Groundwater Application Review Summary Form

Application # G- 19047

GW Reviewer Halley Schibel/Travis Brown/Stacey Garrison Date Review Completed: 8/25/2023

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 **_8/25/2023_**

TO: **Application** G-**_19047_**

FROM: **GW:** **_Halley Schibel/Travis Brown/Stacey Garrison_**
(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 8/25/2023
FROM: Groundwater Section Halley Schibel/Travis Brown/Stacey Garrison
Reviewer's Name
SUBJECT: Application G- **19047** 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: **Graymont Western US Inc. c/o Rob Freeman**
County: **Marion**

A1. Applicant(s) seek(s) 0.07 cfs from 1 well(s) in the Willamette Basin, Molalla-Pudding subbasin

A2. Proposed use 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	PROP0000106	1	Alluvium	0.07	6S/2W-17-SESW	60'S, 1900'W fr NE cor, S 27

* 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	188	80**	-	-	300	0-150	0-300	-	TBD	-	-	-

Use data from application for proposed wells.

A4. **Comments:** **Based on nearby well MARI 4171. Proposed well is within the city of Brooks, less than a mile from I-5 and directly adjacent to fields being irrigated under certificates 24695, 29154, and 50614. The closest well identified is MARI 4171, approximately 450 feet to the northwest, which is a 105 ft deep well drawing water from alluvium and is being used to irrigate 45.1 acres. The closest observation well is MARI 4160, which is State Observation Well 616 and is 136 ft deep and draws water from alluvium. MARI 4160 is approximately 3,480 feet northeast of the proposed well.

A5. **Provisions of the** Willamette Basin rules relative to the development, classification and/or management of groundwater hydraulically connected to surface water ☐ **are**, *or* ☒ **are not**, activated by this application. (Not all basin rules contain such provisions.)
Comments: The proposed POA are greater than ¼ mile from the nearest surface water source. Per OAR 690-502-0240, the relevant basin rules do not apply.

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

B. GROUNDWATER AVAILABILITY CONSIDERATIONS, OAR 690-310-130, 400-010, 410-0070

B1. **Based upon available data**, I have determined that groundwater* for the proposed use:

a. ☐ **is** over appropriated, ☒ **is not** over appropriated, *or* ☐ **cannot be determined to be** over appropriated during any period of the proposed use. * This finding is limited to the groundwater portion of the over-appropriation determination as prescribed in OAR 690-310-130;

b. ☐ **will not** *or* ☐ **will** likely be available in the amounts requested without injury to prior water rights. * This finding is limited to the groundwater portion of the injury determination as prescribed in OAR 690-310-130;

c. ☐ **will not** *or* ☐ **will** likely to be available within the capacity of the groundwater resource; or

d. ☒ **will, if properly conditioned**, avoid injury to existing groundwater rights or to the groundwater resource:

i. ☒ The permit should contain condition #(s) **7e, 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 **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 POA is located in the Central Willamette Valley and will produce from sand and gravel (the Willamette Aquifer described by Gannett and Caldwell, 1998), which overlies fine-grained distal alluvial fan and low gradient stream deposits locally separated by thin layers of sand and fine gravel (Willamette Confining Unit). The Willamette Aquifer is estimated to be ~100-120 ft thick and is covered by ~60-80 ft of silt (the Willamette Silt Unit). The majority of wells in the immediate vicinity draw water from the Willamette Aquifer between ~80-180 ft depth (see attached well statistics). The requested rate (0.07 cfs) is well within the range of reported yields for water wells in this area and is unlikely to interfere with the closest neighboring well, MARI 4171, which is ~450 ft to the northwest.

Nearby observation wells include state observation wells MARI 4160 and MARI 4217 with static water level measurements on record since the late 1950's/early 1960's, with MARI 5217 being dropped from the network in the late 1980's. Other nearby wells include wells on permits with static water level reporting conditions, which have measurements on record since the late 1990's. Neither the permit condition wells nor the longer-term state observation well data show excessive, area-wide declines. Static water levels appear to be slightly deeper in the deeper wells that go into the Willamette Confining Unit. Within 1 mile of the proposed POA, there are 40 POAs associated with 47 water rights and a majority of these are for irrigation; although this is a high density of groundwater use, the long-term steady trend in the observation wells indicates the groundwater resource is not over-appropriated.

