Groundwater Application Review Summary Form

Application # G- 19354

GW Reviewer Gabriela Ferreira / Dennis Orlowski Date Review Completed: August 4, 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 **_August 4, 2023_**

TO: **Application** G-**_19354_**

FROM: **GW:** **_Gabriela Ferreira / 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 August 4, 2023
FROM: Groundwater Section Gabriela Ferreira / Dennis Orlowski
Reviewer's Name
SUBJECT: Application G- **19354** 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: **Hope Village, c/o Craig Gingerich** County: **Clackamas**

A1. Applicant(s) seek(s) 0.089 cfs from 2 well(s) in the Willamette Basin, subbasin

A2. Proposed use Irrigation (7.1 acres) Seasonality: March 1 to 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	CLAC 52004	Well 1	Alluvial	0.089	4S/1E – 4 NW-SE	600' S, 1900' W fr E cor S 4
2	PROPOSED	Well 2	Alluvial	0.089	4S/1E – 4 NW-SE	1210' S, 100' E fr Cntr cor S 4

* 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	175[a]	48	63	6/18/1997	340	0-30	+1-285	280-320	--[b]	300	147	NR
2	175[a]	TBD	TBD	TBD	350	0-30	0-350	TBD	TBD	TBD	TBD	TBD

Use data from application for proposed wells.

A4. **Comments:** The proposed POA/POU is located in south Canby, Oregon. Applicant proposes irrigation use on 7.1 acres by two wells, CLAC 52004 and one to be constructed. CLAC 52004 is an authorized POA for Certificate 91118 with a priority date of October 28, 1994, for irrigation of 25 acres and maximum rate of 0.31 cfs.
[a] Land surface elevation from LIDAR at the proposed well location (OLC, 2016)
[b] The well as constructed is sealed from 0 to 30 feet bls, and is therefore effectively open to the aquifer from 30 to 340 feet bls.

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: The proposed POAs are greater than ¼-mile from the nearest perennial surface water source and will produce from a confined aquifer; therefore, per OAR 690-502-0160 the relevant Willamette Basin rules (OAR 690-502-0050) do not apply.

A6. ☐ **Well(s) #** , , , , , tap(s) an aquifer limited by an administrative restriction.
Name of administrative area: **N/A**
Comments: **N/A**

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, Static Water Level Condition**;

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:** The proposed POAs are located in the central Willamette Valley within the Canby alluvial fan, approximately 60 to 80 ft thick and comprising the Willamette Aquifer, which is overlain by ~0-20 ft of silt (the Willamette Silt). The POAs will produce from water-bearing sand and gravel layers within the underlying Willamette Confining Unit, estimated to be approximately 600 feet thick (Gannett and Caldwell, 1998). The majority of wells in the immediate vicinity draw water from the Willamette Aquifer or upper Willamette Confining unit (see attached well statistics).

Within approximately one mile of the proposed POA locations, there are about 30 groundwater PODs, mostly for irrigation use, completed in the alluvial aquifer system, with several more exempt (domestic) wells also likely in the area. Groundwater PODs associated with municipal water rights for the City of Canby are located within approximately one mile, totalling nearly 5 cfs. Reported maximum yields in the nearby alluvial wells typically range up to 100 gpm, with a few wells reporting 200 – 600 gpm. Well deepenings are not prevalent. The requested rate (0.089 cfs) is within the range of reported yields for water wells in this area.

Six wells with sufficient water level data for evaluation and similar in construction to the proposed POAs were identified within approximately 2 miles of the proposed POAs, ranging in total depth from 163 to 346 feet bls. Reported water level elevations for these wells range from about 80 feet above mean sea level (amsl) to 160 feet amsl. Water level data shows some variability between 10 to 20 feet over the past 30 years, which appear somewhat correspondent to precipitation (e.g. CLAC 18078). CLAC 12211 is constructed at a shallower interval than the proposed POAs but has a data record beginning in

1960 and shows overall stable water levels with approximately 20 feet of variability over the years. Overall, representative water level data appears generally stable with no apparent or significant declines.

