

**Impairment Analyses  
of Existing Water Rights  
at Proposed  
Reclaimed Water Facilities  
in Washington State**

**Keith Stoffel**

**Washington Dept of Ecology  
Water Resources Program**

**2015 Water Reuse Conference  
Boise, Idaho**

## RCW 90.46.120 –

Use of water from wastewater treatment facility...

“...The owner of a wastewater treatment facility that is reclaiming water with a permit issued under this chapter has the **exclusive right** to any reclaimed water generated by the wastewater treatment facility. Use...of reclaimed water permitted under this chapter is **exempt from the permit requirements of RCW 90.03.250 and 90.44.060...**”

## RCW 90.46.130 -

Impairment of water rights  
downstream from freshwater  
discharge points...

“...facilities that reclaim water  
under this chapter **shall not  
impair any existing water right  
downstream from any  
freshwater discharge points of  
such facilities unless  
compensation or mitigation is  
agreed to by the holder of the  
affected water right.**”



[Water Quality](#) > [Rule Making](#) > Overview of the Reclaimed Water Rule Making

## Chapter 173-219 WAC Reclaimed water

### Overview of rule making

Water Quality Program is proposing a new rule, Chapter 173-219 Washington Administrative (WAC) Reclaimed Water, directed by the state Legislature under Chapter 90.46 Revised Code Washington (RCW). The purpose is to establish an efficient, effective and consistent statewide implementation framework, including standards and permit requirements. The rulemaking process initiated in 2006 was suspended by the Governor under two consecutive Executive Orders from 2010 through December 2012. Ecology reactivated the rulemaking process in June 2014 with estimated implementation of an adopted rule in late 2016.

#### Process of development

Ecology's process for developing a rule includes gathering input from affected stakeholders at public, and following the steps for rule adoption.

- [Timeline for Rule Making](#) – Timeline of rulemaking steps required in State law.
- [Documents for Rule Making](#) – Links to all official rule adoptions documents.

Copyright © Washington State Department of Ecology. See <http://www.ecy.wa.gov/copyright.html>

**PART II PLANNING, DESIGN, AND CONSTRUCTION**  
**Subpart A Water Right Considerations**

**NEW SECTION**

**WAC 173-219-100 Impairment Analysis**

(1) **Purpose.** This section describes the requirement to conduct a water rights impairment analysis to address the potential for impairment of an existing water right. Under RCW 90.46.130, reclaimed water facilities shall not impair any existing water right downstream from any freshwater discharge points of the proposed reclaimed water facility unless compensation or mitigation for such impairment is agreed to by the holder of the affected water right.

(2) **Applicability.** This section applies to any person applying for a reclaimed water permit under this chapter where there is a potential for the impairment of a downstream water right due to a proposed decreasing or ceasing of a discharge to a freshwater surface or ground water body. A groundwater right is considered to be potentially impaired if it is located down-gradient of the proponent's original location of discharge.

(3) **Existing water rights.** Existing water rights include any permits, claims, and certificates in existence when a submitted water rights impairment analysis is accepted by ecology. Existing water rights include instream flow appropriation established by rule pursuant to RCW 90.22 and 90.54.

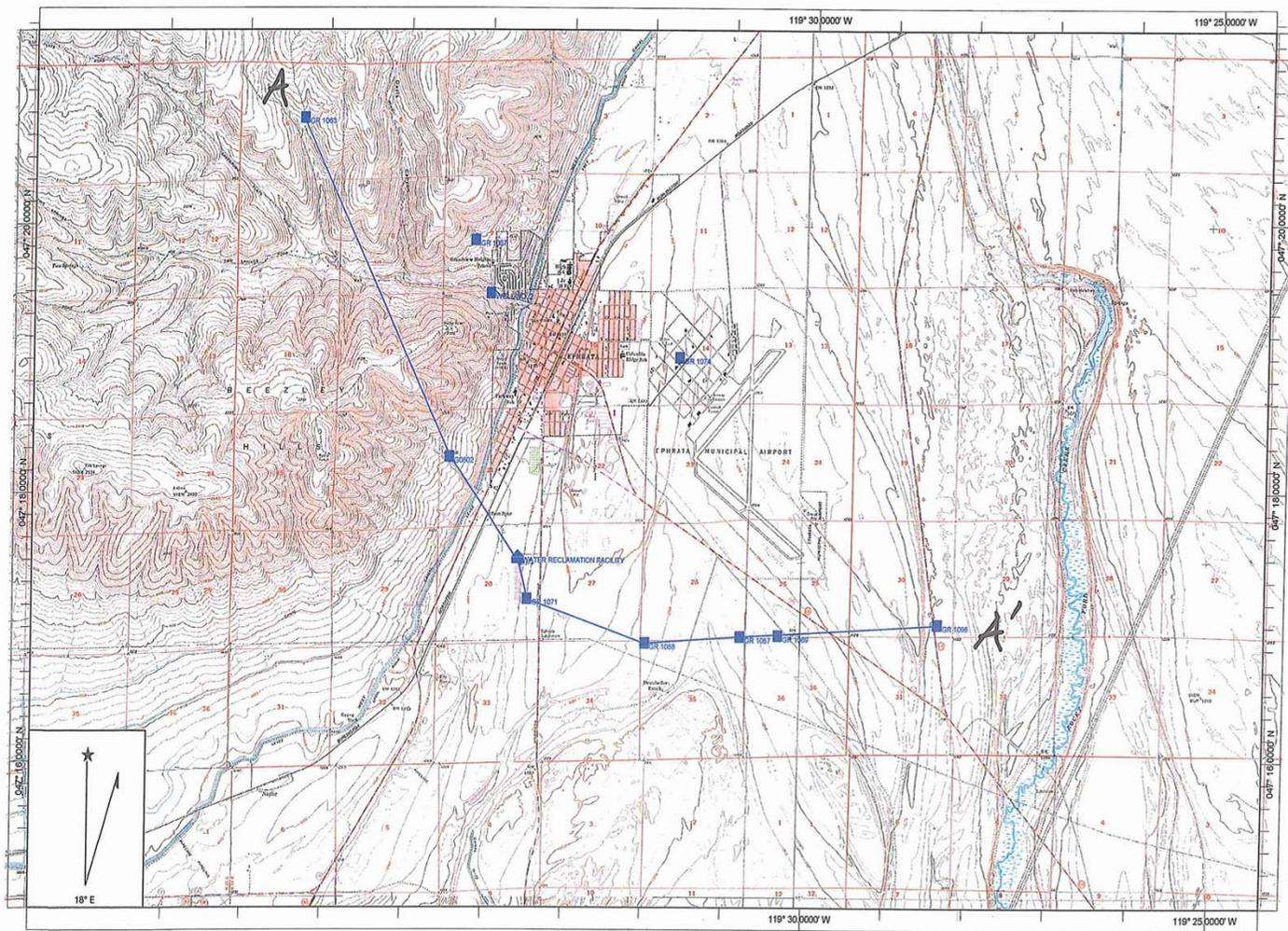
(4) **Cost reimbursement agreements.** At the request of the applicant, ecology may enter into a cost-reimbursement agreement with the applicant at any stage of scoping or conducting the impairment analysis under this section. Such agreements must meet the requirements as to form, process, and as otherwise provided under RCW 43.21A.690.

(5) **Analysis process.** (a) Applicant responsibilities:  
(i) An applicant must submit a complete water rights impairment analysis for review by Ecology or request Ecology to complete it through a cost reimbursement agreement as authorized by Ecology under WAC 173-219-100(4) above. In all cases a water rights impairment analysis must be conducted by a hydrogeologist or engineer licensed by the state of Washington. The applicant must consult with Ecology to develop the scope of the impairment analysis prior to Ecology accepting the final analysis for review. However, the applicant must submit the final water rights impairment analysis information with the engineering report described in WAC 173-219-160. At a minimum, the impairment analysis must include the following information: (A) The effect



Ephrata

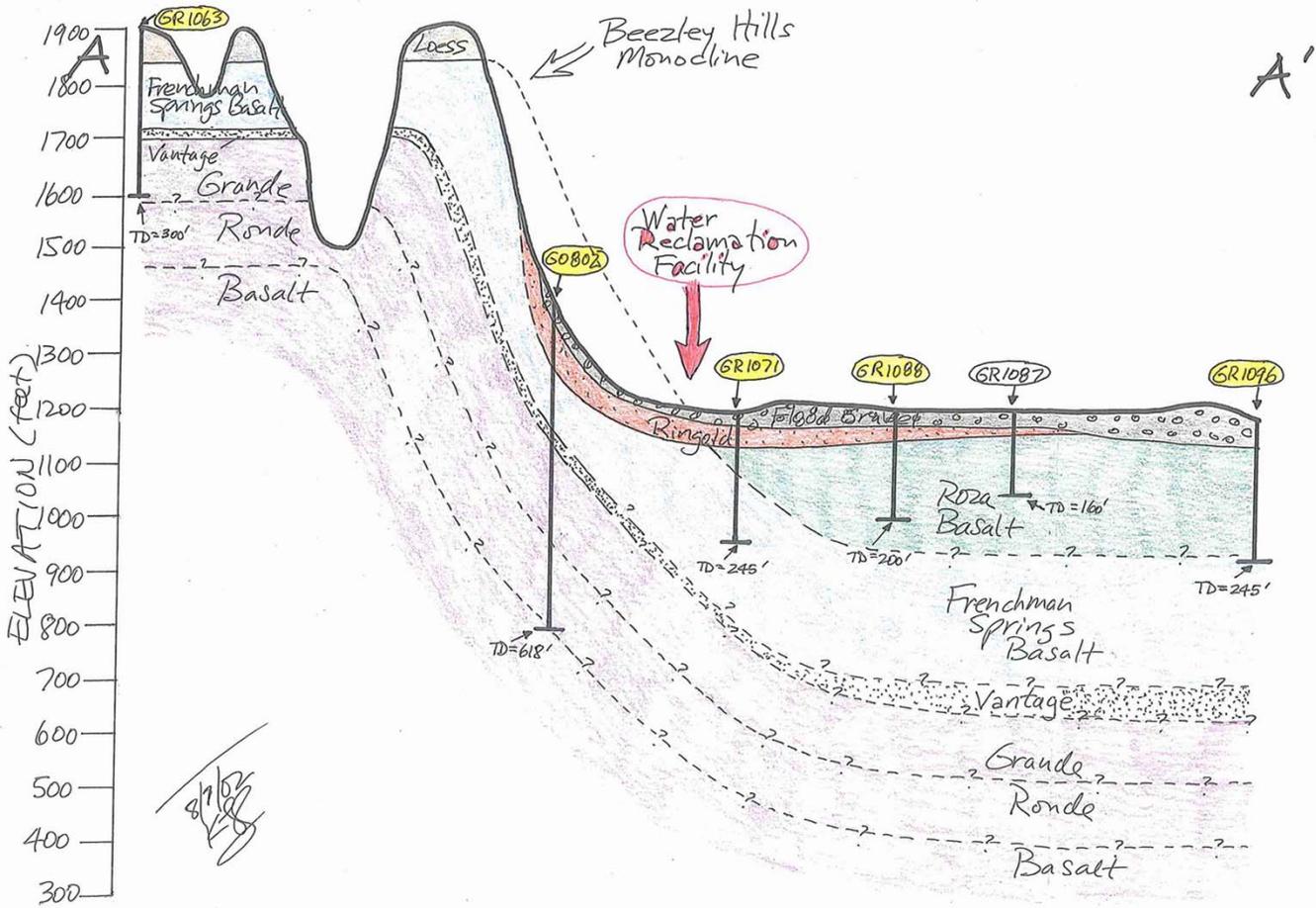
Pullman



# EPHRATA Stratigraphic Thicknesses

Well ID	TD	Surface Elev	Post-CRBG				CRBG				
			Sediments				Basalt & Interbeds				
			Total	Qh	Ql	Trg	Total	Tr	Tf	Tev	Tgsb
GR 1059	150	1269	120	120	0	0	30				
GR 1063	300	1854	58	0	58	0	242	0	127	10	105
GR 1060	260	1268	51				209				
GR 1064	300	1783	20	0	20	0	280	0	0	0	280
GR 1068	113	1281	80				33				
GR 1065	148	1678	15				133				
GR 1067	460	1598	3	0	3	0	457	0	0	0	457
GR 70		1579									
GR 1066	450	1579	34				416				
GR 1076	1361	1293	104				1257				
GR 1075	500	1268	283				217				
GR 71		1320									
GR 1074	1020	1283	210	80	0	130	810	100	260	80	370
GR 1078	618	1490	100				518				
GR 1079	200	1309	180				20				
GR 1080	224	1265	71				153				
GR 1077	150	1407	110	30	0	80	40				
GR 1072	362	1525	14				348				
GR 1073	162	1523	60				102				
GR 1071	248	1254	70	35	0	35	178	80			
GR 1070	180	1269	40	40	0	0	140	100			
GR 1096	245	1196	41	41	0	0	204	56			
GR 1069	341	1269	30	30	0	0	311	89			
GR 1088	200	1256	45	30	0	15	155	33			
GR 1087	160	1268	38	18	0	20	122	42			
GR 1081	400	1417	45				355	0			
GR 1082	500		82								
GR 1083	120	1203	35	35	0	0	85	60			
G0750	102	1442	0	0	0	0	102				
G2272	195	1269	0	39	0	0	195				
G2268	226	1798	21	0	21	0	205	0	0	0	205
G0802	618	1499	100	16	0	84	518	0	127	32	359
G0800	448	1515	71	0	0	71	377	0	0	0	377
GR 1084	220	1295	1				219				
GR 1086	305	1299	50				255				

Qh = Hanford Formation (flood gravel)  
 Ql = Loess  
 Trg = Ringold Formation (sediments)  
 CRBG { Tr = Roza Basalt }  
       { Tf = Frenchman-Springs Basalt } Wanapum  
       { Tev = Vantage Formation (sediments) } Basalt  
       { Tgsb = Gravel Road Basalt Formation } Formation



8/1/02





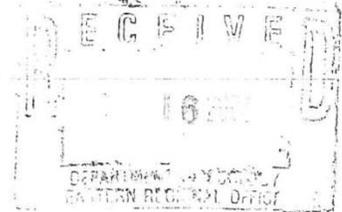
*City of Ephrata*

121 Alder Street S.W.  
Ephrata, Washington 98823

Phone: 509/754-4601  
Fax: 509/754-0912  
Hearing Impaired Access:  
Voice: 1-800-833-6384  
T.D.D.: 1-800-833-6388

October 15, 2002

George B. Schlender  
Section Manager, Water Resources Program  
Washington State Dept of Ecology  
Eastern Regional Office  
4601 North Monroe, Suite 202  
Spokane WA 99205-1295



Dear Mr. Schlender:

Thank you for the opportunity to meet with you and Keith Stoffel on October 3, 2002 to discuss the water rights issues associated with our water reclamation facility. We appreciate the fact that the decisions made regarding our facility are likely to establish precedent for future similar decisions made across the state.

Over the last several months, Ecology has made clear its position that water infiltrated into a particular aquifer must be withdrawn from the same aquifer. We understand that Ecology has determined that none of the City's domestic wells withdraws solely from the upper management zone where our reclaimed water is infiltrated. As a result of these discussions, the City is prepared to find other ways to use its reclaimed water, such as piping it directly from the reclamation facility to the point of application, or drilling new wells into the upper management zone.

