

USACE ACF Interim Operations Plan – FIOPOR  
“As practiced” in 2006 with 20% Woodruff over-releases  
Ramp-down rate limits per BO Table 1.3.A

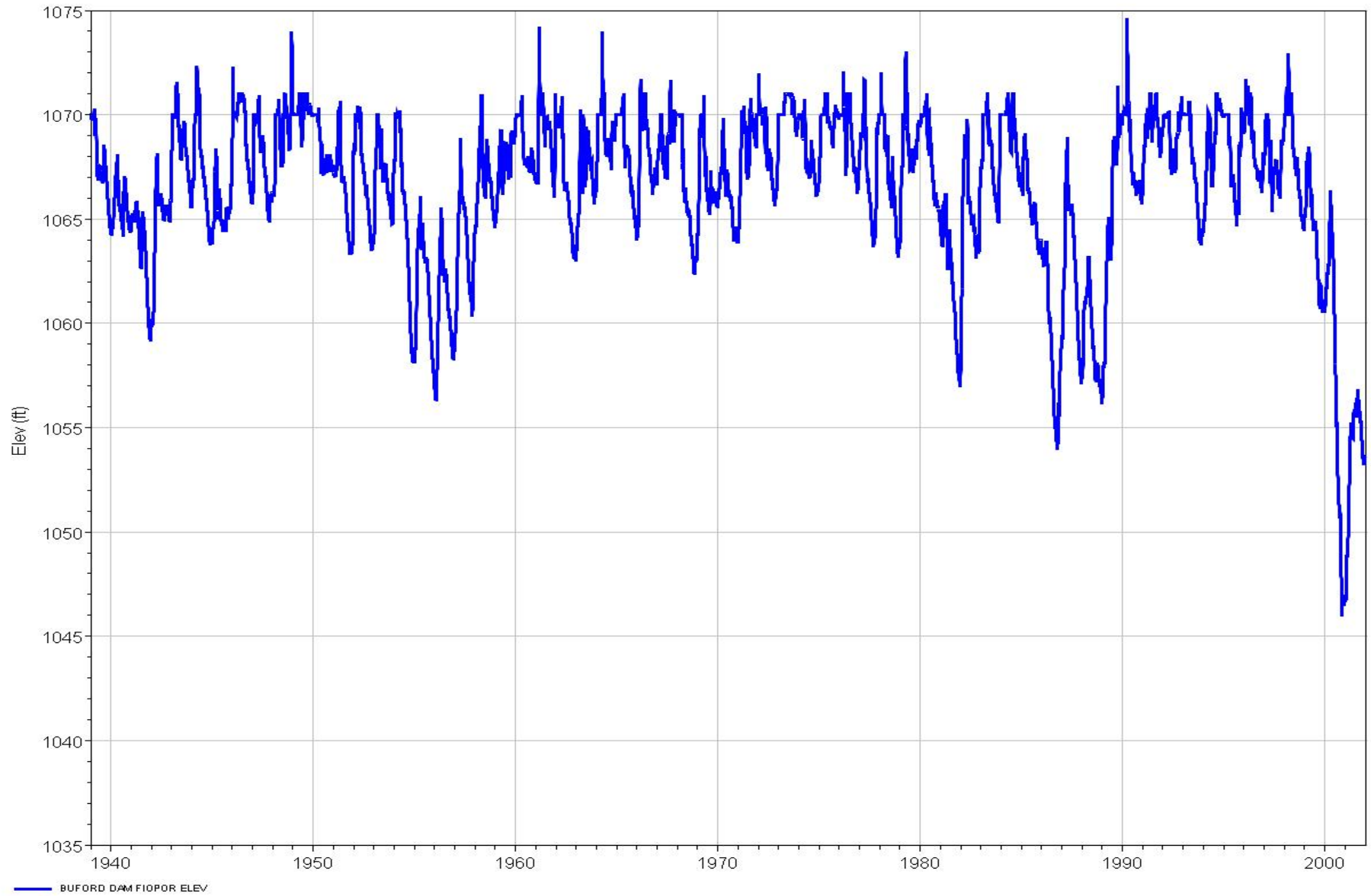
George F. McMahon, Ph.D., PE, D.WRE

December 2006

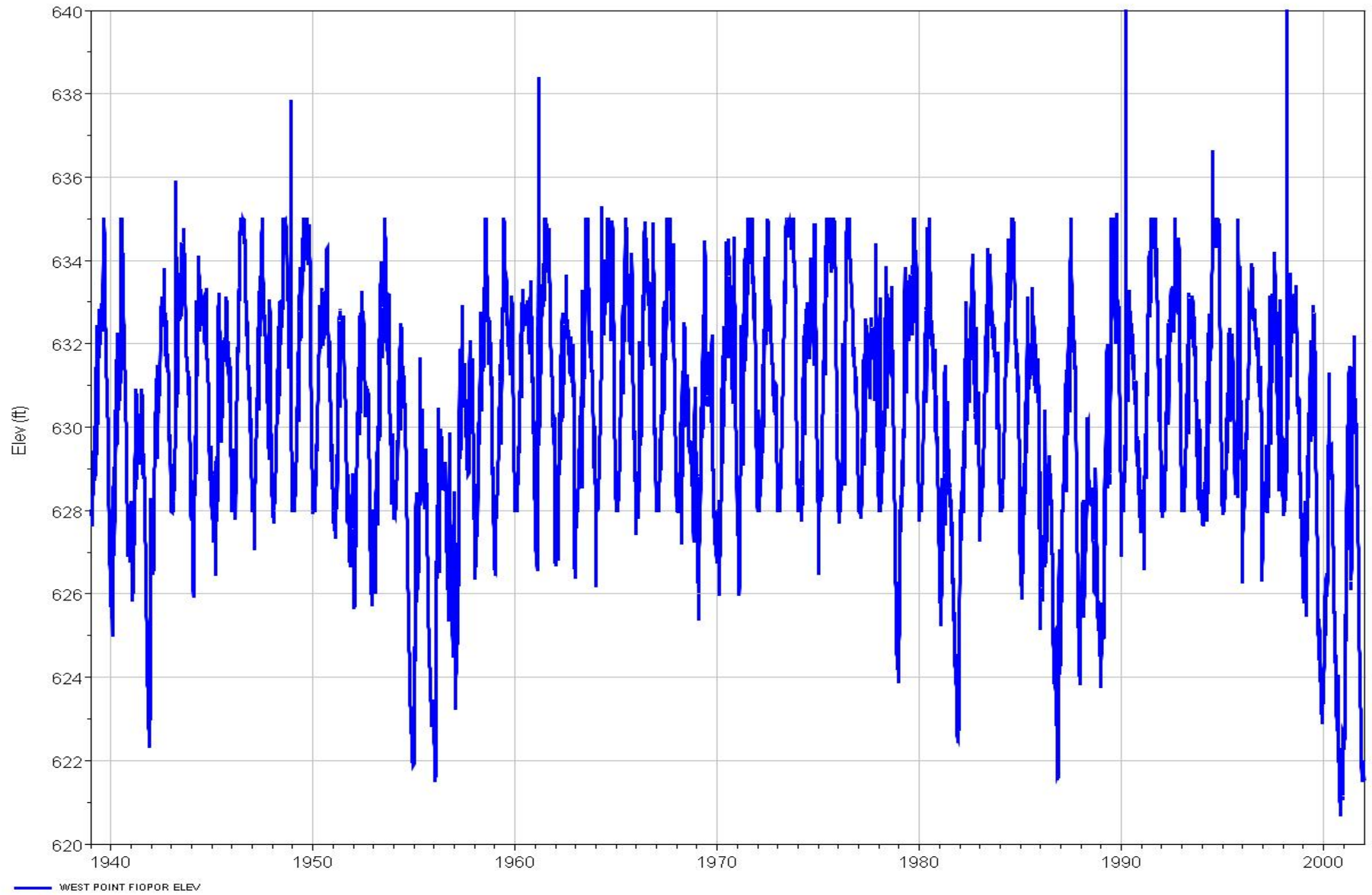
# FIOPOR HEC-5 model summary

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C *****
C               ACF BLACK & WHITE CONDITIONS
C *****
C
C FIOPOR.DAT - ACF IOP PER BIOP WITH 20% OVER_RELEASES "AS PRACTICED" IN 2006
C GEORGE MCMAHON, Ph.D., D.WRE DEC 2006
C
C POR 1939-2001 SEQUENTIAL SIMULATION ANALYSIS OF IOP - FIOPOR
C USING HEC-5 EXECUTABLE DATED 13AUG99
C BASED ON 1989 WCP FBA09017 ("BLACK AND WHITE") PLATFORM MODEL, 01AUG97
C *****
C   WOODRUFF MINIMUM RELEASE BASED ON USACE MODIFIED IOP
C     W/10000-CFS BI THRESHOLD ADJUSTMENT JUN-FEB
