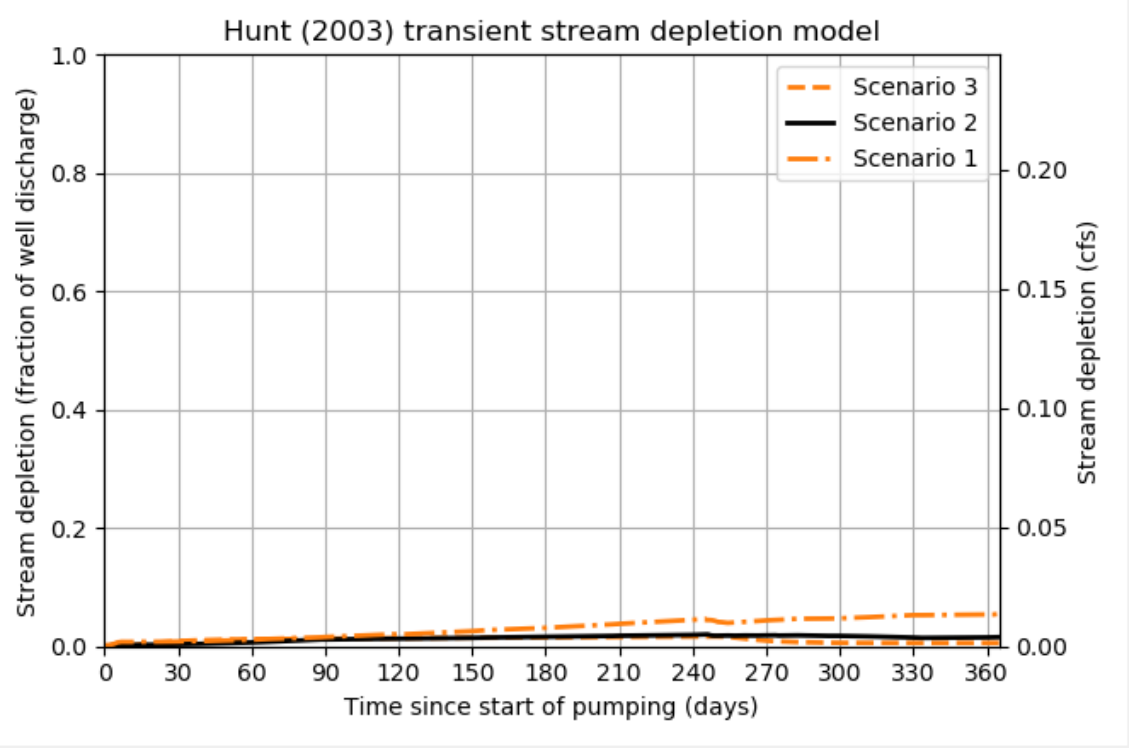
Hunt (2003) Stream Depletion Analysis – YAMH 57192 Depletion of South Yamhill River

Application type:	T
Application number:	14386
Well number:	2
Stream Number:	1
Pumping rate (cfs):	0.2481
Pumping duration (days):	245.0
Pumping start month number (3=March)	3.0
Plotting duration (days)	365

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	3650	3650	3650	ft
Aquifer transmissivity	T	1380	660	410	ft2/day
Aquifer storativity	S	.0003	.001	.003	-
Aquitard vertical hydraulic conductivity	Kva	.1	.05	.01	ft/day
Aquitard saturated thickness	ba	35	40	45	ft
Aquitard thickness below stream	babs	2	3	4	ft
Aquitard specific yield	Sya	0.2	0.2	0.2	-
Stream width	ws	50	50	50	ft

Stream depletion for Scenario 2:

Days	10	330	360	30	60	90	120	150	180	210	240	270	300
Depletion (%)	0	1	2	0	1	1	1	1	2	2	2	2	2
Depletion (cfs)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00



Hunt (2003) Stream Depletion Analysis – YAMH 59181 Depletion of South Yamhill River

Application type:	T
Application number:	14386
Well number:	4
Stream Number:	1
Pumping rate (cfs):	0.2481
Pumping duration (days):	245.0
Pumping start month number (3=March)	3.0
Plotting duration (days)	365

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	2970	2970	2970	ft
Aquifer transmissivity	T	1380	660	410	ft2/day
Aquifer storativity	S	.0003	.001	.003	-
Aquitard vertical hydraulic conductivity	Kva	.1	.05	.01	ft/day
Aquitard saturated thickness	ba	35	40	45	ft
Aquitard thickness below stream	babs	2	3	4	ft
Aquitard specific yield	Sya	0.2	0.2	0.2	-
Stream width	ws	50	50	50	ft

Stream depletion for Scenario 2:

Days	10	330	360	30	60	90	120	150	180	210	240	270	300
Depletion (%)	1	3	3	1	1	2	2	2	3	3	3	3	3
Depletion (cfs)	0.00	0.01	0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01