No nearby wells fully penetrate the 600-800 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**	☒	☐
2	**Alluvial**	☒	☐

Basis for aquifer confinement evaluation: Nearby wells completed in the Willamette Aquifer or Willamette Confining Unit report SWLs above the water-bearing zone(s), indicating a confined aquifer or series of aquifers. The Willamette Aquifer in this area is overlain by up to 20 feet of silt (Willamette Silt). The well report for CLAC 52004 reports a static water level of 63 feet bls from a water bearing zone of 285 to 340 feet bls.

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[1]	SW Elev ft msl[2]	Distance (ft)	Hydraulically Connected? YES	NO	ASSUMED	Potential for Subst. Interfer. Assumed? YES	NO
1	**1**	**Molalla River**	**110**	**120-100**	**2,150**	☒	☐	☐	☐	☒
2	**1**	**Molalla River**	**100 - 120**	**130 - 95**	**1,500**	☒	☐	☐	☐	☒

Basis for aquifer hydraulic connection evaluation: [1] Estimated groundwater elevation is based on groundwater maps provided in Gannett and Caldwell (1998) and the well report for CLAC 52004.

[2] Estimated surface water elevation and distance is provided for the nearest perennial reach for each surface water body (OLC, 2016; USGS 2014).

Because the estimated groundwater elevations for the POAs are coincident with or slightly above the estimated elevation ranges for the Molalla River, the aquifer system proposed to be accessed by the POA is efficiently hydraulically connected to those stream reaches. Additionally, groundwater elevation contour lines near the proposed wells converge towards streams, indicating groundwater discharge to streams incised into the Willamette Silt and Willamette aquifer (Gannet and Caldwell, 1998).

Water Availability Basin the well(s) are located within:
SW 1: Molalla River > Willamette River – above Gribble Creek (WID # 135); Molalla River > Willamette River – at mouth (WID # 69796)

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**	☐	☐	**IS69796A**	**100**	☐	**134**	☐	**< 25%**	☐
1	**1**	☐	☐	**MF135A**	**60.00**	☐	**65.10**	☐	**< 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: The Hunt 2003 analytical stream depletion model was used to estimate 30-day interference at SW 1 (Molalla River) caused by pumping Well 2, the nearest of the two proposed POAs, to estimate the maximum anticipated interference, based on proximity and similar hydrologic conditions. Model parameters are derived from nearby pumping tests and published values (Freeze and Cherry, 1979). Model results indicate that interference is expected to be much less than 25% of the maximum allocated pumping rate at 30 days. The model was not applied to the other scenarios because they are farther from respective streams, and thus, given a similar hydrogeologic setting, the estimated 30-day stream depletion percentages would be even less than that estimated for the Well 2/SW 1 scenario.

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:

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:**

References Used:

Application File G-19354

Water well reports: CLAC 12211, CLAC 13140, CLAC 18078, CLAC 52004, CLAC 55890, CLAC 56080, CLAC 66833

Pumping well reports CLAC 52004, CLAC 12075, CLAC 56080, CLAC 59186

Conlon, T.D., Wozniak, K.C., Woodcock, D., Herrera, N.B., Fisher, B.J., Morgan, D.S., Lee, K.K., and Hinkle, S.R., 2005, Ground-water hydrology of the Willamette Basin, Oregon, Scientific Investigations Report 2005-5168: U. S. Geological Survey, Reston, VA.

Freeze, R.A. and Cherry, J.A., 1979, Groundwater, Prentice Hall, Englewood Cliffs, New Jersey, 604 p.

Hunt, B., 2003, Unsteady stream depletion when pumping from semiconfined aquifer: Journal of Hydrologic Engineering, January/February, Vol 8, p. 12-19.