C   WOODRUFF MINIMUM RELEASES "AS PRACTICED" BY USACE IN 2006
C   MAR-MAY (SPAWNING): BI>37400, MR<=37400
C                       20400<BI<37400, MR<=MAX{20400,90%BI}
C                       BI<20400, MR<=MAX{6000,BI}
C   JUN-FEB (MUSSELS): BI>23000, MR<=23000
C                       10000<BI<23000, MR<=MAX{10000,90%BI}
C                       BI<10000, MR<=MAX{6000,BI}
C   RAMPDOWN RATE LIMIT PER MODIFIED IOP
C OTHER PROVISIONS:
C   (1) USACE (BI.DSS F=STELLA) IOP BI AND WOODRUFF BI TARGET RELEASES
C   (2) INTERNAL CHATTAHOOCHEE R. MIFS: 750CFS(ATLANTA), 1850/1200CFS(COLUMBUS)
C   (3) NO NAVIGATION RELEASES
C   (4) FBA08017 RULE CURVES, CORRECTED (USACE INTERIM.DAT) POWER GUIDE CURVES
C   (5) USACE 6/13/06 REVISED POWER GUIDE CURVES WITH WOODRUFF 'MINI-PEAKING':
C       WEEKDAY HOURS USE
C       ZONE//LANIER//WEST POINT//W.F.GEORGE//WOODRUFF-MP//
