Analysis Techniques: Annual Analysis Example

Information to get started:

- The lesson below contains step-by-step instructions and "snapshots" of what each step looks like when carried out in a Microsoft Excel workbook. Blue shading of information in the Excel illustrations denotes changes made from the previous step. Dots placed in three consecutive rows indicate that a portion of data is hidden from sight.
- You can download an Excel workbook containing the complete data set by clicking on the "Download Data" link below. It contains each calculation step on a separate worksheet. To move between steps, click on the tabs at the bottom of the excel window.
- When you download the file, it may open in your browser window. You may wish to use the "save as" function to save the file to a local drive and then reopen it in Excel. This will make it easier to flip between the online lesson and the example workbook.
- Finally, we want to remind you that the techniques explained on this site are statistically based; therefore results must be viewed as predictions and not as facts. Please use the techniques and the information obtained from them responsibly!

Download Data

Step 1: Calculating Mean Annual Flow

• You can use the average function in Excel to obtain the average streamflow for each water year in the period of record. The averaging will involve 365 or 366 daily values in each water year (366 days accounts for leap year). See the **Data Manipulation** section for a more detailed explanation of how to obtain data and to calculate mean annual flow.

		2 10 100		21 %1 🛍 🗊 🕈 🗠						· 4	
-	M26 *		action (mainting 0 . 0								
	A	B	C	D	E	F	G	H	- 1	d)	
	AGENCY	STATION	DATE (Month, Day, Year)	STREAMFLOW (CFS)	ANNUAL AVERAGES (CFS)					_	
20	USGS	14306500	10/1/39	64					-		
3 22	USGS	14306500	10/2/39	66							
	USGS	14306500	10/3/39	68							
5	USGS	14306500	10/4/39	200							
1	USGS	14306500	10/5/39	290							
	USGS	14306500	10/6/39	200							
1	USGS	14306500	10/7/39	150							
1	USGS	14306500	10/6/39	120					-		
0	USGS	14306500	10/9/39	100							
t	USGS	14306500	10/10/39	90							
2	USGS	14306500	10/11/39	85							
3	USGS	14306500	10/12/39	61							
4	USGS	14306500	10/13/39	78							
5	USGS	14306500	10/14/39	75							
6	USGS	14306500	10/15/39	72							
Z	USGS	14306500	10/16/39	70							
8	USGS	14306500	10/17/39	100							
9	USGS	14306500	10/18/39	159							
0	USGS	14306500	10/19/39	172							
1	USGS	14306500	10/20/39	169							
2	USGS	14306500	10/21/39	137							
-	USGS	14306500	10/22/39	112							
234	USGS	14306500	10/23/39	106							
5											
61		10	20	100							
7			1 N								
5 6 7	USGS	14306500	9/27/40	132							-
8	USGS	14306500	9/26/40	253			_				
2	USGS	14306500	9/29/40	182							
ő	USGS	14306500	9/30/40	125	1198	an	nual and	trane for	water year	1939	
ñ	USGS	14306500	10/1/40	94			1/1/39	to	9/30/40	1 10 30	
		/ there / these			14					-	

• Copy your mean flow for each year into a new table.

	icrosoft Excel - r	and the second se										<u>E</u>
-		isert Formet Jook Date										-10
1	# 2 3 D	V XOB ···	· · · · · · · · · · · · · · · · · · ·		Arial		10 - 1	I I I	王王王	围汕凸		2 - 4 -
		- 12 - 12 - 11	E									
	AA24 -	=	Sector Sector									
	A:	Ð	0	D	E	F	G	H	1	J	K	E.
「見たえる」	WATER YEAR	STREAMFLOW (CFS) WATER YEAR	STREAMFLOW (CFS) USGS - CALENDAR YEAR									
ł	1940	1198	1255 - CALENDAR TEAR									
8	1940	881	1200				-					
8	1942	1185	1434									-
8	1943	1825	1360									-
ł	1944	928	777		-							
ł	1945	1294	1721									-
ł	1946	1545	1664									
ł	1947	1485	1390									
ľ	1948	1792	1724									-
Ì	1949	1490	1274									-
ł	1950	1745	2243									
I	1951	2094	2056					-				
Í	1952	1842	1240									
Contraction of the local division of the loc	1963	1715	2270									
Î	1954	2022	1689									
8	1966	1430	2034									
Non-Dama	1956	2384	1676									
1	1967	1226	1351									
1000	1968	1542	1503									
THE CONTRACTORY AND INCOME.	1969	1495	1331									
1	1960	1368	1603									
I	1961	1838	1800									
Í			-									
1												
Í	1997	1837	1482									
ĺ	1996	1533	1790									
1	1999	2148	1958									
Į	2000	1409										_
l	annual data /				-		+1		1			

