

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-19072
Date: February 25, 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.

Applicant's Well #1 (Proposed Well): Applicant's Well #1 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 #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- 19072

GW Reviewer Halley Schibel/Travis Brown Date Review Completed: 2/17/2022

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

2/17/2022

TO: Application G- 19072

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 Waterway or its tributaries



NO



YES

Use the Scenic Waterway Condition (Condition 7J)



NO



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 Clackamas River 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
0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 2/17/2022
 FROM: Groundwater Section Halley Schibel/Travis Brown
 Reviewer's Name
 SUBJECT: Application G- 19072 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: CrossPollio LLC/Matthew Grooms County: Clackamas

A1. Applicant(s) seek(s) 0.056 cfs from 2 well(s) in the Willamette Basin,
Clackamas subbasin

A2. Proposed use Nursery 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	Prop 125	Well 1	Alluvial	0.056	2S/3E-33NENW	1190' S, 2410' E fr NW cor, S 33
2	Prop 126	Well 2	Alluvial	0.056	2S/3E-33SENW ¹	1350' S, 2530' E fr NW cor, S 33

* 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	437	2-20 ²	30-90 ²	-	150	0-40	0-150	-	TBD	-	-	-
2	442	2-20 ²	30-90 ²	-	150	0-40	0-150	-	TBD	-	-	-

Use data from application for proposed wells.

A4. **Comments:** ¹Well 2 is located in the SENW quarter-quarter, but the water rights database lists NENW.
²Based on nearby well logs.
The proposed POAs are above a scenic waterway

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 although both will draw from unconfined alluvium.

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

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

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

- a. ☐ **is** over appropriated, ☐ **is not** over appropriated, or ☒ **cannot be determined to be** over appropriated during any period of the proposed use. * This finding is limited to the groundwater portion of the over-appropriation determination as prescribed in OAR 690-310-130;
- b. ☐ **will not** or ☐ **will** likely be available in the amounts requested without injury to prior water rights. * This finding is limited to the groundwater portion of the injury determination as prescribed in OAR 690-310-130;
- c. ☐ **will not** or ☐ **will** likely to be available within the capacity of the groundwater resource; or
- d. ☒ **will, if properly conditioned**, avoid injury to existing groundwater rights or to the groundwater resource:
 - i. ☒ The permit should contain condition #(s) 7c, 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 POAs are located in the Central Willamette Valley and will produce from strath terrace deposits (Madin, 2004) consisting of 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 ft thick in this location. The majority of wells in the immediate vicinity draw water from the Willamette Aquifer. The requested rate (0.056 cfs) is well within the range of reported yields for water wells in this area (see attached well statistics) and is unlikely to injure the closest neighboring well, CLAC 5188 (see attached Theis analysis), which is ~580 ft to the northeast.

Nearby observation wells include wells on permits with static water level reporting conditions, which have measurements on record since the early 2010's. These wells do not appear to show excessive, area-wide declines, although CLAC 66847 and CLAC 66853 appear to show a slight decline over the last four years.

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 coincident with the relevant water-bearing zones. Based on the available evidence, the aquifer is unconfined.

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	Unnamed Trib. to Clear Creek, NE	417-435	370-440	2,700	☒	☐	☐	☐	☒
2	1	Unnamed Trib. to Clear Creek, NE	422-440	370-440	2,750	☒	☐	☐	☐	☒
1	2	Unnamed Trib. to Clear Creek, NW	427-435	278-308	4,440	☒	☐	☐	☐	☒
2	2	Unnamed Trib. to Clear Creek, NW	432-440	278-308	4,580	☒	☐	☐	☐	☒
1	3	Unnamed Trib. to Clear Creek, SW	427-435	220-265	4,430	☒	☐	☐	☐	☒
2	3	Unnamed Trib. to Clear Creek, SW	432-440	220-265	4,450	☒	☐	☐	☐	☒

Basis for aquifer hydraulic connection evaluation: The nearest perennial streams are less than one mile from the proposed POAs and are spring-fed tributaries of Clear Creek, which is a tributary of the Clackamas River State Scenic Waterway. The estimated water level elevation in the proposed wells are generally above or coincident with nearby perennial stream reaches that receive water through groundwater discharge.

