

Hydrologic Analysis

- Frequency analysis
 - Annual peaks
 - Monthly peaks
- Special flood events 1990 & 2003
- Representative Flood

COE UNIMPAIRED DATASET

- Originally focused on low flows
- Negative flows removed with smoothing process.
- Processing also smoothed high flows
- APC reversed the smoothing process

Tallapoosa River Flood Frequency Analysis

- Annual Peaks
 - Corps' Unsmoothed Unimpaired flow database
 - HEC-FFA package (based on Bulletin 17B)
 - 1, 3, & 5 day average flows
 - Focus on peaks and volume
 - Completed Nov. 2005
 - Reviewed USGS & COE

Frequency Analysis

- General Skew Factor = 0
- Log-Pearson Type III distribution
- Probability adjusted for record length
- 10, 25, 50, 100, 250 and 500 year average peak flows
- Compare Peaks with 1979 and 1990 floods

Data Stations

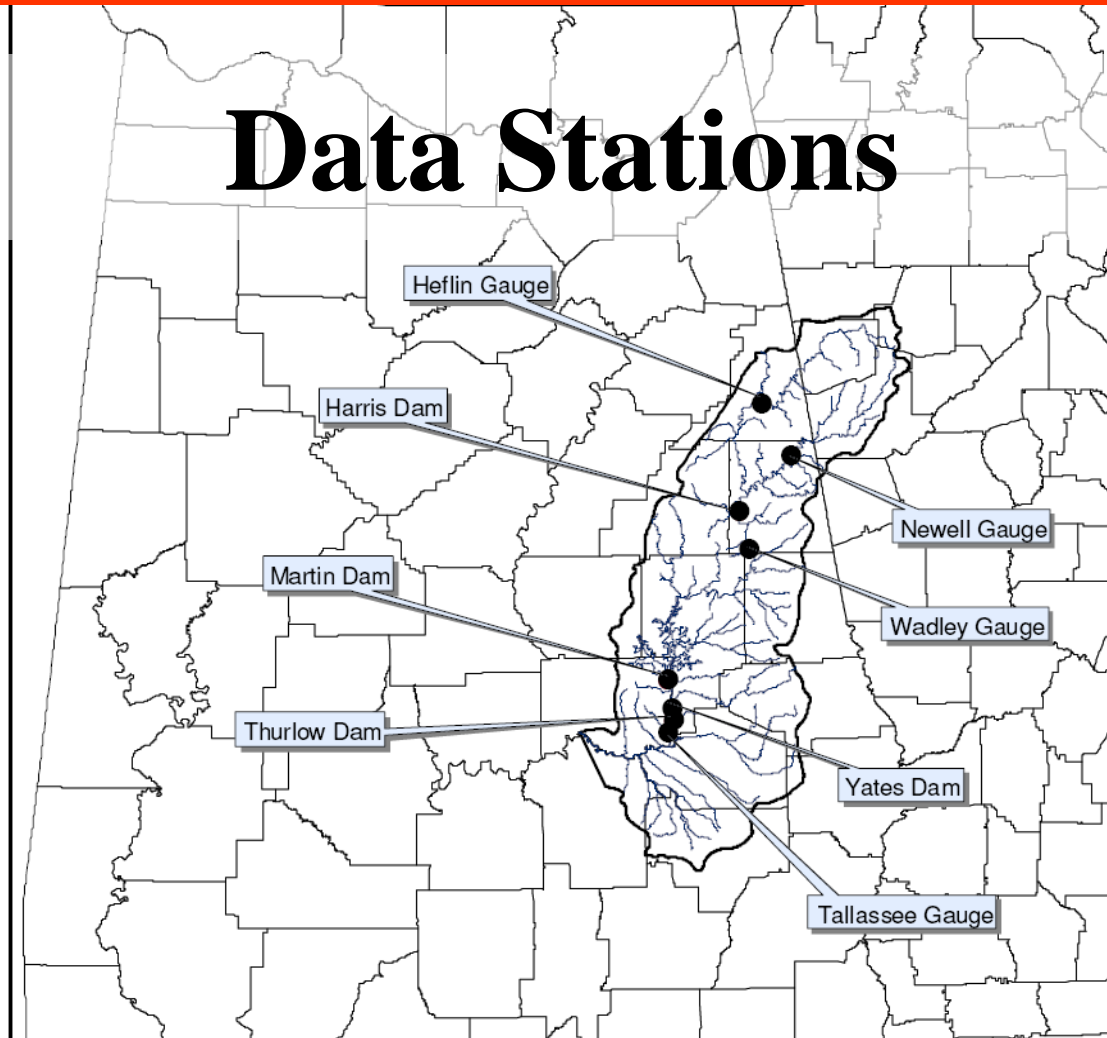


Figure 1-1: Tallapoosa River Basin

Figure 6-4: Exceedence Curve for Unregulated 1 Day Average Flow at Martin
(1939-2005)

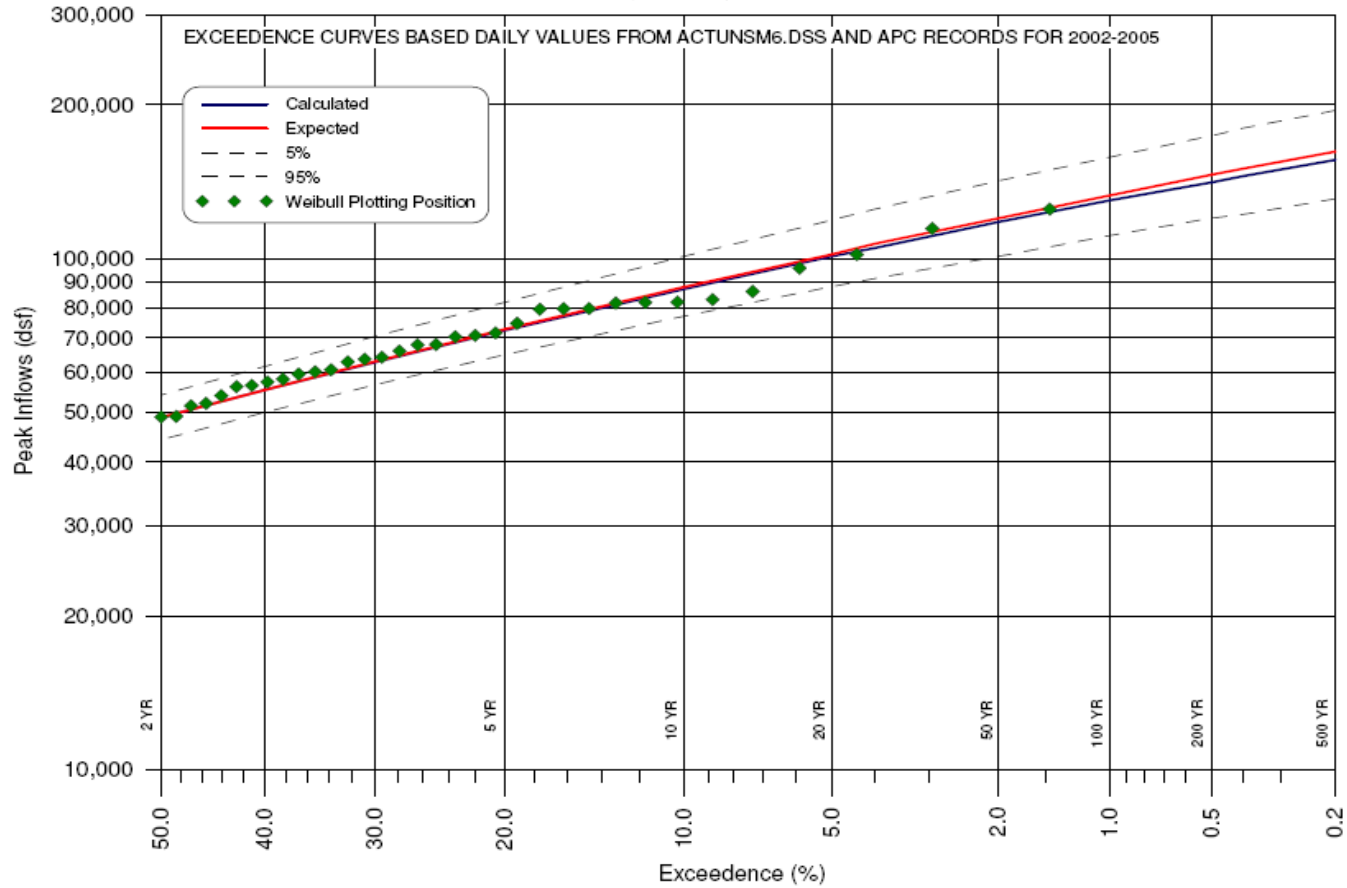
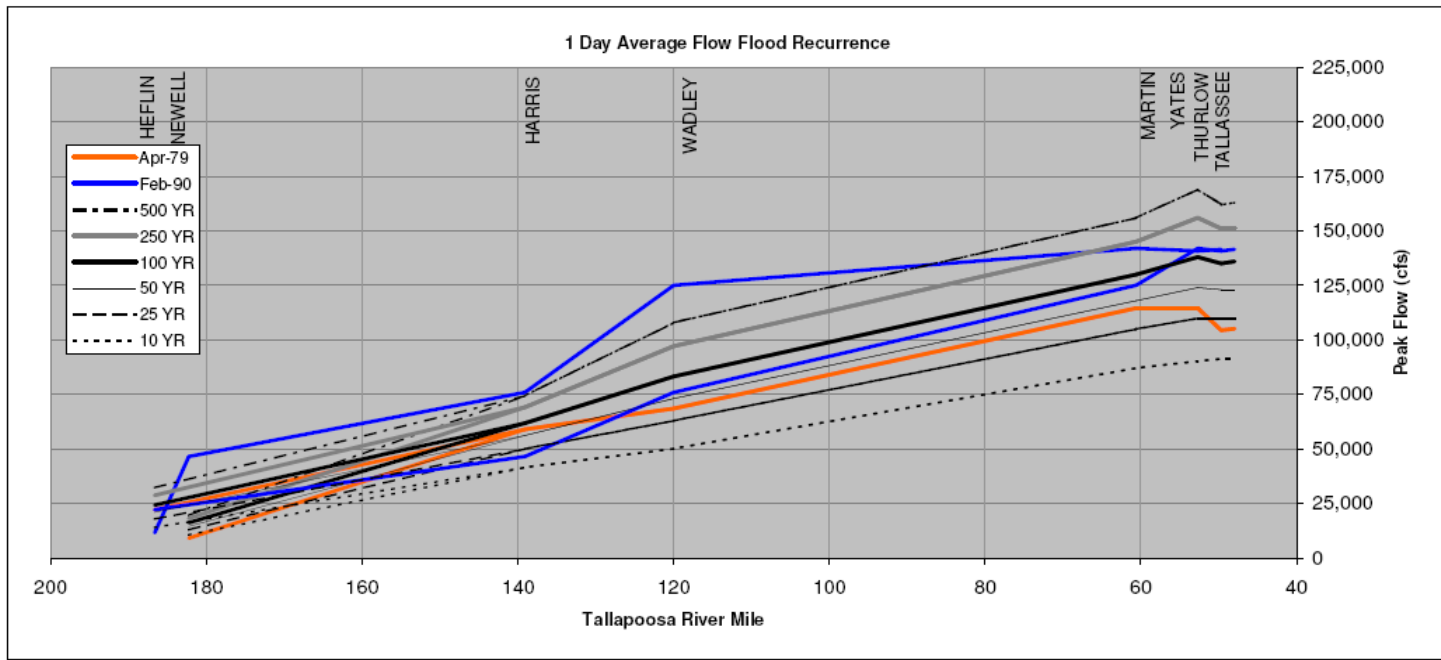


