The Offical WSF is computed on the 3rd work day of the month, January through July, using the 5-day QPF 50% exceedance value. FRM will be computed at the same intervals as before and posted online at: http://www.nwd.usace.army.mil/Missions/Water/Columbia/FloodControl

The February WSF sets BiOp actions as highlighted in the table below.

Forecast Point	Forecast period	Forecast	BiOp Actions to be Determined
Hungry Horse	April – August Provided by Reclamation	January, February, March Final	Sets min. flows at Hungry Horse and Columbia Falls
	May – September Provided by Reclamation	January, February, March Final	Sets VARQ FRM targets
		April Final	Sets VARQ FRM targets and VARQ refill flows
		May, June Final	Sets VARQ refill flows
The Dalles	April – September Provided by NWRFC	March Final	Sets CRWMP adjustments at Grand Coulee
	April – August Provided by NWRFC	April Final	Sets spring flow objective at McNary Dam
		May Final	Sets end of September draft limits at Hungry Horse and Libby
		July Final	Sets end of August draft limit at Grand Coulee
Lower Granite	April – July Provided by NWRFC	April Final	Sets spring flow objective at Lower Granite
		June Final	Sets summer flow objective at Lower Granite
Libby	April – August Provided by Corps Seattle District	December Final	Sets end of December variable draft target
		January, February, March Final	Sets VARQ FRM targets
		April Final	Sets VARQ FRM targets and VARQ refill flows
		May Final	Sets Libby min. sturgeon flow volume and min. bull trout flows for after sturgeon pulse through Sept. Sets VARQ FRM targets and VARQ refill flows
		June Final	VARQ refill flows
Dworshak	April – July Provided by Corps Walla Walla District	January to June Final	Manage for reservoir FRM and refill

February 5, 2018

Hungry Horse Dam – Official Water Supply Forecast
February 2018

Here are the volumes for the February final forecast for Hungry Horse inflow:

Feb-Jul: 2,474 kaf (122%)

Jan-Jul: 2,547 kaf (121%)

Apr-Aug: 2,358 kaf (122%)

May-Sep: 2,062 kaf (122%)

The minimum flows downstream of Hungry Horse are as follows:

Columbia Falls: 3,500 cfs

Hungry Horse: 900 cfs

Thanks,

Peter Cooper, P.E.
River and Reservoir Operations
U.S. Bureau of Reclamation
PN Regional Office
Boise, ID 83706

Northwest River Forecast Center

Water Supply Forecasts

COLUMBIA - THE DALLES DAM (TDAO3)
Forecasts for Water Year 2018

Official Forecast

10 days QPF: ***Ensemble:*** **2018-02-04** ***Issued:*** 2018-02-04

Forecast Period	Forecasts Are in KAF				30 Year Average (1981-2010)
	90 %	50 %	% Average	10 %	
APR-SEP	88212	99192	107	112098	92704
APR-JUL	76143	85553	107	97800	79855
APR-AUG	82925	93432	107	106023	87532
JAN-SEP	110857	124183	109	140616	114216
JAN-JUL	98565	110144	109	125011	101368
OCT-SEP	127073	140398	108	156831	130518

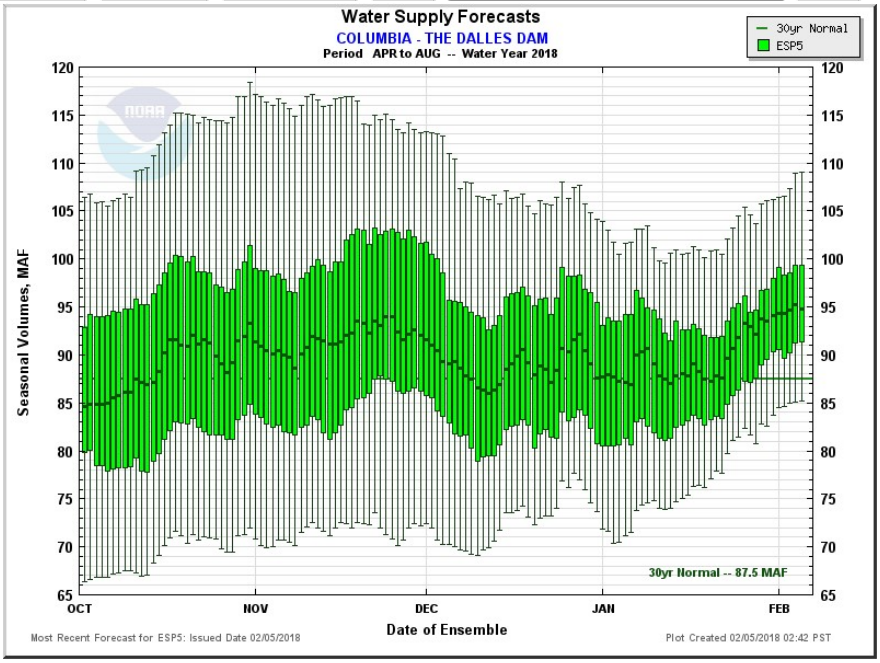
5 days QPF: ***Ensemble:*** **2018-02-05** ***Issued:*** 2018-02-05

