

Approved:



MEMO

To: Kristopher Byrd, Well Construction and Compliance Section Manager
From: Travis Kelly, Well Construction Compliance Coordinator
Subject: Review of Water Right Application G-19048
Date: February 10, 2022

The attached application was forwarded to the Well Construction and Compliance Section by the Groundwater Section. Halley Schibel and Travis Brown reviewed the application. Please see Halley and Travis' Groundwater Review and the Well Reports.

Applicant's Well #1 (CLAC 12533): 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 problem is that the Water Supply Well Report indicates that the well head is flush with land surface. In addition, the well report indicates that the well is sealed with "puddled clay." This is not an approved sealing material. In order to meet minimum well construction standards, the well head must be extended so that it is at least one-foot above land surface, and the well must be re-sealed with an approved sealing material.

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

Applicant's Well #2 (Proposed Well): Applicant's Well #2 is a proposed well, therefore it cannot be reviewed for construction. Construction of this proposed well shall be completed in a manner that protects ground water resources as required under Oregon Administrative Rules 690-200 through 690-240. During construction of this well, specific attention should be paid to ensure sealing requirements are met and that the well does not commingle aquifers.

The construction of applicant's proposed Well #2 may not satisfy hydraulic connection issues.

Groundwater Application Review Summary Form

Application # G- 19048

GW Reviewer Halley Schibel/Travis Brown Date Review Completed: 1/31/2022

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

1/31/2022

TO: Application G- 19048

FROM: GW: Halley Schibel/Travis Brown
(Reviewer's Name)

SUBJECT: Scenic Waterway Interference Evaluation

☐ YES The source of appropriation is hydraulically connected to a State Scenic
☒ NO 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 1/31/2022
 FROM: Groundwater Section Halley Schibel/Travis Brown
 Reviewer's Name
 SUBJECT: Application G- 19048 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: Ryan and Ruth Abigail Echols County: Clackamas

A1. Applicant(s) seek(s) 0.075 cfs from 2 well(s) in the Willamette Basin,
Molalla-Pudding subbasin

A2. Proposed use Nursery Use 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	CLAC 12533	Well 1	Alluvium	0.075	4S/1E-26NWSW	650'S, 900'E fr W1/4 cor, S 26
2	PROP	Well 2	Alluvium	0.075	4S/1E-26NWSW	620'S, 1060'E fr W1/4 cor, S 26

* 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	245	20	8	4/2/1971	61	0-25	-1-61	-	?	15	43	B
2	241	-	-	-	60+/-	0-18+	-1-60+/-	-	?	-	-	-

Use data from application for proposed wells.

A4. **Comments:** Existing well CLAC 12533 is perforated but the perforated interval is unknown. No perforated or screened interval was specified for the proposed well. The closest well identified is CLAC 68247, approximately 300 feet to the south, which is a 102-ft deep domestic well drawing water from alluvium. The closest observation well is 270-ft deep CLAC 57287, about 3,000 feet to the northeast, which has permit condition water levels going back to the mid-2000's and draws water from alluvium.

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 POAs 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:** Groundwater for the proposed use cannot be determined to be over-appropriated due to insufficient available data regarding rates of recharge and the current quantity of groundwater withdrawals from the aquifer system.

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 ~120 ft thick and is covered by ~20-30 ft of silt (the Willamette Silt Unit). The majority of wells in the immediate vicinity draw water from the Willamette Aquifer down to ~150 ft depth (see attached well statistics). The requested rate (0.075 cfs) is well within the range of reported yields for water wells in this area and is unlikely to interfere with the closest neighboring exempt use well, CLAC 68247, which is ~300 ft to the south.

Nearby observation wells include wells on permits with static water level reporting conditions, which have measurements on record since the late 1990's and early 2000's. Neither the permit condition wells nor the longer-term state observation well data show excessive, area-wide declines, although there seems to be a slight (+/- 5-ft) gradual decline seen in wells shallower than 300-ft over the last decade.

