

Groundwater Application Review Summary Form

Application # G- 19476

GW Reviewer Stacey Garrison Date Review Completed: 5/16/2025

Summary of GW Availability and Injury Review:

☒ Groundwater for the proposed use is either over appropriated, will not likely be available in the amounts requested without injury to prior water rights, OR will not likely be available within the capacity of the groundwater resource per Section B of the attached review form.

Summary of Potential for Substantial Interference Review:

☒ There is the potential for substantial interference per Section C of the attached review form.

Summary of Well Construction Assessment:

☐ The well does not appear to meet current well construction standards per Section D of the attached review form. 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 and for conditions that may be necessary for a permit (if one is issued).

WATER RESOURCES DEPARTMENT

MEMO

May 16 2025

TO: Application G- 19476

FROM: GW: Stacey Garrison
(Reviewer's Name)

SUBJECT: Scenic Waterway Interference Evaluation

☐ YES The source of appropriation is hydraulically connected to a State Scenic
☒ NO Waterway or its tributaries

☐ YES
☒ NO Use the Scenic Waterway Condition (Condition 7J)

☐ Per ORS 390.835, the Groundwater Section is **able** to calculate ground water interference with surface water that contributes to a Scenic Waterway. The calculated interference is distributed below

☐ Per ORS 390.835, the Groundwater Section is **unable** to calculate ground water interference with surface water that contributes to a scenic waterway; **therefore, the Department is unable to find that there is a preponderance of evidence that the proposed use will measurably reduce the surface water flows necessary to maintain the free-flowing character of a scenic waterway**

DISTRIBUTION OF INTERFERENCE

Calculate the percentage of consumptive use by month and fill in the table below. If interference cannot be calculated, per criteria in 390.835, do not fill in the table but check the "unable" option above, thus informing Water Rights that the Department is unable to make a Preponderance of Evidence finding.

Exercise of this permit is calculated to reduce monthly flows in [Enter] Scenic Waterway by the following amounts expressed as a proportion of the consumptive use by which surface water flow is reduced.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 5/16/2025
 FROM: Groundwater Section Stacey Garrison
 Reviewer's Name
 SUBJECT: Application G- 19476 Supersedes review of _____
 Date of Review(s) _____

PUBLIC INTEREST PRESUMPTION; GROUNDWATER

OAR 690-310-130 (1) *The Department shall presume that a proposed groundwater use will ensure the preservation of the public welfare, safety and health as described in ORS 537.525. Department staff review groundwater applications under OAR 690-310-140 to determine whether the presumption is established. OAR 690-310-140 allows the proposed use be modified or conditioned to meet the presumption criteria. This review is based upon available information and agency policies in place at the time of evaluation.*

A. GENERAL INFORMATION: Applicant's Name: Ronald G & Gloria F. Nelson Family Trust County: Linn

A1. Applicant(s) seek(s) 1.8 cfs from 3 well(s) in the Willamette Basin,
Santiam-Calapooia subbasin

A2. Proposed use Irrigation Seasonality: April 1 through September 30^a

A3. Well and aquifer data (attach and number logs for existing wells; mark proposed wells as such under logid):

POA Well	Logid	Applicant's Well #	Proposed Aquifer*	Proposed Rate(cfs)	Location (T/R-S QQ-Q)	Location, metes and bounds, e.g. 2250' N, 1200' E fr NW cor S 36
1	PROP 623	1	alluvium	1.5	13S/1W-10 SW-SE	1080' N, 2470' W fr SE cor S 10
2	PROP 624	2	alluvium	1.5	13S/1W-10 NE-SE	2280' N, 800' W fr SE cor S 10
3	PROP 625	3	alluvium	0.3	13S/1W-14 SW-SE	875' N, 3780' E fr SW cor S 14

* Alluvium, CRB, Bedrock

POA Well	Well Depth (ft)	Seal Interval (ft)	Casing Intervals (ft)	Liner Intervals (ft)	Perforations Or Screens (ft)	Well Yield (gpm)	Drawdown (ft)	Test Type
1	90	0 to 18						
2	90	0 to 18						
3	90	0 to 18						

Use data from application for proposed wells.

A4. **Comments:** The proposed POAs/POU are 4 miles northwest from Sweet Home, Oregon. The applicant proposes to irrigate 443 acres between April 1 and September 30* at a total combined rate of 1.8 cfs (807.9 gpm), with a maximum combined rate of 1.5 cfs (673 gpm) from POAs 1 and 2 and 0.3 cfs (134.6) from POA 3. There is conflicting information regarding the total maximum volume in the application: the applicant lists volumes that total of 1087.75 AF for Annual Volume in Section 3, but 1107.5 AF for Annual Volume in Section 5. However, at the proposed maximum rates of combined 1.5 cfs from Wells 1 and 2 and 0.3 cfs from Well 3, it is not possible to achieve either of the Annual Volumes within the reduced time period of Apr 1-Sep 30. The analysis in this review uses a total maximum volume of 650 AF, the volume achieved by pumping 1.8 cfs (807.9 gpm) continuously for the time period identified by the applicant (182 days, Apr 1-Sep 30).

*NOTE: the applicant has requested to irrigate for less than the maximum allowed time period for irrigation (Apr 1-Sep 30 instead of Mar 1-Oct 31). The analysis in this review utilizes this reduced period of time (Apr 1-Sep 30).

A5. ☒ **Provisions of the** Willamette Basin rules relative to the development, classification and/or management of groundwater hydraulically connected to surface water ☒ **are**, or ☐ **are not**, activated by this application. (Not all basin rules contain such provisions.)

Comments: The proposed POA 3 (PROP 625) is within ¼ mile from the nearest surface water source and anticipated to develop the unconfined alluvium, per OAR 690-502-0240 POA 3 is assumed to be in hydraulic connection with surface water and the relevant Willamette Basin Rules (OAR 609-520-0110) apply.

Proposed POAs 1 and 2 are anticipated to develop the unconfined alluvium and as depicted in the Department's database, are exactly ¼ mile (1,320 ft) from the nearest surface water source, therefore the relevant Willamette Basin Rules (OAR 609-520-0110) do not apply per OAR 690-502-0240. Given variations in projections and coordinate systems in geographic

information systems, the final well locations should be verified to be a distance of at least 0.25 miles (1,320 ft) from surface water to confirm the relevant basin rules do not apply.

