

Water Right Conditions Tracking Slip

Groundwater/Hydrology Section

FILE # # G-17955

ROUTED TO: Kerri Cope

TOWNSHIP/
RANGE-SECTION: 36S/2W-28

CONDITIONS ATTACHED?: yes no

REMARKS OR FURTHER INSTRUCTIONS:

Reviewer: Jen Woody

WATER RESOURCES DEPARTMENT MEMO

11-18 - 2014

TO: Application G- 17955

FROM: Jen Woody - Groundwater Section

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 groundwater interference with surface water that contributes to a Scenic Waterway. The calculated interference distribution is provided below.

Per ORS 390.835, the Groundwater Section is unable to calculate groundwater 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 flows necessary to maintain the free-flowing character of a scenic waterway.

DISTRIBUTION OF INTERFERENCE

Calculate interference as the monthly fraction of the annual consumptive use and fill in the table below. If interference cannot be calculated, per criteria in 390.839, do not fill in the table but check the "unable" option above, thus informing the Water Rights Section that the Department is unable to make a Preponderance of Evidence finding.

Exercise of this permit is calculated to reduce monthly flows in the _____ Scenic Waterway by the following amounts, expressed as a proportion of the annual consumptive use pumped from the well.

Monthly Fraction of Annual Consumptive Use

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



PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 11/18/2014
 FROM: Groundwater Section Jen Woody
 SUBJECT: Application G- 17955 Reviewer's Name Jen Woody
 Supersedes review of n/a 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: Stallion Land Company LLC County: Jackson

- A1. Applicant(s) seek(s) 0.06 cfs from 4 well(s) in the Rogue Basin,
Bear Creek subbasin Quad Map: Sam's Valley
- A2. Proposed use landscape irrigation/commercial use Seasonality: Irrigation season /year- round, respectively
- 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	JACK 7607	1	Conglomerate and Sandstone	0.06	T36S/R2W-28 NWNW	1300'S, 10'E fr NW cor S 28
2	JACK 7480	2	Conglomerate and Sandstone	0.06	T36S/R2W-28 SWNW	2110'S, 315'E fr NW cor S 28
3	JACK 7505	3	Conglomerate and Sandstone	0.06	T36S/R2W-28 NWNW	1550'S, 175'E fr NW cor S 28
4	PROPOSED	4	Conglomerate and Sandstone	0.06	T36S/R2W-28 NWNW	590'S, 40'E fr NW cor S 28
5						

* 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	1220	148	40	08/06/2014	250	0-20	+1-46	n/a	n/a	6.5		air
2	1220	24	33	08/06/2014	62	0-23	+1-39	n/a	n/a	30		air
3	1220	92	28	08/06/2014	415*	0-20	+1-69	n/a	n/a	8.5		air
4	1220				400							

Use data from application for proposed wells.

- A4. **Comments:** The application states that Well 3 has been deepened to 415 feet below land surface, but there is no well log available beyond JACK 7505/7482 (225 feet deep). This is addressed in Section D.
- A5. **Provisions of the Rogue** _____ 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) 7C, 7J _____;
 - 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 bedrock 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:** B1a. As shown in the attached hydrograph, water levels in the area are generally stable. JACK 52479, a State Observation Well, shows dewatering influences from operation of the adjacent aggregate mine, but this trend is not reflected in other nearby wells. In addition, the applicant is targeting the fractured bedrock aquifer which underlies the surficial sand, gravel and clay.

B1b. Nearby groundwater rights are greater than ¼ mile from the proposed POAs. In a fractured rock aquifer, the cone of depression is expected to be steep and narrow. This suggests well-to-well interference should be minimal.

B1c. While any single well cited in this review may not produce 25 gpm, the four wells should approach the requested rate cumulatively.

B1d. The scenic waterway condition should be used.

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	Conglomerate and Sandstone	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Conglomerate and Sandstone	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Conglomerate and Sandstone	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	Conglomerate and Sandstone	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer confinement evaluation: The logs for wells 1, 2 and 3 report static water levels 10s of feet above the first water-bearing fracture zone, indicating the aquifer is more confined than unconfined.