During our discussions you mentioned that Ecology is currently evaluating whether to allow infiltrated reclaimed water to be withdrawn upgradient from the point of infiltration. This is a very important issue, and we hope it does not become a stumbling block. As we pointed out, if Ephrata were to drill a new well into the upper management zone, it would make most sense to drill it near the point (or points) of application, which are most likely to be north, or upgradient, from the City's water reclamation facility. **Indeed, Ecology's evaluation team may wish to keep in mind that because the majority of existing and future water reclamation facilities are and will be located downgradient from their communities, disallowing upgradient withdrawals that do not impair senior water rights may discourage many communities from considering water reclamation.**

The City of Ephrata has been and will continue to be a strong supporter of water reclamation. It is, in our view, first and foremost a benefit to the environment. We also believe it is consistent with the principles of the Growth Management Act, and that it may be able to provide that state a small measure of relief from the current water rights crisis that is likely to worsen, particularly in eastern Washington.

(6) **Reclaimed water permit modification and renewals.** A supplemental impairment analysis and final decision of impairment are required if the permittee elects to modify the project in a manner that may affect existing water rights.

**NEW SECTION**

**WAC 173-219-110 Use of reclaimed water for water right mitigation.**

**(1) Applicability.**

(a) This section applies to the use of reclaimed water to mitigate for a new surface or ground water right or a change to an existing surface or ground water right.

**(2) Minimum requirements.**

(a) To use reclaimed water for mitigation of a new water right or a change to an existing water right, the water right applicant must prepare a mitigation plan and submit it in support of an application for a new water right or an application to change an existing water right.

(b) Ecology will evaluate applications for the use of reclaimed water to mitigate for new water rights or changes to existing water rights on a case-by-case basis. These applications must satisfy all applicable provisions of chapters 90.03 and RCW 90.44 RCW, including but not limited to the four-part-test under RCW 90.03.290.

(c) In the event a mitigation plan with a reclaimed water component is approved by ecology, the new water right or change must be conditioned to ensure the availability of mitigation water for the life of the approved water use.

**Subpart B Construction of Reclaimed Water Treatment Facilities**

**NEW SECTION**

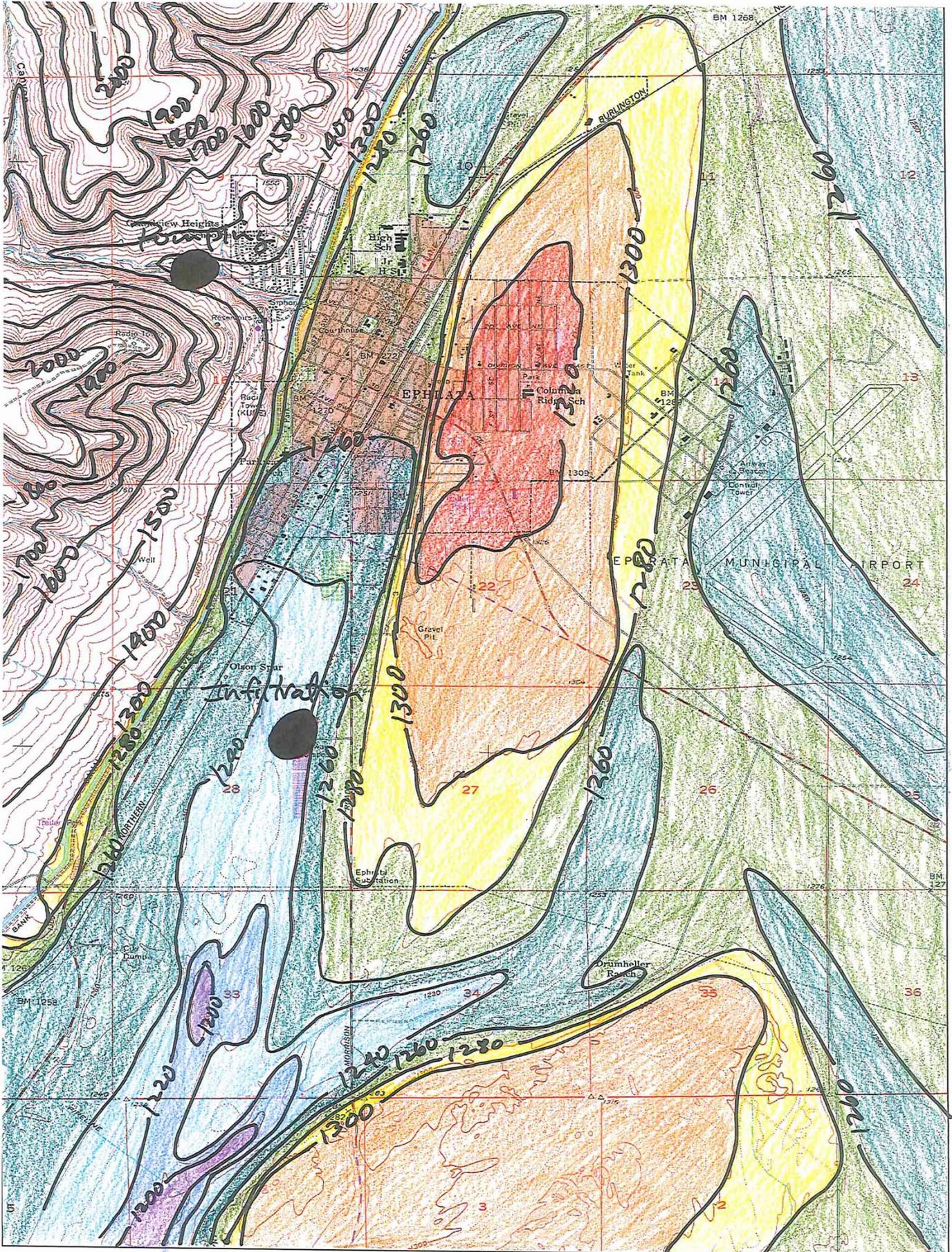
**WAC 173-219-120 Submission of documents for review and approval. (1)**

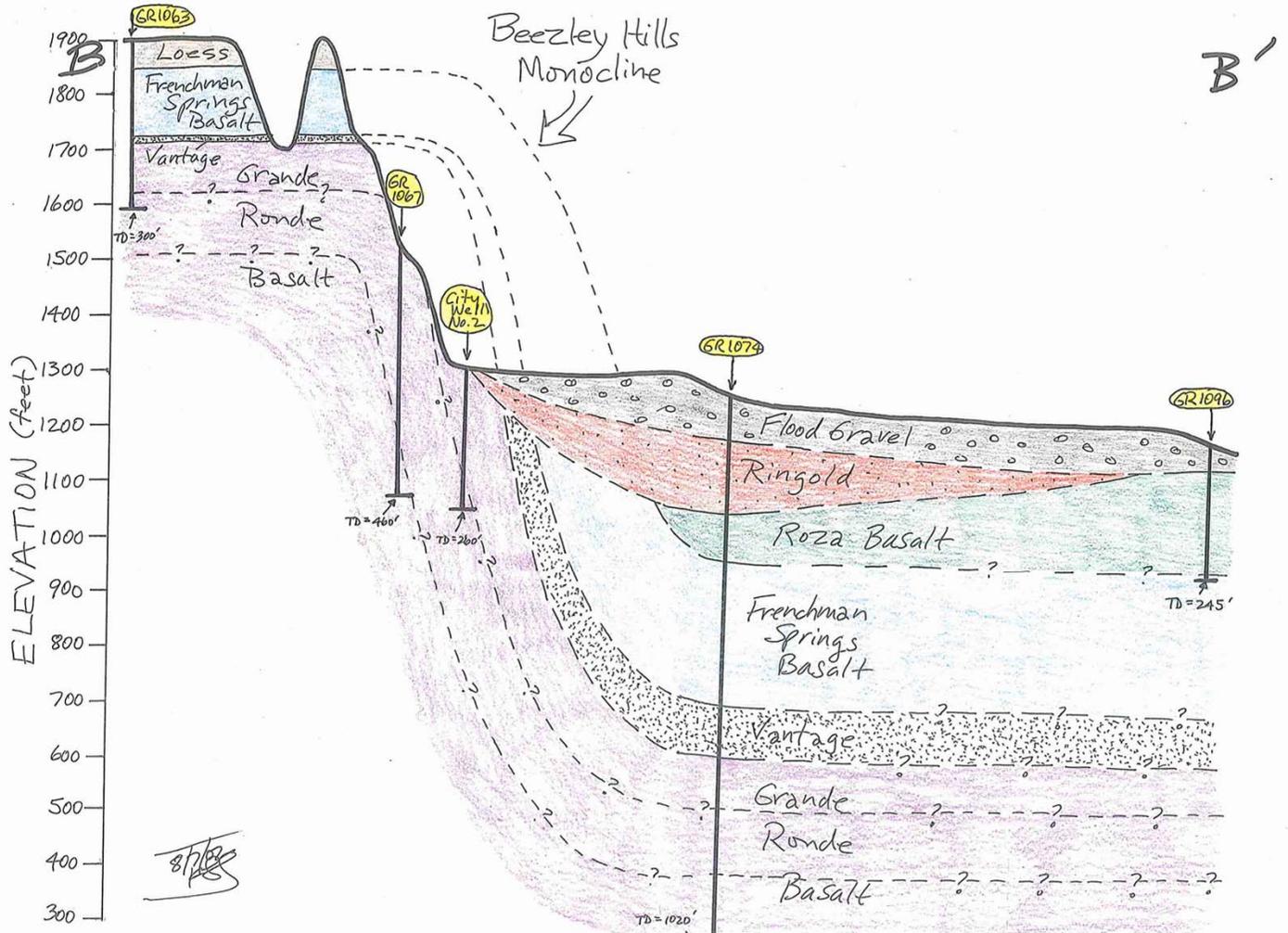
**Submission required.**

(a) Before constructing or modifying reclaimed water treatment facilities, the applicant must submit reclaimed water plans, engineering reports, construction plans and specifications, construction quality assurance, applicable to the project to the lead agency for review and approval.

(b) Before operating the facility, the applicant must submit an operation and maintenance manual as described in WAC 173-240-080, and a declaration of construction as described in WAC 173-240-090 and 095.

(c) Documents must be submitted to ecology, when acting as lead agency, via the Water Quality Permitting Portal unless otherwise specified by ecology. The lead agency and nonlead agency may also request a paper copy on an as needed basis. The nonlead agency may limit the scope of their review or waive the requirement for submission of documents.





Hydrogeologic Parameters  
Used in Wellz Program  
For City of Ephrata's Well #2  
This-Predicted Drawdown Data

FILE COPY

Aquifer "type"

This-unconfined

Aquifer thickness

200 feet

Storativity

0.2

Pumping Time

365 days

Pumping Rate

500 gpm = 720,000 gpd (current)  
2,000 gpm = 2,880,000 gpd (proposed)

Distance to Observation Wells

100 ft  
1,000 ft  
4,000 ft

Transmissivity

50,000 gpd/ft = 6,685 ft<sup>2</sup>/day  
100,000 gpd/ft = 13,369 ft<sup>2</sup>/day  
200,000 gpd/ft = 26,738 ft<sup>2</sup>/day  
300,000 gpd/ft = 40,107 ft<sup>2</sup>/day  
500,000 gpd/ft = 66,845 ft<sup>2</sup>/day

Hydraulic Conductivity

33.4 ft/day  
66.8 ft/day  
133.7 ft/day  
200.5 ft/day  
334.2 ft/day

EPH-1a.rep

REPORT FOR THE CALCULATION OF DRAWDOWNS

No. of Interval in X: 50

No. of Interval in Y: 50

Minimum X: 0.00 Feet

Maximum X: 6000.000000 Feet

Minimum Y: 0.00 Feet

Maximum Y: 6000.000000 Feet

Aquifer type: Theis-unconfined

Hydraulic conductivity: 33.40000 Feet/day

Thickness of aquifer: 200.00 Feet

Specific-Yield: 0.200000

Pumping-time 365.000Days

Number of Pumping Wells: 1

Unit used in the calculation

Pumping rate in GPM

Length and Drawdowns in Feet

Well No.	X	Y	Pumping-Rate
----------	---	---	--------------

#1	1000.000	1000.000	500.000
----	----------	----------	---------

Number of Monitoring Wells: 4

X	Y	Drawdown
---	---	----------

1000.000	1001.000	20.710	wellhead
1000.000	1100.000	9.293	100'
1000.000	2000.000	3.856	1,000'
1000.000	5000.000	0.966	4,000'

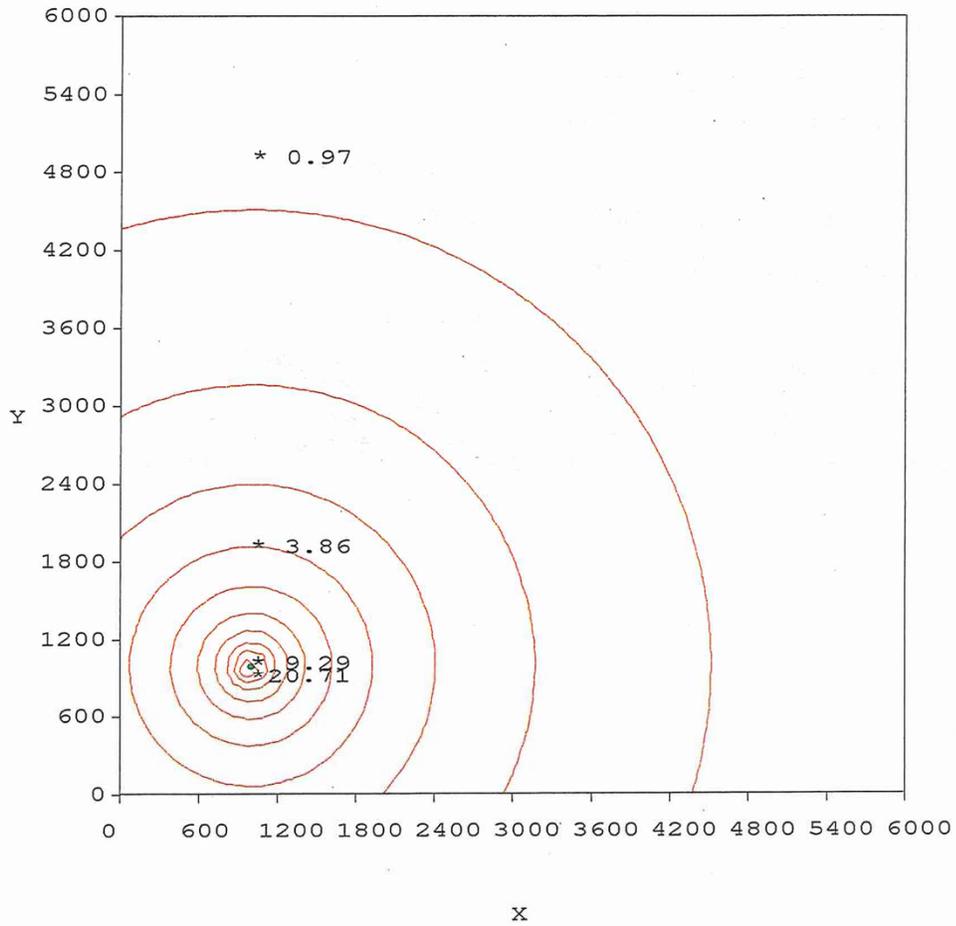
Drawdowns have been output in SURFER grid format in other file

