Groundwater Application Review Summary Form

Application # G- _19311_

GW Reviewer _Grayson Fish_ Date Review Completed: _3/3/2025_

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 **_3/3/2025_**

TO: **Application** G-**_19311_**

FROM: **GW:** **_Grayson Fish_**
(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 **_Klamath_** 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
See attached memo: "Analysis of Groudnwater Pumping Impacts on Klamath Scenic Waterway Flows"											

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 3/3/2025
FROM: Groundwater Section Grayson Fish
Reviewer's Name
SUBJECT: Application G- **19311** 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: **Carolyn Shaw** County: **Klamath**

A1. Applicant(s) seek(s) 0.1225 cfs from 1 well(s) in the Klamath Basin, Lost River subbasin

A2. Proposed use Irrigation (3 Acres) Seasonality: June 1 – October 31

A3. Well and aquifer data **(attach and number logs for existing wells; mark proposed wells as such under logid)**:

POA 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	KLAM 13269*	1	Bedrock	0.1225	39S/10E-27 NE-NW	Not provided

* Alluvium, CRB, Bedrock

POA Well	Well Depth (ft)	Seal Interval (ft)	Casing Intervals (ft)	Liner Intervals (ft)	Perforations Or Screens (ft)	Well Yield (gpm)	Drawdown (ft)	Test Type
1	654	46	+1 - 47	--	--	185	--	Air
2								

POA Well	Land Surface Elevation at Well (ft amsl)	Depth of First Water (ft bls)	SWL (ft bls)	SWL Date	Reference Level (ft bls)	Reference Level Date
1	4155	280	45	7/1/1986	Not set	N/A
2						

Use data from application for proposed wells.

A4. **Comments:** *The application appears to identify KLAM 13264 in Section 3 of the application. However, the well report for **KLAM 13269** is attached to the application and matches the T/R-S of the provided application map. This review assumes there is a scrivener's error on the application and the appropriate proposed POA is **KLAM 13269**.

The proposed POA is ~ 9 miles southeast of Klamath Falls and ~1 mile south of Olene gap. The applicant requests 0.1225 cfs from 1 well for irrigation of 3 acres. Applicant proposes to withdraw water from Tertiary aged sedimentary and volcanic rocks of the Winema Volcanic Field.

The only available water level data for KLAM 13269 is a July 1, 1986 measurement from the well log submitted at the time of construction. The water level at the time and the lithology recorded in the well log suggest that the well sources water from the shallow sedimentary rocks and volcanic sediments overlaying the basalts/volcanic at depth (See attached hydrograph and well log). Given the lack of water level data from nearby wells which source water from the sedimentary unit, it is recommended that additional data be collected from KLAM 13269 if a permit were to be issued.

A5. ☐ **Provisions of the** 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) **7RLN, "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 proposed POA appears to produce groundwater from Tertiary aged sedimentary rock and sediments which overlies basalt and volcanic sediments in the vicinity of Nuss Lake. There is limited long term water level data available from wells completed into the upper sedimentary unit. The depth at which a well will encounter water bearing basalt is highly variable based on location due to extensive faulting in the area. OWRD observation well **KLAM 54529** located approximately 1.25 miles to the southwest of the proposed POA sources water from the tertiary aged basalts. **KLAM 54529** has experienced approximately 12 feet of groundwater level decline since 2007 and displays a pumping response during the irrigation season. The groundwater level decline does not meet the definition of excessively declining nor excessively declined (OAR 690-008-001 (4) and (6)). Additionally, Basin-wide hydrologic budget estimates suggest that recharge to groundwater is approximately 2 million acre-feet per year which likely greatly exceeds the total appropriation of groundwater in any given year and groundwater would not be "Over-Appropriated" as defined in OAR 690-400-0010 (11)(a) (Gannett et. al., 2007). Therefore, groundwater in the vicinity of applicant's proposed POA is not considered over appropriated.