Figure 3: Unregulated 1 Day Average Flow Flood Recurrence

Location	RM	10YR	25YR	50YR	100YR	250 YR	500 YR	Apr-79	Feb-90		Modify Apr-79	Modify Feb-90
Heflin	186.62	14,100	18,000	21,100	24,300	28,800	32,400	22,202	22,202		9%	9%
Newell	182.27	10,700	13,000	14,600	16,200	18,200	19,700	9,137	11,613		77%	39%
Harris	139.10	41,600	50,100	56,200	61,900	69,200	74,500	59,002	46,604		5%	33%
Wadley	120.00	50,200	63,100	73,100	83,300	97,200	108,000	68,567	75,976		21%	10%
Martin	60.60	87,200	105,000	118,000	130,000	145,000	156,000	114,551	125,019		13%	4%
Yates	52.70	90,300	110,000	124,000	138,000	156,000	169,000	114,552	141,920		20%	-3%
Thurlow	49.70	91,400	110,000	123,000	135,000	151,000	162,000	104,491	140,790		29%	-4%
Tallassee	47.98	91,600	110,000	123,000	136,000	151,000	163,000	105,151	141,539		29%	-4%



100 Year or 1% Flood

- Annual instantaneous peak flows
- FEMA primary interest is flood elevations
- FEMA has not defined the 100 year flow for most of the Tallapoosa.
- 1% probably of recurrence each year
- FEMA is not concerned with volume

Monthly Frequency Analysis of Martin Inflows

- Requested by stakeholders
- Assess risk of 100 year flood for months of interest
- Submitted to FERC
- Support request for a higher winter pool

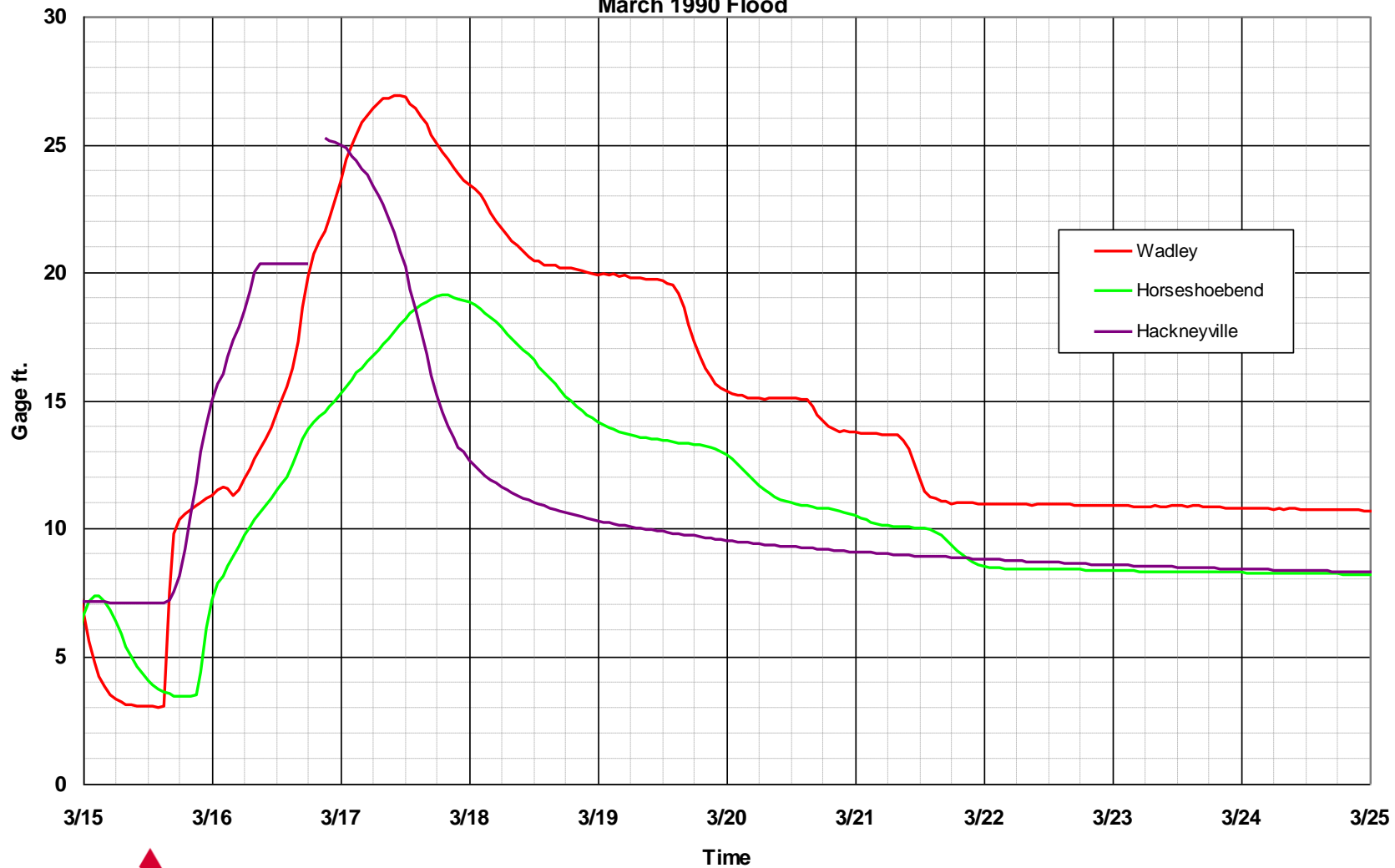
Monthly Frequency Analysis

- Select peak flow for a particular month
- HEC-SSP version 1.0
 - Log Pearson Type III
 - General Skew = 0
- For months December - May

