

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](http://www.nwd.usace.army.mil/Missions/Water/Columbia/FloodControl)

The **MARCH** 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, <b>March</b>	Sets min. flows at Hungry Horse and Columbia Falls
		January, February, <b>March</b>	Sets VARQ FRM targets
	May – September Provided by Reclamation	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	<b>March</b>	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, <b>March</b>	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	<b>January to March</b>	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-March-2024

## **Hungry Horse Dam – Official Water Supply Forecast March 2024**

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

- Mar-Jul: 1,595 kaf (76%)
- Apr-Aug: 1,561 kaf (76%)
- May-Jul: 1,203 kaf (72%)
- May-Sep: 1,302 kaf (73%)

The minimum flows downstream of Hungry Horse based on the Apr-Aug Volume forecast are as follows:

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

End of April forecasted forebay elevation at Hungry Horse is projected to be 3,547 ft.

### **Chris Runyan**

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

# Northwest River Forecast Center

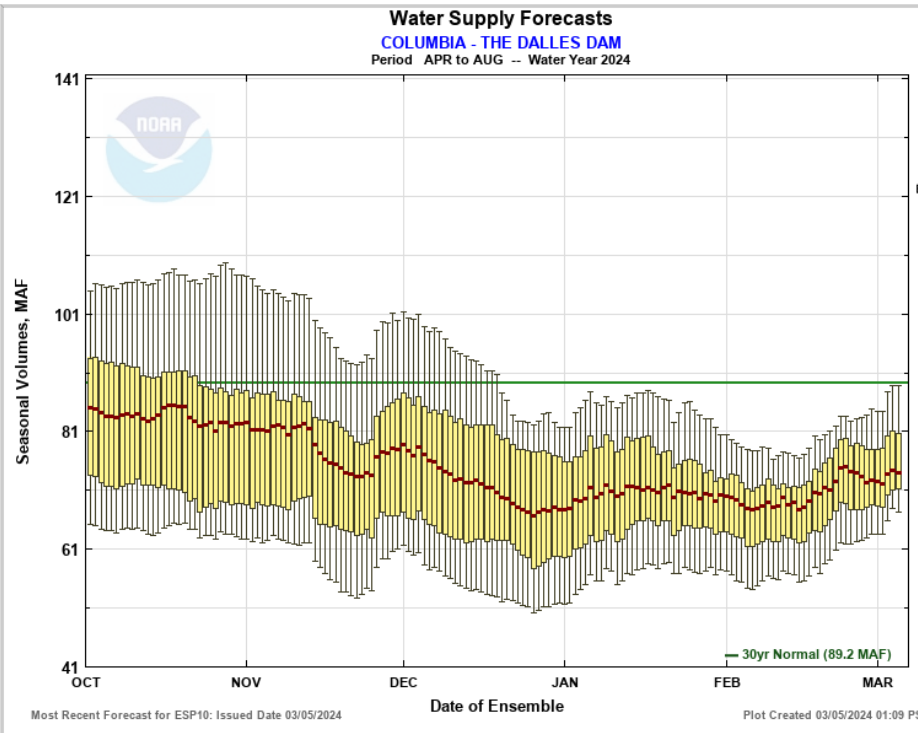
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COLUMBIA - THE DALLES DAM (TDAO3) Forecasts for Water Year 2024					
Official Water Supply					
ESP with 10 Days QPF Ensemble: 2024-03-05 Issued: 2024-03-05					
Forecast Period	Forecasts Are in KAF				30 Year Average (1991-2020)
	90 %	50 %	% Average	10 %	
APR-SEP	71514	78695	84	93807	94166
APR-JUL	61698	66987	82	80953	81933
APR-AUG	67182	73915	83	88779	89196
JAN-SEP	91446	98435	85	114032	115946
JAN-JUL	80984	87359	84	101224	103714
OCT-SEP	104701	111690	84	127286	132314
Experimental Water Supply					
HEFS with 15 days EQPF Ensemble: 2024-03-05 Issued: 2024-03-05					
APR-SEP	68781	79669	85	89654	94166
APR-JUL	57726	68575	84	77461	81933
APR-AUG	63576	74883	84	84582	89196
JAN-SEP	89345	99326	86	111867	115946
JAN-JUL	79083	88023	85	100185	103714
OCT-SEP	102599	112580	85	125122	132314
Reference					
ESP with 0 Days QPF Ensemble: 2024-03-05 Issued: 2024-03-05					
APR-SEP	68434	80924	86	89911	94166
APR-JUL	57199	68866	84	77770	81933
APR-AUG	63260	75635	85	84696	89196
JAN-SEP	88714	100689	87	112361	115946
JAN-JUL	78751	89917	87	100288	103714
OCT-SEP	101968	113943	86	125616	132314