The proposed POAs are above the Clackamas River State Scenic Waterway. Due to the hydraulic connection between SW 1-3 and the shallow aquifer system in this area, the relevant State Scenic Waterway provisions apply to the proposed use.

Water Availability Basin the well(s) are located within: Watershed ID #82: CLEAR CR CLACKAMAS 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?	Q _w > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Q _w > 1% ISWR?	80% Natural Flow (cfs)	Q _w > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
1	2	☐	☐			☐	5.65	☐	<<25%	☐
2	2	☐	☐			☐	5.65	☐	<<25%	☐
1	3	☐	☐			☐	5.65	☐	<<25%	☐
2	3	☐	☐			☐	5.65	☐	<<25%	☐

[illegible][illegible]

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) 7j (State Scenic Waterway Condition);
 - ii. ☐ The permit should contain special condition(s) as indicated in "Remarks" below;

C6. **SW / GW Remarks and Conditions:** While net impacts to surface water will likely be small at the onset of pumping, stream depletions will increase with time until a new equilibrium between local recharge and discharge is reached. Because SW 1-3 appear to issue from springs fed by the aquifer tapped by the proposed POAs, it is anticipated that, eventually, all water consumed from the proposed POA will be depleted from local streams. Since the proposed POAs and the nearby streams are above the Clackamas River State Scenic Waterway, 100-percent of the consumptive use of water from the proposed POA will eventually result in an equal and measurable depletion of surface water flows necessary to maintain the free-flowing character of the Clackamas River State Scenic Waterway.

References Used: Application G-19019 and application map received 9/3/2020.

Well logs, pumping test reports (CLAC 4954, CLAC 4079, CLAC 56492, CLAC 4667, CLAC 10930, CLAC 62440, and three NLOG tests) and water levels (CLAC 18657, CLAC 66847, and CLAC 66853) 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., 1999, Unsteady Stream Depletion from Ground Water Pumping: *Groundwater*, v. 37, no. 1, p. 98–102.

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.

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

Madin, I.P., 2004, Geologic Mapping and Database for Portland Area Fault Studies: Final Technical Report: Oregon Department of Geology & Mineral Industries Open-File Report O-2004-02, 18 p.

McFarland, W.D., and Morgan, D.S., 1996, Description of the Ground-Water Flow System in the Portland Basin, Oregon and Washington, Water Supply Paper 2470-A, 58 p: U. S. Geological Survey, Reston, VA.

Theis, C.V., 1941, The effect of a well on the flow of a nearby stream: *Am. Geophys. Union Trans.*, v. 22, pt.3, p. 734-738.

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, Redland quadrangle, Oregon [map], 1:24,000, 7.5 minute topographic series, U.S. Department of the Interior, Reston, VA.

Walton, W.C., 1984, Practical Aspects of Groundwater Modeling: *National Water-Well Assoc.*, pp. 268-269 & 298-303.

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 #:** _____ **Logid:** _____

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

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

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

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

Water Availability Tables

Water Availability Analysis Detailed Reports

CLEAR CR > CLACKAMAS R - AT MOUTH
WILLAMETTE BASIN

Water Availability as of 1/28/2022

Watershed ID #: 82 ([Map](#))

Date: 1/28/2022

Exceedance Level: 80% ▾

Time: 2:11 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	126.00	1.31	125.00	0.00	0.00	125.00
FEB	128.00	1.22	127.00	0.00	0.00	127.00
MAR	128.00	0.84	127.00	0.00	0.00	127.00
APR	131.00	0.99	130.00	0.00	0.00	130.00
MAY	111.00	2.70	108.00	0.00	0.00	108.00
JUN	48.10	3.75	44.30	0.00	40.00	4.35
JUL	19.00	6.46	12.50	0.00	40.00	-27.50
AUG	8.02	5.28	2.74	0.00	20.00	-17.30
SEP	5.65	2.28	3.37	0.00	20.00	-16.60
OCT	6.23	0.91	5.32	0.00	0.00	5.32
NOV	21.50	0.88	20.60	0.00	0.00	20.60
DEC	103.00	1.38	102.00	0.00	0.00	102.00
ANN	99,100.00	1,700.00	97,400.00	0.00	7,260.00	93,300.00