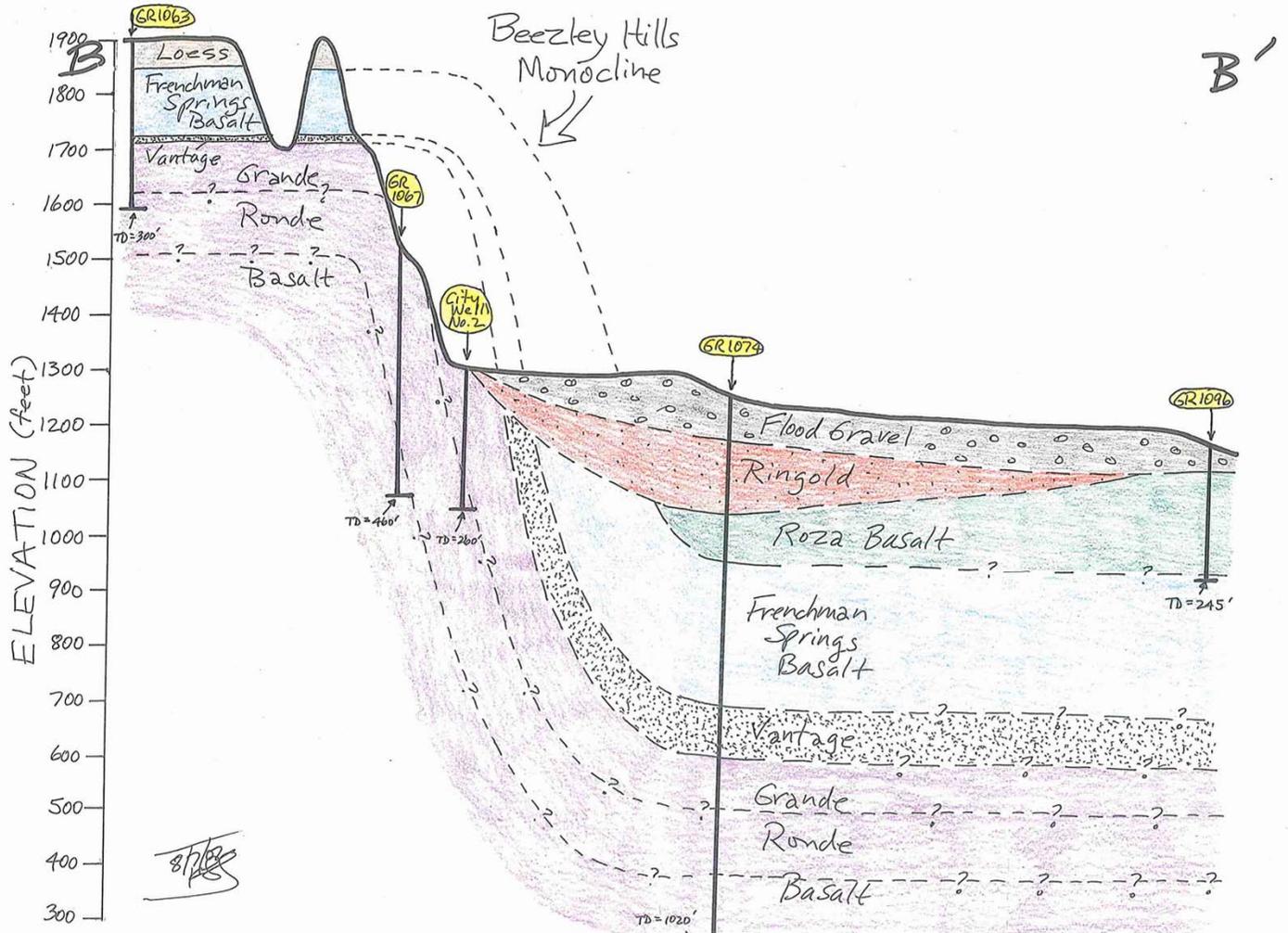
EPH - la. whz

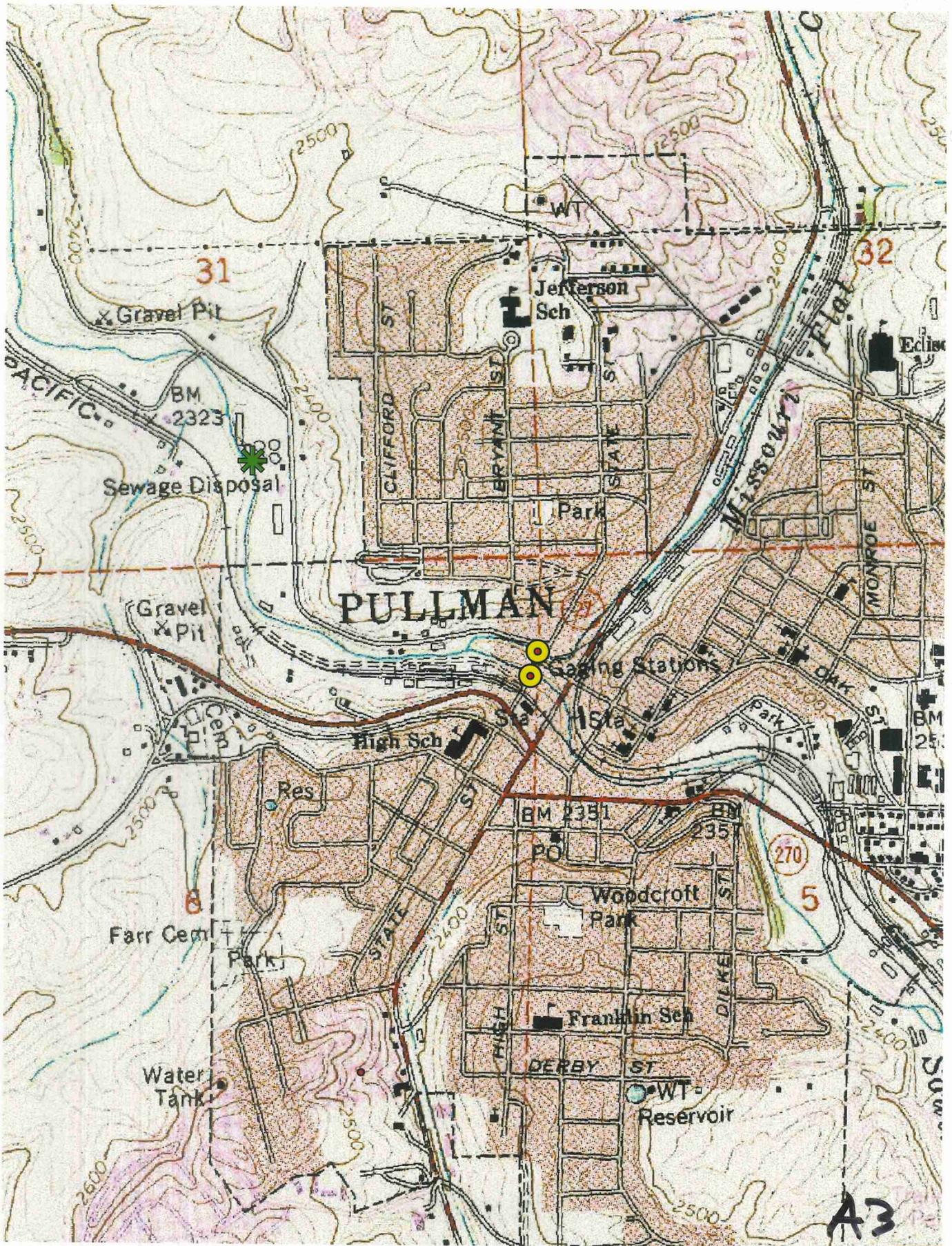
$Q = 500 \text{ gpm}$

$T = 50,800 \text{ gpd/ft} \quad (6,685 \text{ ft}^2/\text{day})$

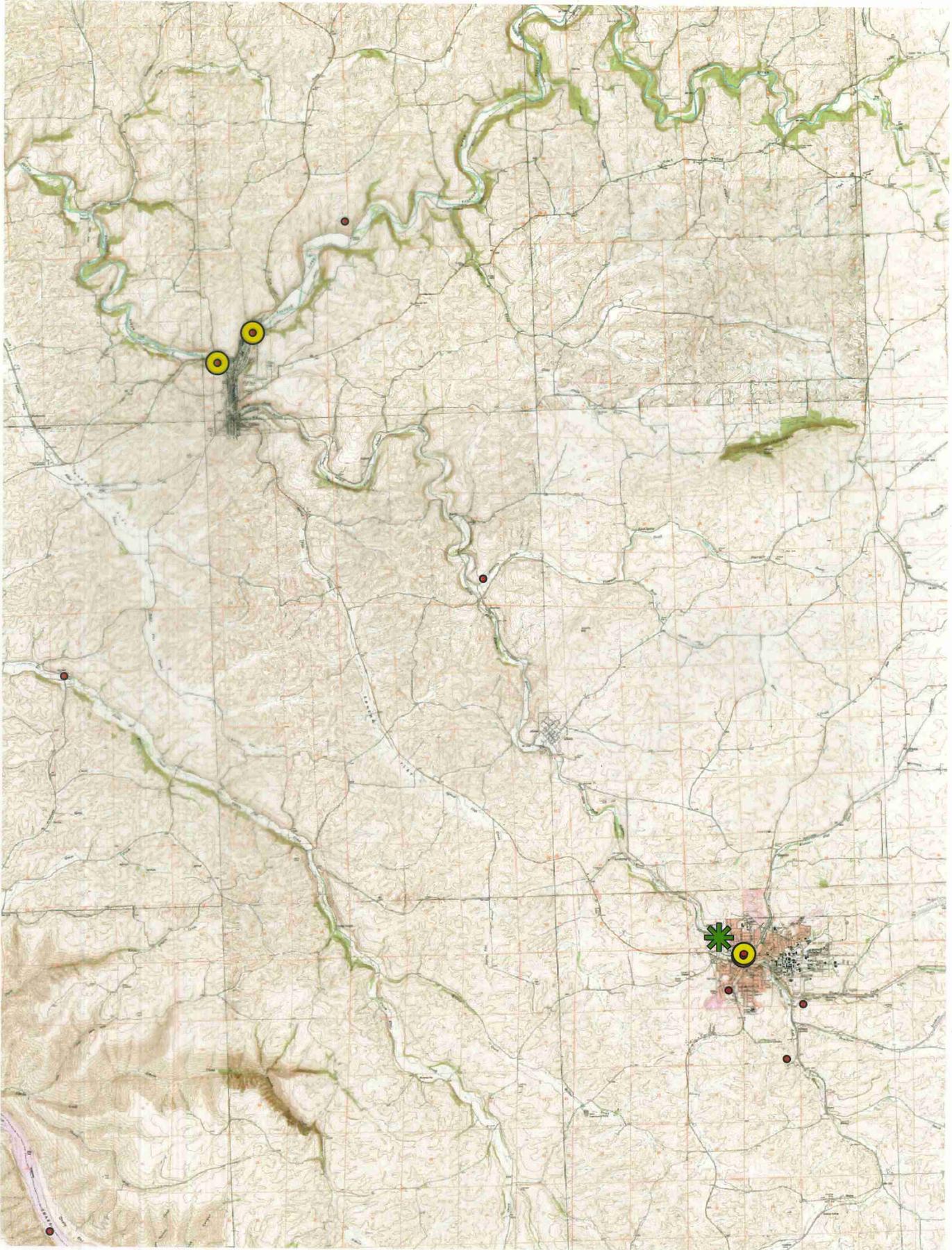
$K = 33.4 \text{ ft/day}$



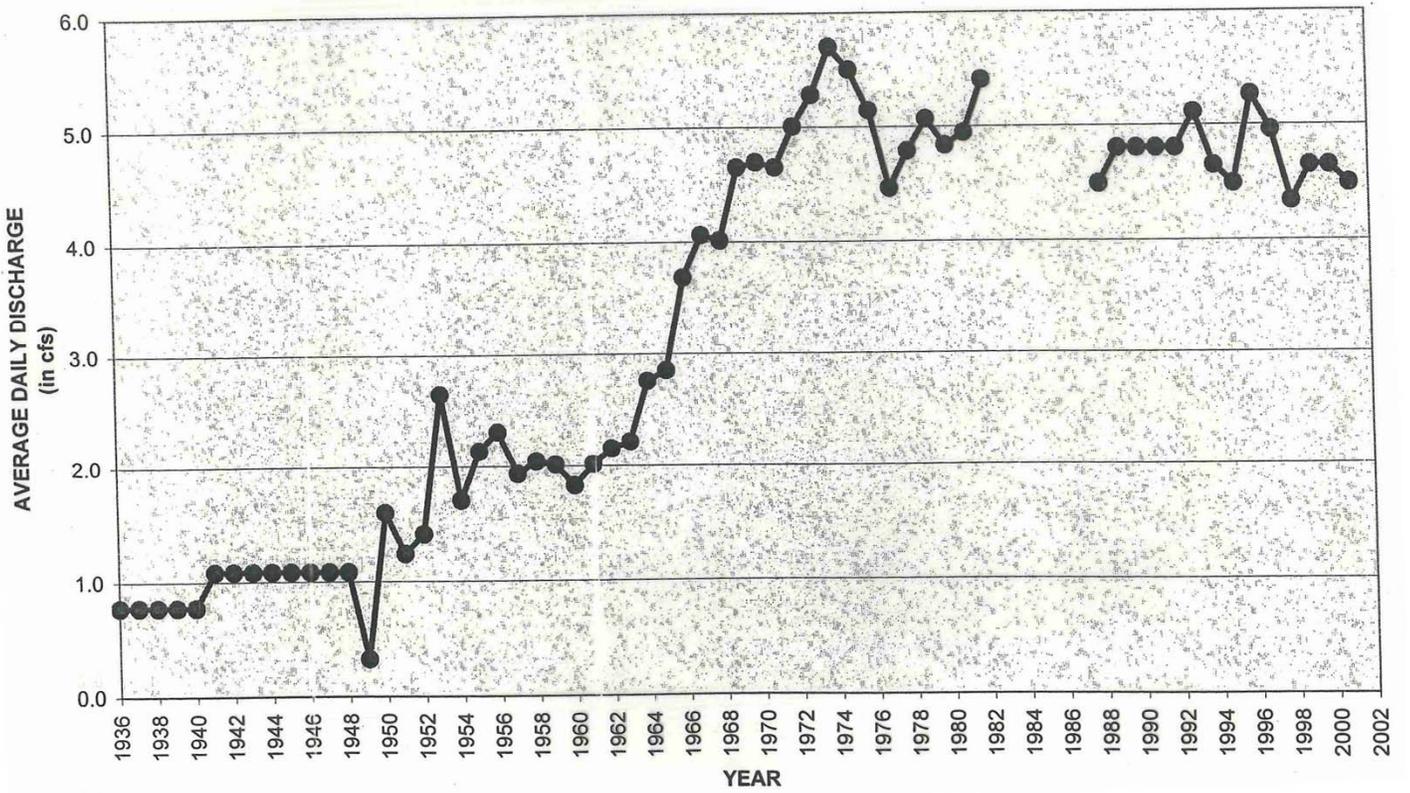




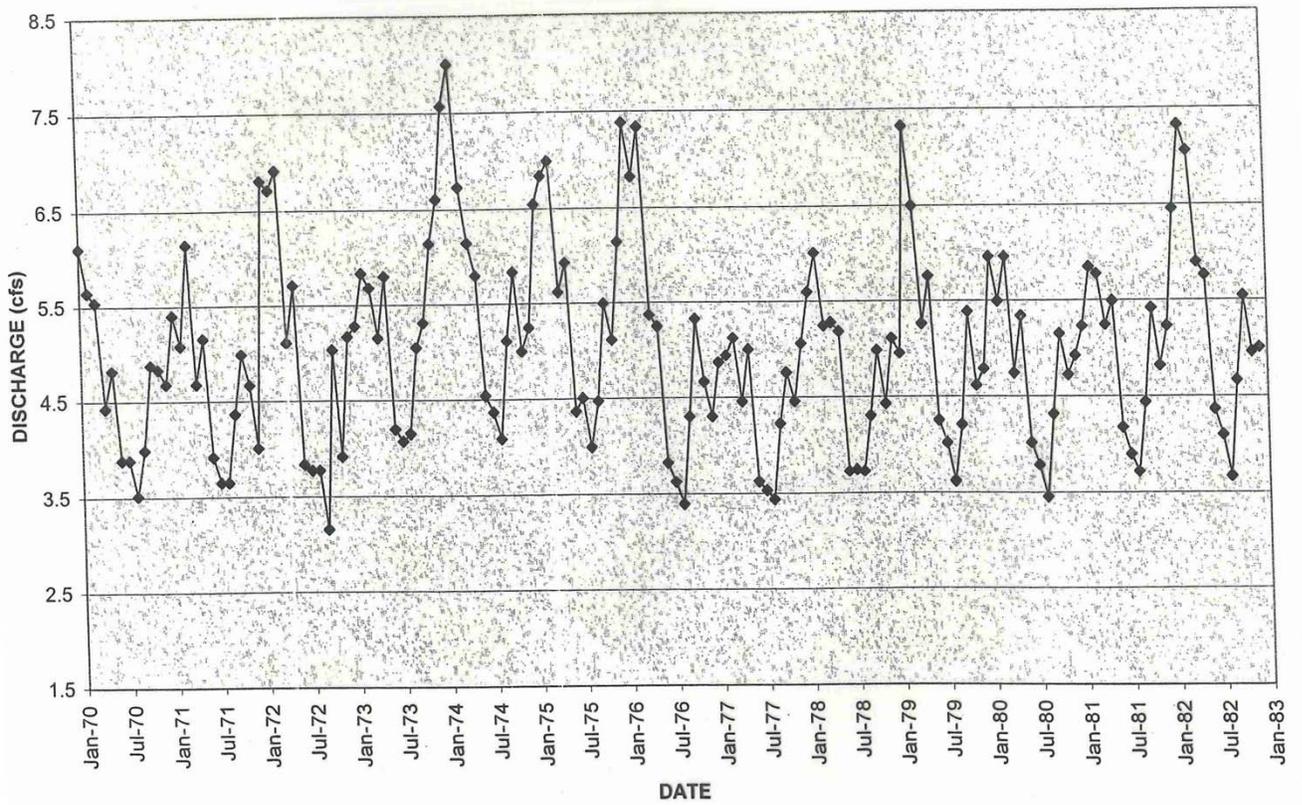
A3



AVERAGE DAILY DISCHARGE (in cfs)  
FROM PULLMAN POTW  
1936-2001



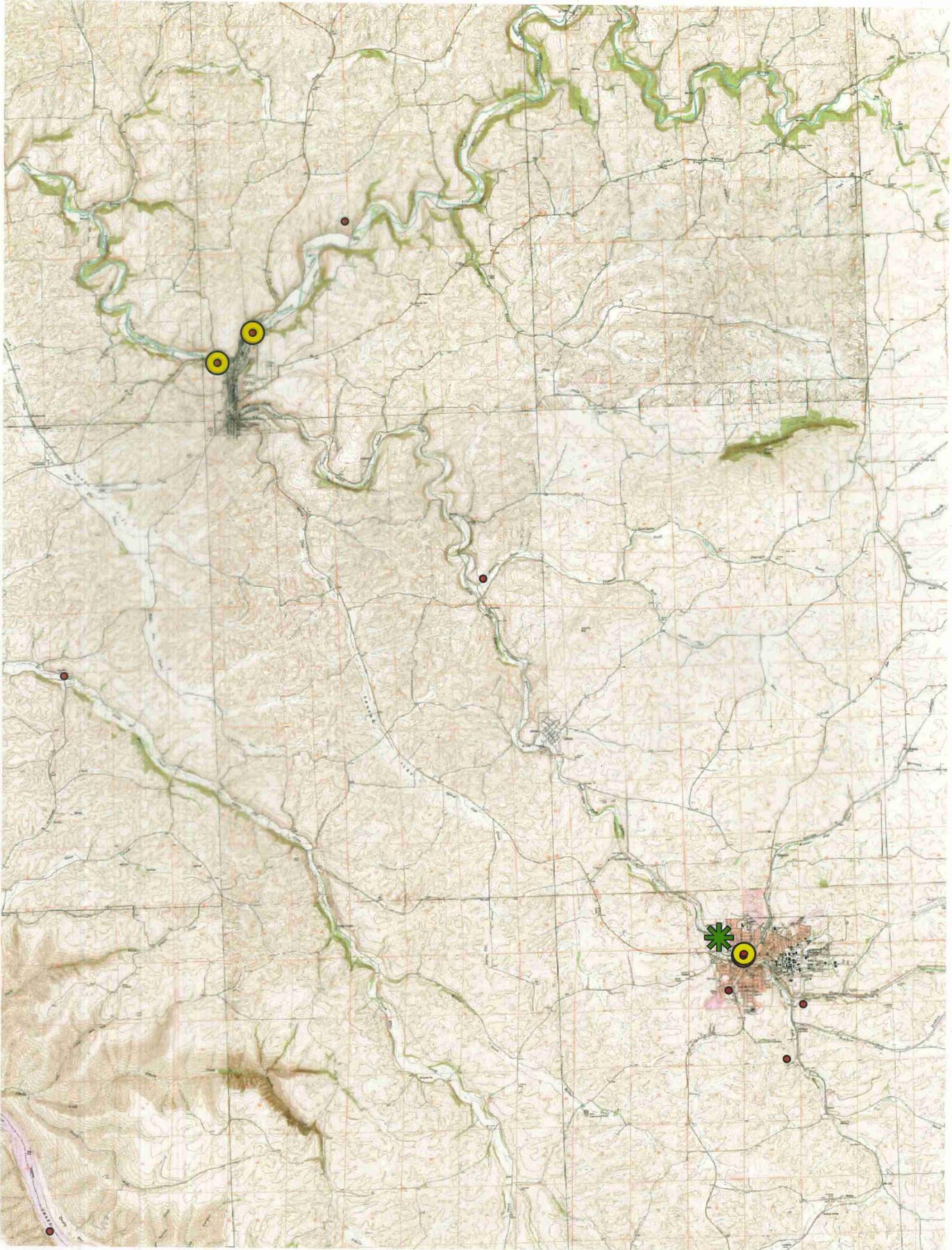
MEAN DAILY DISCHARGE (in cfs) FROM PULLMAN POTW  
1970 through 1982



## RCW 90.46.130 -

Impairment of water rights  
downstream from freshwater  
discharge points...

“...facilities that reclaim water  
under this chapter **shall not  
impair any existing water right  
downstream from any  
freshwater discharge points of  
such facilities unless  
compensation or mitigation is  
agreed to by the holder of the  
affected water right.**”



<u>NUMBER</u>	<u>TYPE</u>	<u>PRIORITY DATE</u>	<u>MAXIMUM Qi</u>
S3-015089	Claim	1872	0.002
S3-025078	Claim	1878	0.02
S3-091630	Claim	1878	0.018
S3-091631	Claim	1882	0.018
S3-007090	Claim	1900	0.012
S3-015079	Claim	1910	0.03
S3-003522	Claim	1910	0.002
S3-003524	Claim	1910	0.002
S3-000598	Claim	1916	0.004
S3-113641	Claim	1938	0.01
S3-012823	Claim	1949	0.002
S3-04290	Certificate	1949	0.11
S3-05746	Certificate	1950	0.25
S3-04706	Certificate	1951	0.35
S3-11316	Certificate	1951	1.0
S3-05852	Certificate	1952	0.18
S3-06030	Certificate	1952	0.3
S3-05237	Certificate	1952	0.46
S3-09346	Certificate	1954	0.09
S3-06874	Certificate	1955	0.2
S3-08187	Certificate	1959	0.09
S3-10821	Certificate	1962	0.4
S3-135905	Claim	1962	0.001
S3-08792	Certificate	1962	0.04
S3-09423	Certificate	1963	0.077
S3-152735	Claim	1965	0.2
S3-10608	Certificate	1968	0.05
S3-01528	Certificate	1969	0.02
S3-29209	Certificate	1992	0.02
S3-30282	Certificate	2000	0.01
S3-125169	Claim		0.018

**SURFACE WATER CLAIMS**  
**South Fork Palouse River**  
**Between Pullman and Colfax, WA**

<u>WRAT NUMBER</u>	<u>NAME</u>	<u>LOCATION</u>	<u>PRIORITY DATE</u>	<u>MAXIMUM INSTANTANEOUS QUANTITY (Qi) (in cfs)</u>	<u>MAXIMUM ANNUAL QUANTITY (Qa) (in afy)</u>	<u>ACRES IRRIGATED</u>	<u>PURPOSE</u>
S3-000598	Richardson, Arthur	SW4NW4SW4 Sec 14 16N, 43E	December 1916	0.004 (2 gpm)	1	0.25	IR
S3-003522	Willsey, Clyde	SE corner Sec 18 16N, 44E	December 1910	0.002 (1 gpm)	1.6	---	DG, ST
S3-003524	Willsey, Clyde	SE corner Sec 18 16N, 44E	December 1910	0.002 (1 gpm)	1.6	---	DG, ST
S3-007090	Mood, Florence	Sec 14 16N, 43E	before 1900	0.012 (6 gpm)	9.7	1	DG, IR
S3-012823	Kuder, William	SE4SW4 Sec 30 16N, 44E	1949	0.002 (1 gpm)	12	---	ST
