

Groundwater Application Review Summary Form

Application # G- 18435

GW Reviewer J. Hackett

Date Review Completed: 4/11/2017

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).

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date April 11, 2017
 FROM: Groundwater Section J. Hackett
 SUBJECT: Application G- 18435 Reviewer's Name
 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: Clinton Farms, LLC County: Linn

A1. Applicant(s) seek(s) 0.275 cfs from 2 well(s) in the Willamette Basin,
 _____ subbasin

A2. Proposed use Nursery 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	LINN 60640	1	Marine Seds.	0.275	10S/1W-32 NE-NW	80' S, 500' W fr S ¼ cor S 29
2	Proposed	2	Marine Seds.	0.275	10S/1W-32 NE-NW	250' S, 400' W fr S ¼ cor S 29
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	310	116	10	11/30/2013	200	0-19	+1 - 19	0-200	60-195	25		A
2	310				350 est.	0-19 est.	+1 - 19 est.					

Use data from application for proposed wells.

A4. **Comments:** _____

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 applicant's wells are not located within ¼ mile of the nearest surface water source, so the pertinent basin rules 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 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; 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:** The applicant's wells are located in an area that contains mixed grain-size Quaternary alluvial sediments from land surface to a depth of approximately 15 feet. The alluvial sediments are underlain by early to middle Tertiary marine sandstones and conglomerates of the Eugene Formation. The applicant's existing well (LINN 60640) is 200 feet deep and produces mostly from Eugene Formation sandstone. If constructed similarly, the applicant's proposed well will also produce from the Eugene Formation. These materials generally yield low to moderate amounts of water in the range of 10-50 gpm based on well logs in the vicinity, so the applicant may have difficulty obtaining the requested 123 gpm from two wells. Most well logs indicate confined aquifer conditions with increasing confinement with depth – most wells are < 400 feet deep.

There are no observation wells with current or historical water levels within 3 mi of the proposed POA and observation wells > 3 mi are completed in different materials. Therefore it cannot be determined that groundwater is over-appropriated but the Southern Willamette Valley, on a broad scale, generally maintains stable water levels.

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	Low-yield, fractured bedrock	☒	☐
2	Low-yield, fractured bedrock	☒	☐
		☐	☐
		☐	☐
		☐	☐

Basis for aquifer confinement evaluation: Static water levels reported on well logs from nearby wells are higher than reported *First Water* indicating 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?			Potential for Subst. Interfer. Assumed?	
						YES	NO	ASSUMED	YES	NO
1	1	Crabtree Creek	300	290	3100	☒	☐	☐	☐	☒
2	1	Crabtree Creek	300	290	2950	☒	☐	☐	☐	☒
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐

Basis for aquifer hydraulic connection evaluation: The applicant's wells produce from low-yield bedrock but are located in the alluvial valley adjacent to Crabtree Creek. Groundwater in the shallow bedrock is likely interacting with the alluvial deposits adjacent to the creek. The static water level in the applicant's existing well is coincident with the elevation of the nearby reach of Crabtree Creek, which also suggests hydraulic connection between the creek and the groundwater system accessed by the applicant's wells.

Water Availability Basin the well(s) are located within: #88: CRABTREE CR > S SANTIAM 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	☐	☐	MF88A	25.00	☒	37.30	☐	N/A ^a	☒
2	1	☐	☐	MF88A	25.00	☒	37.30	☐	N/A ^a	☒
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐

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: ^a The assumptions of the analytical stream depletion model typically used for Section C3b (Hunt, 2003) cannot be met in this situation due to the nature of the fractured bedrock system. Therefore no model was applied. **See comments in C6.**

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: _____

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 wells will be producing from shallow fractured bedrock and will be intersecting groundwater that would likely be discharging to the younger alluvium adjacent to Crabtree Creek; hence the finding of hydraulic connection was made. This type of aquifer does not meet the assumptions of the standard analytical models used to determine interference but conceptually it is unlikely that the applicant's use will substantially interfere with the creek due to the confined nature of the fractured-rock aquifer, the distance to the creek, and the likely presence of fine-grained alluvium in the creek channel.

References Used: McClaghry, J.D., and others, 2010, Digital Geologic Map of the Southern Willamette Valley, Benton, Lane, Linn, Marion, and Polk Counties, Oregon, Oregon Department of Geology and Mineral Industries, Open File Report O-10-03, 116 p., 1 plate.

Jenkins, C.T. 1968. Techniques for computing rate and volume of stream depletion by wells. Ground Water, v. 6, no. 2, p. 37-46

Hunt, B. 2003. Unsteady stream depletion when pumping from semiconfined aquifer. Journal of Hydrologic Engineering. January/February, 2003.

