Groundwater Application Review Summary Form

Application # G- _19270_

GW Reviewer _Stacey Garrison/Travis Brown_ Date Review Completed: _7/10/2023_

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 **_July 10 2023_**

TO: **Application** G-**_19270_**

FROM: **GW:** **_Stacey Garrison/Travis Brown_**
(Reviewer's Name)

SUBJECT: Scenic Waterway Interference Evaluation

☐ **YES**
☒ **NO**

The source of appropriation is hydraulically connected to a State Scenic 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 7/10/2023
FROM: Groundwater Section Stacey Garrison/Travis Brown
Reviewer's Name
SUBJECT: Application G- **19270** 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: **Grapevine Capital Partners LLC** County: **Linn**

A1. Applicant(s) seek(s) 0.226 cfs from 1 well(s) in the Willamette Basin, Santiam-Calapooia subbasin

A2. Proposed use irrigation Seasonality: May 1 through September 30

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

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	LINN 61776	1	alluvial	0.226	14S/3W-12 SE-SW	505' S, 2900' E fr NW cor S 12 [a]

* Alluvium, CRB, Bedrock

Well	Well Elev ft msl	First Water ft bls	SWL ft bls	SWL Date	Well Depth (ft)	Seal Interval (ft)	Casing Intervals (ft)	Liner Intervals (ft)	Perforations Or Screens (ft)	Well Yield (gpm)	Draw Down (ft)	Test Type
1	325 [b]	75	12.17[c]	3/16/2021	200	0-20	0-199		75-115	175		air

Use data from application for proposed wells.

A4. **Comments:** The POA/POUs are located 0.7 miles southwest of Brownsville, Oregon. Applicant proposes to irrigate at 0.226cfs (101 gpm) on up to 91 ac with a total annual volume limited to 68.6 af/year. NOTE: the applicant has requested to irrigate for less than the maximum allowed time period for irrigation (May 1 through September 30 instead of March 1 through October 31) and with a volume less than the maximum allowed (68.6 AF instead of 227.5 AF). **The analyses for this review utilize this reduced period of time (May 1 through September 30) and the reduced volume (68.6 AF).**

[a] There appears to be a discrepancy in the Public Lands Survey System (PLSS) projection used in the application map and that used by Department. The "metes-and-bounds" location descriptions provided in the application for the POA is 90 ft northwest of the mapped location; the mapped location is used for this review.

[b] Well head elevation estimated based on LIDAR measurements at well locations (Watershed Sciences, 2009).

[c] Most recent SWL reported here; SWL on well log is 41 ft bls on 8/27/2016.

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 is anticipated to develop a confined aquifer; therefore, per OAR 690-502-0240, the relevant Willamette Basin Rules (OAR 690-502-0110) do not apply. OAR 690-502-0110(1)(d) has restrictions on type of use of the Calapooia River and tributaries. In the event that PSI is found, these rules may be applicable.

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

i. ☒ The permit should contain condition #(s) **7c (7-yrs measurements), medium water use reporting**;

ii. ☒ The permit should be conditioned as indicated in item 2 below.