Step 2: Calculating the Mean Annual Flow for Period of Record

- Use the average function to calculate the mean annual flow for the period of record. For this example, the period of record is 10 years.
- Column C in the table below contains the mean annual flow for "calendar years". It is interesting to compare how the value changes when the mean is calculated for "calendar years" instead of "water years".

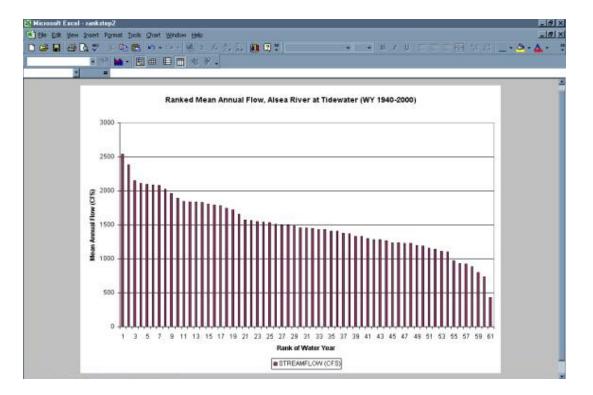
		- 📷 🍋 - 🖬 🖦	II									
	AB67	=										
	A	B	0	D	E	F	G	H	1	J 3	K	E.
	WATER YEAR		STREAMFLOW (CFS)					_				
ĝ	100100	WATER YEAR	USGS - CALENDAR YEAR				-		-			
	1940	1198	1255				-		-			
	1941	881	1113									
	1942	1185	1434									
	1943	1825	1360									
1	1944	928	777									
	1945	1294	1721									
	1946	1545	1664		-		-	-	-	-		
	1947	1485	1390									
	1948	1792	1724									
	1949	1490	1274									
	1960	1745	2243									
	1961	2094	2056		-		-		-	-		
ł	1952	1842	1240									
	1963	1715	2270									
	1954	2022	1689						-			
	1965	1430	2034									
	1956	2384	1676									
			•									
Ī		÷										
Ī	1. A.S											
	1996	2088	2226									
	1997	1837	1482							1		
	1996	1533	1790									
	1999	2148	1958									
	2000	1409										
	Mean Annual Flow for Period of											
	Record	1490	1497									
đ												

Step 3: Ranked Annual Flow

• Use the sort option (under the Data menu) to sort mean annual flows in descending order.

	Insert Format Tools Data			21 00	(7) P 1944			1000		- CTT +		-
	to the			A+ 188	LT Paris	10 10		-	100			
	* 1991 🌨 * (EL 1997)	THE R. P.	88.									
VA23	=	С	D	E	. e	G		長	23	3	K	12
MEAN	ANNUAL FLOWS		- U.	-	RANKED ME	AN ANNUAL FLOWS		11	100	4	P	L.
	STREAMFLOW (CFS)			RANK		STREAMFLOW (CFS	a					
1940	1198			1	1974	2541	1					
1941	881			2	1956	2384						-
1942	1185			3	1999	2148						_
1943	1825			4	1982	2108						
1944	926			5	1951	2094						
1945	1294			6	1996	2098						
1946	1545			7	1972	2080			-		-	
1947	1485			8	1954	2022						
1948	1792			9	1963	1959						
1949	1490			10	1971	1892						
1960	1745			11	1952	1842						
1961	2094		-	12	1961	1836			-		-	
1962	1842			13	1997	1837						
1963	1715			14	1943	1825						
1954	2022			15	1969	1807						
1965	1430			15	1948	1792						
1956	2384			17	1995	1782				_		_
1957	1226			18	1950	1745					-	
1958	1542		_	19	1953	1715				_		_
1969	1495			20	1965	1656	-				-	-
1960	1368			21	1984	1574			-		-	_
1961	1838			22	1978	1560					-	-
					2	1					-	_
	•			-		1				_		_
1997	1837		-	58	1941	881	-	_	-	-	-	
1997	1637			58	1941	795					-	_
1998	2148			60	1992	731	-			-	-	-
2000	1409			61	1977	431					-	_
2000	1409			Dis	131.1	421				_		

• Plot ranked data.



