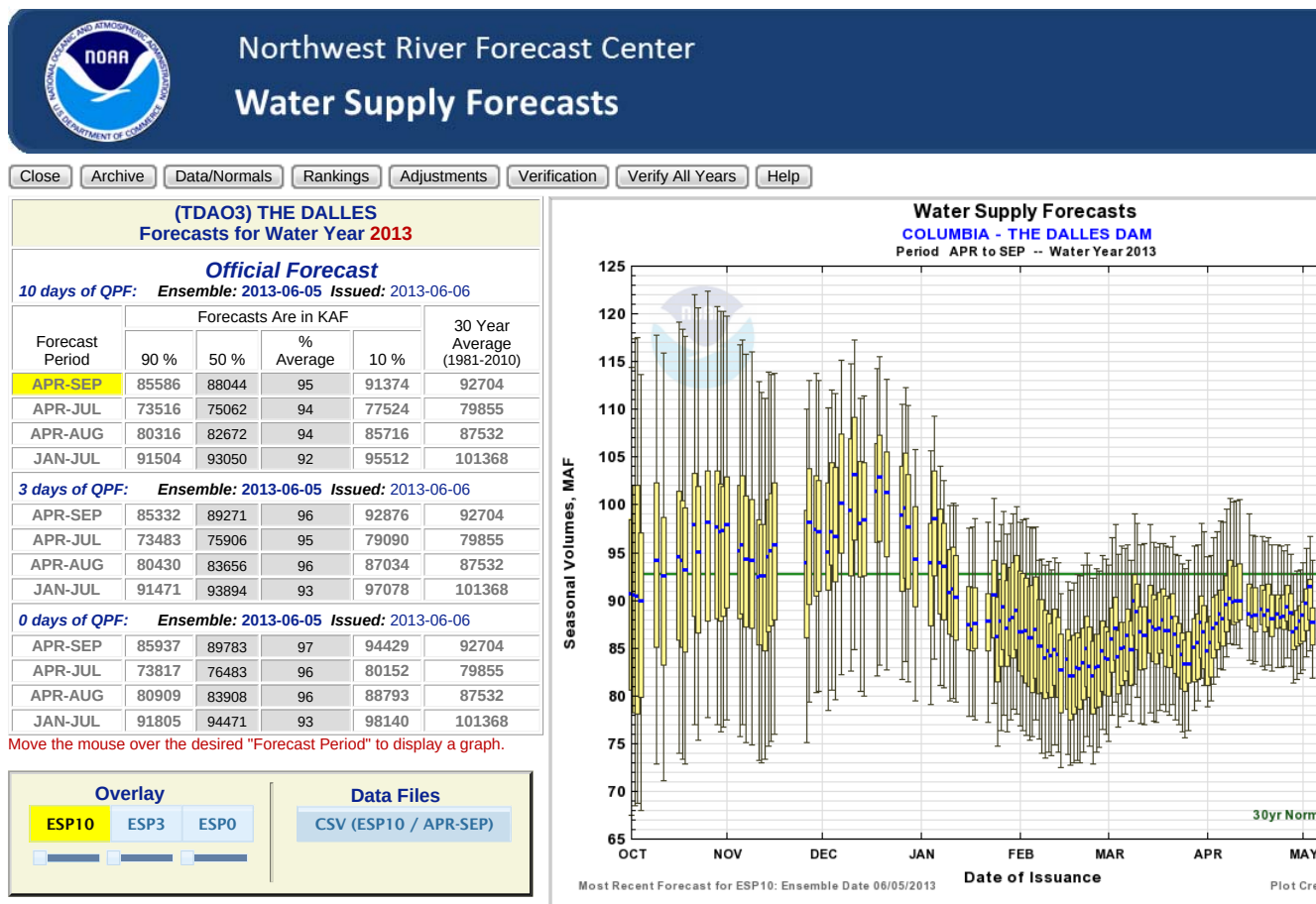


The Dalles Dam official water supply forecast is computed by RFC on the 5th working day of the month. **The JUNE final forecast is not used for implementation of any BiOp actions and is provided for informational purposes only.** See the 2013 Water Management Plan (Table 4) for more info.



