Groundwater Application Review Summary Form

Application # G- 18749

GW Reviewer Travis Brown **Date Review Completed:** 4/1/2019

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:

[X] 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 April 1, 2019

TO: **Application** G- 18749

FROM: **GW:** Travis Brown
(Reviewer's Name)

SUBJECT: Scenic Waterway Interference Evaluation

☐ YES
The source of appropriation is within or above a Scenic Waterway

☒ NO

☐ YES
Use the Scenic Waterway condition (Condition 7J)

☒ NO

☐ 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 _____ 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 4/1/2019

FROM: Groundwater Section Travis Brown
Reviewer's Name

SUBJECT: Application G- 18749 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: Carus Road Farm, LLC County: **Clackamas**

A1. Applicant(s) seek(s) 0.2028 cfs from 2 well(s) in the Willamette Basin, _____ subbasin

A2. Proposed use Commercial/Nursery Seasonality: Year-round

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	PROPOSED	1	Alluvium	0.2027	3S/2E-30 SE-SE	740' N, 1050' W fr SE cor S 30
2	PROPOSED	2	Alluvium	0.2027	3S/2E-30 SE SE	660' N, 820' W fr SE cor S 30

* 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	~344				~250 [b]	0-200 [b]	0-200 (8") [b]		200-250 [b]			
2	~345				~250 [b]	0-200 [b]	0-200 (8") [b]		200-250 [b]			

Use data from application for proposed wells.

A4. **Comments:** The proposed POA are ~3 miles east of the City of Canby, Oregon.

[a] Surface elevations estimated based on proposed well locations (Watershed Sciences, 2009; USGS, 2013; WSI, 2015)

[b] Proposed well construction.

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 would produce water from a confined aquifer; therefore, per OAR 690-502-0240, the relevant Willamette Basin rules (OAR 690-502-0040) do not apply.

A6. ☐ **Well(s) #** _____, _____, _____, _____, _____, tap(s) an aquifer limited by an administrative restriction.
Name of administrative area: **N/A**
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 years of 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 **0** ft. and **800** 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: Groundwater for the proposed use cannot be determined to be over-appropriated due to insufficient available data regarding rates of recharge and the current quantity of groundwater withdrawals from the aquifer system.**

Based on nearby water well reports, the proposed POA are anticipated to produce water from thin beds of water-bearing sand and possibly some gravel between 200 to 250 ft below land surface (bls). Most nearby water well reports indicate fine-grained sediments overlying observed water-bearing zones. Trimble (1963) and Hampton (1972) have mapped the Tertiary (Neogene) sediments in this area as part of the Troutdale Formation (Fmn); however, Leonard and Collins (1983) mapped the area of interest as part of the undifferentiated Troutdale Fmn and Sandy River Mudstone, the latter of which they describe as "500 to 700 ft of mostly dark, thin-bedded siltstone and claystone" that locally "contains thin beds of sandstone or conglomerate that yield a few to about 50 gal/min to wells that are a few hundred feet deep[.]" Hydrostratigraphically, the predominantly fine-grained sediments in this area have been assigned to the Willamette confining unit of Woodward et al. (1998), estimated at greater than 800 ft thick in the area of interest. Although Leonard and Collins (1983) mapped a narrow lobe of Boring Lava at land surface in this area, based on nearby well logs, it appears that any lava near this location is thin and has been very deeply weathered.

Water level data is sparse around the proposed POA. The nearest observation wells with potentially applicable data are greater than 1.8 miles away from the proposed POA. Reported water levels in these observation wells do not show widespread or consistent declines (see Hydrographs, attached).

Twenty-three (23) water wells with reported yields were identified in the same or adjacent quarter-sections as the proposed POA. Completed depths for these wells ranged from 90 to 363 ft bls. Reported yields ranged from 2 to 40 gpm, with a median yield of 15 gpm (see Well Statistics – Adjacent Quarter Sections, attached). There appears to be a modest trend of decreasing yield with depth. Assuming that the requested maximum rate (91 gpm / ~0.2028 cfs) would be evenly distributed between the two proposed POA (i.e. yield of 45.5 gpm / ~0.1014 cfs per well), the requested rate would be ~114 percent of the maximum reported yield and ~303 percent of the median yield from nearby wells. **Based on the nearby well statistics, it is unlikely that the applicant will be able to obtain the requested maximum rate (91 gpm / ~0.2028 cfs) from the two proposed POA. However, due to the lack of current, applicable information, it cannot be stated whether the proposed**

use will or will not be available in the amounts requested without injury to prior water rights or within the capacity of the groundwater resource.

