

Groundwater Application Review Summary Form

Application # G- 18824

GW Reviewer M. Thoma Date Review Completed: 08-21-19

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.*

si etw/11

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).



MEMO

To: Kristopher Byrd, Well Construction and Compliance Section Manager
From: Joel Jeffery, Well Construction Program Coordinator
Subject: Review of Water Right Application G-18824
Date: August 27, 2019

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

Applicant's Well #1 (LANE 22096): Based on a review of the Well Report, Applicant's Well #1 does not appear to comply with current minimum well construction standards (See OAR 690 Division 210). The water well report indicates that "Puddled clay & cement" was used as the surface seal. Puddled clay & cement is not an approved sealing material. In addition, the well log indicates that the top terminal height of the well casing is at land surface (0 ft.). By rule the top terminal height of the well casing shall be a minimum of 12 inches above land surface, pump house floor or the local surface runoff level. In order to meet minimum well construction standards, the well must be re-sealed and the top terminal height of the well extended to a minimum of 12 inches above land surface, pump house floor or the local surface runoff level by a licensed well constructor.

My recommendation is that the Department **not issue** a permit for Applicant's Well #1 (LANE 22096) unless it is brought into compliance with current minimum well construction standards or information is provided showing that it is in compliance with current minimum well construction standards.

The repair of Applicant's Well #1 may not satisfy hydraulic connection issues.

LANE

022096

NOTICE TO WATER WELL CONTRACTOR

The original and first copy of this report are to be filed with the

STATE ENGINEER, SALEM, OREGON within 30 days from the date of well completion.

WATER WELL REPORT STATE OF OREGON

SEP 8 1964 (Please type or print)

State Well No. 20/3W-15

State Permit No.

(1) OWNER:

Name South Lane School
Address 103 S 5th
Cottage Grove, Oregon

STATE ENGINEER SALEM, OREGON

(2) LOCATION OF WELL:

County Lane Driller's well number
1/4 Section 15 T. 20 S R. 3 W W.M.

(11) WELL TESTS:

Drawdown is amount water level is lowered below static level

Was a pump test made? Yes No If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.
Ballor test 1400 gal./min with 45 ft. drawdown after 1 hrs.

(12) WELL LOG:

Diameter of well below casing 6"

Depth drilled 78 ft. Depth of completed well 78 ft.
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

TYPE OF WORK (check):

New Well Deepening Reconditioning Abandon
If abandonment, describe material and procedure in Item 12.

(4) PROPOSED USE (check):

Domestic Industrial Municipal
Irrigation Test Well Other

(5) TYPE OF WELL:

Rotary Driven
Cable Jetted
Dug Bored

(6) CASING INSTALLED:

Threaded Welded
6" Diam. from 0 ft. to 70 ft. Gage 250

(7) PERFORATIONS:

Perforated? Yes No

Type of perforator used

Size of perforations in. by in.
perforations from ft. to ft.

(8) SCREENS:

Well screen installed? Yes No

Manufacturer's Name
Type Model No.
Diam. Slot size Set from ft. to ft.

(9) CONSTRUCTION:

Well seal—Material used in seal Puddled clay & cement
Depth of seal 20 ft. Was a packer used?
Diameter of well bore to bottom of seal 10 in.

Table with 3 columns: MATERIAL, FROM, TO. Contains entries for Black top soil, Sand & gravel & boulders--course, and Fine sand & gravel to coarse gravel.

Work started 8-7-64 19 Completed 8-12-64 19
Date well drilling machine moved off of well 8-12-64 19

(13) PUMP:

Manufacturer's Name
Type: H.P.

Water Well Contractor's Certification:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Casey Jones Well Drilling Company Co.
Address Rt. 2 Box 695 Creswell, Oregon

Drilling Machine Operator's License No. 186
[Signed] Albert J. Jones (Water Well Contractor)
Contractor's License No. 103 Date 8-24-64 19

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 08/21/2019
 FROM: Groundwater Section M Thoma
 SUBJECT: Application G- 18824
 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: South Lane School Dist. County: Lane

A1. Applicant(s) seek(s) 0.02 cfs from 1 well(s) in the Willamette Basin,
Coast Fork Willamette subbasin

A2. Proposed use Nursery (3.2 ac) 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	LANE 22096	1	Alluvium	0.02	20S/03W-15 NWNE	1200'S, 2100'W of NE cor S 15
2						

* 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	610	-	20	8-12-64	78	20	0-70			23	45	B

Use data from application for proposed wells.