☐ Max Scale
 ☒ Scale To Data
 ☐ Scale To Last 45 Days

Note: Compatible with the latest browsers (Chrome, Firefox, Safari, and Internet Explorer (ie9+)).

The Lower Granite Dam official water supply forecast is computed by RFC on the 5th working day of the month.

The JUNE final forecast of April-August runoff volume is used to set summer flow objective at Lower Granite. See the 2013 Water Management Plan (Table 4) for more info.



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(LGDW1) LOWER GRANITE DAM Forecasts for Water Year 2013

Official Forecast

10 days of QPF: Ensemble: 2013-06-05 Issued: 2013-06-06

Forecast Period	Forecasts Are in KAF				30 Year Average (1981-2010)
	90 %	50 %	% Average	10 %	
APR-SEP	15784	16048	72	16362	22279
APR-JUL	13559	13708	69	14020	19848
APR-AUG	14697	14860	70	15220	21091
JAN-JUL	18621	18770	68	19082	27440

3 days of QPF: Ensemble: 2013-06-05 Issued: 2013-06-06

APR-SEP	15875	16343	73	16897	22279
APR-JUL	13629	13992	70	14492	19848
APR-AUG	14771	15195	72	15764	21091
JAN-JUL	18691	19054	69	19554	27440

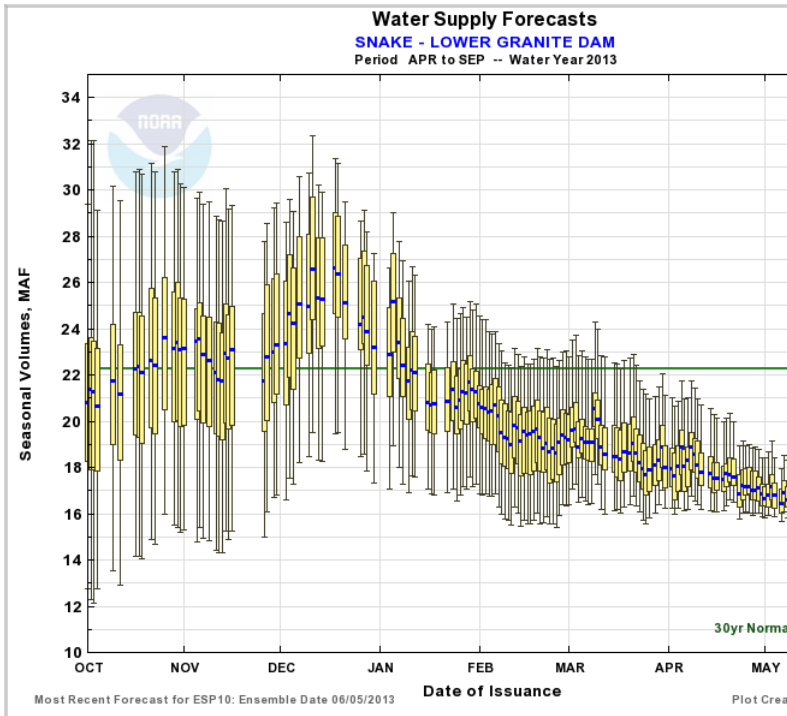
0 days of QPF: Ensemble: 2013-06-05 Issued: 2013-06-06

APR-SEP	15909	16474	74	17393	22279
APR-JUL	13675	14133	71	14977	19848
APR-AUG	14821	15327	73	16230	21091
JAN-JUL	18737	19195	70	20039	27440

Move the mouse over the desired "Forecast Period" to display a graph.

