Groundwater Application Review Summary Form

Application # G- 18382-RR

GW Reviewer M. Thoma **Date Review Completed:** 06-23-17

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 06-23 ,2017

TO: **Application G-** 18382-RR

FROM: **GW:** M. Thoma
(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 Rogue 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
0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date June 23, 2017

FROM: Groundwater Section Michael J Thoma
Reviewer's Name

SUBJECT: Application G- 18382 Supersedes review of December 12, 2016
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: **Rogue's Lair Farms LLC** County: **Jackson**

A1. Applicant(s) seek(s) 0.22* cfs from 2 well(s) in the Rogue Basin, Upper Rogue subbasin

A2. Proposed use Nursery Seasonality: Year-round

*Prompt of this re-review was the applicant requesting a lower rate of 0.22 cfs from the original requested rate of 1.97 cfs. See attached email

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	4	Bedrock	0.22	36S/01W-6 NWNE	744'S, 1240'E of N¼ cor S6
2	Proposed	5	Bedrock	0.22	36S/01W-6 SWNE	1850'S, 962'E of N¼ cor S6
3						

* 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	1245	-	15-20†		100	0-20	+1-25		40-100			
2	1240	-	15-20†		100	0-20	+1-25		40-100			

Use data from application for proposed wells.

A4. **Comments:** †Wells are proposed; *SWL* is assumed based on well logs for the area and the relief between the land surface and the Rogue River which likely controls groundwater levels. *Well depth, seal, casing,* and *perforations* are taken from application.

A5. ☒ **Provisions of the** Rogue (OAR 690-515) 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:

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:
   i. ☒ The permit should contain condition #(s) **7J (Scenic Waterway); 7N (Annual SWL); 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 _____ 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:** There are no OWRD Observation Well data in the area of the proposed POA so groundwater over-appropriation cannot be determined.

The applicant originally proposed a rate of 1.97 cfs which was deemed to be beyond the capacity of the resources based on median well yields in the area. The applicant's adjusted rate of 0.22 cfs (100 gpm) is still in much higher than median well yields but several well logs in the area report yields ≥ 50 gpm. Also, given that this rate will be divided between two wells and that this describes the maximum appropriation rate – actual pumping rate will be much less and likely limited by well yield – the adjusted rate is deemed appropriate.

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	**Bedrock of Payne Cliffs Fm.**	☒	☐
2	**Bedrock of Payne Cliffs Fm.**	☒	☐
		☐	☐

Basis for aquifer confinement evaluation: The geology at the site of the proposed wells consists of a thin (20-30 ft) layer of alluvium overlying bedrock of the Payne Cliffs Fm. Both wells will likely be producing from fractures within the bedrock that will be under confined 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	SW Elev ft msl	Distance (ft)	Hydraulically Connected? YES	NO	ASSUMED	Potential for Subst. Interfer. Assumed? YES	NO
1	1	**Rogue River**	~1230	1210-1230	1450	☒	☐	☐	☐	☒
2	1	**Rogue River**	~1230	1210-1230	1610	☒	☐	☐	☐	☒
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐

Basis for aquifer hydraulic connection evaluation: GW elevations are estimated to be above SW elevations suggesting groundwater is flowing towards and discharging to surface water

Water Availability Basin the well(s) are located within: Rogue River > Pacific Ocean – AB Curry G at Gage 14359000

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	☐	☐	**MF270**	**1200**	☐	**1130**	☐	**< 5%**	☐
2	1	☐	☐	**MF270**	**1200**	☐	**1130**	☐	**< 5%**	☐
		☐	☐			☐		☐		☐

Comments: Interference was calculated using the Hunt (2003) analytical stream-depletion model

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?
			☐			☐		☐		☐

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		**No surface water sources beyond 1 mile were evaluated**											
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: _____

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 applicant's proposed wells would be producing from an aquifer that has been found to be hydraulically connected to surface water (Rogue River) at a distance of < 1 mile. However, the reviewer is unable to find a preponderance of evidence that the proposed use will have the Potential for Substantial Interference (PSI) with surface water.

References Used:

Hunt, B. 2003. *Unsteady Stream Depletion when Pumping from a Semiconfined Aquifer.* Journal of Hydrologic Engineering. Vol 8(1), pp 12-19

OWRD Well Log Database – Accessed 6/23/2017.