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	**Troutdale Fmn/Sandy River Mudstone**	☒	☐
2	**Troutdale Fmn/Sandy River Mudstone**	☒	☐

Basis for aquifer confinement evaluation: Water well reports near the proposed POA generally report SWLs above the shallowest water-bearing zones, indicating confined conditions. Most reported lithologies indicate predominantly fine-grained sediment (clay/silt) which may act as confining units overlying the applicable water-bearing zones.

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	**Parrott Creek**	**>180**	**125-410**	**~1,340**	☒	☐	☐	☐	☒
1	2	**Unnamed tributary**	**>180**	**125-390**	**~1,430**	☒	☐	☐	☐	☒
1	3	**Unnamed tributary**	**>180**	**135-160**	**~3,630**	☒	☐	☐	☐	☒
1	4	**Unnamed tributary**	**>180**	**210-390**	**~3,630**	☐	☒	☐	☐	☒
2	1	**Parrott Creek**	**>180**	**125-410**	**~1,310**	☒	☐	☐	☐	☒
2	2	**Unnamed tributary**	**>180**	**125-390**	**~1,400**	☒	☐	☐	☐	☒
2	3	**Unnamed tributary**	**>180**	**135-160**	**~3,840**	☒	☐	☐	☐	☒
2	4	**Unnamed tributary**	**>180**	**210-390**	**~3,420**	☐	☒	☐	☐	☒

Basis for aquifer hydraulic connection evaluation: Minimum surface water elevations in SW 1, 2, and 3 within 1 mile of the proposed POA are below the elevation of the bottom of the proposed seal (~145 ft above mean sea level [msl]). Although water level information for the proposed aquifer in this area is limited, based on nearby water well reports and the land surface elevation at the proposed POA, the groundwater elevation in the proposed POA is estimated to be at least 180 ft above msl – or greater than 45 ft above the minimum surface water elevation SW 1, 2, and 3. Although the difference between minimum surface water elevation in SW 4 and estimated groundwater elevation in the proposed POA is 30 feet or less, there is not sufficient evidence to conclude hydraulic connection between the proposed POA and SW 4, particularly given that SW 4 lies on the opposite side of SW 3 from the proposed POA.

Water Availability Basin the well(s) are located within: SW 1-4: WILLAMETTE R > COLUMBIA R – AT 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 source. Limit evaluation to instream rights and minimum stream flows that are pertinent to that surface water source, and 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	☐	☐	**N/A**	**N/A**	☐	**4,890**	☐	**<25%**	☐
1	2	☐	☐	**N/A**	**N/A**	☐	**4,890**	☐	**<25%**	☐
1	3	☐	☐	**N/A**	**N/A**	☐	**4,890**	☐	**<25%**	☐
2	1	☒	☐	**N/A**	**N/A**	☐	**4,890**	☐	**<25%**	☒
2	2	☐	☐	**N/A**	**N/A**	☐	**4,890**	☐	**<25%**	☐
2	3	☐	☐	**N/A**	**N/A**	☐	**4,890**	☐	**<25%**	☐

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: The proposed POA 2 location appears to be just within ¼ mile of the nearest surface water source, SW 1 (see Well Location Map). On this basis, the Potential for Substantial Interference (PSI) is assumed per OAR 690-009-0040(4)(a). However, this is the only basis for assuming PSI for the proposed POA. Should the applicant revise the location of their proposed POA so that it would be greater than 1,320 ft from the nearest surface water source, a new groundwater review should not be required.

