Groundwater Application Review Summary Form

Application # G- 19416

GW Reviewer James Hootsmans/Travis Brown Date Review Completed: 11/12/2024

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 **_11/12/2024_**

TO: **Application** G-**_19416_**

FROM: **GW:** **_James Hootsmans/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 11/12/2024
FROM: Groundwater Section James Hootsmans/Travis Brown
Reviewer's Name
SUBJECT: Application G- **19416** 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: **Koos Seed Company** County: **LINN**

A1. Applicant(s) seek(s) 1.58 cfs from 4 well(s) in the Willamette Basin, Santiam-Calapooia subbasin

A2. Proposed use Irrigation Seasonality: March 1 to October 31

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 534	1	Alluvium	1.58	12S/3W-5 SWNW	2540' N, 1970' E fr SW cor S 5
2	Prop 535	2	Alluvium	1.58	12S/3W-5 SWNW	2520' S, 2290' E fr SW cor S 5
3	Prop 536	3	Alluvium	1.58	12S/3W-5 SWNW	2510' S, 2660' E fr SW cor S 5
4	Prop 537	4	Alluvium	1.58	12S/3W-5 SWNW	2200' S, 2710' E fr SW cor S 5

* 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	160	0 - 25	+2 - 160		60 - 160			
2	160	0 - 25	+2 - 160		60 - 160			
3	160	0 - 25	+2 - 160		60 - 160			
4	160	0 - 25	+2 - 160		60 - 160			

POA Well	Land Surface Elevation at Well (ft amsl)	Depth of First Water (ft bls)	SWL (ft bls)	SWL Date	Reference Level (ft bls)	Reference Level Date
1	253					
2	254					
3	255					
4	256					

Use data from application for proposed wells.

A4. **Comments:** The applicant proposes four new Points of Appropriation (POAs) developing groundwater from the alluvial aquifer of the Willamette Basin.

Note: The applicant also has a pending water right review for 2 POAs across the highway in G19415 (PROP 532 and 533).

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 wells are not located within ¼ mile of a perennial surface water source, therefore the pertinent basin rules do not apply.

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) **7RLN; 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 applicant's proposed wells are in an area underlain by thick alluvial fan deposits by Woodward et al., (1998). O'Connor et al. (2001) map the unit as Qff2 (Quaternary Surficial Deposits – fine grained sediments), the main body of fine-grained Missoula Flood Deposits. These deposits are composed of coarse to fine sediments that reach > 140 ft thick and are considered to be a very productive aquifer system within the Willamette Valley. Locally, the aquifer appears to be greater than 200 feet thick and is confined by 10-20 feet of silt and clay (Willamette Silt). The thickness of these deposits and their overall high transmissivity suggest minimal negative impacts from the proposed use.

Available water level data are sparse, and display seasonal fluctuation within the aquifer system, but do not indicate or suggest long-term groundwater elevation declines in the area of the proposed use (see attached hydrograph).

The closest proximity senior water right (Claim GR-322, LINN 10421) is located 330' southeast of proposed POA 4. At this distance, a Theis drawdown calculation utilizing typical values for sands and gravels and a bulk aquifer thickness of 100' anticipate much more than 25' of drawdown after one year of pumping at the proposed rate of 1.58 cfs (See Theis analysis). **Therefore, groundwater for the proposed use will not likely be available in the amounts requested without causing interference with neighboring wells in excess of the standard permit condition limit of 25 ft. If the requested rate were reduced to 0.5 cfs or less, interference with neighboring wells would not be anticipated to exceed the 25 ft threshold.**

Reported yields from regional wells range from less than 1 to ~ 480 gpm, with a median of 60 gpm (see attached Well Statistics). To achieve the requested rate of 1.58 cfs (709 gpm), each POA would need to produce at least 0.395 cfs (177 gpm) with all 4 POA operating simultaneously. The per-well minimum rate of 0.395 cfs (177 gpm) therefore represents ~37 percent of the maximum yield reported for water wells in this area, although it is almost 3 times the median reported yield.