Wiley, T. K. and J. G. Smith. 1993. *Preliminary Geologic Map of the Medford East, Medford West, Eagle Point, and Sams Valley Quadrangles, Jackson County, Oregon.* Oregon Dept. of Geology and Mineral Industries. OFR O-93-13

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

Water Availability Analysis
Detailed Reports

ROGUE R > PACIFIC OCEAN - AB CURRY G AT GAGE 14359000
ROGUE BASIN

Water Availability as of 12/12/2016

Watershed ID #: 270 (Map) Exceedance Level: 80%
Date: 12/12/2016 Time: 8:50 AM

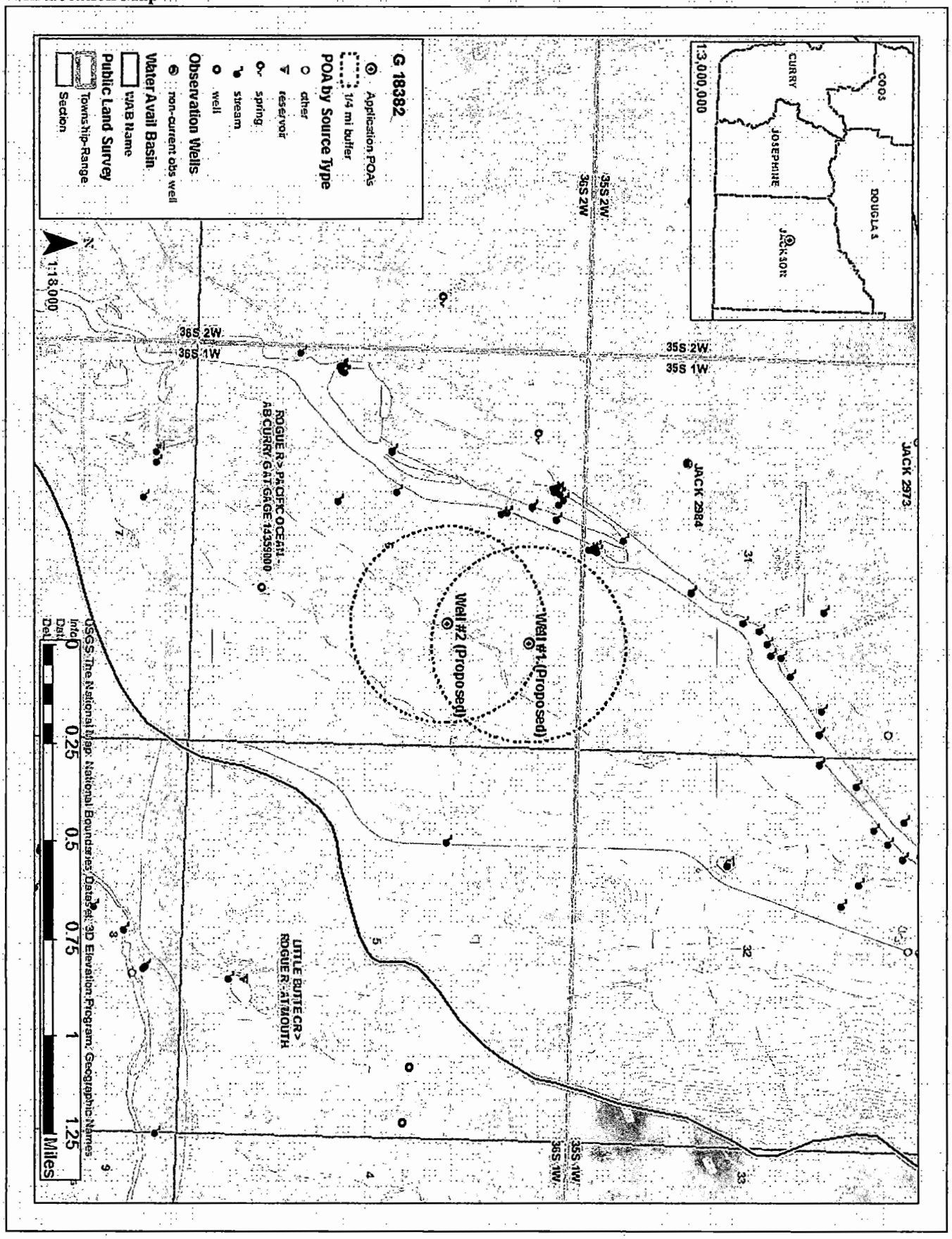
Water Availability Calculation | Consumptive Uses and Storages | Instream Flow Requirements | Reservations
Water Rights | Watershed Characteristics