• It may be helpful to plot on the chart the mean annual flow and one standard deviaton of the mean.

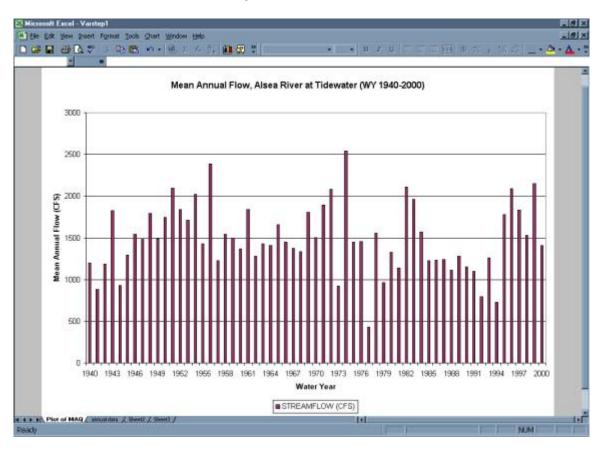
	pen gisert Forma	t Jools Date Window H	elp							
	B D 7 1	DE 0.00	E A 21 %1 🛍 🗇 🖱 🗛	ial	- 10 - B	<i>1</i> U U		B % #	_ • @	
89	the state of the s	日日日日本	88.							
A.	8	c	D	E F	G	н	T	3	K	-1
	RANKED ME	AN ANNUAL FLOWS								
			MEAN ANNUAL FLOW FOR							
RANK	WATER YEAR	STREAMELOW (CES)	PERIOD OF RECORD (CFS)							
1	1974	2541	1490							
2	1956	2384	1490							
3	1999	2148	1490		_					_
4	1982	2108 2094	1490		_					
6	1996	2068	1490							-
7	1972	2060	1490							
8	1954	2022	1490							_
9	1983	1959	1490							
11	1952	1842	1490							-
12	1961	1838	1490							
13	1997	1837	1490							
14	1943	1825	1490							-
15 16	1969	1807	1490		-		-			
17	1995	1782	1490							-
		4	1							
1										
59	1992				-			_		-
60	1992	731	1490							
61	1977	431	1490							
	Deviation	410	0.023							
	Ine STDEV	1900		_	-					-
ean - O	IN STDEV	1000								
• b c			B △ · ∠ · △ · = = : C		1.1	1		î î	N.M.	
• b) 6			<u>0</u> . <u>0</u> . <u>2</u> . <u>0</u> .==f			1		î î	DA.M	
• Dj (c record) Ef	AgtoShapes -	I Iods Chart Window i	*			T				-
• Dj (c record) Ef	AgtoShapes -	I Iods Chart Window i				I.				-
• Dj (c record) Ef	AglaShapes + notel = zankstep3 gen (poet Figma D C (* 1997)	* Iools Grant Window ; 2: 2: 4: 4: 4: 4: 4: 4: 4: 4: 4: 4: 4: 4: 4:	** ** /* (** (**)* (* (* (*))			1 x_U_0	F.			-
• Dj (c record) Ef	AglaShapes + notel - zankstep3 gen (poet Figma D C (*	I Iods Chart Window i	** ** /* (** (**)* (* (* (*))			r r	F			-
· D) (; rescalt (; ; Edk)	AgtaShapes + mod o zankatep3 (ew poset Figma (a) (*)	* Iools Grant Window ; 2: 2: 4: 4: 4: 4: 4: 4: 4: 4: 4: 4: 4: 4: 4:	** ** /* (** (**)* (* (* (*))			1 2 U E	F			-
· D) (; rescalt (; ; Edk)	AgtaShapes + mod o zankatep3 (ew poset Figma (a) (*)		** ** /* (** (**)* (* (* (*))	106.	• • 1					-
· D) (; rescalt (; ; Edk)	, AgtoShapes - coel a rankstep3 den joset Figma ■ D, V = =	t Iols Shat Window H	** ** /* (), (), () () () () * () & * .	106.	• • 1					-
E E E	AgtaShapes + mod o zankatep3 (ew poset Figma (a) (*)		** ** /* (), (), () () () () * () & * .	106.	• • 1					-
E E E	, AgtoShapes - coel a rankstep3 den joset Figma ■ D, V = =	t jock Ohert Window H	** ** /* (), (), () () () () * () & * .	106.	• • 1					-
E E E	AgtoShapes -	t Iods Shart Wrober H Tods Shart Wrober H F E E F Ranked 2341 div 1344 2344 div	** ** /* (), (), () () () () * () & * .	106.	• • 1		1			-
E E E	, AgtoShapes - coel a rankstep3 den joset Figma ■ D, V = =	t Tools Chart Window H P P M M M M M M H M M M M M M M H M M M M M M M Ranked	** ** /* (), (), () () () () * () & * .	106.	• • 1					-
E E E	AgtoShapes -	t Iods Shart Wrober H Tods Shart Wrober H F E E F Ranked 2341 div 1344 2344 div	** ** /* (), (), () () () () * () & * .	106.	• • 1					-
E G	AgtoShapes -	t Jods Chart Window H Dols Chart Window H Ranked 2011 of 1 1014 2014 of 5 1055	** ** /* (), (), () () () () * () & * .	106.	• • 1		7			-