Overlay
☒ ESP10
 ☐ ESP3
 ☐ ESP0

Data Files



Max Scale Scale To Data Scale To Last 45 Days

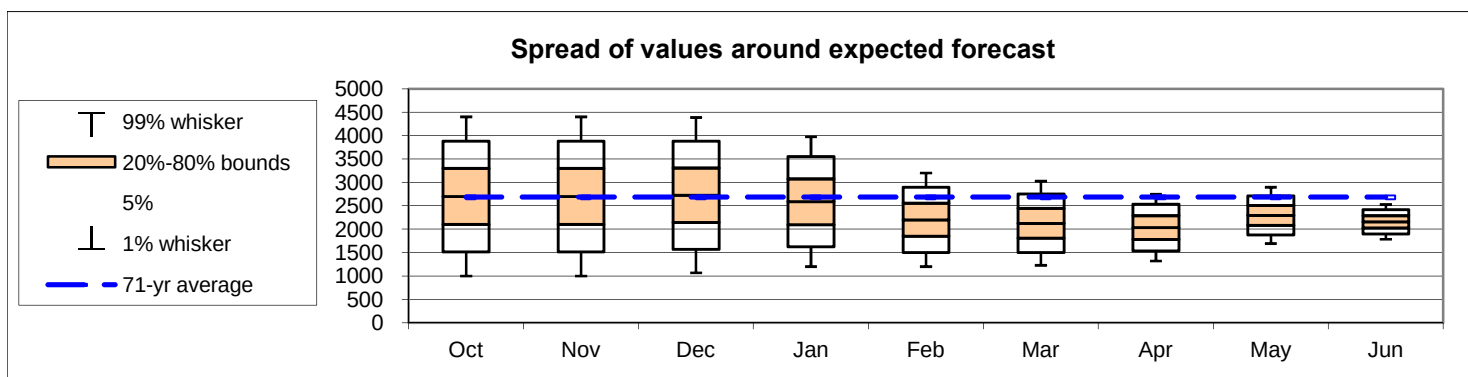
Note: Compatible with the latest browsers (Chrome, Firefox, Safari, and Internet Explorer (ie9+)).

The Dworshak Dam official water supply forecast is computed by Corps Walla Walla District on the 5th working day of the month.
The JUNE final forecast of April-July runoff volume is used to manage reservoir refill. See 2013 WMP (Table 4) for more info.