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



- Max Scale
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- Show Min/Max Ensemble Volume
- Show Tooltips Help

Overlay

ESP10

HEFS

ESPO

Data Files

CSV (ESP10 / APR-AUG)

Forecast Ensemble





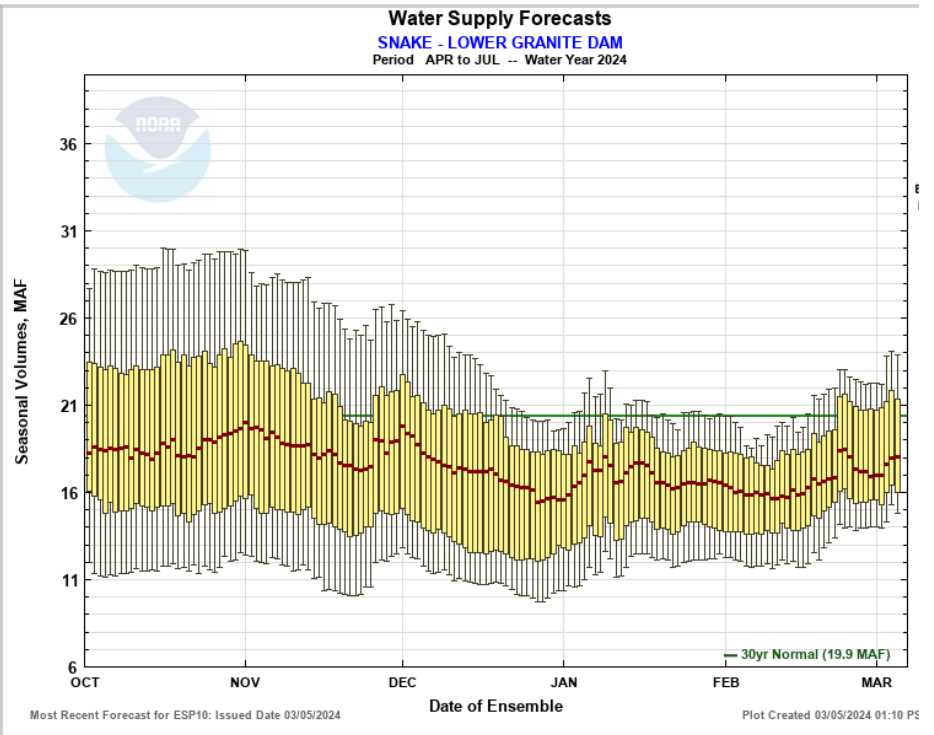
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SNAKE - LOWER GRANITE DAM (LGDW1) Forecasts for Water Year 2024					
Official Water Supply					
ESP with 10 Days QPF Ensemble: 2024-03-05 Issued: 2024-03-05					
Forecast Period	Forecasts Are in KAF				30 Year Average (1991-2020)
	90 %	50 %	% Average	10 %	
APR-SEP	16568	20207	91	25942	22232
<b>APR-JUL</b>	<b>14402</b>	<b>17650</b>	<b>88</b>	<b>23453</b>	<b>19946</b>
APR-AUG	15459	19046	90	24733	21121
JAN-SEP	22646	26206	88	32738	29736
JAN-JUL	20530	23828	87	30221	27450
OCT-SEP	26491	30051	88	36582	34287
Experimental Water Supply					
HEFS with 15 days EQPF Ensemble: 2024-03-05 Issued: 2024-03-05					
APR-SEP	15363	19241	87	24100	22232
APR-JUL	13197	16976	85	21549	19946
APR-AUG	14259	18119	86	22870	21121
JAN-SEP	21766	25733	87	30837	29736
JAN-JUL	19632	23358	85	28219	27450
OCT-SEP	25611	29577	86	34682	34287
Reference					
ESP with 0 Days QPF Ensemble: 2024-03-05 Issued: 2024-03-05					
APR-SEP	15382	19608	88	24546	22232
APR-JUL	13212	17250	86	21847	19946
APR-AUG	14278	18423	87	23273	21121
JAN-SEP	21800	26759	90	31361	29736
JAN-JUL	19722	23856	87	28758	27450
OCT-SEP	25645	30604	89	35205	34287