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	☒	☐
2	Alluvium	☒	☐

Basis for aquifer confinement evaluation: Water levels in area wells are generally above the relevant water-bearing zones, which are overlain by a ~20-30 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?			Potential for Subst. Interfer. Assumed?	
						YES	NO	ASSUMED	YES	NO
1	1	Gribble Creek	237	223	3540	☒	☐	☐	☐	☐
2	1	Gribble Creek	233	223	3390	☒	☐	☐	☐	☐
1	2	Creamery Creek	237	214	1530	☒	☐	☐	☐	☐
2	2	Creamery Creek	233	214	1640	☒	☐	☐	☐	☐
1	3	Wheeler Creek	237	188	3410	☒	☐	☐	☐	☐
2	3	Wheeler Creek	233	188	3560	☒	☐	☐	☐	☐
2	4	Dove Creek	233	213	5250	☒	☐	☐	☐	☐

Basis for aquifer hydraulic connection evaluation: The nearest perennial streams are less than one mile from the proposed POAs. Nearby wells with long records of measurement records and published water table maps in the area show water levels generally above or coincident with nearby perennial stream. These indicate that the seasonal high water table is likely approximately 200-220 ft above mean sea level at the location of the applicant's proposed development and that groundwater flows towards, and discharges into local streams (Woodward et al., 1998 and Conlon et al., 2005). Nearby observation well data (permit condition measurements) from wells show water level elevations ranging from around ~195-205 (CLAC 57287) and ~205—230 (CLAC 12530). The likely water-bearing zone seen in the log for CLAC 12533 is present between 20 and 45 ft below land surface, or 200-225 ft above mean sea level, which is coincident with the elevations of Gribble, Creamery, and Dove Creeks. Wheeler Creek appears to have incised below the bottom of this water-bearing zone at the point closest to the proposed POAs, however water level contours (Woodward et al., 1998) indicate groundwater flow southwestward toward the stream and several gaining reaches (water level contours bending toward the direction of streamflow).

Water Availability Basin the well(s) are located within: Watershed ID #69796 MOLALLA 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 (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	☐	☐			☐	134	☐	<25%	☐
2	1	☐	☐			☐	134	☐	<25%	☐
1	2	☐	☐			☐	134	☐	<25%	☐
2	2	☐	☐			☐	134	☐	<25%	☐
1	3	☐	☐			☐	67.3	☐	<25%	☐
2	3	☐	☐			☐	67.3	☐	<25%	☐

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:
- ☐ The permit should contain condition #(s) _____;
 - ☐ The permit should contain special condition(s) as indicated in "Remarks" below;

C6. **SW / GW Remarks and Conditions:** _____

References Used: Application G-19048 and application map received 12/9/2020.

Pumping test reports (CLAC 12458, 12539, 12545, 12546, 12566, 12567, 18557, and 57287) and water levels (CLAC 12432, 12469, 12524, 12530, 12796, 14260, 57287, 61794, 66672) 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.

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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, 2 Logid: CLAC 12533, N/A (proposed)