Potential depletion of hydraulically-connected surface water sources within 1 mile of the proposed POA was analyzed using the Hunt 1999 analytical model. Hydraulic parameters used for the model were derived from regional data or studies of the hydrogeologic regime (Pumping Test Reports, OWRD Well Log Query Report, Conlon et al., 2003, 2005; Iverson, 2002; 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). The potential point of depletion on the various surface water sources was determined based on where along the stream channels the surface water elevation would equal the elevation of the bottom of the proposed well seal (~145 ft above msl) – the presumption being that the water-bearing zones tapped by the proposed POA would be roughly horizontal and exposed along the stream channels. See attached "Stream Depletion Analysis – SW 2" for the specific parameters used in the analysis.

The Hunt 1999 analytical model results indicated that interference with (depletion of) SW 2 due to pumping of POA 1 is anticipated to be much less than 25 percent of the well discharge at 30 days of continuous pumping, primarily due to the low transmissivity of the water-bearing zones. 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 1 and SW 2) was analyzed quantitatively for interference (stream depletion). All other POA-SW pairs would presumably result in less interference due to their greater separation relative to POA 1 and SW 2. Therefore, the interference of both proposed POA with all surface water sources within 1 mile are anticipated to result in much less than 25 percent of the well discharge at 30 days of continuous pumping.

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													
(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

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:** C3a: **The proposed POA 2 appears to be within ¼-mile of SW 1 (Parrott Creek); PSI is assumed on this basis alone. The applicant may revise the proposed POA 2 location to avoid triggering PSI on this basis without the need for a new groundwater review.**

References Used:

Application File: G-18749

Pumping Test Files: CLAC 12181, 12188, 16144

Conlon, T.D., Lee, K.K., and Risley, J.R., 2003, Heat tracing in streams in the central Willamette Basin, Oregon, in Stonestrom, D.A. and Constantz, Jim, eds., Heat as a tool for studying the movement of groundwater near streams: U.S. Geological Survey Circular 1260, chapter 5, p. 29-34.

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: U.S. Geological Survey Scientific Investigations Report 2005-5168.

Domenico, P.A. and Mifflin, 1965, Water from low-permeability sediments and land subsidence: Water Resource Research, v. 1, no. 4, p. 563-576.

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

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

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.

Leonard, A.R., and Collins, C.A., 1983, Ground water in the northern part of Clackamas County, Oregon: Oregon Water Resources Department Ground Water Report 29. 85 p.

McFarland, W.D., and Morgan, D.S., 1996, Description of the Ground-Water Flow System in the Portland Basin, Oregon and Washington: U.S. Geological Survey Water Supply Paper 2470-A, 58 p.

Trimble, D.E., 1963, Geology of Portland, Oregon, and adjacent areas: U.S. Geological Survey Bulletin 1119, 119 p.

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

United States Geological Survey, 2017, *Oregon City quadrangle*, Oregon [map], 1:24,000, 7.5 minute topographic series, U.S. Department of the Interior, Reston, Virginia.

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.

Watershed Sciences, 2009, LIDAR remote sensing data collection, Department of Geology and Mineral Industries, Hood to Coast 2009, Portland, OR, May 27.

WSI, 2015, OLC Metro 2014: Final Delivery, Portland, OR, May 8.