APR-SEP	90756	100785	109	115549	92704
APR-JUL	76992	86807	109	99711	79855
APR-AUG	85219	94748	108	109041	87532
JAN-SEP	113353	125672	110	146334	114216
JAN-JUL	99988	111454	110	131055	101368
OCT-SEP	129569	141888	109	162550	130518

0 days QPF: ***Ensemble:*** **2018-02-05** ***Issued:*** 2018-02-05

APR-SEP	90046	100489	108	113714	92704
APR-JUL	77306	86263	108	99415	79855
APR-AUG	84927	95005	109	106992	87532
JAN-SEP	113742	125664	110	148274	114216
JAN-JUL	100886	110821	109	132183	101368
OCT-SEP	129959	141881	109	164491	130518

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



Max Scale | Scale To Data | Scale To Last 45 Days

Overlay: ESP10 | ESP5 | ESP0

Data Files: CSV (ESP5 / APR-AUG) | Forecast Ensemble

Northwest River Forecast Center

Water Supply Forecasts

SNAKE - LOWER GRANITE DAM (LGDW1)
Forecasts for Water Year 2018

Official Forecast

10 days QPF: ***Ensemble:*** **2018-02-04** ***Issued:*** 2018-02-04

Forecast Period	Forecasts Are in KAF				30 Year Average (1981-2010)
	90 %	50 %	% Average	10 %	
APR-SEP	17804	23000	103	26722	22279
APR-JUL	15690	20522	103	24146	19848
APR-AUG	16739	21805	103	25457	21091
JAN-SEP	27536	32825	110	37623	29872
JAN-JUL	25344	30346	111	35003	27440
OCT-SEP	32753	38042	110	42840	34667

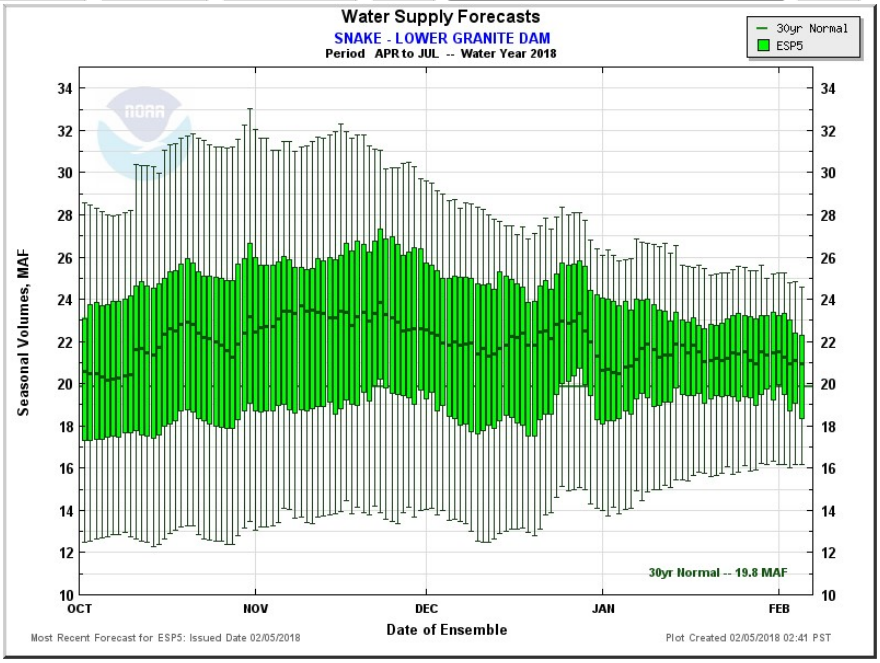
5 days QPF: ***Ensemble:*** **2018-02-05** ***Issued:*** 2018-02-05