iii. ☐ 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 proposed POA/POU are on Missoula Flood deposits, a Quaternary sequence of bedded silts, sands, and clays up to 30 feet thick in the southern Willamette Valley (Beaulieu et al 1974, O'Connor et al 2001). Based on the depth of the proposed POA's water-bearing zone (WBZ) it is likely utilizing an aquifer in the Quaternary alluvial terrace deposits that underlie the Missoula Flood deposits (Beaulieu et al 1974). These fluvial terrace deposits include moderately to deeply weathered gravels, sands, and silts (Beaulieu et al 1974). The Quaternary alluvial terrace deposits correlate to the Willamette aquifer of Gannett and Caldwell (1998) and the Middle sedimentary unit/Pre-Missoula floods sands and gravels of Conlon et al (2005). Department-located wells within 1 mile of the POAs and utilizing the Quaternary Late Tertiary Sediment (QLTS) aquifer system (LINN 1062, LINN 13407, LINN 13416, LINN 13420, LINN 13530, LINN 13533, LINN 13534, LINN 13539, LINN 13540, LINN 13598, LINN 57626, LINN 59124, LINN 60530, LINN 63211) identify mixed layers of fine to coarse and consolidated and unconsolidated materials (boulders, clay, claystone, sand, sandstone, and gravel). There are multiple water-bearing zones, WBZs, ranging from 4 to 179 ft bls (150 to 325 ft msl), with thickness varying from 5 to 144 ft, and described in well logs as clays, gravels, and sands. The SWLs range from 283.5 to 325 ft msl and are above the elevation of the top of the respective WBZs, indicating confined conditions.
A review of statistics for nearby well records was completed and compared with the proposed rate of 0.226 cfs (101 gpm) for this application (see Well Statistics). The proposed rate of use of 0.226 cfs (101 gpm) is likely within the capacity of the groundwater resource; median reported well yield is 23 gpm, and the maximum reported yield is 675 gpm. The proposed rate for this application is 441% of the median and 15% of the maximum reported yield. For the wells within 1 mile and discussed above the maximum yield is 600 gpm, the minimum is 12.5 gpm, and the median is 100 gpm.
Department SWL data is limited in this area (0 to 3 miles from POAs) to six wells that utilize the QLTS aquifer targeted by the POA; this limited data indicate water level trends are overall stable (see Water Level Measurements in Nearby Wells). However, the POA has declined 5 ft in the last 5 years; to protect senior groundwater users, the conditions listed above are strongly recommended.

The nearest groundwater user to Well 1 is LINN 63211 (an exempt domestic well), 235 ft northeast of the POA at an elevation of ~326 ft msl. LINN 63211 is drilled to 120 ft bls [206 ft msl] with a WBZ from 44 to 120 ft bls [206 to 282 fl msl], and a seal depth of 19 ft bls [307 ft msl]. It is likely the proposed use would cause some degree of well-to-well

interference with LINN 63211. To assess the degree of drawdown, a Theis drawdown analysis was conducted for the proposed use (see attached Theis Drawdown Analysis). Results indicate that the proposed use is not likely to cause well-to-well interference with LINN 63211 that exceeds the threshold under the standard condition for alluvial aquifers in the Willamette Basin.

Based on this analysis of the available data and under the assumptions previously identified, groundwater for the proposed use **is likely available;** 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.

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	**Alluvial**	☒	☐

Basis for aquifer confinement evaluation: The proposed POA utilizes a WBZ that is 75 to 115 ft bls [210 to 250 ft msl] with a confining layer from 61 to 75 ft bls [250 to 264 ft msl]. The SWL is above the bottom of the overlying confining layer, indicating confined aquifer conditions.

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? YES	NO	ASSUMED	Potential for Subst. Interfer. Assumed? YES	NO
1	**1**	**Courtney Creek**	**283-325**	**318-340**	**1,559**	☒	☐	☐	☐	☒
1	**2**	**Calapooia River**	**283-325**	**312-338**	**6,400**	☒	☐	☐	☐	☒

Basis for aquifer hydraulic connection evaluation: The proposed POA is cased and sealed continuously to a depth of 20 ft bls [305 ft msl]. SWLs in surrounding wells utilizing the QLTS aquifer vary from 283 to 325 ft msl (LINN 1062, LINN 13407, LINN 13416, LINN 13420, LINN 13530, LINN 13533, LINN 13534, LINN 13539, LINN 13540, LINN 13598, LINN 57626, LINN 59124, LINN 60530, LINN 63211). The local streambed of SW 1 (Courtney Creek) is 318 to 340 ft msl and of SW 2 (Calapooia River) is 312 to 338 ft msl, indicating the local groundwater is likely discharging to surface water, consistent with Woodward et al (1998) findings that groundwater discharges to surface water. The surface water drainages have not incised below the elevation of the WBZs of the wells within a mile, which range from 150 to 308 ft msl[c]. The WBZ for the POAs is 210 to 250 ft msl with the seal extending to 20 ft bls. Hydraulic connection to nearby streams is likely but anticipated to be inefficient due to the low vertical permeability of the overlying fine-grained sediments. **Net impacts to surface water will be small at the onset of pumping but will increase with time until a new equilibrium between local recharge and discharge is reached, at which time surface water depletion is anticipated to be relatively constant throughout the year at roughly the annualized rate of pumping.**

