Water Right Conditions Tracking Slip

- *Groundwater/Hydrology Section*

FILE # # G-18095

ROUTED TO: Water Rights

TOWNSHIP/
RANGE-SECTION: 16S/24E-4,5,8

CONDITIONS ATTACHED?: [X] yes [ ] no

REMARKS OR FURTHER INSTRUCTIONS:
need well const. review

Reviewer: K. Lite

WATER RESOURCES DEPARTMENT

MEMO **September 2 ,2015**

TO: **Application G- 18095**

FROM: **GW: K. Lite**
(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 GROUND WATER APPLICATIONS

TO: Water Rights Section Date **26 August 2015**

FROM: Ground Water/Hydrology Section **K. Lite**
Reviewer's Name

SUBJECT: Application G- **18095** 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 ground water 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 **Durgan Ranch, LLC** County: **Crook**

A1. Applicant(s) seek(s) **(2,785 gpm) 6.206** cfs from **4** well(s) in the **Deschutes** Basin, **South Fork Crooked River (Wolf Creek)** subbasin Quad Map: **Mud Springs and Paulina**

A2. Proposed use: **138.6 Irrigation; 357.8 Suppl Irrigation** Seasonality: **2/1-7/31; 9/16-12/1 (pri & suppl); 2/1-12/1 (suppl)**

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	Croo 51364	1	Basalt	1.89	16S/24E-sec 04 AAA	80'S, 520'W fr NE cor S 04
2	Croo 51747	2	Basalt	2.08	16S/24E-sec 04 CCC	520' N, 1130' E fr S1/4 cor S 04
3	Croo 51746	3	Basalt	2.23	16S/24E-sec 05 DDA	1010' N, 590'W fr SE cor S 05
4	Croo 53470	4	Basalt	1.86	16S/24E-sec 08 BCC	80' N, 180' E fr W1/4 cor S 08

* 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	3851	10	106	08/29/00	260	0-50	+1-93	70-93	130-170	100	2	A
2	3839	205	90	07/12/01	255	0-18.5	+1.5-18.5	na	na	600+		A
3	3838	176	100.43	03/06/15	380	0-18.5	+1.5-58.5	na	na	300		A
4	3818	120	70.05	03/06/15	220	0-18.5	+1.5-18.5	na	na	150		A

Use data from application for proposed wells.

A4. **Comments:** **The wells are located near Wolf Creek, a tributary to Beaver Creek /Crooked River. The wells are constructed into water-bearing zones within basalt. The basalt is likely Picture Gorge Basalt. The yield shown on the well logs do not support the requested amount. However, the wells are currently in use under permit G-17074 so presumably the yield requested is attainable.**

A5. ☒ **Provisions of the** **Deschutes** Basin rules relative to the development, classification and/or management of ground water hydraulically connected to surface water ☐ **are**, *or* ☒ **are not**, activated by this application. (Not all basin rules contain such provisions.)
Comments: **The well is located outside the USGS Deschutes Ground Water Study Area.**

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

B. GROUND WATER AVAILABILITY CONSIDERATIONS, OAR 690-310-130, 400-010, 410-0070

B1. **Based upon available data**, I have determined that ground water* 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 ground water 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 ground water 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 ground water resource; or

d. ☒ **will, if properly conditioned**, avoid injury to existing ground water rights or to the ground water resource:
   i. ☒ The permit should contain condition #(s) **7B AND 7N**;
   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 ground water production from no deeper than _____ ft. below land surface;

b. ☐ **Condition** to allow ground water production from no shallower than _____ ft. below land surface;

c. ☐ **Condition** to allow ground water production only from the _____ ground water 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 Ground Water 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. **Ground water availability remarks:** _____

Condition with 7B and 7N

A large amount of groundwater has been, and is being permitted in a relatively small area of the Paulina Basin. The sustainability of the resource in the area, given the new development, is unknown. The groundwater resource is likely relatively small (in area) within the Paulina Basin. The nearest State Observation Well (Croo 2757) is located about 5 miles to the southwest. The observation well has been monitored since 2008 and does not show decline.

Alluvium, other sediments, and tuffaceous rocks locally overlie basalt in the area. The basalt is likely vertically fractured, and ground water in the basalt may be hydraulically connected to the overlying sediments, where saturated, and subsequently to surface water. The canyon of Wolf Creek is locally cut in Picture Gorge Basalt, and likely provides an interconnection with surface water.