C         1//   3//   4//   4// 3.6(15%PF)//
C         2//   2//   2//   2// 3.6(15%PF)//
C         3//   2//   2//   2// 3.6(15%PF)//
C         4//   0//   0//   0// 3.6(15%PF)//
C       GFM: AVERAGE SEASONAL PC RATIOS FROM WCPZones.XLS, TB worksheets
C   (6) LANIER-WP-WFG-JW STORAGE BALANCING PER 1989 WCP ZONES
C       WFG ZONE 3 FBA08017.DAT (USACE INTERIM.DAT) ERRORS CORRECTED
C   (7) WP OPERATES FOR COLUMBUS, WFG; BARTLETTS FERRY ROR
C   (8) GA REVISED EPD WATER DEMAND DATA (Year-2000-demands-updated.xls)
C   (9) W.F.GEORGE ZONE 3 (LEVEL 3) SEASONAL STORAGE (RS) CORRECTED
C   (10) RAMP-DOWN RATE LIMIT PER USACE INTERIM.DAT BASED ON BI (DUMMY RES 400)
C *****
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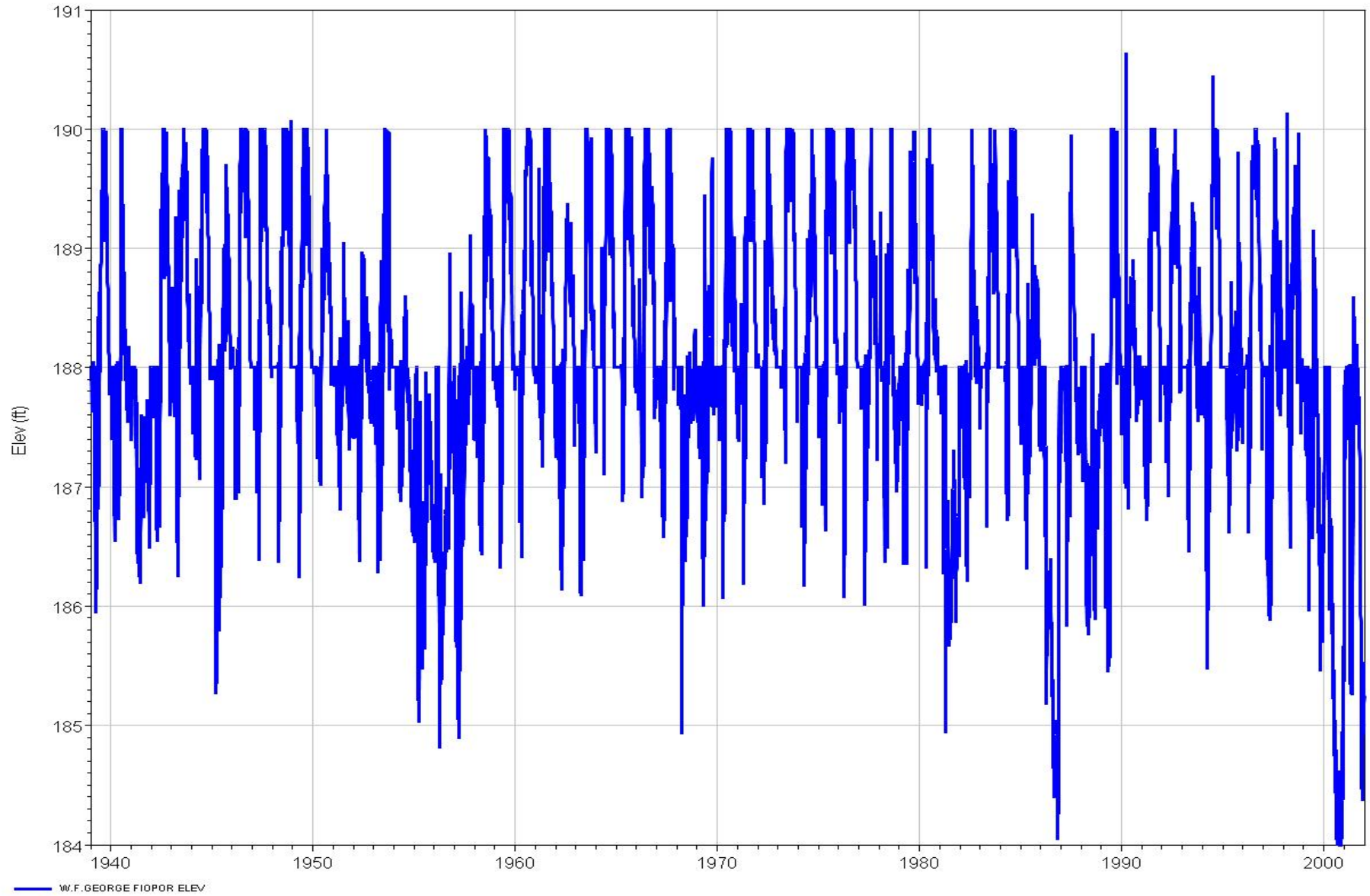
# FIOPOR Lanier elevation – 1939-2001