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

CRABTREE CR > S SANTIAM R - AT MOUTH WILLAMETTE BASIN

Water Availability as of 4/10/2017

Watershed ID #: 88 ([Map](#))Exceedance Level: 80%

Date: 4/10/2017

Time: 3:39 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	468.00	2.17	466.00	0.00	100.00	366.00
FEB	467.00	2.14	465.00	0.00	100.00	365.00
MAR	449.00	1.78	447.00	0.00	100.00	347.00
APR	380.00	2.48	378.00	0.00	100.00	278.00
MAY	221.00	8.14	213.00	0.00	100.00	113.00
JUN	123.00	16.10	107.00	0.00	50.00	56.90
JUL	55.00	28.00	27.00	0.00	35.00	-7.98
AUG	37.30	22.30	15.00	0.00	25.00	-9.97
SEP	38.80	11.00	27.80	0.00	100.00	-72.20
OCT	59.10	1.05	58.00	0.00	100.00	-41.90
NOV	214.00	1.34	213.00	0.00	100.00	113.00
DEC	421.00	2.19	419.00	0.00	100.00	319.00
ANN	310,000.00	6,000.00	304,000.00	0.00	60,900.00	246,000.00

Detailed Report of Instream Flow Requirements

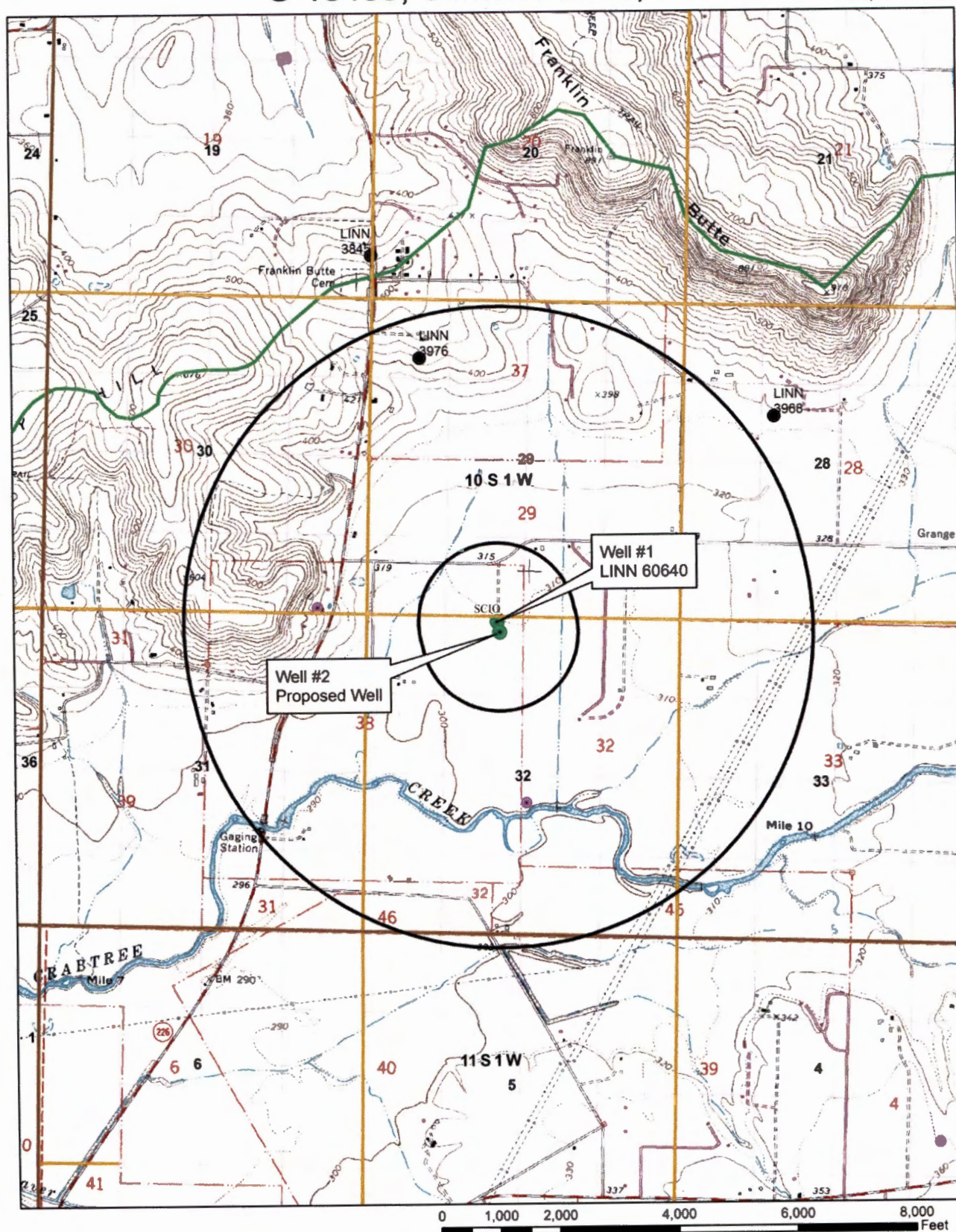
Instream Flow Requirements in Cubic Feet per Second

Application #	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MF88A	CERTIFICATE	100.00	100.00	100.00	100.00	100.00	50.00	35.00	25.00	100.00	100.00	100.00	100.00
Maximum		100.00	100.00	100.00	100.00	100.00	50.00	35.00	25.00	100.00	100.00	100.00	100.00

Well Location Map

G-18435, Clinton Farms, LLC

1:24,000 scale



Nearby Wells Statistics