Water Availability Calculation

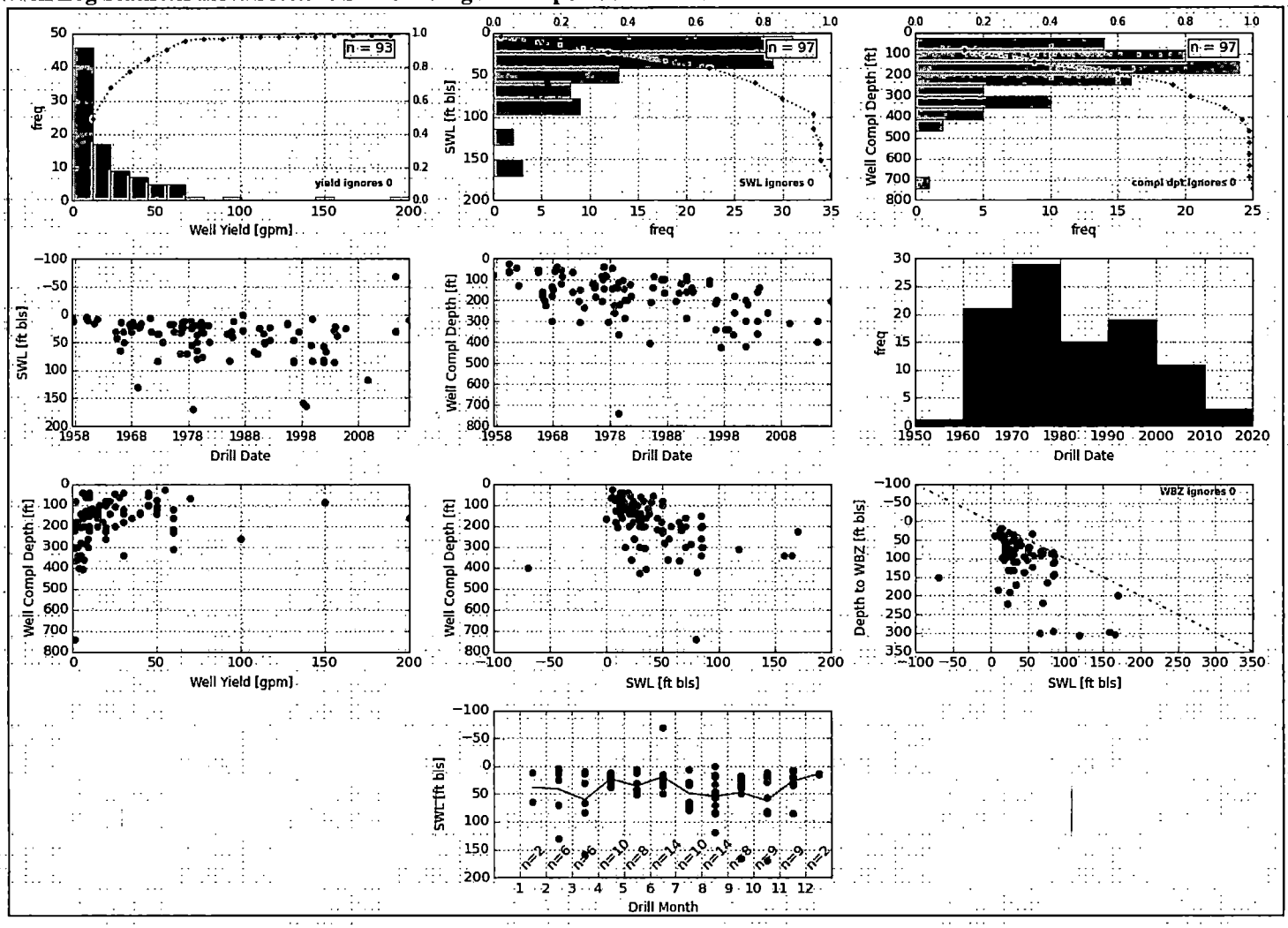
Monthly Streamflow in Cubic Feet per Second
Annual Volume at 50% Exceedance in Acre-Feet

Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	2,180.00	1,130.00	1,050.00	0.00	1,200.00	-147.00
FEB	2,710.00	2,040.00	666.00	0.00	1,200.00	-534.00
MAR	2,750.00	1,820.00	934.00	0.00	1,200.00	-266.00
APR	2,810.00	1,030.00	1,780.00	0.00	1,200.00	576.00
MAY	2,750.00	367.00	2,380.00	0.00	1,200.00	1,180.00
JUN	1,760.00	343.00	1,420.00	0.00	1,200.00	217.00
JUL	1,330.00	368.00	962.00	0.00	1,200.00	-238.00
AUG	1,160.00	330.00	830.00	0.00	1,200.00	-370.00
SEP	1,130.00	275.00	855.00	0.00	1,200.00	-345.00
OCT	1,160.00	227.00	933.00	0.00	1,200.00	-267.00
NOV	1,370.00	344.00	1,030.00	0.00	1,200.00	-174.00
DEC	1,810.00	561.00	1,250.00	0.00	1,200.00	49.00
ANN	1,900,000.00	528,000.00	1,370,000.00	0.00	869,000.00	533,000.00

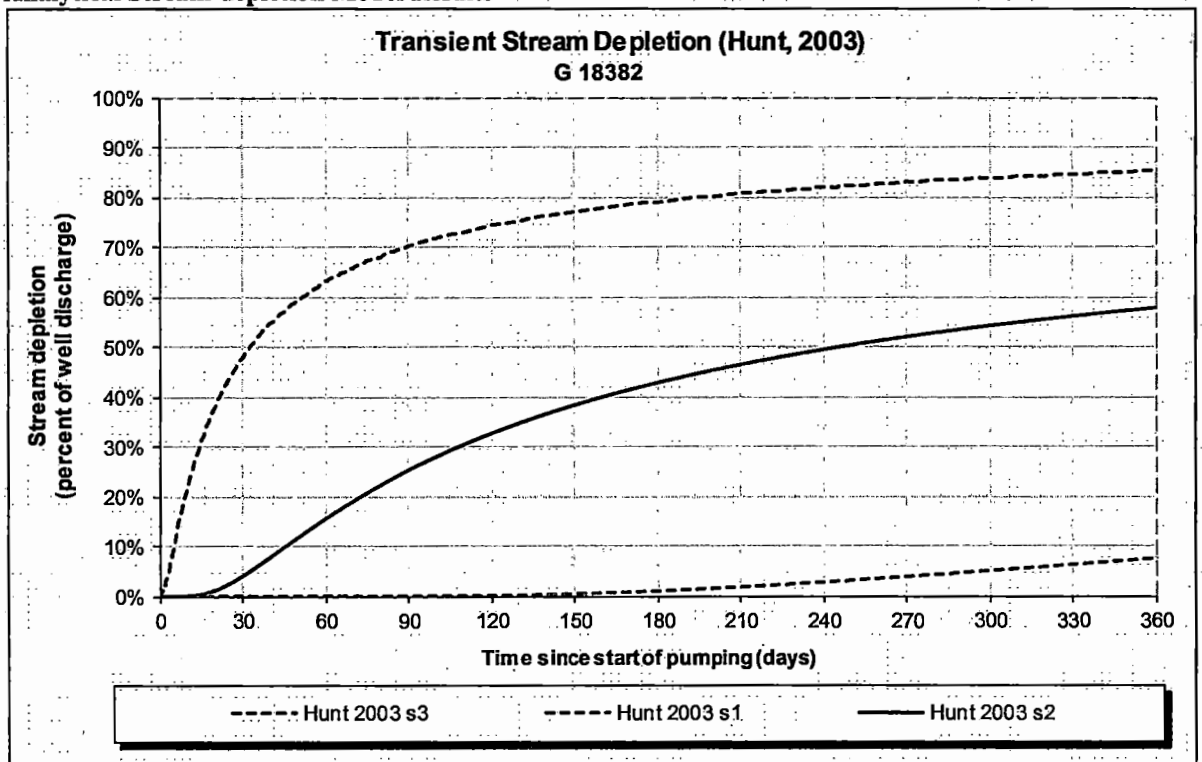
Well Location Map



Well Log Statistics from Sections Surrounding the Proposed POAs



Analytical Stream-depletion Model Results



Output for Stream Depletion, Scenerio 2 (s2):						Time pump on (pumping duration) = 365 days						
Days	30	60	90	120	150	180	210	240	270	300	330	360
J SD	96.1%	97.3%	97.8%	98.1%	98.3%	98.4%	98.5%	98.6%	98.7%	98.8%	98.8%	98.9%
H SD 1999												
H SD 2003	4.04%	15.47%	25.22%	32.63%	38.32%	42.80%	46.43%	49.45%	52.00%	54.20%	56.12%	57.81%
Qw, cfs	1.970	1.970	1.970	1.970	1.970	1.970	1.970	1.970	1.970	1.970	1.970	1.970
H SD 99, cfs												
H SD 03, cfs	0.079	0.305	0.497	0.643	0.755	0.843	0.915	0.974	1.024	1.068	1.105	1.139

Parameters:		Scenario 1	Scenario 2	Scenario 3	Units
Net steady pumping rate of well	Qw	1.97	**1.97**	1.97	cfs
Time pump on (pumping duration)	tpon	365	**365**	365	days
Perpendicular from well to stream	a	1450	**1450**	1450	ft
Well depth	d	100	**100**	100	ft
Aquifer hydraulic conductivity	K	1	**10**	100	ft/day
Aquifer saturated thickness	b	150	**150**	150	ft
Aquifer transmissivity	T	150	**1500**	15000	ft*ft/day
Aquifer storativity or specific yield	S	0.0001	**0.0001**	0.0001	
Aquitard vertical hydraulic conductivity	Kva	5	**5**	5	ft/day
Aquitard saturated thickness	ba	20	**20**	20	ft
Aquitard thickness below stream	babs	5	**5**	5	ft