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Libby : March Runoff Forecast & Flood Risk Management Calculation

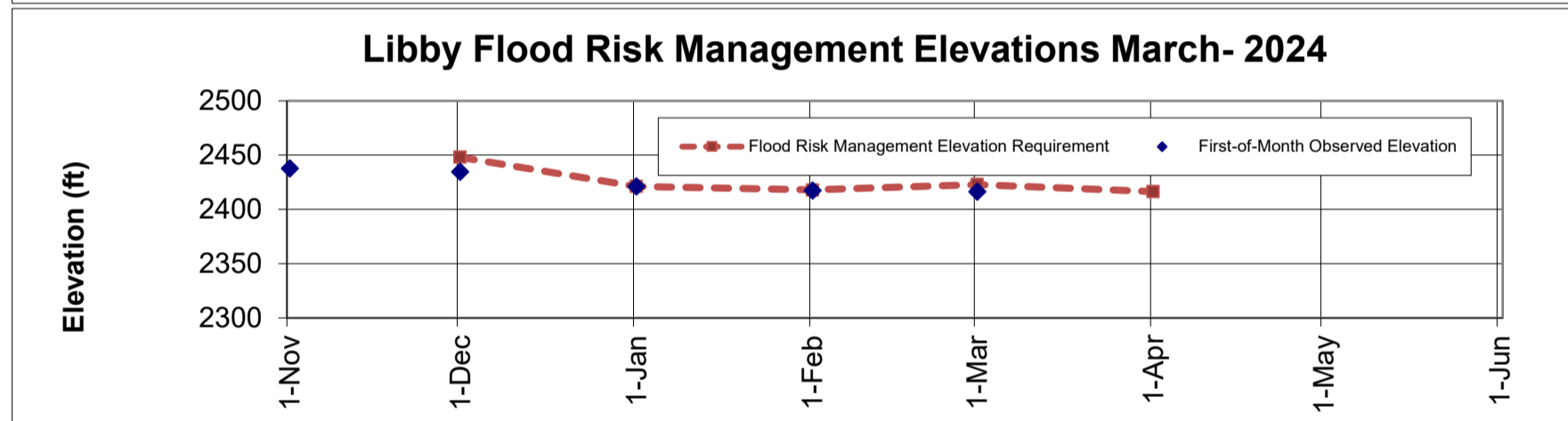
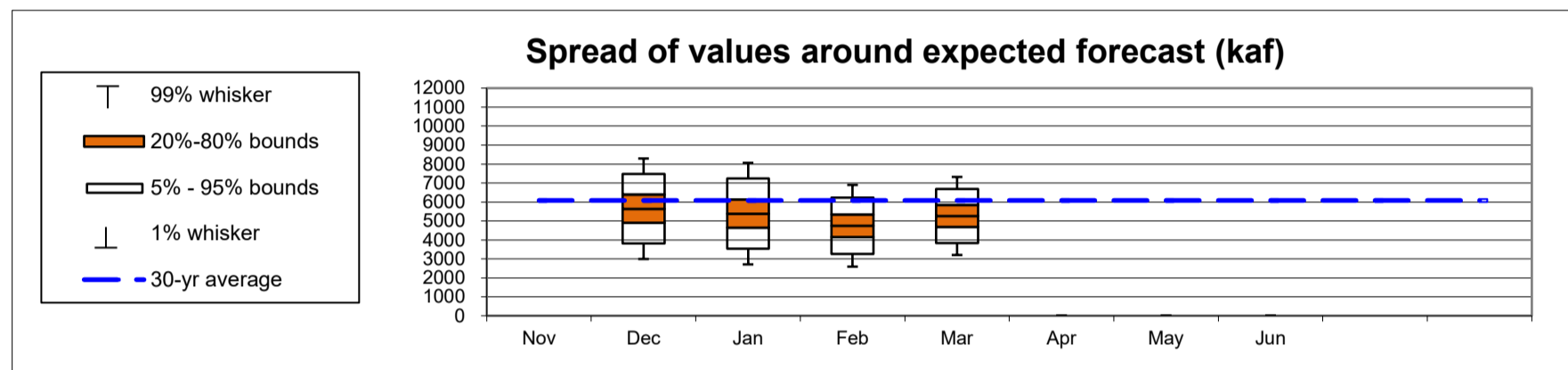
WY 2024