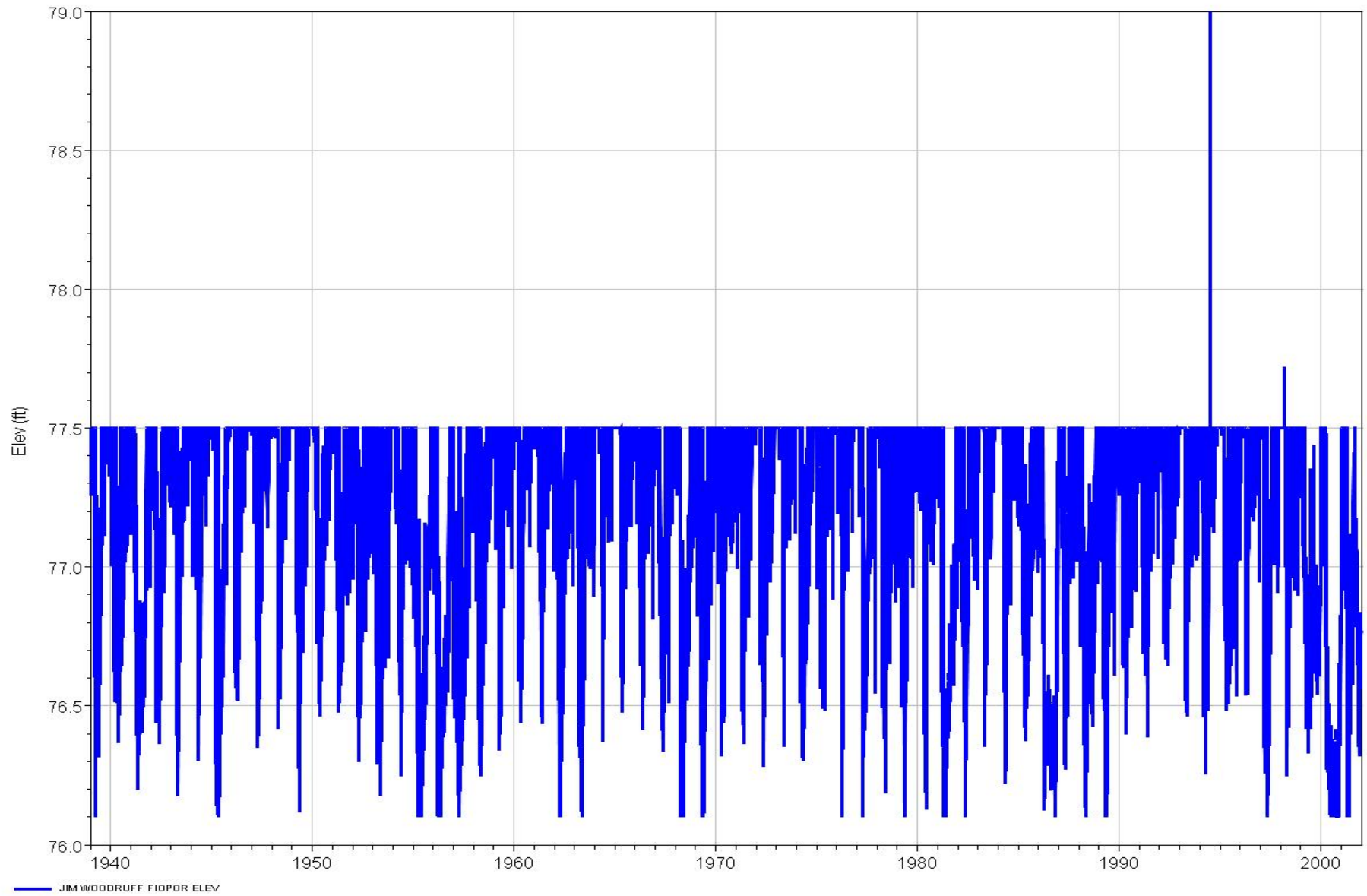
# FIOPOR West Point elevation – 1939-2001