A4. **Comments:** _____

A5. **Provisions of the** Willamette (OAR 690-502) 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) 7C (Annual SWL); 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:** There are limited water level data in the aquifer and vicinity of the applicant’s proposed POA so Over-Appropriation and Capacity of the Resource cannot be determined and water-level reporting conditions in B1(d) are recommended. There are two permitted groundwater right within 1 mile of the applicant’s proposed POA and it is unlikely that the applicant’s use would result in injury to these permitted water rights given the low rate of appropriation and generally high transmissivity and storativity of the aquifer in the area. However, standard interference conditions should be applied

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 Terrace Sediments	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer confinement evaluation: the well log for the applicant’s proposed POA, along with well logs for nearby wells of similar depths, report SWLs near “First Water”, implying unconfined aquifer 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	Coast Fk Willamette River	590	580-610	1560	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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"/>

Basis for aquifer hydraulic connection evaluation: groundwater elevations are similar to surface water elevations implying that water can readily move between surface water and the aquifer.

Water Availability Basin the well(s) are located within: COAST FK WILLAMETTE R > WILLAMETTE 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	<input type="checkbox"/>	<input type="checkbox"/>	MF 532	40	<input type="checkbox"/>	65.6	<input type="checkbox"/>	<< 25%	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>

Comments: stream-depletion at 30 d was estimated using the Hunt-1999 stream-depletion model with parameter values representative of alluvial aquifer material.

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"/>

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													
(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: no surface water sources were evaluated beyond 1 mile

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 proposed POA would be producing from an aquifer that has been found to be hydraulically connected to surface water – specifically the Coast Fk Willamette River – at a distance of less than 1 mile. The proposed maximum rate of appropriation is less than 1% of the pertinent adopted perennial streamflow and also less than 1% of the adopted instream water rights for the surface water source and the estimated stream-depletion is less than 25% after 30 days. Per OAR 690-009-0040(4) the POAs are assumed to **not** have the Potential for Substantial Interference

References Used:

Hunt, B. 1999. *Unsteady Stream Depletion from Ground Water Pumping*. Journal of Hydrologic Engineering, Vol 8(1), pp 12-19

McClaghry, J. D., T. J. Wiley, M. L. Ferns, and I. P Madin. 2010. *Digital Geologic Map of the Southern Willamette Valley, Benton, Lane, Linn, Marion, and Polk Counties, Oregon*. Oregon Dept. of Geology and Mineral Industries. Open File Report O-10-13.

Oregon Department of Geology and Mineral Industries, *Geologic Map of Oregon*. <http://www.oregongeology.org/geologicmap/>

