

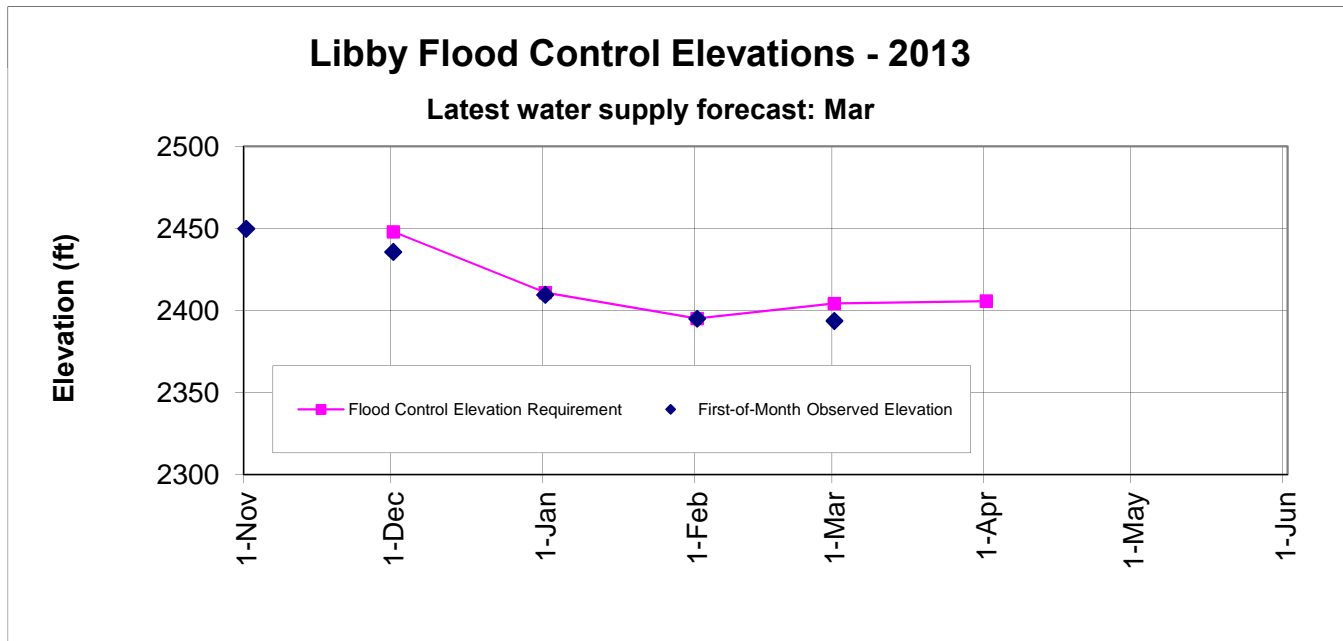
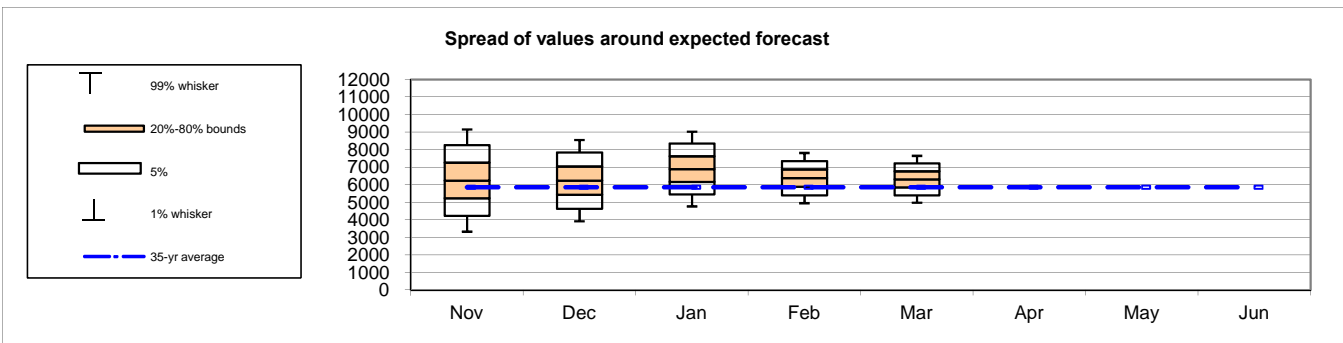
# Libby : March Runoff Forecast & Flood Control Calculation