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 1/4 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?			Potential for Subst. Interfer. Assumed?	
						YES	NO	ASSUMED	YES	NO
1	1	Bear Creek	1180	1160	1755	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	1	Bear Creek	1187	1160	2100	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	1	Bear Creek	1192	1160	1560	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4	1	Bear Creek	1192	1160	1370	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer hydraulic connection evaluation: The existing wells have seals to about 20 feet below land surface. Nearby well logs report clay 20 to 70 feet below land surface, with sand and gravel lenses of variable thickness and extent. The sediments are alluvial in origin, limited in extent and variable in permeability. Nearby gravel mines (Rogue Aggregate is located about 4000 feet to the northwest of Well 4) have conducted dewatering during mine operation, indicating the unconsolidated sand and gravel are saturated at least seasonally at that location. The well logs at the site of this application report the majority of the water production below the alluvial deposits, in the fractured sandstone and conglomerate. Water levels in wells reflect a peizometric surface that is above or coincident with Bear Creek locally. This indicates hydraulic connection, although the clay overburden likely prevents efficient hydraulic connection between the applicant's wells and Bear Creek.

Water Availability Basin the well(s) are located within: Watershed ID #: 70993 BEAR CR > ROGUE 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	<input type="checkbox"/>	<input type="checkbox"/>	IS70993A	20	<input type="checkbox"/>	17.10	<input type="checkbox"/>	<<25%	<input type="checkbox"/>
2	1	<input type="checkbox"/>	<input type="checkbox"/>	IS70993A	20	<input type="checkbox"/>	17.10	<input type="checkbox"/>	<<25%	<input type="checkbox"/>
3	1	<input type="checkbox"/>	<input type="checkbox"/>	IS70993A	20	<input type="checkbox"/>	17.10	<input type="checkbox"/>	<<25%	<input type="checkbox"/>
4	1	<input type="checkbox"/>	<input type="checkbox"/>	IS70993A	20	<input type="checkbox"/>	17.10	<input type="checkbox"/>	<<25%	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>

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?
			<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
			<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
			<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
			<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>

Comments: Using a range of aquifer parameters to represent pumpage from the fractured aquifer produces stream depletion (with the Hunt 2003 model) much less than 25% at 30 days. This reflects a conceptual model of a fractured bedrock aquifer overlain by sands, gravels and then clay at the surface.

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													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
(A) = Total Interf.													
(B) = 80 % Nat. Q													
(C) = 1 % Nat. Q													

D. WELL CONSTRUCTION, OAR 690-200

D1. Well #: Well 3 Logid: JACK 7505/7482

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:** The well is currently 415 feet deep, but the well logs identified (original log = JACK 7505, deepening = JACK 7482) represent a 225 foot deep well. A log describing further deepening could not be tied to this well to confirm it meets current well construction standards.

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

Water Availability Tables

BEAR CR > ROGUE R - AT MOUTH
ROGUE BASIN

Water Availability as of 11/14/2014

Watershed ID #: 70993 ([Map](#))