[a] Groundwater elevation calculated from static water level reported in well logs and/or latest static water level reported for LINN 1062, LINN 13407, LINN 13416, LINN 13420, LINN 13530, LINN 13533, LINN 13534, LINN 13539, LINN 13540, LINN 13598, LINN 57626, LINN 59124, LINN 60530, LINN 63211 and well head elevations estimated based on LIDAR measurements at existing well locations (Watershed Sciences, 2009).
[b] Surface water elevations were estimated from land surface elevations along stream reaches (Watershed Sciences, 2009; USGS, 2013).

[c] Water-bearing zone elevations calculated from water-bearing layers reported in well logs LINN 1062, LINN 13407, LINN 13416, LINN 13420, LINN 13530, LINN 13533, LINN 13534, LINN 13539, LINN 13540, LINN 13598, LINN 57626, LINN 59124, LINN 60530, LINN 63211.

Water Availability Basin the well(s) are located within:
SW 1 (Courtney Creek): CALAPOOIA R>WILLAMETTE R-AB MOUTH

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 Right ID	Instream Water Right Q (cfs)	Qw > 1% ISWR?	80% Natural Flow (cfs)	Qw > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?

1	**1**	☐	☐			☐	**22.7**	☐	**<25%**	☐

Comments:

Potential depletion (interference with) SW 1 (Courtney Creek) by proposed pumping at proposed POA 1 was estimated using Hunt 2003 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; Iverson 2002) or are within a typical range of values for the parameter within the hydrogeologic regime (Freeze and Cherry, 1979; Morris and Johnson 1967; Heath 1983). See attached "Stream Depletion Analysis – SW 1" for the specific parameters used in the analysis. The Hunt 2003 analytical model results indicate that depletion of (interference with) SW 1 due to pumping of the proposed POA is anticipated to be much less than 25 percent of the well discharge at 30 days of continuous pumping.

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?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
			☐			☐		☐		☐
			☐			☐		☐		☐

Comments: NA-Q is not distributed among wells.

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: NA-streams within 1 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:

i. ☐ The permit should contain condition #(s)_____;

ii. ☐ The permit should contain special condition(s) as indicated in "Remarks" below;

C6. **SW / GW Remarks and Conditions:** **The local Watermaster has in the past regulated Courtney Creek on an approximately annual basis and has expressed concerns that additional appropriation of hydraulically-connected groundwater could exacerbate problems within Courtney Creek. As discussed in C2 and C3, the proposed POA is hydraulically-connected and within 1 mile of Courtney Creek, but does not meet the requirements for a finding of PSI based on OAR 690-009-0040(a)-(d). However, depletion of Courtney Creek would likely occur as a result of the proposed use and be relatively constant throughout the year after several years of operation.**

References Used:

Application File: G-19270, LL-1665

Pumping Test Files: LINN 59124, LINN 13533, LINN 57626, LINN 57386, LINN 62990

Well Reports: LINN 1062, LINN 13407, LINN 13416, LINN 13420, LINN 13530, LINN 13533, LINN 13534, LINN 13539, LINN 13540, LINN 13598, LINN 57626, LINN 59124, LINN 60530, LINN 61776, LINN 63211

Beaulieu, J.D., Hughes, P.W., and Mathiot, R.K., 1974, Environmental geology of western Linn County, Oregon: Oregon Department of Geology and Mineral Industries Bulletin 84, 117 p.

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.

Freeze, R.A. and J.A. Cherry, 1979. Groundwater, Prentice Hall, Englewood Cliffs, New Jersey, 604p

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.

Heath, R.C., 1983. Basic ground-water hydrology, U.S. Geological Survey Water-Supply Paper 2220, 86p.

