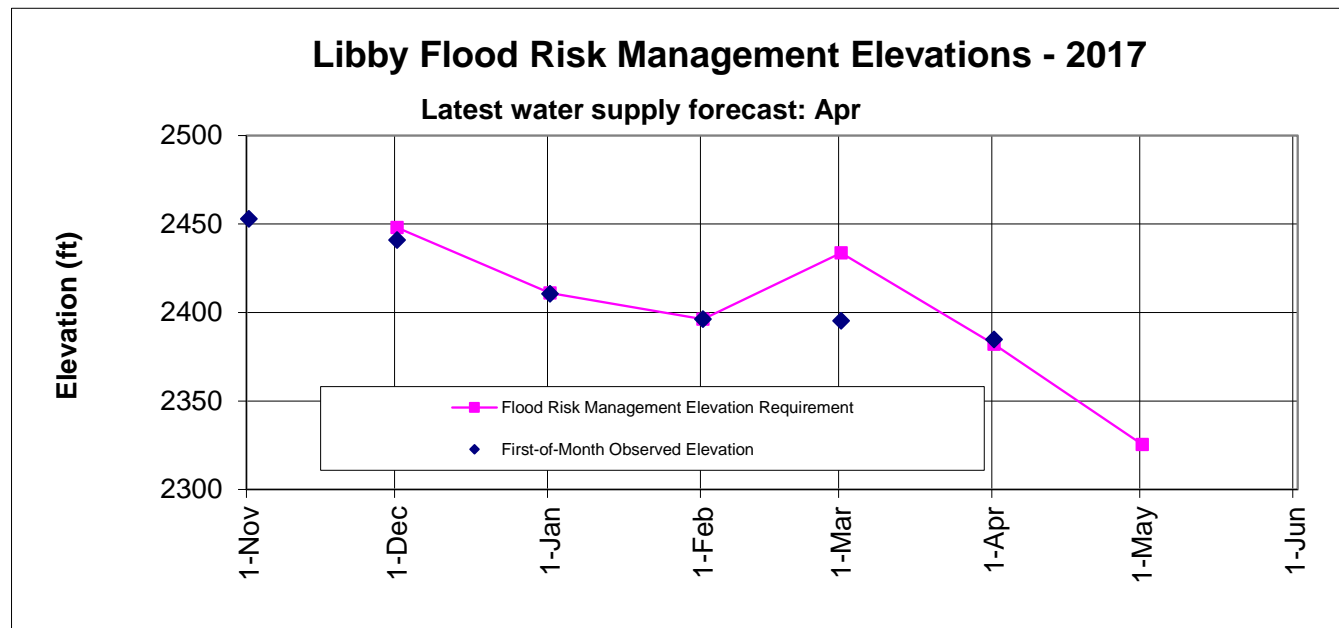
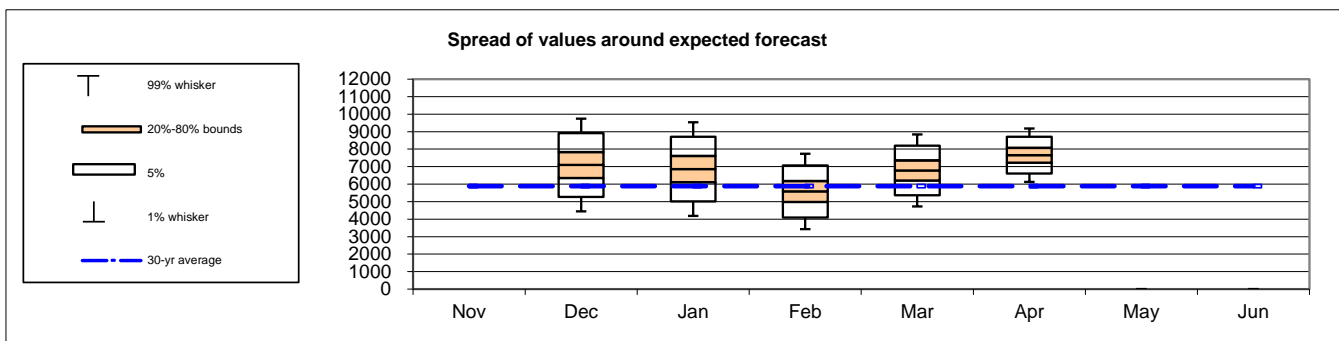


