Groundwater Application Review Summary Form

Application # G- 18703

GW Reviewer J. Hackett **Date Review Completed:** 11/2/2018

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.
JI 11/7/18

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).

WATER RESOURCES DEPARTMENT

MEMO November 2, 2018

TO: **Application** G- 18703

FROM: **GW:** J. Hackett
(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

MEMO

To: Kristopher Byrd, Well Construction and Compliance Section Manager

From: Joel Jeffery, Well Construction Program Coordinator

Subject: Review of Water Right Application G-18703

Date: November 8, 2018

The attached application was forwarded to the Well Construction and Compliance Section by Water Rights. Josh Hackett reviewed the application. Please see Josh's Groundwater Review and the Well Log.

Applicant's Well #1 (LINN 344): Based on a review of the Well Report, Applicant's Well #1 seems to protect the groundwater resource.

The construction of Well #1 may not satisfy hydraulic connection issues.

STATE OF OREGON

WATER WELL REPORT
(as required by ORS 537.765)

NOV 09 1989

WATER RESOURCES DEPT.
SALEM, OREGON

Linn 344

10S/2W/10Ca

(START CARD) # 17196

(1) OWNER:
Well Number:
Name Joe Loewen
Address 37221 Jefferson Scio Dr.
City Scio State OR. Zip 97374

(2) TYPE OF WORK:
☒ New Well ☐ Deepen ☐ Recondition ☐ Abandon

(3) DRILL METHOD
☐ Rotary Air ☐ Rotary Mud ☒ Cable
☐ Other

(4) PROPOSED USE:
☐ Domestic ☐ Community ☐ Industrial ☒ Irrigation
☐ Thermal ☐ Injection ☐ Other

(5) BORE HOLE CONSTRUCTION:
Special Construction approval Yes ☐ No ☒ Depth of Completed Well 99 ft.
Explosives used Yes ☐ No ☒ Type Amount

HOLE Diameter	From	To	SEAL Material	From	To	Amount sacks or pounds
14"	0	18'	cement	0	18'	10 sacks
10"	18'	99'				

How was seal placed: Method ☐ A ☐ B ☒ C ☐ D ☐ E
☐ Other
Backfill placed from ft. to ft. Material
Gravel placed from ft. to ft. Size of gravel

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	10"	+14"	97'	.250	☐	☐	☒	☐
			11"		☐	☐	☐	☐
Liner:					☐	☐	☐	☐

Final location of shoe(s) 97'11"

(7) PERFORATIONS/SCREENS:
☒ Perforations Method Acetylene torch
☐ Screens Type Material

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
84'11"	95'11"	3/8 x12"	36	10"		☒	☐

(8) WELL TESTS: Minimum testing time is 1 hour
☐ Pump ☒ Bailer ☐ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
100 gpm	17		1 hr.

Temperature of water Depth Artesian Flow Found
Was a water analysis done? ☐ Yes By whom
Did any strata contain water not suitable for intended use? ☐ Too little
☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other
Depth of strata:

(9) LOCATION OF WELL by legal description:
County Linn Latitude ' " Longitude ' "
Township 10 S N or S, Range 2 W E or W, WM.
Section 10 NE ¼ SW ¼
Tax Lot 100500 Lot Block Subdivision
Street Address of Well (or nearest address)
37221 Jefferson-Scio Dr.

(10) STATIC WATER LEVEL:
17' ft. below land surface. Date 10-25-89
Artesian pressure lb. per square inch. Date

(11) WATER BEARING ZONES:
Depth at which water was first found 29'

From	To	Estimated Flow Rate	SWL
29'	35'	10 gpm	17'
47'	70'	100 gpm	17'

(12) WELL LOG:
Ground elevation

Material	From	To	SWL
Top soil	0	2	
Brown clay	2	9	
Brown clay & some gravel	9	25	
Brown clay & gravel	25	29	
Dirty gravel	29	35	17'
Brown clay	35	47	
Dirty brown sand & gravel	47	70	17'
Brown clay & gravel	70	87	
Brown clay & bolders	87	99	

Date started 10-13-89 Completed 10-25-89

(unbonded) Water Well Constructor Certification:
I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon well construction standards. Materials used and information reported above are true to my best knowledge and belief.

WWC Number
Signed Date

(bonded) Water Well Constructor Certification:
I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. all work performed during this time is in compliance with Oregon well construction standards. This report is true to the best of my knowledge and belief.