Dworshak : June Runoff Forecast & Flood Control Calculation

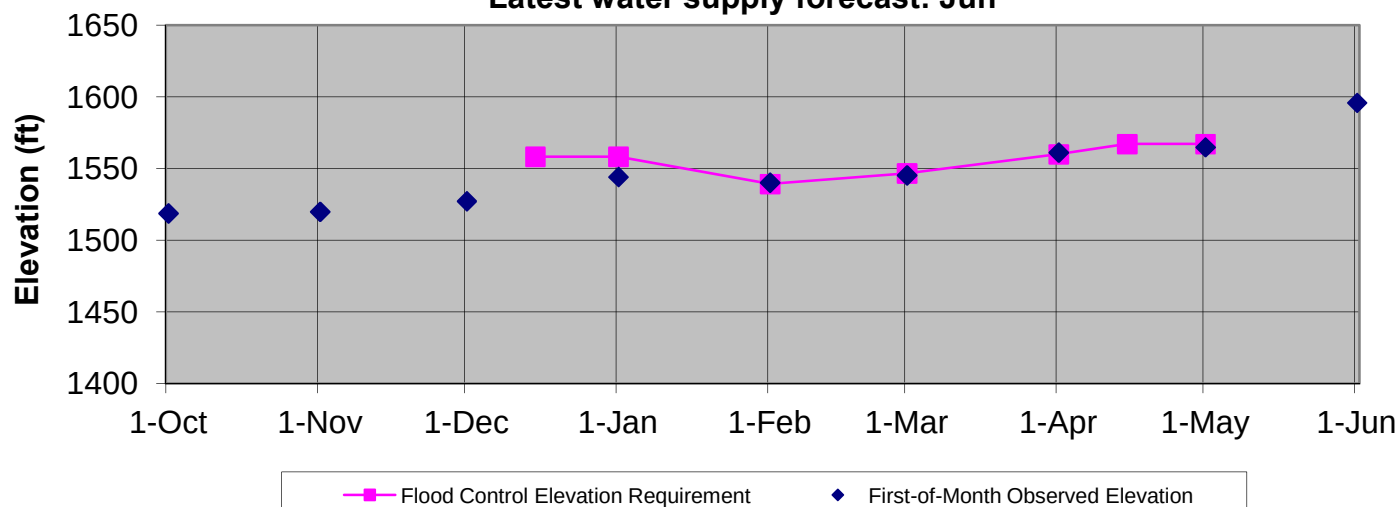
WY 2013

Runoff Forecast and Flood Control						1981-2010 Average	Percent of Average	1929-1999 Average	Percent of Average
Most Probable Runoff Volume	Apr-Jul	2158	KAF			2437.9	89%	2683	80%
	May-Jul	1527	KAF			1783.7	117%	1980	77%
	Jun-Jul	613	KAF			852.9	139%	924	66%
Seasonal Flood Control (assumes no shift of flood control space to Grand Coulee)									
Forecast Date>>	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Apr-Jul Runoff Forecast	2701	2701	2727	2587	2202	2128	2036	2296	2158
First-of-Month Elev	1518.8	1519.9	1527.3	1544.2	1540.2	1545.3	1561.2	1564.9	1595.9
Date >>	15-Dec	31-Dec	31-Jan	28-Feb	31-Mar	15-Apr	30-Apr		
Flood Control Space	--	700	700	970	867	675	567	567	
Flood Control Elevation	--	1558.2	1558.2	1539.2	1546.7	1560.0	1567.1	1567.1	



Dworshak Flood Control Elevations - 2013

Latest water supply forecast: Jun



Notes:

- The given forecast is the official Corps of Engineers forecast for Dworshak. If you have any questions please contact Jeremy Giovando (509 527 7053), or Steve Hall (509 527 7550).
- Due to updated values for precipitation, snow or streamflow, subsequent forecasts may be different from the forecast published herein.
- 15-Dec and 31-Dec flood control space is fixed at 700 KAF.

Dworshak : June Runoff Forecast & Flood Control Calculation

Jun-Jul Runoff Forecast Calculation:					
Variable	Month	Observed Value	% of Average	Regression Coefficient	Marginal Runoff (KAF)
		A		B	=A*B
Elk Butte SWE	1-Jun	3.20	24%	6.84	21.9
Hemlock Butte SWE	1-Jun	9.00	34%	6.24	56.2
Hoodoo Basin SWE	1-Jun	25.60	90%	6.73	172.3
Lost Lake SWE	1-Jun	27.20	63%	5.10	138.7
Shanghi Summit SWE	1-May	9.40	51%	8.40	79.0
Intercept		1		145.39	145.4
1-Jun Forecast (KAF)				Σ	613.4

Data Station	Sept	Nov	Dec	1-Jan	1-Feb	1-Mar	1-Apr	1-May	1-Jun
Climate (Stdzd SOI)									
September SOI	0.20								
Precipitation (monthly depth, inches)									
Headquarters, ID		5.30	6.30						
Snow Water Equiv (first of month SWE depth, inches)									
Elk Butte, ID				12.6	21.0	25.9	29.7	28.8	3.2
Hemlock Butte, ID				15.1	25.6	32.0	38.3	40.1	9.0
Hoodoo Basin, MT				17.2	23.8	29.9	36.6	40.6	25.6
Pierce RS, ID				1.9	5.6	6.2			
Shanghi Summit, ID							16.3	9.4	
Lost Lake, ID								47.1	27.2
Streamflow (monthly volume, KAF)				Jan	Feb	Mar	Apr	May	Jun
Dworshak Inflow				158	162	331	630	914	--

