

RMC-RFA Flood Seasonality

DLS-114, Module 2.5



U.S. ARMY



**US Army Corps
of Engineers®**

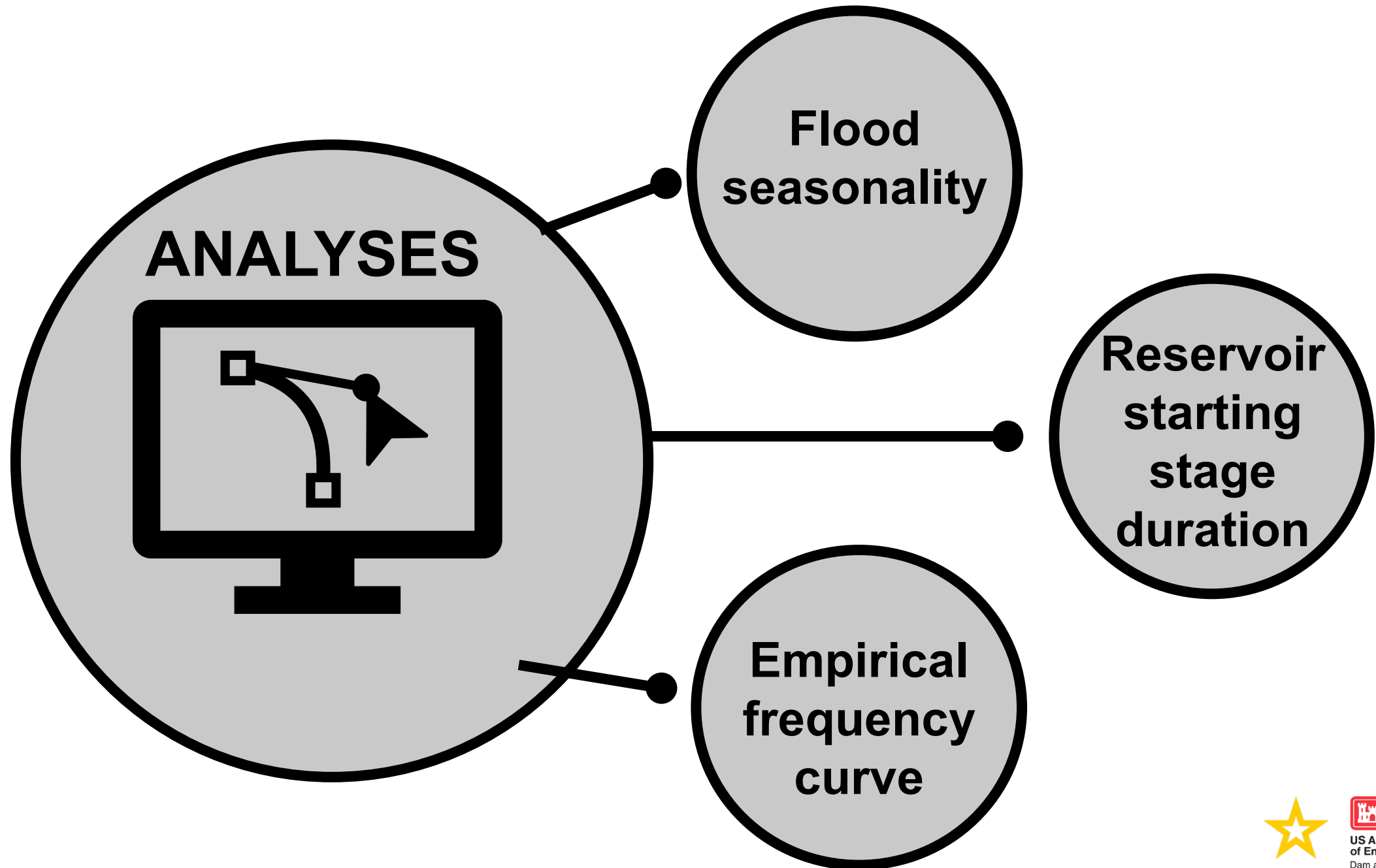
Dam and Levee
Safety Programs

March 2026 / Version 1

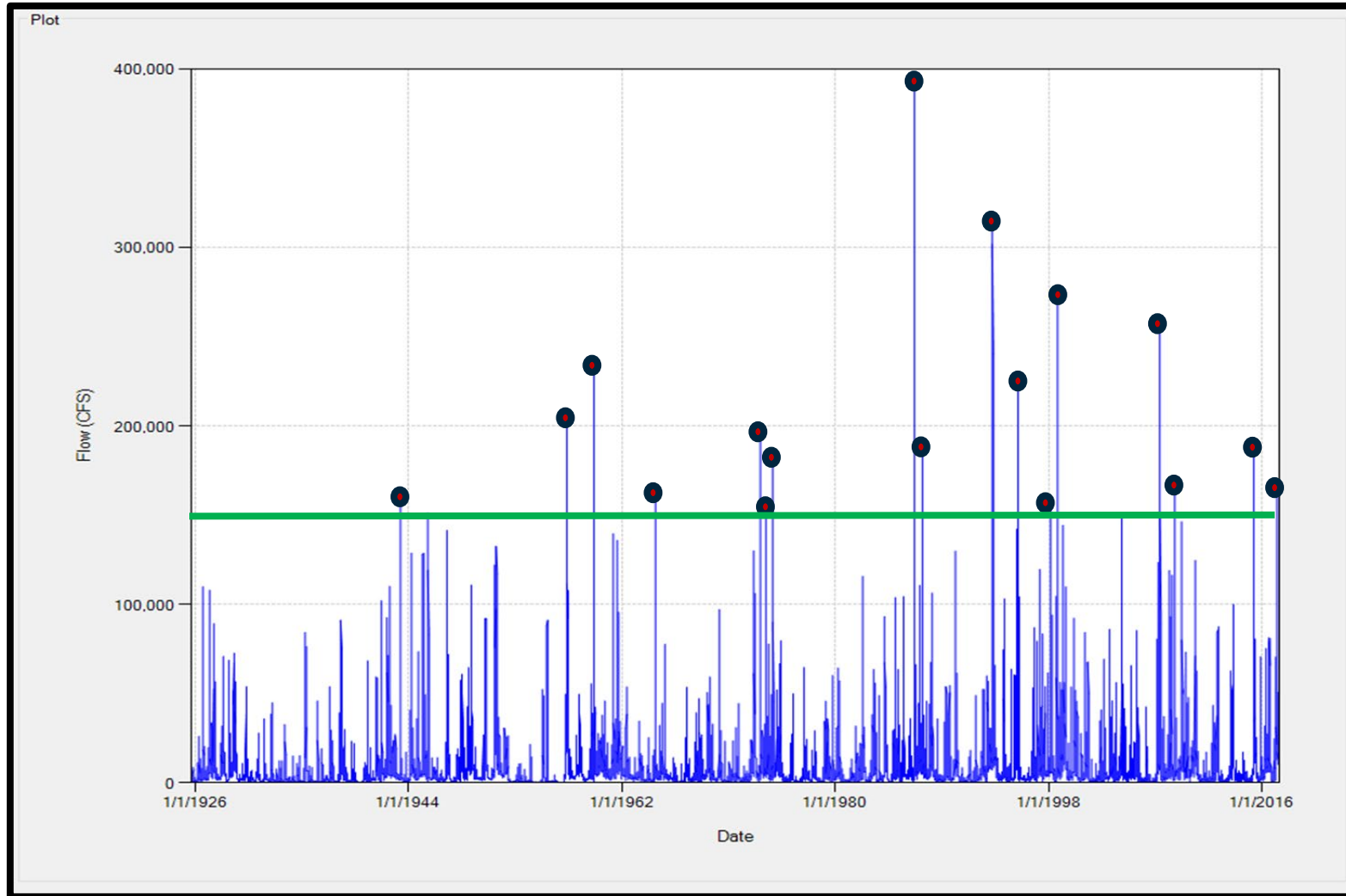