Libby : April Runoff Forecast & Flood Risk Management Calculation

WY 2017

Runoff Forecast and Flood Risk Management				1981-2010 Average	Percent of Average	1929-2008 Average	Percent of Average	
Most Probable Runoff Volume:								
	Apr-Aug	7654	KAF	5885	130%	6282	122%	
	Apr-Jul	6948	KAF	5342	130%	5720	121%	
	May-Jul	6270	KAF	4821	130%	5199	121%	
30-Apr Flood Risk Management Space				4303	KAF			
30-Apr Flood Risk Management Elevation				2325.4	ft			
Seasonal Flood Risk Management VARQ Flood Risk Management Implemented								
Forecast Date >>	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Apr-Aug Runoff Forecast		7093	6861	5583	6783	7654		
First-of-Month Elev	2452.9	2440.9	2410.5	2396.2	2395.2	2384.7		
Date >>	30-Nov	31-Dec	31-Jan	28/29-Feb	31-Mar	30-Apr		
d Risk Management Space	500	2000	2083	2145	2453	2772		
isk Management Elevation	2448.0	2411.0	2396.2	2433.7	2382.1	2325.4		



Notes:

1. The given forecast is the official Corps of Engineers forecast for Libby. If you have any questions please contact Joel Fenolio (206) 764-6683, Kristy Riley (206) 316-3947, Kevin Shaffer (206) 764-3660, Logan Osgood-Jacobs (206) 764-6928, or Kristian Mickelson (206) 764-6927.
2. If a prior month's forecast as published in this document is different than what was originally published in the issue month, then the earlier forecast has been adjusted to reflect updated values for precipitation or streamflow.
3. October Precip capped at Mean plus 2 standard deviations. A memo to NWD summarizes the methodology used.
4. Due to missing data, South Racehorse Creek SWE was estimated using a principal components regression with surrounding gages that are not already in the forecast.

Libby : April Runoff Forecast & Flood Risk Management Calculation

Apr-Aug Runoff Forecast Calculation:						
Variable	Month(s)	Units	Observed Value	Percent of Average	Regression Coefficient	Marginal Runoff (KAF)
			A		B	=A*B
SOI	ΣJun:Jul					
Eureka RS, MT	ΣOct:Mar Prcp	inches	9.90	170%	68.5	678.2
West Glacier, MT	ΣOct:Mar Prcp	inches	21.27	129%	29.5	626.8
Cranbrook A, BC	ΣOct:Mar Prcp	millimeters	273.93	172%	3.0	819.1
Fernie, BC	ΣOct:Mar Prcp	millimeters	796.07	118%	0.7	565.2
Hawkins Lake, MT	1-Apr SWE	inches	29.50	118%	22.4	661.7
Stahl Creek, MT	1-Apr SWE	inches	39.70	114%	19.7	782.1
East Creek, BC	1-Apr SWE	millimeters	1020.00	119%	0.7	744.6
Moyie Mountain, BC	1-Apr SWE	millimeters	560.00	131%	1.2	677.6
Sunshine Village, AB	1-Apr SWE	millimeters	681.00	121%	1.4	973.8
Akamina Pass, AB	1-Apr SWE	millimeters	516.00	111%	0.7	371.5
South Racehorse Creek, AB	1-Apr SWE	millimeters	505.90	118%	1.4	683.0
Intercept			1		70.5	70.5
1-Apr Forecast (KAF)					Σ	7654.0

Data used in Libby Water Supply Forecast

WY 2017

Climate Data				Jun-16	Jul-16				
SOI				0.60	0.40				
Precipitation Data	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Units
Eureka RS, MT	2.34	1.07	1.53	0.57	3.12	1.27			inch
West Glacier, MT	5.91	2.71	2.27	1.32	3.53	5.53			inch
Cranbrook A, BC	54.93	20.20	46.60	16.80	83.80	51.60			mm
Fernie, BC	238.07	157.00	76.00	33.00	168.00	124.00			mm
Snow Water Equiv			1-Jan	1-Feb	1-Mar	1-Apr	1-May	1-Jun	Units
Hawkins Lake, MT				12	22	30			inch
Stahl Creek, MT			21	22	33	40			inch
East Creek, BC				527	711	1020			mm
Moyie Mountain, BC			171	221	376	560			mm
Sunshine Village, AB			281	388	514	681			mm
Akamina Pass, AB				188	368	516			mm
South Racehorse Creek, AB				206	340	506			mm
Streamflow			Jan	Feb	Mar	Apr	May	Jun	Units
Libby Inflow Volume			227.9	203.7	452.8				KAF
Reservoir Elevation	1-Nov	1-Dec	1-Jan	1-Feb	1-Mar	1-Apr	1-May	1-Jun	Units
Libby FOM Elev	2452.9	2440.9	2410.5	2396.2	2395.2	2384.7			feet

William D. Proctor, P.E.
 Approving Official
 Ch., Hydrologic Engineering and Power Branch
 Northwestern Division

Joel Fenolio, P.E.
 Upper Columbia Senior Water Manager
 Seattle District