The Official Water Supply Forecasts for January through July are computed on the 3rd workday of the month. Flood Risk Management (FRM) is computed at standard intervals and posted at: *www.nwd.usace.army.mil/Missions/Water/Columbia/FloodControl*

The **JUNE** Water Supply Forecast 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	Sets min. flows at Hungry Horse and Columbia Falls
	May – September Provided by Reclamation	January, February, March	Sets VARQ FRM targets
		April	Sets VARQ FRM targets and VARQ refill flows
		May	Sets VARQ refill flows Sets end of September draft target
		June	Sets VARQ refill flows
The Dalles	April – September Provided by NWRFC	March	Sets CRWMP adjustments at Grand Coulee
	April – August Provided by NWRFC	April	Sets spring flow objective at McNary Dam
		July	Sets end of August draft limit at Grand Coulee
Lower Granite	April – July Provided by NWRFC	April	Sets spring flow objective at Lower Granite
		June	Sets summer flow objective at Lower Granite
Libby	April – August Provided by Corps Seattle District	December	Sets end of December variable draft target
		January, February, March	Sets VARQ FRM targets
		April	Sets VARQ FRM targets and VARQ refill flows
		May	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 Sets end of September draft limit.
		June	VARQ refill flows
Dworshak	April – July Provided by NWRFC	January to March	Manage for reservoir FRM, VDL, and Flood Control Refill Curve (FCRC)
		April to June	Manage for reservoir FRM and FCRC

Source: 2024 Water Management Plan, page 15 - https://pweb.crohms.org/tmt/documents/wmp/2024/

5-June-2024

Hungry Horse Dam – Official Water Supply Forecast
June 2024

Below are the volumes for the June 2024 final forecast for Hungry Horse:

- Jun-Jul: 660 kaf (73%)
- Apr-Aug: 1,515 kaf (74%)
- May-Sep: 1,277 kaf (72%)

The minimum flows downstream of Hungry Horse are as follows:

- Columbia Falls: 3,390 cfs
- Hungry Horse: 710 cfs

The end of September draft target is 3,540 ft.

Chris Runyan
U.S. Bureau of Reclamation | Columbia-Pacific Northwest Interior - Region 9
Water Management | Operations Group
Boise, ID

Northwest River Forecast Center

Water Supply Forecasts

Choose Date: 06/05/2024 Archive: Water Year

COLUMBIA - THE DALLES DAM (TDAO3)
Forecasts for Water Year 2024

Official Water Supply

ESP with 10 Days QPF ***Ensemble:*** 2024-06-05 ***Issued:*** 2024-06-05

Forecast Period	Forecasts Are in KAF				30 Year Average (1991-2020)
	90 %	50 %	% Average	10 %	
APR-SEP	69859	72176	77	74904	94166
APR-JUL	59527	60508	74	63017	81933
APR-AUG	65525	67197	75	70037	89196
JAN-SEP	89197	91514	79	94241	115946
JAN-JUL	78865	79846	77	82355	103714
OCT-SEP	102451	104768	79	107496	132314

Experimental Water Supply

HEFS with 15 days EQPF ***Ensemble:*** 2024-06-05 ***Issued:*** 2024-06-05

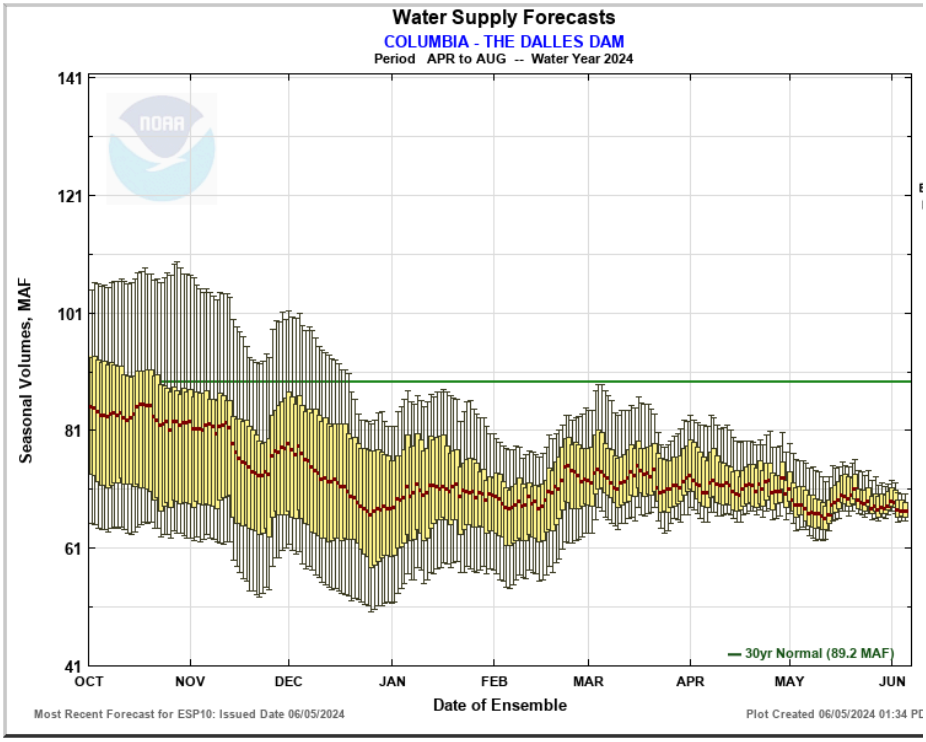
APR-SEP	70450	72547	77	75678	94166
APR-JUL	59877	61102	75	63691	81933
APR-AUG	66167	67529	76	70815	89196
JAN-SEP	89788	91885	79	95016	115946
JAN-JUL	79214	80440	78	83029	103714
OCT-SEP	103042	105139	79	108270	132314