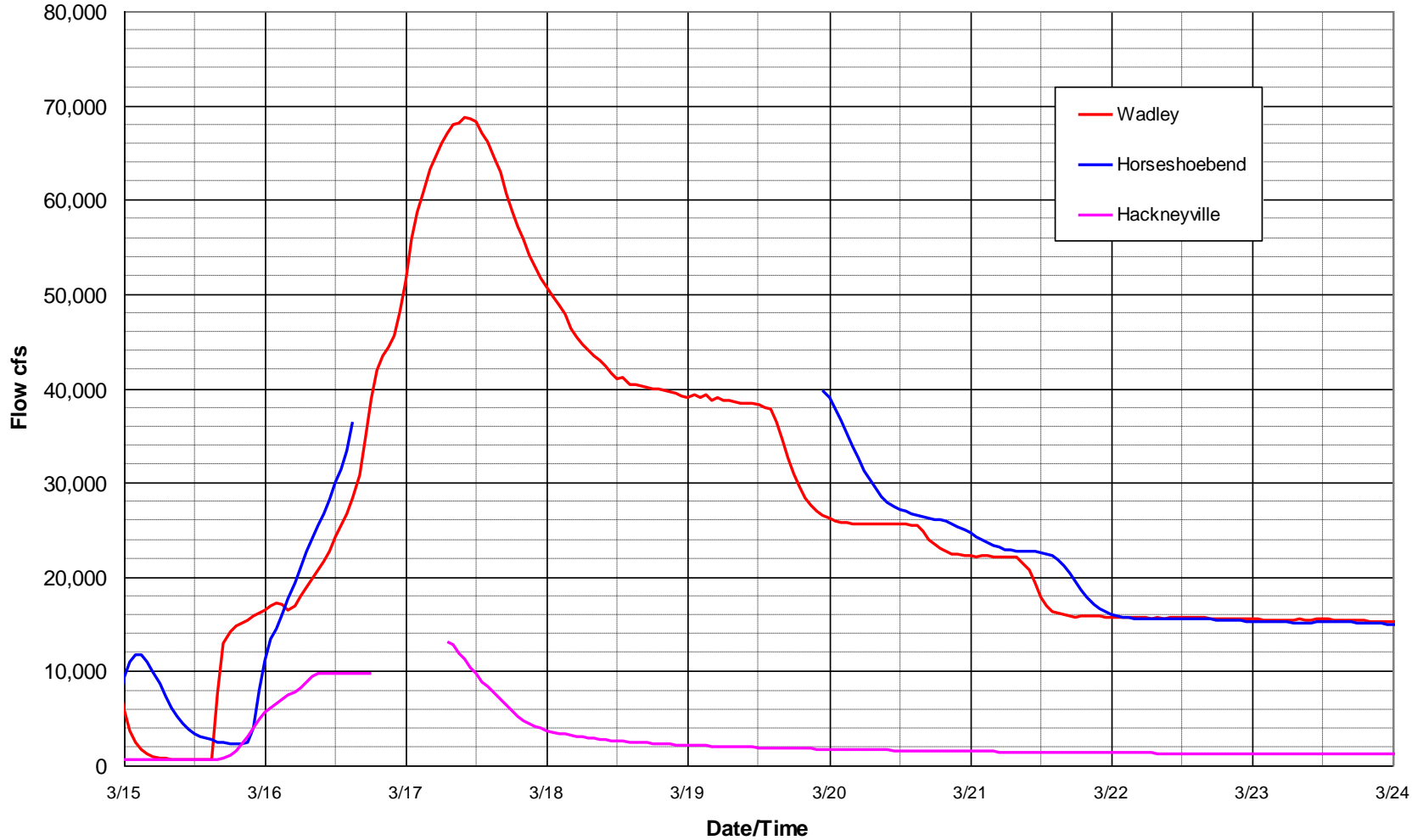
Special Flood Events

- March 1990
 - Hourly data had some gaps.
 - Some Stations with interpolated daily flows
 - Reflected regulation from upstream reservoirs
- May 2003
 - Gaps and adjustments