OWRD Well Log Database – Accessed 08/21/2019

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) _____

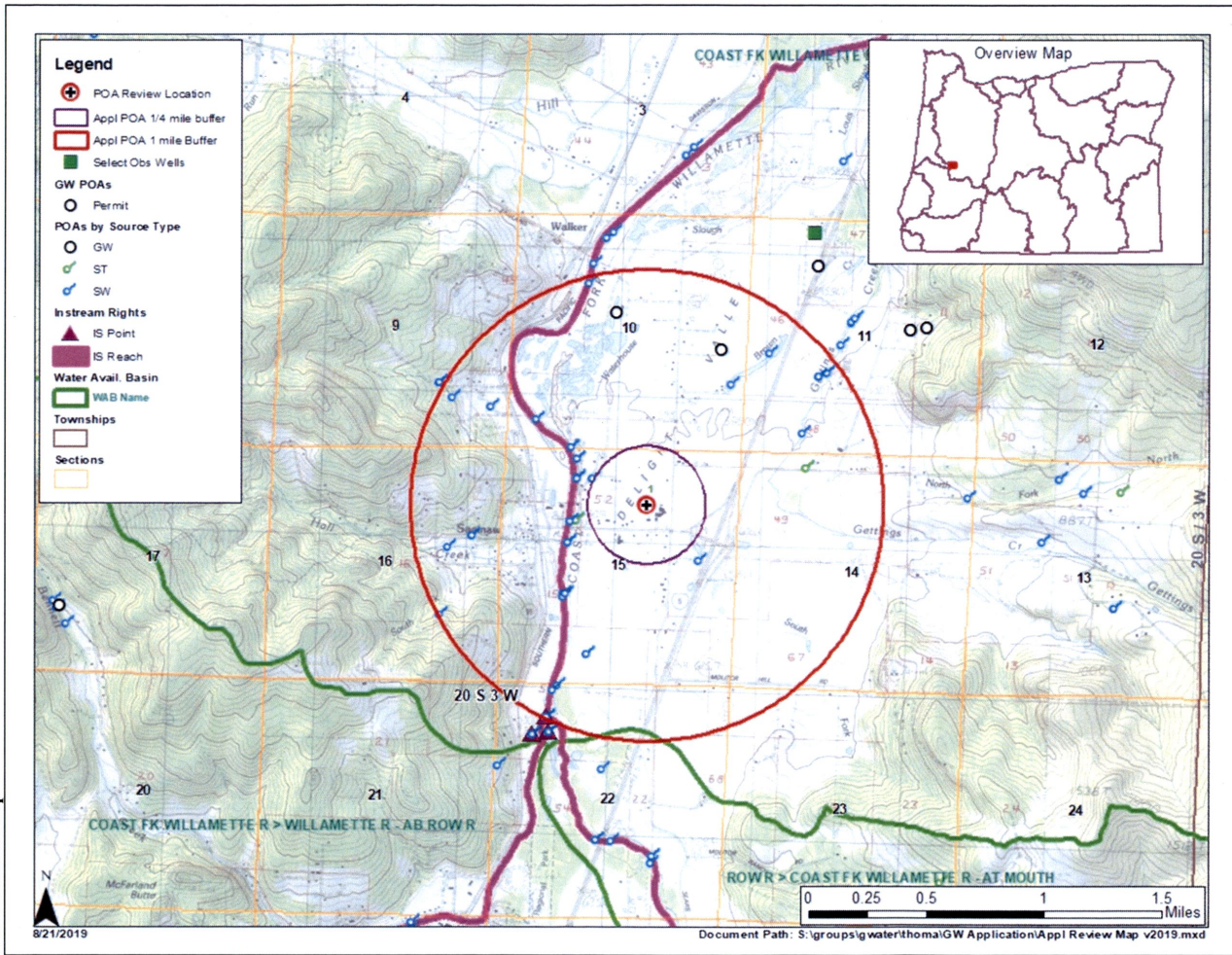
D3. **THE WELL construction deficiency or other comment is described as follows:** _____

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

Water Availability Tables

Water Availability Analysis Detailed Reports									
COAST FK WILLAMETTE R > WILLAMETTE R - AT MOUTH WILLAMETTE BASIN									
Water Availability as of 8/21/2019									
Watershed ID # 532 (Map)					Exceedance Level 80% ▾				
Date 8/21/2019					Time 3:58 PM				
Water Availability Calculation		Consumptive Uses and Storages			Instream Flow Requirements		Reservations		
Water Rights				Watershed Characteristics					
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	955.00	123.00	832.00	0.00	200.00	632.00			
FEB	1,080.00	297.00	783.00	0.00	200.00	583.00			
MAR	1,080.00	467.00	613.00	0.00	200.00	413.00			
APR	928.00	369.00	559.00	0.00	40.00	519.00			
MAY	531.00	236.00	295.00	0.00	40.00	255.00			
JUN	216.00	28.60	187.00	0.00	40.00	147.00			
JUL	108.00	37.30	70.70	0.00	40.00	30.70			
AUG	70.50	33.10	37.40	0.00	40.00	-2.57			
SEP	65.60	24.70	40.90	0.00	40.00	0.86			
OCT	86.40	8.13	78.30	0.00	40.00	38.30			
NOV	268.00	93.70	174.00	0.00	200.00	-25.70			
DEC	761.00	9.03	752.00	0.00	200.00	552.00			
ANN	754,000.00	104,000.00	650,000.00	0.00	77,000.00	573,000.00			