- A6. ☐ Well(s) # _____, _____, _____, _____, _____, tap(s) an aquifer limited by an administrative restriction.
 Name of administrative area: _____
 Comments: _____

B. GROUNDWATER AVAILABILITY CONSIDERATIONS, OAR 690-310-130, 400-010, 410-0070

B1. **Based upon available data**, I have determined that groundwater* for the proposed use:

- a. ☐ is over appropriated, ☒ is not over appropriated, or ☐ cannot be determined to be over appropriated during any period of the proposed use. * This finding is limited to the groundwater portion of the over-appropriation determination as prescribed in OAR 690-310-130;
- b. ☐ will not or ☐ will likely be available in the amounts requested without injury to prior water rights. * This finding is limited to the groundwater portion of the injury determination as prescribed in OAR 690-310-130;
- c. ☒ will not or ☐ will likely to be available within the capacity of the groundwater resource; or
- d. ☐ will, if properly conditioned, avoid injury to existing groundwater rights or to the groundwater resource:
- ☒ The permit should contain condition #(s) 7RLN (Large Water Use);
 - ☒ The permit should be conditioned as indicated in item 2 below.
 - ☐ The permit should contain special condition(s) as indicated in item 3 below;

- B2. a. ☐ Condition to allow groundwater production from no deeper than _____ ft. below land surface;
- b. ☐ Condition to allow groundwater production from no shallower than _____ ft. below land surface;
- c. ☒ Condition to allow groundwater production only from the alluvial groundwater reservoir ~~between approximately~~ _____ ft. and _____ ft. below land surface;
- d. ☐ Well reconstruction is necessary to accomplish one or more of the above conditions. The problems that are likely to occur with this use and without reconstructing are cited below. Without reconstruction, I recommend withholding issuance of the permit until evidence of well reconstruction is filed with the Department and approved by the Groundwater Section.

Describe injury –as related to water availability– that is likely to occur without well reconstruction (interference w/ senior water rights, not within the capacity of the resource, etc): _____

- B3. **Groundwater availability remarks:** The POAs/POU are located along the South Santiam River. POAs 1 and 2 are on a terrace between the South Santiam River and Noble Creek, and POA 3 is in the Lower Pleasant Valley between the South Santiam River and Marks Ridge, a Quaternary-Late Tertiary Volcanic and Volcaniclastic, QLTV, intracanyon basalt exposure (McCloughry et al., 2010). The alluvial deposits along the streams and rivers are up to 75 ft thick and underlain by Middle to Early Tertiary Volcanic and Volcaniclastic, METV, and QLTV layers (McCloughry et al., 2010). Within one mile of the POAs^a, wells that produce from the alluvial deposits, or Quaternary to Late Tertiary Sediment, QLTS, aquifers vary in depth from 24 to 67 ft bls [334 to 423 ft amsl] and water-bearing zones, WBZs, from 12 to 56 ft bls [349 to 451 ft amsl]. The WBZs are described in well logs as gravel and sand and vary in thickness from 1 to 60 ft, although within the vicinity of the POAs the QLTS alluvial package is only 40 ft thick (LINN 11141, LINN 59022, LINN 11163). The alluvial sediments form a thin veneer that is typically only a few tens of feet thick and is not likely productive enough to supply sufficient water for intense irrigation.
A review of statistics for nearby well records for wells less than 100 ft depth was completed and compared with the proposed rates of 1.5 cfs (673 gpm) for POAs 1 and 2 and 0.3 cfs (134.6 gom) for POA 3 of this application (see Well Statistics). The median reported well yield was 20 gpm and the maximum reported well yield is 75 gpm. The proposed rates for this application are: for POAs 1 and 2, 3.365% of the median and 897% of the maximum reported yield; for POA 3, 670% of the median and 179% of the maximum reported yield. For the QLTS wells within one mile of the POAs the maximum reported

yield is 40 gpm and the median is 15 gpm. **It is not likely the requested rates are within the capacity of the groundwater resource.**

Department SWL data is limited in this area (~4.5 miles from POAs) to three wells that utilize the QLTS aquifer, but there has not been any data from these wells in 20 years (LINN 9404, LINN 9588, LINN 9589). There are ten POAs on ten groundwater rights within one mile of the proposed POA locations and confirmed to be utilizing the QLTS aquifer. It is anticipated that the QLTS aquifer is in hydraulic connection with the South Santiam River and its tributaries in the area, so the dominant source of water to wells is likely via capture rather than storage and persistent water level declines would not be expected. The groundwater resource is not likely over-appropriated.

A Theis drawdown analysis on the total drawdown within the pumping well was completed for the proposed maximum rate and compared to the maximum depth of the proposed wells. Results indicate that the proposed rate of 1.5 cfs for POAs 1 and 2 is likely to completely dewater the POAs in less than six hours. Therefore, the proposed use is not in the capacity of the resource. For POA 3, it is not likely that the proposed rate of 0.3 cfs will dewater the POA.

The nearest groundwater user to POA 3/PROP 625 is LINN 14833 (an exempt domestic well) located 540 ft to the southwest and at an elevation of 461 ft amsl. It is likely the proposed use would cause some degree of well-to-well interference with the LINN 14833. To assess the degree of drawdown, a Theis drawdown analysis was conducted for the proposed use (see attached Theis Drawdown Analysis). Results indicated that the proposed use is not likely to cause well-to-well interference with LINN 14833 that exceeds the threshold under the standard condition for alluvial aquifers in the Willamette Basin. Therefore, the proposed use is within the capacity of the resource.

Based on this analysis of the available data and under the assumptions previously identified, groundwater for the proposed use is likely not within the capacity of the resource; if a permit is issued for this application, the conditions in B1(d)(i) and B2(c) are recommended to protect senior users and the groundwater resource.

NOTE: This evaluation considers a conservative scenario for the nearest authorized POA not owned by the applicant. Other authorized POAs in the area may also experience an increase in interference as a result of this application, although to a lesser extent than the scenario evaluated here.

^a Wells within one mile of the POAs and using the QLTS aquifer: LINN 11196, LINN 10968, LINN 11179, LINN 11312, LINN 1842, LINN 11296, LINN 11088, LINN 10962, LINN 63195, LINN 59646, LINN 59022, LINN 14833, LINN 11195, LINN 11309, LINN 11159, LINN 11158, LINN 11141.

C. GROUNDWATER/SURFACE WATER CONSIDERATIONS, OAR 690-09-040**C1. 690-09-040 (1):** Evaluation of aquifer confinement:

Well	Aquifer or Proposed Aquifer	Confined	Unconfined
1	Alluvium	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	Alluvium	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	Alluvium	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Basis for aquifer confinement evaluation: Of the 18 QLTS wells identified within one mile of the POAs, six well logs record a clay-bearing confining layer with a SWL higher than the top of the WBZ. There does not appear to be a laterally extensive confining layer. The proposed POAs are likely to develop an unconfined QLTS WBZ.

^a Wells within one mile of the POAs and using the QLTS aquifer: LINN 11196, LINN 10968, LINN 11179, LINN 11312, LINN 1842, LINN 11296, LINN 11088, LINN 10962, LINN 63195, LINN 59646, LINN 59022, LINN 14833, LINN 11195, LINN 11309, LINN 11159, LINN 11158, LINN 11141.

C2. 690-09-040 (2) (3): Evaluation of distance to, and hydraulic connection with, surface water sources. All wells located a horizontal distance less than ¼ mile from a surface water source that produce water from an unconfined aquifer shall be assumed to be hydraulically connected to the surface water source. Include in this table any streams located beyond one mile that are evaluated for PSI.