Reference

ESP with 0 Days QPF ***Ensemble:*** 2024-06-05 ***Issued:*** 2024-06-05

APR-SEP	72034	74173	79	79657	94166
APR-JUL	60975	62747	77	67223	81933
APR-AUG	67556	69346	78	74667	89196
JAN-SEP	91372	93510	81	98995	115946
JAN-JUL	80313	82085	79	86561	103714
OCT-SEP	104626	106765	81	112249	132314

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



Max Scale | Scale To Data | Scale To Last 45 Days | Show Min/Max Ensemble Volume | Show Tooltips Help

Overlay: ESP10 | HEFS | ESP0

Data Files: CSV (ESP10 / APR-AUG) | Forecast Ensemble

Northwest River Forecast Center

Water Supply Forecasts

Choose Date: 06/05/2024 Archive: Water Year

SNAKE - LOWER GRANITE DAM (LGDW1)
Forecasts for Water Year 2024

Official Water Supply

ESP with 10 Days QPF **Ensemble:** 2024-06-05 **Issued:** 2024-06-05

Forecast Period	Forecasts Are in KAF 90 %	50 %	% Average	10 %	30 Year Average (1991-2020)
APR-SEP	18773	19076	86	19647	22232
APR-JUL	16490	16675	84	17118	19946
APR-AUG	17629	17881	85	18341	21121
JAN-SEP	24655	24958	84	25529	29736
JAN-JUL	22371	22557	82	23000	27450
OCT-SEP	28500	28803	84	29373	34287

Experimental Water Supply

HEFS with 15 days EQPF **Ensemble:** 2024-06-05 **Issued:** 2024-06-05

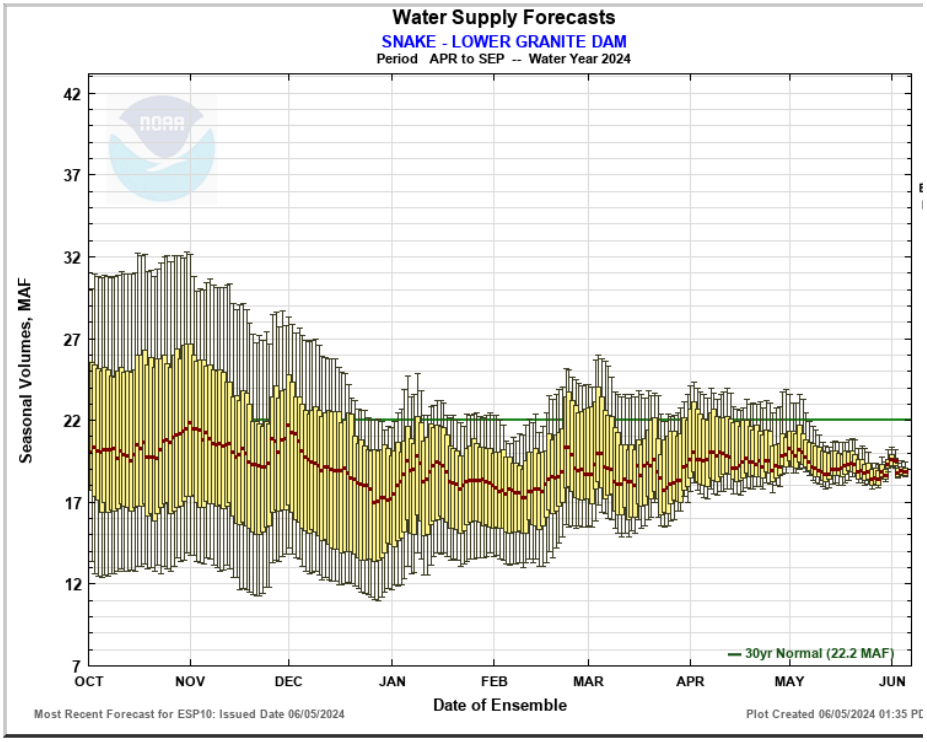
APR-SEP	18721	19093	86	19798	22232
APR-JUL	16465	16714	84	17190	19946
APR-AUG	17581	17903	85	18478	21121
JAN-SEP	24603	24975	84	25679	29736
JAN-JUL	22347	22596	82	23072	27450
OCT-SEP	28447	28820	84	29524	34287