Given the low requested rate (0.1225 cfs) and volume, it is highly unlikely that the proposed use would result in injury to an existing water right. Regardless, if a water right was to be issued, conditions listed in B1(d)(i) of this review form are recommended.

The applicant's proposed POA is located within the Bureau of Reclamation's Klamath Project area of the Upper Klamath Basin. Wells throughout this area have experienced long term-water level declines associated with increased groundwater pumping during drought years when Project surface water deliveries have been shut off or reduced. The nearby domestic observation well **KLAM 54529,** which sources water from basalt/volcanics at depth**,** has experienced approximately 12 feet of groundwater level declines since measurements began in 2007, with 6.60 feet of decline observed between 2019 and 2023 when comparing annual high-water levels. These year-over-year declines associated with drought years and annual highs that do not recover to previous levels suggest that groundwater storage in the area is being depleted. The highly transmissive volcanics and the overlying low transmissivity sedimentary units are hydraulicly connected, albeit with an attenuated pressure response. **If proposed groundwater use were to commence as described in this application, it would further contribute to observed groundwater level declines in this portion of the basin and potentially lead to permit decline conditions triggering on existing rights. This would preclude the perpetual use of the aquifer by limiting the use of existing water right holders and, therefore, groundwater for the proposed use will not likely be available within the capacity of the resource.**

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	**Tertiary Aged Sedimentary and Volcanic Rocks**	☐	☒
		☐	☐

Basis for aquifer confinement evaluation: System is identified as generally unconfined with discontinuous low permeability layers causing local (discontinuous, limited) confinement. Water well reports (well logs) for area wells indicate low transmissivity (low permeability) sediment of varying thickness (150 feet to more than 1,000 feet) overlies high transmissivity (high permeability) basalt in the area. Ground water occurs in both the sediment and basalt.

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**	**Lost River**	**4110**	**4090**	**3009**	☒	☐	☐	☐	☒
1	**2**	**Nuss Lake**	**4110**	**4100**	**1265**	☒	☐	☐	☒	☐

Basis for aquifer hydraulic connection evaluation: Groundwater elevations are higher than surface water elevations suggesting that groundwater flows to and discharges to Lost River and Nuss Lake in this vicinity. Additionally, generalized water-level contours show groundwater flowing towards the Lost River just west of Olene Gap (Figure 21, USGS 2007). Nuss Lake is located less than ¼ mile of the proposed POA KLAM 13269 is a is a source of water for primary/supplemental surface water permit S-53731 and appears to have an outlet to the Lost River from the northwest portion of the lake.
Water Availability Basin the well(s) are located within: LOST R > TULE L – AT STATE LINE (W. ID#: 31420404)

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?
1	**1**	☐	☐	**N/A**	**N/A**	☐	**95.40**	☐	**27**	☒
1	**2**	☒	☐	**N/A**	**N/A**	☐	**95.40**	☐	**--**	☒

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: The Hunt (1999) model was used to estimate the degree of stream depletion that may occur if use were to proceed under this application. Transmissivity and storativity values for the tertiary sedimentary unit was sourced from Ground-Water Hydrology of the Upper Klamath Basin, Oregon and California (Gannett et. al., 2007). The Hunt (1999) model estimates between 13 to 70% stream depletion value at 30 days using a transmissivity value of 200 ft2/day and storativity values ranging from 0.003 to 0.0002 and 27% stream depletion when a transmissivity value of 0.0016 (mid-point of the range) is used. Using a preponderance of the evidence standard (51% certainty), groundwater use from the proposed POA is likely to result in stream depletion greater than 25% by 30 days of use.

Nuss Lake is located less than ¼-mile from the proposed POA which sources water from an unconfined aquifer and results in a finding of assumed potential for substantial interference under OAR 690-009-0040(2).