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

Oregon Lidar Consortium (OLC), 2016, OLC metro 2014 lidar project, Oregon Department of Geology & Mineral Industries, Portland, OR, November 30.

United States Geological Survey, 2014, National Hydrography Dataset (NHD), 1:24,000, U. S. Department of the Interior, Reston, VA.

D. WELL CONSTRUCTION, OAR 690-200

D1. **Well #:** 1 **Logid:** CLAC 52004

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:** As indicated on its well log, CLAC 52004 is sealed to 30 ft bls at the contact between "boulders" and "cemented gravel.". To comply with current well construction standards (OAR 690-210-0140) the well should instead be sealed into the first significant clay bed recorded between 76 and 88 feet bls; a recommended minimum seal depth would be to approximately 85 ft bls.

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

Water Availability Tables

Water Availability Analysis
Detailed Reports

MOLALLA R > WILLAMETTE R - AB GRIBBLE CR
WILLAMETTE BASIN
Water Availability as of 7/27/2023

Watershed ID #: 135 (Map)
Date: 7/27/2023

Exceedance Level: 80%
Time: 11:32 AM

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	694.00	4.09	690.00	0.00	60.00	630.00
FEB	701.00	3.97	697.00	0.00	60.00	637.00
MAR	714.00	3.68	710.00	0.00	60.00	650.00
APR	685.00	4.21	681.00	0.00	60.00	621.00
MAY	495.00	10.40	485.00	0.00	60.00	425.00
JUN	221.00	14.90	206.00	0.00	60.00	146.00
JUL	97.60	25.50	72.10	0.00	60.00	12.10
AUG	67.00	20.90	46.10	0.00	60.00	-13.90
SEP	65.10	9.14	56.00	0.00	60.00	-4.04
OCT	103.00	3.48	99.50	0.00	60.00	39.50
NOV	306.00	3.26	303.00	0.00	60.00	243.00
DEC	669.00	4.20	665.00	0.00	60.00	605.00
ANN	560,000.00	6,550.00	554,000.00	0.00	43,500.00	510,000.00

Water Availability Analysis
Detailed Reports

MOLALLA R > WILLAMETTE R - AT MOUTH
WILLAMETTE BASIN
Water Availability as of 7/27/2023