In order to protect the groundwater resource and neighboring users, the conditions specified in B1(d)Ii) and B2(c), above, are recommended for any permit issued pursuant to this application.

C. GROUNDWATER/SURFACE WATER CONSIDERATIONS, OAR 690-09-040

C1. **690-09-040 (1):** Evaluation of aquifer confinement:

Well	Aquifer or Proposed Aquifer	Confined	Unconfined
1	**Alluvium**	☒	☐

Basis for aquifer confinement evaluation: Water levels in area wells are generally above the relevant water-bearing zones, which are overlain by a ~60-80 ft-thick sequence of fine-grained sediments (Willamette Silt as described by Gannett and Caldwell, 1998). Based on the available evidence, the aquifer is confined.

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**	**Patterson Creek**	**~155-165**	**~153-160**	**~10,820**	☒	☐	☐	☐	☒

Basis for aquifer hydraulic connection evaluation: The nearest perennial stream is greater than one mile from the proposed POA. Nearby wells (in particular, MARI 4160) with long records of measurement records indicate that the seasonal high water table is likely approximately 155-165 ft above mean sea level at the location of the applicant's proposed development. The water levels in nearby wells are generally above or coincident with nearby perennial stream reaches indicated groundwater discharges to local streams. Published water table maps in the area corroborate this elevation and indicate that groundwater flows towards, and discharges into local streams (Gannett and Caldwell, 1998 and Conlon et al., 2005).
Water Availability Basin the well(s) are located within: Watershed ID #151 PUDDING R > MOLALLA R - AB MILL CR
Water Availability Basin the stream(s) are located within: Watershed ID #182 WILLAMETTE R > COLUMBIA R - AB MOLALLA R

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?
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐

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:

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
1	**1**	**<1 %**	**<1 %**	**<1 %**	**<1 %**	**<1 %**	**<1 %**	**<1 %**	**<1 %**	**<1 %**	**<1 %**	**<1 %**	**<1 %**
Well Q as CFS		**0.07**	**0.07**	**0.07**	**0.07**	**0.07**	**0.07**	**0.07**	**0.07**	**0.07**	**0.07**	**0.07**	**0.07**
Interference CFS		**<0.01**	**<0.01**	**<0.01**	**<0.01**	**<0.01**	**<0.01**	**<0.01**	**<0.01**	**<0.01**	**<0.01**	**<0.01**	**<0.01**

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.		**<0.01**	**<0.01**	**<0.01**	**<0.01**	**<0.01**	**<0.01**	**<0.01**	**<0.01**	**<0.01**	**<0.01**	**<0.01**	**<0.01**
(B) = 80 % Nat. Q		**21400**	**23200**	**22400**	**19900**	**16600**	**8740**	**4980**	**3830**	**3890**	**4850**	**10200**	**19300**
(C) = 1 % Nat. Q		**214**	**232**	**224**	**199**	**166**	**87.4**	**49.8**	**38.3**	**38.9**	**48.5**	**102**	**193**
(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: The low pumping rate and great distance between the proposed well and Patterson Creek combined with existing knowledge of the hydrogeologic regime in this area indicate that it is unlikely for the well to cause substantial interference. Potential for substantial interference was checked against the quantitative Hunt (2003) model using hydraulic parameters derived from regional data and studies (Pumping test reports; Conlon et al., 2005; Domenico and Schwartz, 1990; Freeze and Cherry, 1979; Iverson, 2002; Lohman, 1972; Price, 1967; Todd, 1980; and Woodward, 1998). Results indicate that interference with SW 1 is not anticipated to exceed 25 percent of the rate of withdrawal within the first year of continuous pumping.

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 G-19047 and application map received 12/4/2020.

Pumping test reports (MARI 58, 3852, 4067, 4071, 4160, 4218, 4373, 4880, 54503, 57212, and 58798) and water levels (MARI 3878, 4110, 4160, 4217, 18766, 50927, 52494, and 60275) for selected nearby wells.

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.

Domenico, P.A. and F.W. Schwartz, 1990. *Physical and Chemical Hydrogeology*, John Wiley & Sons, New York, 824 p.

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

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.

Hunt, B., 2003, Unsteady stream depletion when pumping from semiconfined aquifer: Journal of Hydrologic Engineering, Janu
Iverson, J., 2002, Investigation of the hydraulic, physical, and chemical buffering capacity of Missoula flood deposits for water quality and supply in the Willamette Valley of Oregon: Unpublished M.S. thesis, Oregon State University, 147 p.