Well	SW #	Surface Water Name	GW Elev ft msl ^a	SW Elev ft msl ^b	Distance (ft)	Hydraulically Connected?			Potential for Subst. Interfer. Assumed?	
						YES	NO	ASSUMED	YES	NO
1	1	South Santiam River	400-500	429-444	3286	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	1	South Santiam River	400-500	423-444	1320 ^c	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	1	South Santiam River	400-500	441-454	1280	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
1	2	Noble Creek	400-500	456-506	1320 ^c	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	2	Noble Creek	400-500	446-448	2960	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	2	Noble Creek	400-500	446-506	8044	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer hydraulic connection evaluation: The groundwater elevation is above or coincident with the surface water elevations for SW 1 (South Santiam River) and SW 2 (Noble Creek), indicating groundwater discharges to surface water. The local surface water is likely in hydraulic connection with the QLTS groundwater resource.

POA 3 (PROP 625) has hydraulic connection to and is within a quarter mile of SW 1 (South Santiam River), therefore, the POA has the Potential for Substantial Interference with SW 1 per OAR 690-009-0040(4)(a).

^a Groundwater elevation calculated from static water level and WBZs reported in well logs and/or latest static water level reported for wells within one mile of the POAs and using the QLTS aquifer: LINN 11196, LINN 10968, LINN 11179, LINN 11312, LINN 1842, LINN 11296, LINN 11088, LINN 10962, LINN 63195, LINN 59646, LINN 59022, LINN 14833, LINN 11195, LINN 11309, LINN 11159, LINN 11158, LINN 11141.

^b Surface water elevations were estimated from land surface elevations along stream reaches (Watershed Sciences, 2009; USGS, 2013).

^c In accordance with OAR 690-009-0040(4)(a), PSI is assumed for POAs within 0.25 miles (1,320 ft) of surface water and in hydraulic connection with surface water. POAs 1 and 2 as depicted in the Department's database are exactly 0.25 miles (1,320 ft) from SW 2 (Noble Creek) and SW 1 (South Santiam River, respectively. Given variations in projections and coordinate systems in geographic information systems, the final well location should be verified to be a distance of at least 0.25 miles (1,320 ft) from surface water.

Water Availability Basin the well(s) are located within: S SANTIAM R>SANTIAM R-AB HAMILTON CR

C3a. 690-09-040 (4): Evaluation of stream impacts for each well that has been determined or assumed to be **hydraulically connected and less than 1 mile** from a surface water (SW) source. Limit evaluation to instream rights and minimum stream flows that are pertinent to that SW source, not lower SW sources to which the stream under evaluation is tributary. Compare the requested rate against the 1% of 80% *natural* flow for the pertinent Water Availability Basin (WAB). If Q is not distributed by well, use full rate for each well. Any checked ☒ box indicates the well is assumed to have the potential to cause PSI.

Well	SW #	Well < ¼ mile?	Qw > 5 cfs?	Instream Water	Instream Water	Qw > 1%	80% Natural	Qw > 1% of 80%	Interference @ 30 days	Potential for Subst.
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				Right ID	Right Q (cfs)	ISWR?	Flow (cfs)	Natural Flow?	(%)	Interfer. Assumed?
1	1	<input type="checkbox"/>	<input type="checkbox"/>	MF159A	170	<input type="checkbox"/>	167	<input type="checkbox"/>	<25%	<input type="checkbox"/>
2	1	<input type="checkbox"/>	<input type="checkbox"/>	MF159A	170	<input type="checkbox"/>	167	<input type="checkbox"/>	<25%	<input type="checkbox"/>
3	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	MF159A	170	<input type="checkbox"/>	167	<input type="checkbox"/>	<25%	<input checked="" type="checkbox"/>
1	2	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	167	<input checked="" type="checkbox"/>	<25%	<input type="checkbox"/>
2	2	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	167	<input checked="" type="checkbox"/>	<25%	<input type="checkbox"/>

Comments: Potential depletion (interference with) SW 1 (South Santiam River) and SW 2 (Noble Creek) by the proposed individual rate pumping at POAs 1 (PROP 623), 2 (PROP 624), and 3 (PROP 625) was estimated using Hunt 1999 analytical model. Hydraulic parameters used for the model were derived from regional data or studies of the hydrogeologic regime (OWRD Well Log Query Report; Conlon et al., 2003, 2005; McFarland and Morgan, 1996; Woodward et al., 1998) or are within a typical range of values for the parameter within the hydrogeologic regime (Freeze and Cherry, 1979; Domenico and Mifflin, 1965). See attached "Stream Depletion Analysis" for the specific parameters used in the analysis. The Hunt 1999 analytical model results indicate that depletion of (interference with) surface water sources due to pumping of the proposed POAs is anticipated to be less than 25 percent of the well discharge at 30 days of continuous pumping.

POAs 1 (PROP 623) and 2 (PROP 624) were assessed using the maximum individual rate of 1.5 cfs (673 gpm). Because only the distance is expected to vary between the POA and surface water sources, only the POA-SW pair with the shortest distance (in this case, POA 2 and SW 1/POA 1 and SW 2) was analyzed quantitatively for interference (stream depletion). For POAs 1 and 2, all other POA-SW pairs would presumably result in less interference due to their greater separation relative to POA 2 and SW 1/POA 1 and SW 2. Therefore, the interference of both proposed POAs with all surface water sources within 1 mile are anticipated to result in less than 25 percent of the well discharge at 30 days of continuous pumping.

Similarly, for POA 3 (PROP 625) which was assessed at the individual pumping rate of 0.3 cfs (134.6 gpm), only the POA-SW pair with the shortest distance (in this case, POA 3 and SW 1) was analyzed. The interference of the proposed POA with all surface water sources within 1 mile are anticipated to result in less than 25 percent of the well discharge at 30 days of continuous pumping.

POA 3 (PROP 625) is within ¼ mile of SW 1 (South Santiam River) and is anticipated to develop unconfined alluvium. Therefore, there is an assumption of Potential for Substantial Interference in accordance with OAR 690-009-0040(2).

In accordance with OAR 690-009-0040(4)(a), PSI is assumed for POAs within 0.25 miles (1,320 ft) of surface water and in hydraulic connection with surface water. POAs 1 and 2 as depicted in the Department's database are exactly 0.25 miles (1,320 ft) from SW 2 (Noble Creek) and SW 1 (South Santiam River, respectively. Given variations in projections and coordinate systems in geographic information systems, the final well locations should be verified to be a distance of at least 0.25 miles (1,320 ft) from surface water.

C3b. **690-09-040 (4):** Evaluation of stream impacts by total appropriation for all wells determined or assumed to be **hydraulically connected and less than 1 mile** from a surface water source. **Complete only if Q is distributed among wells.** Otherwise same evaluation and limitations apply as in C3a above.