Runoff Forecast	March	1991-2020 Average	1991 - 2020 Percent of Average	1929-2020 Average	1929 - 2020 Percent of Average
Most Probable Runoff Volume: Apr-Aug (kaf)	5261	6080	87%	6259	84%
Most Probable Runoff Volume: Apr-Jul (kaf)	4820	5570	87%	5708	84%
Most Probable Runoff Volume: May-Jul (kaf)	4339	5014	87%	5183	84%

Flood Risk Management	March
31-Mar Flood Risk Management Space (kaf)	1799
31-Mar Flood Risk Management Elevation (ft)	2416.4

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

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			
Flood Risk Management Elevation (ft)	2448.0	2421.3	2417.9	2423.0	2416.4			



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, and David Varner (206) 316-3155.
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.

**Libby : March Runoff Forecast & Flood Risk Management Calculation**  
**Apr-Aug Runoff Forecast Calculation:**

<i>Variable</i>	<i>Month(s)</i>	<i>Units</i>	<i>Observed Value A</i>	<i>Percent of Average (1991-2020)</i>	<i>Regression Coefficient B</i>	<i>Marginal Runoff (KAF) =A*B</i>
SOI	$\Sigma$ Jun:Jul					
Eureka RS, MT	$\Sigma$ Oct:Feb Prcp	inches	4.84	91%	65.87	318.8
West Glacier, MT	$\Sigma$ Oct:Feb Prcp	inches	14.23	94%	28.51	405.7
Cranbrook A, BC	$\Sigma$ Oct:Feb Prcp	millimeters	103.80	71%	2.73	283.4
Fernie, BC	$\Sigma$ Oct:Feb Prcp	millimeters	655.49	114%	0.63	413.0
Hawkins Lake, MT	1-Mar SWE	inches	15.60	76%	24.33	379.5
Stahl Peak, MT	1-Mar SWE	inches	26.30	89%	19.11	502.6
East Creek, BC	1-Mar SWE	millimeters	602.50	82%	0.65	391.6
Moyie Mountain, BC	1-Mar SWE	millimeters	226.50	62%	1.27	287.7
Sunshine Village, AB	1-Mar SWE	millimeters	370.10	83%	1.26	466.3
Akamina Pass, AB	1-Mar SWE	millimeters	289.50	72%	1.04	301.1
South Racehorse Creek, AB	1-Mar SWE	millimeters	264.00	79%	1.40	369.6
Intercept			1		1142.00	1142.0
March Forecast	April - August	kaf				5261.3

**Data used in Libby Water Supply Forecast**

<i>Climate Data</i>	<i>Jun-23</i>	<i>Jul-23</i>
SOI	0.30	-0.30

<i>Precipitation Data</i>	<i>Oct</i>	<i>Nov</i>	<i>Dec</i>	<i>Jan</i>	<i>Feb</i>	<i>Mar</i>	<i>Apr</i>	<i>May</i>
Eureka RS, MT (inch)	0.58	1.88	0.70	1.12	0.56			
West Glacier, MT (inch)	1.52	4.12	2.74	3.39	2.46			
Cranbrook A, BC (mm)	4.80	22.20	27.40	24.10	25.30			
Fernie, BC (mm)	98.30	129.79	243.33	87.63	96.44			


<i>Snow Water Equiv</i>	<i>1-Nov</i>	<i>1-Dec</i>	<i>1-Jan</i>	<i>1-Feb</i>	<i>1-Mar</i>	<i>1-Apr</i>	<i>1-May</i>	<i>1-Jun</i>
Hawkins Lake, MT (inch)				9	16			
Stahl Peak, MT (inch)			12	21	26			
East Creek, BC (mm)				433	603			
Moyie Mountain, BC (mm)			85	138	227			
Sunshine Village, AB (mm)			169	234	370			
Akamina Pass, AB (mm)				212	290			
South Racehorse Creek, AB (mm)				148	264			