Water Availability Analysis Detailed Reports

CLACKAMAS R > WILLAMETTE R - AT MOUTH
WILLAMETTE BASIN

Water Availability as of 1/28/2022

Watershed ID #: 80 ([Map](#))

Date: 1/28/2022

Exceedance Level: 80% ▾

Time: 2:12 PM

Water Availability Calculation

Consumptive Uses and Storages

Instream Flow Requirements

Reservations

Water Rights

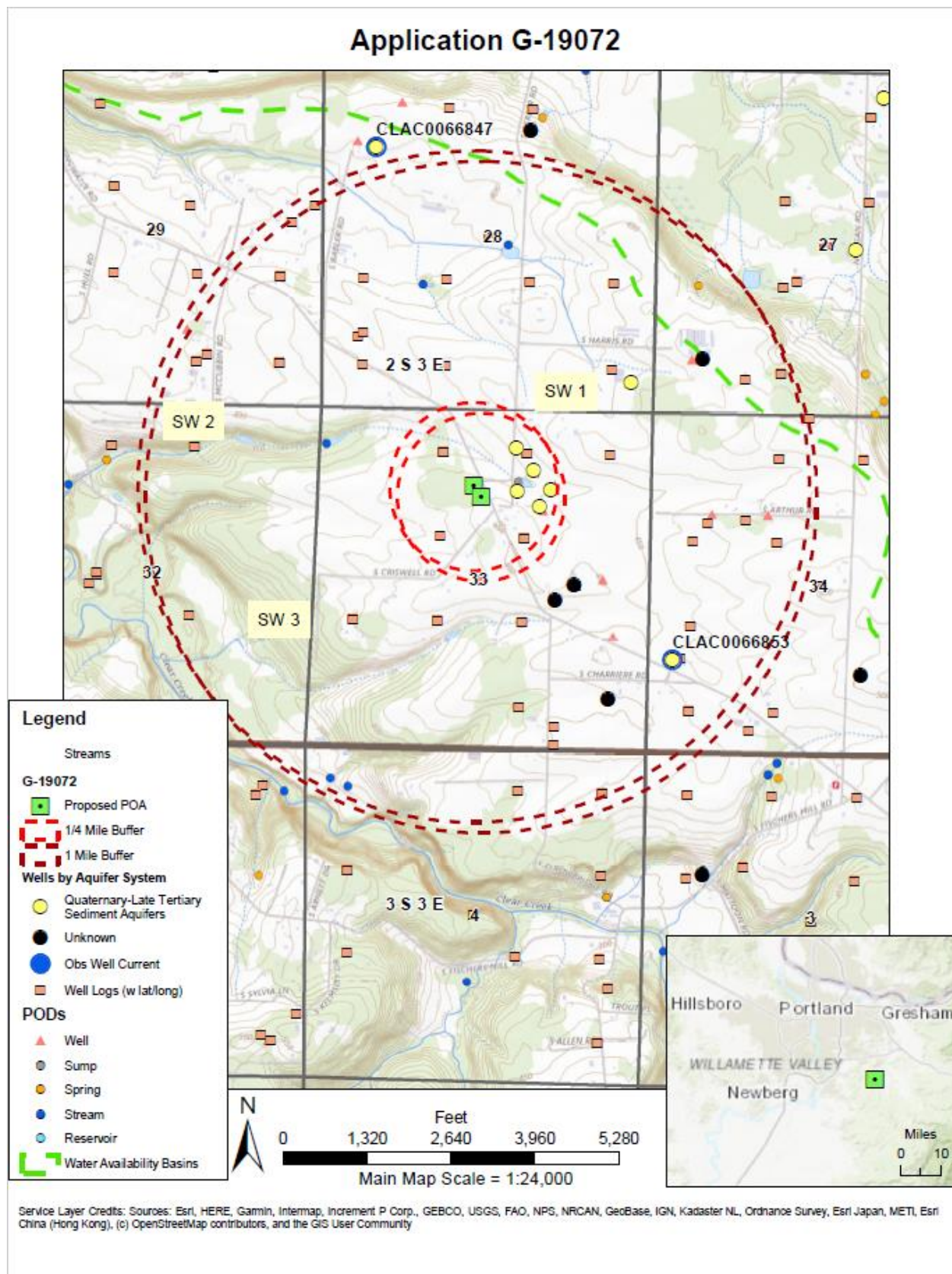
Watershed Characteristics