	SW #		Qw > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Qw > 1% ISWR?	80% Natural Flow (cfs)	Qw > 1% of 80% Natural Flow?		Potential for Subst. Interfer. Assumed?
	1		<input type="checkbox"/>	MF159A	170	<input checked="" type="checkbox"/>	167	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
	2		<input type="checkbox"/>			<input type="checkbox"/>	167	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>

Comments: The proposed combined pumping rate (1.8 cfs) is greater than 1% (1.67 cfs) of the 80% exceedance natural flow (167 cfs), so PSI is assumed per 690-009-0040(4)(d) for SW 1 (South Santiam River) and SW 2 (Noble Creek). The proposed combined pumping rate (1.8 cfs) is greater than 1% (1.7 cfs) of the Instream Water Right (170 cfs), so PSI is assumed per 690-009-0040(4)(c) for SW 1 (South Santiam River).

C4a. **690-09-040 (5):** Estimated impacts on **hydraulically connected surface water sources greater than one mile** as a percentage of the proposed pumping rate. Limit evaluation to the effects that will occur up to one year after pumping begins. This table encompasses the considerations required by 09-040 (5)(a), (b), (c) and (d), which are not included on this form. Use additional sheets if calculated flows from more than one WAB are required.

Non-Distributed Wells													
Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
Distributed Wells													
Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
(A) = Total Interf.													
(B) = 80 % Nat. Q													
(C) = 1 % Nat. Q													
(D) = (A) > (C)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
(E) = (A / B) x 100		%	%	%	%	%	%	%	%	%	%	%	%

(A) = total interference as CFS; (B) = WAB calculated natural flow at 80% exceed. as CFS; (C) = 1% of calculated natural flow at 80% exceed. as CFS; (D) = highlight the checkmark for each month where (A) is greater than (C); (E) = total interference divided by 80% flow as percentage.

Basis for impact evaluation: N/A-surface water sources within one mile evaluated above.

C4b. **690-09-040 (5) (b)** The potential to impair or detrimentally affect the public interest is to be determined by the Water Rights Section.

- C5. ☐ **If properly conditioned**, the surface water source(s) can be adequately protected from interference, and/or groundwater use under this permit can be regulated if it is found to substantially interfere with surface water:
- ☐ The permit should contain condition #(s)_____;
 - ☐ The permit should contain special condition(s) as indicated in "Remarks" below;

C6. SW / GW Remarks and Conditions: **POA 3 (PROP 625) has hydraulic connection to and is within a quarter mile of SW 1 (South Santiam River), therefore the POA has the Potential for Substantial Interference (PSI) with SW 1 per OAR 690-009-0040(4)(a).**

In accordance with OAR 690-009-0040(4)(a), PSI is assumed for POAs within 0.25 miles (1,320 ft) of surface water and in hydraulic connection with surface water. POAs 1 and 2 as depicted in the Department's database are exactly 0.25 miles (1,320 ft) from SW 2 (Noble Creek) and SW 1 (South Santiam River, respectively. Given variations in projections and coordinate systems in geographic information systems, the final well location should be verified to be a distance greater than 0.25 miles (1,320 ft) from surface water.

The proposed combined pumping rate (1.8 cfs) is greater than 1% (1.67 cfs) of the 80% exceedance natural flow (167 cfs), so PSI is assumed per 690-009-0040(4)(d) for SW 1 (South Santiam River) and SW 2 (Noble Creek).

The proposed combined pumping rate (1.8 cfs) is greater than 1% (1.7 cfs) of the Instream Water Right (170 cfs), so PSI is assumed per 690-009-0040(4)(c) for SW 1 (South Santiam River).

References Used:

Application File: G-19476

Pumping Test Files: LINN 9588, LINN 9589, LINN 9782, LINN 11088

Well Reports: LINN 11196, LINN 10968, LINN 11179, LINN 11312, LINN 1842, LINN 11296, LINN 11088, LINN 10962, LINN 63195, LINN 59646, LINN 59022, LINN 14833, LINN 11195, LINN 11309, LINN 11159, LINN 11158, LINN 11141, LINN 1573, LINN 14504, LINN 11078, LINN 11163, LINN 61581, LINN 61958, LINN 61495, LINN 63792, LINN 11197, LINN 11328, LINN 51356, LINN 57607, LINN 10862, LINN 11129, LINN 51013, LINN 878, LINN 11116, LINN 11087, LINN 2007, LINN 58503, LINN 58376, LINN 50477, LINN 11125, LINN 50464, LINN 2382, LINN 55678, LINN 877, LINN 12276, LINN 11120, LINN 11118, LINN 11117, LINN 11119, LINN 11135, LINN 60732, LINN 64183, LINN 62935, LINN 64374, LINN 9588, LINN 9589, LINN 9782

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.

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., 1999. Unsteady depletion of ground water pumping. *Groundwater*, 37: 98-102.

McClaghry, J. D., T. J. Wiley, M. L. Ferns, and I. P. Madin. 2010. Digital Geologic Map of the Southern Willamette Valley, Benton, Lane, Linn, Marion, and Polk Counties, Oregon. Oregon Dept. of Geology and Mineral Industries. Open File Report O-10-13.

O'Connor, J.E., Sarna-Wojcick, A., Wozniak, K.C., Polette, D.J., Fleck, R.J., 2001, Origin, Extent, and Thickness of Quaternary Geologic Units in the Willamette Valley, Oregon; U.S. Geological Survey, Professional Paper 1620, 51 p.

Theis, C.V., 1935, The relation between the lowering of the piezometric surface and the rate and duration of discharge of a well using ground-water storage: *American Geophysical Union transactions*, v. 16, p. 519-524.

United States Geological Survey, 2013, National Elevation Dataset (NED) [DEM geospatial data]. 1/9th arc-second, updated 2013.

Watershed Sciences, 2009, LIDAR remote sensing data collection, Department of Geology and Mineral Industries, Willamette Valley Phase I, Oregon: Portland, OR, December 21.

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.


D. WELL CONSTRUCTION, OAR 690-200

D1. Well #: _____ Logid: _____

D2. **THE WELL does not appear to meet current well construction standards based upon:**

- a. ☐ review of the well log;
- b. ☐ field inspection by _____;
- c. ☐ report of CWRE _____;
- d. ☐ other: (specify) _____

D3. **THE WELL construction deficiency or other comment is described as follows:** _____D4. ☐ **Route to the Well Construction and Compliance Section for a review of existing well construction.****Water Availability Tables**

 Oregon Water Resources Department
Water Availability Analysis

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Water Availability Analysis
Detailed Reports

S SANTIAM R > SANTIAM R - AB HAMILTON CR
WILLAMETTE BASIN

Watershed ID #: 159 ([Map](#))
Date: 4/7/2025

Water Availability as of 4/7/2025

Exceedance Level: 80%
Time: 10:11 AM

Water Availability Calculation

Water Rights

Consumptive Uses and Storages

Instream Flow Requirements

Reservations

Watershed Characteristics

Water Availability Calculation
Monthly Streamflow in Cubic Feet per Second
Annual Volume at 50% Exceedance in Acre-Feet

Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirements	Net Water Available
JAN	1,970.00	139.00	1,830.00	0.00	170.00	1,660.00
FEB	2,210.00	1,400.00	805.00	0.00	170.00	635.00
MAR	2,100.00	1,130.00	971.00	0.00	170.00	801.00
APR	2,000.00	919.00	1,160.00	0.00	170.00	991.00
MAY	1,550.00	582.00	968.00	0.00	170.00	798.00
JUN	696.00	30.40	666.00	0.00	170.00	496.00
JUL	326.00	23.60	302.00	0.00	170.00	132.00
AUG	191.00	22.40	169.00	0.00	170.00	-1.45
SEP	167.00	19.50	147.00	0.00	170.00	-22.50
OCT	234.00	13.80	220.00	0.00	170.00	50.20
NOV	981.00	13.80	967.00	0.00	170.00	797.00
DEC	2,070.00	15.40	2,050.00	0.00	170.00	1,880.00
ANN	1,590,000.00	256,000.00	1,340,000.00	0.00	123,000.00	1,210,000.00

Download Data ([Text - Formatted](#) , [Text - Tab Delimited](#) , [Excel](#))

Water Availability Analysis

Detailed Reports

S SANTIAM R > SANTIAM R - AB HAMILTON CR
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Watershed ID #: 159 ([Map](#))

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- Water Availability Calculation
- Water Rights
- Consumptive Uses and Storages
- Instream Flow Requirements
- Watershed Characteristics
- Reservations

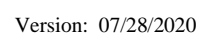
Detailed Report of Instream Flow Requirements

Instream Flow Requirements in Cubic Feet per Second

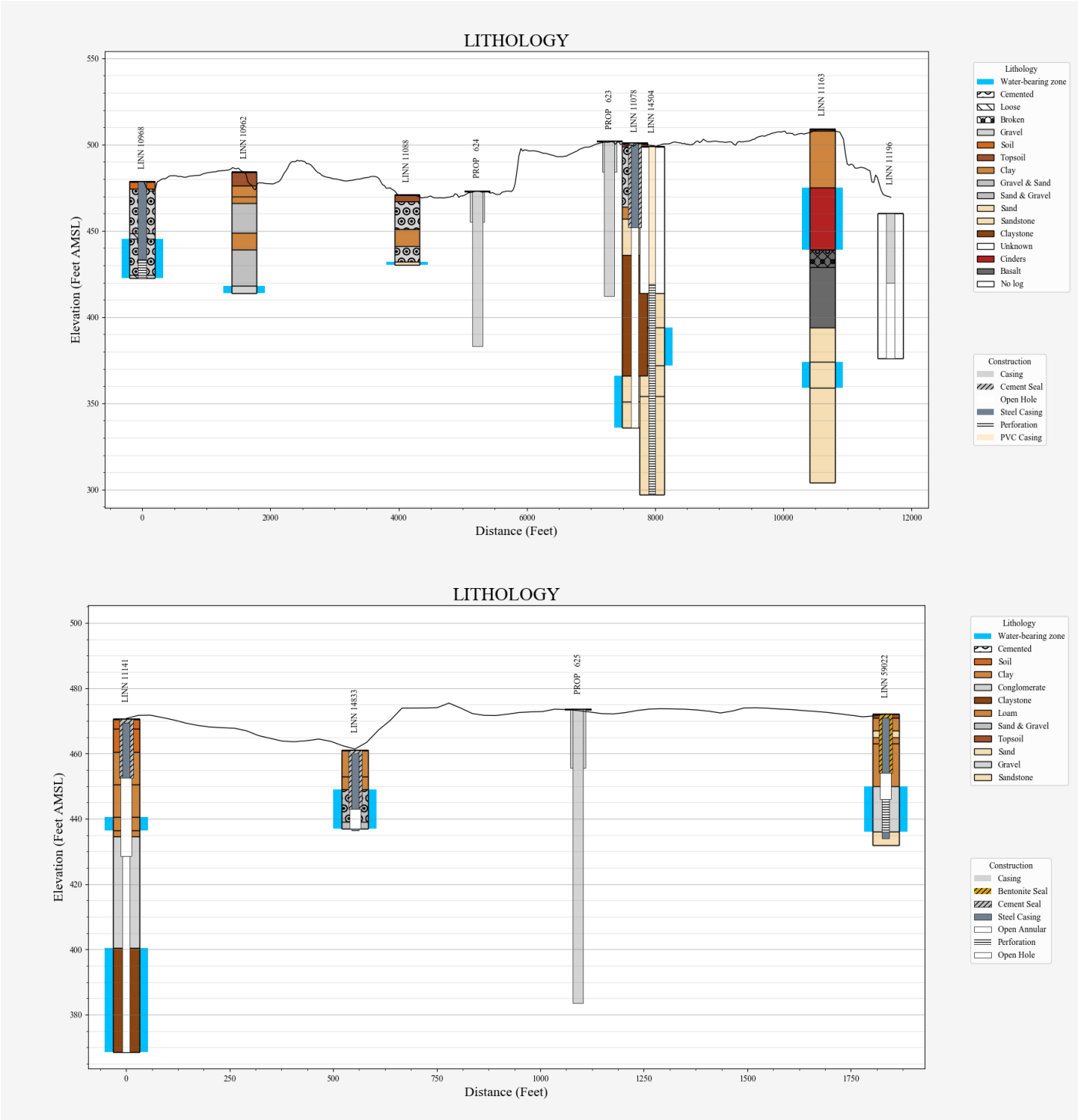
Application #	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MF159A	APPLICATION	170.00	170.00	170.00	170.00	170.00	170.00	170.00	170.00	170.00	170.00	170.00	170.00
IS89715A	APPLICATION	150.00	150.00	150.00	150.00	150.00	120.00	110.00	110.00	150.00	150.00	150.00	150.00
IS89703A	APPLICATION	90.00	90.00	90.00	90.00	90.00	80.00	70.00	50.00	70.90	90.00	90.00	90.00
Maximum		170.00	170.00	170.00	170.00	170.00	170.00	170.00	170.00	170.00	170.00	170.00	170.00

