

Libby : January Runoff Forecast & Flood Control Calculation

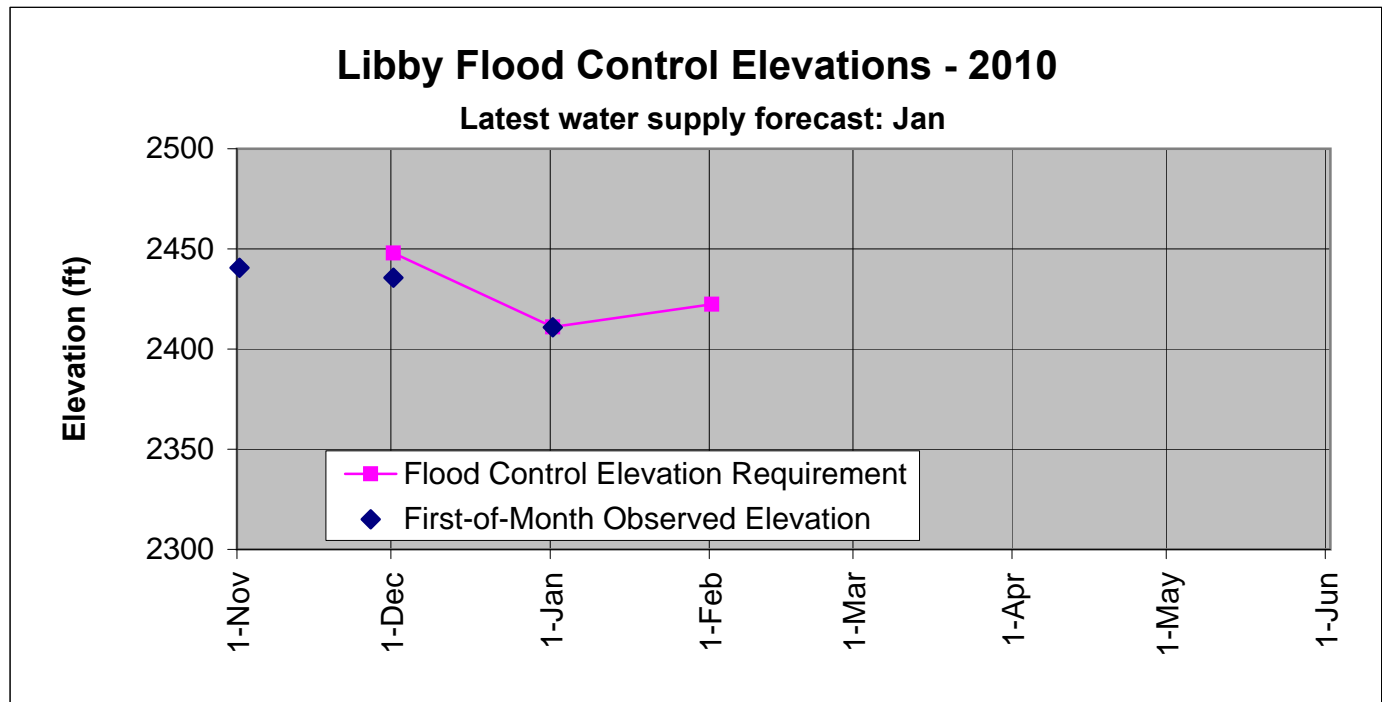
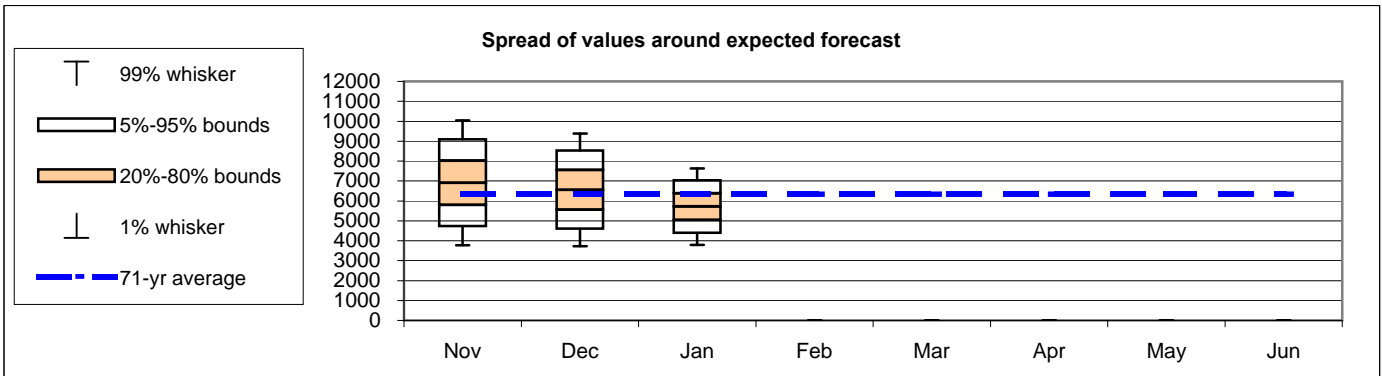
WY 2010

| Runoff Forecast and Flood Control | | | |
|-----------------------------------|---------|--------|-----|
| Most Probable Runoff Volume: | Apr-Aug | 5713 | KAF |
| | Apr-Jul | 5202 | KAF |
| | May-Jul | 4730 | KAF |
| 31-Jan Flood Control Space | | 1570 | KAF |
| 31-Jan Flood Control Elevation | | 2422.4 | ft |