APR-SEP	18415	23450	105	27204	22279
APR-JUL	16163	20953	106	24566	19848
APR-AUG	17323	22241	105	25946	21091
JAN-SEP	27658	32952	110	38603	29872
JAN-JUL	25350	30472	111	36032	27440
OCT-SEP	32875	38169	110	43820	34667

0 days QPF: ***Ensemble:*** **2018-02-05** ***Issued:*** 2018-02-05

APR-SEP	18392	23858	107	28036	22279
APR-JUL	16229	21411	108	25047	19848
APR-AUG	17299	22623	107	26608	21091
JAN-SEP	27289	33289	111	38895	29872
JAN-JUL	25099	30732	112	36338	27440
OCT-SEP	32506	38506	111	44112	34667

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



Max Scale | Scale To Data | Scale To Last 45 Days

Overlay: ESP10 | ESP5 | ESP0

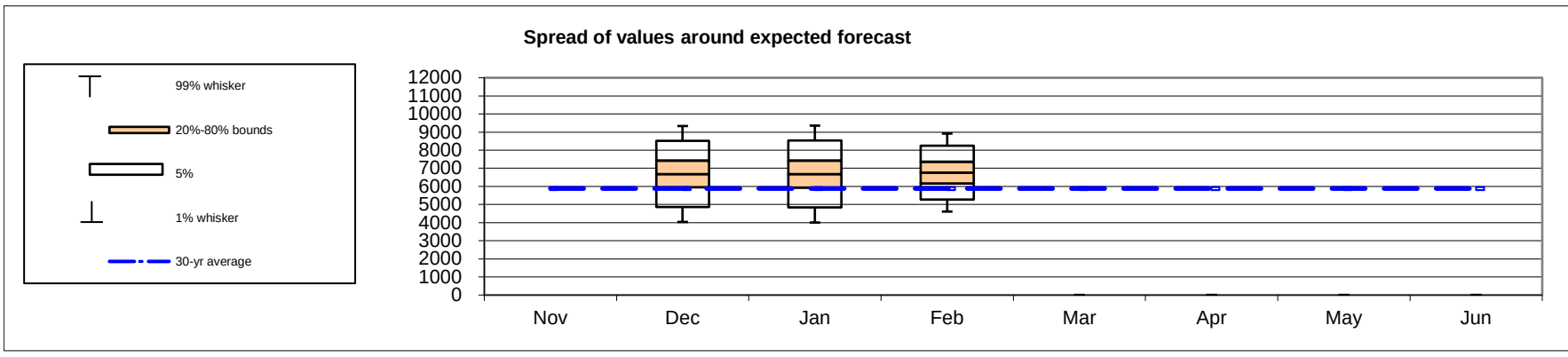
Data Files: CSV (ESP5 / APR-JUL) | Forecast Ensemble