Iverson, J., 2002, Investigation of the hydraulic, physical, and chemical buffering capacity of Missoula flood deposits for water quality and supply in the Willamette Valley of Oregon: Unpublished M.S. thesis, Oregon State University, 147 p.

Lohman, S.W., 1972. Ground-water hydraulics, U.S. Geological Survey Prof. Paper 708, 70p. [pdf]

Price, D., 1967, Geology and water resources in the French Prairie area, northern Willamette Valley, Oregon: U. S. Geological Survey Water Supply Paper 1833, 98 p., accessed June 25, 2019, at https://pubs.er.usgs.gov/publication/wsp1833.

Todd, D.K., 1980. *Groundwater Hydrology*, 2nd ed., John Wiley & Sons, New York, 535p.

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

United States Geological Survey, 2017, Gervais quadrangle, Oregon [map], 1:24,000, 7.5 minute topographic series, U.S. Department of the Interior, Reston, VA.

Watershed Sciences, 2009, LIDAR remote sensing data collection, Department of Geology and Mineral Industries, Willamette Valley Phase I, Oregon: Portland, OR, December 21.

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, 82 p.

D. WELL CONSTRUCTION, OAR 690-200

D1. **Well #**: **1** **Logid: N/A (proposed)**

D2. **THE WELL does not appear to meet current well construction standards based upon:**

a. ☐ review of the well log;

b. ☐ field inspection by _____;

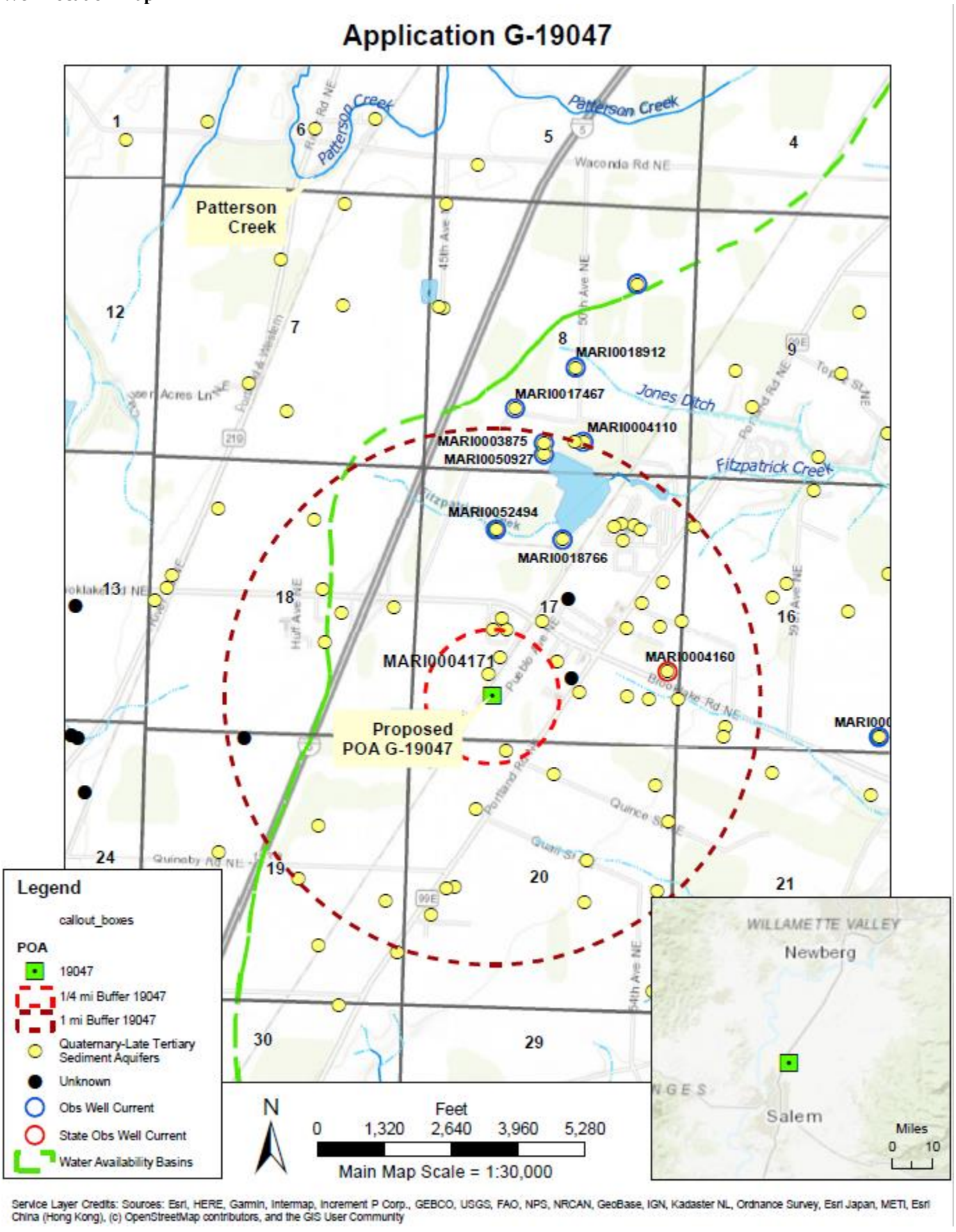
c. ☐ report of CWRE _____;