S3-015079	Gilchrist, DW	NW/4SW/4 Sec 15 15N, 44E	1910	0.03 (15 gpm)	24.2	---	DG, ST
S3-015089	Freeman, Austa	SW/4SW/4 Sec 14 16N, 43E	1872	0.002 (1 gpm)	1.6	---	DG, ST
S3-025078	Guptill, Leonard	NW corner Sec 29 16N, 44E	1878	0.02 (10 gpm)	16.1	---	ST
S3-091630	Roberts, Edwin	SE/4 Sec 18 16N, 44E	1878	0.018? (9 gpm?)	14.5?	---	DG, ST, IR
S3-091631	Roberts, Edwin	NW4NE4NW4 Sec 18 16N, 44E	1882	0.018? (9 gpm?)	14.5?	---	DG, ST, IR
S3-113641	Hunton, Ollie	SE/4NE/4 Sec 28 16N, 44E	May 1938	0.01 (5 gpm)	8.1	---	DG
S3-125169	Cain, Clinton	NW4 Sec 15 15N, 44E	???	0.018? (9 gpm?)	14.5?	12.6	ST, IR
S3-135905	Dober, Frank	NW/4 Sec 15 15N, 44E	April 1962	0.001 (0.5 gpm)	0.8	---	ST
S3-152735	Kolattukudy, PE	W/2SW/4 Sec 13 16N, 43E	August 1965	0.2 (100 gpm)	40	---	DG, ST, IR

**TOTAL Qi (all claims) = 0.339 cfs**

**TOTAL Qi (not including late claims) = 0.11 cfs**

**TOTAL Qa (all claims) = 160.2 afy**

**TOTAL Qa (not including late claims) = 96.8 afy**

**SURFACE WATER CERTIFICATES  
South Fork Palouse River  
Between Pullman and Colfax, WA**

<u>CERTIFICATE NUMBER</u>	<u>NAME</u>	<u>LOCATION</u>	<u>PRIORITY DATE</u>	<u>MAXIMUM INSTANTANEOUS QUANTITY (Qi) (in cfs)</u>	<u>MAXIMUM ANNUAL QUANTITY (Qa) (in afy)</u>	<u>ACRES IRRIGATED</u>	<u>PURPOSE</u>
S3-01528	Hope, Everett	SE4NW4 Sec 15 15N, 44E	8/7/69	0.02 (10 gpm)	4	---	DS, ST
S3-04290	Phelps, Harold	NW4NE4SE4 Sec 15 15N, 44E	7/30/49	0.11 (55 gpm)	---	8	IR
S3-04706	Schrader, D Cain, C	NW4SW4NW4 Sec 15 15N, 44E	1/9/51	0.35 (175 gpm)	---	20	IR
S3-05237	Branch, Archie	SW4SE4 Sec 13 16N, 43E	8/18/52	0.46 (230 gpm)	---	35	IR
S3-05746	Brannon, Harold	SW4NW4 Sec 25 15N, 44E	11/15/50	0.25 (125 gpm)	---	20	IR
S3-05852	Christopher, PG	S2SW4 Sec 10 15N, 44E	5/19/52	0.18 (90 gpm)	---	18	IR
S3-06030	Jones, Elbert	NE4NE4 Sec 19 16N, 44E	5/28/52	0.3 (150 gpm)	---	30	IR
S3-06874	Cochran, Roy	NE4SW4 Sec 33 16N, 44E	1/28/55	0.2 (100 gpm)	60	15	IR
S3-08187	McDonald, GR	Sec 31 15N, 45E	2/13/59	0.09 (45 gpm)	24	6	IR
S3-08792	Harston, CB & R	SW4SW4NE4 Sec 15 15N, 44E	10/15/62	0.04 (20 gpm)	10	2.5	IR
S3-09346	Pyetski, Paul	SE4NW4 Sec 15 15N, 44E	8/24/54	0.09 (45 gpm)	---	7	IR
S3-09423	Urness, Vance	W2SW4 Sec 13 16N, 43E	5/21/63	0.077 (39 gpm)	20	5	DS, IR
S3-10608	Morton, Ralph	NE4NE4 Sec 24 16N, 43E	5/29/68	0.05 (25 gpm)	5.88	2	ST, IR
S3-10821	Ledeman, Harry	SW4SE4 Sec 25 15N, 44E	1/29/62	0.4 (200 gpm)	108	27	IR
S3-11316	Weber, CF & Y	W2SE4SW4 Sec 28 16N, 44E	11/13/51	1.0 (500 gpm)	---	105	IR
S3-29209	McDonald, Gordon	NE4SW4 Sec 31 15N, 45E	5/27/92	0.02 (10 gpm)	2	1	IR
S3-30282 Permit Only	AlbionTown, Smith	SW4SE4NW4 Sec 15 15N, 44E	3/15/00	0.01 (5 gpm)	4	---	EN