Hunt, B., 2003, Unsteady stream depletion when pumping from semiconfined aquifer: Journal of Hydrologic Engineering, January/February, 2003.

Iverson, J., 2002, Investigation of the hydraulic, physical, and chemical buffering capacity of Missoula flood deposits for water quality and supply in the Willamette Valley of Oregon: Unpublished M.S. thesis, Oregon State University, 147 p.

Morris, D.A. and A.I. Johnson, 1967. Summary of hydrologic and physical properties of rock and soil materials as analyzed by the Hydrologic Laboratory of the U.S. Geological Survey, U.S. Geological Survey Water-Supply Paper 1839-D, 42p

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

Main Help Return Contact Us

Water Availability Analysis
Detailed Reports

CALAPOOIA R > WILLAMETTE R - AB MOUTH
WILLAMETTE BASIN
Water Availability as of 5/26/2023

Watershed ID #: 76 (Map)
Date: 5/26/2023

Exceedance Level: 80%
Time: 3:35 PM

Water Availability Calculation | Consumptive Uses and Storages | Instream Flow Requirements | Reservations | Water Rights | 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 Requirement	Net Water Available
JAN	592.00	3.94	588.00	0.00	20.00	568.00
FEB	650.00	3.87	646.00	0.00	20.00	626.00
MAR	575.00	2.69	572.00	0.00	20.00	552.00
APR	423.00	2.37	421.00	0.00	20.00	401.00
MAY	234.00	19.60	214.00	0.00	20.00	194.00
JUN	111.00	15.40	95.60	0.00	20.00	75.60
JUL	49.00	23.90	25.10	0.00	20.00	5.10
AUG	26.00	17.20	8.77	0.00	20.00	-11.20
SEP	22.70	8.89	13.80	0.00	20.00	-6.19
OCT	29.60	2.02	27.60	0.00	20.00	7.58
NOV	133.00	2.53	130.00	0.00	20.00	110.00
DEC	499.00	3.89	495.00	0.00	20.00	475.00
ANN	404,000.00	6,460.00	397,000.00	0.00	14,500.00	383,000.00

Oregon Water Resources Department
Water Availability Analysis

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Water Availability Analysis
Detailed Reports

CALAPOOIA R > WILLAMETTE R - AB MOUTH
WILLAMETTE BASIN
Water Availability as of 5/26/2023

