

Libby : March Runoff Forecast & Flood Risk Management Calculation

WY 2017

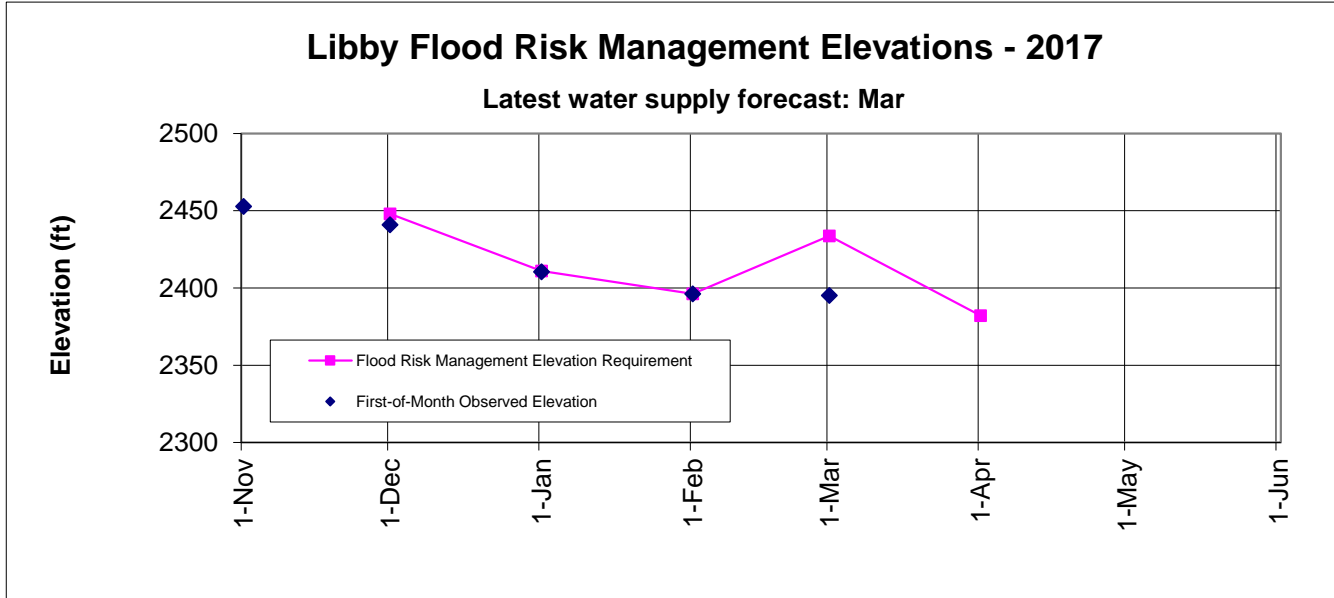
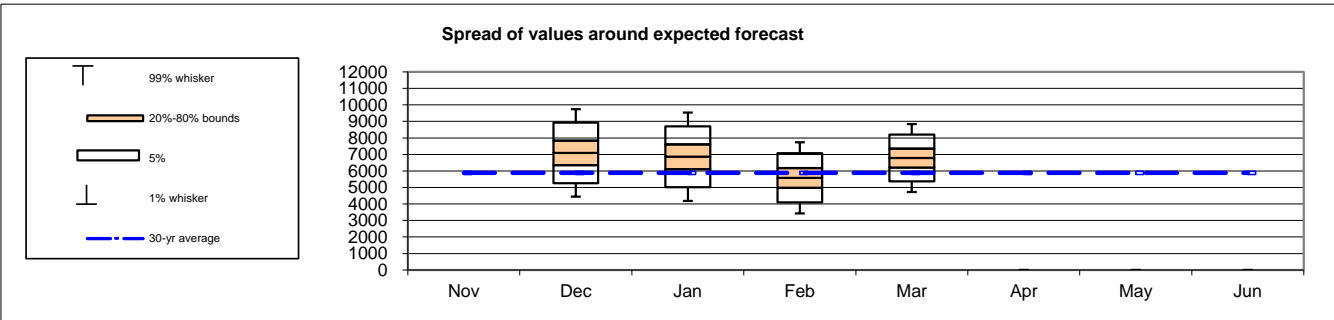
Runoff Forecast and Flood Risk Management

Most Probable Runoff Volume:	Apr-Aug	6783	KAF
	Apr-Jul	6158	KAF
	May-Jul	5557	KAF
31-Mar Flood Risk Management Space		2924	KAF
31-Mar Flood Risk Management Elevation		2382.1	ft

1981-2010 Average	Percent of Average	1929-2008 Average	Percent of Average
5885	115%	6282	108%
5342	115%	5720	108%
4821	115%	5199	107%

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			
First-of-Month Elev	2452.9	2440.9	2410.5	2396.2	2395.2			

Date >>	30-Nov	31-Dec	31-Jan	28-Feb	31-Mar	30-Apr
Flood Risk Management Space	500	2000	2083	2145	2453	
Flood Risk Management Elevation	2448.0	2411.0	2396.2	2433.7	2382.1	



- Notes:**
- 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.
 - 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.
 - October Precip capped at Mean plus 2 standard deviations. A memo to NWD summarizes the methodology used.
 - 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.

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Apr-Aug Runoff Forecast Calculation:						
Variable	Month(s)	Units	Observed Value	Percent of Average	Regression Coefficient	Marginal Runoff (KAF)
			A		B	=A*B
SOI	∑Jun:Jul					
Eureka RS, MT	∑Oct:Feb Prcp	inches	8.63	174%	65.9	568.3
West Glacier, MT	∑Oct:Feb Prcp	inches	15.74	111%	28.5	448.7
Cranbrook A, BC	∑Oct:Feb Prcp	millimeters	222.33	165%	2.7	607.0
Fernie, BC	∑Oct:Feb Prcp	millimeters	672.07	117%	0.6	423.4
Hawkins Lake, MT	1-Mar SWE	inches	21.50	106%	24.3	523.1
Stahl Creek, MT	1-Mar SWE	inches	32.70	114%	19.1	624.9
East Creek, BC	1-Mar SWE	millimeters	711.00	100%	0.7	462.2
Moyie Mountain, BC	1-Mar SWE	millimeters	376.00	106%	1.3	477.5
Sunshine Village, AB	1-Mar SWE	millimeters	514.00	110%	1.3	647.6
Akamina Pass, AB	1-Mar SWE	millimeters	368.00	94%	1.0	382.7
South Racehorse Creek, AB	1-Mar SWE	millimeters	339.90	98%	1.4	475.9
Intercept			1		1142.0	1142.0
1-Mar Forecast (KAF)					∑	6783.2

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				inch
West Glacier, MT		5.91	2.71	2.27	1.32	3.53				inch
Cranbrook A, BC		54.93	20.20	46.60	16.80	83.80				mm
Fernie, BC		238.07	157.00	76.00	33.00	168.00				mm
Snow Water Equiv				1-Jan	1-Feb	1-Mar	1-Apr	1-May	1-Jun	Units
Hawkins Lake, MT					12	22				inch
Stahl Creek, MT				21	22	33				inch
East Creek, BC					527	711				mm
Moyie Mountain, BC				171	221	376				mm
Sunshine Village, AB				281	388	514				mm
Akamina Pass, AB					188	368				mm
South Racehorse Creek, AB					206	340				mm
Streamflow				Jan	Feb	Mar	Apr	May	Jun	Units
Libby Inflow Volume				227.9	203.7					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				feet

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