Watershed ID #: 69796 (Map)
Date: 7/27/2023

Exceedance Level: 80%
Time: 11:19 AM

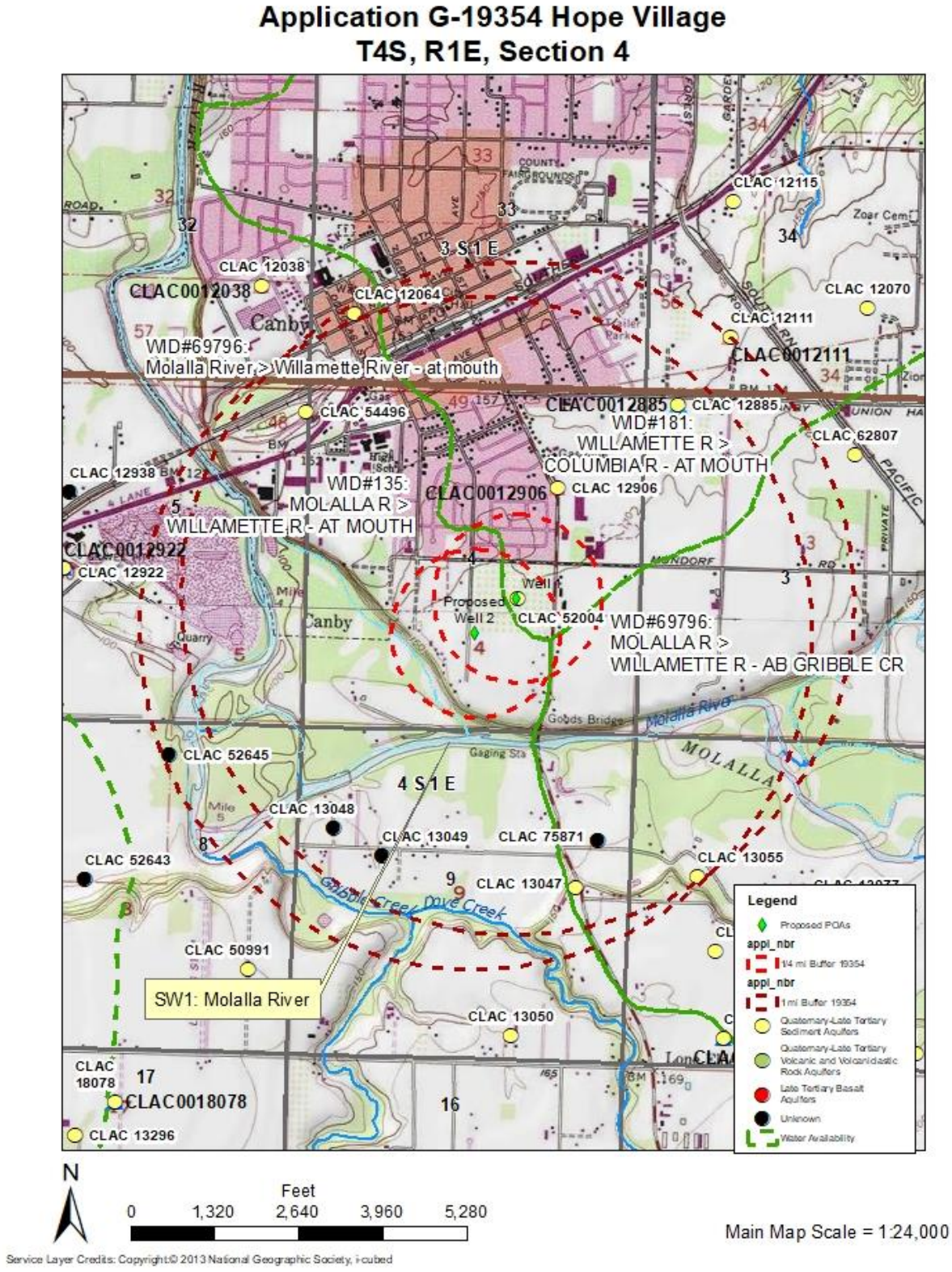
Water Availability Calculation | Consumptive Uses and Storages | Instream Flow Requirements | Reservations
Water Rights | Watershed Characteristics