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
1-4	**Alluvium – Sand and Gravels**	☒	☐

Basis for aquifer confinement evaluation: Nearby well logs indicate that static water levels are typically somewhat higher than the elevation of respective water-bearing zones. The confining Willamette Silt is, in places, incised by local drainages, producing local confinement that likely varies by location and well construction. Considering the proposed well depth, the POA wells are likely to produce from semi-confined zones at depth within the alluvial aquifer system.

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	SW Elev ft msl	Distance (ft)	Hydraulically Connected? YES	NO	ASSUMED	Potential for Subst. Interfer. Assumed? YES	NO
1	**1**	**Lake Creek**	**~240[a]**	**~216[b]**	**13,490**	☒	☐	☐	☐	☒
2	**1**	**Lake Creek**	**~240[a]**	**~216[b]**	**13,830**	☒	☐	☐	☐	☒
3	**1**	**Lake Creek**	**~240[a]**	**~216[b]**	**14,170**	☒	☐	☐	☐	☒
4	**1**	**Lake Creek**	**~240[a]**	**~216[b]**	**14,290**	☒	☐	☐	☐	☒

Basis for aquifer hydraulic connection evaluation:
[a] Woodward et al., 1998
[b] LIDAR

Water Availability Basin the well(s) are located within: 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?
		☐	☐			☐		☐		☐

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: Note - The requested rated is over 1% of 80% natural flow for the WAB however, there are no perennial surface water sources within 1 mile of the POAs. Therefore this section does not apply.

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: Based upon the distance to surface water from the proposed POA locations, the thickness and storage properties of the aquifer, and the relatively low pumping rate, the proposed use is not anticipated to substantially interfere with hydraulically connected local surface water.

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:** _____

References Used: G-19416 application files, OWRD GWIS database, Well log database

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 R. R. Caldwell. 1998. *Geologic Framework of the Willamette Lowland Aquifer System, Oregon and Washington.* USGS Professional Paper 1424-A.

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

O'Connor, J.E., Sarna-Wojcick, A., Woznikak, 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.

Woodward, D. G., M. W. Gannett, and J. J. Vaccaro. 1998. *Hydrogeologic Framework of the Willamette Lowland Aquifer System, Oregon and Washington*. USGS Professional Paper 1424-B.