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: No surface water sources were evaluated for hydraulic connection at distance greater than 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 groundwater from an aquifer that has been found to be hydraulically connected to surface waters of the Lost River and Nuss Lake. Using a preponderance of the evidence standard (51% certainty), groundwater use from the proposed POA is likely to result in interference with the Lost River greater than 25% by 30 days of use. Additionally, Nuss Lake is located less than ¼-mile from the proposed POA which sources water from an unconfined aquifer and results in a finding of assumed potential for substantial interference under OAR 690-009-0040(2). Nuss Lake is a POD for surface water permit S-53731 and appears to have an outlet to the Lost River from the northwest portion of the lake.

References Used:

Gannett, M. W,. K.E. Lite, J. L. LaMarche, B.J. Fisher, and D. J. Polette, 2007.*Ground-water Hydrology of the Upper Klamath Basin, Oregon and California*. USGS Scientific Investigations Report 2007-5050.

Jenks, M.D. 2007 (unpublished). *Geologic compilation map of part of the Upper Klamath Basin, Klamath County, Oregon*. Oregon Dept. of Geology and Mineral Industries. Open File Report O-07-05.

Oregon Water Resources Department: Groundwater Information System. Accessed 3/3/2025.

Oregon Water Resources Department: Well Report Query. Accessed 3/3/2025.

Oregon Water Resource Department: Water Rights Section. "Memo: RE: Water Availability Determinations other than standard." June 21, 2005.