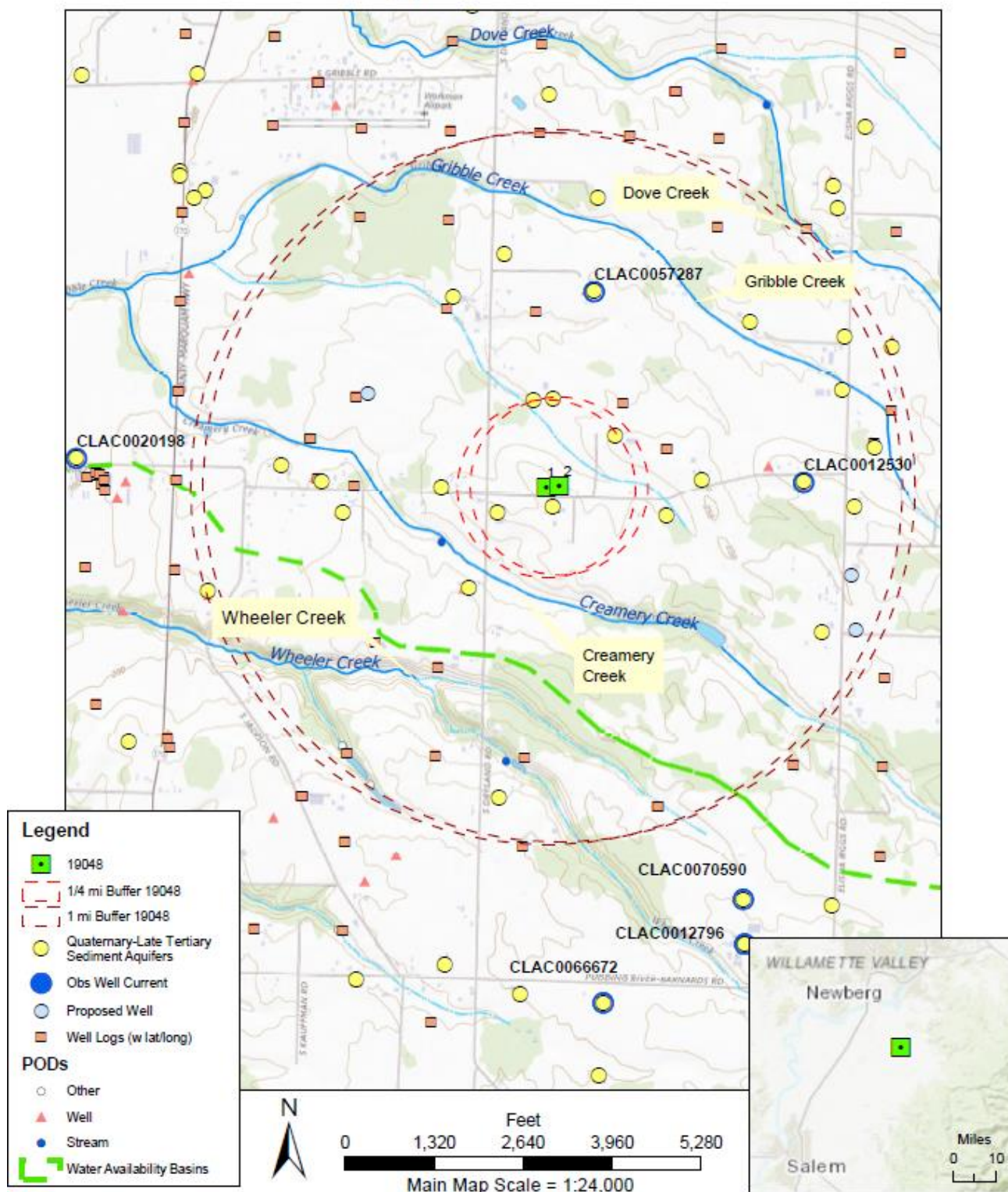
D2. **THE WELL does not appear to meet current well construction standards based upon:**

- a. ☐ review of the well log;
- b. ☐ field inspection by _____;
- c. ☐ report of CWRE _____;
- d. ☐ other: (specify) _____