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:** _____

_____

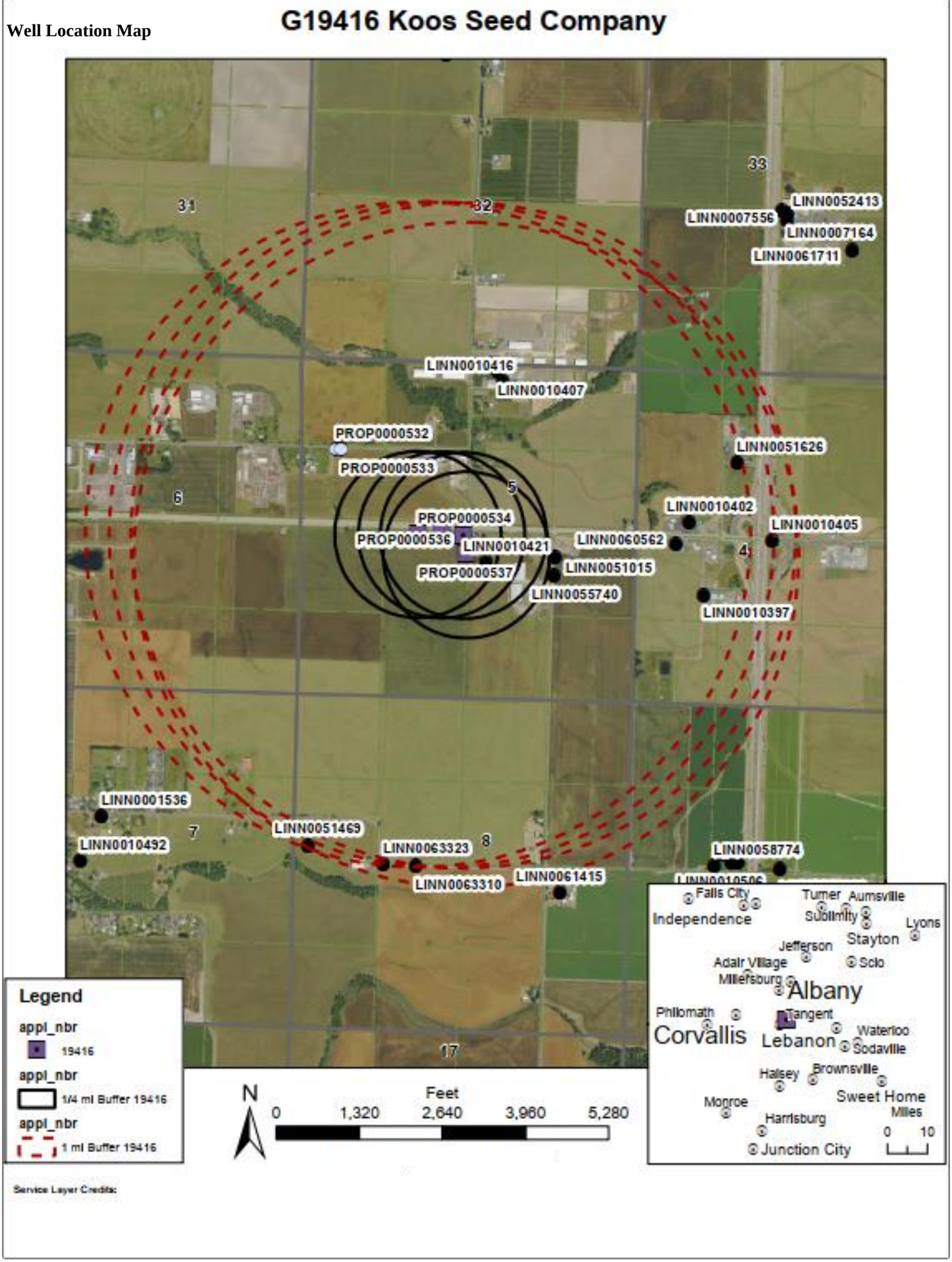
_____

_____