E G	AgtoShapes -	t Iods Shart Wrober H Tods Shart Wrober H F E E F Ranked 2341 div 1344 2344 div	** ** /* (), (), () () () () * () & * .	106.	• • 1		r f			-
E G	AgtoShapes -	t Jods Chart Window H Dols Chart Window H Ranked 2011 of 1 1014 2014 of 5 1055	** ** /* (), (), () () () () * () & * .	106.	• • 1					-
E G	AgtoShapes -	t Jods Chart Window H Dols Chart Window H Ranked 2011 of 1 1014 2014 of 5 1055	** ** /* (), (), () () () () * () & * .	106.	• • I	40-2000)	1	e 24 di	• •	-
E E E	AgtoShapes -	t Jods Chart Window H Dols Chart Window H Ranked 2011 of 1 1014 2014 of 5 1055	** ** /* (), (), () () () () * () & * .	106.	• • I	40-2000)	ation of the m	e 24 di	• •	-
E E E	AgtoShapes -	t Jods Chart Window H Dols Chart Window H Ranked 2011 of 1 1014 2014 of 5 1055	** ** /* (), (), () () () () * () & * .	106.	• • I	40-2000)	1	e 24 di	• •	-
E E E	AgtoShapes -	t Jods Chart Window H Dols Chart Window H Ranked 2011 of 1 1014 2014 of 5 1055	** ** /* (), (), () () () () * () & * .	106.	• • I	40-2000)	1	e 24 di	• •	-
E E E	AgtoShapes -	t Jods Chart Window H Dols Chart Window H Ranked 2011 of 1 1014 2014 of 5 1055	** ** /* (), (), () () () () * () & * .	106.	• • I	40-2000)	1	14 24 21	&	-
· D) (; rescalt (; ; Edk)	AgtoShapes -	t Jods Chart Window H Dols Chart Window H Ranked 2011 of 1 1014 2014 of 5 1055	** ** /* (), (), () () () () * () & * .	106.	• • I	40-2000)	1	e 24 23	_ + @	
E E E	AgtoShapes -	t Jods Chart Window H Dols Chart Window H Ranked 2001 cm 2001 cm 2001 cm	** ** /* (), (), () () () () * () & * .	106.	• • I	40-2000)	1	e 24 23	&	
E E E	AgtoShapes -	t Jods Chart Window H Dols Chart Window H Ranked 2001 cm 2001 cm 2001 cm	** ** /* (), (), () () () () * () & * .	106.	• • I	40-2000)	1	e 24 23	_ + @	
· D) (; rescalt (; ; Edk)	AgtoShapes -	t Jods Chart Window H Dols Chart Window H Ranked 2001 cm 2001 cm 2001 cm	** ** /* (), (), () () () () * () & * .	106.	• • I	40-2000)	1	e 24 23	_ + @	
E E E	AgtoShapes -	t Jods Chart Window H Dols Chart Window H Ranked 2001 cm 2001 cm 2001 cm	** ** /* (), (), () () () () * () & * .	106.	• • I	40-2000)	1	e 24 23	_ + @	
· D) (; rescalt (; ; Edk)	AgtoShapes -	t Jods Chart Window H Dols Chart Window H Ranked 2001 cm 2001 cm 2001 cm	** ** /* (), (), () () () () * () & * .	106.	• • I	40-2000)	1	e 24 23	_ + @	-
E E E	AgtoShapes -	t Jods Chart Window H Const Window H Const Window H Const Window H Const Const Window H Const Const Con	Mean Annual Flow, Alsea	River at Tidewa	• • I	40-2000) andard devi	ation of the m	ean = 1490	@	-
E G	AgtoShapes -	t Jods Chart Window H Const Window H Const Window H Const Window H Const Const Window H Const Const Con	Mean Annual Flow, Alsea	River at Tidewa	• • B	40-2000) andard devi	ation of the m	ean = 1490	@	-
Edit j	AgtoShapes -	t Jods Chart Window H Const Window H Const Window H Const Window H Const Const Window H Const Const Con	Mean Annual Flow, Alsea	River at Tidewa	• • 3 ter (WY 19 One s 7 39 41 43	10-2000) andard devi	ation of the m	ean = 1490	@	-