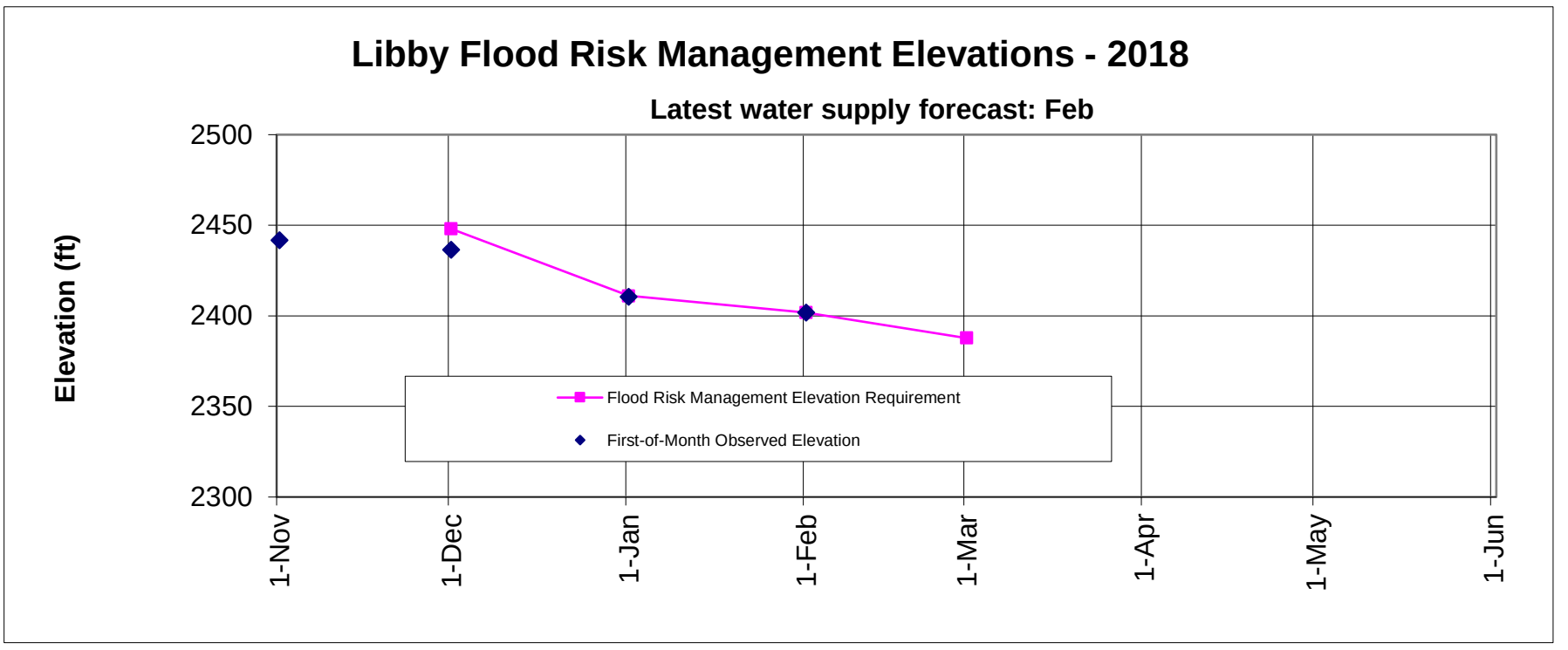
Libby : February Runoff Forecast & Flood Risk Management Calculation — WY 2018

Runoff Forecast and Flood Risk Management				1981-2010 Average	Percent of Average	1929-2008 Average	Percent of Average
Most Probable Runoff Volume:	Apr-Aug	6765	KAF	5885	115%	6282	108%
	Apr-Jul	6141	KAF	5342	115%	5720	108%
	May-Jul	5542	KAF	4821	115%	5199	108%
28 Feb Flood Risk Management Space		2762	KAF				
28 Feb Flood Risk Management Elevation		2387.7	ft				

Seasonal Flood Risk Management	VARQ Flood Risk Management Implemented							
Forecast Date >>	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Apr-Aug Runoff Forecast		6687	6682	6765				
First-of-Month Elev	2441.8	2436.5	2410.6	2401.8				

Date >>	30-Nov	31-Dec	31-Jan	28-Feb	15-Mar	31-Mar	15-Apr	30-Apr
Flood Risk Management Space	500	2000	2322	2762				
Flood Risk Management Elevation	2448.0	2411.0	2401.8	2387.7				





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, Jon Moen (206) 764-3561, or the general Water Management line (206) 764-3584.
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 Akamina Pass snow station was destroyed in a fire in Sept. 2017. Akamina Pass SWE was estimated based on a regression equation and observed values at nearby sites Grave Creek, Hand Creek, Lost Creek South, Mount Odlum, and Three Isle Lake.

Libby : February 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	*∑Jun:Jul*					
Eureka RS, MT	*∑Oct:Jan Prcp*	*inches*	5.80	134%	78.5	455.1
West Glacier, MT	*∑Oct:Jan Prcp*	*inches*	16.08	131%	31.0	497.7
Cranbrook A, BC	*∑Oct:Jan Prcp*	*millimeters*	165.40	143%	2.8	469.7
Fernie, BC	*∑Oct:Jan Prcp*	*millimeters*	582.00	118%	0.7	419.0
Hawkins Lake, MT	*1-Feb SWE*	*inches*	18.00	109%	30.6	550.8
Stahl Creek, MT	*1-Feb SWE*	*inches*	25.80	110%	23.0	593.1
East Creek, BC	*1-Feb SWE*	*millimeters*	659.00	108%	0.8	494.3
Moyie Mountain, BC	*1-Feb SWE*	*millimeters*	318.00	111%	1.5	470.6
Sunshine Village, AB	*1-Feb SWE*	*millimeters*	399.00	103%	1.5	586.5
Akamina Pass, AB	*1-Feb SWE*	*millimeters*	365.41	114%	1.3	464.1
South Racehorse Creek, AB	*1-Feb SWE*	*millimeters*	309.00	110%	1.5	472.8
Intercept			1		1291.5	1291.5
	1-Feb Forecast (KAF)				∑	6765.3