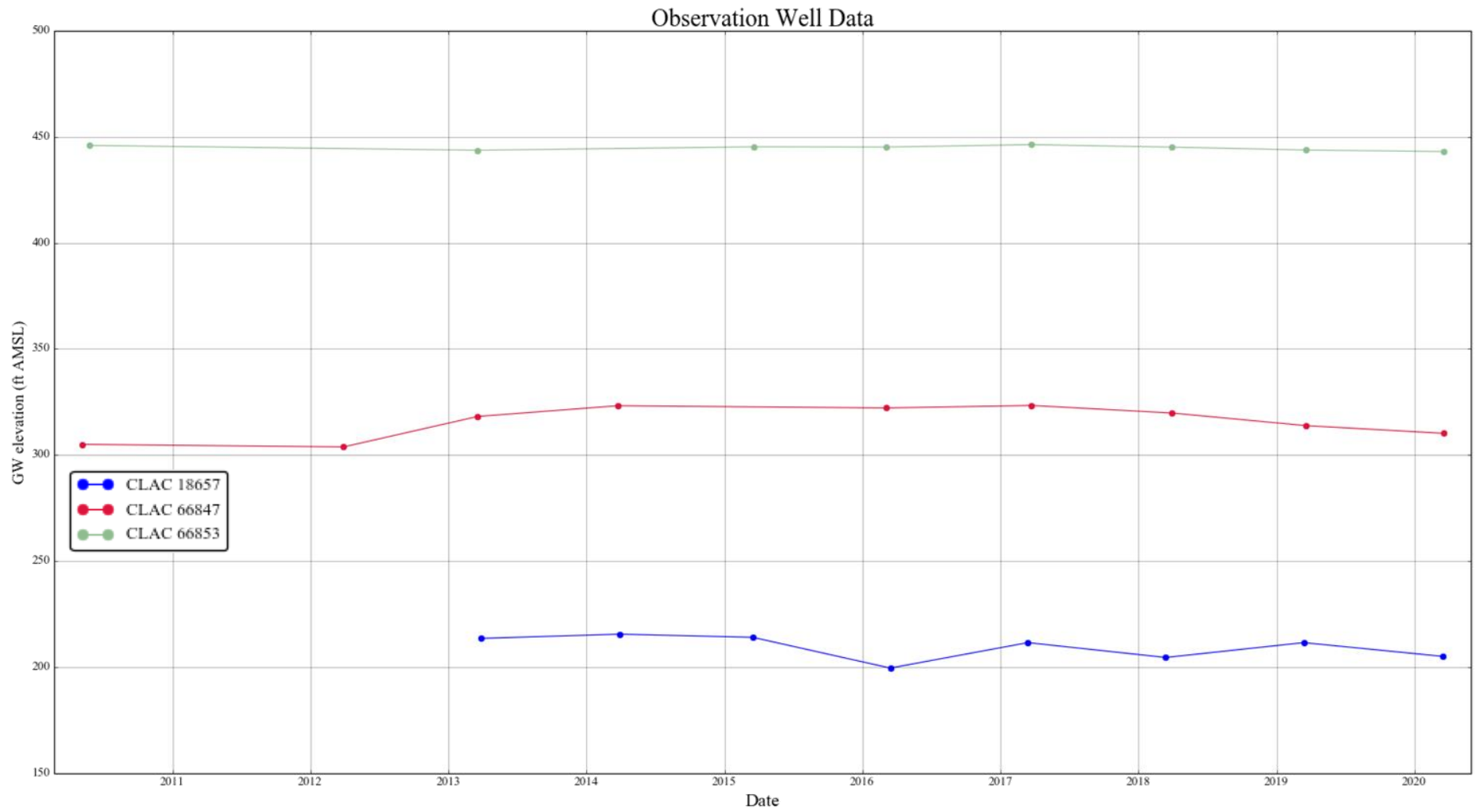
Water Availability Calculation

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

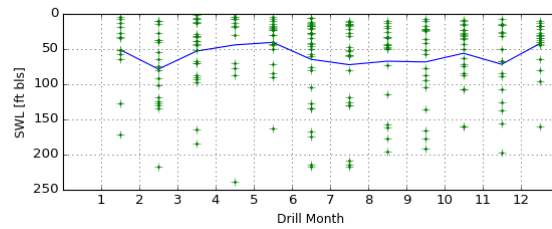
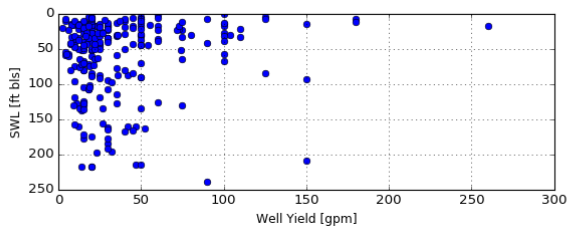
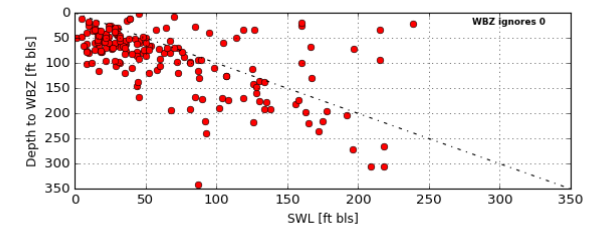
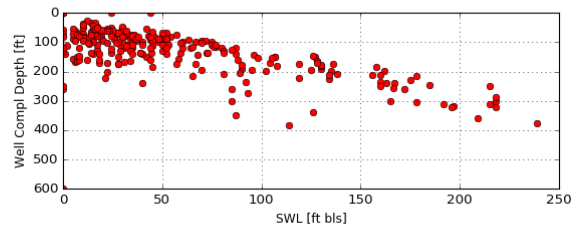
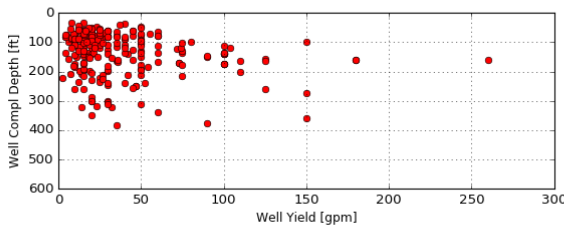
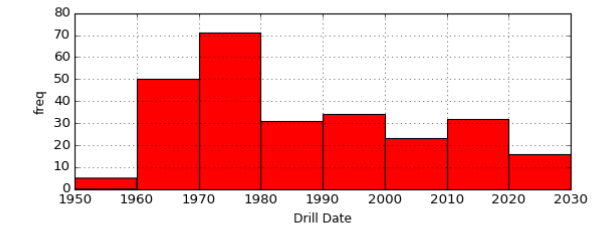
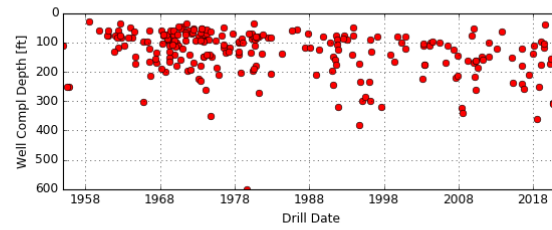
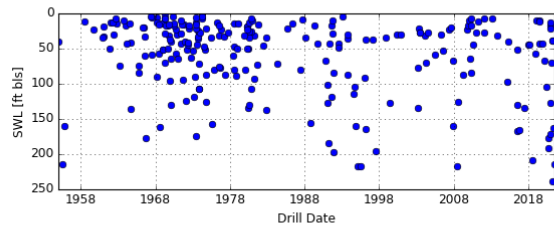