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:** _____

_____

_____

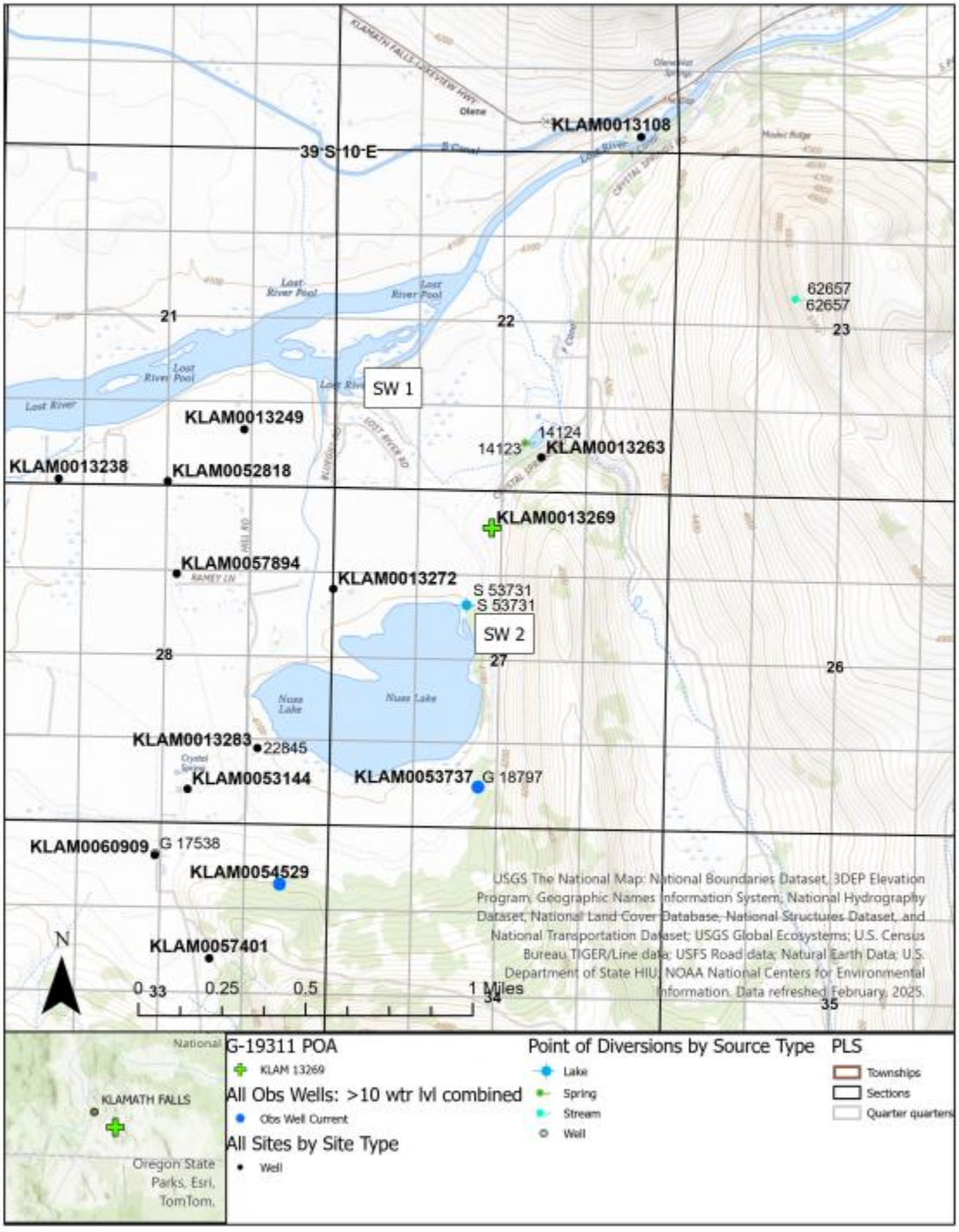
_____

_____

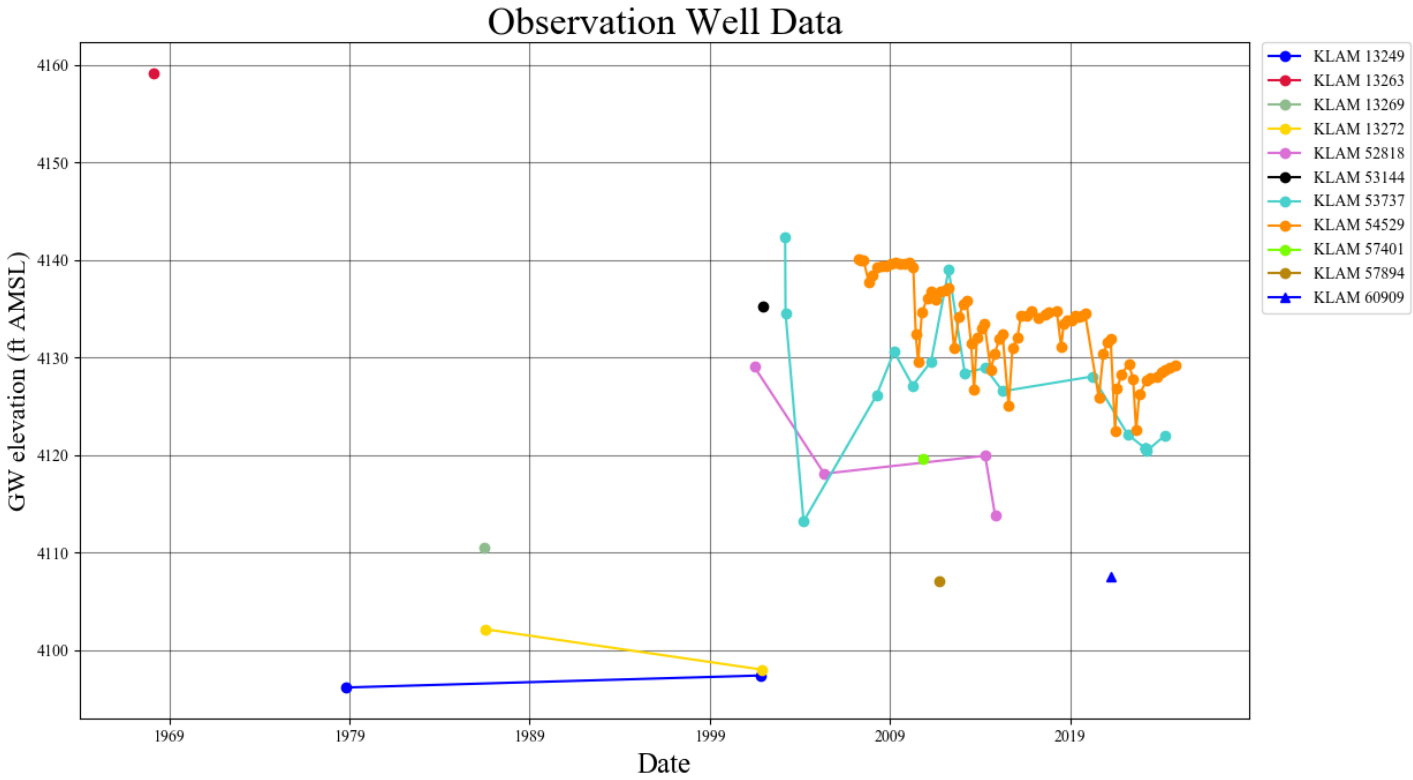
D4. ☐ **Route to the Well Construction and Compliance Section for a review of existing well construction.**