Watershed ID #: 76 (Map)
Date: 5/26/2023

Exceedance Level: 80%
Time: 3:37 PM

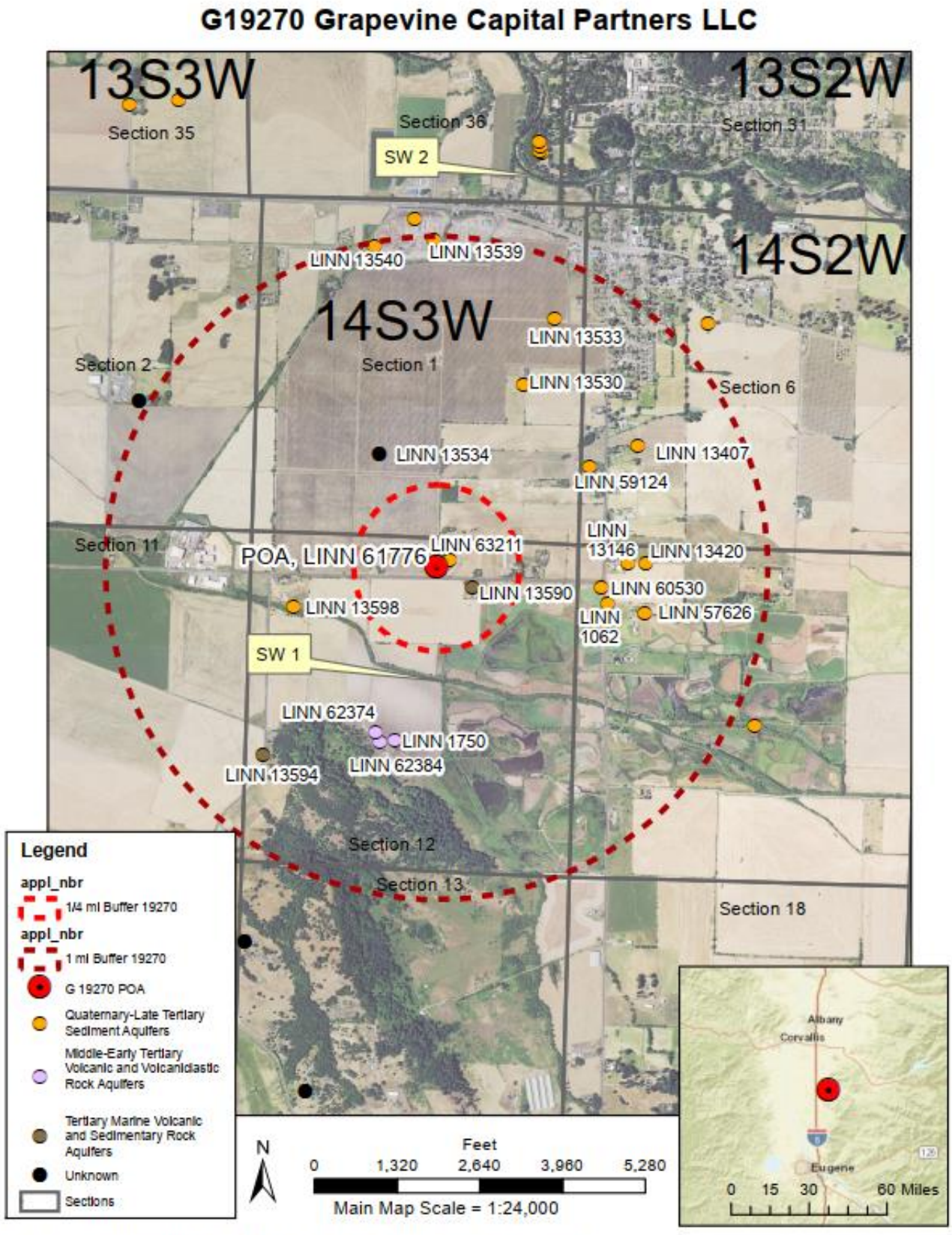
Water Availability Calculation | Consumptive Uses and Storages | Instream Flow Requirements | Reservations | Water Rights | Watershed Characteristics