<i>Streamflow</i>	<i>Nov</i>	<i>Dec</i>	<i>Jan</i>	<i>Feb</i>	<i>Mar</i>	<i>Apr</i>	<i>May</i>	<i>Jun</i>
Libby Inflow Volume (kaf)			161	192				

<i>Reservoir Elevation</i>	<i>1-Nov</i>	<i>1-Dec</i>	<i>1-Jan</i>	<i>1-Feb</i>	<i>1-Mar</i>	<i>1-Apr</i>	<i>1-May</i>	<i>1-Jun</i>
Libby FOM Elev (feet)	2437.9	2434.8	2421.2	2417.5	2416.4			

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



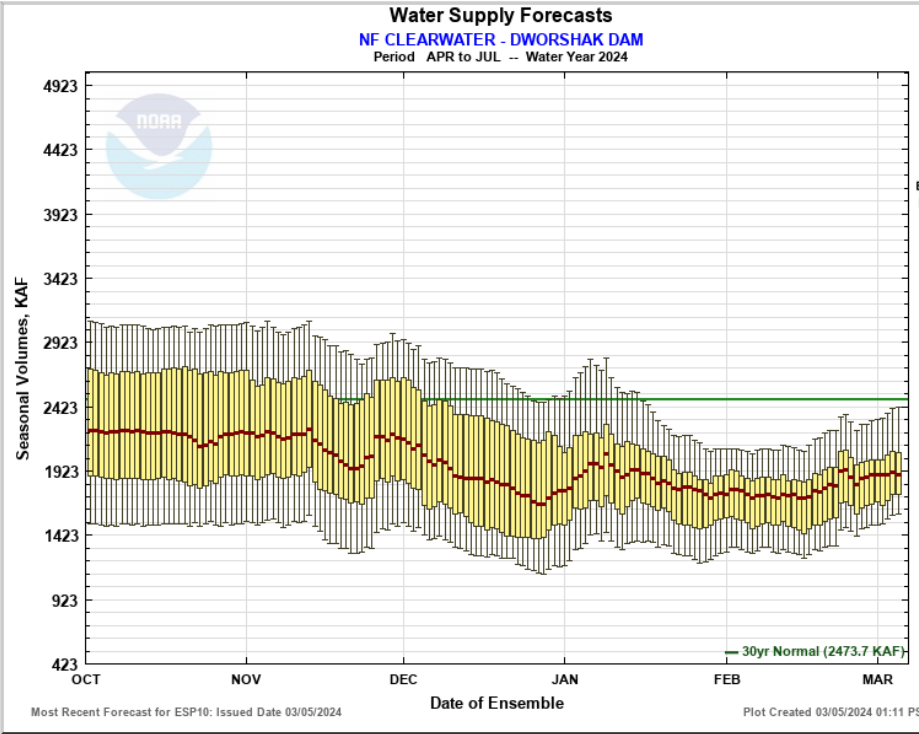
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NF CLEARWATER - DWORSHAK DAM (DWRI1) Forecasts for Water Year 2024					
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Forecast Period	Forecasts Are in KAF				30 Year Average (1991-2020)
	90 %	50 %	% Average	10 %	
APR-SEP	1697	2017	77	2543	2620
<b>APR-JUL</b>	<b>1585</b>	<b>1894</b>	<b>77</b>	<b>2417</b>	<b>2474</b>
JAN-SEP	2580	2876	81	3461	3543
JAN-JUL	2467	2763	81	3329	3397
OCT-SEP	2879	3175	79	3760	3998
Experimental Water Supply					
HEFS with 15 days EQPF Ensemble: 2024-03-05 Issued: 2024-03-05					
APR-SEP	1626	2031	78	2456	2620
APR-JUL	1515	1915	77	2326	2474
JAN-SEP	2478	2883	81	3398	3543
JAN-JUL	2367	2726	80	3265	3397
OCT-SEP	2777	3182	80	3697	3998
Reference					
ESP with 0 Days QPF Ensemble: 2024-03-05 Issued: 2024-03-05					
APR-SEP	1620	2093	80	2513	2620
APR-JUL	1500	1958	79	2371	2474
JAN-SEP	2508	2921	82	3471	3543
JAN-JUL	2394	2788	82	3323	3397
OCT-SEP	2808	3220	81	3770	3998

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