WWC Number 1378
Signed Date 10-27-89

ORIGINAL & FIRST COPY - WATER RESOURCES DEPARTMENT SECOND COPY - CONSTRUCTOR THIRD COPY - CUSTOMER 9809C 3/88

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date November 2, 2018
FROM: Groundwater Section J. Hackett
Reviewer's Name
SUBJECT: Application G- 18703 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: **OTL Properties 1, LLC** County: **Linn**

A1. Applicant(s) seek(s) 0.60 cfs from 1 well(s) in the Willamette Basin, _____ subbasin

A2. Proposed use Irrigation Seasonality: March 1 – October 31

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 344	1	Alluvium	0.60	10S/2W-10 SE-SW	695' N, 415' W fr SW cor DLC 54
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	299	29	17	10/25/1989	99	0-18	0-98		85-96	100	17	B

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 well is not 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 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:**

The applicant's well is located in an area that contains mostly sand with some gravel and silt from land surface to a depth of approximately 100 feet. A 60 feet thick package of mostly fine-grained alluvial sediments underlies the upper sands, silts and gravels. The applicant's well produces from sands and gravels found from 30 to 95 feet below land surface.

Water levels in nearby wells show no obvious signs of decline (see attached hydrograph). Long-term water level monitoring is necessary to assess the stability of the ground water system.

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	**Alluvium**	☐	☒
		☐	☐
		☐	☐
		☐	☐
		☐	☐

Basis for aquifer confinement evaluation: Typical confining unit, Willamette Silt, is absent in this area. Applicant's well penetrates 99 feet of mixed-grained alluvial sediments. These factors indicate the well produces from an unconfined aquifer.

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**	**North Santiam River**	**270**	**270-300**	**4800**	☒	☐	☐	☐	☒
1	**2**	**Thomas Creek**	**270**	**260**	**5170**	☒	☐	☐	☐	☒
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐

Basis for aquifer hydraulic connection evaluation: Groundwater elevations in nearby wells are coincident with or above the elevations of local reaches of North Santiam River and Thomas Creek, suggesting groundwater discharges to these streams.

Water Availability Basin the well(s) are located within: 141: N SANTIAM R > SANTIAM R - AT MOUTH; 171: THOMAS 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**	☐	☐	**MF141A**	**430.00**	☐	**627.00**	☐	**<25%**	☐
1	**2**	☐	☐	**MF171A**	~~**100.00**~~ **25.00**	☒	**33.80**	☒	**<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: Modeling in similar circumstances suggests that due to the unconfined nature of the aquifer and large distance from the applicant's well to both North Santiam River and Thomas Creek, interference after 30 days of pumping will be less than 25% of the pumping rate.

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 proposed pumping rate (0.60 cfs) is greater than 1% of the pertinent adopted minimum perennial streamflow (33.80 cfs) in Thomas Creek. As a result, PSI has been determined per OAR 690-009-040. PSI can be avoided by reducing the proposed pumping rate to < 0.338 cfs.

References Used:

Gannett and Caldwell, 1998, Geologic Framework of the Willamette Lowland Aquifer System, Oregon and Washington, USGS Professional Paper 1424-A

Woodward, Gannett and Vaccaro, 1998, Hydrogeologic Framework of the Willamette Lowland Aquifer System, Oregon and Washington, USGS Professional Paper 1424-B

Conlon and Others, 2005, Ground-Water Hydrology of the Willamette Basin, Oregon, Scientific Report 2005-5168, USGS.

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

N SANTIAM R > SANTIAM R - AT MOUTH

WILLAMETTE BASIN

Water Availability as of 11/1/2018

Watershed ID #: 141 (Map)

Exceedance Level: 80%

Date: 11/1/2018

Time: 3:00 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	2,330.00	480.00	1,850.00	0.00	430.00	1,420.00
FEB	2,670.00	1,490.00	1,180.00	0.00	430.00	751.00
MAR	2,540.00	1,320.00	1,220.00	0.00	430.00	792.00
APR	2,500.00	1,480.00	1,020.00	0.00	430.00	589.00
MAY	2,590.00	802.00	1,790.00	0.00	430.00	1,360.00
JUN	1,500.00	434.00	1,070.00	0.00	430.00	636.00
JUL	858.00	331.00	527.00	0.00	430.00	97.30
AUG	661.00	317.00	344.00	0.00	430.00	-85.90
SEP	627.00	294.00	333.00	0.00	430.00	-97.50
OCT	694.00	264.00	430.00	0.00	430.00	-0.22
NOV	1,380.00	266.00	1,110.00	0.00	430.00	684.00
DEC	2,540.00	267.00	2,270.00	0.00	430.00	1,840.00
ANN	1,960,000.00	463,000.00	1,500,000.00	0.00	312,000.00	1,190,000.00

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
MF141A	APPLICATION	430.00	430.00	430.00	430.00	430.00	430.00	430.00	430.00	430.00	430.00	430.00	430.00
Maximum		**430.00**	**430.00**	**430.00**	**430.00**	**430.00**	**430.00**	**430.00**	**430.00**	**430.00**	**430.00**	**430.00**	**430.00**

THOMAS CR > S SANTIAM R - AT MOUTH

WILLAMETTE BASIN

Water Availability as of 11/1/2018

Watershed ID #: 171 (Map)