d. ☐ other: (specify) _____

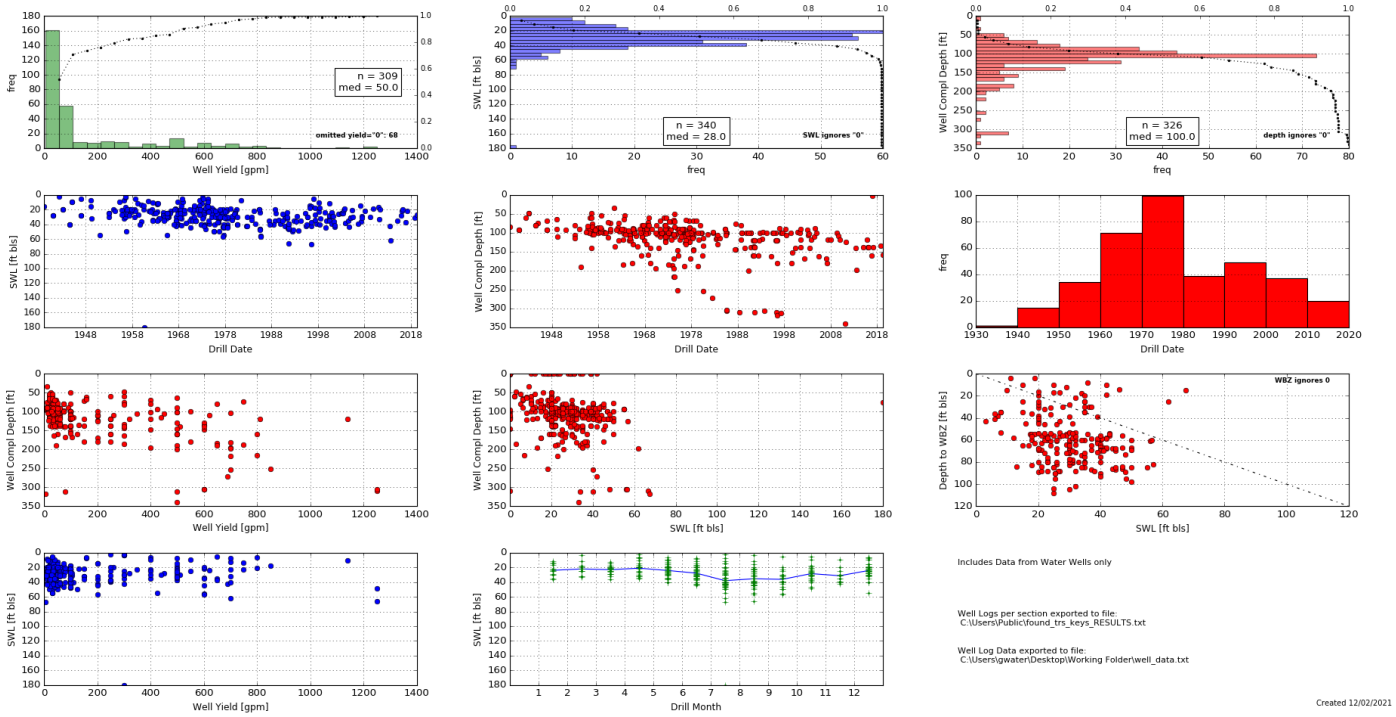
D3. **THE WELL construction deficiency or other comment is described as follows:** _____

