

WATER RESOURCES DEPARTMENT

MEMO

July 26, 2016

TO: Application G- 18275

FROM: GW: Aurora Bouchier
(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 July 26, 2016
 FROM: Groundwater Section Aurora C Bouchier
Reviewer's Name
 SUBJECT: Application G- 18275 Supersedes review of na
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: JSRR Investments, LLC County: Clackamas

- A1. Applicant(s) seek(s) 0.0825 cfs from 1 well(s) in the Willamette Basin,
Molalla-Pudding subbasin
- A2. Proposed use Nursery (3.3 acres) 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?	0.0825	4S/2E-5 SE-NE	2740' N, 700' W fr SE ¼ cor S 5
2						
3						
4						
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	600				Est 200	Est 0-18	Est 0-200		Est 50-200			

Use data from application for proposed wells.

A4. **Comments:** The proposed well must be constructed so that it develops water from water-bearing zones within the Troutdale Formation. This will likely require a deeper total well depth, and deeper continuous casing and continuous seal than the applicant proposed.

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 well must be constructed so that it is not producing from unconfined alluvium within ¼-mile of the banks of a surface water source, so the pertinent rules (OAR 690-502-0240) do not apply.

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) 7N, 7T, and iii (see below);
 - 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:** _____

The applicant's proposed well is located in an area that contains low permeability silt and clay from land surface to a depth of 1-70 feet below land surface (nearby wells logs). In general, 100 – 200 feet of Boring Lava (Gannett and Caldwell, 1998 from Trimble, 1963) underlie the clay and silt, although the thickness can range from 50 feet far from vents to >600 feet near vents (Gannett and Caldwell, 1998 from Beeson et al., 1989b). The Boring lavas rest on the eroded surface of the Troutdale Formation (Gannett and Caldwell, 1998). The Troutdale formation consists of layers of weakly to moderately cemented pebble and cobble conglomerate with scattered thin lenses of medium to course sandstone (Evarts et al., 2013), along with layers of mudstone and claystone. The applicant's proposed well must be constructed so that it is producing from water-bearing zones within the Troutdale Formation.

Limited groundwater data exists for the Troutdale Formation in this area (see hydrograph below). Given the geologic nature of the Troutdale Formation, it is likely that water-bearing zones are discontinuous. Annual static water level measurements (condition 7N) through a dedicated measuring tube (condition 7T) will enable better understanding of local groundwater conditions within the Troutdale Formation locally.

SPECIAL WELL CONSTRUCTION CONDITION: The well must be continuously cased and continuously sealed into the alluvial aquifer of the Troutdale Formation. The well must show static water level which is lower in elevation than the surface water bodies within 1 mile (255 feet above mean sea level – at the proposed well location this the elevation for a water level approximately 345 feet below land surface).

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 Formation	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer confinement evaluation: Water levels in nearby wells rise above the water-bearing zone at which they were encountered. This indicates a confined aquifer environment for those wells completed in the Troutdale Formation (CLAC 13589, CLAC 58409 and CLAC 65707).

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?			Potential for Subst. Interfer. Assumed?	
						YES	NO	ASSUMED	YES	NO
1	1	Hooter Creek (trib to Milk Cr)	~220-255*	380-580	800	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	2	Trib to Buckner Creek	~220-255*	365-575	3,080	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	3	Northern branch of Trib to Parrott Creek	~220-255*	315-495	3,240	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	4	Southern branch of Trib to Parrott Creek	~220-255*	260-400	3,955	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Basis for aquifer hydraulic connection evaluation: Groundwater levels for wells completed within the Boring lavas (nearby CLAC 13583 has a March static water level which ranges from 12-22 feet below land surface) is above the surface water level of nearby creeks indicating hydraulic connection.

***The groundwater level is based on a nearby well (CLAC 13589, located approximately 3,500 feet to the northeast of the proposed well location) completed within the Troutdale Formation. The static water level for CLAC 13589 is lower in elevation than surface water levels within a mile of the applicant's proposed well location. The proposed well should have no efficient hydraulic connection to the surface water sources AS LONG as the well is continuously cased and continuously sealed into the Troutdale Formation.**

Water Availability Basin the well(s) are located within: 131: Milk Cr > Molalla R – at Mouth. There is potential for there to be some affect in WAB 181: Willamette R > Columbia R – at Mouth, although most of the affects will likely be in WAB 131.