# FIOPOR W.F.George elevation – 1939-2001

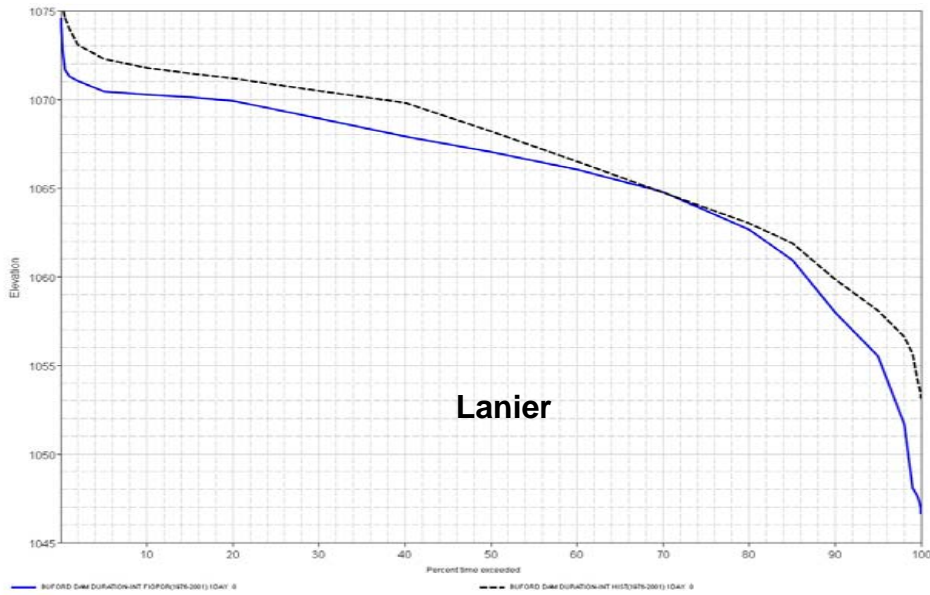


# FIOPOR Jim Woodruff elevation – 1939-2001