Data used in Libby Water Supply Forecast **WY 2018**

Climate Data				***Jun-17***	***Jul-17***				
SOI				-0.40	0.80				
Precipitation Data	***Oct***	***Nov***	***Dec***	***Jan***	***Feb***	***Mar***	***Apr***	***May***	***Units***
Eureka RS, MT	0.87	1.76	2.33	0.84					inch
West Glacier, MT	3.10	4.57	4.23	4.18					inch
Cranbrook A, BC	25.00	63.60	47.00	29.80					mm
Fernie, BC	132.00	193.00	77.00	180.00					mm
Snow Water Equiv			***1-Jan***	***1-Feb***	***1-Mar***	***1-Apr***	***1-May***	***1-Jun***	***Units***
Hawkins Lake, MT				18					inch
Stahl Creek, MT			15	26					inch
East Creek, BC				659					mm
Moyie Mountain, BC			194	318					mm
Sunshine Village, AB			284	399					mm
Akamina Pass, AB				365					mm
South Racehorse Creek, AB				309					mm
Streamflow			***Jan***	***Feb***	***Mar***	***Apr***	***May***	***Jun***	***Units***
Libby Inflow Volume			205.1						KAF
Reservoir Elevation	***1-Nov***	***1-Dec***	*1-Jan*	*1-Feb*	*1-Mar*	*1-Apr*	*1-May*	*1-Jun*	***Units***
Libby FOM Elev	2441.8	2436.5	2410.6	2401.8					feet

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

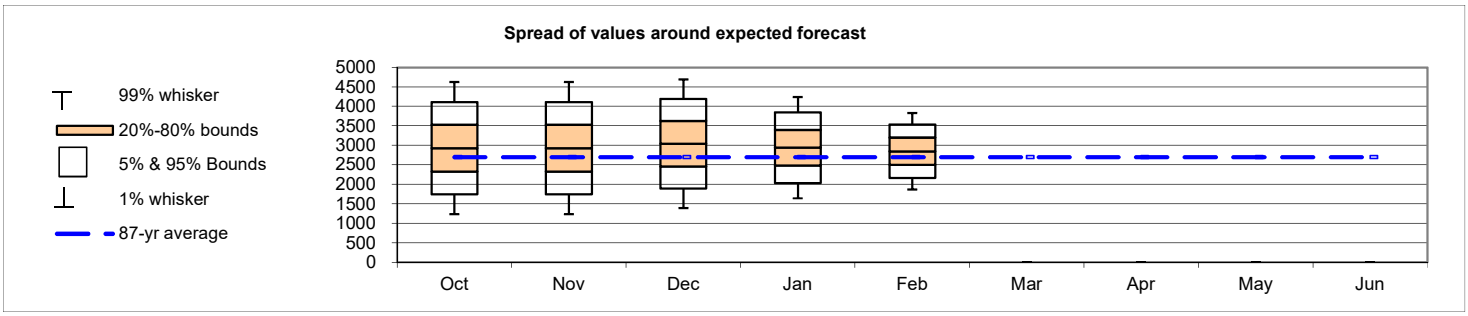
Joel Fenolio, P.E.
Upper Columbia Senior Water Manager
Seattle District