**TOTAL Qi = 3.647 cfs**

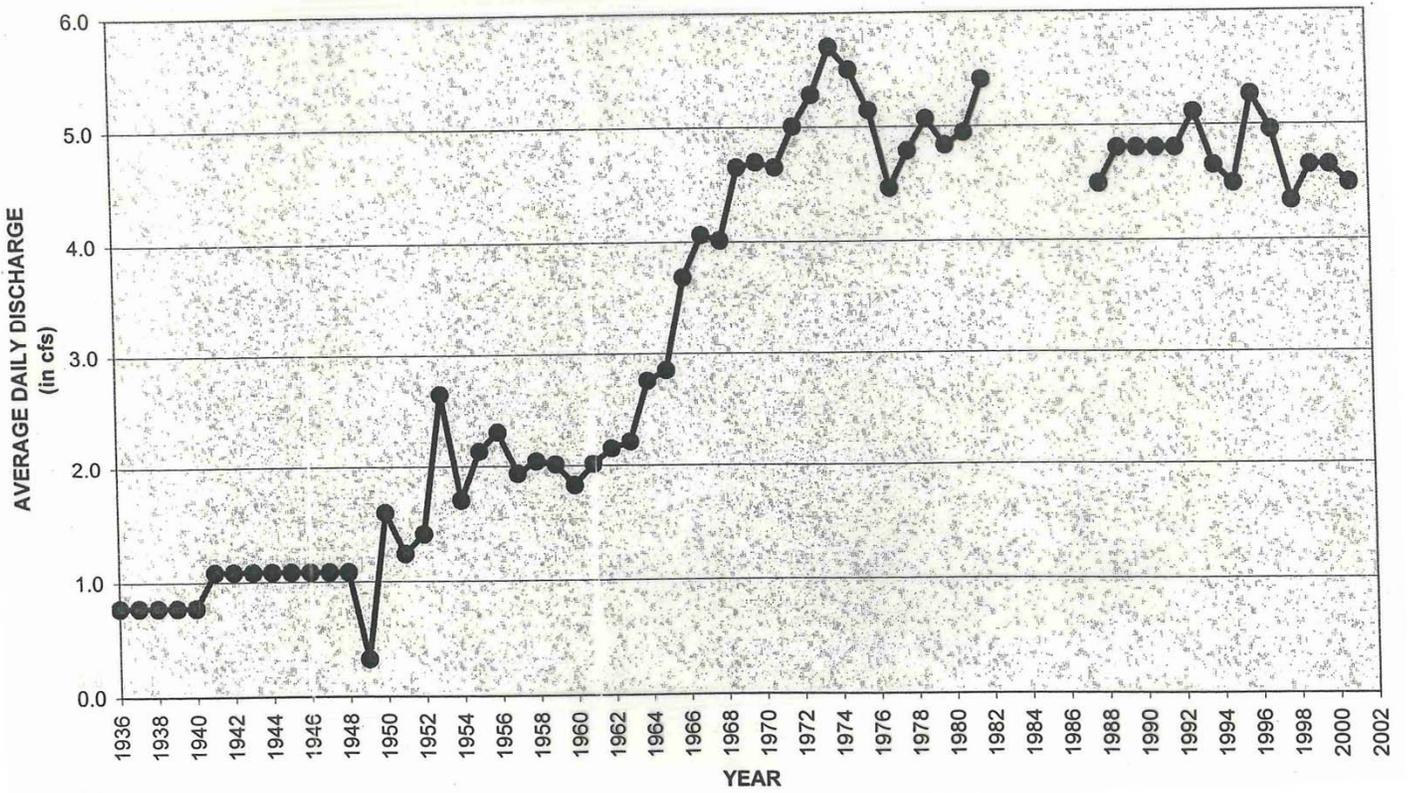
**Maximum Instantaneous Quantity (Qi)  
For All Surface Water Rights  
On South Fork Palouse River  
Between Pullman and Colfax, WA**

**Certificates Qi = 3.647 cfs**

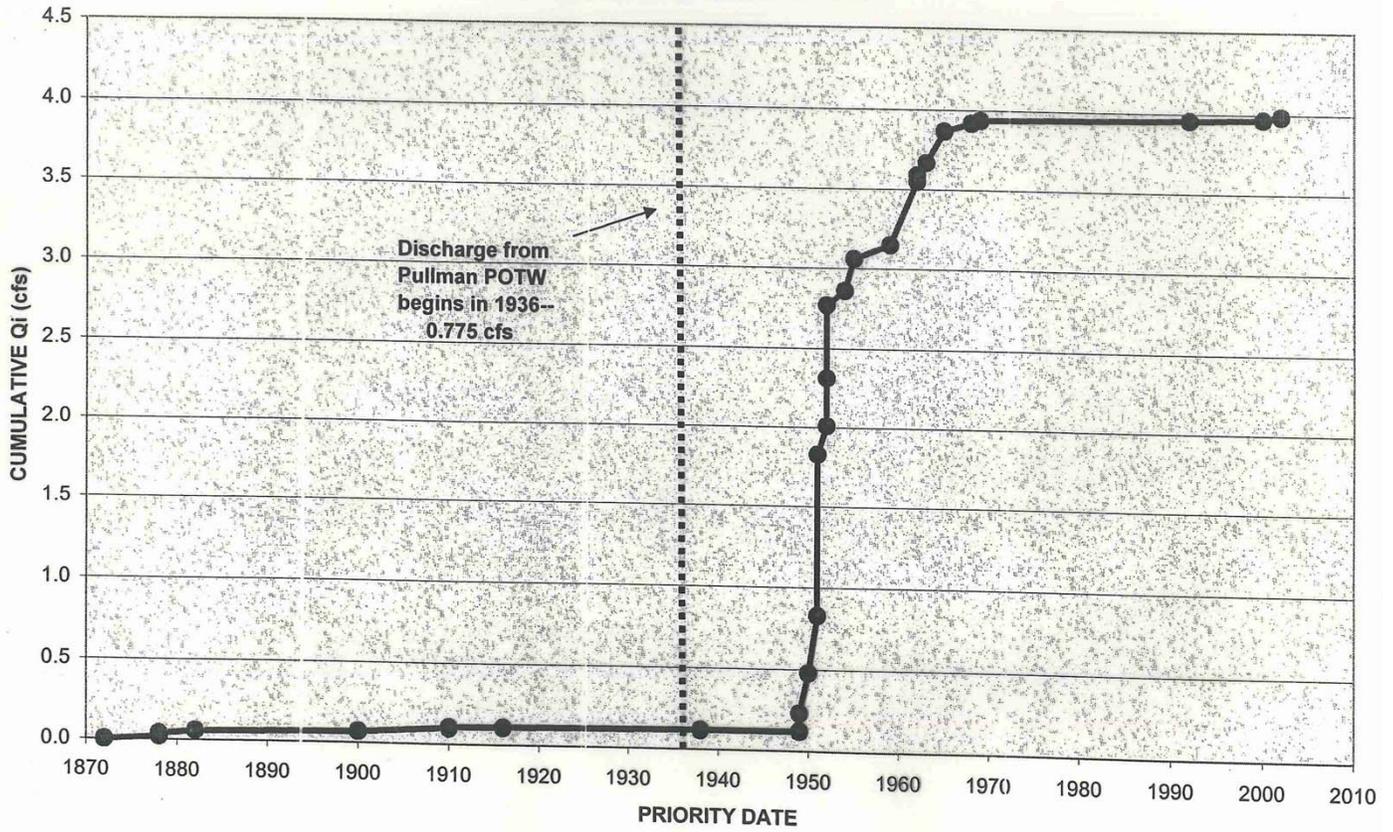
**Claims Qi = 0.339 cfs**

**TOTAL Qi = 3.986 or 4.0 cfs**

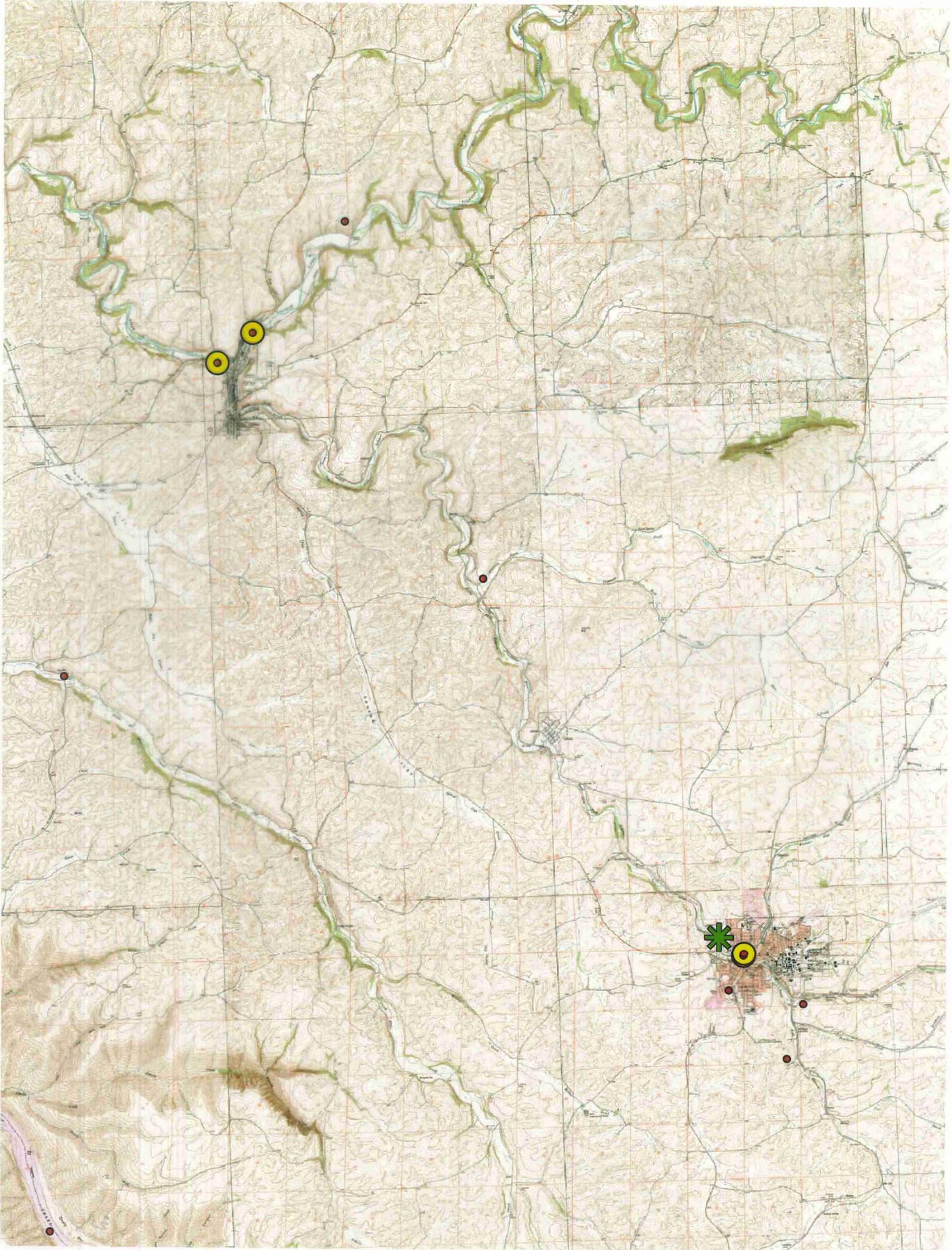
AVERAGE DAILY DISCHARGE (in cfs)  
FROM PULLMAN POTW  
1936-2001



**CUMULATIVE WATER RIGHTS  
For South Fork Palouse River  
Between Pullman and Colfax, WA**



WRprioritydates.xls  
10/8/02



Water Resources

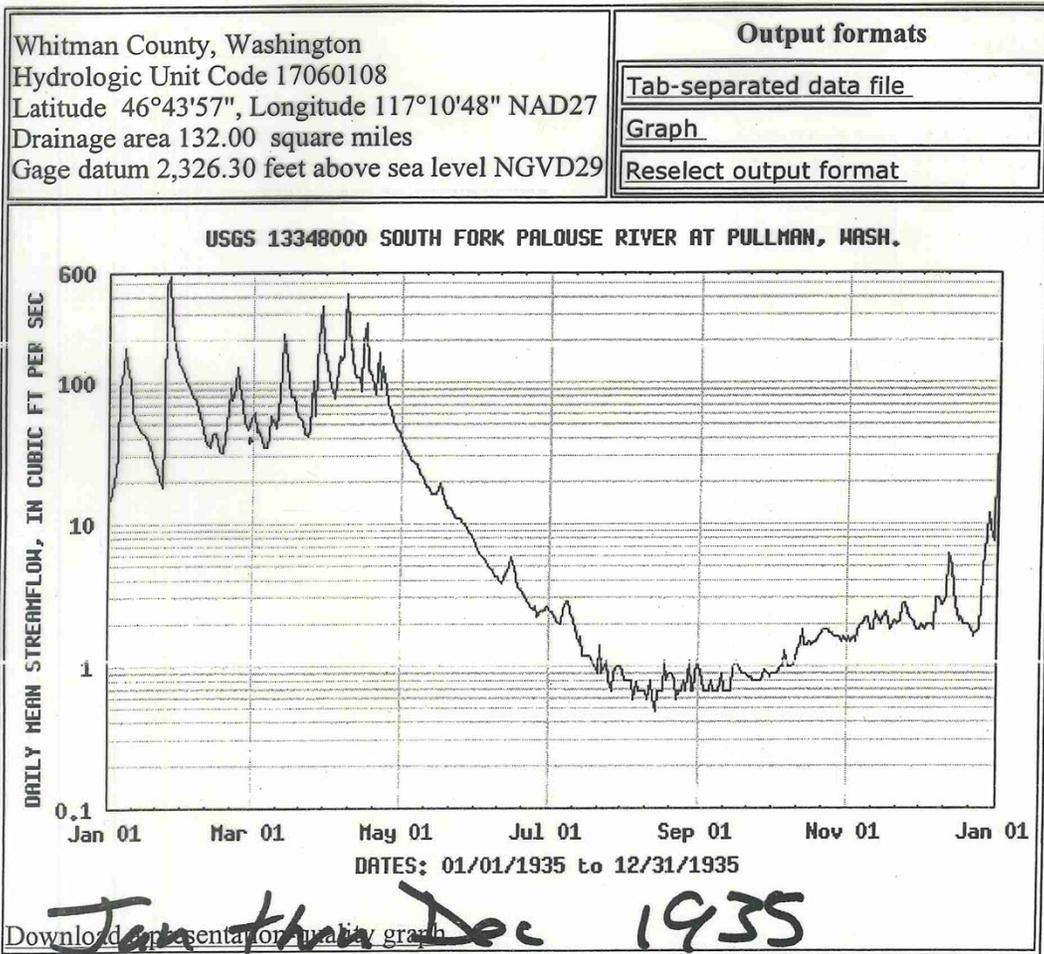
Data Category:  Geographic Area:

# Daily Streamflow for Washington

 [Click Here for information on our September NWIS upgrade](#)

## USGS 13348000 SOUTH FORK PALOUSE RIVER AT PULLMAN, WASH.

Available data for this site



Questions about data [gs-w-wa\\_NWISWeb\\_Data\\_Inquiries@usgs.gov](mailto:gs-w-wa_NWISWeb_Data_Inquiries@usgs.gov)

D4

Water Resources

Data Category:

Surface Water

Geographic Area:

Washington

GO

# Daily Streamflow for Washington



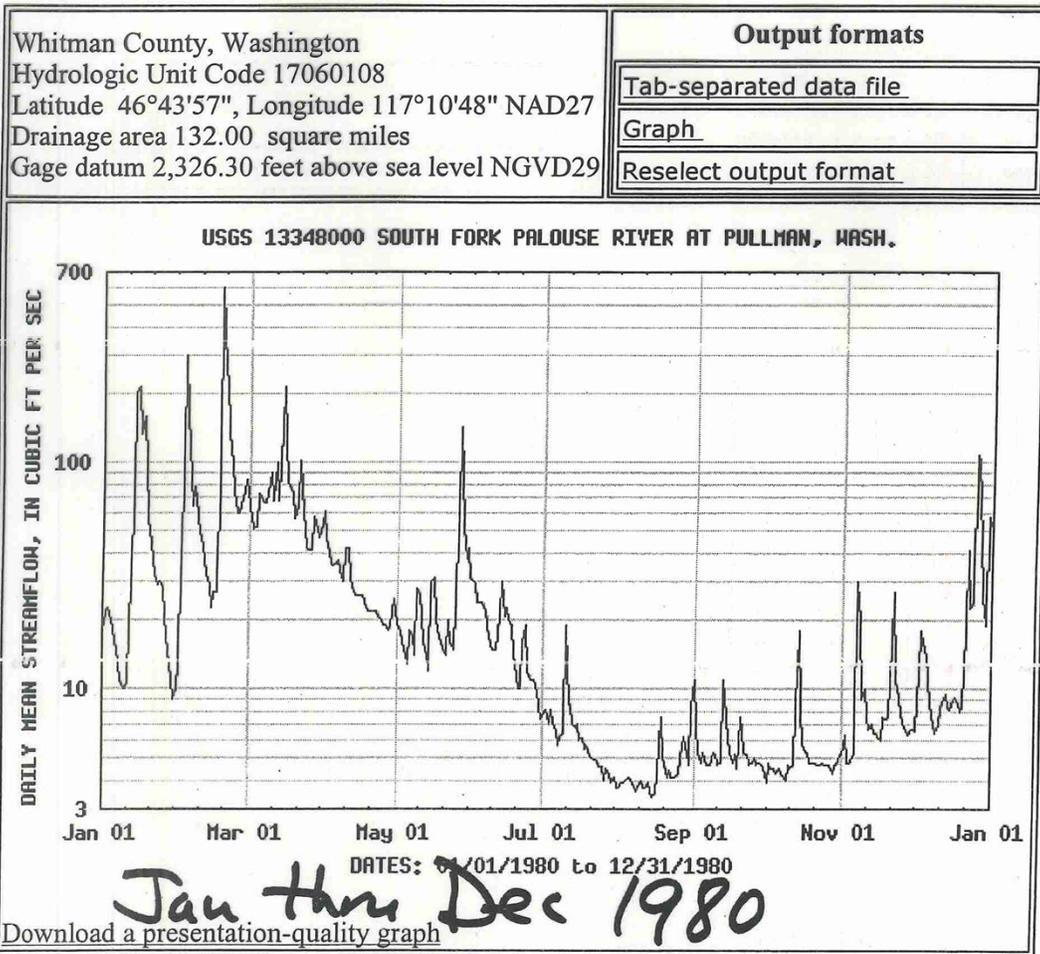
[Click Here for information on our September NWIS upgrade](#)

## USGS 13348000 SOUTH FORK PALOUSE RIVER AT PULLMAN, WASH.

Available data for this site

Surface-water: Daily streamflow

GO



Questions about data [gs-w-wa\\_NWISWeb\\_Data\\_Inquiries@usgs.gov](mailto:gs-w-wa_NWISWeb_Data_Inquiries@usgs.gov)

D5

Water Resources

Data Category:  Geographic Area:

# Daily Streamflow for Washington

 [Click Here for information on our September NWIS upgrade](#)

## USGS 13348000 SOUTH FORK PALOUSE RIVER AT PULLMAN, WASH.

Available data for this site:

Whitman County, Washington Hydrologic Unit Code 17060108 Latitude 46°43'57", Longitude 117°10'48" NAD27 Drainage area 132.00 square miles Gage datum 2,326.30 feet above sea level NGVD29	<b>Output formats</b> <input type="text" value="Tab-separated data file"/> <input type="text" value="Graph"/> <input type="text" value="Reselect output format"/>
---	--

**USGS 13348000 SOUTH FORK PALOUSE RIVER AT PULLMAN, WASH.**

DATES: 06/01/2001 to 09/30/2001

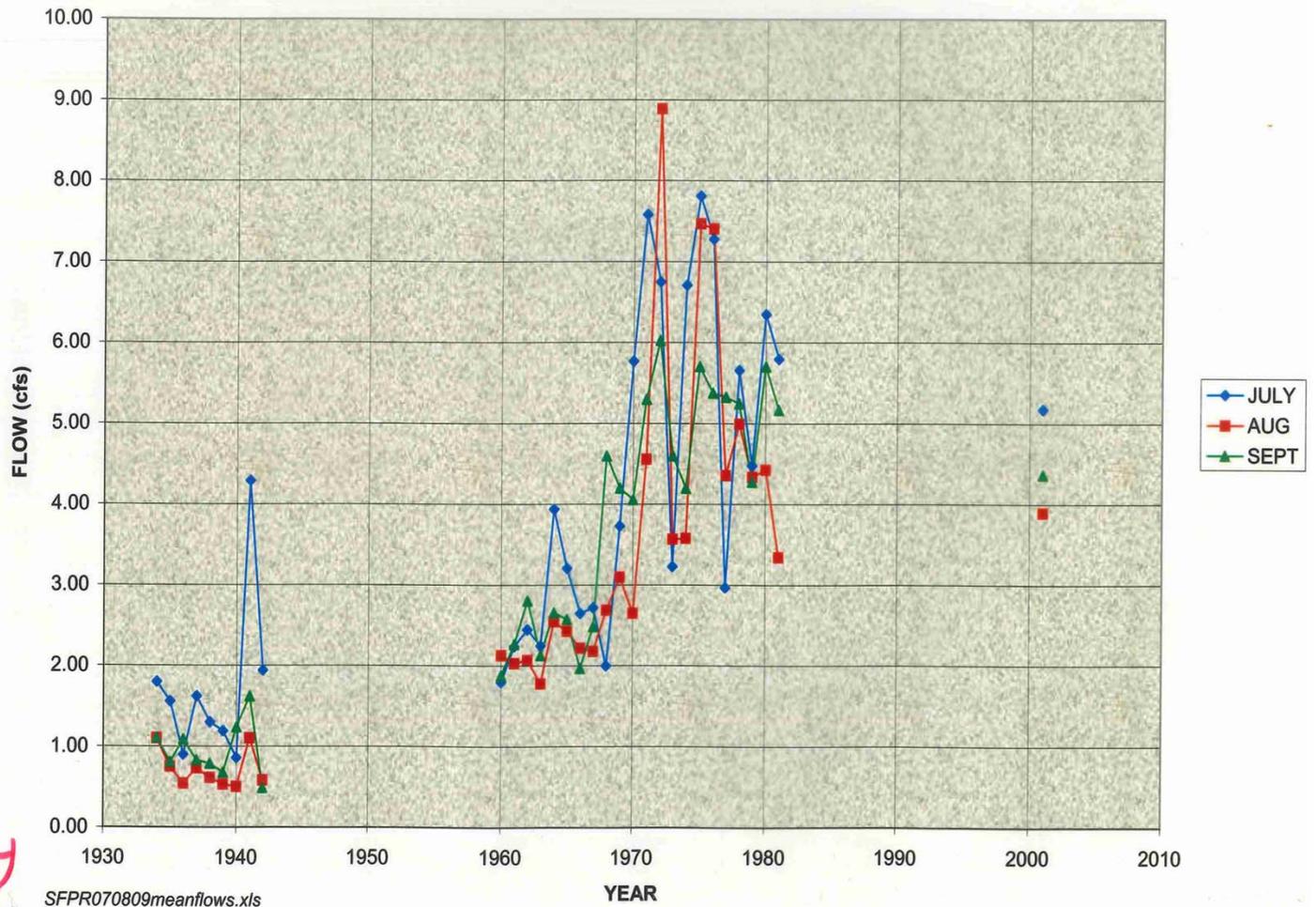
June thru September 2001

[Download chart presentation in quality grade](#)

Questions about data [gs-w-wa\\_NWISWeb\\_Data\\_Inquiries@usgs.gov](mailto:gs-w-wa_NWISWeb_Data_Inquiries@usgs.gov)

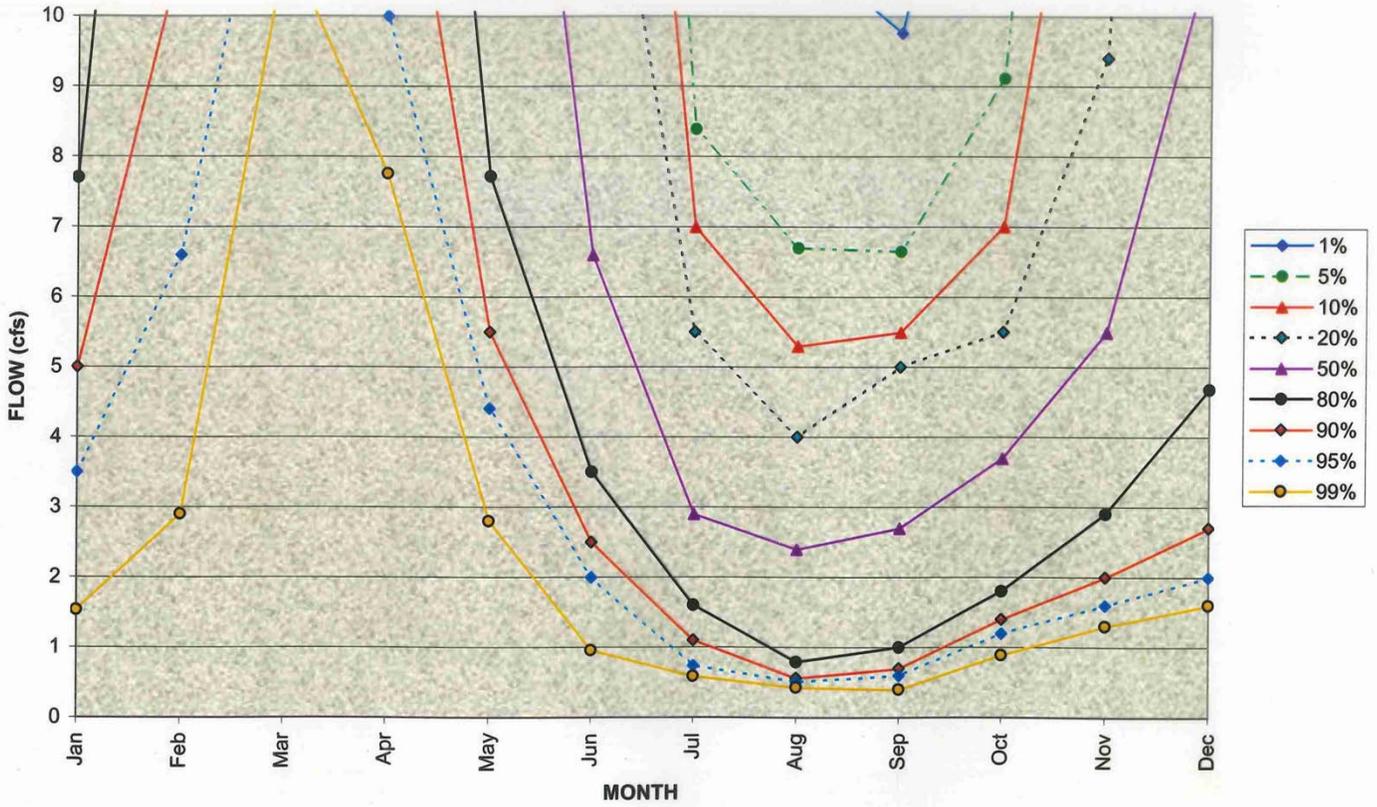
*D7*

1934-2001 MONTHLY MEAN FLOWS (cfs)  
IN SOUTH FORK PALOUSE RIVER AT USGS GAGING STATION 13348000  
UPSTREAM OF CITY OF PULLMAN POTW