Approval:

John J. Heitstuman P.E.
Chief Hydrology Section
Walla Walla District USACE

Peter F. Brooks, P.E., D. WRE
Ch., Hydrologic Engineering and Power Branch
Northwestern Division

The Grand Coulee Dam water supply forecast is not used for implementation of any BiOp actions. This forecast is provided for informational purposes only. See the 2013 Water Management Plan (Table 4) for more info.



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(GCDW1) GRAND COULEE DAM Forecasts for Water Year 2013

Official Forecast

10 days of QPF: **Ensemble: 2013-06-05** **Issued: 2013-06-06**

Forecast Period	Forecasts Are in KAF				30 Year Average (1981-2010)
	90 %	50 %	% Average	10 %	
APR-SEP	58958	61299	102	64571	60110
APR-JUL	50576	51807	102	53936	51015
APR-AUG	55581	57671	102	60497	56763
JAN-JUL	58841	60072	101	62201	59599

3 days of QPF: **Ensemble: 2013-06-05** **Issued: 2013-06-06**

APR-SEP	58962	62350	104	65178	60110
APR-JUL	50378	52226	102	54849	51015
APR-AUG	55545	58413	103	61127	56763
JAN-JUL	58643	60491	101	63114	59599

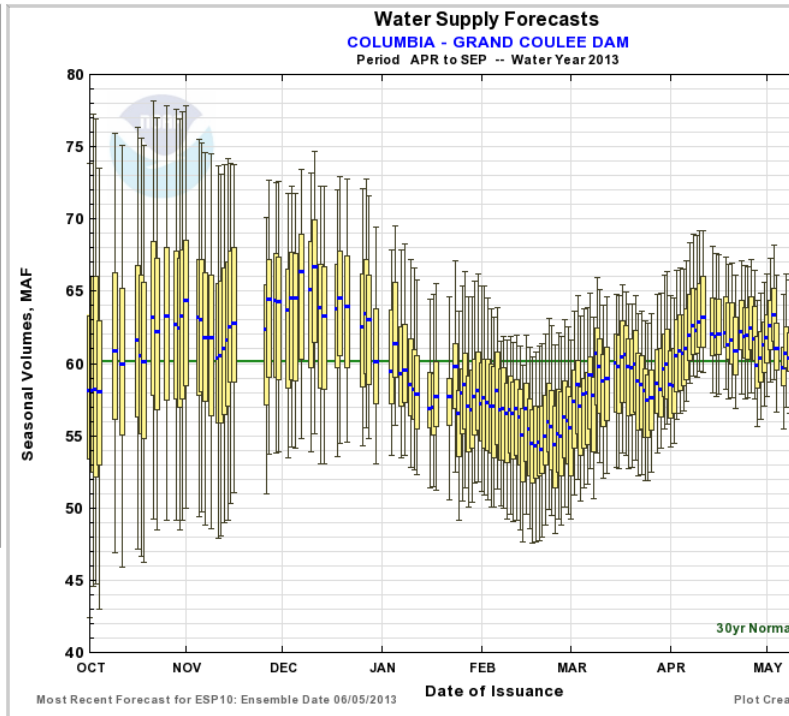
0 days of QPF: **Ensemble: 2013-06-05** **Issued: 2013-06-06**

APR-SEP	59084	62734	104	65832	60110
APR-JUL	50623	52766	103	55416	51015
APR-AUG	55808	58848	104	62015	56763
JAN-JUL	58888	61031	102	63681	59599

Move the mouse over the desired "Forecast Period" to display a graph.

Overlay
☒ ESP10
 ☐ ESP3
 ☐ ESP0

Data Files



Max Scale Scale To Data Scale To Last 45 Days

Note: Compatible with the latest browsers (Chrome, Firefox, Safari, and Internet Explorer (ie9+)).