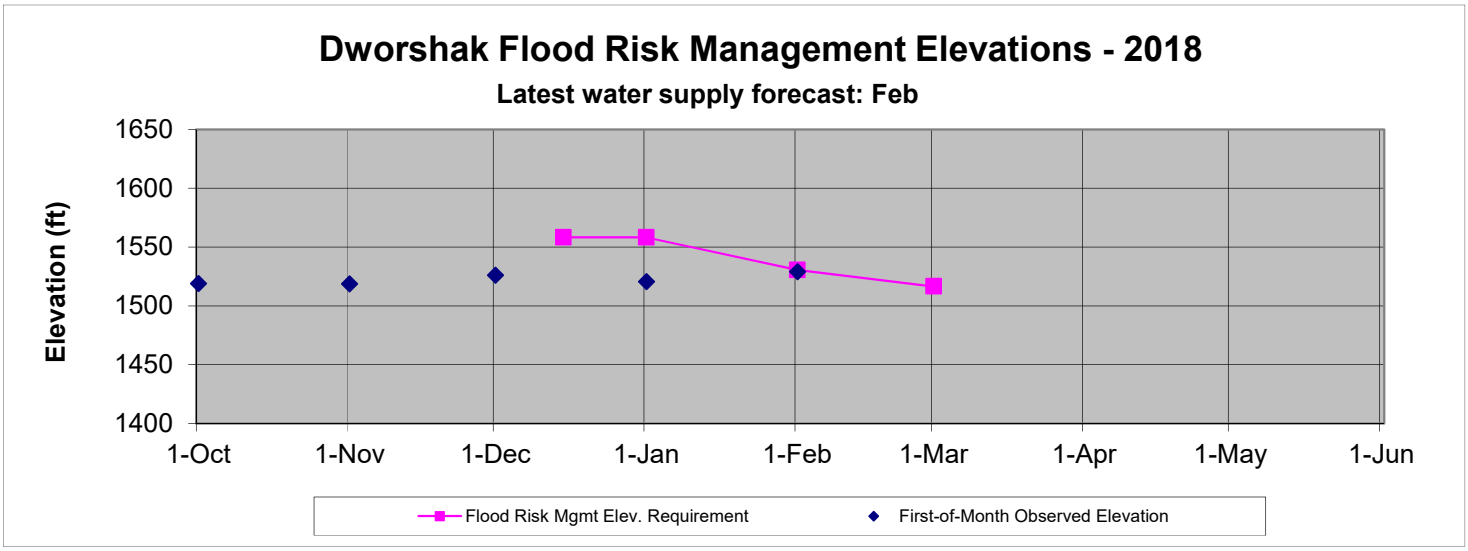
Dworshak : February Runoff Forecast & Flood Risk Management Calculation **WY 2018**

Runoff Forecast and Flood Risk Management (FRM)				1981-2010 Average	Percent of 30yr Average	1929-2008 Average	Percent of Average
Most Probable Runoff Volume	Apr-Jul	2849	KAF	2438	117%	2696	106%
	May-Jul	2083	KAF	1784	117%	1972	106%
28/29-Feb Flood Risk Management Space		1276	KAF				
28/29-Feb Flood Risk Management Elevation		1516.5	ft				

Seasonal Flood Risk Management (assumes no shift of flood risk management space to Grand Coulee)

Forecast Date>>	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Apr-Jul Runoff Forecast	2929	2929	3043	2941	2849				
First-of-Month Elev	1519.1	1518.7	1526.2	1520.7	1529.1				
Date >>		**15-Dec**	**31-Dec**	**31-Jan**	**28-Feb**	**31-Mar**	**15-Apr**	**30-Apr**	**31-May**
FRM Space	--	700	700	1090	1276				
FRM Elevation	--	1558.2	1558.2	1530.5	1516.5				





Dworshak : February Runoff Forecast & Flood Risk Management Calculation

Apr-Jul Runoff Forecast Calculation					
Variable	*Month*	*Observed Value*	*% of Average*	*Regression Coefficient*	*Marginal Runoff (KAF)*
		A		B	=A*B
SOI	*Sep*	0.60		264.27	158.6
HQSI Cumulative Precip	*Oct-Date*	20.45	105%	27.04	553.0
Elk Butte SWE	*1-Feb*	31.9	137%	12.06	384.7
Cool Creek SWE	*1-Feb*	32.0	111%	11.35	363.2
Hoodoo Basin SWE	*1-Feb*	29.5	114%	10.97	323.6
Sherwin SWE	*1-Feb*	7.0	91%	29.17	204.2
Lost Lake SWE	*1-Feb*	38.0	110%	7.60	288.8
Intercept		1		572.93	572.9
	1-Feb Forecast (KAF)			∑	2849.0

Data Station	*Sept*	*Nov*	*Dec*	*1-Jan*	*1-Feb*	*1-Mar*	*1-Apr*	*1-May*	*1-Jun*
Climate (Stdzd SOI)									
September SOI	0.60								
Precipitation (in)	Oct								
Headquarters, ID	3.65	6.20	6.10	4.50	--	--	--		
Cumulative HQSI Data	**3.65**	**9.85**	**15.95**	**20.45**	**--**	**--**	**--**		
Snow Water Equiv (First of Month values) (in)									
Elk Butte, ID				16.1	31.9	--	--		
Cool Creek, ID				18.9	32.0				
Hoodoo Basin, MT				18.7	29.5	--	--	--	--
Sherwin, ID				5.1	7.0	--	--		
Shanghi Summit, ID								--	--
Lost Lake, ID				22.3	38.0	--	--	--	--
Hemlock, ID								--	--
Crater Meadows Mar						--	--		
Streamflow (End of Month) (kaf)				Jan	Feb	Mar	Apr	May	Jun
Dworshak Inflow				326	--	--	--	--	--