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

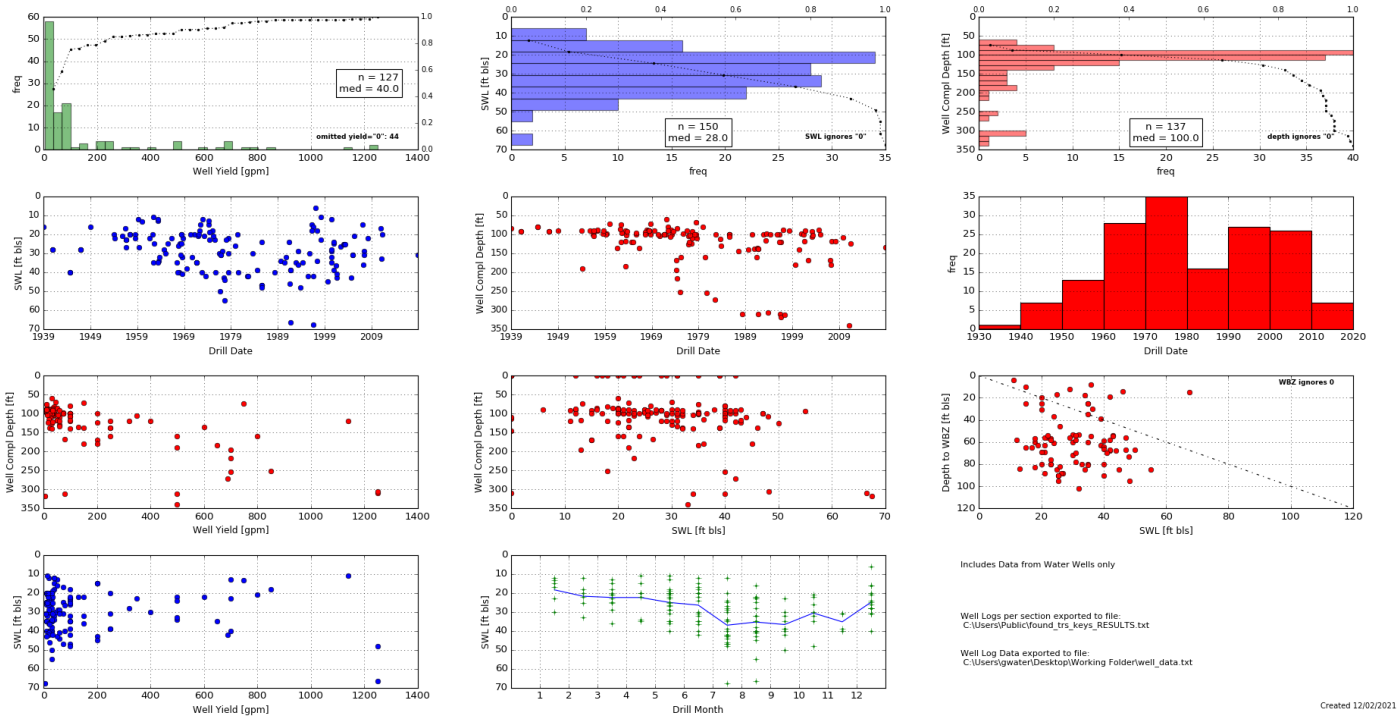
Well Location Map