WY 2013

Runoff Forecast and Flood Control			
Most Probable Runoff Volume:	Apr-Aug	6315	KAF
	Apr-Jul	5710	KAF
	May-Jul	5165	KAF
31-Mar Flood Control Space		2186	KAF
31-Mar Flood Control Elevation		2405.8	ft

1975-2009 Average	Percent of Average	1929-1999 Average	Percent of Average
5865	108%	6337	100%
5303	108%	5771	99%
4797	108%	5247	98%

Seasonal Flood Control								
VARQ Flood Control Implemented								
Forecast Date >>	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Apr-Aug Runoff Forecast	6245	6238	6898	6384	6315			
First-of-Month Elev	2449.9	2435.7	2409.7	2395.1	2393.8			
Date >>	30-Nov	31-Dec	31-Jan	28-Feb	31-Mar	30-Apr		
Flood Control Space	500	2000	2534	2238	2186			
Flood Control Elevation	2448.0	2411.0	2395.2	2404.3	2405.8			



- 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, Kevin Shaffer (206) 764-3660, Adam Price (206) 764-3604, 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.
  - Extreme observed precipitation in October was reduced so that the forecast would reflect realistic physical conditions. Observed values for October were replaced with average values + 1/2 standard deviation from the forecast training period (1975-2010).
  - Previous Water Supply Forecasts included flood control elevations for March 15 and April 15. As of the current update to the Libby Water Control Manual, there are no longer any flood control elevations associated with these mid-month dates.

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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
QBO	∑Jan:Mar		-48.06		-10.2	490.5
Eureka, MT	∑Oct:Feb Prcp	inches	3.73	75%	68.6	256.0
Libby 1 NE RS, MT	∑Oct:Feb Prcp	inches	10.03	111%	51.5	516.7
West Glacier, MT	∑Oct:Feb Prcp	inches	16.12	112%	33.7	543.5
Fernie, BC	∑Oct:Feb Prcp	inches	22.65	89%	11.5	260.3
Floe Lake, BC	1-Mar SWE	inches	23.78	102%	6.4	151.8
Sunshine Village, AB	1-Mar SWE	inches	16.38	89%	17.8	291.7
East Creek, BC	1-Mar SWE	inches	25.00	87%	4.8	119.0
Stahl Peak, MT	1-Mar SWE	inches	25.20	87%	15.2	384.0
Gardiner Creek, AB	1-Mar SWE	inches	21.26	117%	13.2	279.8
Three Isle Lake, AB	1-Mar SWE	inches	13.35	87%	26.1	348.6
Lost Creek South, AB	1-Mar SWE	inches	21.54	112%	14.7	316.4
Morrissey Ridge, BC	1-Mar SWE	inches	20.24	89%	18.6	376.4
Hawkins Lake, MT	1-Mar SWE	inches	22.20	110%	22.8	506.9
Intercept			1		1473.3	1473.3
1-Mar Forecast (KAF)					∑	6315.1

## Data used in Libby Water Supply Forecast

	WY							Jul-05	
Climate Data	Jan-12	Feb-12	Mar-12	Jun-12	Jul-12	Oct-12	Nov-12	Dec-12	Jan-13
SOI				-0.40	0.00				
QBO	-16.07	-15.25	-16.74						
PNA						-1.13	-1.06	-1.31	0.05
Precipitation Data	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Units
Eureka, MT	1.24	0.76	1.21	0.31	0.21				inch
Libby 1 NE RS, MT	1.94	2.52	4.39	0.91	0.27				inch
West Glacier, MT	3.06	4.59	4.51	1.92	2.04				inch
Fernie, BC	136.60	153.20	186.00	54.00	45.50				mm
Snow Water Equiv			1-Jan	1-Feb	1-Mar	1-Apr	1-May	1-Jun	Units
Floe Lake, BC			429	532	604				mm
Sunshine Village, AB			319	370	416				mm
East Creek, BC			459	533	635				mm
Stahl Peak, MT			14	20	25				inch
Gardiner Creek, AB			365	479	540				mm
Three Isle Lake, AB			249	294	339				mm
Lost Creek South, AB			355	452	547				mm
Morrissey Ridge, BC			331	428	514				mm
Hawkins Lake, MT			14	19	22				inch
Streamflow			Jan	Feb	Mar	Apr	May	Jun	Units
Libby Inflow Volume			213.0	179.9					KAF
Reservoir Elevation	1-Nov	1-Dec	1-Jan	1-Feb	1-Mar	1-Apr	1-May	1-Jun	Units
Libby FOM Elev	2449.9	2435.7	2409.7	2395.1	2393.8				feet