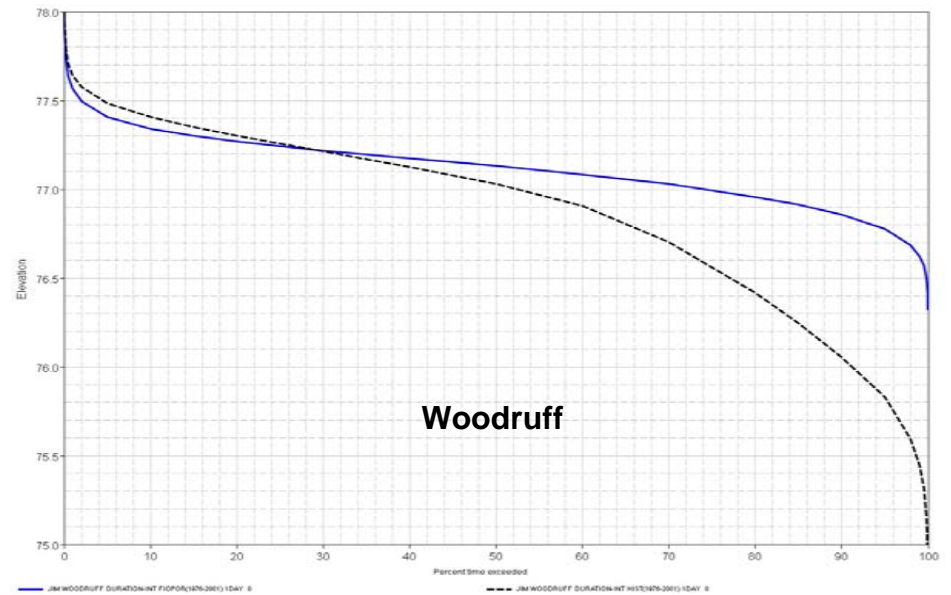
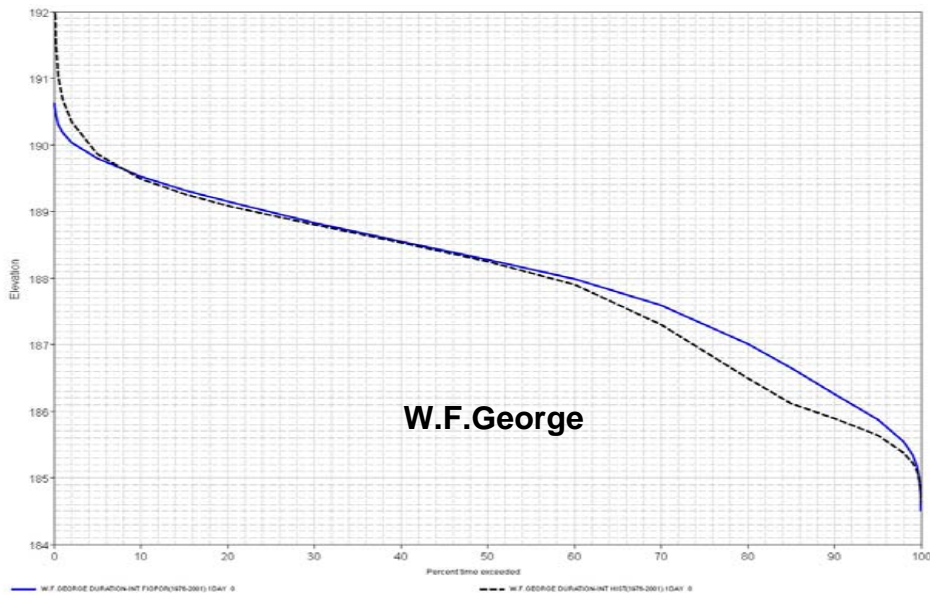
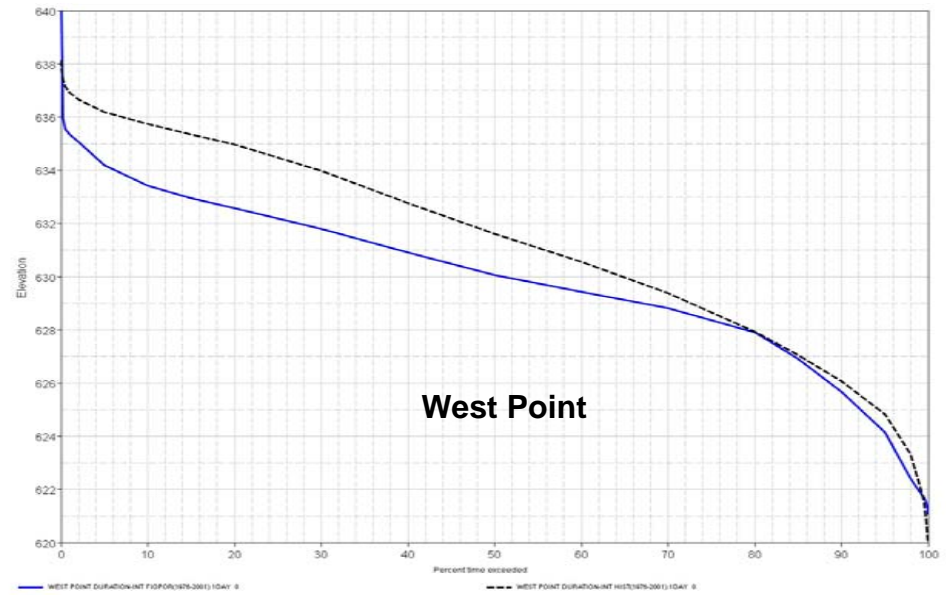