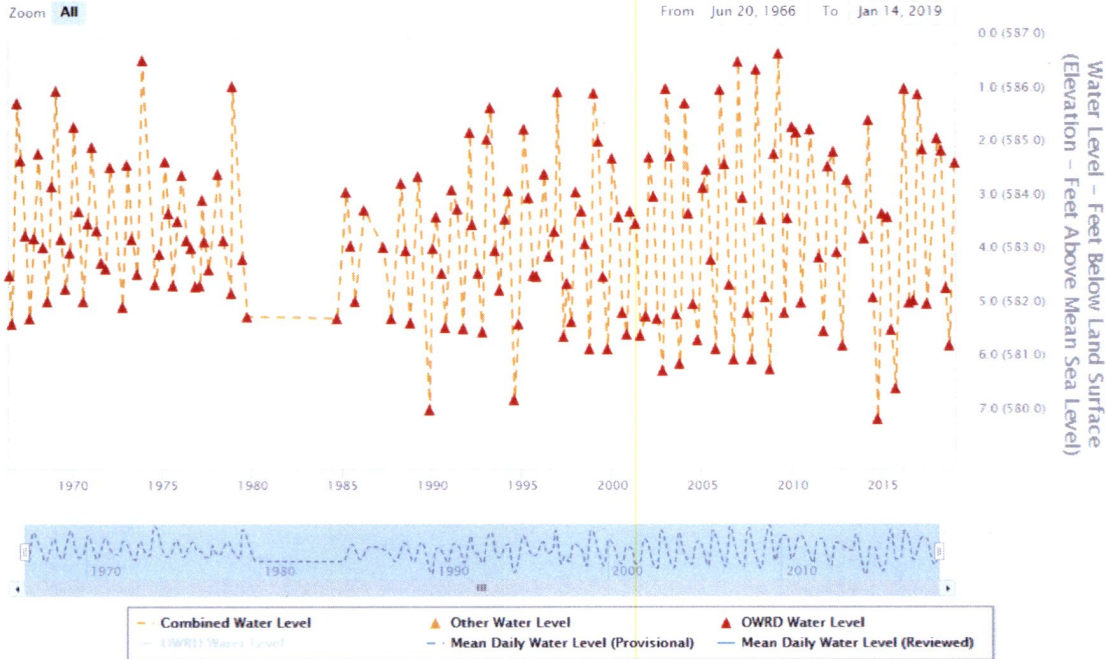
Well Location Map



Water-Level Trends in Nearby Wells

Well Location: 20 00S/3 00W-11BAB	Total Depth (fbis): 415 ft	Water Level Count: 169
Log ID: LANE 22027 Well Log	Land Surface Elevation: 587 ft	Wtr Lvl Date Range: 6/20/1966 - 1/14/2019
Well Tag: ---	Vertical Reference Datum: NGVD1929	Wtr Lvl Min-Max: 0.26 - 7.07 ft
State Observation: 476	Primary Use of Well: UNUSED	Recorder Wtr Lvl Count: 0
USGS Site:	Primary Aquifer System: Little Butte Formation	Recorder Wtr Lvl Date Range: ---
		Recorder Wtr Lvl Min-Max: ---