Reference

ESP with 0 Days QPF **Ensemble:** 2024-06-05 **Issued:** 2024-06-05

APR-SEP	18729	19410	87	20648	22232
APR-JUL	16431	17014	85	18168	19946
APR-AUG	17569	18172	86	19429	21121
JAN-SEP	24611	25291	85	26530	29736
JAN-JUL	22313	22896	83	24049	27450
OCT-SEP	28456	29136	85	30375	34287

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



Max Scale | Scale To Data | Scale To Last 45 Days | Show Min/Max Ensemble Volume | Show Tooltips Help

Overlay: ESP10 | HEFS | ESP0

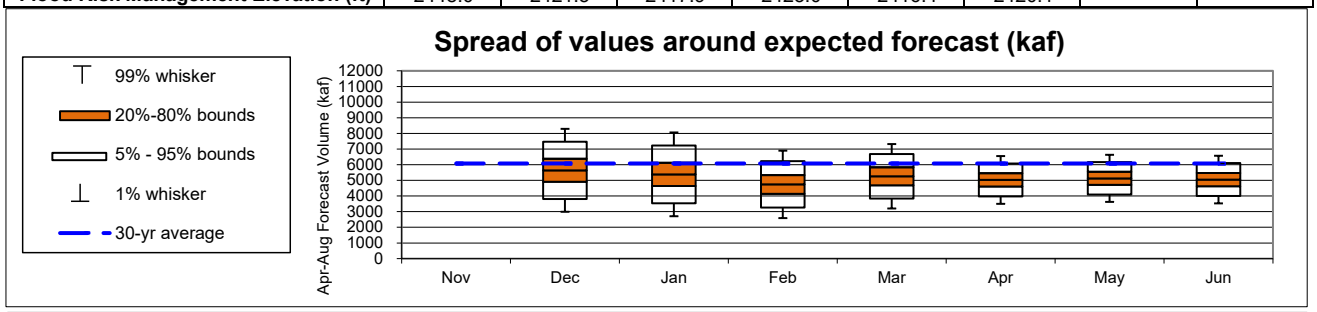
Data Files: CSV (ESP10 / APR-JUL) | Forecast Ensemble

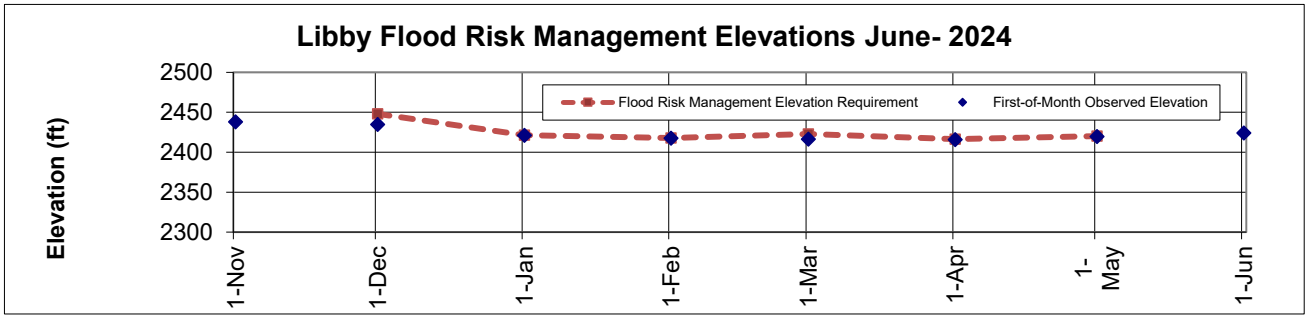
Libby : June Runoff Forecast & Flood Risk Management Calculation WY 2024