The Libby Dam official water supply forecast is computed by the Corps Seattle District. *The JUNE final forecast of Apr-Aug runoff volume is used to set VARQ refill flows.*

Libby : June Runoff Forecast & Flood Control Calculation

WY 2013

Runoff Forecast and Flood Control

Most Probable Runoff Volume:	Apr-Aug	6464	KAF
	Apr-Jul	5916	KAF
	May-Jul	5380	KAF

1981-2010 Average	Percent of Average	1929-1999 Average	Percent of Average
5885	110%	6337	102%
5342	111%	5771	103%
4821	112%	5247	103%

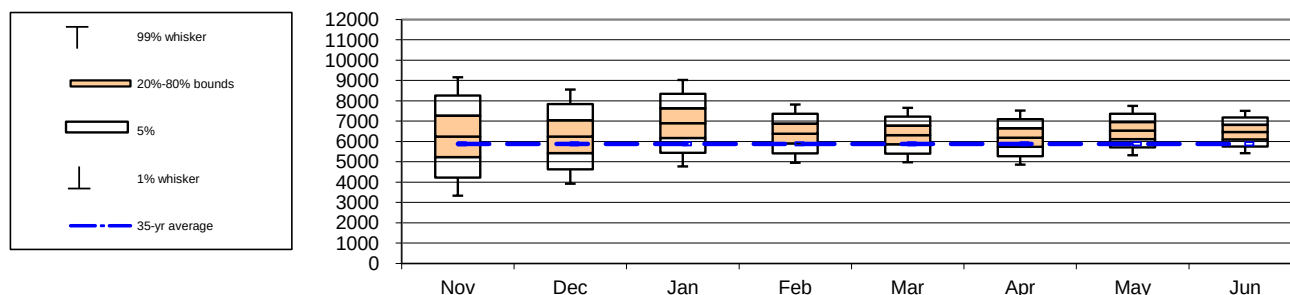
Seasonal Flood Control

VARQ Flood Control Implemented

Forecast Date >>	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Apr-Aug Runoff Forecast	6245	6238	6898	6384	6315	6189	6535	6464
First-of-Month Elev	2449.9	2435.7	2409.7	2395.1	2393.8	2394.2	2402.9	2425.2

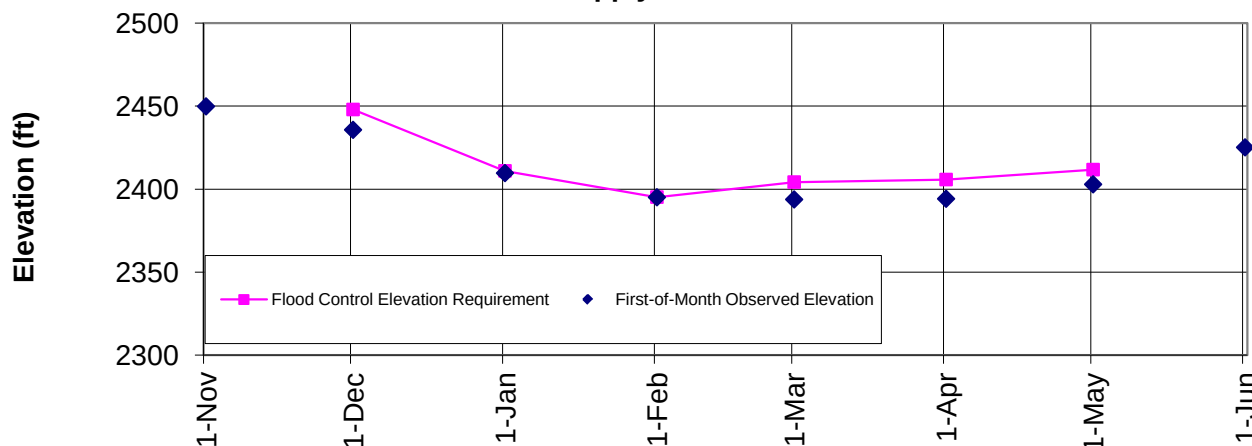
Date >>	30-Nov	31-Dec	31-Jan	28-Feb	31-Mar	30-Apr
Flood Control Space	500	2000	2534	2238	2186	1972
Flood Control Elevation	2448.0	2411.0	2395.2	2404.3	2405.8	2411.8

