Groundwater Application Review Summary Form

Application # G- 19256

GW Reviewer Dennis Orlowski Date Review Completed: March 31, 2023

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).

WATER RESOURCES DEPARTMENT

MEMO **March 31, 2023**

TO: **Application** G-**19256**

FROM: **GW:** **Dennis Orlowski**
(Reviewer's Name)

SUBJECT: Scenic Waterway Interference Evaluation

☐ **YES**
☒ **NO** The source of appropriation is hydraulically connected to a State Scenic Waterway or its tributaries

☐ **YES**
☒ **NO** Use the Scenic Waterway Condition (Condition 7J)

☐ 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 [Enter] 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 March 31, 2023
FROM: Groundwater Section Dennis Orlowski
Reviewer's Name
SUBJECT: Application G- **19256** 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: **Tuan Tiet** County: **Clackamas**

A1. Applicant(s) seek(s) 0.577 cfs from two well(s) in the Willamette Basin, Molalla River subbasin

A2. Proposed use Nursery (17.5 ac), Commercial 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	Well 1	Alluvium	0.577**	T4S, R2E-33 SW-SW	345' N, 1230' E fr SW cor S33
2	Proposed	Well 2	Alluvium	0.577**	T4S, R2E-33 SE-SW	660' N, 1540' E fr SW cor S33

* 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	300	TBD	Est. ~40 ft***	TBD	300	0-170	0-300	--	TBD	TBD	TBD	TBD
2	300	TBD	Est. ~40 ft***	TBD	300	0-170	0-300	--	TBD	TBD	TBD	TBD

Use data from application for proposed wells.

A4. **Comments:** ** The application states the following: *"We previously applied for groundwater application G-16728 and received permit G-16207, but we were unable to financially afford installing any of the proposed wells. Since we cannot apply for an extension on Permit G-16207, we are re-applying for a new groundwater allocation and will permanently withdraw permit G-16207 once the new permit has been issued. The requested rate of 0.577 cfs is the sum of the rate for nursery use (0.438 cfs) and the rate for commercial use (0.139 cfs)."*

Permit G-16207 was issued on 7/26/2007, but then later cancelled on 4/8/2022 (via Special Order 122-737). This current application G-19256 is essentially the same as application G-16728/permit G-16207, albeit for less nursery acreage (current 17.5 acres versus previous 32.3 acres) and correspondingly less maximum pumping rate (current 0.577 cfs versus previous 0.950 cfs).

*** Nearby well CLAC 55308, with construction details similar to the proposed wells, has reported static water levels from 2002-2022 ranging from about elevation 260-265 ft msl, which equates to about 40 ft bls at the proposed POA locations.

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: Proposed Well 1 and Well 2 will produce from a confined alluvial aquifer system, and thus the pertinent Basin rules (OAR 690-502-0240) do not apply.

A6. ☐ **Well(s) #** _____ , _____ , _____ , _____ , _____ , tap(s) an aquifer limited by an administrative restriction.
Name of administrative area: **None**
Comments: Not applicable.

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**

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 **alluvial** 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:** Approximately 700-900 feet of alluvial sediments occur beneath the land surface at and near the proposed POA locations. Local wells obtain groundwater from water-bearing sand and gravel beds that are encased by lower-permeability silts and clays, the latter of which progressively confine deeper water-bearing deposits. This system is generally classified by the USGS as the Willamette Aquifer, with the deepest portions assigned to the underlying Willamette Confining Unit (Gannett and Caldwell, 1998; Woodward and others, 1998; Conlon and others, 2005).

Water level measurements from nearby wells indicate relatively stable long-term conditions (e.g., CLAC 55308, CLAC 60360, CLAC 51358) (see attached hydrograph). No nearby wells fully penetrate the 700-900 ft deep Willamette Aquifer system in this area, and thus potential injury to nearby groundwater users was not assessed for this review; however, permit condition 7N is recommended to assess potential future injury concerns, and as a means to monitor long-term groundwater conditions in this area.

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	**Alluvial (Willamette Aquifer)**	☒	☐
2	**Alluvial (Willamette Aquifer)**	☒	☐

Basis for aquifer confinement evaluation: Nearby wells with relatively-deep seals (i.e., at least 150 ft bls) indicate that SWLs are above principal water-bearing zones, and are generally overlain by several tens of feet of confining silts and clays (e.g., CLAC 55308). These facts indicate confined conditions for the proposed wells.