CAPTAIN ANTHONY MELDAHL DAM, OH (SOURCE: USACE)

Learning Objectives

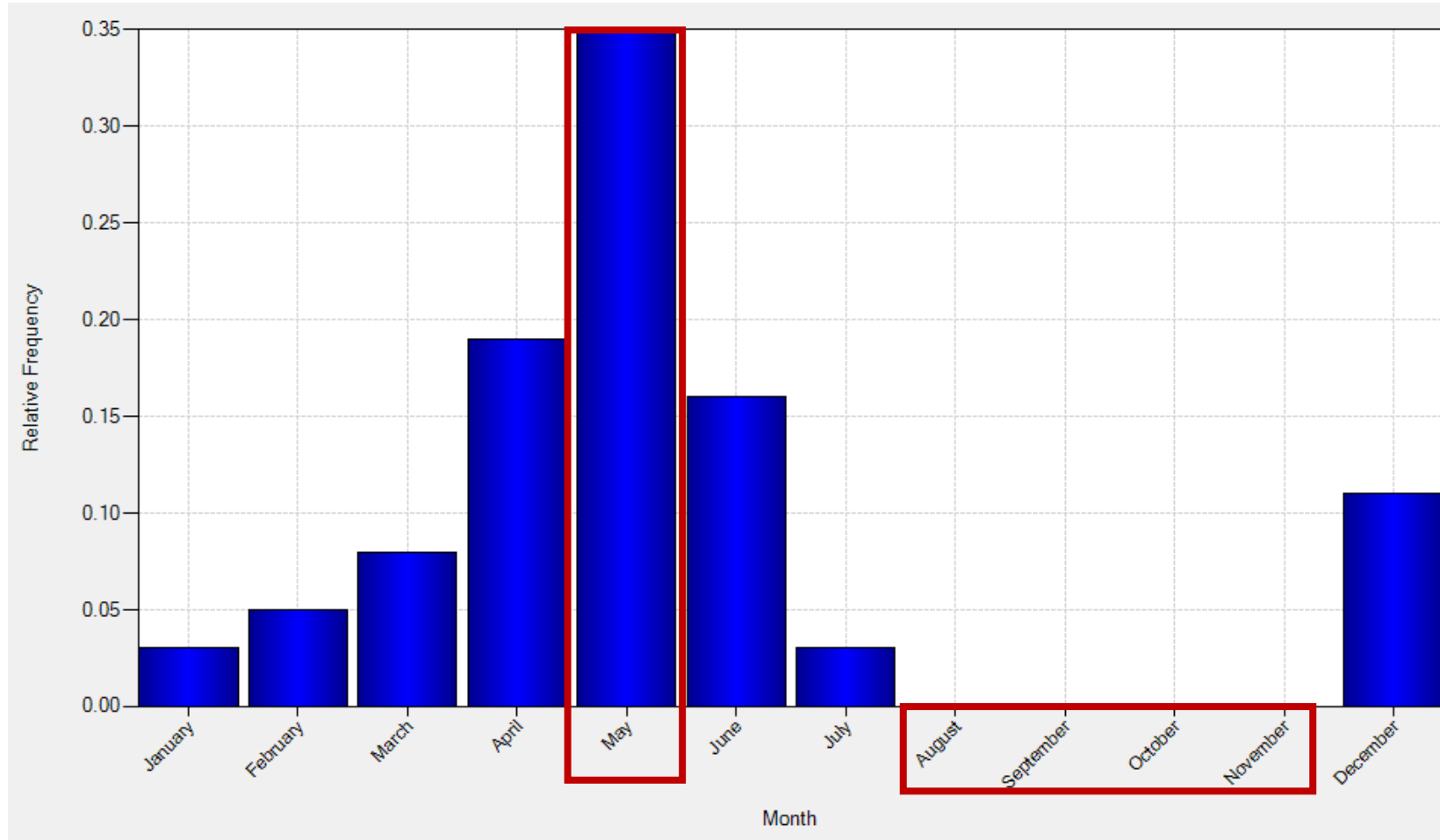
- Identify the three analyses in RMC-RFA
- Define flood seasonality
- Discuss flood seasonality analysis and how it's used in the RMC-RFA software