Aquitard porosity	n	0.2	**0.2**	0.2	
Stream width	ws	300	**300**	300	ft
Streambed conductance (lambda)	sbc	300.000	**300.000**	300.000	ft/day
Stream depletion factor	sdf	1.402	**0.140**	0.014	days
Streambed factor	sbf	2900.000	**290.000**	29.000	
input #1 for Hunt's Q_4 function	t'	7.13E-01	**7.13E+00**	7.13E+01	
input #2 for Hunt's Q_4 function	K'	3.50E+03	**3.50E+02**	3.50E+01	
input #3 for Hunt's Q_4 function	epsilon'	5.00E-04	**5.00E-04**	5.00E-04	
input #4 for Hunt's Q_4 function	lamda'	2.90E+03	**2.90E+02**	2.90E+01	

THOMA Michael J * WRD

From: FRENCH Kim R * WRD <Kim.R.French@oregon.gov>
Sent: Wednesday, June 21, 2017 12:07 PM
To: Evan Malepsy
Cc: 'THOMA Michael J'; 'Dennis Botefur'
Subject: RE: G 18382 - Change in Requested Withdrawal Rate

Hi Evan,

I received your email and I will make this change. Your email will be sufficient to change the rate on the application. Mike Thoma (GW Hydrogeologist) will revise the GW review based on the new rate. The rate change and new GW findings will be indicated in the Proposed Final Order when it is issued. That should be sometime in August.

Thanks,

Kim French | Water Right Application Specialist
Water Resources Department | 725 Summer St. NE, Suite A | Salem, Oregon 97301
Ph: 503 986-0816 | Fax: 503 986-0901
Email: kim.r.french@oregon.gov | Web:http://www.wrd.state.or.us

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From: Evan Malepsy [mailto:emalepsy@roguecivil.com]
Sent: Monday, June 19, 2017 9:38 AM
To: FRENCH Kim R * WRD
Cc: 'THOMA Michael J'; 'Dennis Botefur'
Subject: G 18382 - Change in Requested Withdrawal Rate

Hi Kim,

As Agent for my client, Rogues Lair Farms LLC, I would like to change our request for maximum total withdrawal rate to 100 GPM for this application (combined from 2 wells). Could you please confirm that you received this email, and let me know if we need to make any revisions to the application.

Thanks,

Evan Malepsy, PE CWRE
541-621-2868
emalepsy@roguecivil.com

ROGUE CIVIL LLC
Civil Engineering
Water Rights