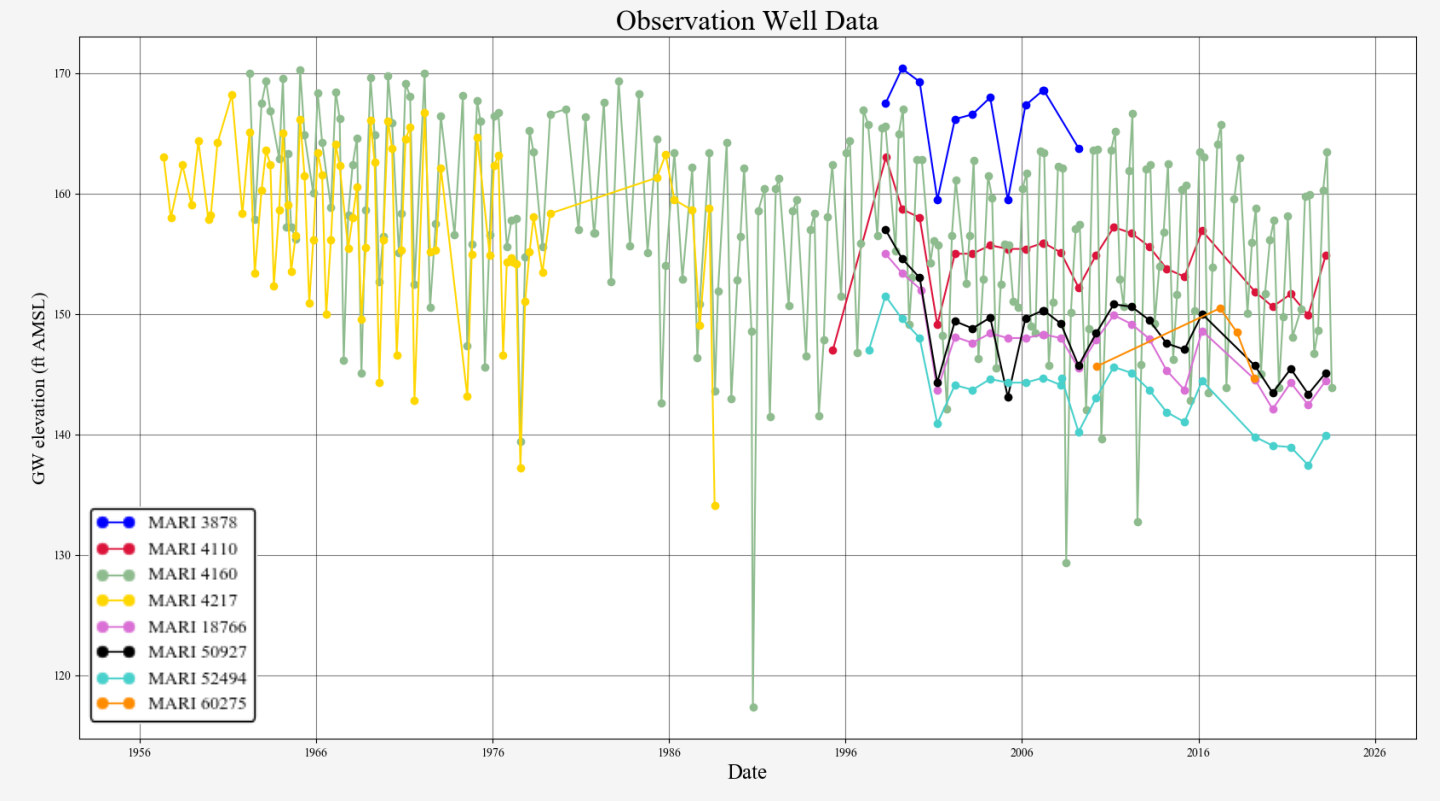
Well Statistics – Township 6 S, Range 2 W, Sections 16, 17, 18, 19, 20, and 21