Well Location Map

G-19311



Water-Level Measurements in Nearby Wells



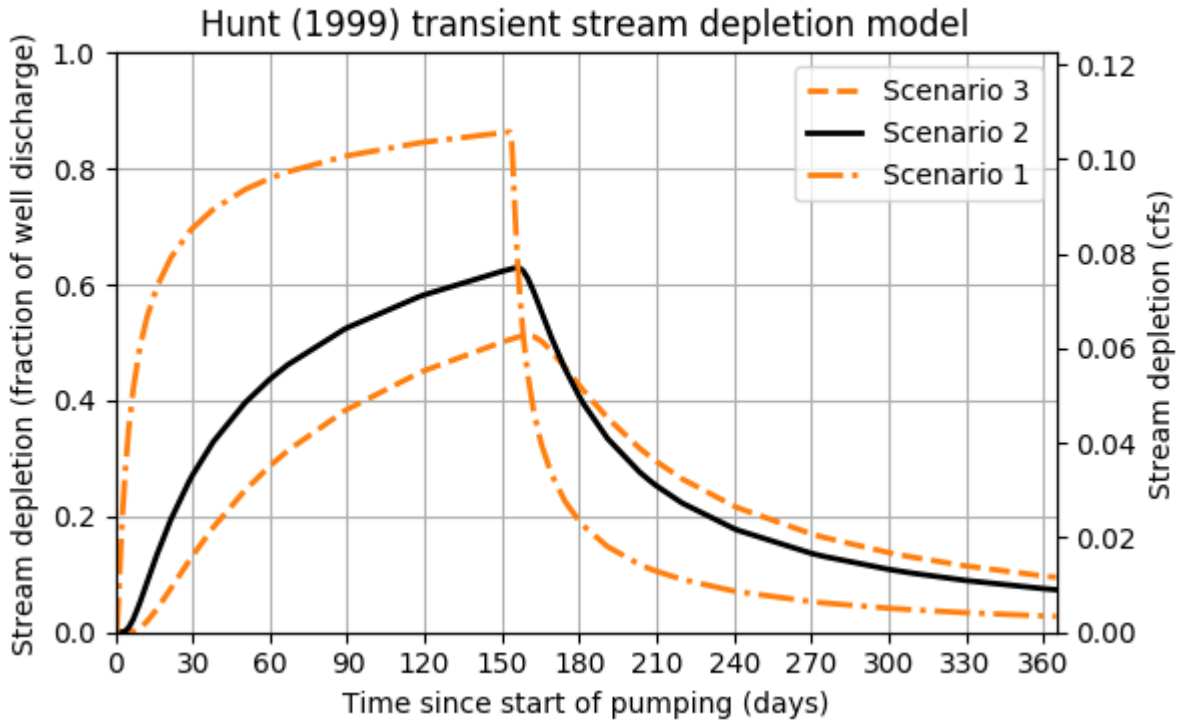
Hunt (1999) Model – Stream Depletion

Application type:	G
Application number:	19311
Well number:	1
Stream Number:	1
Pumping rate (cfs):	0.1225
Pumping duration (days):	153
Pumping start month number (3=March)	6
Plotting duration (days)	365