Flood Seasonality Defined



Flood Seasonality Analysis



Compute Flood Seasonality

RMC-RFA 1.1.0 [C:\Users\H2EDED\Documents\Example Dam]

File Project Input Data Analyses

Example Dam

- Input Data
- Analyses
 - Flood Seasonality
 - Reservoir Starting Stage Duration
 - Empirical Frequency Curve
- Reservoir Models
- Simulations

Flood Seasonality [*]

Name:

Description:

Parameters

Select Discharge Gage:

Threshold Flow (CFS):

Critical Duration (DAYS):

Max Events Per Year:

Min Days Between Events:

Compute

Tabular Results

Seasonal Frequency Flood Events

Month	Frequency	Relative Frequency	Cumulative Relative Frequency
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			
Total:			

Flood Seasonality [*]

Name: Example Flood Seasonality

Description: Example Description

Parameters

Select Discharge Gage:

Threshold Flow (CFS):

Critical Duration (DAYS):

Max Events Per Year:

Min Days Between Events:

Compute

Flood Seasonality Parameters: Threshold Flow

Parameters

Select Discharge Gage: Blakely Inflow

Threshold Flow (CFS):

Critical Duration (DAYS):

Max Events Per Year:

Min Days Between Events:

Compute

Tabular Results

Return Period	Probability	Upper (0.95)	Median (0.50)	Lower (0.05)
20,000	5E-05	181,389	145,724	118,265
10,000	0.0001	167,593	137,044	112,807
5,000	0.0002	154,319	128,381	107,541
2,000	0.0005	136,999	116,952	100,269
1,000	0.001	124,808	108,320	94,451
500	0.002	112,587	99,694	88,397
200	0.005	97,513	88,284	79,918
100	0.01	86,448	79,627	73,276
50	0.02	75,930	70,920	66,174
20	0.05	62,419	59,254	56,145
10	0.1	52,424	50,199	48,045
5	0.2	42,326	40,743	39,120
2	0.5	27,795	26,670	25,615
1.05	0.95	11,387	10,582	9,868

Select Discharge Gage: Blakely Inflow

Threshold Flow (CFS): 30,000

Critical Duration (DAYS): 3

Max Events Per Year: 10

Min Days Between Events: 2

Compute

Rule of thumb: 30–40 flood events

Flood Seasonality Parameters: Critical Duration

Parameters

Select Discharge Gage: Blakely Inflow

Threshold Flow (CFS):

Critical Duration (DAYS):

Max Events Per Year:

Min Days Between Events:

Compute

- Critical duration should match the volume frequency duration

Flood Seasonality Parameters:

Maximum Events Per Year and Minimum Days Between Events

Parameters

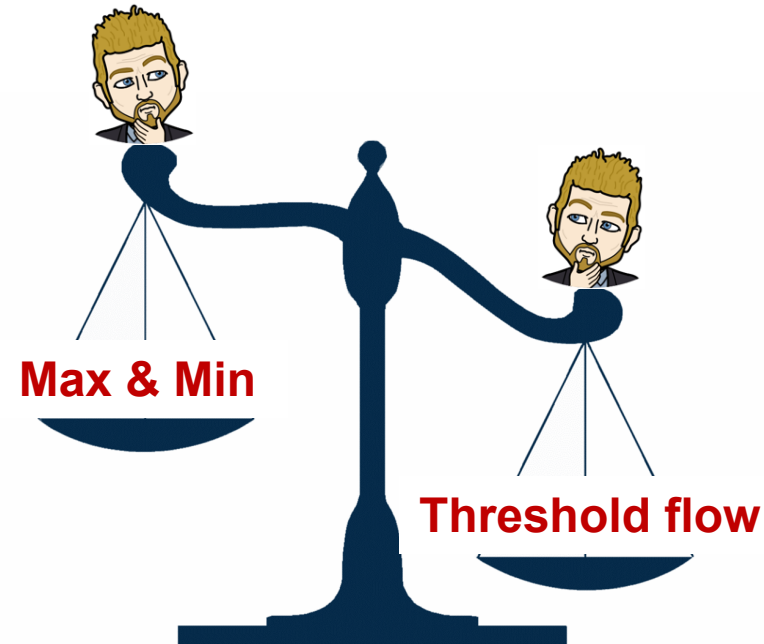
Select Discharge Gage:

Threshold Flow (CFS):

Critical Duration (DAYS):

Max Events Per Year:

Min Days Between Events:



Balance these with your threshold flow in order to reach the rule of thumb: 30–40 events per year

Flood Seasonality Example

Volume Frequency Curve [-FINAL BestFit]

Name: -FINAL BestFit

Description: Final BestFit curve using Bayesian analysis (Smith) - systematic, his

Parameters

Probability Distribution: Log Pearson Type III (LPIII)

Mean (of log): 4.4159

Standard Deviation (of log): 0.2279

Skew (of log): -0.2666

Effective Record Length: 532

Duration (DAYS): 3

Compute

Tabular Results

Return Period	Probability	Upper (0.95)	Median (0.50)	Lower (0.05)
20,000	5E-05	181,389	145,724	118,265
10,000	0.0001	167,593	137,044	112,807
5,000	0.0002	154,319	128,381	107,541
2,000	0.0005	136,999	116,952	100,269
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2	0.5	27,795	26,670	25,615
1.05	0.95	11,387	10,582	9,868

Flood Seasonality [Example]*

Name: Example

Description: Example

Parameters

Select Discharge Gage: Blakely Inflow

Threshold Flow (CFS): 50,000

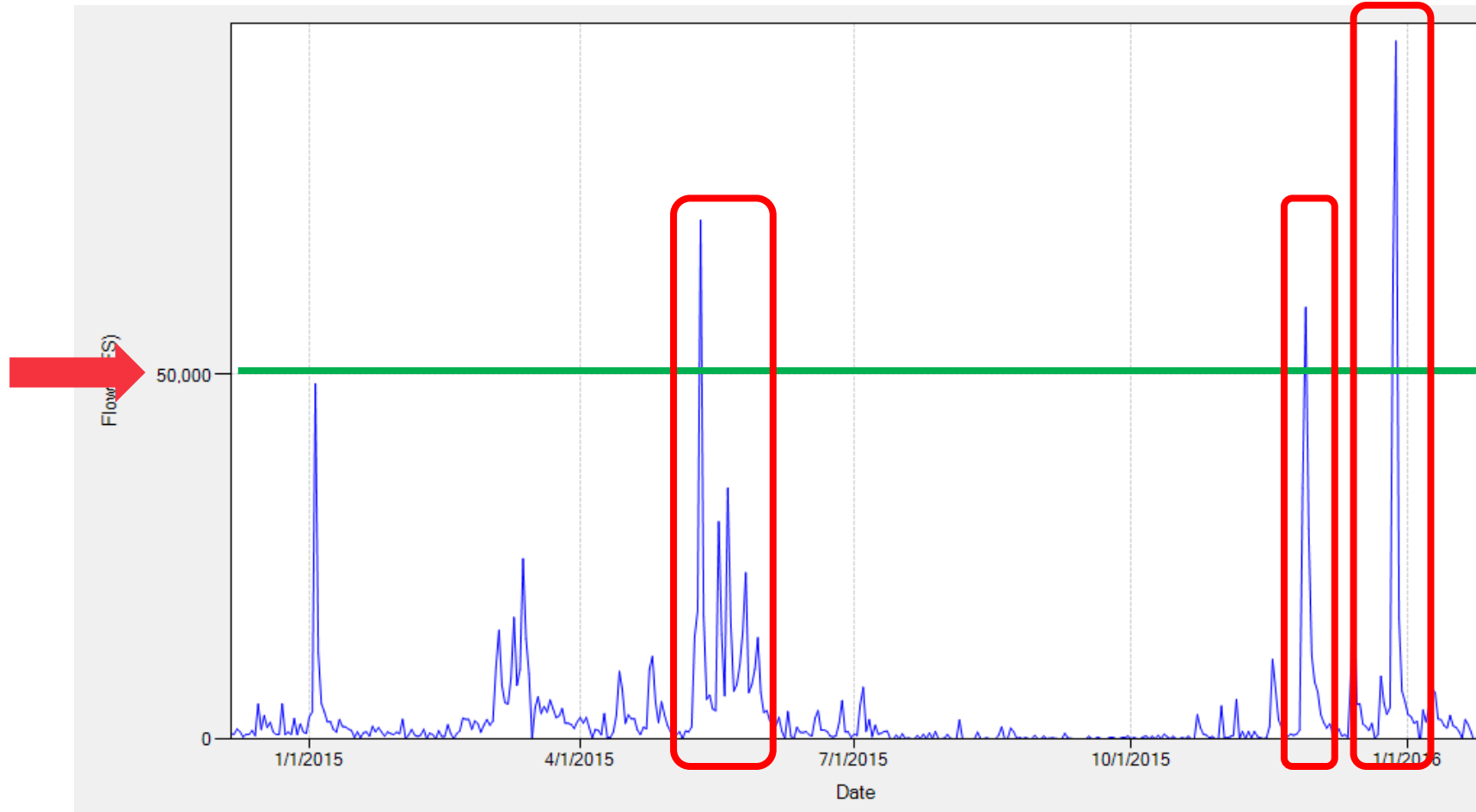
Critical Duration (DAYS): 3

Max Events Per Year: 5

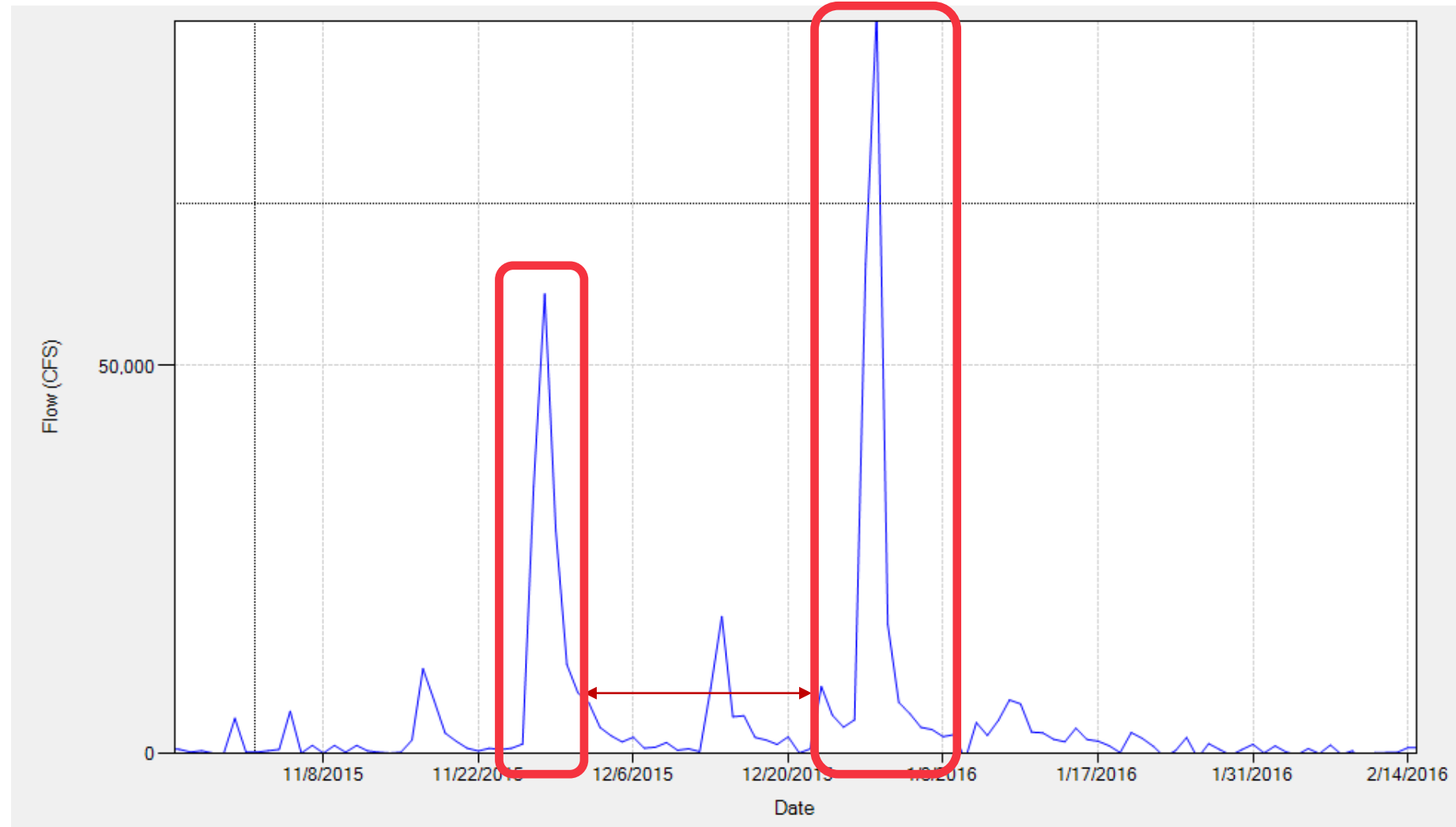
Min Days Between Events:

Compute

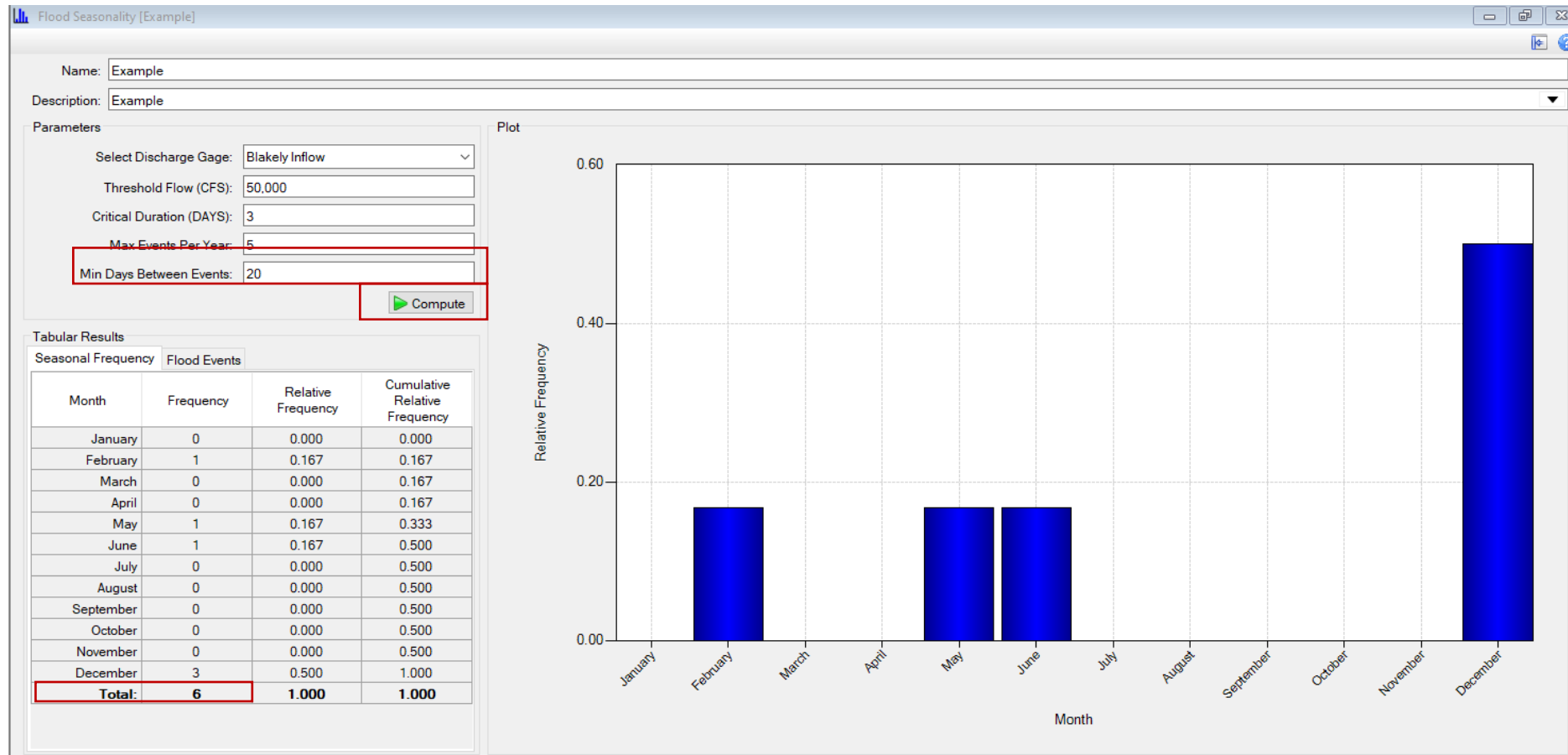
Flood Seasonality Parameters: Max Events Per Year



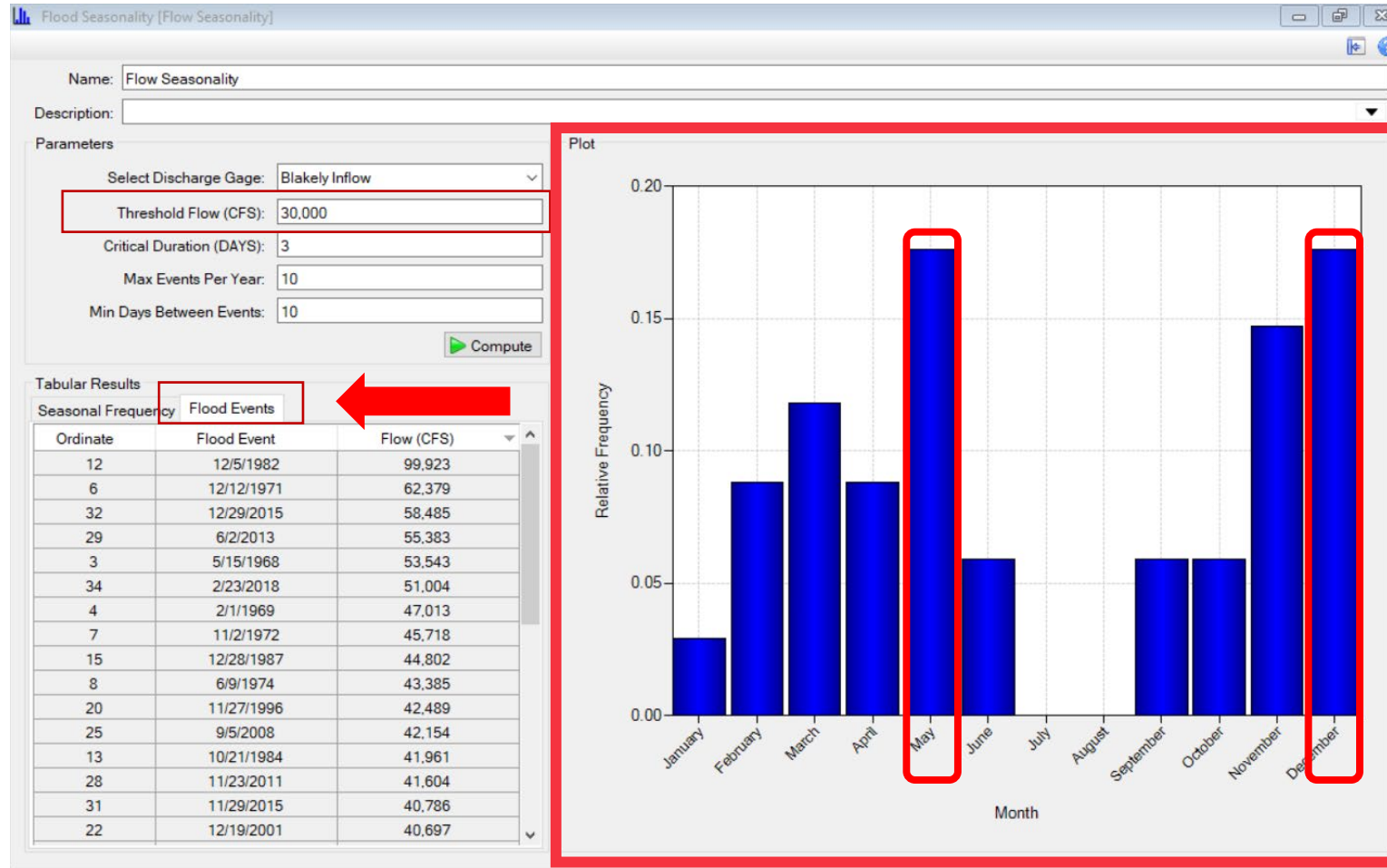
Flood Seasonality Parameters: Min Days Between Events