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**	**Unnamed tributary to Molalla River**	**~260**	**265-340**	**5400***	☒	☐	☐	☐	☒
2	**1**	**Unnamed tributary to Molalla River**	**~260**	**265-340**	**5200***	☒	☐	☐	☐	☒
1	**2**	**Molalla River**	**~260**	**260-280**	**5300**	☒	☐	☐	☐	☒
2	**2**	**Molalla River**	**~260**	**260-280**	**4900**	☒	☐	☐	☐	☒

Basis for aquifer hydraulic connection evaluation: Published groundwater maps indicate that groundwater in this area flows towards, and discharges into, the Molalla River (Woodward and others, 1998; Gannett and Caldwell, 1998). Heads in nearby shallow wells (<~200 ft deep) completed in the coarse-grained sediments are similar to the elevations of nearby stream reaches, which indicates that the shallow water-bearing zones are hydraulically connected to nearby streams. Some deeper wells with shallow seals show similarly shallow heads. However, several wells that are cased and sealed into the deeper, finer-grained sediments show heads that are 40-100 feet below adjacent stream reaches. The lower heads in the deeper water-bearing zones suggest that these zones are not hydraulically connected to nearby reaches of local streams, Therefore, if all of the POAs on this proposed water right are completed in the lower water-bearing zones – as proposed - they may not be connected to adjacent reaches of nearby streams. This finding presumes that the proposed wells will be sealed to a depth of 170 feet and the heads in these wells will be at least 40-50 feet below the elevation of adjacent stream reaches.

*The nearest reach of SW1, the unnamed tributary to the Molalla River, is located less than ¼ mile from the proposed POA locations. However, at the nearest reach locations the stream elevations are above the likely seasonal high groundwater elevation by approximately 40-50 feet. The distances shown on the above table correspond to the locations along the SW1 reach whose elevations are generally coincident with the estimated seasonal high groundwater elevation, ~260 ft msl.

Water Availability Basin the well(s) are located within: SW1, SW2: WID 70747: Molalla R > Willamette R – above Milk Creek.

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 (SW) source. Limit evaluation to instream rights and minimum stream flows that are pertinent to that SW source, 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?
2	**1**	☐	☐	**N/A**	**N/A**	☐	**54.50**	☐	**<<25%**	☐
2	**2**	☐	☐	**IS70747A**	**78.70**	☐	**54.50**	☐	**<<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: C3a: based on past stream depletion modeling experience in similar settings (Hunt, 2003), it is likely that interference at 30 days of continuous pumping at the maximum authorized rate will be much less than 25% of that rate. This conclusion is due largely to the relatively-distant hydraulic connection points to nearby streams (see Section C2 discussion) and the shallow, thick sequences of low-permeability silt and clay that exist between the stream beds and deeper, confined water-bearing sands and gravels.

C3b: not applicable.

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													
(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: Not applicable.

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:** **To prevent impacts to adjacent reaches of nearby streams, all wells on this right shall be continuously cased and sealed to a depth of at least 170 feet below land surface to ensure that ground water production is only from the deeper confined part of the alluvial aquifer.**

References Used: Application G-19256; Groundwater reviews G-16728, G-16795, G-18288.

Conlon and others, 2005, Ground-water hydrology of the Willamette Basin, Oregon: U.S Geological Survey Scientific Investigations Report 2005-5168.

Gannett, M. W. and Caldwell, R.R., 1998, Geologic framework of the Willamette lowland aquifer system, Oregon and Washington: U.S. Geological Survey Professional Paper 1424-A, 32p.

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

Woodward, D.G., Gannett, M.W., and Vaccaro, J.J., 1998, Hydrogeologic framework of the Willamette Lowland Aquifer system, Oregon and Washington: U.S. Geological Survey Professional Paper 1424-B, 82p.