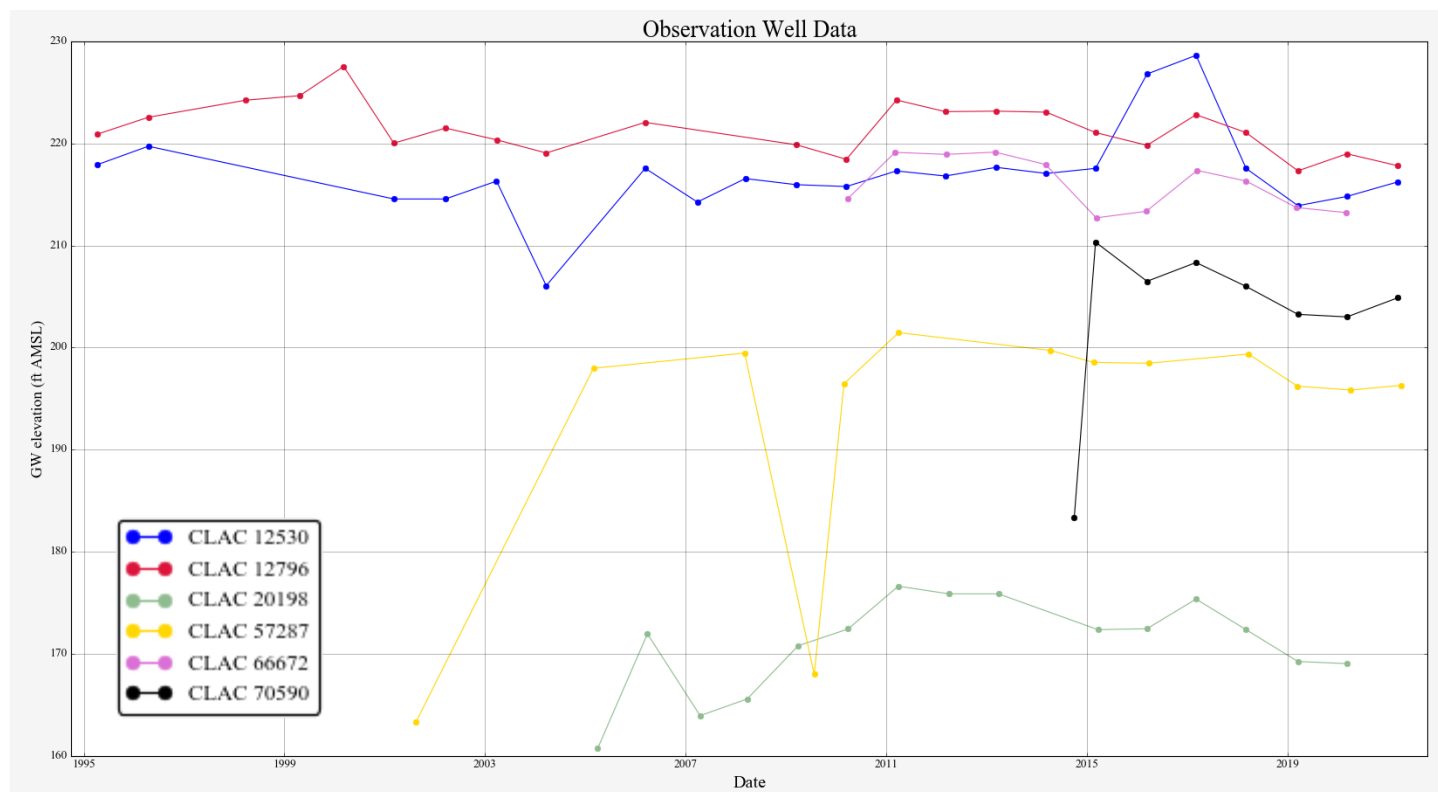
D3. **THE WELL construction deficiency or other comment is described as follows:** _____