Detailed Report of Instream Flow Requirements

Instream Flow Requirements in Cubic Feet per Second

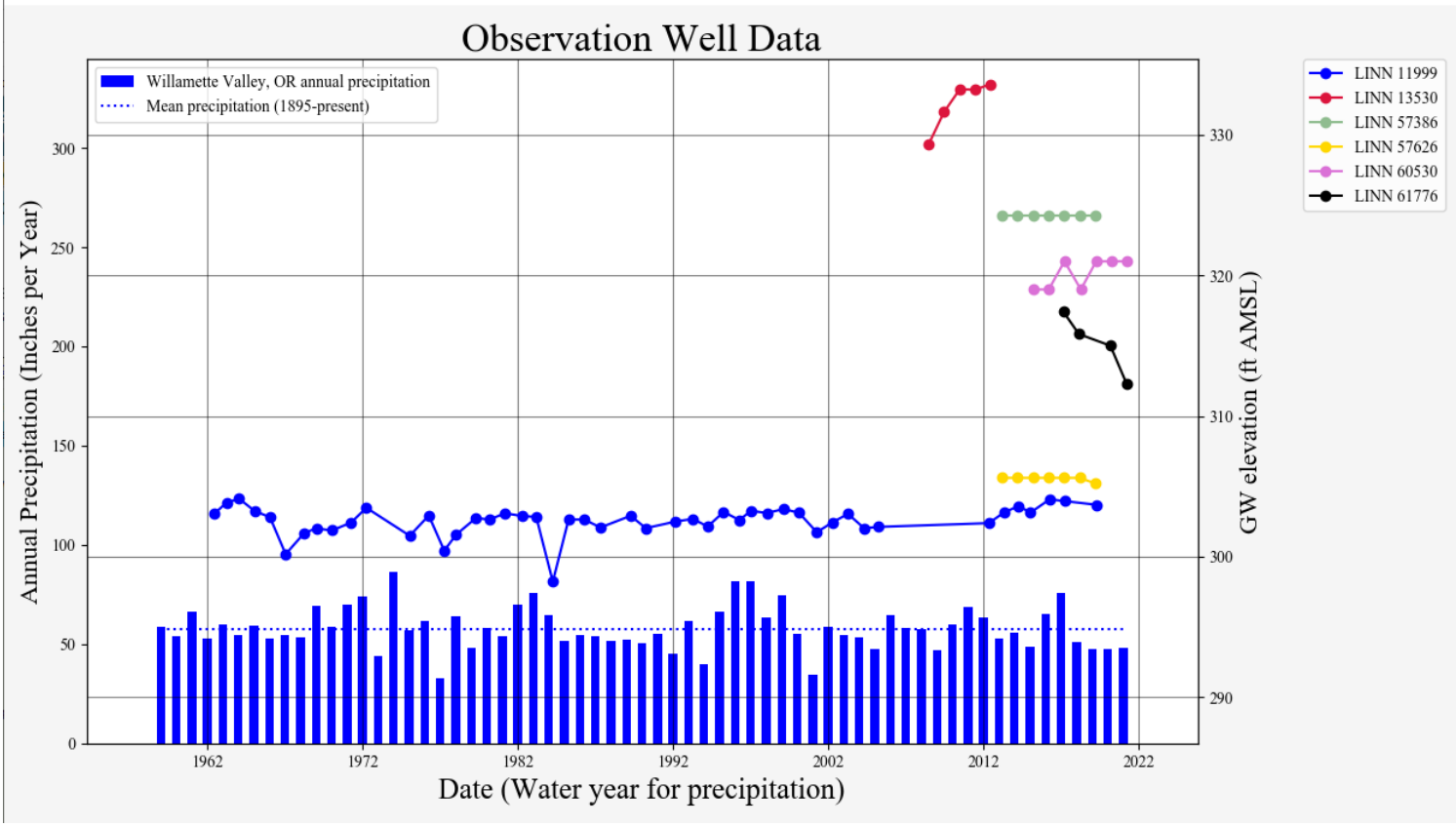
Application #	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MF76A	CERTIFICATE	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
Maximum		20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00