Groundwater Levels for LANE 22027



Source: Oregon Water Resources

Stream-Depletion Model Results

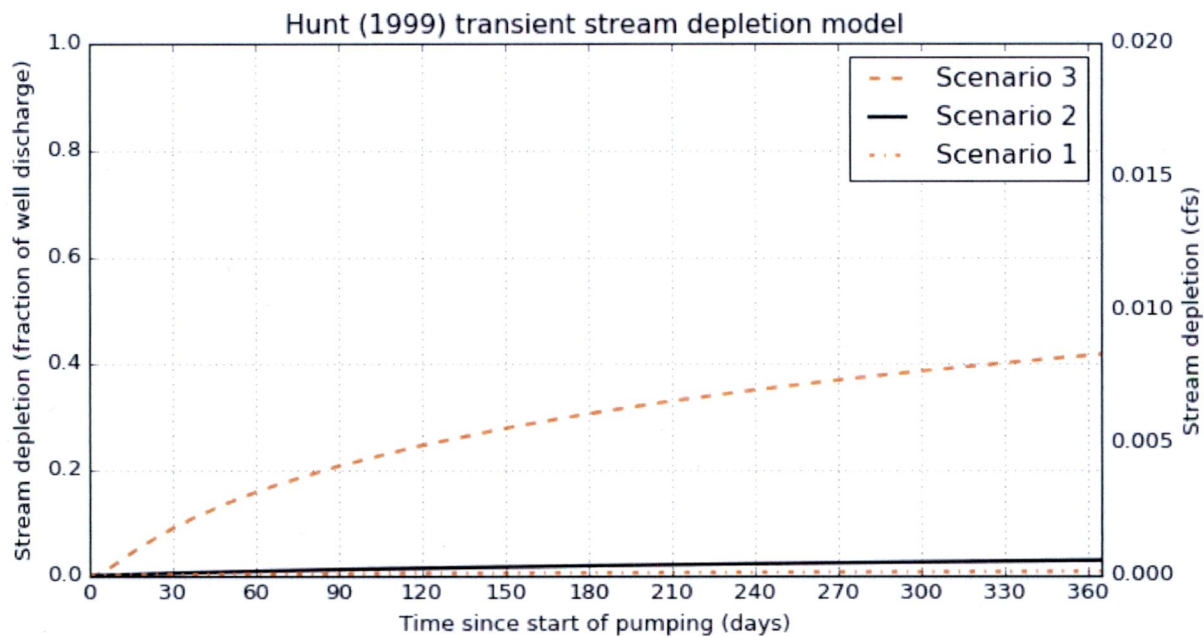
76 PyHunt stream depletion analysis tool

Application type:	G
Application number:	18824
Well number:	1
Stream Number:	1
Pumping rate (cfs):	0.02
Pumping duration (days):	365
Pumping start month number (3=March)	1

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	1560	1560	1560	ft
Aquifer transmissivity	T	10000	5000.0	1000	ft ² /day
Aquifer storativity	S	0.1	0.05	0.01	-
Aquitard vertical hydraulic conductivity	Kva	0.0005	0.001	0.005	ft/day
Not used		20.0	20.0	20.0	
Aquitard thickness below stream	babs	3.0	3.0	3.0	ft
Not used		0.2	0.2	0.2	
Stream width	ws	160	160	160	ft

Stream depletion for Scenario 2:

Days	10	30	60	90	120	150	180	210	240	270	300	330	360
Depletion (%)	0	0	1	1	1	2	2	2	2	2	2	3	3
Depletion (cfs)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00



Stream-Depletion Model Results – Well #1 to SW #1

PyHunt stream depletion analysis tool

Application type:	G
Application number:	18813
Well number:	1
Stream Number:	1
Pumping rate (cfs):	0.07
Pumping duration (days):	365
Pumping start month number (3= March)	1

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	1400	1400	1400	ft
Aquifer transmissivity	T	500	100	10	ft ² /day
Aquifer storativity	S	0.005	0.001	0.0005	-
Aquitard vertical hydraulic conductivity	Kva	0.0005	0.001	0.005	ft/day
Not used		20.0	20.0	20.0	
Aquitard thickness below stream	babs	10	8	5	ft
Not used		0.2	0.2	0.2	
Stream width	ws	20	20	20	ft

Stream depletion for Scenario 2:

Days	10	30	60	90	120	150	180	210	240	270	300	330	360
Depletion (%)	0	1	2	3	3	4	4	5	5	5	6	6	6
Depletion (cfs)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