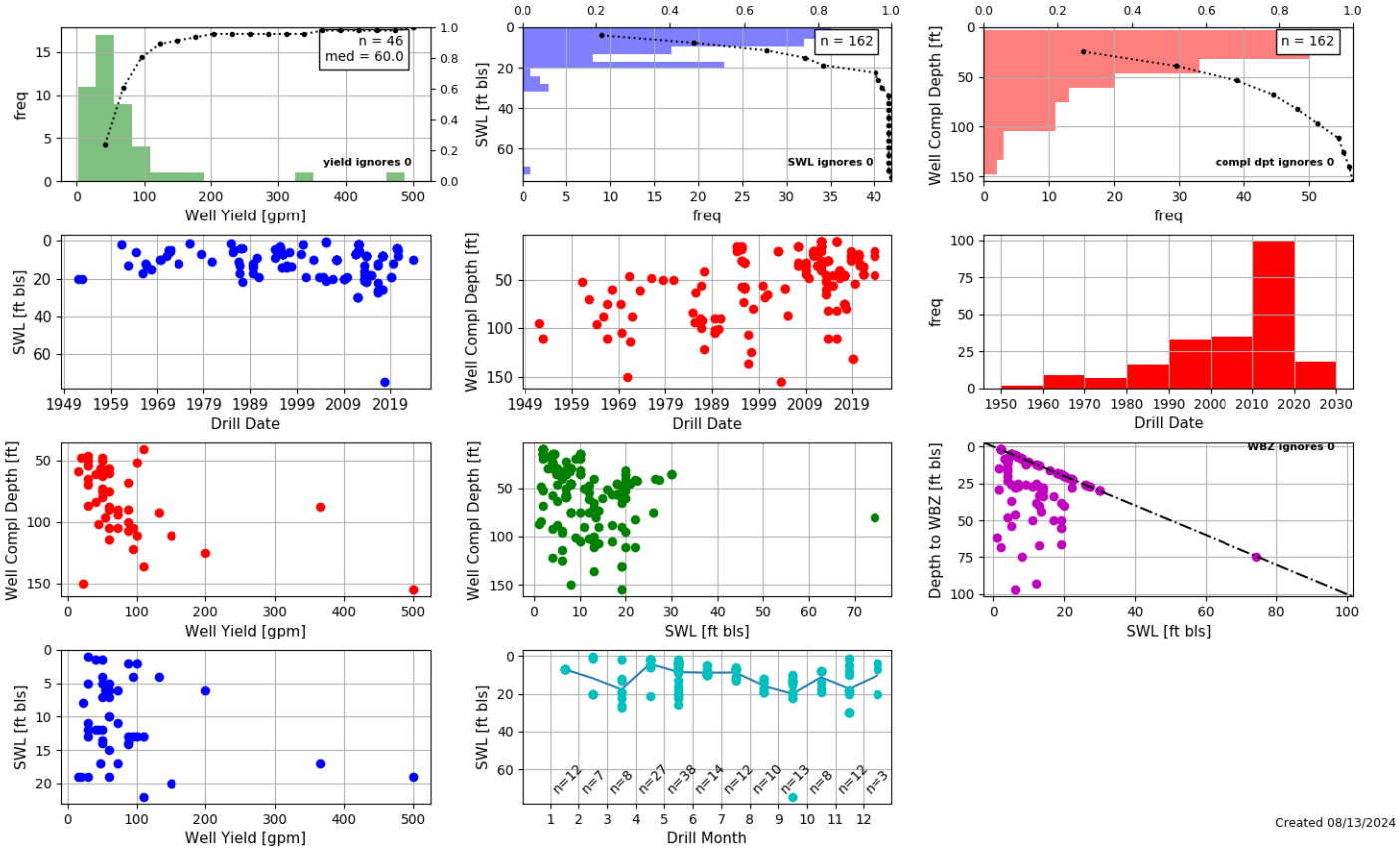
_____

D4. ☐ **Route to the Well Construction and Compliance Section for a review of existing well construction.**