Spread of values around expected forecast



Libby Flood Control Elevations - 2013

Latest water supply forecast: Jun



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, Kevin Shaffer (206) 764-3660, Adam Price (206) 764-3604, 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. The precipitation gage at Fernie reported on 28/31 days for a total of 76.7 mm. Sparwood, which is ~19 miles upriver from Fernie, correlated fairly well on the days when Fernie reported. On the three days Fernie did not report, Sparwood received 1mm, 0 mm, and 7.8 mm. 8 mm was added to the reported Fernie total for input into these forecasting equations.

Libby : June Runoff Forecast & Flood Control Calculation

Apr-Aug Runoff Forecast Calculation:						
Variable	Month(s)	Units	Observed Value	Percent of Average	Regression Coefficient	Marginal Runoff (KAF)
			A		B	=A*B
QBO	Σ Jan:Mar		-48.06		-1.8	87.3
PNA	Σ Oct:Jan		-3.45		-72.4	249.7
West Glacier, MT	Σ Jan:May Prcp	inches	10.98	94%	87.2	957.9
Fernie, BC	Σ Jan:May Prcp	inches	16.15	80%	35.9	580.2
East Creek, BC	1-Jun SWE	inches	28.94	101%	21.9	634.7
Stahl Peak, MT	1-Jun SWE	inches	24.10	87%	22.0	531.3
Gardiner Creek, AB	1-Jun SWE	inches	15.55	113%	16.3	252.8
Intercept			1		526.2	526.2
1-June Jun-Aug Forecast (KAF)						Σ 3820.2
Libby Inflow (KAF)	April	536	103%	May	2108	133%
1-June Apr-Aug Forecast (KAF)						6463.9