Water Availability Calculation

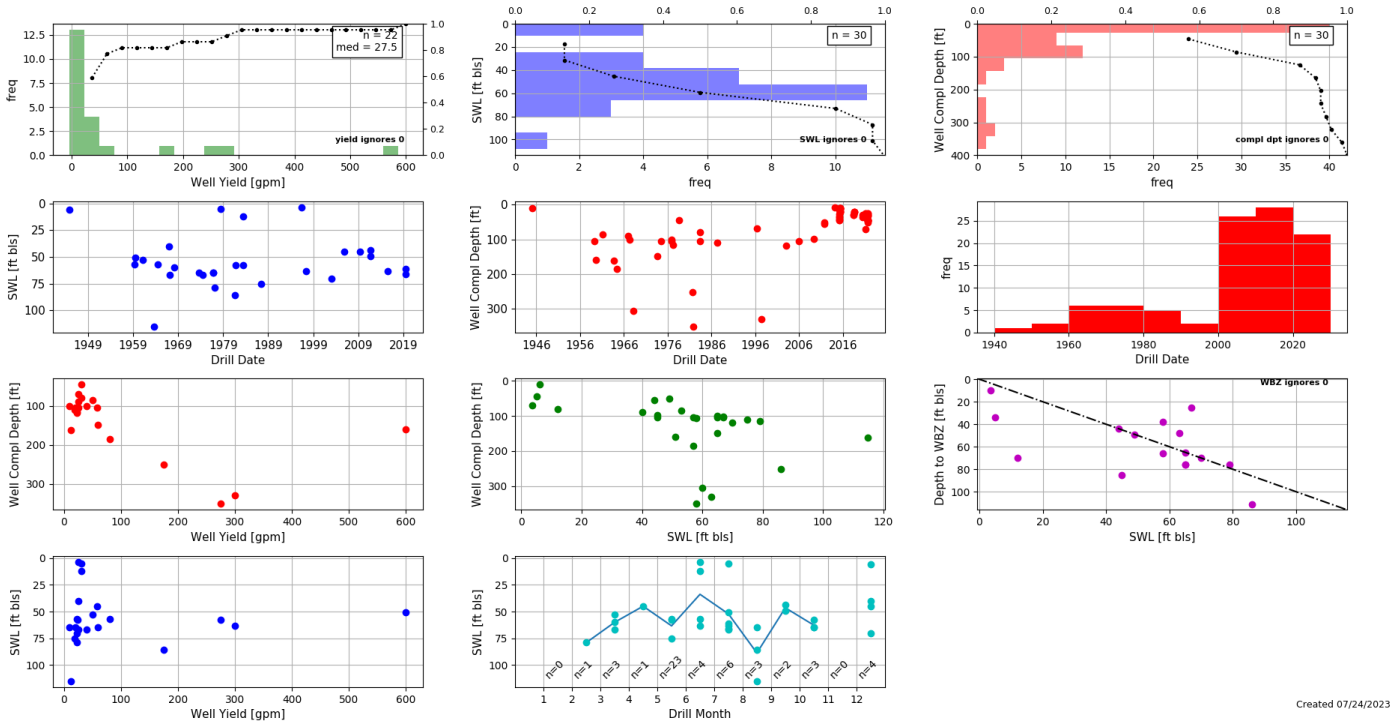
Monthly Streamflow in Cubic Feet per Second
Annual Volume at 50% Exceedance in Acre-Feet

Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	1,870.00	155.00	1,720.00	0.00	500.00	1,220.00
FEB	2,010.00	145.00	1,870.00	0.00	500.00	1,370.00
MAR	1,830.00	113.00	1,720.00	0.00	500.00	1,220.00
APR	1,530.00	86.90	1,440.00	0.00	500.00	943.00
MAY	927.00	98.30	829.00	0.00	500.00	329.00
JUN	431.00	121.00	310.00	0.00	500.00	-190.00
JUL	204.00	186.00	17.60	0.00	200.00	-182.00
AUG	139.00	157.00	-17.60	0.00	100.00	-118.00
SEP	134.00	83.30	50.70	0.00	150.00	-99.30
OCT	188.00	39.90	148.00	0.00	450.00	-302.00
NOV	637.00	80.00	557.00	0.00	500.00	57.00
DEC	1,700.00	150.00	1,550.00	0.00	500.00	1,050.00
ANN	1,320,000.00	85,500.00	1,240,000.00	0.00	295,000.00	966,000.00