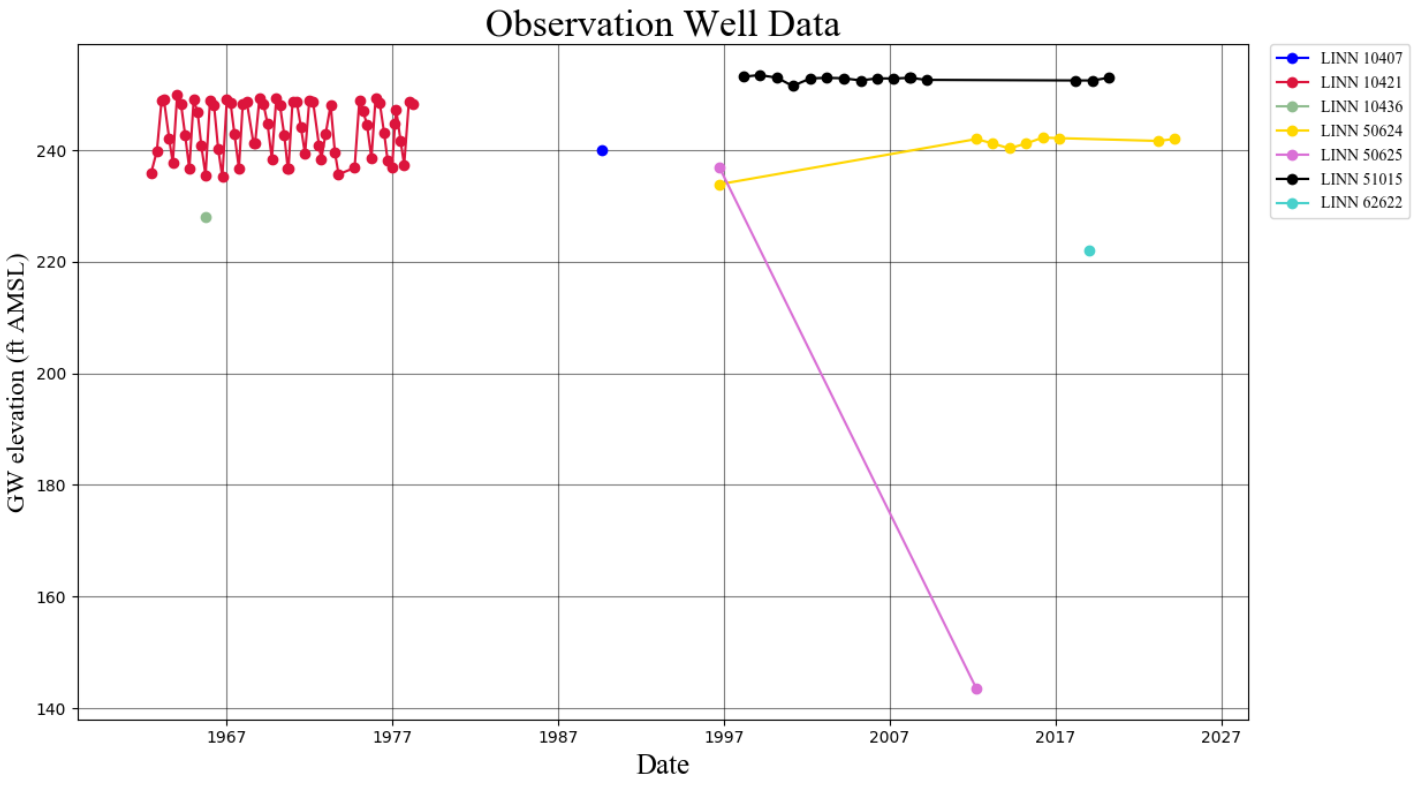
Well Location Map



Well Statistics



Water-Level Measurements in Nearby Wells



Water Availability Tables

Water Availability Analysis
Detailed Reports

CALAPOOIA R > WILLAMETTE R - AB MOUTH
WILLAMETTE BASIN
Water Availability as of 8/7/2024