Flood Seasonality (1 of 3)

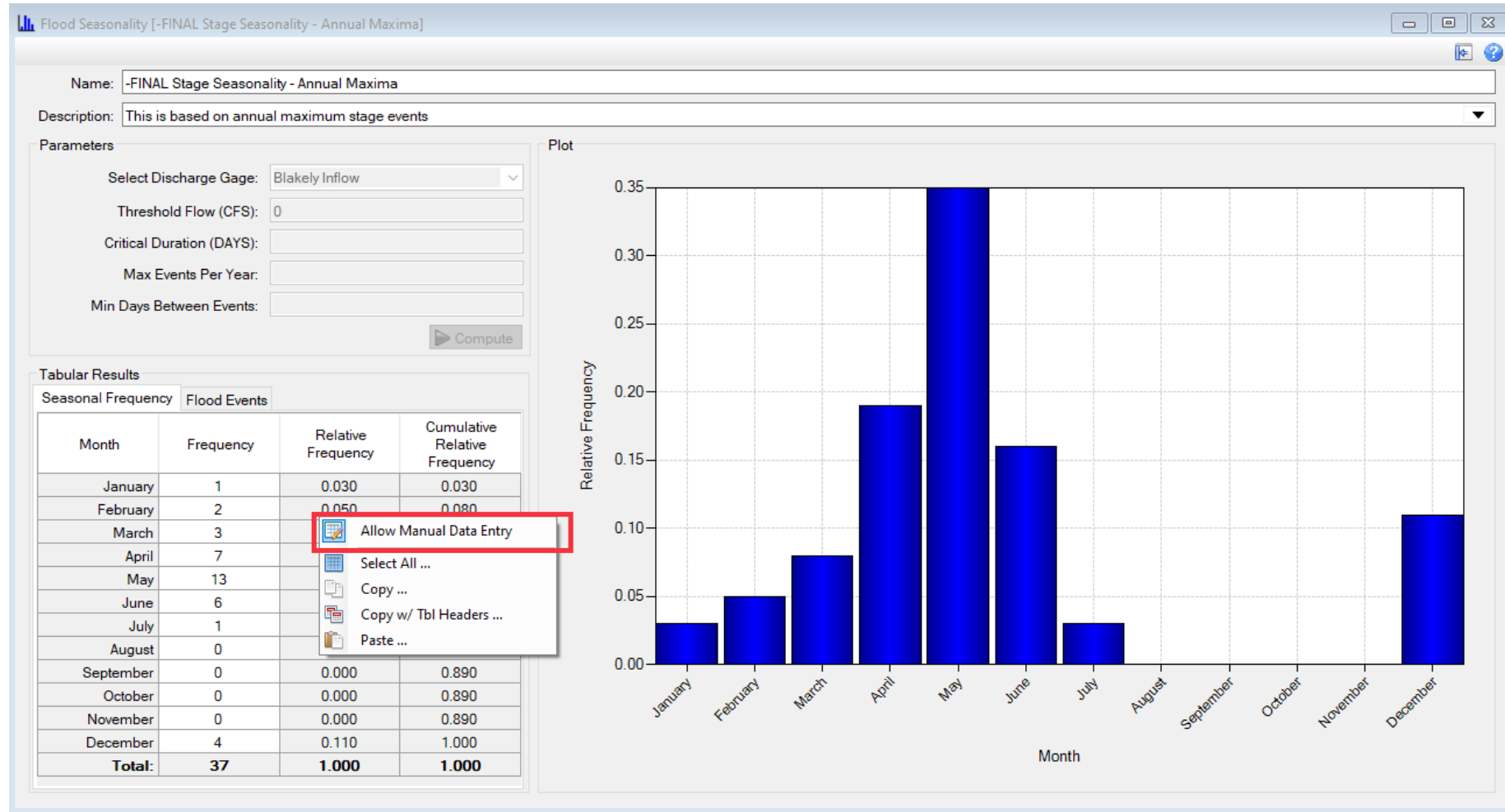


Flood Seasonality (2 of 3)