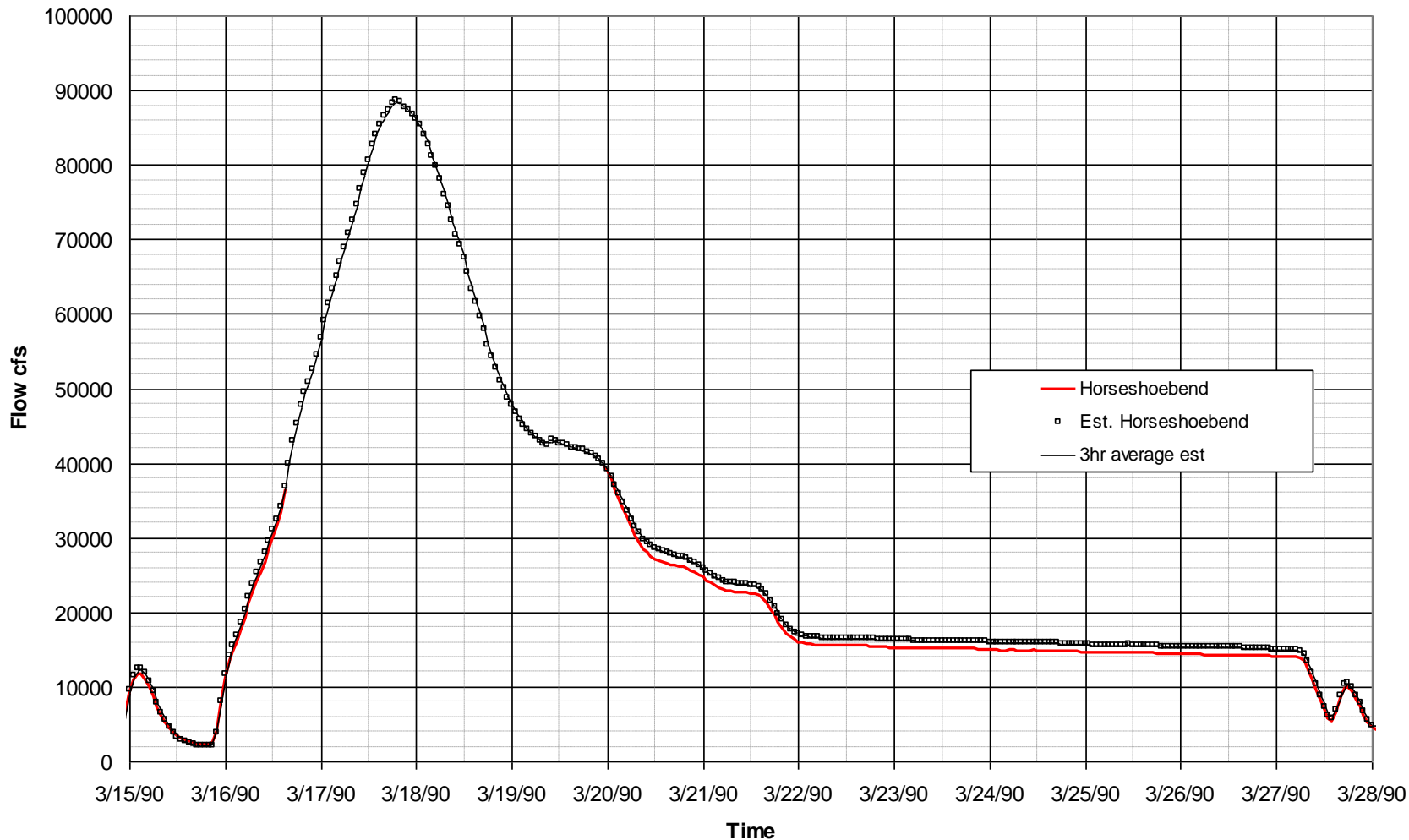
Hourly data at Gages March 1990 Flood



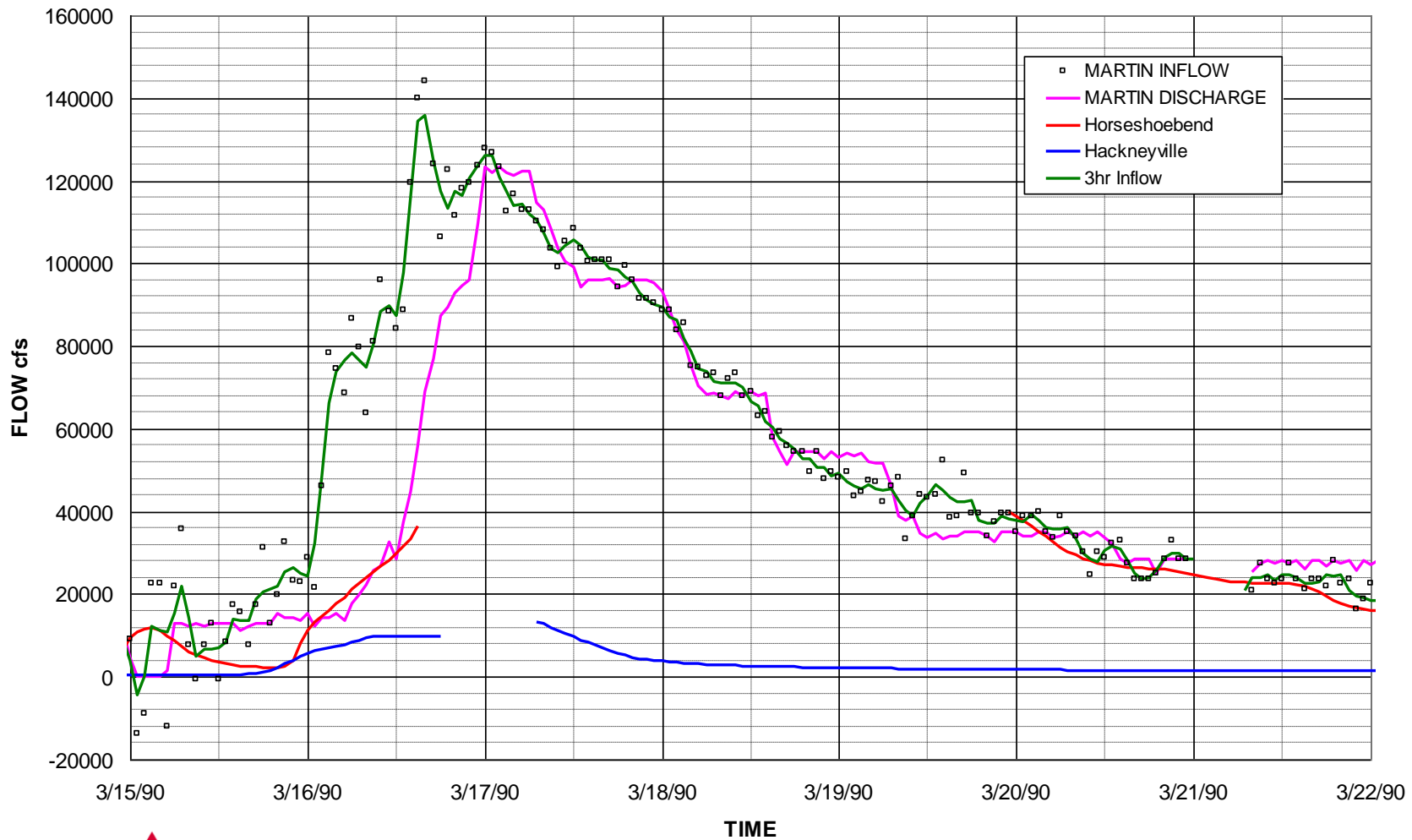
March 1990 Flood



Horseshoebend



MARTIN LAKE FLOWS



Design Flood

- Identify Impacts of Changes in operation
- Peak is based on 1% recurrence from the frequency analysis of the average daily flows
- Volumes – 1% recurrence of 3 and 5 day average flows.
- Scale the 1990 flood hydrograph based on ratio of 1990 peak to 100yr peak flow.