Well Location Map

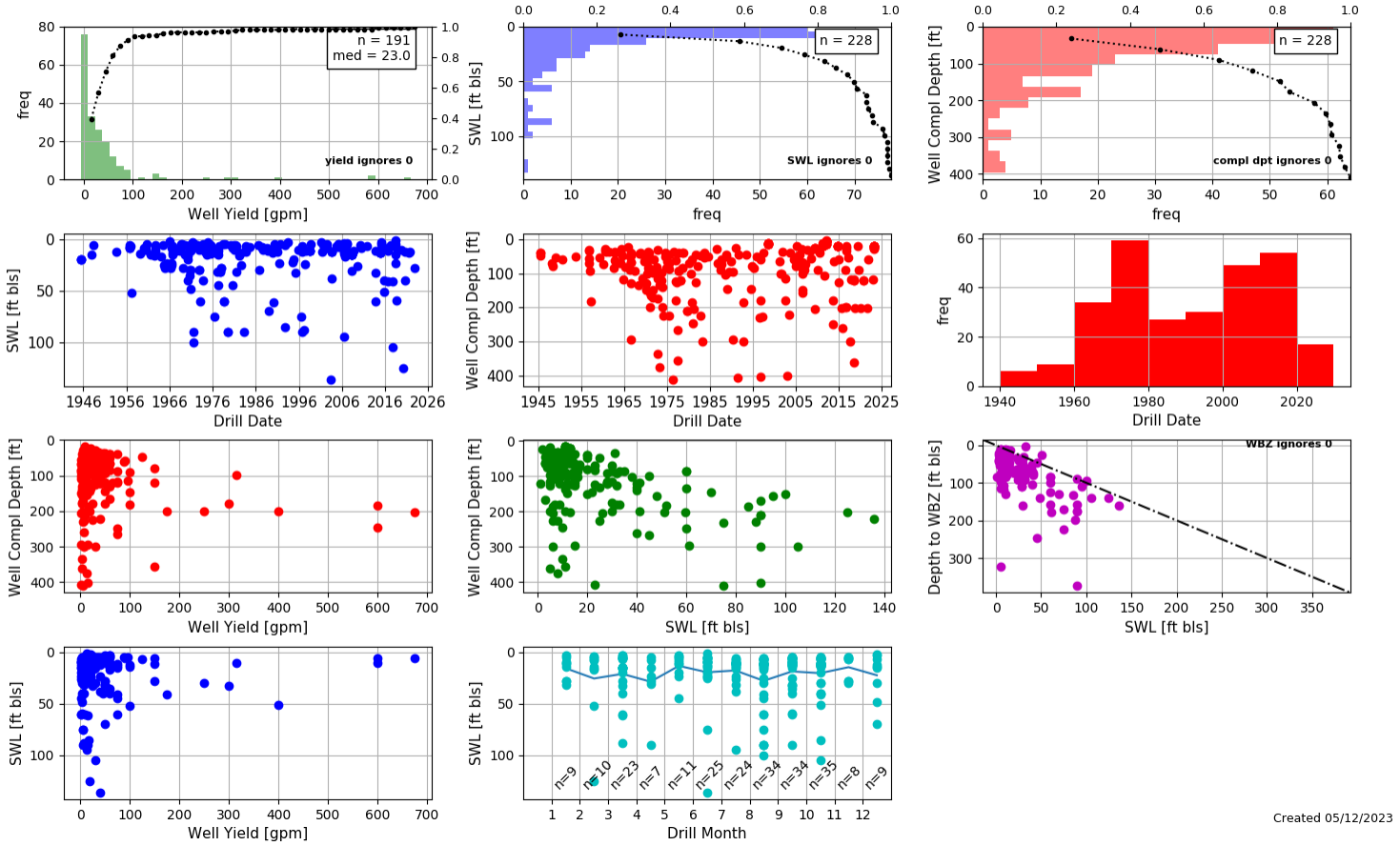


Service Layer Credits: Oregon Statewide Imagery Program (OSIP) - Oregon Imagery Framework Implementation Team
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