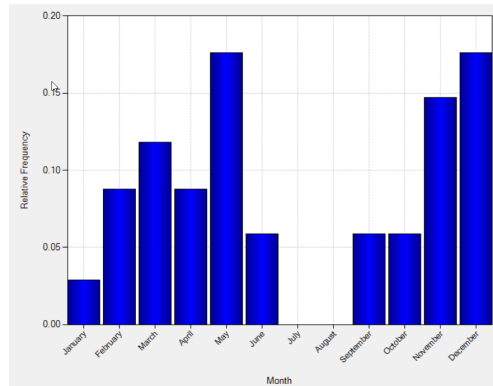
Date	Elevation (ft-NAVD88)
26 Apr 1927*	591.8
6 May 1982	590.1
20 May 1968	588.6
17 May 2009	588.1
24 May 1990	587.4
4 Nov 1984	587.0
4 May 2013	586.95

Flood Seasonality (3 of 3)

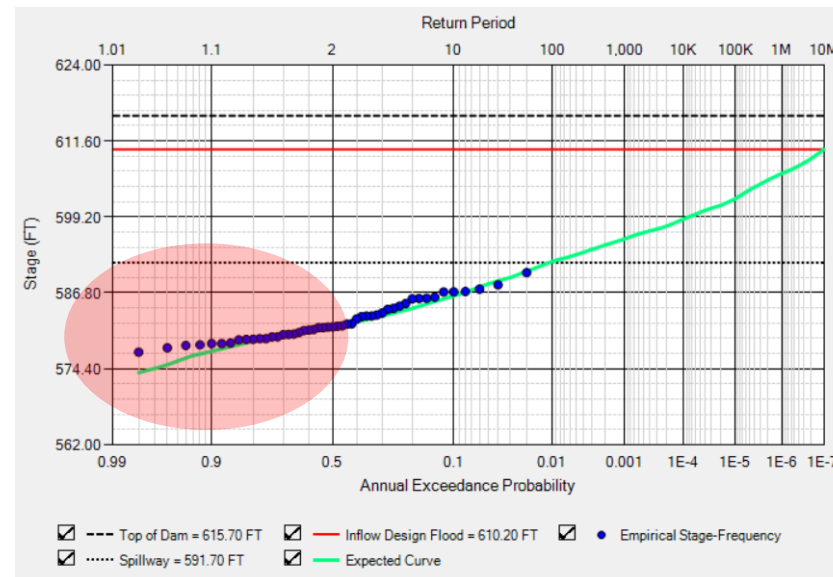
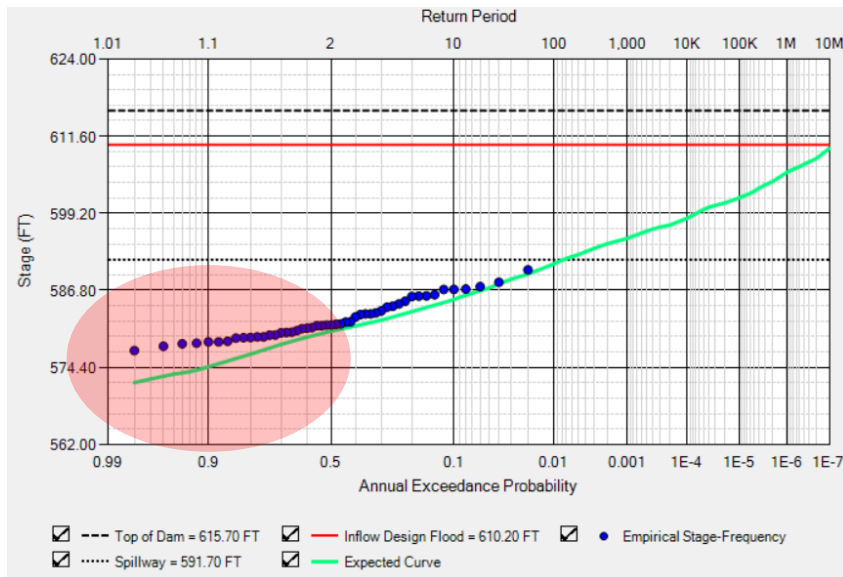
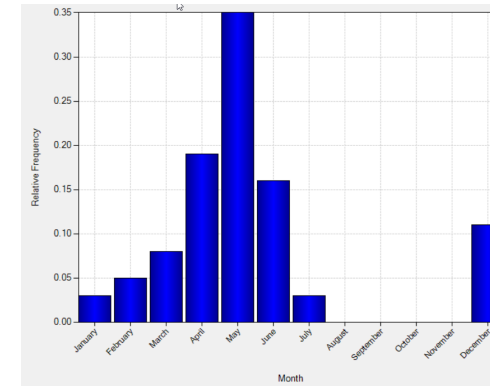


Flow versus Stage Seasonality

FLOW



STAGE



? Questions