Exceedance Level: 80%

Date: 11/1/2018

Time: 3:02 PM

Water Availability Calculation

Monthly Streamflow in Cubic Feet per Second

Annual Volume at 50% Exceedance in Acre-Feet

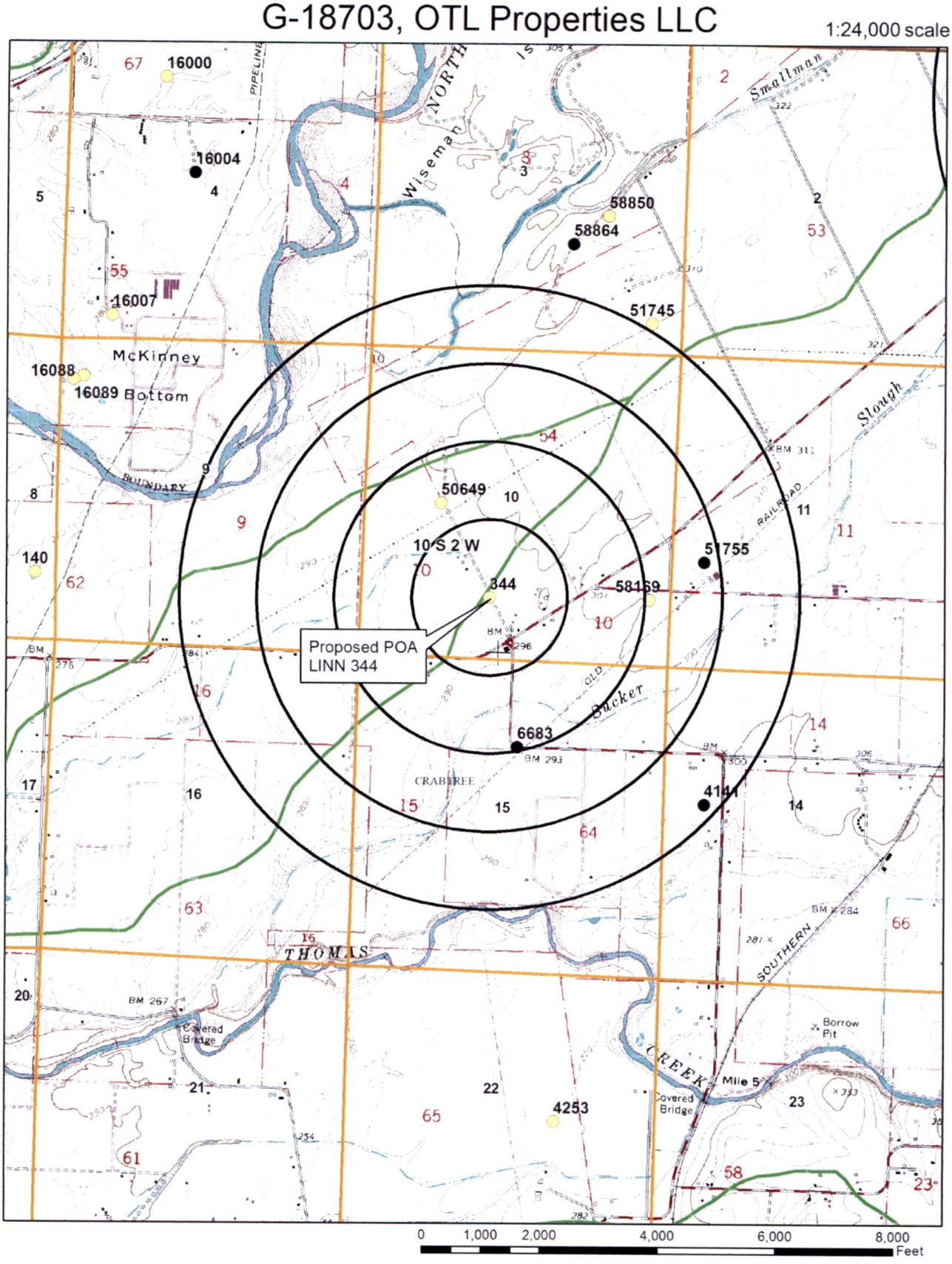
Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	467.00	3.43	464.00	0.00	100.00	364.00
FEB	465.00	3.42	462.00	0.00	100.00	362.00
MAR	447.00	2.97	444.00	0.00	100.00	344.00
APR	380.00	3.71	376.00	0.00	100.00	276.00
MAY	221.00	9.44	212.00	0.00	100.00	112.00
JUN	120.00	16.70	103.00	0.00	50.00	53.30
JUL	51.50	26.80	24.70	0.00	35.00	-10.30
AUG	33.80	21.90	11.90	0.00	25.00	-13.10
SEP	35.70	12.40	23.30	0.00	100.00	-76.70
OCT	56.30	3.42	52.90	0.00	100.00	-47.10
NOV	208.00	3.17	205.00	0.00	100.00	105.00
DEC	424.00	3.44	421.00	0.00	100.00	321.00
ANN	307,000.00	6,730.00	300,000.00	0.00	60,900.00	244,000.00

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
MF171A	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



Water-Level Trends in Nearby Wells