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

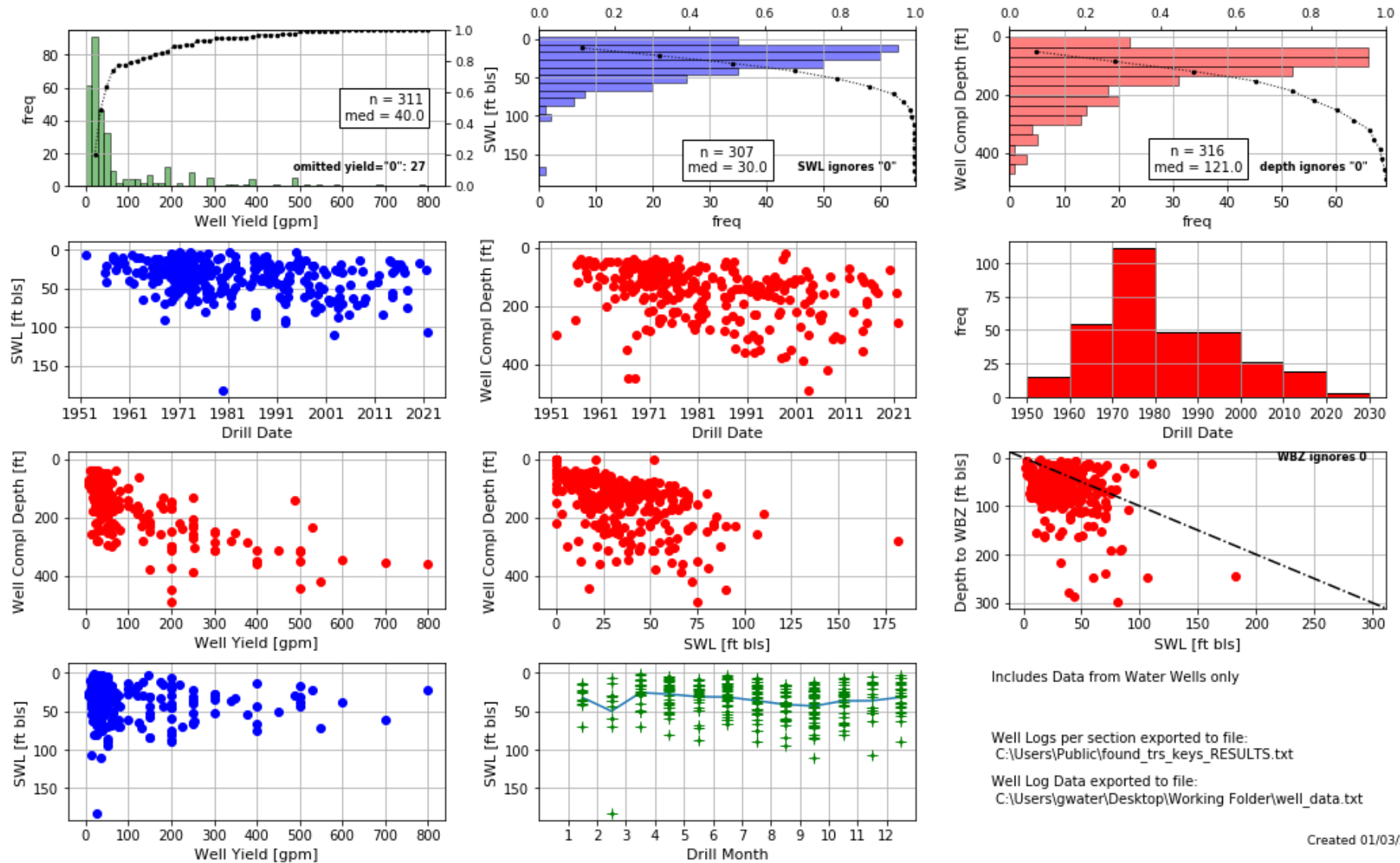
Application G-19048



Service Layer Credits: USGS The National Map; National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed August, 2021.
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c)

Water-Level Measurements in Nearby Wells

Well Statistics – Township 4 S, 1 E, Sections 22 through 36



Water Availability Tables

Water Availability Analysis Detailed Reports

MOLALLA R > WILLAMETTE R - AT MOUTH
WILLAMETTE BASIN

Water Availability as of 1/6/2022

Watershed ID #: 69796 ([Map](#))

Date: 1/6/2022

Exceedance Level:

Time: 1:33 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	1,870.00	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	98.00	829.00	0.00	500.00	329.00
JUN	431.00	120.00	311.00	0.00	500.00	-189.00
JUL	204.00	185.00	18.60	0.00	200.00	-181.00
AUG	139.00	156.00	-16.80	0.00	100.00	-117.00
SEP	134.00	82.90	51.10	0.00	150.00	-98.90
OCT	188.00	39.80	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	85,300.00	1,240,000.00	0.00	295,000.00	966,000.00

Water Availability Analysis

Detailed Reports

PUDDING R > MOLALLA R - AB MILL CR
WILLAMETTE BASIN

Water Availability as of 1/20/2022

Watershed ID #: 151 ([Map](#))

Exceedance Level: 80% ▾

Date: 1/20/2022

Time: 9:18 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	1,040.00	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