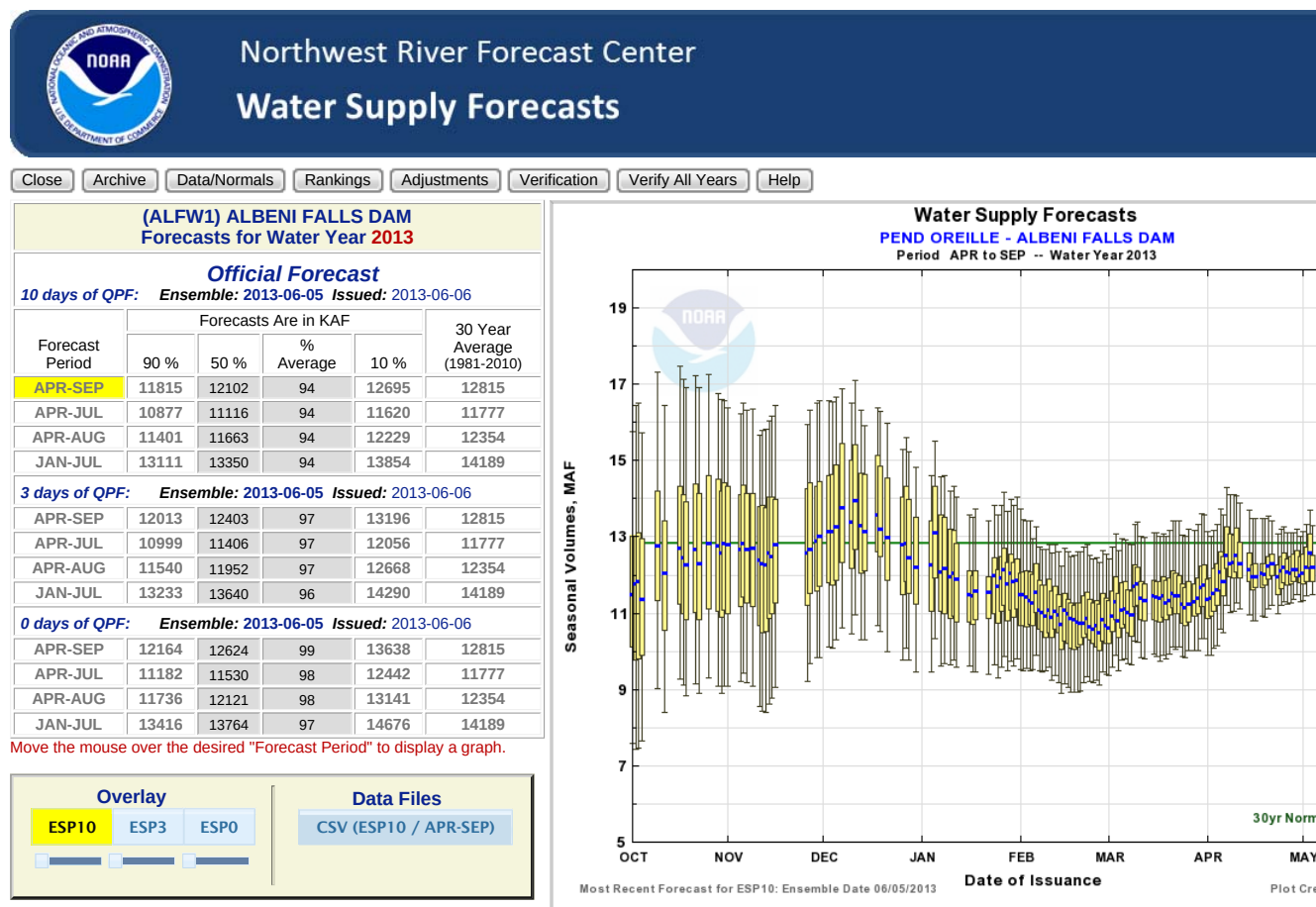
Data used in Libby Water Supply Forecast

WY 2013									
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	2.71	1.87	2.44	inch
Fernie, BC	136.60	153.20	186.00	54.00	45.50	143.70	82.38	84.70	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	556	633			mm
East Creek, BC		459	533	635	821	1093	735		mm
Stahl Peak, MT		14	20	25	35	38	24		inch
Gardiner Creek, AB		365	479	540	667	783	395		mm
Three Isle Lake, AB		249	294	339	441				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	260.0	535.7	2108.0			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	2394.2	2402.9	2425.2	feet

Peter F. Brooks, P.E., D. WRE
 Approving Official, D. WRE
 Ch., Hydrologic Engineering and Power Branch
 Northwestern Division

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

The Albeni Falls Dam water supply forecast is not used for the implementation of any BiOp actions. This forecast is provided for informational purposes only. See the 2013 Water Management Plan (Table 4) for more info.



The official Hungry Horse Dam water supply forecast is computed by the Bureau of Reclamation on the 3rd working day of the month from January-June.

The JUNE final forecast of *May-Sep* inflows is used to set VARQ refill flows. See the [2013 Water Management Plan](#) (Table 4) for more info.

June 4, 2013 - JUNE final forecast of volumes (kaf) for Hungry Horse inflow:

Jun – Jul: 740 kaf (86%)

Apr – Aug: 2,042 kaf (105%)

May – Sep: 1,766 kaf (104%)

Jan - Jul: 2,214 kaf (106%)

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John Roache, Civil Engineer
River and Reservoir Operations
U.S. Bureau of Reclamation
PN Regional Office, Boise, ID