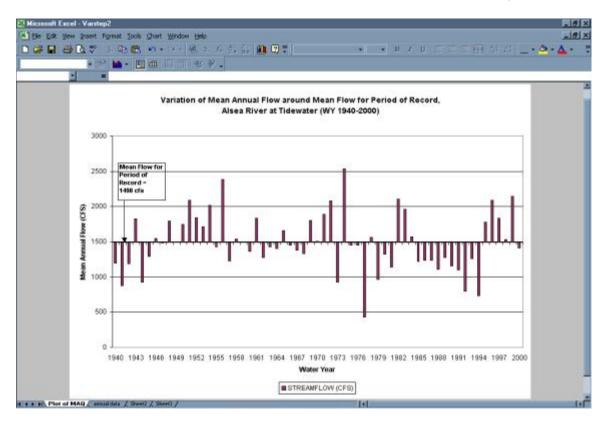
Analysis Techniques: Annual Analysis Example from Streamflow Evaluations for Watershed Restoration Planning and Design, http://water.oregonstate.edu/streamflow/, Oregon State University, 2002-2005. - 5 -

Step 4: Pattern Analysis

Step 4a: Variation of Mean Annual Flow around Mean Flow for Period of Record

• Plot mean annual flow vs. water year.



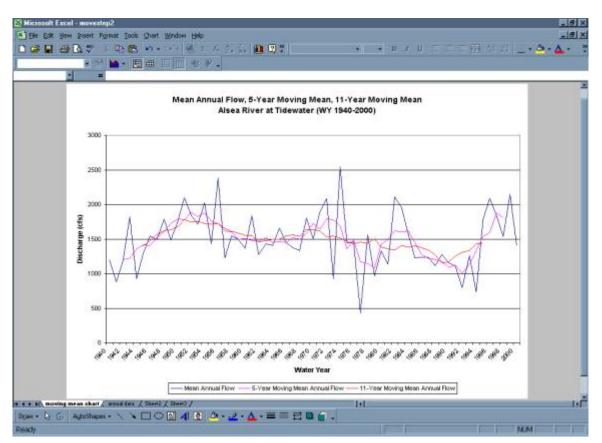


• Set the Y-axis to intersect the X-axis at the value for the mean flow for the period of record.

Step 4b: 5-Year and 11-Year Moving Mean

• Starting with the 3rd and 6th year of the period of record, use the average function in Excel to calculate the mean annual flow of the surrounding 5 (yr 1 to yr 5) and 11 (yr 1 to yr 11) years. Copy these formulas down the columns to calculate the mean annual flow for 5-year and 11-year intervals for the entire period of record. Note that there will be no entry for the last two years in the record for the 5-year moving mean and no entry for the last five years in the record for the 11-year moving mean.