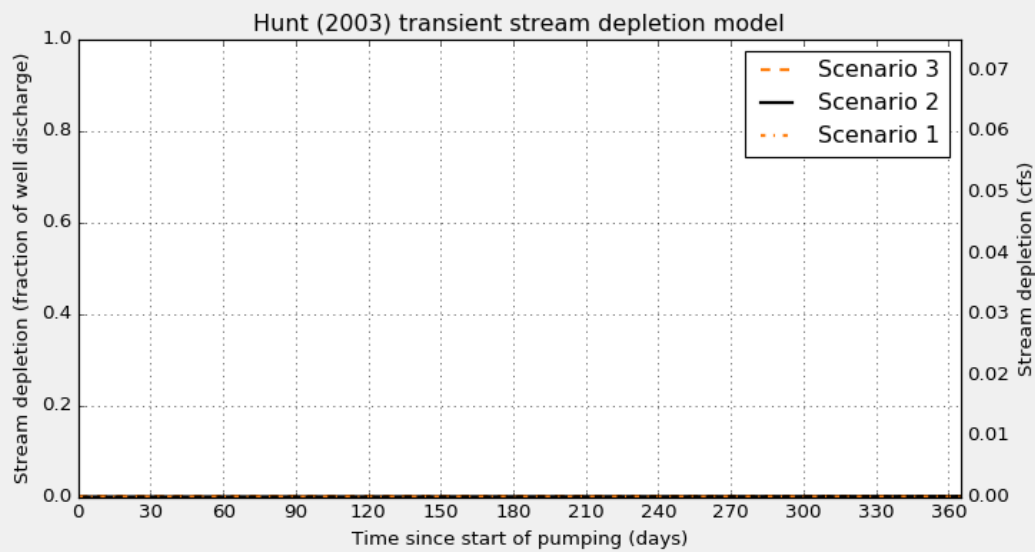
Stream Depletion Model Results

Application type:	G
Application number:	19048
Well number:	1
Stream Number:	1
Pumping rate (cfs):	0.075
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	3540	3540	3540	ft
Aquifer transmissivity	T	200	560	700	ft ² /day
Aquifer storativity	S	0.003	0.0008	0.0002	-
Aquitard vertical hydraulic conductivity	Kva	0.01	0.005	0.001	ft/day
Aquitard saturated thickness	ba	7	7	7	ft
Aquitard thickness below stream	babs	3	3	3	ft
Aquitard specific yield	Sya	0.2	0.2	0.2	-
Stream width	ws	10	10	10	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

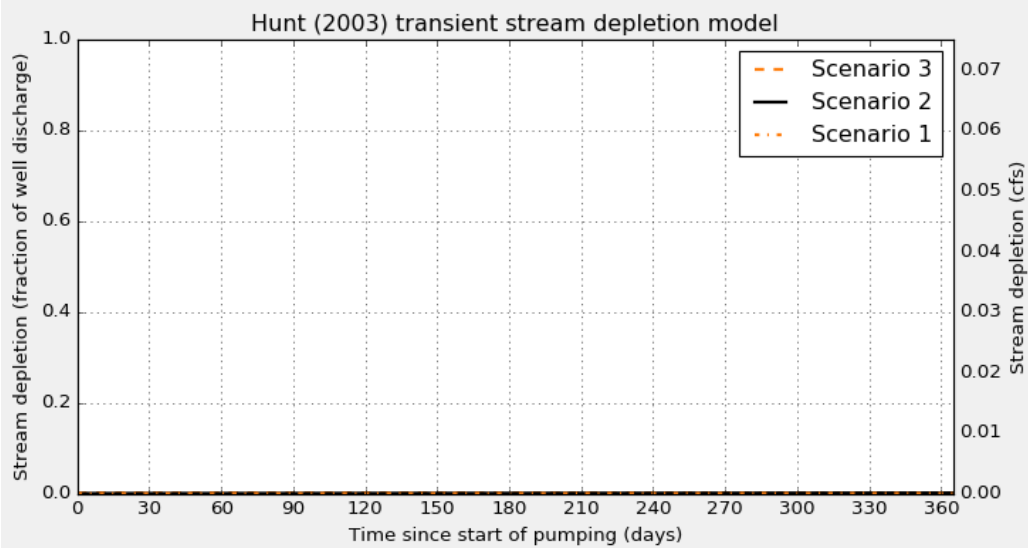


Application type:	G
Application number:	19048
Well number:	2
Stream Number:	1
Pumping rate (cfs):	0.075
Pumping duration (days):	365
Pumping start month number (3=March)	1