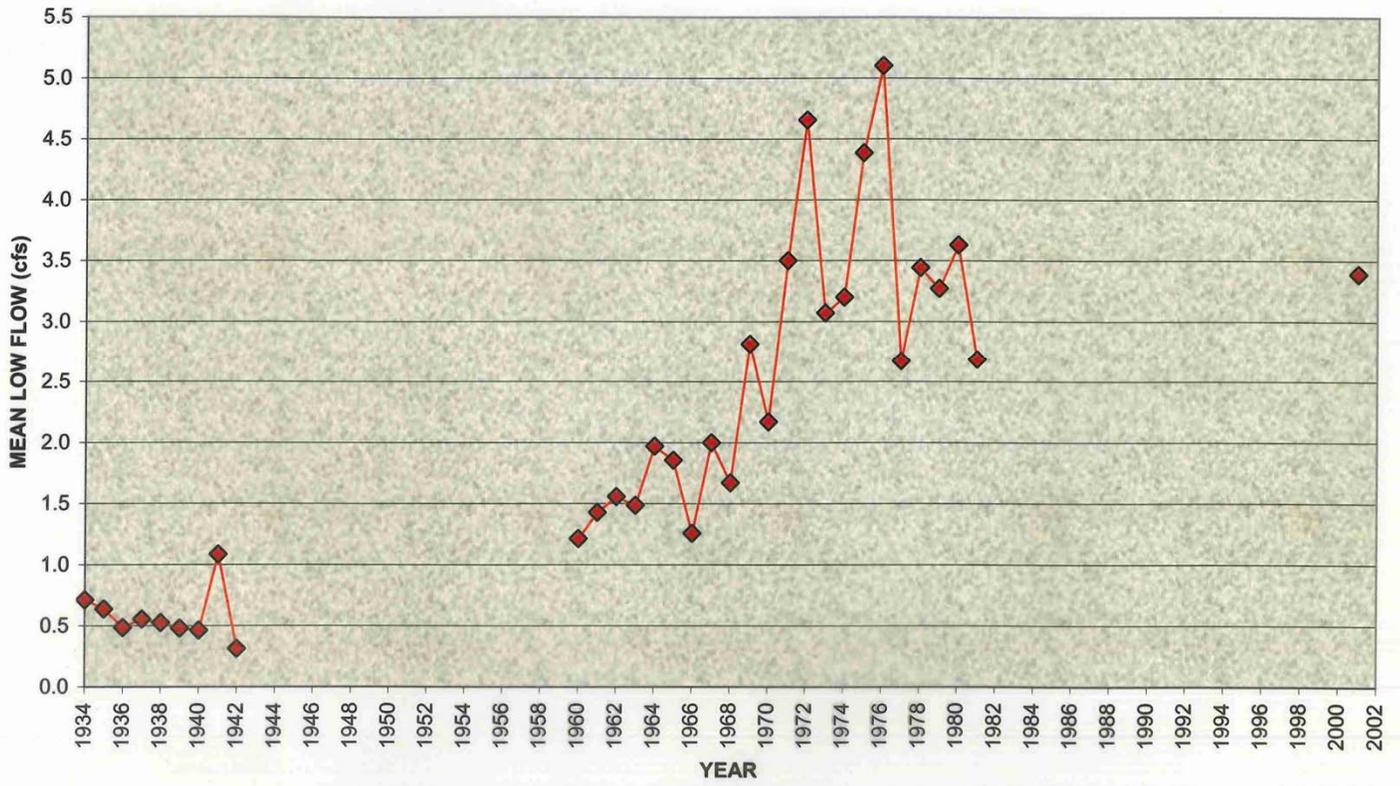


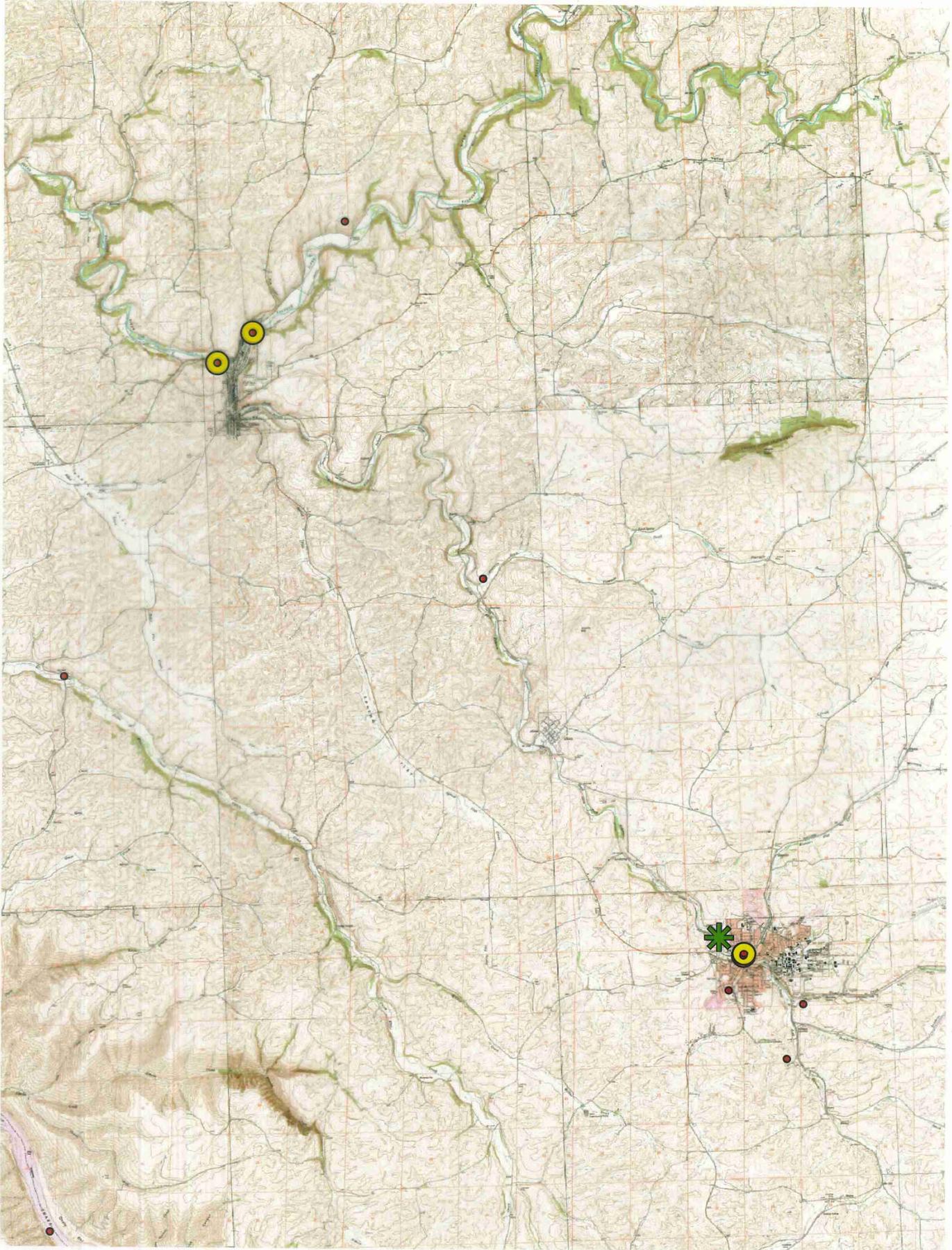
SFPR070809meanflows.xls  
12/06/02

**FLOW EXCEEDANCES IN SOUTH FORK PALOUSE RIVER  
at Station 13348000 in Pullman, WA**

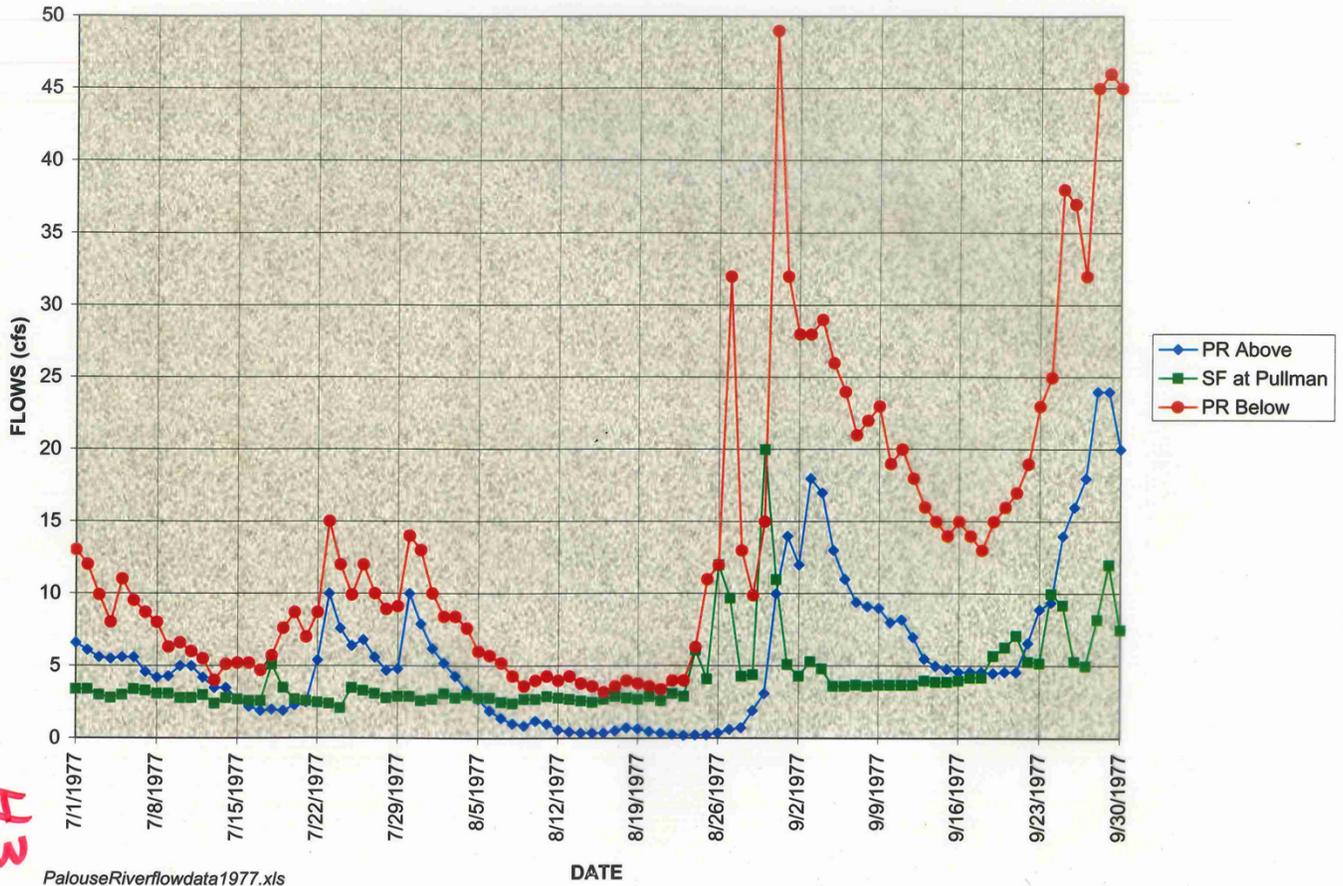


**SEVEN DAY LOW FLOWS at Station 13348000  
SOUTH FORK PALOUSE RIVER in Pullman, WA  
1934 through 2001**





FLOWS IN PALOUSE RIVER AND SOUTH FORK PALOUSE RIVER  
July through September 1977



43

PalouseRiverflowdata1977.xls  
12/10/02

PR Above (Colfax) 0  
 from  
 PR Below (Colfax)

DATE	PR Above	SF at Pullman	POTW	TOTAL Above	PR Below	SFPR Gain/Loss	SFPR Contribution
7/30/77	10	2.9	3.5	16.4	14	-2.4	4
7/31/77	7.9	2.6	3.5	14	13	-1	5.1
8/1/77	6.2	2.7	3.4	12.3	10	-2.3	3.8
8/2/77	5.2	3.1	3.4	11.7	8.4	-3.3	3.2
8/3/77	4.3	2.8	3.4	10.5	8.4	-2.1	4.1
8/4/77	3.3	3	3.4	9.7	7.6	-2.1	4.3
8/5/77	2.7	2.8	3.4	8.9	6	-2.9	3.3
8/6/77	1.9	2.8	3.4	8.1	5.7	-2.4	3.8
8/7/77	1.4	2.5	3.4	7.3	5.2	-2.1	3.8
8/8/77	1	2.4	3.4	6.8	4.3	-2.5	3.3
8/9/77	0.86	2.7	3.4	6.96	3.6	-3.36	2.74
8/10/77	1.2	2.7	3.4	7.3	4	-3.3	2.8
8/11/77	0.99	2.9	3.4	7.29	4.3	-2.99	3.31
8/12/77	0.59	2.8	3.4	6.79	4	-2.79	3.41
8/13/77	0.45	2.7	3.4	6.55	4.3	-2.25	3.85
8/14/77	0.38	2.6	3.4	6.38	3.8	-2.58	3.42
8/15/77	0.38	2.5	3.4	6.28	3.6	-2.68	3.22
8/16/77	0.38	2.7	3.4	6.48	3.2	-3.28	2.82
8/17/77	0.52	2.9	3.4	6.82	3.6	-3.22	3.08
8/18/77	0.74	2.8	3.4	6.94	4	-2.94	3.26
8/19/77	0.66	2.7	3.4	6.76	3.8	-2.96	3.14
8/20/77	0.48	2.9	3.4	6.78	3.6	-3.18	3.12
8/21/77	0.38	2.6	3.4	6.38	3.4	-2.98	3.02
8/22/77	0.27	3.1	3.4	6.77	4	-2.77	3.73
8/23/77	0.2	2.9	3.4	6.5	4	-2.5	3.8
8/24/77	0.22	6.1	3.4	9.72	6.3	-3.42	6.08
8/25/77	0.22	4.1	3.4	7.72	11	3.28	10.78
8/26/77	0.38	12	3.4	15.78	12	-3.78	11.62
8/27/77	0.62	9.7	3.4	13.72	32	18.28	31.38

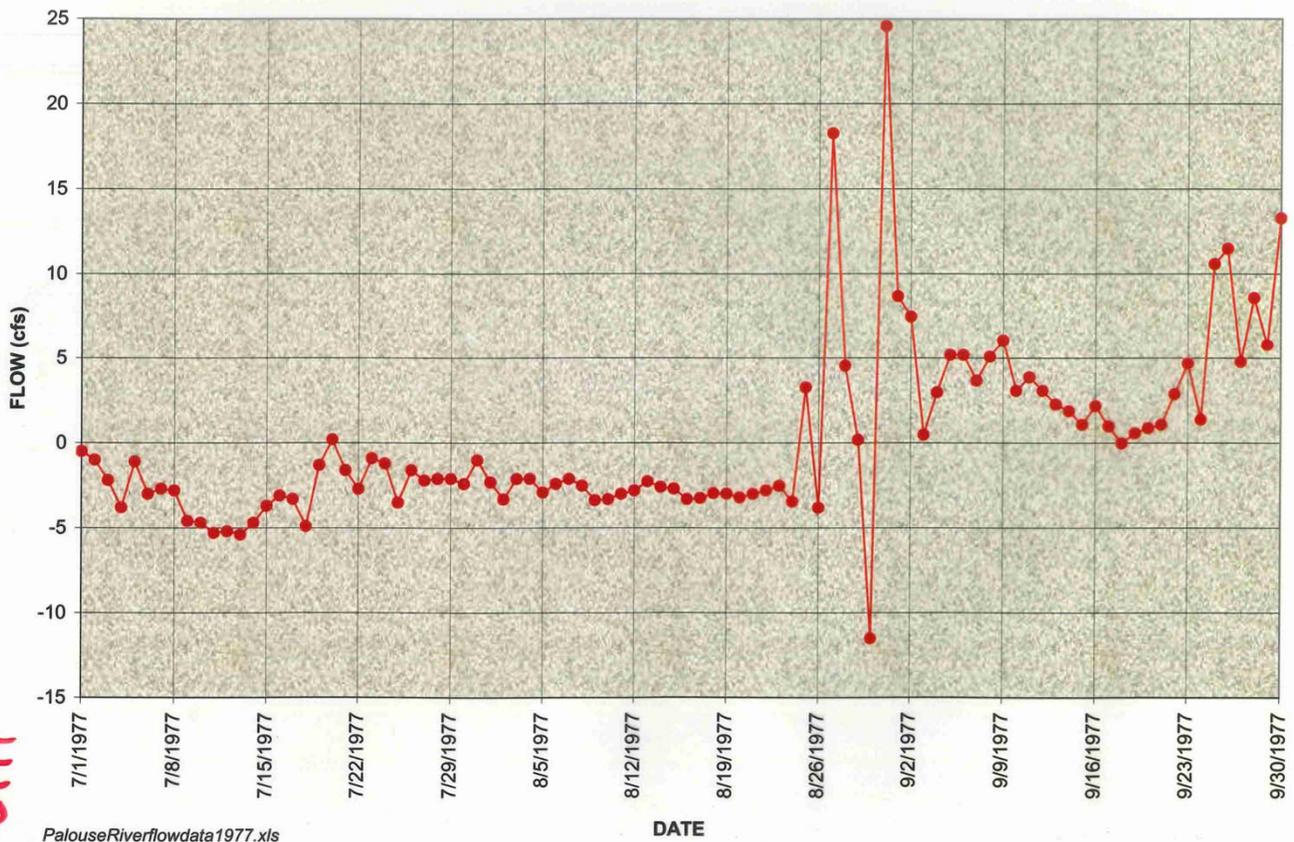
calculated by:  
 PR Below (Colfax)  
 - PR Above (Colfax)

calculated by:  
 SFPR Contribution  
 - SF @ Pullman + POTW

calculated by  
 subtracting  
 SF @ Pullman  
 + POTW  
 from  
 SFPR Contribution

HA  
 64

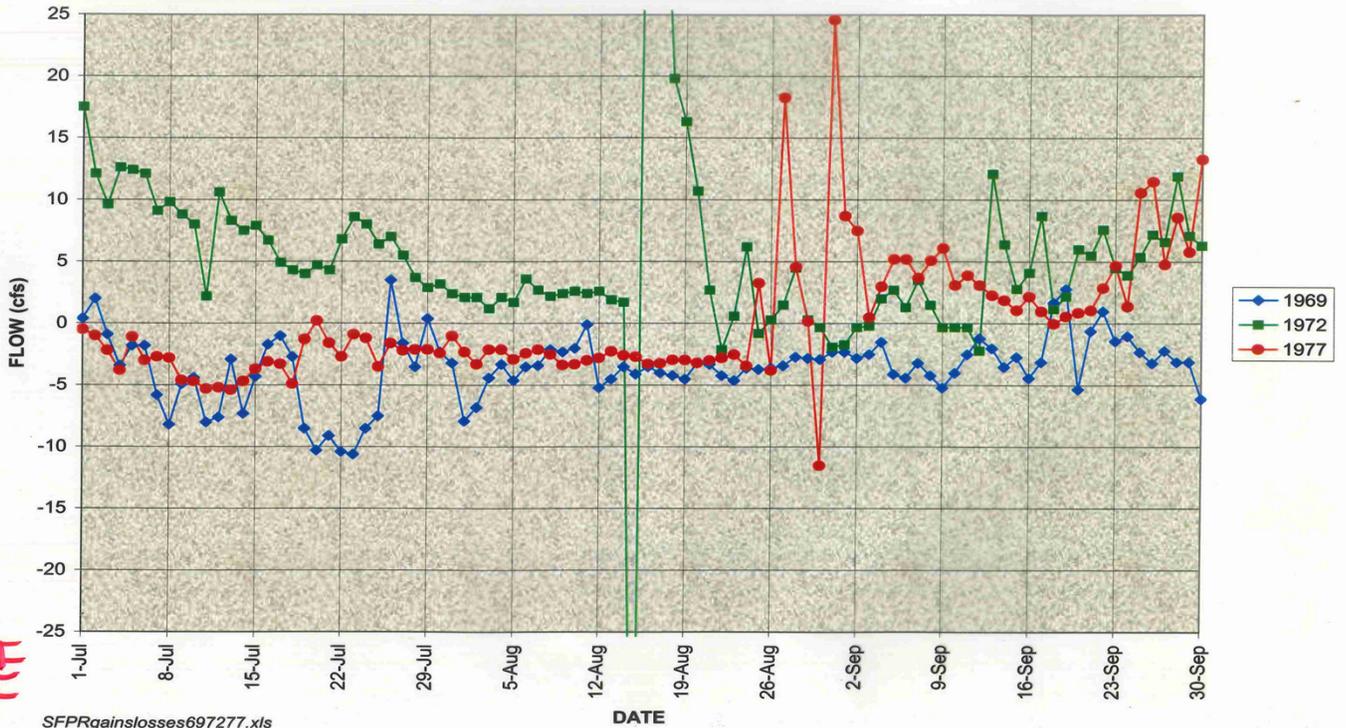
GAIN OR LOSS OF SOUTH FORK PALOUSE RIVER  
BETWEEN PULLMAN POTW AND COLFAX  
DURING JULY THROUGH SEPTEMBER 1977