D. WELL CONSTRUCTION, OAR 690-200

D1. **Well #:** _____ **Logid:** _____

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

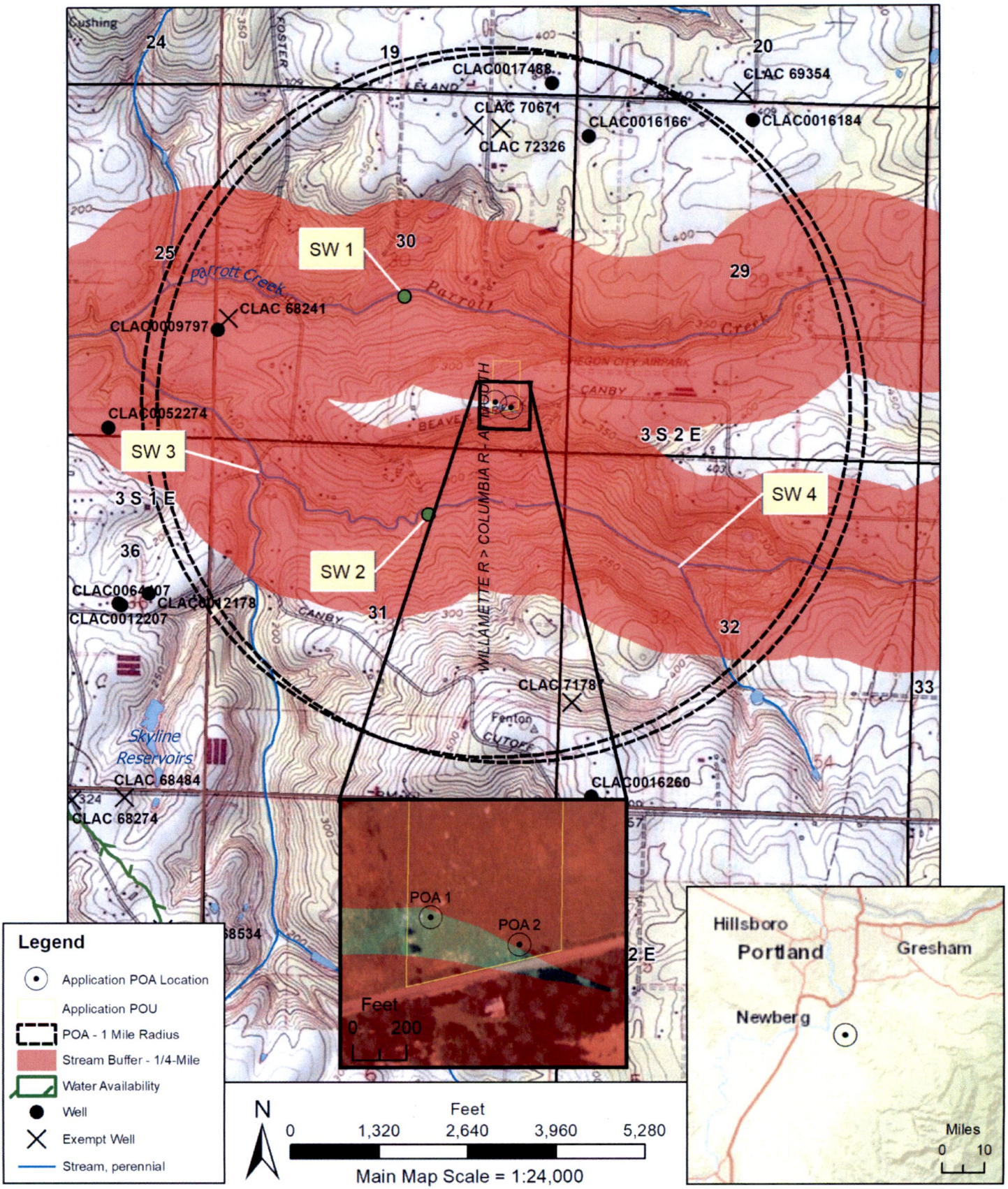
a. ☐ review of the well log;
b. ☐ field inspection by _____;
c. ☐ report of CWRE _____;
d. ☐ other: (specify) _____

D3. **THE WELL construction deficiency or other comment is described as follows:** _____