Water-Level Measurements in Nearby Wells

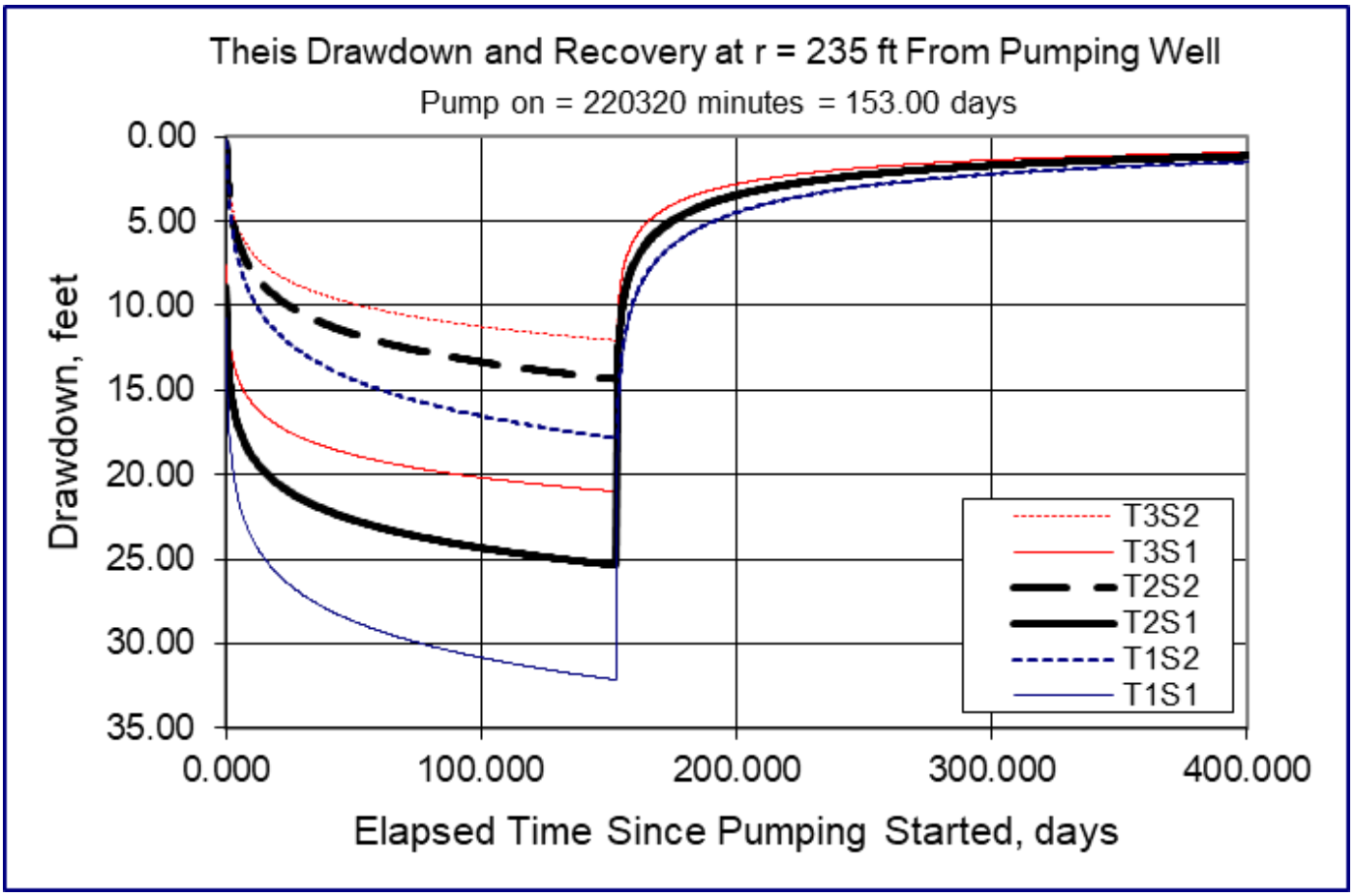


Well Statistics 14S/3W-12 and surrounding sections



Created 05/12/2023

Theis Drawdown Analysis



Radial distance from pumping well (r)=235 ft [estimated radial distance to nearest user, LINN 63211]
Pumping Rate (Q)= 0.226 cfs (~101 gpm)
Aquifer Transmissivity (T1)= 3,740 gpd/ft (500 ft^2/day), (T2)= 4,862 gpd/ft (650 ft^2/day), (T3)= 5,984 gpd/ft (800 ft^2/day)
Storativity (s1) = 0.0001, (s2) = 0.01 [Conlon et al 2005, Table 2 values for Middle Sedimentary Unit]
Total pumping time=153 days [May 1-September 30]

Stream Depletion Analysis – SW 1

Application type:	G
Application number:	19270
Well number:	1
Stream Number:	1
Pumping rate (cfs):	0.226
Pumping duration (days):	153.0
Pumping start month number (3=March)	5.0

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	1559.0	1559.0	1559.0	ft
Aquifer transmissivity	T	500.0	650.0	800.0	ft2/day
Aquifer storativity	S	0.0001	0.001	0.01	-
Aquitard vertical hydraulic conductivity	Kva	0.001	0.05	0.1	ft/day
Aquitard saturated thickness	ba	20.0	20.0	20.0	ft
Aquitard thickness below stream	babs	30	30	30	ft
Aquitard specific yield	Sya	0.2	0.2	0.2	-
Stream width	ws	50.0	50.0	50.0	ft

Stream depletion for Scenario 2:

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