# FIOPOR elevation-duration – 1976-2001

Simulated Historical

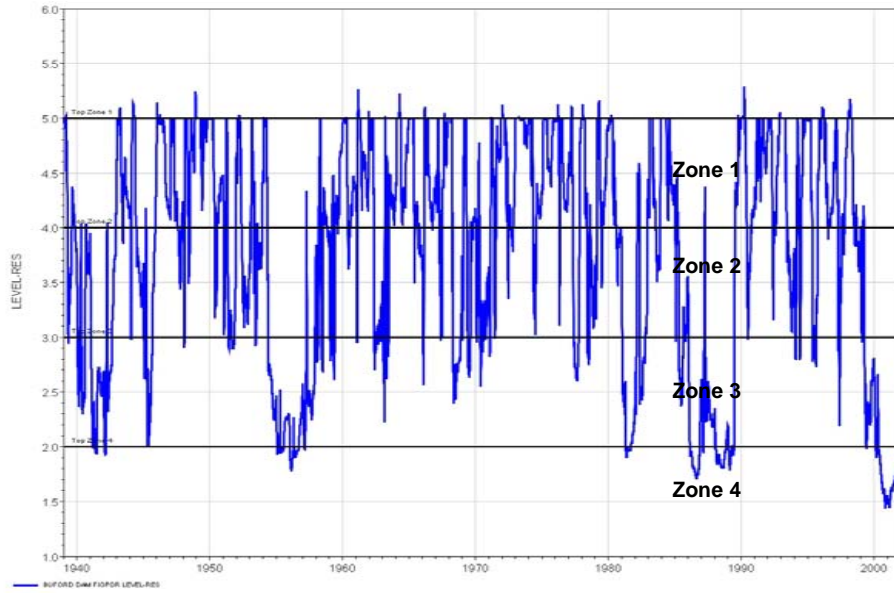


Simulated Historical

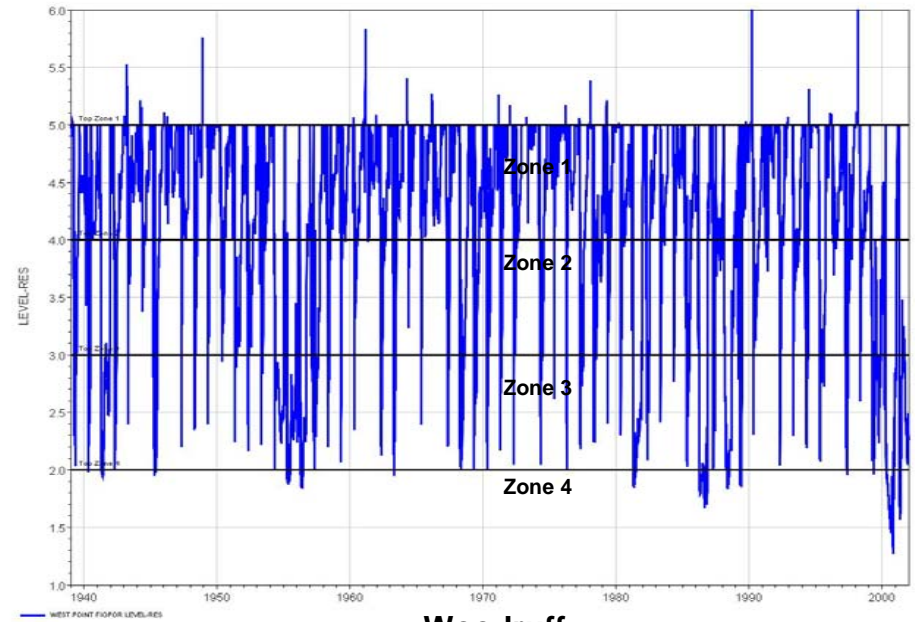


# FIOPOR WCP zones – 1939-2001

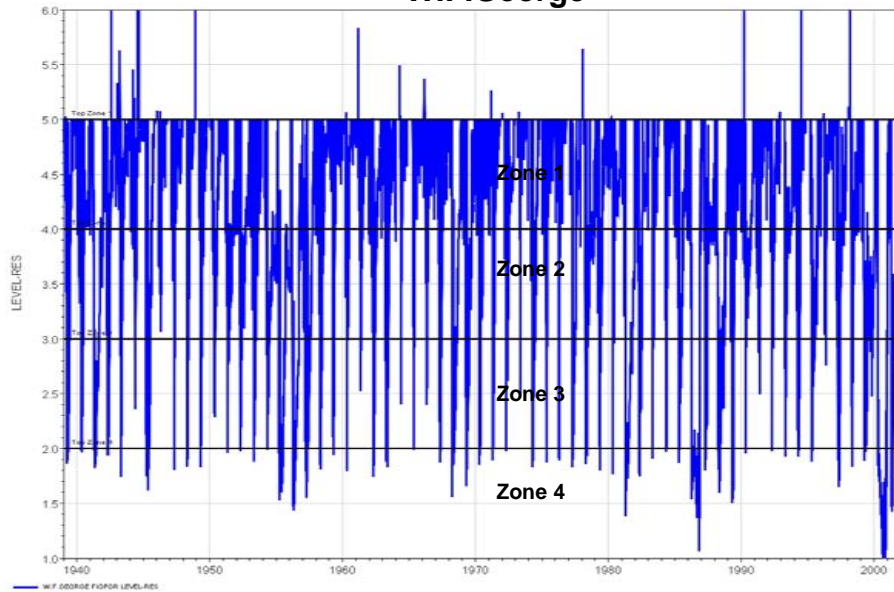
## Lanier



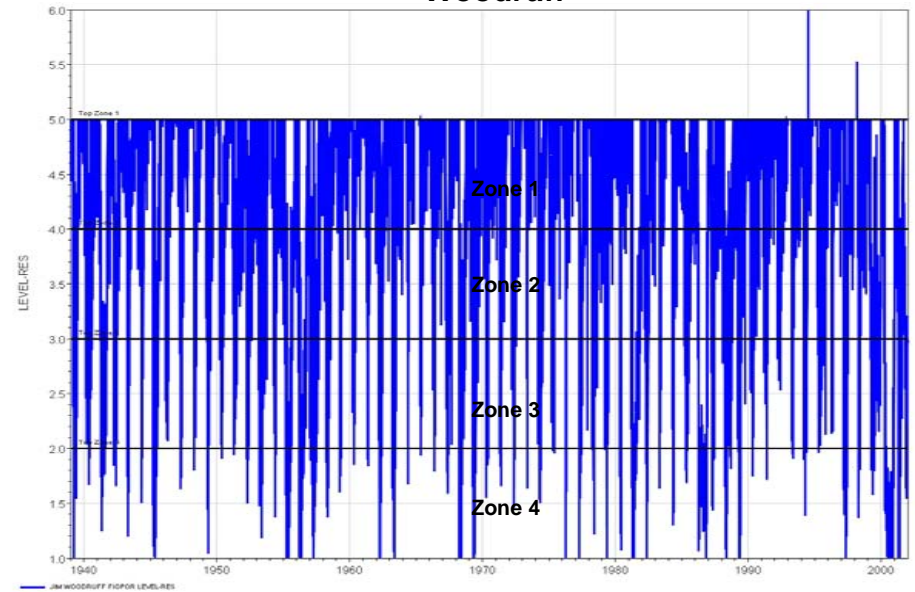
## West Point



## W.F.George

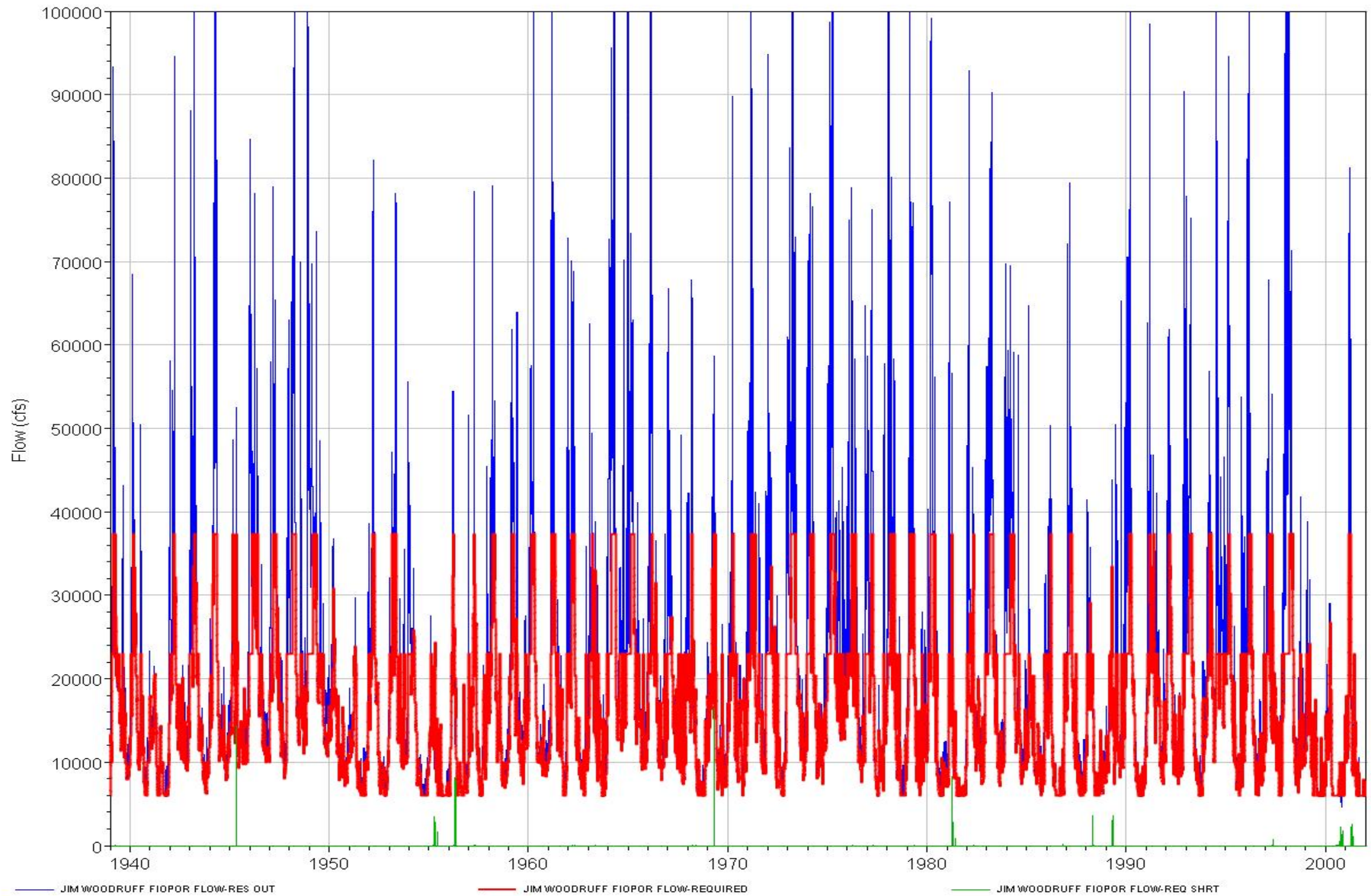


## Woodruff





# FIOPOR Jim Woodruff releases, targets, shortages



# Conclusions, recommendations

- USACE 10/05–10/06 Woodruff release statistics:
  - Average Woodruff release  $\approx$  105% BI
  - Average Woodruff release  $\approx$  140% IOP target
- FIOPOR 1939–2001 statistics:
  - Average Woodruff release  $\approx$  101% BI
  - Average Woodruff release  $\approx$  138% IOP target
- FIOPOR performance:
  - Lanier, West Point pools lower than historical
  - W.F.George, Woodruff pools higher than historical
- Recommendations:
  - Impose over-release caps
  - Set ramp-up rate limits = rampdown rates