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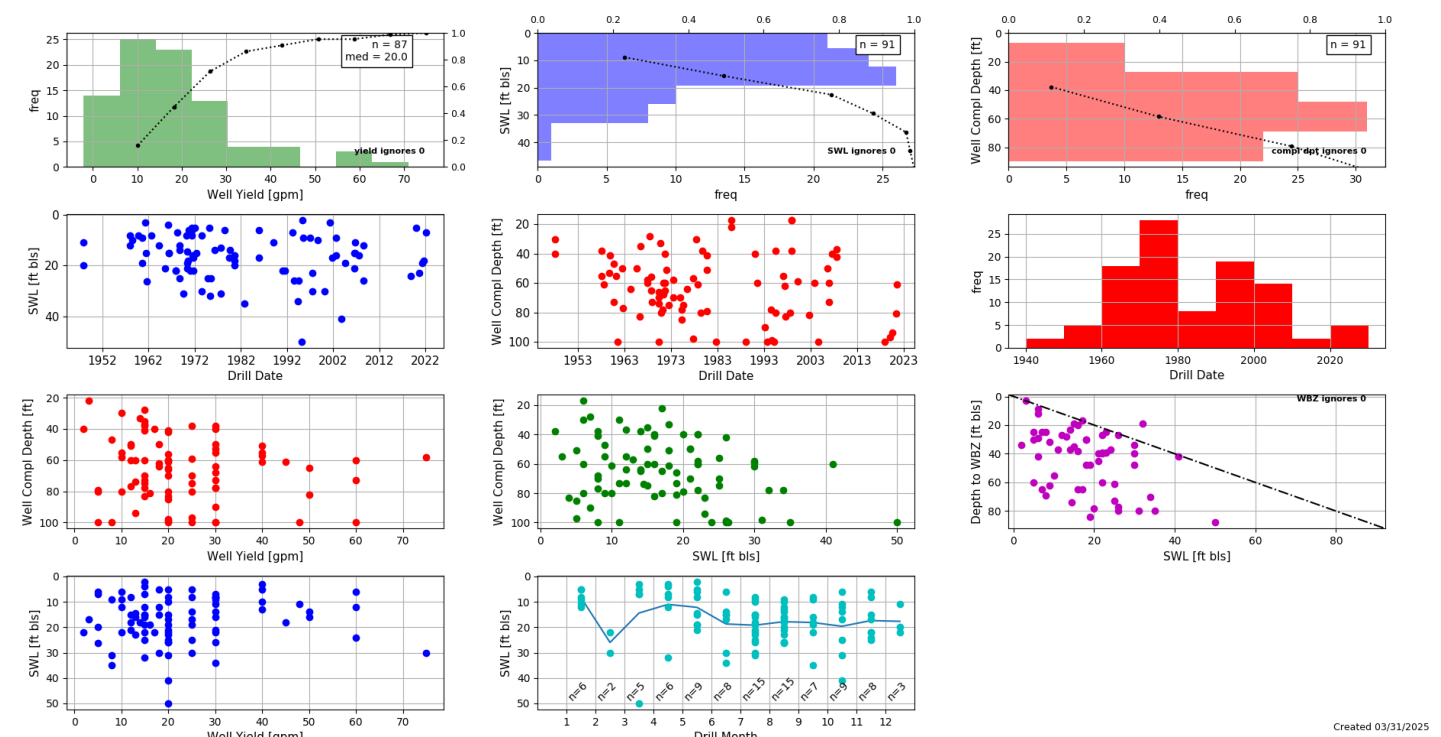
G-19476
Nelson Family Trust