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	3009	3009	3009	ft
Aquifer transmissivity	T	200	200	200	ft2/day
Aquifer storativity	S	0.0002	0.0016	0.003	-
Aquitard vertical hydraulic conductivity	Kva	2.09	2.09	2.09	ft/day
Not used		0	0	0	
Aquitard thickness below stream	babs	3.0	3.0	3.0	ft
Not used		0	0	0	
Stream width	ws	500	500	500	ft

Stream depletion for Scenario 2:

Days	10	240	270	300	330	360	30	60	90	120	150	180	210
Depletion (%)	6	18	14	11	9	8	27	44	53	58	62	41	25
Depletion (cfs)	0.01	0.02	0.02	0.01	0.01	0.01	0.03	0.05	0.06	0.07	0.08	0.05	0.03



Well Log

RECEIVED AUG - 4 1986 KLAM 13269 KLAM 13269 39s/10E-27ab

STATE OF OREGON
WATER WELL REPORT
(as required by ORS 537.765)

(1) OWNER: Owner's Well Number:
Name William Turnock
Address 4735 S.W. Oak Ridge
City Lake Oswego. State OR. Zip 97034

(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 test

(5) BORE HOLE CONSTRUCTION:
Depth of Completed Well 654 ft.
Special Standards date of approval none

HOLE Diameter	From	To	SEAL Material	From	To	Amount sacks or pounds
12"	0	46	cement	0	46	15 sacks
8"	46	654				

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:	8"	+1	47'	.250	☒	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
Liner:	none				☐	☐	☐	☐
					☐	☐	☐	☐

Final location of shoe(s) no shoe used

(7) PERFORATIONS/SCREENS:
none
☐ Perforations Method
☐ Screens Type Material

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
						☐	☐
						☐	☐
						☐	☐
						☐	☐
						☐	☐
						☐	☐

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

Yield gal/min	Pumping level	Drill stem at	Time
			½ hr
185	600	600	1 hr
55	55	55	1 hr

Temperature of water 57 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: 547

(9) LOCATION OF WELL by legal description:
County Klamath Latitude ' " Longitude ' "
Township 39 south N or S, Range 10 east E or W, WM.
Section 27 NW ¼ NE ¼
Tax Lot Lot Block Subdivision
Street Address of Well (or nearest address) Crystal Springs RD.

(10) STATIC WATER LEVEL:
45 ft. below land surface. Date 7,1,86
Artesian pressure lb. per square inch. Date

(11) WELL LOG: Ground elevation 4000

Material	From	To	WB?	SWL
Top soil & boulders	0	3		
Brown clay & gravel	3	5		
Yellow clay	5	45		
Blue clay	45	203		
Blue clay with streaks of	203			
black sand		207		
Blue clay	207	280		
Blue clay with streaks of	280			
black sandstone		356		45'
Blue claystone	356	408		
Blue claystone with streaks	408			
of black sand		415		45'
Blue claystone	415	421		
Coarse sand & gravel	421	425		
Blue claystone	425	543		
White pumice	543	547		45'
Blue clay	547	649		
Black rock (hard)	649	654		

Date started 6, 18, 86 Completed 7,1,86

(unbonded) Water Well Constructor Certification:
I constructed this well in compliance with Oregon well construction standards. Materials used and information reported above are true to my best knowledge and belief.

Signed Date

(bonded) Water Well Constructor Certification:
I accept responsibility for construction of this well and its compliance with all Oregon water well standards. This report is true to the best of my knowledge and belief.

Signed Norm Sevey Date 7,31,86

Company Norm Sevey Well Drilling Inc. Job No.