C. GROUND WATER/SURFACE WATER CONSIDERATIONS, OAR 690-09-040

C1. **690-09-040 (1):** Evaluation of aquifer confinement:

Well	Aquifer or Proposed Aquifer	Confined	Unconfined
1	**Basalt**	☐	☒
2	**Basalt**	☐	☒
3	**Basalt**	☐	☒
4	**Basalt**	☐	☒
		☐	☐

Basis for aquifer confinement evaluation:

The large range of depths and multiple geological units over which the drillers reported water-bearing zones indicate the permeability is likely in fractures. The fracture orientations are unknown, but are likely in multiple directions. So, the groundwater flow system is likely a combination of generally unconfined to locally confined fractures.

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	**Wolf Creek**	**3745**	**3740**	**18,700**	☒	☐	☐	☐	☒
2	1	**Wolf Creek**	**3749**	**3740**	**13,000**	☒	☐	☐	☐	☒
3	1	**Wolf Creek**	**3734**	**3740**	**12,200**	☒	☐	☐	☐	☒
4	1	**Wolf Creek**	**3748**	**3740**	**6,500**	☒	☐	☐	☐	☒
						☐	☐	☐	☐	☐

Basis for aquifer hydraulic connection evaluation: **The elevations of the hydraulic head in the wells are below the elevation of Wolf Creek at the nearest reaches. However, the elevations of the hydraulic heads are very similar and coincident with Wolf Creek at the measured distances. Also, the aquifer unit (Picture Gorge Basalt) is exposed in the canyon of Wolf Creek at the measured distances.**

Water Availability Basin the well(s) are located within: **BEAVER CR > CROOKED R - AT MOUTH**

C3a. **690-09-040 (4):** Evaluation of stream impacts for <u>each well</u> 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?
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐

C3b. **690-09-040 (4):** Evaluation of stream impacts <u>by total appropriation</u> 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:

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													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
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:

The wells will likely impact surface water somewhere along Wolf Creek or Beaver Creek. However, the locally confined nature of the aquifer unit and lack of nearby connectivity preclude the use of the available analytical models to evaluate the interference.

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 ground water 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:

Application File: G-18095

Brown, C.E. and Thayer, T. P. 1966. Geologic map of the Canyon City quadrangle, northeastern Oregon: U.S. Geological Survey Miscellaneous Geologic Investigations Map I-447.

Gonthier, J.B. 1985. A description of aquifer units in eastern Oregon: U.S. Geological Survey Water Resources Investigations Report 84-4095, 39 p., maps.

Walker, G. W. (editor) 1990. Geology of the Blue Mountains region of Oregon, Idaho, and Washington; Cenozoic geology of the Blue Mountains region: U.S. Geological Survey Professional Paper 1437, 135 p.

Paulina quadrangle map (USGS map, 1:24,000 scale), Mud Springs quadrangle map (USGS map, 1:24,000 scale).

D. WELL CONSTRUCTION, OAR 690-200

D1. **Well #:** 3 **Logid:** Croo 51746

D2. **THE WELL does not 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**:

a. ☐ constitutes a health threat under Division 200 rules;
b. ☐ commingles water from more than one ground water reservoir;
c. ☐ permits the loss of artesian head;
d. ☐ permits the de-watering of one or more ground water reservoirs;
e. ☐ other: (specify) _____

D4. **THE WELL construction deficiency is described as follows:** _____

D5. **THE WELL**

a. ☐ **was**, *or* ☐ **was not** constructed according to the standards in effect at the time of original construction or most recent modification.

b. ☐ I don't know if it met standards at the time of construction.

D6. ☐ **Route to the Enforcement Section.** I recommend withholding issuance of the permit until evidence of well reconstruction is filed with the Department and approved by the Enforcement Section and the Ground Water Section.