Runoff Forecast	June	1991-2020 Average	1991 - 2020 Percent of Average	1929-2020 Average	1929 - 2020 Percent of Average
Most Probable Runoff Volume: Apr-Aug (kaf)	5050	6080	83%	6259	81%
Most Probable Runoff Volume: Apr-Jul (kaf)	4604	5570	83%	5708	81%
Most Probable Runoff Volume: May-Jul (kaf)	4147	5014	83%	5183	80%

Forecast/Reservoir Data	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Apr-Aug Runoff Forecast (kaf)		5642	5385	4743	5261	5026	5129	5050
First-of-Month Elev (ft)	2437.9	2434.8	2421.2	2417.5	2416.4	2415.9	2419.7	2424.0

Seasonal FRM Requirements	30-Nov	31-Dec	31-Jan	28-Feb	31-Mar	30-Apr		
Flood Risk Management Space (kaf)	500	1613	1745	1547	1799	1658		
Flood Risk Management Elevation (ft)	2448.0	2421.3	2417.9	2423.0	2416.4	2420.1		





Notes:

1. The given forecast is the official Corps of Engineers forecast for Libby. If you have any questions please contact Leon Basdekas (208) 353-2564, Courtney Moore (206) 316-3005, David Varner (206) 316-3155 or Jason Chang (206) 764-3528.
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. Nearby Cranbrook A (Auto), BC dataset was used in place of Cranbrook A, BC due to a missing data point in the latter.

Libby : June Runoff Forecast & Flood Risk Management Calculation

Apr-Aug Runoff Forecast Calculation:

Variable	Month(s)	Units	Observed Value A	Percent of Average (1991-2020)	Regression Coefficient B	Marginal Runoff (KAF) =A*B
SOI	∑Jun:Jul					
Eureka RS, MT	∑Oct:May Prcp	inches	7.8	86%	37.7	293.4
West Glacier, MT	∑Oct:May Prcp	inches	20.3	90%	22.5	455.3
Cranbrook A, BC	∑Oct:May Prcp	millimeters	181.0	75%	2.0	367.5
Fernie, BC	∑Oct:May Prcp	millimeters	831.0	98%	0.5	417.2
Hawkins Lake, MT	1-Jun SWE	inches	3.1	30%	10.1	31.3
Stahl Peak, MT	1-Jun SWE	inches	24.7	90%	10.3	254.6
East Creek, BC	1-Jun SWE	millimeters	618.0	89%	0.4	267.1
Moyie Mountain, BC	1-Jun SWE	millimeters	0.0	0%	0.8	0.0
Sunshine Village, AB	1-Jun SWE	millimeters	331.1	74%	0.6	205.7
Akamina Pass, AB	1-Jun SWE	millimeters	59.1	93%	0.7	40.2
South Racehorse Creek, AB	1-Jun SWE	millimeters	3.8	4%	0.6	2.4
Intercept			1		978.0	978.0
Forecast Inflow	June-August	kaf				3312.7
Observed Inflow	April - May	kaf	1737.6			1737.6
May Forecast	April - August	kaf				5050.3

Data used in Libby Water Supply Forecast

Climate Data	Jun-23	Jul-23
SOI	0.3	-0.3

Precipitation Data	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Eureka RS, MT (inch)	0.6	1.9	0.7	1.1	0.6	0.8	0.8	1.4
West Glacier, MT (inch)	1.5	4.1	2.7	3.4	2.5	2.0	1.3	2.8
Cranbrook A, BC (mm)	4.8	22.2	27.4	24.1	25.3	23.8	23.8	29.6
Fernie, BC (mm)	98.3	129.8	243.3	87.6	96.4	89.9	46.2	39.4

Snow Water Equiv	1-Nov	1-Dec	1-Jan	1-Feb	1-Mar	1-Apr	1-May	1-Jun
Hawkins Lake, MT (inch)				8.7	15.6	20.5	20.7	3.1
Stahl Peak, MT (inch)			11.9	21.4	26.3	30.7	32.0	24.7
East Creek, BC (mm)				433.0	602.5	711.5	834.5	618.0
Moyie Mountain, BC (mm)			85.0	138.4	226.5	270.0	170.3	0.0
Sunshine Village, AB (mm)			168.7	233.9	370.1	372.2	494.8	331.1
Akamina Pass, AB (mm)				211.6	289.5	383.9	215.2	59.1
South Racehorse Creek, AB (mm)				147.6	264.0	340.7	276.3	3.8