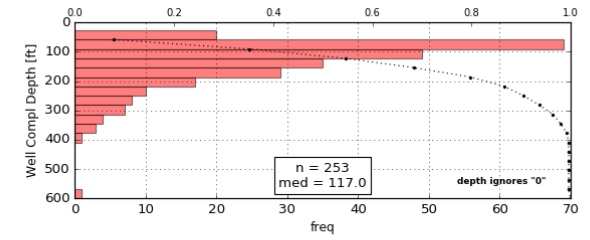
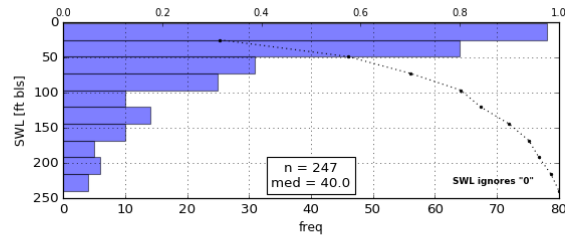
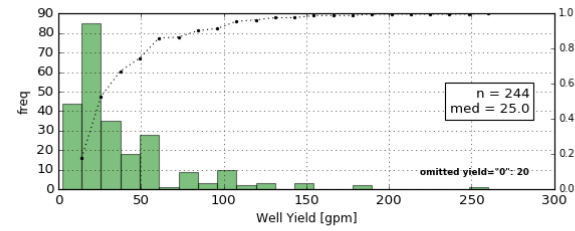
Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	2,670.00	326.00	2,340.00	0.00	1,000.00	1,340.00
FEB	2,900.00	362.00	2,540.00	0.00	1,000.00	1,540.00
MAR	2,800.00	330.00	2,470.00	0.00	1,000.00	1,470.00
APR	3,010.00	399.00	2,610.00	0.00	1,000.00	1,610.00
MAY	2,740.00	398.00	2,340.00	0.00	1,000.00	1,340.00
JUN	1,620.00	309.00	1,310.00	0.00	1,000.00	311.00
JUL	980.00	309.00	671.00	0.00	1,000.00	-329.00
AUG	822.00	294.00	528.00	0.00	890.00	-362.00
SEP	833.00	283.00	550.00	0.00	890.00	-340.00
OCT	882.00	276.00	606.00	0.00	1,000.00	-394.00
NOV	1,630.00	324.00	1,310.00	0.00	1,000.00	306.00
DEC	2,650.00	328.00	2,320.00	0.00	1,000.00	1,320.00
ANN	2,110,000.00	238,000.00	1,870,000.00	0.00	711,000.00	1,200,000.00