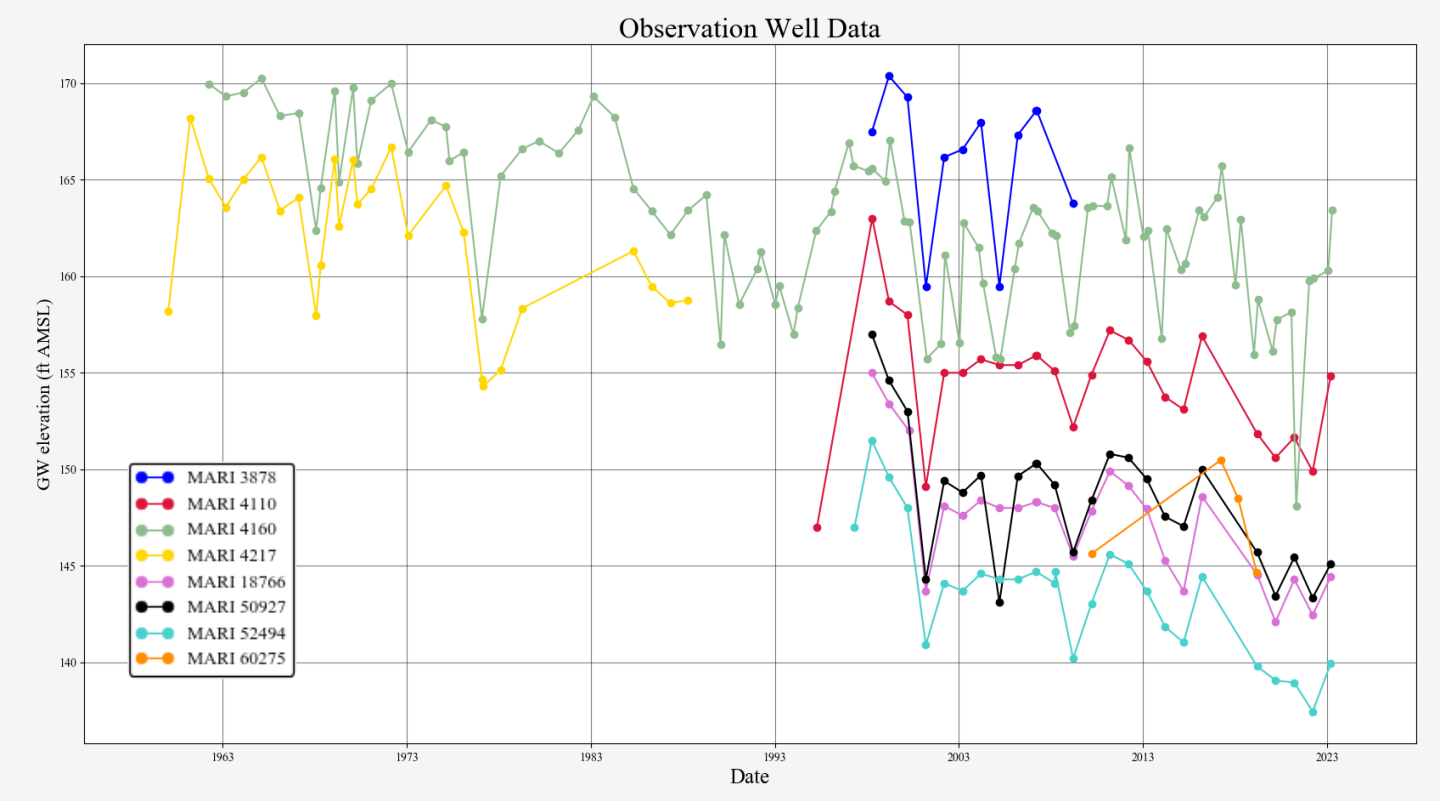
Well Statistics – Township 6 S, Range 2 W, Sections 17 and 20