Streamflow	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Libby Inflow Volume (kaf)			161.5	192.0	226.6	457.3	1280.3	

Reservoir Elevation	1-Nov	1-Dec	1-Jan	1-Feb	1-Mar	1-Apr	1-May	1-Jun
Libby FOM Elev (feet)	2437.9	2434.8	2421.2	2417.5	2416.4	2415.9	2419.7	2424.0

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

Leon Basdekas, P.E.
Upper Columbia Senior Water Manager
Seattle District

Northwest River Forecast Center

Water Supply Forecasts

Choose Date: 06/05/2024 Archive: Water Year

NF CLEARWATER - DWORSHAK DAM (DWRI1)
Forecasts for Water Year 2024

Official Water Supply

ESP with 10 Days QPF **Ensemble:** 2024-06-05 **Issued:** 2024-06-05

Forecast Period	Forecasts Are in KAF 90 %	50 %	% Average	10 %	30 Year Average (1991-2020)
APR-SEP	1673	1734	66	1816	2620
APR-JUL	1558	1608	65	1684	2474
JAN-SEP	2386	2446	69	2528	3543
JAN-JUL	2270	2320	68	2396	3397
OCT-SEP	2685	2745	69	2827	3998

Experimental Water Supply

HEFS with 15 days EQPF **Ensemble:** 2024-06-05 **Issued:** 2024-06-05

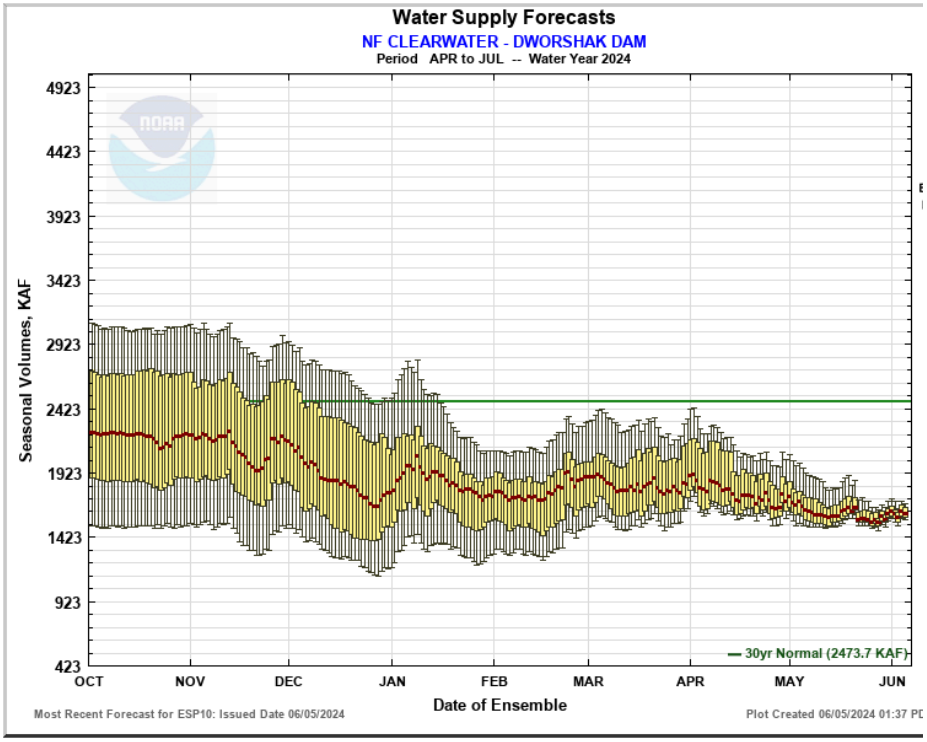
APR-SEP	1671	1729	66	1825	2620
APR-JUL	1555	1600	65	1687	2474
JAN-SEP	2383	2441	69	2537	3543
JAN-JUL	2268	2313	68	2399	3397
OCT-SEP	2682	2740	69	2836	3998

Reference

ESP with 0 Days QPF **Ensemble:** 2024-06-05 **Issued:** 2024-06-05

APR-SEP	1700	1773	68	1943	2620
APR-JUL	1588	1650	67	1803	2474
JAN-SEP	2412	2485	70	2655	3543
JAN-JUL	2300	2363	70	2515	3397
OCT-SEP	2711	2784	70	2954	3998

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



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Overlay: ESP10 | HEFS | ESP0

Data Files: CSV (ESP10 / APR-JUL) | Forecast Ensemble

Dworshak Flood Risk Management Requirements:
https://www.nwd-wc.usace.army.mil/report/colsum/