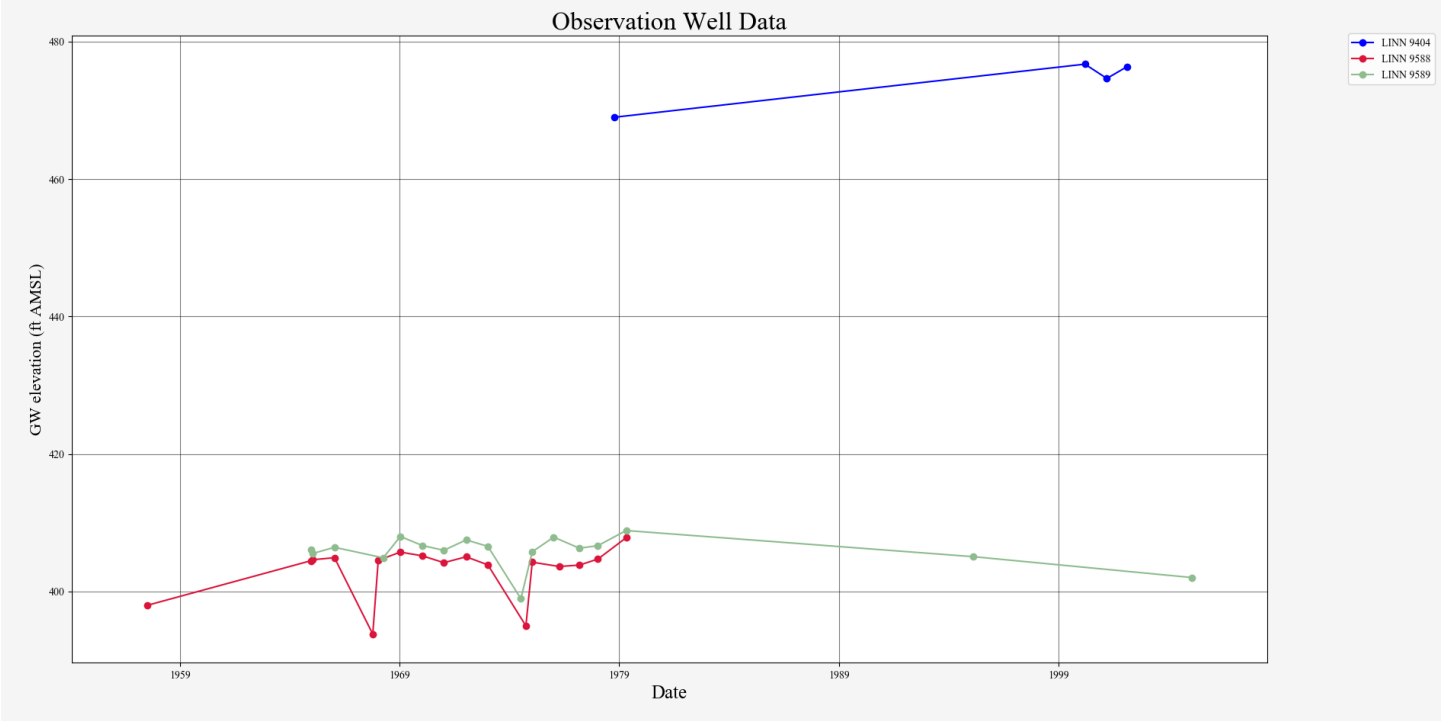
Cross-Section

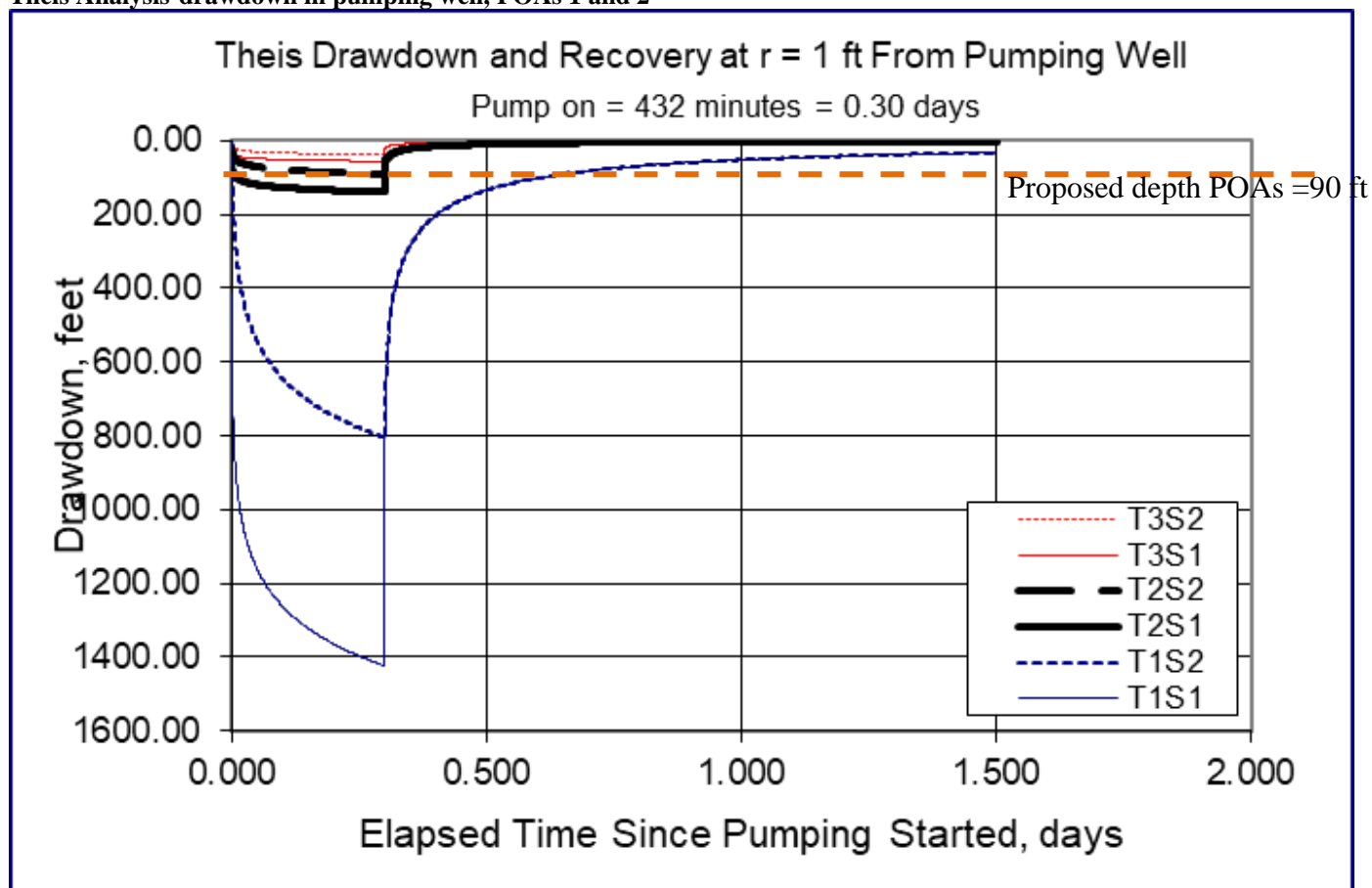


Well Statistics



Water-Level Measurements in Nearby Wells



Theis Analysis-drawdown in pumping well, POAs 1 and 2

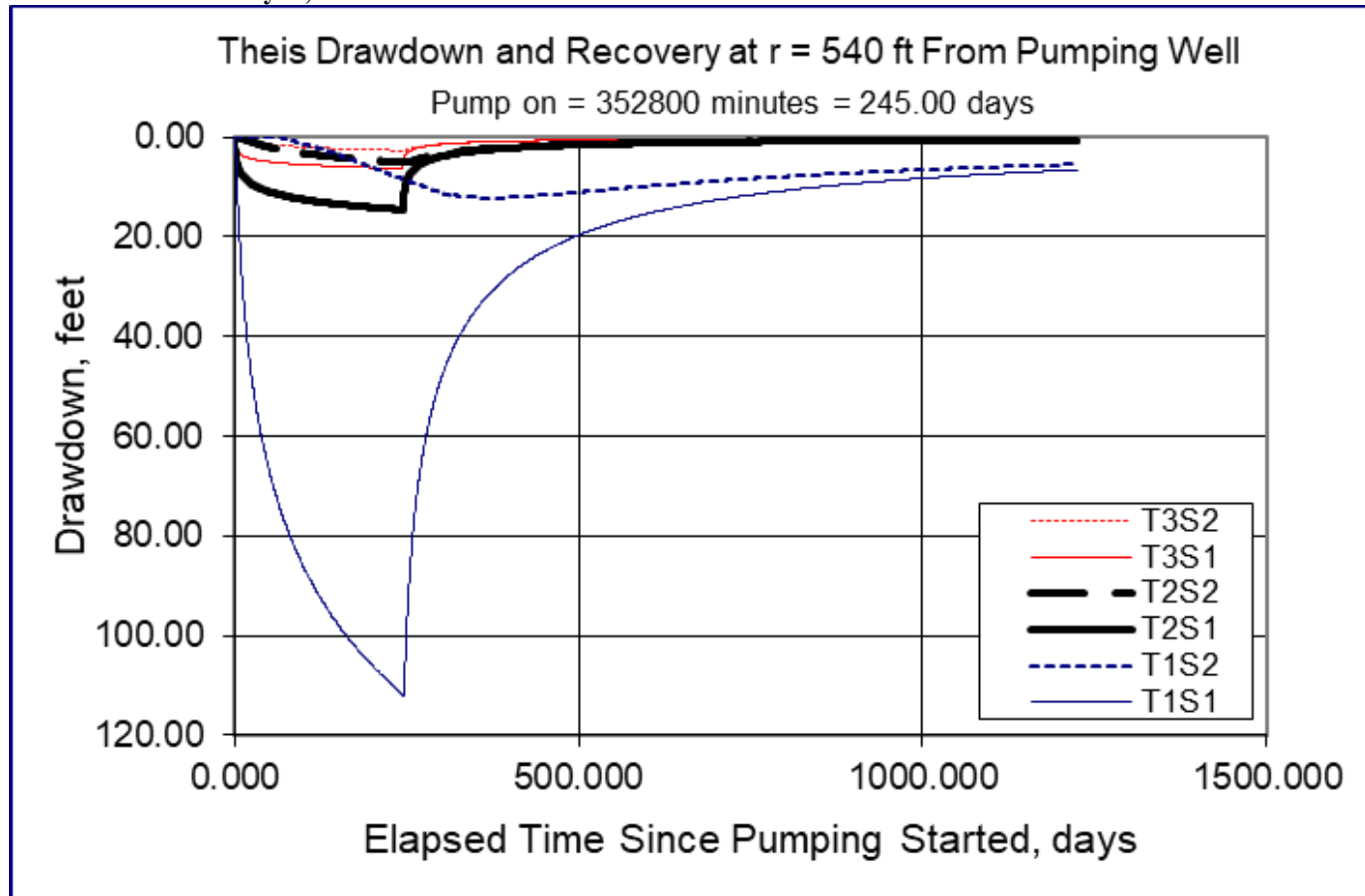
Radial distance from pumping well (r)=1

Pumping Rate (Q)= 1.5 cfs (~673.2 gpm)