Hydrographs – All Nearby Observation Wells, All Measurements



Hydrographs – All Nearby Observation Wells, January-April Measurements Only



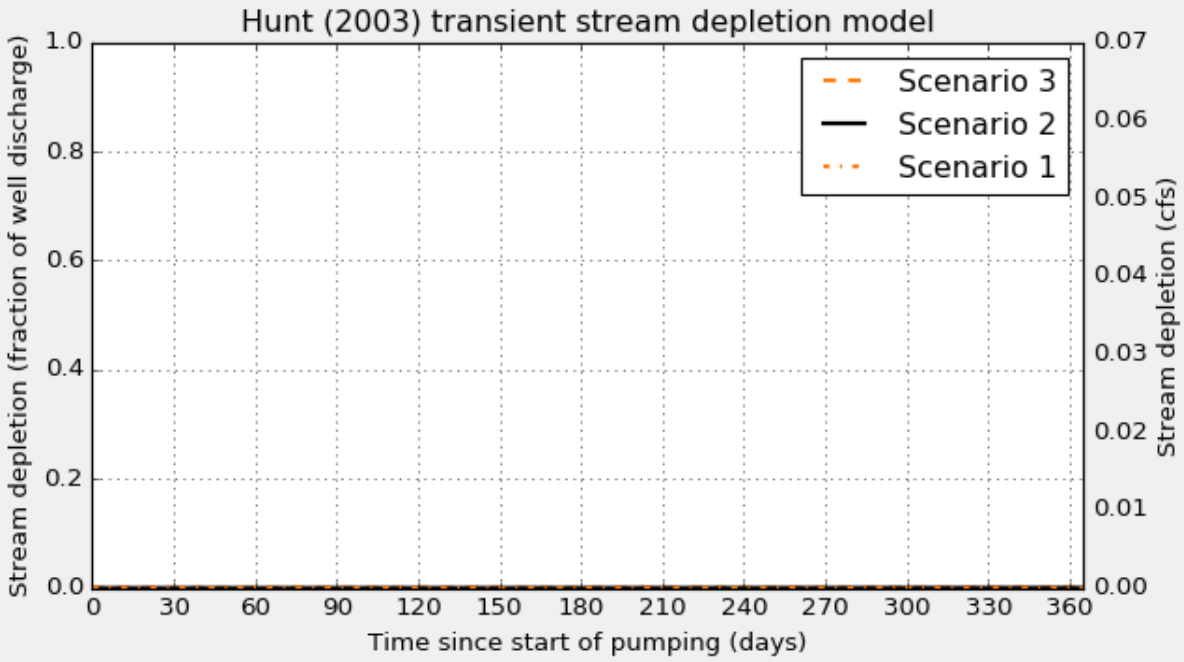
Hunt (2003) Model Parameters and Output

Application type:	G
Application number:	19047
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	10820	10820	10820	ft
Aquifer transmissivity	T	970	3908	6100	ft2/day
Aquifer storativity	S	0.003	0.008	0.002	-
Aquitard vertical hydraulic conductivity	Kva	0.01	0.05	0.0001	ft/day
Aquitard saturated thickness	ba	60	60	60	ft
Aquitard thickness below stream	babs	63	63	63	ft
Aquitard specific yield	Sya	0.2	0.2	0.2	-
Stream width	ws	5	50	100	ft

Stream depletion for Scenario 2:

Days	10	30	60	90	120	150	180	210	240	270	300	330	360
Depletion (%)	0	0	0	0	0	0	0	0	0	0	0	0	0
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



Water Availability Tables

Water Availability Analysis
Detailed Reports

PUDDING R > MOLALLA R - AB MILL CR
WILLAMETTE BASIN

Water Availability as of 12/3/2021

Watershed ID #: 151 (Map)
Date: 12/3/2021

Exceedance Level: 80%
Time: 2:54 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	1,040.00	125.00	915.00	0.00	36.00	879.00
FEB	1,180.00	115.00	1,070.00	0.00	36.00	1,030.00
MAR	1,010.00	76.60	933.00	0.00	36.00	897.00
APR	787.00	52.40	735.00	0.00	36.00	699.00
MAY	425.00	50.60	374.00	0.00	36.00	338.00
JUN	224.00	72.50	152.00	0.00	36.00	116.00
JUL	109.00	114.00	-4.89	0.00	36.00	-40.90
AUG	71.00	93.40	-22.40	0.00	36.00	-58.40
SEP	67.30	53.00	14.30	0.00	36.00	-21.70
OCT	91.60	11.50	80.10	0.00	36.00	44.10
NOV	363.00	48.60	314.00	0.00	36.00	278.00
DEC	957.00	119.00	838.00	0.00	36.00	802.00
ANN	706,000.00	56,100.00	650,000.00	0.00	26,100.00	626,000.00

Water Availability Analysis
Detailed Reports

WILLAMETTE R > COLUMBIA R - AB MOLALLA R
WILLAMETTE BASIN
Water Availability as of 12/14/2021

Watershed ID #: 182 (Map)
Date: 12/14/2021

Exceedance Level: 80%
Time: 10:17 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	21,400.00	2,300.00	19,100.00	0.00	1,500.00	17,600.00
FEB	23,200.00	7,480.00	15,700.00	0.00	1,500.00	14,200.00
MAR	22,400.00	7,250.00	15,100.00	0.00	1,500.00	13,600.00
APR	19,900.00	6,910.00	13,000.00	0.00	1,500.00	11,500.00
MAY	16,600.00	4,250.00	12,400.00	0.00	1,500.00	10,900.00
JUN	8,740.00	1,980.00	6,760.00	0.00	1,500.00	5,260.00
JUL	4,980.00	1,810.00	3,170.00	0.00	1,500.00	1,670.00
AUG	3,830.00	1,650.00	2,180.00	0.00	1,500.00	682.00
SEP	3,890.00	1,390.00	2,500.00	0.00	1,500.00	998.00
OCT	4,850.00	749.00	4,100.00	0.00	1,500.00	2,600.00
NOV	10,200.00	885.00	9,310.00	0.00	1,500.00	7,810.00
DEC	19,300.00	969.00	18,300.00	0.00	1,500.00	16,800.00
ANN	15,200,000.00	2,250,000.00	13,000,000.00	0.00	1,090,000.00	11,900,000.00