U	F7 .	= Σ <i>Γ</i> = 2+	🛍 100% 🔹 🕐 100% 🔹 😤 Arial	× 10 × B Z ∐ 🗰	#	= 四	\$ 9	6.,	18 13	H • 🙅 •	· 🔺 ·
	A	8	C	D		E	F		G	н	
1	Water Year	Streamflow (cfs)	Streamflow (cfs)	Streamflow (cfs)							
2		Mean Annual Flow	5-Year Moving Mean Annual Flow	11-Year Moving Mean Annual Flow							
3	1940	1198									
4	1941	881	1								
5	1942	1185									
6	1943	1825	5 1223								
7	1944	928	3 1355								
8	1945	1294	4 1415	1397							
9	1946	1545		1479							
10	1947	1485	5 1521	1566							
1	1948	1792	2 1611	1614							
12	1949	1490		1632							
3	1950	1746		1678							
4	1951	2094		1777							
6	1952	1842		1748							
16	1953	1716		1753							
17	1954	2022		1726							
18	1955	1430		1715							
19	1956	2384		1723							
20	1957	1226		1649							
21	1958	1542		1611							
2	1959	1495		1584							
3	1960	1368		1550							
4	1961	1838	3 1481	1552							
25											
6											
27		,		•							
7	1994	731	1 1332	1429	1			-			
8	1995	1782		1440							
9	1995	2088									
50	1997	1837	7 1878								
1	1998	1533									
2	1999	2148									
3	2000	1409	9								
			4b / Step 4b-1 / Step 4c / Step 4c-1 /	Stan 5 / Stan 6 / S 4						101010	



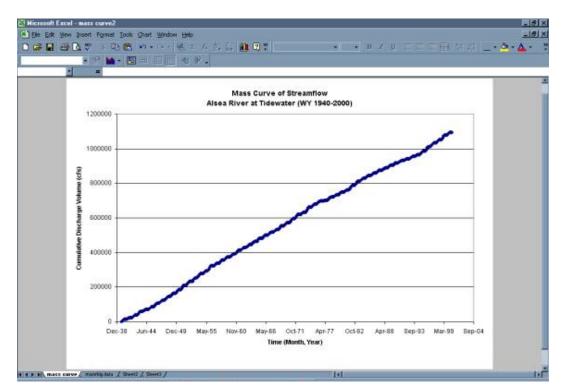
• Plot the Average mean annual flow, the 5-year moving mean annual flow, and the 11-year moving mean annual flow.

Step 4c: Mass Curve Method

• Calculate cumulative quantity of streamflow for the period of record using average monthly flows. See the **Data Manipulation** section for a more detailed explanation of how to calculate average monthly flows.

		50.7	LOB	. E A 41 11 10 .	Arial		- 10 -	B / U		围加	41	3.4
		- 11			A.su-		a designed and a second		Course of the			
1	AA23											
Π	A	В	C	D	()E	F	G	H	1	J	- K	1
L	Year	Month	Streamflow (cfs)	Cumulative Streamflow (cfs)								_
	1939	10	159	159			_		-	-		
	1939	11	115	274				-	-			-
	1939	12	2232	2506		-	_	_				
ļ.	1940	1	2007	4513								
	1940	2	4550	9063		-						
ļ.	1940	3	2806	11871					-			
ŀ	1940	4	1154	13025				_				_
ŀ	1940	6	911	13936			-		-			
ŀ	1940	6	254	14190								
	1940	7	132	14322								
ŀ	1940	8	81.5	14404								
	1940	9	90.5	14494					-			
ŀ	1940	10	1027	14695			-		-			-
ŀ	1940	11	1027	15/22					-			
ŀ	1940	12	3068	20764			_		-			
ŀ	1941	2	1035	21799								
ŀ	1941	3	604	21/39					-			
ŀ	1941	4	695	23098					-			
ŀ	1941	5	920	24018			-		-			-
ŀ	1941	6	309	24375					-		-	-
ŀ	1941	7	154	24327			-		-			-
	1941	8	116	24597					-			
ŀ												
ŀ	- 2	-										
ŀ							-		-			-
	2000	6	602	1096002								
	2000	7	229	1096231							-	-
ŀ	2000	8	125	1096356								1
ŀ	2000	9	113	1096469								-

• Plot cumulative streamflow versus time.



Step 5: Calculate Simple Statistics

• Excel functions can be used to perform these calculations.