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?
		<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: The proposed well should have no efficient hydraulic connection to surface water sources AS LONG as the wells is continuously cased and continuously sealed into the Troutdale Formation. As a check, interference with nearby streams was estimated using the Hunt (2003) model. In the area, the Troutdale Formation lies beneath up to 80+ ft of Boring lava, which in turn lies beneath 20 - 30 ft of clay. The Troutdale Formation and the Boring lavas were modeled as a single unit with a hydraulic conductivity of High Cascade Volcanics (6-20 ft/d) (Conlon et al., 2005). Model parameters include a 20 ft aquitard saturated thickness with 3 ft of aquitard thickness below the stream. The full rate (0.0825 cfs) was modeled against the closest to a stream (53 feet from a intermittent tributary to Hooter Creek). The model indicates that at 30 days roughly 5% of water to the well will be supplied from the unnamed creek if the wells are not cased and sealed completely through the Boring lavas.

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		.0825											
Interference CFS		.00001											
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													

(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:

**** Given the large distance to Milk Creek or the Willamette River and the intervening fine-grained material any impacts Milk Creek or the Willamette River should be <<25%. Milk Creek has an instream right of 20 cfs and an 80% of natural flow of 8.92 cfs. The Willamette has an instream of 1500 cfs and an 80% of natural flow of 4890 cfs. Water is available for new appropriation on this section of the Willamette River.**

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:

Application files: G-18275, and nearby G-15801 and G-18122.

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.

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.

OWRD Groundwater Database and well logs, particularly: CLAC 13583, CLAC 13589, CLAC 16323, CLAC 20274, CLAC 57020, CLAC 61215.

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

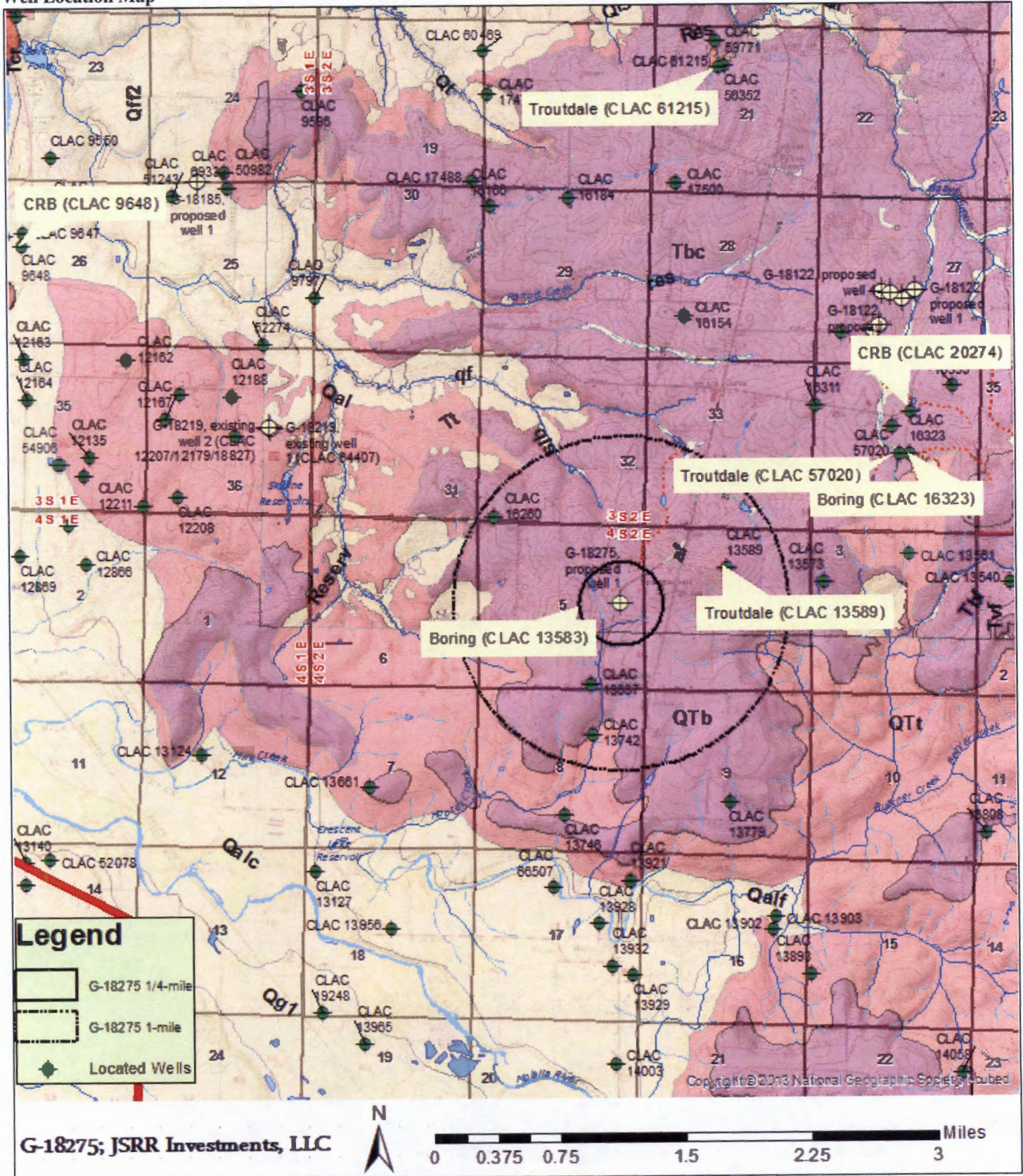
DETAILED REPORT ON THE WATER AVAILABILITY CALCULATION						
Watershed ID #: 131 Time: 12:05 PM		MILK CR > MOLALLA R - AT MOUTH Basin: WILLAMETTE			Exceedance Level: 80 Date: 07/25/2016	
Month	Natural Stream Flow	Consumptive Use and Storage	Expected Stream Flow	Reserved Stream Flow	Instream Requirements	Net water Available
Monthly values are in cfs. Storage is the annual amount at 50% exceedance in ac-ft.						
JAN	124.00	2.01	122.00	0.00	85.00	37.00
FEB	117.00	1.90	115.00	0.00	85.00	30.10
MAR	121.00	1.61	119.00	0.00	85.00	34.40
APR	91.50	1.85	89.70	0.00	85.00	4.65
MAY	59.20	5.02	54.20	0.00	85.00	-30.80
JUN	26.50	7.49	19.00	0.00	60.00	-41.00
JUL	10.80	12.70	-1.91	0.00	40.00	-41.90
AUG	8.92	10.50	-1.54	0.00	20.00	-21.50
SEP	8.95	4.64	4.31	0.00	20.00	-15.70
OCT	15.20	1.68	13.50	0.00	40.00	-26.50
NOV	32.20	1.53	30.70	0.00	85.00	-54.30
DEC	92.00	2.11	89.90	0.00	85.00	4.89
ANN	93,600	3,220	90,400	0	46,700	48,800