Notes:

1. The given forecast is the official Corps of Engineers forecast for Dworshak. If you have any questions please contact Steve Hall (509 527 7550), Wayne Jousma (509-527-7606), Amanda Morelos (509-527-7632), or Alfredo Rodriguez (509-527-7532).
2. Due to updated values for precipitation, snow or streamflow, subsequent forecasts may be different from the forecast published herein.
3. 15-Dec and 31-Dec Flood Management Space is fixed at 700 KAF.
4. Elk Butte and Cool Creek SWE depth estimated by NRCS.
5. Headquarters Cumulative Precipitation was taken from the HDQI link and calculated from 1OCT-1FEB

Approval:

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

William D. Proctor, P.E.
Ch., Hydrologic Engineering and Power Branch
Columbia Basin Water Management Division

Northwest River Forecast Center

Water Supply Forecasts

COLUMBIA - GRAND COULEE DAM (GCDW1)
Forecasts for Water Year 2018

Official Forecast

10 days QPF: ***Ensemble:*** **2018-02-04** ***Issued:*** 2018-02-04

Forecast Period	Forecasts Are in KAF				30 Year Average (1981-2010)
	90 %	50 %	% Average	10 %	
APR-SEP	59986	66537	111	75241	60110
APR-JUL	50150	57067	112	63489	51015
APR-AUG	56340	63620	112	71065	56763
JAN-SEP	69104	76055	111	85835	68694
JAN-JUL	59486	65457	110	75028	59599
OCT-SEP	76522	83473	109	93253	76824

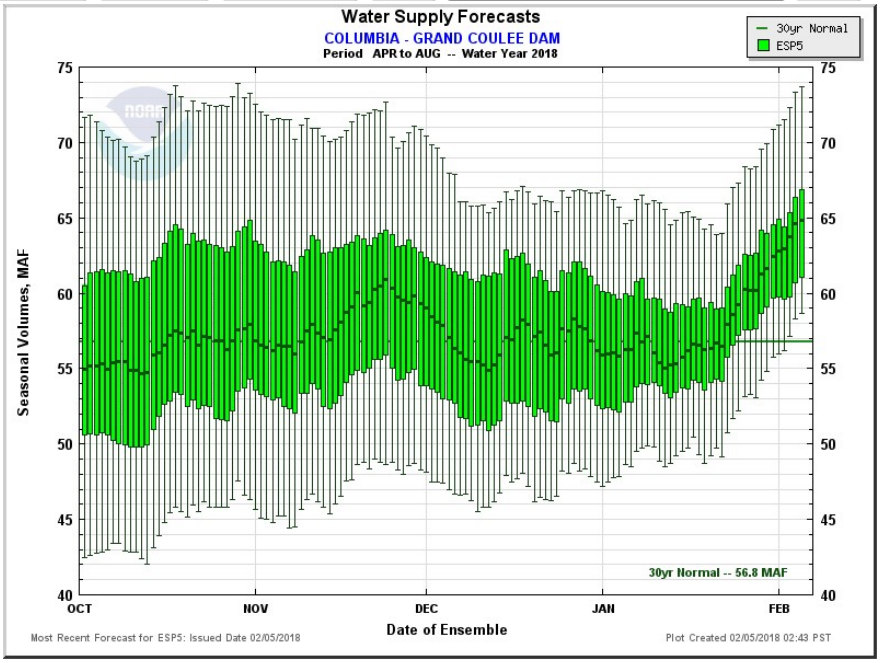
5 days QPF: ***Ensemble:*** **2018-02-05** ***Issued:*** 2018-02-05

APR-SEP	62363	68242	114	78016	60110
APR-JUL	52190	58208	114	66117	51015
APR-AUG	58657	64817	114	73722	56763
JAN-SEP	71866	77991	114	89723	68694
JAN-JUL	61673	67576	113	77759	59599
OCT-SEP	79284	85410	111	97142	76824

