PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date **February 25, 2016**

FROM: Groundwater Section **J. Hackett**
Reviewer's Name

SUBJECT: Application G- **18249** 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: **K & L Madison LLC** County: **Umatilla**

A1. Applicant(s) seek(s) **0.23** cfs from **4** well(s) in the **Umatilla** Basin, _____ subbasin

A2. Proposed use: **Group Domestic Expanded** 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	UMAT 57554	1	CRB	0.23	1N/35E-34 SW-SW	825' N, 1085' E fr SW cor S 34
2	Proposed	2	CRB	0.23	1N/35E-34 NW-SW	2215' N, 270' E fr SW cor S 34
3	Proposed	3	CRB	0.23	1N/35E-34 NW-SW	1810' N, 600' E fr SW cor S 34
4	Proposed	4	CRB	0.23	1N/35E-34 SW-SW	210' N, 1485' E fr SW cor S 34
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	3752	67	34	6/17/2015	247	0-34	+2-34	6-246	80-140, 200-240	100		A
2	3736				247 est.	0-34 est.	+2-34 est.	6-246 est.	80-140, 200-240			
3	3756				247 est.	0-34 est.	+2-34 est.	6-246 est.	80-140, 200-240			
4	3760				247 est.	0-34 est.	+2-34 est.	6-246 est.	80-140, 200-240			

Use data from application for proposed wells.

A4. **Comments:** _____

A5. ☒ **Provisions of the** Umatilla 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) **7N; Large 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:** _____

SPECIAL CONDITIONS:

1) **Groundwater production in each well shall be limited to a single aquifer in the Columbia River Basalt Group lavas.**
2) **The permittee shall instruct the well constructor to contact the Ground Water Section of the Water Resources Department prior to drilling each well to arrange for the collection of drill cuttings.**

The applicant has one existing well and *three* proposed wells that produce from water-bearing zones in the Columbia River Basalt Group (CRBG). The CRBG consists of a series of lava flows that range up to *2500* feet thick in the vicinity of the applicant's wells. Although unconfined ground water occurs near the surface of the basalts, most water occurs in confined aquifers that occupy thin rubble zones (interflow zones) that occur at the contacts between lava flows. The thick interiors of the basalt flows generally have very low porosity and permeability and act as confining beds. This physical geometry generally produces a stack of thin aquifers (interflow zones) separated by thick confining beds (flow interiors). A geologic map of the area (Madin, 2007) shows that the basalts are locally broken into many fault-bounded blocks (see attached map). The degree to which these faults impede horizontal flow or enhance vertical flow of ground-water is unknown. However, any significant vertical offset of thin permeable zones is likely to produce some degree of isolation between equivalent water-bearing zones in different fault blocks.

Well density in the area is sparse. As a result, very little is known about water-level trends and long-term groundwater availability. If a permit is issued it should contain water level measurement and water-use reporting conditions.

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	**CRB**	☒	☐
2	**CRB**	☒	☐
3	**CRB**	☒	☐
4	**CRB**	☒	☐
		☐	☐

Basis for aquifer confinement evaluation: Water-bearing zones in the applicant's well are confined by dense flow interiors.

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**	**Meacham Creek**	**3720**	**3700-3680**	**5800**	☒	☐	☐	☐	☒
2	**1**	**Meacham Creek**	**3720**	**3700-3680**	**7350**	☒	☐	☐	☐	☒
3	**1**	**Meacham Creek**	**3720**	**3700-3680**	**6800**	☒	☐	☐	☐	☒
4	**1**	**Meacham Creek**	**3720**	**3700-3680**	**5100**	☒	☐	☐	☐	☒
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐

Basis for aquifer hydraulic connection evaluation: The static water level in the applicant's existing well is above the elevation of the local reach of Meacham Creek. Additionally, water-bearing zone elevations in the well are coincident with the creek. These factors suggest the well and creek are hydraulically connected. Although hydraulic connection exists, a northwest trending normal fault located east of the applicant's wells potentially isolates the wells from the reach of Meacham Creek east of the fault. As a result, the nearest hydraulically connected reach is likely located south of the wells in the southern portion of 1S/35E-3.

Water Availability Basin the well(s) are located within: 70489: MEACHAM CR > UMATILLA R – AB N FK MEACHAM CR

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?
4	**1**	☐	☐			☐	**0.37**	☒	**<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: ____

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) = (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: Due to the distance between the proposed wells and the nearest hydraulically connected reach of Meacham Creek and the potential presence of fine-grained material in the creek, pumping impacts are likely to be less than 1% of the 80% exceedance flow for any month during the first year of pumping.

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:

Madin, I. P. and R. P. Geitgey, 2007. Preliminary Geologic Map of the Umatilla Basin, Morrow and Umatilla Counties, Oregon. Open-File Report O-07-17. State of Oregon – Dept. of Geology And Mineral Industries.

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

MEACHAM CR > UMATILLA R - AB N FK MEACHAM CR
UMATILLA BASIN

Water Availability as of 2/23/2016

Watershed ID #: 70489 (Map)

Exceedance Level: 80%

Date: 2/23/2016

Time: 1:36 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	15.10	0.25	14.90	0.00	47.90	-33.00
FEB	40.90	0.01	40.90	0.00	102.00	-61.10
MAR	58.10	0.95	57.10	0.00	102.00	-44.90
APR	63.00	1.56	61.40	0.00	102.00	-40.60
MAY	13.40	0.01	13.40	0.00	92.70	-79.30
JUN	4.58	0.01	4.57	0.00	18.20	-13.60
JUL	0.88	0.01	0.87	0.00	5.57	-4.70
AUG	0.37	0.01	0.36	0.00	2.34	-1.98
SEP	0.86	0.01	0.85	0.00	2.55	-1.70
OCT	1.01	0.01	1.00	0.00	3.38	-2.38
NOV	1.83	0.01	1.82	0.00	7.64	-5.82
DEC	11.40	0.01	11.40	0.00	39.20	-27.80
ANN	32,600.00	172.00	32,400.00	0.00	31,500.00	4,830.00

Detailed Report of Instream Flow Requirements

Instream Flow Requirements in Cubic Feet per Second

Application #	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
IS70489A	CERTIFICATE	47.90	102.00	102.00	102.00	92.70	18.20	5.57	2.34	2.55	3.38	7.64	39.20
Maximum		**47.90**	**102.00**	**102.00**	**102.00**	**92.70**	**18.20**	**5.57**	**2.34**	**2.55**	**3.38**	**7.64**	**39.20**

Well Location Map