THIS SECTION TO BE COMPLETED BY ENFORCEMENT PERSONNEL

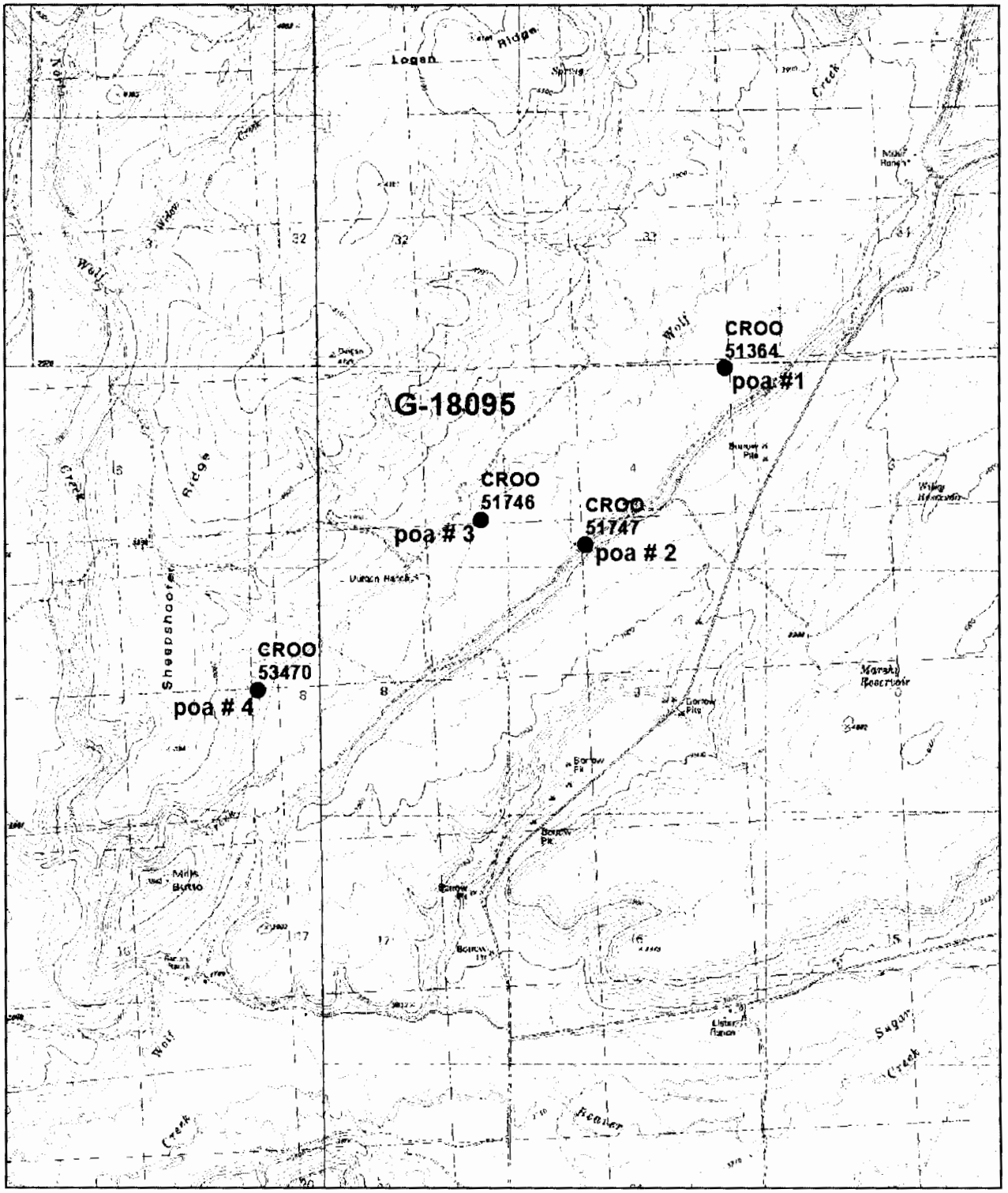
D7. ☐ Well construction deficiency has been corrected by the following actions: _____

_____, 200____.

(Enforcement Section Signature)

D8. ☐ **Route to Water Rights Section (attach well reconstruction logs to this page).**

G-18095: Mud Springs and Paulina Quadrangles



Oregon Water Resources Department (OWRD) Well Location	16.00S/24.00E-31bc
OWRD Logid	CR00 2757
OWRD Well Tag (Well ID)	----
OWRD State Observation Well Number	----
Total well depth (feet below land surface)	385
Land surface elevation (feet above mean sea level)	3745
Primary use of well	----
Primary aquifer system	Late Tertiary Basalt Aquifers