Exceedance Level:80%

Date: 11/14/2014

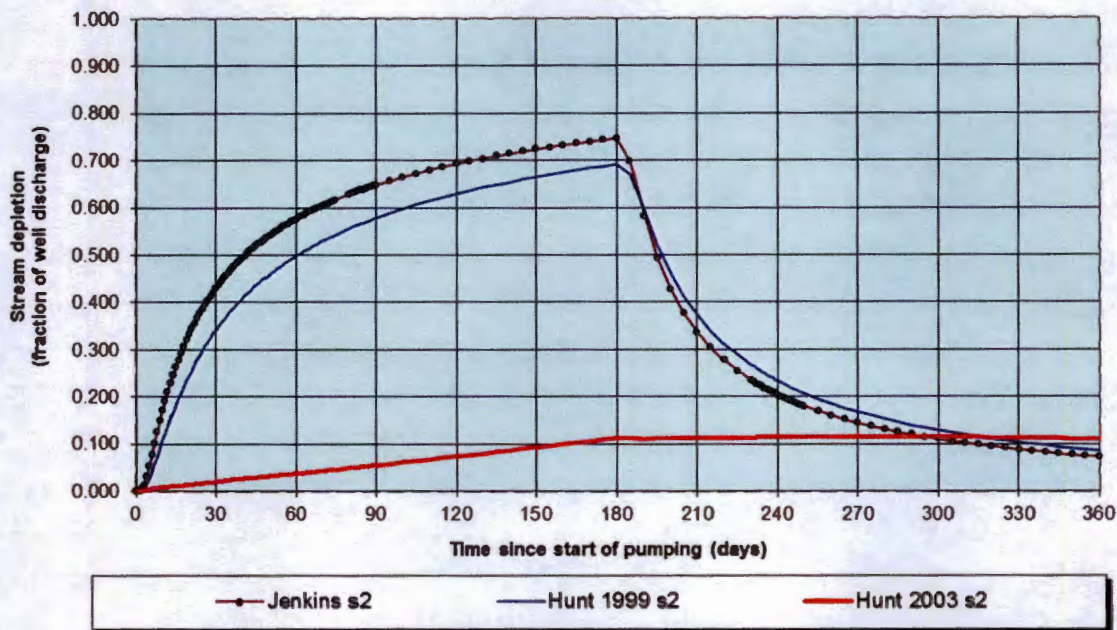
Time: 3:14 PM

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	107.00	192.00	-85.40	0.00	170.00	-255.00
FEB	129.00	235.00	-106.00	0.00	170.00	-276.00
MAR	129.00	214.00	-85.20	0.00	170.00	-255.00
APR	105.00	31.00	74.00	0.00	170.00	-96.00
MAY	84.20	47.20	37.00	0.00	170.00	-133.00
JUN	61.60	73.40	-11.80	0.00	100.00	-112.00
JUL	28.10	94.20	-66.10	0.00	40.00	-106.00
AUG	19.30	79.80	-60.50	0.00	24.00	-84.50
SEP	17.10	56.50	-39.40	0.00	20.00	-59.40
OCT	18.30	18.10	0.17	0.00	24.00	-23.80
NOV	30.90	57.90	-27.00	0.00	62.00	-89.00
DEC	65.30	138.00	-72.30	0.00	153.00	-225.00
ANN	89,800.00	74,400.00	24,400.00	0.00	76,600.00	0.00

Transient Stream Depletion (Jenkins, 1970; Hunt, 1999, 2003)



Output for Stream Depletion, Scenerio 2 (s2):						Time pump on (pumping duration) = 180 days						
Days	30	60	90	120	150	180	210	240	270	300	330	360
J SD	42.9%	57.6%	64.8%	69.2%	72.4%	74.7%	33.6%	20.4%	14.4%	11.0%	8.8%	7.3%
H SD 1999	34.2%	49.8%	57.8%	62.9%	66.5%	69.2%	37.2%	23.3%	16.7%	12.9%	10.3%	8.6%
H SD 2003	1.98%	3.69%	5.44%	7.35%	9.29%	11.23%	11.23%	11.42%	11.54%	11.43%	11.26%	10.93%
Qw, cfs	0.056	0.056	0.056	0.056	0.056	0.056	0.056	0.056	0.056	0.056	0.056	0.056
H SD 99, cfs	0.019	0.028	0.032	0.035	0.037	0.039	0.021	0.013	0.009	0.007	0.006	0.005
H SD 03, cfs	0.001	0.002	0.003	0.004	0.005	0.006	0.006	0.006	0.006	0.006	0.006	0.006
Parameters:						Scenario 1	Scenario 2	Scenario 3	Units			
Net steady pumping rate of well		Qw	25.00	25.00	25.00	gpm						
Time pump on (pumping duration)		tpon	180	180	180	days						
Perpendicular from well to stream		a	1370	1370	1370	ft						
Well depth		d	415	415	415	ft						
Aquifer hydraulic conductivity		K	1	10	100	ft/day						
Aquifer saturated thickness		b	50	50	50	ft						
Aquifer transmissivity		T	50	500	5000	ft*ft/day						
Aquifer storativity or specific yield		S	0.01	0.01	0.01							
Aquitard vertical hydraulic conductivity		Kva	0.1	0.1	0.1	ft/day						
Aquitard saturated thickness		ba	20	20	20	ft						
Aquitard thickness below stream		babs	3	3	3	ft						
Aquitard porosity		n	0.2	0.2	0.2							
Stream width		ws	100	100	100	ft						
Streambed conductance (lambda)		sbc	3.333333	3.333333	3.333333	ft/day						
Stream depletion factor		sdf	375.380000	37.538000	3.753800	days						
Streambed factor		sbf	91.333333	9.133333	0.913333							
input #1 for Hunt's Q_4 function		t'	0.002664	0.026640	0.266397							
input #2 for Hunt's Q_4 function		K'	187.690000	18.769000	1.876900							
input #3 for Hunt's Q_4 function		epsilon'	0.050000	0.050000	0.050000							
input #4 for Hunt's Q_4 function		lamda'	91.333333	9.133333	0.913333							



- Legend**
- Obs Well Current
 - Obs Well Non-Current
 - State Obs Well Current
 - State Obs Well Non-Current
 - Other Wells
 - ◆ Drain
 - ◆ Ditch
 - ◆ Lake
 - ◆ Reservoir
 - ◆ Sewage Effluent
 - ◆ Slough
 - ◆ Sump
 - ◆ Spring
 - ◆ Stream
 - ◆ Well
 - ◆ Winter Runoff
 - ◆ Waste Water