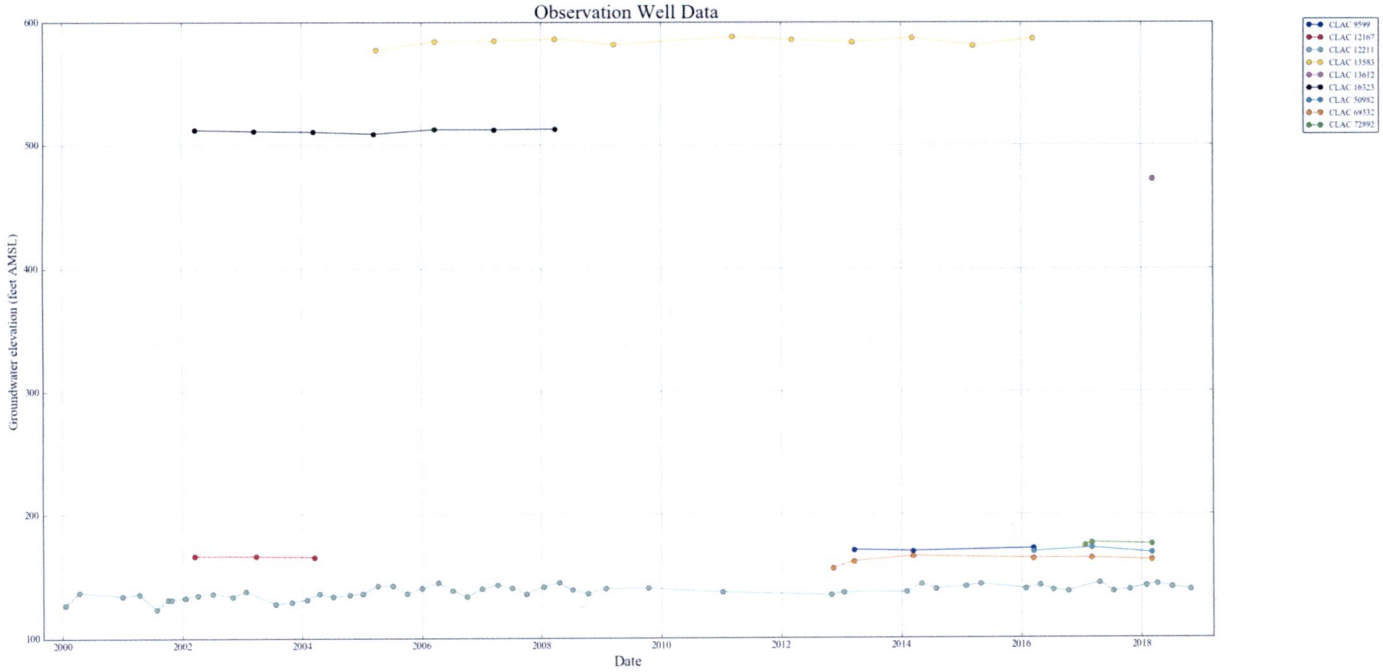
D4. ☐ **Route to the Well Construction and Compliance Section for a review of existing well construction.**