Aquifer Transmissivity ($T1$)= 523.6 gpd/ft (70 ft²/day), ($T2$)= 6,732 gpd/ft (900 ft²/day), ($T3$)= 17,952 gpd/ft (2,400 ft²/day)

Storativity ($s1$) = 0.003, ($s2$) = 0.2 [Conlon et al 2005, Table 1 values for USU]

Total pumping time=432 minutes=7.2 hours=0.3 days

Theis Drawdown Analysis, POA 3-LINN 14833

Radial distance from pumping well (r)=540 ft [estimated radial distance to nearest user, LINN 14833]

Pumping Rate (Q)= 0.3 cfs (~134.6 gpm)

Aquifer Transmissivity (T_1)= 523.6 gpd/ft (70 ft²/day), (T_2)= 6,732 gpd/ft (900 ft²/day), (T_3)= 17,952 gpd/ft (2,400 ft²/day)

Storativity (s_1) = 0.003, (s_2) = 0.2 [Conlon et al 2005, Table 1 values for USU]

Total pumping time=245 days

Stream Depletion (Hunt) Model Analysis

POA 1 (PROP 623)/SW 2 (Noble Creek) and POA 2 (PROP 624)/SW 1 (South Santiam River)

Application type:	G
Application number:	19476
Well number:	1
Stream Number:	2
Pumping rate (cfs):	1.5
Pumping duration (days):	182.0
Pumping start month number (3=March)	4.0
Plotting duration (days)	365

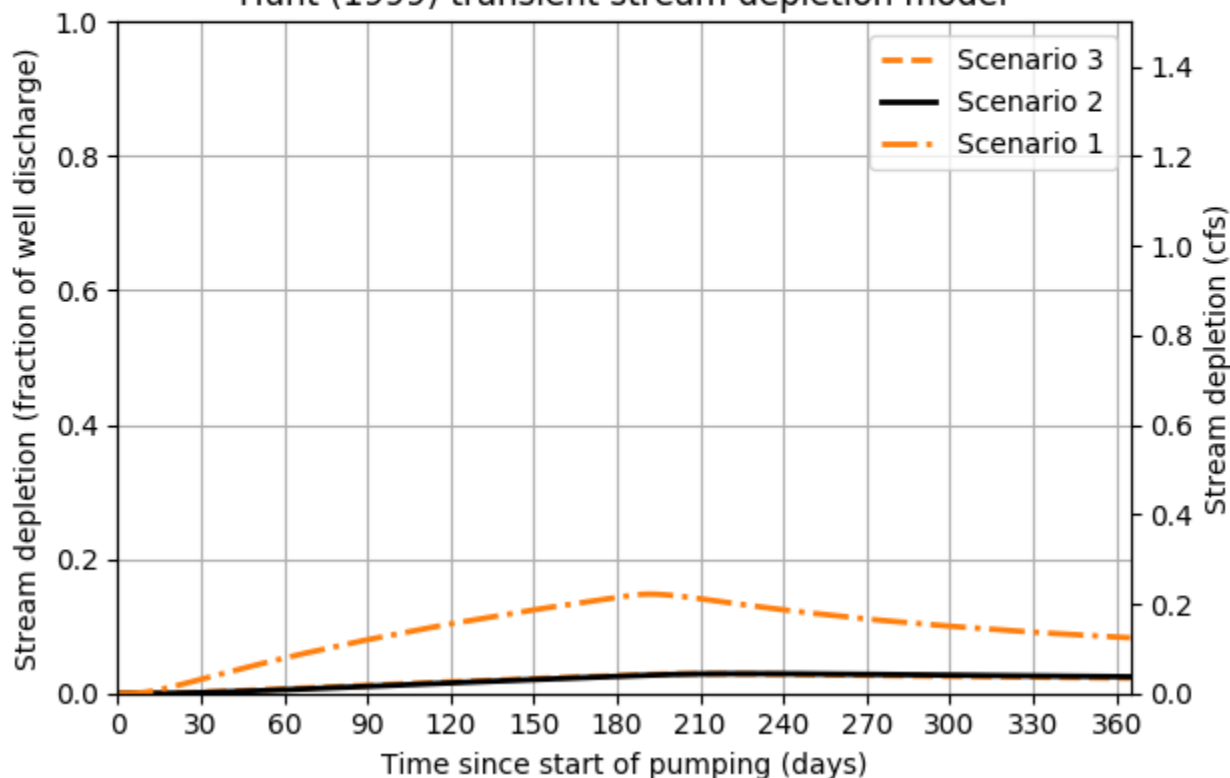
Application type:	G
Application number:	19476
Well number:	2
Stream Number:	1
Pumping rate (cfs):	1.5
Pumping duration (days):	182.0
Pumping start month number (3=March)	4.0
Plotting duration (days)	365

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	1320.0	1320.0	1320.0	ft
Aquifer transmissivity	T	70.0	900.0	2400.0	ft ² /day
Aquifer storativity	S	0.003	0.1015	0.2	-
Aquitard vertical hydraulic conductivity	Kva	0.001	0.005	0.01	ft/day
Not used		10.0	10.0	10.0	
Aquitard thickness below stream	babs	10.0	10.0	10.0	ft
Not used		0.2	0.2	0.2	
Stream width	ws	200.0	200.0	200.0	ft

Stream depletion for Scenario 2:

Days	10	300	330	360	30	60	90	120	150	180	210	240	270
Depletion (%)	0	3	3	2	0	1	1	2	2	3	3	3	3
Depletion (cfs)	0.00	0.04	0.04	0.04	0.00	0.01	0.02	0.02	0.03	0.04	0.04	0.04	0.04

Hunt (1999) transient stream depletion model



POA 3 (PROP 625)/SW 1 (South Santiam River)

Application type:	G	Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Application number:	19476	Distance from well to stream	a	1280.0	1280.0	1280.0	ft
Well number:	3	Aquifer transmissivity	T	70.0	900.0	2400.0	ft ² /day
Stream Number:	1	Aquifer storativity	S	0.003	0.1015	0.2	-
Pumping rate (cfs):	0.3	Aquitard vertical hydraulic conductivity	Kva	0.001	0.005	0.01	ft/day
Pumping duration (days):	182.0	Not used		10.0	10.0	10.0	
Pumping start month number (3=March)	4.0	Aquitard thickness below stream	babs	10.0	10.0	10.0	ft
Plotting duration (days)	365	Not used		0.2	0.2	0.2	
		Stream width	ws	280.0	280.0	280.0	ft

Stream depletion for Scenario 2:

Days	10	300	330	360	30	60	90	120	150	180	210	240	270
Depletion (%)	0	4	4	3	0	1	2	2	3	4	4	4	4
Depletion (cfs)	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01