Watershed ID #: 76 (Map)
Date: 8/7/2024

Exceedance Level: 80%
Time: 4:23 PM

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

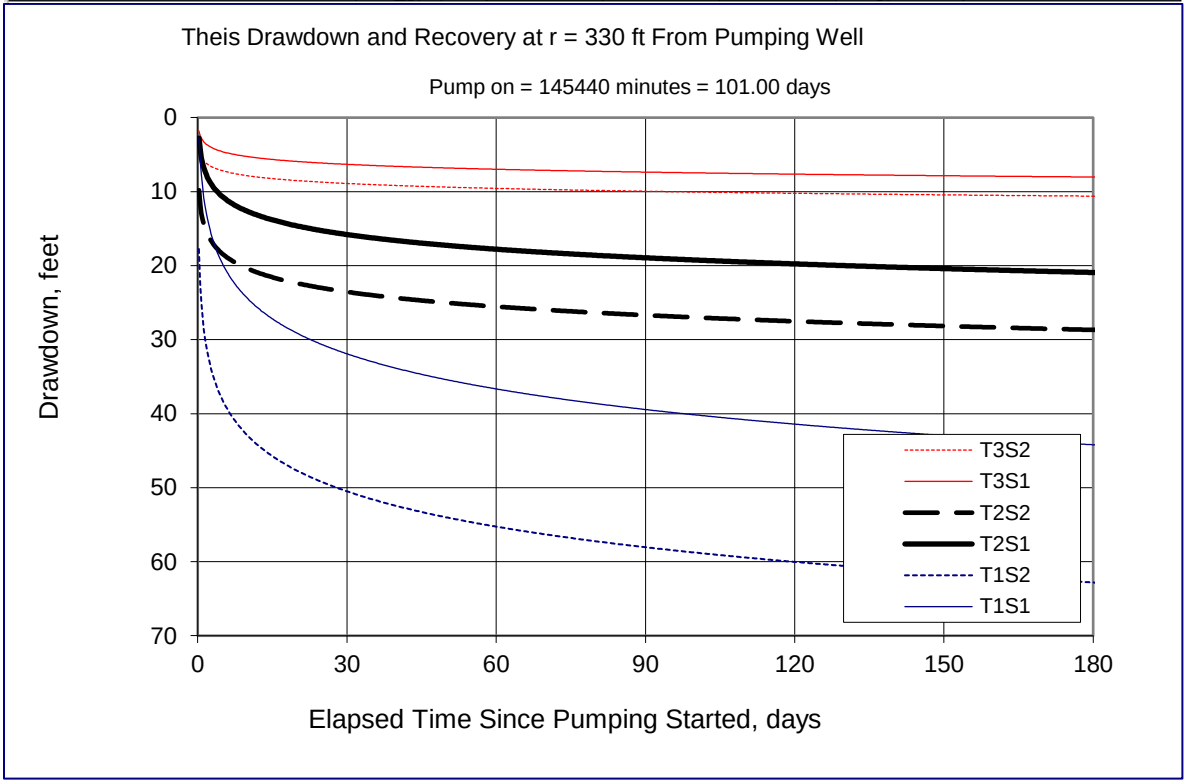
Water Availability Calculation

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	4.75	587.00	0.00	20.00	567.00
FEB	650.00	4.68	645.00	0.00	20.00	625.00
MAR	575.00	3.50	571.00	0.00	20.00	551.00
APR	423.00	3.18	420.00	0.00	20.00	400.00
MAY	234.00	19.60	214.00	0.00	20.00	194.00
JUN	111.00	15.30	95.70	0.00	20.00	75.70
JUL	49.00	23.80	25.20	0.00	20.00	5.16
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	4.70	494.00	0.00	20.00	474.00
ANN	404,000.00	6,690.00	397,000.00	0.00	14,500.00	383,000.00

Theis Interference Analysis

Input Data:	Var Name	Scenario 1	Scenario 2	Scenario 3	Units	
Total pumping time	t		101		d	
Radial distance from pumped well:	r		330		ft	Q conversions
Pumping rate	Q		1.58		cfs	709.10 gpm
Hydraulic conductivity	K	5	12	36	ft/day	1.58 cfs
Aquifer thickness	b		100		ft	94.80 cfm
Storativity	S_1		0.003			136,512.00 cfd
	S_2		0.0002			3.13 af/d
Transmissivity Conversions	T_f2pd	500	1200	3600	ft2/day	
	T_ft2pm	0.3472222	0.8333333	2.5	ft2/min	Recalculate
	T_gpdpft	3740	8976	26928	gpd/ft	



LINN 10421 (GR-322)

SWL	20	ft bls	Well log, water table mapping (Woodward et al., 1998)
Aquifer Bottom	160	ft bls	Gannett and Caldwell, 1998
Available Drawdown	140	ft	Aquifer Bottom - SWL
Pump Height Above Bottom	5	ft	Estimate
Required NPSH	5	ft	Estimate
Estimated Drawdown	21	ft	@ 160 gpm (based on spec cap of 7.5 gpm/ft estimate)
Minimum Water Column	31	ft	Estimate Drawdown + NPSH + Pump Height
Injury Interference Level	**109**	**ft**	**Available Drawdown - Minimum Water Column**