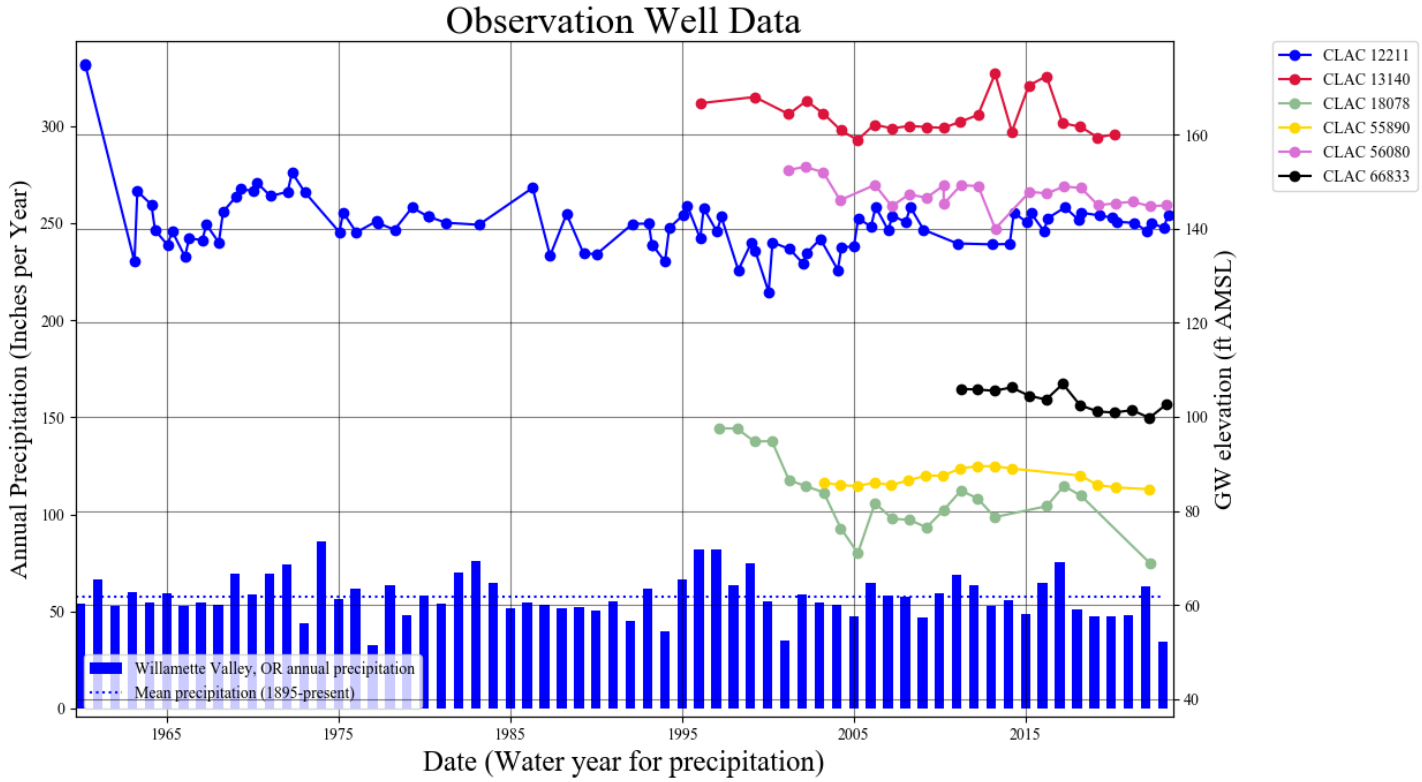
Well Location Map



Well Statistics



Water-Level Measurements in Nearby Wells



Stream Depletion (Hunt) Model Analysis

Application type:	G
Application number:	19354
Well number:	2
Stream Number:	1
Pumping rate (cfs):	0.089
Pumping duration (days):	215.0
Pumping start month number (3=March)	3.0

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	1500.0	1500.0	1500.0	ft
Aquifer transmissivity	T	200	400	600	ft2/day
Aquifer storativity	S	0.001	0.001	0.001	-
Aquitard vertical hydraulic conductivity	Kva	0.01	0.05	0.1	ft/day
Aquitard saturated thickness	ba	5.0	5.0	5.0	ft
Aquitard thickness below stream	babs	3.0	3.0	3.0	ft
Aquitard specific yield	Sya	0.2	0.2	0.2	-
Stream width	ws	80.0	100.0	120.0	ft

Stream depletion for Scenario 2:

Days	10	330	360	30	60	90	120	150	180	210	240	270	300
Depletion (%)	0	9	9	1	1	2	3	4	5	6	7	8	9
Depletion (cfs)	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01