1929-1999 Average Percent of Average

6337 90%
5771 90%
5247 90%

| Seasonal Flood Control | | | | | | | | |
|--------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| VARQ Flood Control Implemented | | | | | | | | |
| Forecast Date >> | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun |
| Apr-Aug Runoff Forecast | 6910 | 6558 | 5713 | | | | | |
| First-of-Month Elev | 2440.5 | 2435.6 | 2410.9 | | | | | |
| Date >> | 30-Nov | 31-Dec | 31-Jan | 28-Feb | 15-Mar | 31-Mar | 15-Apr | 30-Apr |
| Flood Control Space | 500 | 2000 | 1570 | | | | | |
| Flood Control Elevation | 2448.0 | 2411.0 | 2422.4 | | | | | |



- 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), Amy Reese (206 764-3660), or Kenneth Brettman (206 764-6567).
 - Subsequent forecasts may differ from the originally published forecast due to updated values for precipitation, snow or streamflow.
 - Vermillion River snow measurements, with adjustments, are serving as a surrogate for Marble Canyon.

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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 |
| Fernie, BC | ΣOct,Nov,Dec Prcp | inches | 11.02 | 70% | 21.8 | 240.7 |
| Glacier NP RP, BC | ΣOct,Nov,Dec Prcp | inches | 22.87 | 105% | 22.0 | 504.1 |
| Kaslo, BC | ΣOct,Nov,Dec Prcp | inches | 11.95 | 105% | 44.2 | 527.9 |
| Fortine 1N, MT | ΣOct,Nov,Dec Prcp | inches | 4.08 | 104% | 109.4 | 446.4 |
| West Glacier, MT | ΣOct,Nov,Dec Prcp | inches | 8.06 | 94% | 47.3 | 381.3 |
| Libby 1 NE RS, MT | ΣOct,Nov,Dec Prcp | inches | 4.37 | 70% | 70.1 | 306.4 |
| Banff, AB | Dec Prcp | inches | 0.39 | 31% | 93.2 | 36.3 |
| Cranbrook, BC | Dec Prcp | inches | 0.91 | 55% | 112.5 | 102.7 |
| Vermillion R #3, BC | 1-Jan SWE ³ | inches | 5.14 | 90% | ---- | |
| Marble Canyon, BC | 1-Jan SWE ³ | inches | 5.98 | | 57.7 | 345.3 |
| East Creek, BC | 1-Jan SWE | inches | 17.72 | 96% | 23.8 | 422.5 |
| Intercept | | | 1 | | 2398.9 | 2398.9 |
| 1-Jan Forecast (KAF) | | | | | Σ | 5712.5 |

Data used in Libby Water Supply Forecast

WY 2010

| Climate Data | June | July | Aug | Sep | | | | | | |
|---------------------------|--------|--------|--------|-------|-------|-------|-------|-------|--------|-------|
| SOI | -0.30 | 0.10 | -0.70 | 0.30 | | | | | | |
| Precipitation Data | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Units | |
| Cranbrook A, BC | | | 23.20 | | | | | | mm | |
| Fernie, BC | 112.00 | 82.30 | 85.70 | | | | | | mm | |
| Glacier NP Rogrs Pass, BC | 179.40 | 258.50 | 143.00 | | | | | | mm | |
| Kaslo, BC | 126.60 | 95.20 | 81.80 | | | | | | mm | |
| Banff, AB | | | 9.90 | | | | | | mm | |
| Fortine 1N, MT | 1.82 | 0.73 | 1.53 | | | | | | inch | |
| West Glacier, MT | 3.18 | 1.38 | 3.50 | | | | | | inch | |
| Libby 1 NE RS, MT | 1.98 | 1.16 | 1.23 | | | | | | inch | |
| Snow Water Equiv | | | | 1-Jan | 1-Feb | 1-Mar | 1-Apr | 1-May | 15-May | Units |
| Vermillion Rvr No. 3, BC | | | | 131 | | | | | | mm |
| East Creek, BC | | | | 450 | | | | | | mm |
| Morrissey Ridge, BC | | | | | | | | | | mm |
| Moyie Mountain, BC | | | | | | | | | | mm |
| Sullivan Mine, BC | | | | | | | | | | mm |
| Hawkins Lake, MT | | | | | | | | | | inch |
| Stahl Peak, MT | | | | | | | | | | inch |
| Streamflow | | | | Jan | Feb | Mar | Apr | May | Jun | Units |
| Libby Inflow Volume | | | | | | | | | | KAF |
| Reservoir Elevation | 1-Nov | 1-Dec | 1-Jan | 1-Feb | 1-Mar | 1-Apr | 1-May | 1-Jun | Units | |
| Libby FOM Elev | 2440.5 | 2435.6 | 2410.9 | | | | | | feet | |