- o Mean -- use the AVERAGE function.
- o Standard Deviation -- use the STDEV function.
- o Maximum Value -- use the MAX function.
- o Minimum Value -- use the MIN function.

APD B C D E F G H I J K L M WATER YEAR STREAMFLOW (CFS) WATER YEAR Image: Construction of the stress of the		- 147		**										
WATER YEAR STREAMFLOW (CFS) WATER YEAR 1940 1198 1941 081 1942 1185 1943 1625 1944 928 1945 1294 1945 1294 1944 928 1945 1294 1946 1545 1947 1465 1948 1792 1949 1460 1950 1745 1951 2064 1952 1842 1953 1715 1954 2022 1955 1430 1956 1430 1956 1533 1956 1533 1959 1533 1959 1533 1989 2148 2000 1409 Maximum Value 2541	A	and and a second se	the second se											
WATER YEAR Image: Constraint of the second of		A		0	D	E	F	G	H	10	10	K	1	M
1940 1196		WATER YEAR									_			
1941 681 1942 1165 1943 1625 1944 928 1945 1244 1946 1545 1947 1465 1948 1792 1948 1792 1949 1460 1950 1745 1951 2084 1952 1642 1953 1715 1954 2022 1955 1430 1956 1284 1957 1637 1958 1533 1959 2148 2000 1409 Mean Flow for Period of Record 1490 Standard Deviation 140														
1942 1186 1943 1625 1944 928 1945 1294 1946 1645 1947 1486 1948 1792 1949 1490 1950 1745 1951 2084 1952 1642 1953 1716 1954 2002 1955 1430 1966 284 1 - . . .				-							-	-		
1943 1625 Image: constraint of the second seco														
1944 928 1945 1294 1946 1545 1947 1465 1948 1792 1949 1460 1950 1745 1951 2084 1952 1642 1953 1715 1956 1430 1956 2384 1956 2384 1957 1637 1968 1533 1979 1837 1986 1533 1996 2148 2000 1409 Mean Flow for Period of Record 4180 Maximum Value 2541														
1945 1294 1946 1545 1947 1465 1948 1792 1949 1460 1950 1745 1951 2084 1952 1642 1953 1715 1956 1430 1956 1430 1956 1430 1956 1430 1956 1430 1957 1837 1997 1837 1998 1533 1999 2148 2000 1409 Mean Flow for Period of Record 1490 Standard Deviation 418	L													
1946 1545 1947 1485 1948 1792 1949 1490 1950 1745 1951 2084 1952 1642 1953 1715 1956 1430 1956 1430 1956 2384 - - 1996 1480 Standard Deviation 410 Max														
1947 1486 1948 1792 1949 1490 1950 1745 1951 2094 1952 1842 1953 1715 1954 2002 1955 1430 1996 2384 1996 2384 1996 2384 1996 2384 1996 2384 1996 248 1997 1837 1998 1533 1998 1533 1998 1533 1998 1533 1998 1533 1998 1533 1998 1533 1999 148 2000 1409 Mean Flow for Period of Record 1490 Standard Deviation 410 Maximum Value 2541											_			
1948 1792 1949 1460 1950 1745 1951 2084 1952 1842 1953 1715 1954 2022 1955 1430 1956 2384 1956 2384 1957 1837 19597 1837 1998 1533 1999 2148 2000 1409 Mean Flow for Period of Record 1490 Standard Deviation 418 Maximum Value 2541							-			_	-	-		
1949 1490 1950 1745 1951 2084 1952 1642 1953 1715 1954 2022 1955 1430 1966 2384 1996 2384 1996 2384 1996 2183 1997 1837 1998 1533 1998 1533 1998 1533 1998 148 2000 1409 Mean Flow for Period of Record 1490 Standard Deviation 410 Maximum Value 2541				_										
1950 1745 1951 2084 1952 1842 1953 1715 1954 2022 1955 1430 1996 2384 - - 1996 1533 1999 2148 2000 1409 Mean Flow for Period of Record 1490 Standard Deviation 410														
1951 2084 1952 1642 1953 1715 1954 2022 1955 1430 1956 1430 1956 2384 . . .														
1952 1842 1953 1715 1954 2022 1955 1430 1956 2384 - - 1996 2148 2000 1409 Mean Flow for - Pariod of Record 1490 Standard Deviation 410 Maximuk Value 2541 <td>L.</td> <td></td>	L.													
1953 1715 1954 2022 1955 1430 1956 2384 - - - - - - - - - - - - - - 1997 1837 1998 1533 1998 1533 1998 148 2000 1409 Mean Flow for Period of Record - Standard Deviation 410 Maximum Value 2541											-	-		
1954 2022 1955 1430 1956 2384 1956 2384 1 1 1 1 1957 1837 1958 1533 1998 1533 1999 2148 2000 1409 Mean Flow for Period of Record 1490 Standard Deviation 410 Maximum Value 2541											_			
1955 1430 1956 2384 1956 2384 1 1 1 1 1 1 1977 1837 1998 1533 1999 2148 2000 1409 Mean Flow for Period of Record 1490 Standard Deviation 418 Maximum Value 2541	L						1							
1996 2384 . . <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>-</td><td></td><td></td><td></td></t<>											-			
1997 1837 1996 1553 1998 1553 1999 2148 2000 1409 Mean Flow for Period of Record 1490 Standard Deviation 410 Maximum Value 2541														
1 1 1997 1837 1998 1533 1999 2148 2000 1409 Mean Flow for Period of Record 1490 Standard Deviation 418 Maximum Value 2541		1956	2384									_		
1997 1837 1998 1533 1999 2148 2000 1409 Mean Flow for Period of Record 1490 Standard Deviation 410 Maximum Value 2541														
1967 1837 1998 1533 1999 2148 2000 1409 Mean Flow for Period of Record 1490 Standard Deviation 410 Maximum Value 2541			2(+)2											
1998 1533 1999 2148 2000 1409 Mean Flow for							-				-			
1999 2148 2000 1409 Mean Flow for Period of Record 1490 Standard Deviation 410 Maximum Value 2541														
2000 1409 Mean Flow for Period of Record 1490 Standard Deviation 418 Maximum Value 2541	_										-			
Mean Flow for Period of Record 1490 Standard Deviation 410 Maximum Value 2541				_		_								
Period of Record 1490 Standard Deviation 410 Maximum Value 2541	_		1409											
Standard Deviation 410 Maximum Value 2541			8705											
Maximum Value 2541												-		
						_								
Minimum Value 431														
		Minimum Value	431			_								