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:** _____

_____

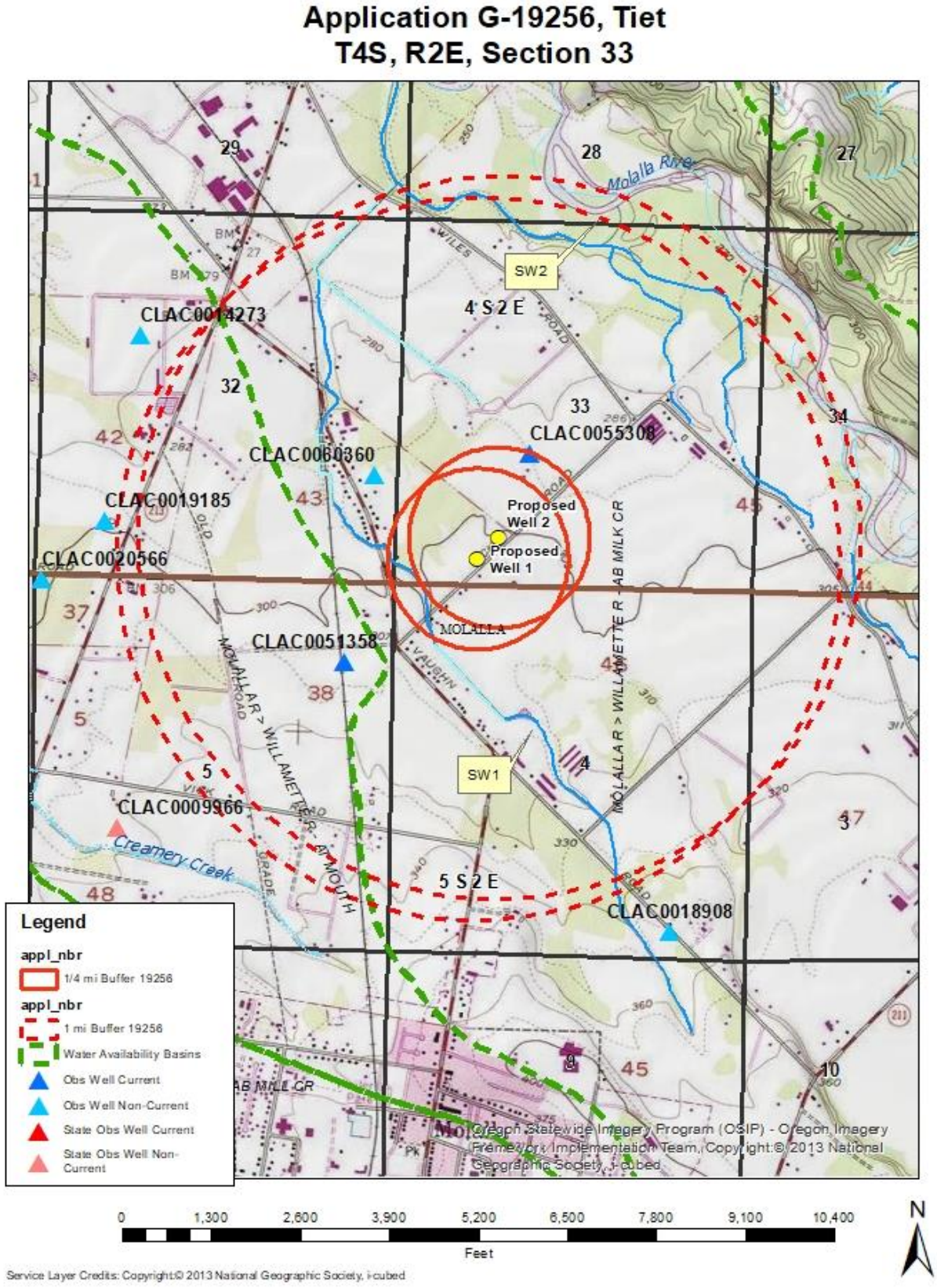
_____

_____

_____

D4. ☐ **Route to the Well Construction and Compliance Section for a review of existing well construction.**

Well Location Map



Water Availability Table

Oregon Water Resources Department
Water Availability Analysis

Main Help Return Contact Us

Water Availability Analysis
Detailed Reports

MOLALLA R > WILLAMETTE R - AB MILK CR
WILLAMETTE BASIN
Water Availability as of 3/31/2023

Watershed ID #: 70747 (Map)
Date: 3/31/2023

Exceedance Level: 80%
Time: 1:51 PM

Water Availability Calculation | Water Rights | Consumptive Uses and Storages | Instream Flow Requirements | Watershed Characteristics | Reservations

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	531.00	1.33	530.00	0.00	300.00	230.00
FEB	541.00	1.32	540.00	0.00	300.00	240.00
MAR	569.00	1.35	568.00	0.00	300.00	268.00
APR	591.00	1.64	589.00	0.00	300.00	289.00
MAY	466.00	5.15	461.00	0.00	300.00	161.00
JUN	207.00	7.28	200.00	0.00	200.00	-0.28
JUL	85.90	12.80	73.10	0.00	100.00	-26.90
AUG	55.70	10.40	45.30	0.00	78.70	-33.40
SEP	54.50	4.24	50.30	0.00	88.90	-38.60
OCT	90.40	1.45	89.00	0.00	166.00	-77.00
NOV	273.00	1.30	272.00	0.00	300.00	-28.30
DEC	560.00	1.34	559.00	0.00	300.00	259.00
ANN	454,000.00	3,020.00	451,000.00	0.00	165,000.00	287,000.00

Water-Level Measurements in Nearby Wells