Well Location Map

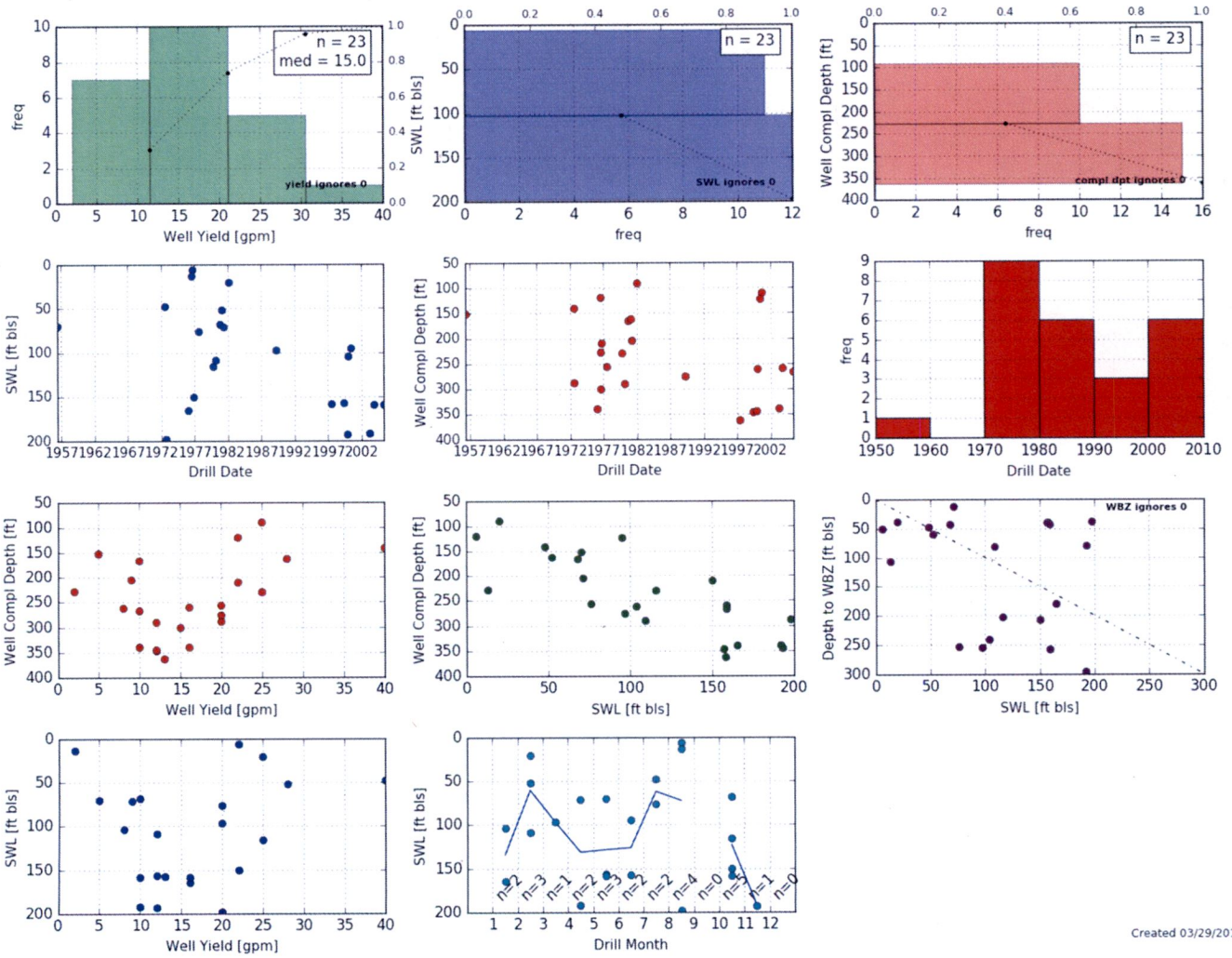
G-18749 Carus Road Farm, LLC



Hydrographs



Well Statistics – Adjacent Quarter-Sections



Water Availability Tables

Water Availability Analysis
Detailed Reports

WILLAMETTE R > COLUMBIA R - AT MOUTH
WILLAMETTE BASIN

Water Availability as of 3/28/2019

Watershed ID #: 181 (Map)
Date: 3/28/2019

Exceedance Level: 80%
Time: 2:34 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	27,500.00	2,800.00	24,700.00	0.00	1,500.00	23,200.00
FEB	30,000.00	8,060.00	21,900.00	0.00	1,500.00	20,400.00
MAR	28,500.00	7,620.00	20,900.00	0.00	1,500.00	19,400.00
APR	25,400.00	7,230.00	18,200.00	0.00	1,500.00	16,700.00
MAY	20,700.00	4,440.00	16,300.00	0.00	1,500.00	14,800.00
JUN	11,000.00	2,340.00	8,660.00	0.00	1,500.00	7,160.00
JUL	6,280.00	2,290.00	3,990.00	0.00	1,500.00	2,490.00
AUG	4,890.00	2,050.00	2,840.00	0.00	1,500.00	1,340.00
SEP	4,930.00	1,680.00	3,250.00	0.00	1,500.00	1,750.00
OCT	5,990.00	715.00	5,280.00	0.00	1,500.00	3,780.00
NOV	12,700.00	1,060.00	11,600.00	0.00	1,500.00	10,100.00
DEC	24,800.00	1,450.00	23,400.00	0.00	1,500.00	21,900.00
ANN	19,700,000.00	2,500,000.00	17,200,000.00	0.00	1,090,000.00	16,100,000.00

Stream Depletion Analysis

Application type:	G
Application number:	18749
Well number:	1
Stream Number:	2
Pumping rate (cfs):	0.2028
Pumping duration (days):	365
Pumping start month number (3=March)	1

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	1940	1940	1940	ft
Aquifer transmissivity	T	62	150	155	ft2/day
Aquifer storativity	S	0.15	0.1	0.05	-
Aquitard vertical hydraulic conductivity	Kva	0.01	0.05	0.1	ft/day
Not used		0	0	0	
Aquitard thickness below stream	babs	3.0	3.0	3.0	ft
Not used		0	0	0	
Stream width	ws	10	10	10	ft

Stream depletion for Scenario 2:

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