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	3390	3390	3390	ft
Aquifer transmissivity	T	200	560	700	ft ² /day
Aquifer storativity	S	0.003	0.0008	0.0002	-
Aquitard vertical hydraulic conductivity	Kva	0.01	0.005	0.001	ft/day
Aquitard saturated thickness	ba	7	7	7	ft
Aquitard thickness below stream	babs	3	3	3	ft
Aquitard specific yield	Sya	0.2	0.2	0.2	-
Stream width	ws	10	10	10	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

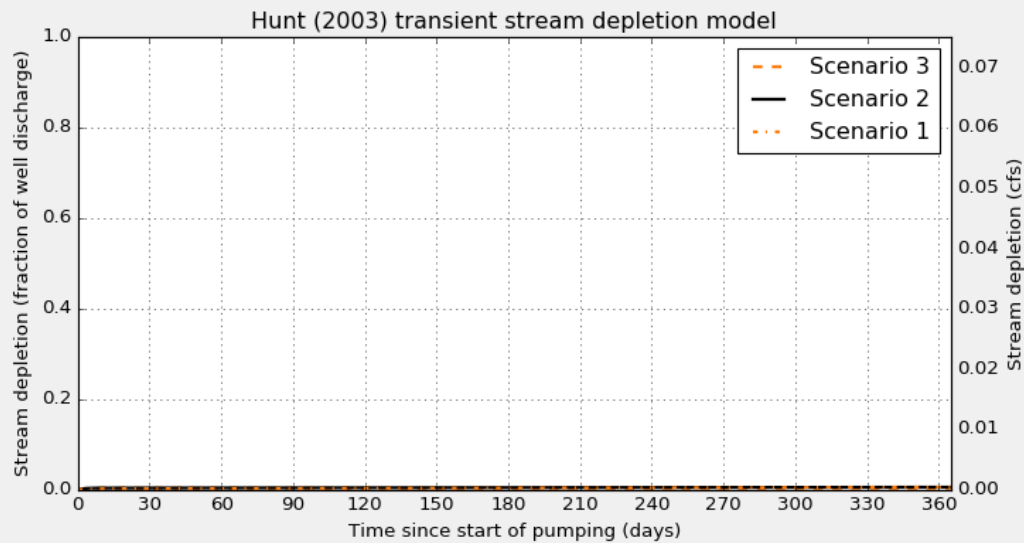


Application type:	G
Application number:	19048
Well number:	1
Stream Number:	2
Pumping rate (cfs):	0.075
Pumping duration (days):	365
Pumping start month number (3=March)	1

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	1530	1530	1530	ft
Aquifer transmissivity	T	200	560	700	ft ² /day
Aquifer storativity	S	0.003	0.0008	0.0002	-
Aquitard vertical hydraulic conductivity	Kva	0.01	0.005	0.001	ft/day
Aquitard saturated thickness	ba	16	16	16	ft
Aquitard thickness below stream	babs	3	3	3	ft
Aquitard specific yield	Sya	0.2	0.2	0.2	-
Stream width	ws	5	5	5	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