Step 6: Normalization of Mean Annual Flow (Discharge per Unit Area)

- Calculate Discharge Per Unit Area.
 - To do this, you need the Station Description provided by the USGS web page. It includes the drainage area for the gage.

Show Me (this will open in a separate browser window)

• Mean flow for the Period of Record is divided by the Drainage Area for the gage.

		- 19 🎽 - 12 💷 1		88.										
	AC67	-												
	A	B	C	D	E	F	G	「日日」	3	J	- K	- E	M	N
	WATER YEAR	STREAMFLOW (CFS) WATER YEAR			-		_							-
200	1940	1198												
1	1941	861												
5														
5 6 7	<u></u>	2												
1	0.000	CONTRACT.												
8	1963	1959												
50	1964	1574			-	-	-						-	
51	1965	1224												
12	1966 1987	1237												
13	1967	1238												
54 55	1969	1280												
8	1990	1156												
56	1991	1102						Mean Elo	w for P	eriod of Re	cord			
58	1992	795			Dischar	an nor l in	+ 3 + 2 + 2 + 2	and the second se		or Gaging S				
対理		1.1.2.2.			Discharg	je per un	i Alea -	Dramage	WI69 I	or Gaging a	station			
	1993	1262												
50	1994	731		-	12207131.07			18/02/10/51		0004580				
1	1995	1782						1490 cfs	х	1 mi ²				
12	1996	2088			for Alsea	a River at	Tidewate	334 mi ²		10.76 ft ²				
33	1997	1837												
34	1998	1533												
55	1999	2148			Dischar	se ner Lin	t Area =	0.41 efect	2 or A	.46 cfs/mi ²	8			
56	2000	1409				a River at			1 01 1	CHO GIGHTIT				
~	Mean Annual	1405			101.74203	a maneer cat	Truevicate	1						
	Flow for													
	Period of													
17	Record	1490												
8	B BE annual data							1+1					1. Alt 1.	