Well Location Map



Water-Level Measurements in Nearby Wells

Well Statistics for 2S/3E-27-29, 32-34 and 3S/3E-3-5



Includes Data from Water Wells only

Well Logs per section exported to file:
C:\Users\Public\found_trs_keys_RESULTS.txt

Well Log Data exported to file:
C:\Users\lgwater\Desktop\Working Folder\well_data.txt

Created 01/28/2022

Theis Drawdown Analysis**Theis Time-Drawdown Worksheet** v.5.00

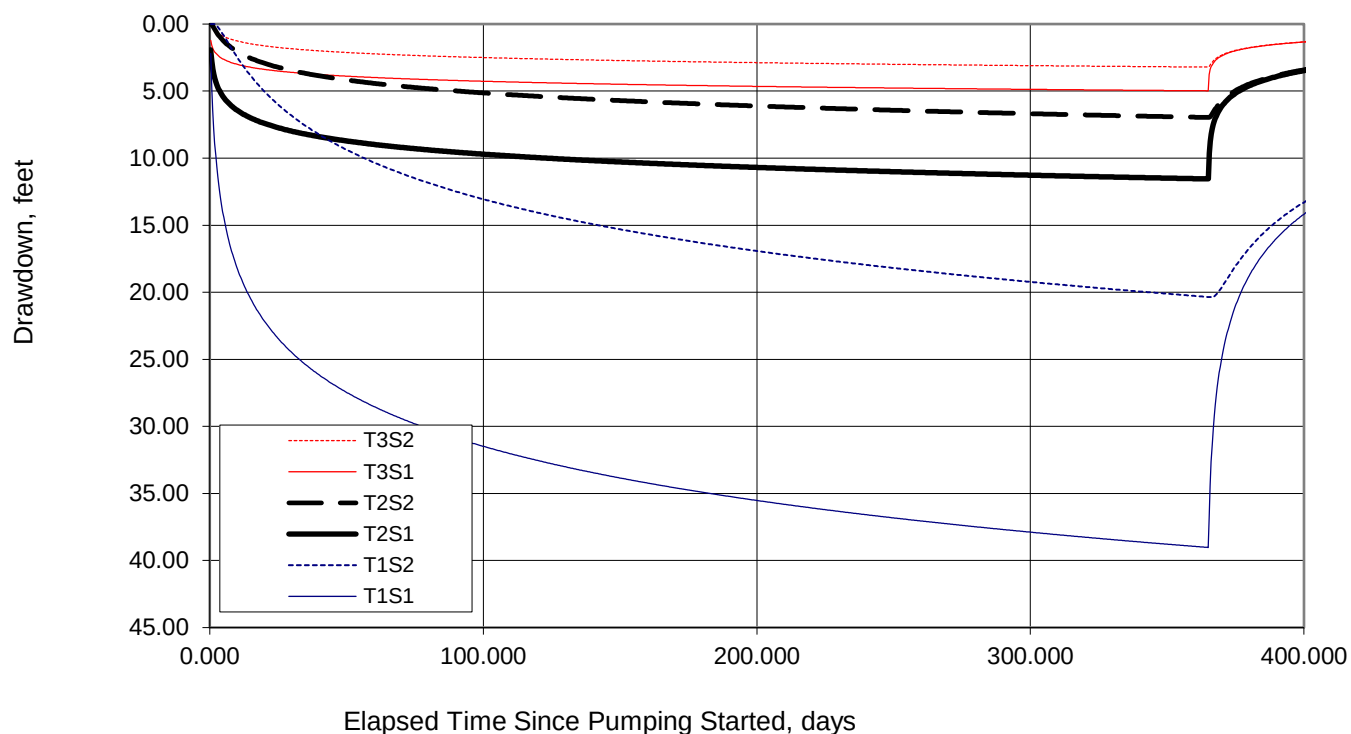
Calculates Theis nonequilibrium drawdown and recovery at any arbitrary radial distance, r , from a pumping well for 3 different T values and radial distance, r , from a pumping well for 3 different T values and 2 different S values.

Written by Karl C. Wozniak September 1992. Last modified December 17, 2019

Input Data:	Var Name	Scenario 1	Scenario 2	Scenario 3	Units	
Total pumping time	t		365		d	
Radial distance from pumped well:	r		580		ft	Q conversions
Pumping rate	Q		0.056		cfs	25.13 gpm
Hydraulic conductivity	K	0.66	2.7	7	ft/day	0.06 cfs
Aquifer thickness	b		100		ft	3.36 cfm
Storativity	S 1		0.0002			4,838.40 cfd
	S 2		0.005			0.11 af/d
Transmissivity Conversions	T f2pd	66	270	700	ft ² /day	Recalculate
	T ft2pm	0.0458333	0.1875	0.4861111	ft ² /min	
	T gpdpft	493.68	2019.6	5236	gpd/ft	

Theis Drawdown and Recovery at $r = 580$ ft From Pumping Well

Pump on = 525600 minutes = 365.00 days



Hunt (1999) Stream Depletion Model Analysis

Application type:	G
Application number:	19072
Well number:	3
Stream Number:	1
Pumping rate (cfs):	0.056
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	4430	4430	4430	ft
Aquifer transmissivity	T	66	270	700	ft ² /day
Aquifer storativity	S	0.1	0.2	0.3	-
Aquitard vertical hydraulic conductivity	Kva	8500	1000	0.01	ft/day
Not used		0	0	0	
Aquitard thickness below stream	babs	3	3	3	ft
Not used		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