01H

PalouseRiverflowdata1977.xls  
12/10/02

GAIN OR LOSS OF SOUTH FORK PALOUSE RIVER  
BETWEEN PULLMAN POTW AND COLFAX  
During Summers of 1969, 1972, and 1977



111

SFPRgainslosses697277.xls  
12/10/02

**SOUTH FORK PALOUSE RIVER (SFPR) FLOWS**  
**Above and Below POTW Outfall**  
**For City of Pullman, WA**

<u>MONTH</u>	<u>LOWEST MONTHLY MEAN FLOW OF SFPR AT USGS GAGING STATION 13348000 between 1971 and 1981</u>  (cfs)	<u>LOWEST 7-DAY LOW FLOW OF SFPR AT USGS GAGING STATION 13348000 between 1971 and 1981</u>  (cfs)	<u>LOWEST DAILY MEAN DISCHARGE FROM PULLMAN POTW between 1971 and 1981</u>  (cfs)	<u>LOWEST DAILY MEAN DISCHARGE FROM PULLMAN POTW if 2.1 cfs had been diverted between 1971 and 1981</u>  (cfs)	<u>LOWEST DAILY MEAN FLOW OF SFPR BELOW PULLMAN POTW between 1971 and 1981</u>  (Lowest 7-day low flow of SFPR + lowest daily mean discharge from Pullman POTW for the month)  (cfs)	<u>LOWEST DAILY MEAN FLOW OF SFPR BELOW PULLMAN POTW if 2.1 cfs had been diverted between 1971 and 1981</u>  (Lowest 7-day low flow of SFPR + lowest daily mean discharge from Pullman POTW for the month if reduced by 2.1 cfs)  (cfs)
June	4.33 (1977)		3.6 (1977)	1.5	6.27	4.17
July	2.97 (1977)		3.5 (1977)	1.4	6.17	4.07
August	3.35 (1981)	2.67 (1977)	3.4 (1976)	1.3	6.07	3.97 +++
September	4.20 (1974)		3.1 (1972)	1.0	5.77	3.67 +++

+++ indicates flow less than 4.0 cfs, which is the total Qi for all surface water certificates and claims on the South Fork Palouse River between Pullman and Colfax



if 2.1 cfs reclaimed

Water Resources

Data Category:  Geographic Area:

## Daily Streamflow for Washington

[Click Here](#) for information on our September NWIS upgrade

### USGS 13348000 SOUTH FORK PALOUSE RIVER AT PULLMAN, WASH.

Available data for this site

Whitman County, Washington Hydrologic Unit Code 17060108 Latitude 46°43'57", Longitude 117°10'48" NAD27 Drainage area 132.00 square miles Gage datum 2,326.30 feet above sea level NGVD29	<b>Output formats</b> <input type="button" value="Tab-separated data file"/> <input type="button" value="Graph"/> <input type="button" value="Reselect output format"/>
---	--

**USGS 13348000 SOUTH FORK PALOUSE RIVER AT PULLMAN, WASH.**

DAILY MEAN STREAMFLOW, IN CUBIC FT PER SEC

DATES: 01/01/1977 To 12/31/1977

Download a presentation-quality graph

Questions about data [gs-w-wa\\_NWISWeb\\_Data\\_Inquiries@usgs.gov](mailto:gs-w-wa_NWISWeb_Data_Inquiries@usgs.gov)

67



if 3.1 cfs reclaimed

Water Resources

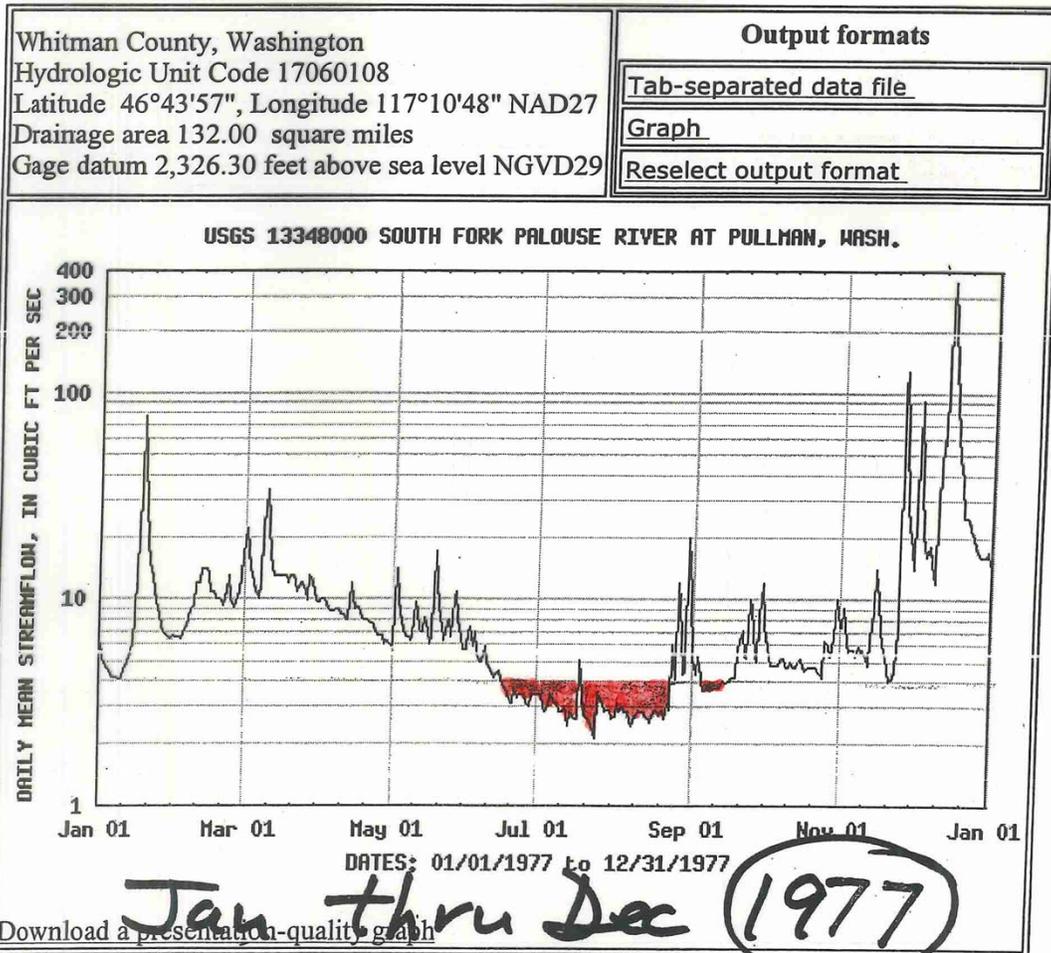
Data Category:  Geographic Area:

# Daily Streamflow for Washington

[Click Here](#) for information on our September NWIS upgrade

## USGS 13348000 SOUTH FORK PALOUSE RIVER AT PULLMAN, WASH.

Available data for this site



Questions about data [gs-w-wa\\_NWISWeb\\_Data\\_Inquiries@usgs.gov](mailto:gs-w-wa_NWISWeb_Data_Inquiries@usgs.gov)

68



if 2.1 cfs reclaimed

Water Resources

Data Category:

Surface Water

Geographic Area:

Washington

GO

# Daily Streamflow for Washington



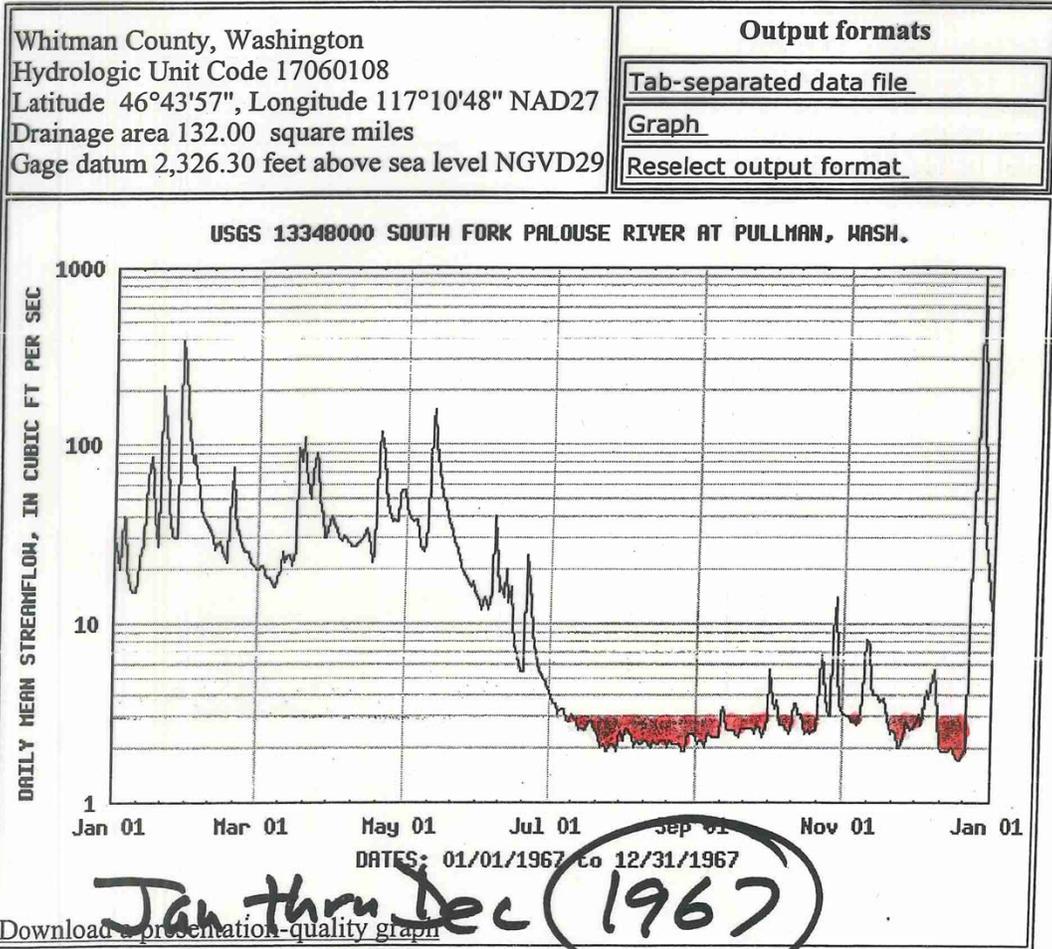
[Click Here](#) for information on our September NWIS upgrade

## USGS 13348000 SOUTH FORK PALOUSE RIVER AT PULLMAN, WASH.

Available data for this site

Surface-water: Daily streamflow

GO



Questions about data [gs-w-wa\\_NWISWeb\\_Data\\_Inquiries@usgs.gov](mailto:gs-w-wa_NWISWeb_Data_Inquiries@usgs.gov)

66



STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

4601 N. Monroe Street • Spokane, Washington 99205-1295 • (509) 456-2926

February 28, 2003

COPY

Mr. Mark Workman  
Public Works Director

City of Pullman  
P.O. Box 249  
Pullman, WA 99163-0249

Mr. Gerald Schlatter  
Executive Director  
Capital Planning & Development  
Washington State University  
P.O. Box 643611  
Pullman, WA 99164-3611

Dear Mr. Workman and Mr. Schlatter:

Thank you for meeting with Department of Ecology (Ecology) staff on January 28, 2003 to discuss the reclaimed water project proposed by the City of Pullman (Pullman) and Washington State University (WSU). At your request, we are sending you this letter to memorialize the issues discussed in the meeting and to document Ecology's concerns about potential impacts on the quantity and quality of water in the South Fork Palouse River if the project is implemented as proposed. This summary represents our understanding of the information presented and discussed at the meeting.

Participants

City of Pullman—Mark Workman & Art Garro  
Washington State University—Gerald Schlatter & Joe Kline  
Parametrix (Consultant to Pullman & WSU)—Bob Rosain  
Ecology Water Resources Program—George Schlender, John Covert & Keith Stoffel  
Ecology Water Quality Program—Jim Bellaÿty, Jerry Anderson, Richard Koch & Marcie Mangold

Water Resource Issues

Keith Stoffel and John Covert presented a synopsis of the water rights impairment analysis the Water Resources Program conducted for the proposed project. Copies of data, graphs, and maps generated for the analysis were presented to the Pullman and WSU representatives. The following information was evaluated for the impairment analysis:

- ✓ Historic (1936-2001) discharge data for the Pullman/WSU wastewater treatment plant (WWTP)
- ✓ Streamflow data for gaging stations located on the Palouse River, South Fork Palouse River (SFPR) and Missouri Flat Creek (a tributary to the SFPR) during the period of discharge from the WWTP, including the following:
  - Daily and monthly mean discharge data
  - Daily flow data for selected years during the period of discharge
  - Annual 7-day low flow data
  - Flow exceedance data
- ✓ Water right claims and certificates for the SFPR between Pullman and Colfax
- ✓ Landsat data showing vegetative growth along the SFPR between Pullman and Colfax
- ✓ Estimates of gains and losses of the SFPR between Pullman and Colfax during the summers of 1969, 1972, and 1977



Mr. Mark Workman  
Mr. Gerald Schlatter  
Page 3  
February 28, 2003

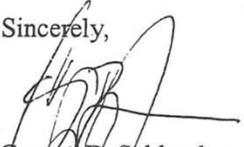
Summary

Ecology believes the probability that the proposed Pullman/WSU reclaimed water project would either impair existing water rights on the South Fork Palouse River or would adversely affect the quality of water in the river is strongly dependent upon the volume of wastewater diverted from the WWTP for the reclaimed water project. It appears that a 1.05 mgd project would have no significant effect on either water quantity or quality in the South Fork Palouse River. A 1.35 mgd project would increase the risk of impairing existing water rights and would raise the uncertainty of meeting future water quality TMDLs that will be established for the river. A 2.0 mgd project would almost certainly impair existing water rights and affect water quality on the South Fork Palouse River.

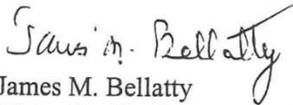
Because some uncertainty exists about the magnitude of water rights impairment and/or water quality impacts the 1.35 mgd and 2.0 mgd projects would have on the South Fork Palouse River, Ecology encourages the City of Pullman and WSU to conduct additional investigations to further assess and quantify the uncertainty. We also encourage Pullman and WSU to plan for adaptive management to protect water resources and to maintain compliance with water quality standards and water resource laws.

Please let us know if you have any questions, concerns or the need for clarification.

Sincerely,

  
George B. Schlender  
Water Resources Program Section Manager  
Eastern Regional Office

Sincerely,

  
James M. Bellatty  
Water Quality Program Section Manager  
Eastern Regional Office

GBS/KS:md

W: Stoffel/2003/Pullman and WSU 2-28-2003.doc