9809C 10/85

Attachment 1: Analysis of Groundwater Pumping Impacts on Klamath Scenic Waterway Flows

State of Oregon
Water Resources Department

Memorandum

To: Barry Norris – Administrator, Technical Services Division
Dwight French – Administrator, Waterights Division
Tom Paul – Deputy Director
Doug Woodcock – Administrator, Field Services Division

From: Ivan Gall – Manager, Groundwater Section

Date: February 19, 2013

Subject: Analysis of Groundwater Pumping Impacts on Klamath Scenic Waterway Flows

In 1971 the Oregon Legislature created the Scenic Waterway Act, codified by Oregon Revised Statutes 390.805 to 390.925, to preserve for the benefit of the public Waldo Lake and selected parts of the state's free-flowing rivers. The Klamath Scenic Waterway was part of the Act and includes the Klamath River from the John Boyle Dam powerhouse downstream to the Oregon-California border. Under the Act, the Water Resources Commission is allowed to allocate small amounts of surface water for human consumption and livestock watering, as long as issuing the water right does not significantly impair the free-flowing character of these waters in quantities necessary for recreation, fish and wildlife, and the amount allocated may not exceed a cumulative total of one percent of the average daily flow or one cubic foot per second (cfs), whichever is less.

In 1995 the Scenic Waterway Act was modified to address the impact of groundwater uses that, based upon a preponderance of evidence, would measurably reduce the surface water flows within a scenic waterway. "Measurably reduce" means that the use authorized will individually or cumulatively reduce surface water flows within the scenic waterway in excess of a combined cumulative total of one percent of the average daily flow or one cfs, whichever is less.

In 2012 the United States Geological Survey (USGS), in cooperation with OWRD and the US Bureau of Reclamation, completed groundwater flow and management models for the Upper Klamath Basin. The 2012 groundwater flow model uses generally accepted hydrogeologic methods and the relevant field data to model the cumulative effects of groundwater pumping within the Klamath Scenic Waterway, and provides a comprehensive methodology for analyzing the relevant field data necessary to determine whether the cumulative use of groundwater in the Klamath Basin will measurably reduce the surface water flow necessary to maintain the free-flowing character of the Klamath Scenic Waterway.

In September 2012 the OWRD Groundwater Section conducted two model simulations. The two simulations used the 2012 USGS flow model, incorporating groundwater permits issued (61.96 cfs) since adoption of the 1995 Scenic Waterway Act amendment up through 2004. Each simulation was run to steady-state, where inflows and outflows for that model run balanced. An evaluation of the water budgets showed that groundwater discharge to the Klamath Scenic Waterway decreased by 5.88 cfs as a result of the 61.96 cfs of groundwater uses issued between 1995 and 2004. These results indicate to the OWRD that a preponderance of evidence exists to establish that groundwater development occurring in the Upper Klamath Basin in Oregon since 1995 has "measurably reduced" surface water flows within the Klamath Scenic Waterway.

In January 2013 the OWRD Groundwater Section conducted flow model simulations to evaluate impacts to streams from pumping groundwater within the Lost River subbasin. Groundwater pumping was simulated by placing wells in the model that correspond to the center of 39 townships in the southeast part of the Klamath Basin in Oregon. Each of the simulations was run to steady-state, where inflows and outflows for that model run balanced. These results indicate that the scenic waterway is impacted by pumping groundwater in all of the townships evaluated in Oregon in the Lost River subbasin. In summary, a preponderance of evidence exists to establish that groundwater development occurring in Oregon since 1995 in the Upper Klamath Basin and Lost River subbasin has "measurably reduced" surface water flows within the Klamath Scenic Waterway.

References:

Gannett, M.W., Lite, K.E., Jr., La Marche, J.L., Fisher, B.J., and Polette, D.J., 2007. Ground-water hydrology of the upper Klamath Basin, Oregon and California: U.S. Geological Survey Scientific Investigations Report 2007-5050, 84p.

Gannett, M.W., Wagner, B.J., and Lite, K.E., Jr., 2012. Groundwater simulation and management models for the upper Klamath Basin, Oregon and California: U.S. Geological Survey Scientific Investigations Report 2012-5062, 92p.