DETAILED REPORT OF INSTREAM REQUIREMENTS													
Watershed ID #: 131 Time: 12:05 PM		MILK CR > MOLALLA R - AT MOUTH										Basin: WILLAMETTE Date: 07/25/2016	
Application Number	Status	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Monthly values are in cfs.													
MF131A	CERTIFICATE	85.0	85.0	85.0	85.0	85.0	60.0	40.0	20.0	20.0	40.0	85.00	85.0
MAXIMUM		85.0	85.0	85.0	85.0	85.0	60.0	40.0	20.0	20.0	40.0	85.0	85.0

DETAILED REPORT ON THE WATER AVAILABILITY CALCULATION						
Watershed ID #: 181		WILLAMETTE R > COLUMBIA R - AT MOUTH			Exceedance Level: 80	
Time: 3:39 PM		Basin: WILLAMETTE			Date: 07/25/2016	
Month	Natural Stream Flow	Consumptive Use and Storage	Expected Stream Flow	Reserved Stream Flow	Instream Requirements	Net water Available
Monthly values are in cfs. Storage is the annual amount at 50% exceedance in ac-ft.						
JAN	27,500.00	2,750.00	24,700.00	0.00	1,500.00	23,200.00
FEB	30,000.00	8,020.00	22,000.00	0.00	1,500.00	20,500.00
MAR	28,500.00	7,580.00	20,900.00	0.00	1,500.00	19,400.00
APR	25,400.00	7,190.00	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	2,410.00	8,590.00	0.00	1,500.00	7,090.00
JUL	6,280.00	2,360.00	3,920.00	0.00	1,500.00	2,420.00
AUG	4,890.00	2,110.00	2,780.00	0.00	1,500.00	1,280.00
SEP	4,930.00	1,750.00	3,180.00	0.00	1,500.00	1,680.00
OCT	5,990.00	723.00	5,270.00	0.00	1,500.00	3,770.00
NOV	12,700.00	1,010.00	11,700.00	0.00	1,500.00	10,200.00
DEC	24,800.00	1,400.00	23,400.00	0.00	1,500.00	21,900.00
ANN	19,700,000	2,500,000	17,200,000	0	1,090,000	16,100,000

DETAILED REPORT OF INSTREAM REQUIREMENTS													
Watershed ID #: 181		WILLAMETTE R > COLUMBIA R - AT MOUTH										Basin: WILLAMETTE	
Time: 3:40 PM												Date: 07/25/2016	
Application Number	Status	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Monthly values are in cfs.													
MF181A	APPLICATION	1500.0	1500.0	1500.0	1500.0	1500.0	1500.0	1500.0	1500.0	1500.0	1500.0	1500.0	1500.0
	MAXIMUM	1500.0	1500.0	1500.0	1500.0	1500.0	1500.0	1500.0	1500.0	1500.0	1500.0	1500.0	1500.0

Well Location Map



Water-Level Trends in Nearby Wells