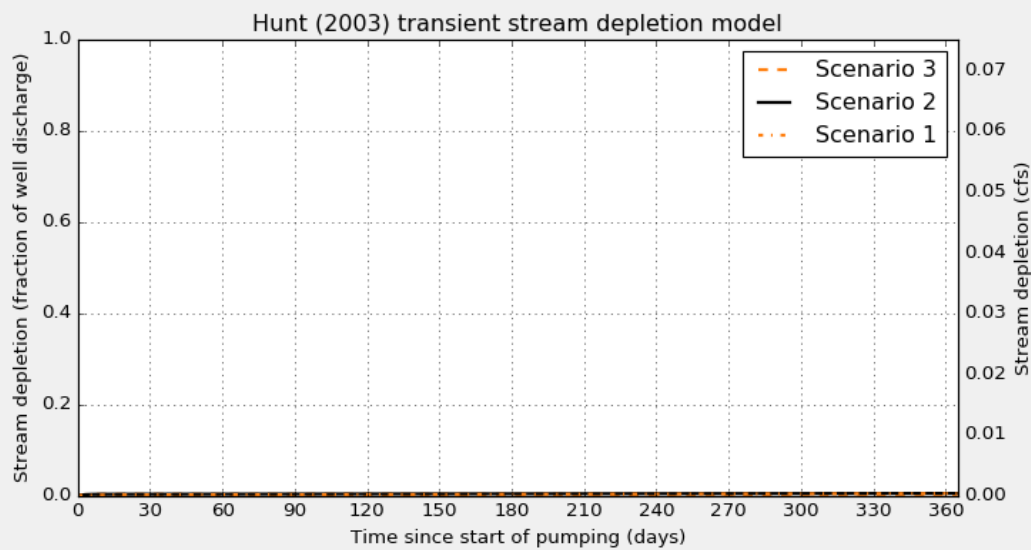


Application type:	G
Application number:	19048
Well number:	2
Stream Number:	2
Pumping rate (cfs):	0.075
Pumping duration (days):	365
Pumping start month number (3=March)	1

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	1640	1640	1640	ft
Aquifer transmissivity	T	200	560	700	ft ² /day
Aquifer storativity	S	0.003	0.0008	0.0002	-
Aquitard vertical hydraulic conductivity	Kva	0.01	0.005	0.001	ft/day
Aquitard saturated thickness	ba	16	16	16	ft
Aquitard thickness below stream	babs	3	3	3	ft
Aquitard specific yield	Sya	0.2	0.2	0.2	-
Stream width	ws	5	5	5	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

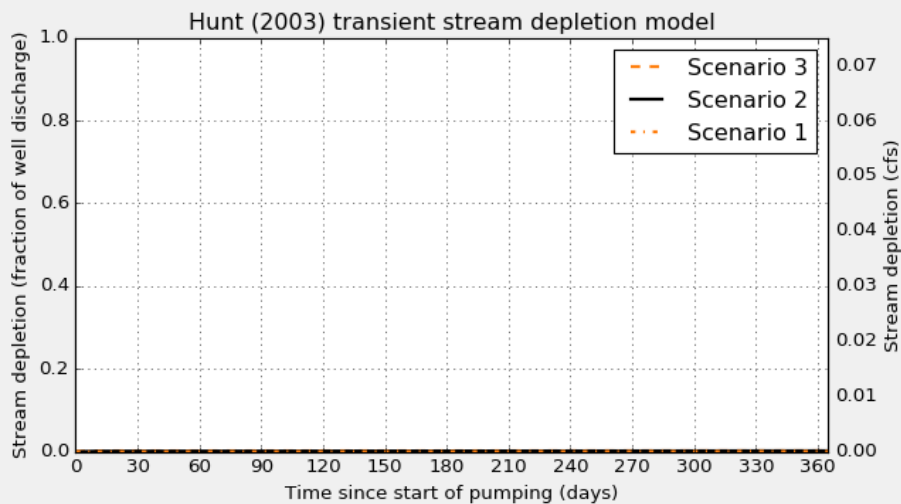


Application type:	G
Application number:	19048
Well number:	1
Stream Number:	3
Pumping rate (cfs):	0.075
Pumping duration (days):	365
Pumping start month number (3=March)	1

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	3410	3410	3410	ft
Aquifer transmissivity	T	200	560	700	ft ² /day
Aquifer storativity	S	0.003	0.0008	0.0002	-
Aquitard vertical hydraulic conductivity	Kva	0.01	0.005	0.001	ft/day
Aquitard saturated thickness	ba	24	24	24	ft
Aquitard thickness below stream	babs	3	3	3	ft
Aquitard specific yield	Sya	0.2	0.2	0.2	-
Stream width	ws	5	5	5	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



Application type:	G
Application number:	19048
Well number:	1
Stream Number:	3
Pumping rate (cfs):	0.075
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	3560	3560	3560	ft
Aquifer transmissivity	T	200	560	700	ft ² /day
Aquifer storativity	S	0.003	0.0008	0.0002	-
Aquitard vertical hydraulic conductivity	Kva	0.01	0.005	0.001	ft/day
Aquitard saturated thickness	ba	24	24	24	ft
Aquitard thickness below stream	babs	3	3	3	ft
Aquitard specific yield	Sya	0.2	0.2	0.2	-
Stream width	ws	5	5	5	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