0 days QPF: ***Ensemble:*** **2018-02-05** ***Issued:*** 2018-02-05

APR-SEP	60691	66925	111	76432	60110
APR-JUL	50885	56485	111	65096	51015
APR-AUG	56667	63404	112	71696	56763
JAN-SEP	69630	76713	112	87553	68694
JAN-JUL	60554	66111	111	75032	59599
OCT-SEP	77048	84132	110	94972	76824

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



Max Scale | Scale To Data | Scale To Last 45 Days

Overlay: ESP10 | ESP5 | ESP0

Data Files: CSV (ESP5 / APR-AUG) | Forecast Ensemble

Northwest River Forecast Center

Water Supply Forecasts

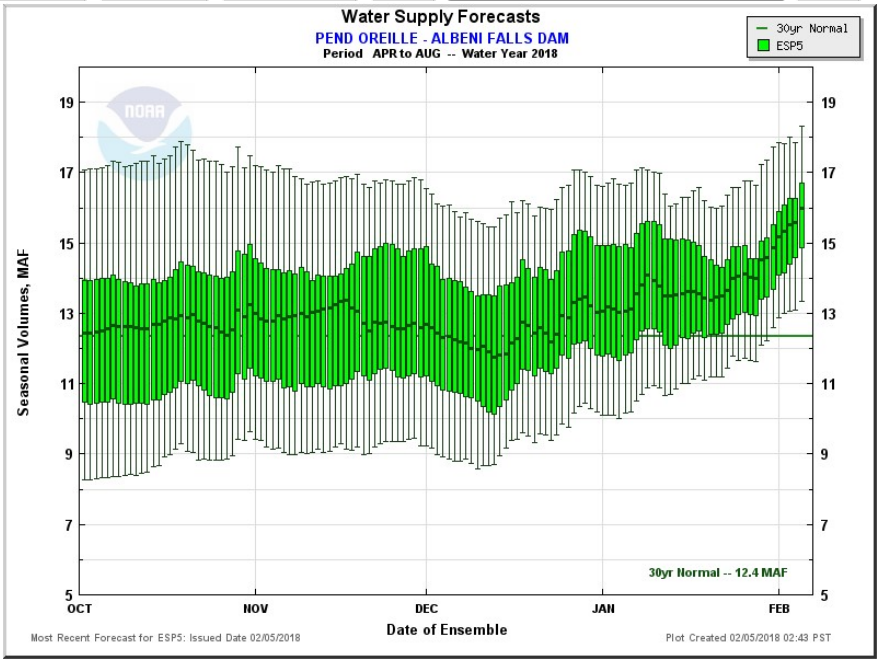
PEND OREILLE - ALBENI FALLS DAM (ALFW1)
Forecasts for Water Year 2018

Official Forecast

10 days QPF: ***Ensemble:*** **2018-02-04** ***Issued:*** 2018-02-04

Forecast Period	Forecasts Are in KAF				30 Year Average (1981-2010)
	90 %	50 %	% Average	10 %	
APR-SEP	13557	15836	124	18276	12815
APR-JUL	12288	14413	122	16746	11777
APR-AUG	13010	15261	124	17614	12354
JAN-SEP	16279	18617	122	21300	15226
JAN-JUL	15163	17324	122	19826	14189
OCT-SEP	18462	20800	121	23483	17218
5 days QPF: ***Ensemble:*** **2018-02-05** ***Issued:*** 2018-02-05					
APR-SEP	14276	16576	129	19024	12815
APR-JUL	12640	15152	129	17396	11777
APR-AUG	13344	15984	129	18320	12354
JAN-SEP	17105	19492	128	23123	15226
JAN-JUL	15836	18013	127	21491	14189
OCT-SEP	19288	21675	126	25307	17218
0 days QPF: ***Ensemble:*** **2018-02-05** ***Issued:*** 2018-02-05					
APR-SEP	13585	15957	125	18835	12815
APR-JUL	12490	14592	124	17455	11777
APR-AUG	13094	15376	124	18206	12354
JAN-SEP	16496	18897	124	22503	15226
JAN-JUL	15366	17560	124	21024	14189
OCT-SEP	18679	21080	122	24686	17218

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



Max Scale | Scale To Data | Scale To Last 45 Days

Overlay: ESP10 | ESP5 | ESP0

Data Files: CSV (ESP5 / APR-AUG) | Forecast Ensemble