Flood Risk Management Requirements
Report #7 for Water Year 2022
Issue Date: 16 May 2022

A. Purpose of Flood Risk Management Requirements. These requirements provide maximum end-of-month reservoir elevations and/or minimum outflows for flood risk management projects in the Columbia River Basin. These requirements are for use by U.S. Army Corps of Engineers, Bureau of Reclamation, Idaho Power, Energy Keepers, BC Hydro and Bonneville Power Administration for operations planning and include all formally approved deviations to date. Any deviation from the flood risk management requirements herein will require approval from the Chief, Columbia Basin Water Management (CBWM) per the Northwestern Division's (NWD) Deviation Policy (NWDR 1110-2-6). Requirements are in accordance with the Columbia River Treaty Flood Control Operating Plan (FCOP) and any project-specific water control manuals, with variations as described below. These flood risk management requirements will be revised and re-issued as new information becomes available.

B. List of Approved Flood Deviations from Water Control Manuals.
None are currently in effect.

C. Flood Risk Management Requirements
These requirements have been prepared using the most recent official seasonal volume forecasts. The April-August volume forecast at The Dalles Dam based on the May 2022 official forecast is 83, 250 kaf. All other forecasts can be found in Table 2 or at:
https://www.nwd-wc.usace.army.mil/report/colsum/

Table 1 shows the flood risk management elevations, draft and flow limits for the evacuation, holding and refill periods. See the FCOP for how the ICF is computed. More details on the values used can be found at:
https://www.nwd-wc.usace.army.mil/report/storcorr/

D. System Flood Risk Management Refill Requirement Discussion.
The Initial Controlled Flow (ICF) based on the official May 2022 forecast is 312 kcfs, and the Controlled Flow (CF) target is 350 kcfs in the lower Columbia. **Note that we do not expect to see this level of flow in the lower Columbia until late May as cool meteorology continues to delay the freshet, so projects should operate to their end of month elevations listed in Table 1.** If needed, the CF will be updated as the system is managed for flood risk. Note that flows in the lower Columbia may be lower or higher than the CF during the runoff season. Do not exceed an instantaneous flow of 375 kcfs at John Day.

The ICF date is 7 May based on the ICF calculated using the official April 2022 forecast. The Flood Risk Management Requirements shown in Table 1 are based on the official May 2022 seasonal runoff volume forecasts and modeling. Refill dates are also listed in Table 1. During the runoff season, end-of-month reservoir elevation targets and CF may change in response to the shape and timing of runoff.

E. Individual Project Flood Risk Management Requirements Discussion.
No specific individual requirements at this time.

Table 1. Flood Risk Management Requirements

Project	31 Jan	28 Feb	31 Mar	15 Apr	30 Apr	Date Refill Starts	31 May[3]	30 Jun[3]	31 Jul[3]
MCDB (kaf) [2]	1609	2810	4080	4080	4080	2 May	2448	286	0
ARDB (ft)	1430.1	1422.9	1414.1	1414.1	1414.1	5 May	1420.0	1437.0	1444.0
DCDB (ft)[5]	1839.3	1812.5[5]	1807.7[5]	1807.7	1807.7	27 Apr	1834.5	1877.3	1892.0
LIB (ft) [4]	2384.6	2363.9	2371.8	2370.7	2370.7	27 Apr	n/a	n/a	2459.0
LIB (kcfs)	n/a	n/a	n/a	n/a	~16	27 Apr	~12.3	~12.3	n/a
HGH (ft)	3542.2	3539.3	3539.3	3543.4	3542.5	1 May	n/a	n/a	3560.0
HGH (kcfs)	n/a	n/a	n/a	n/a	n/a	1 May	~7.5	~7.5	n/a
SKQ (ft)	n/a	n/a	n/a	2883.0	n/a	-	2890.0	2893.0	2893.0
ALF (ft) [1]	2060.0	2060.0	2056.0	n/a	2056.0	-	2062.5	2062.5	2062.5
GCL (ft)	1290.0	1290.0	1271.5	1258.2	1250.7	6 May	1260.0	1284.0	1290.0
BRN (ft)	2077.0	2053.7	2059.1	2069.1	2077.0[6]	6 May	2077.0	2077.0	2077.0
DWR (ft)	1527.8	1518.6	1528.6	1559.5	1540.0[6]	6 May	1588.0[6]	1600.0	1600.0

Notes:

1. Albeni Falls flood risk management elevations are based on readings at the Hope gage.
2. KAF units refer to required flood risk management space (draft) in the reservoir.
3. Flood risk management requirements for May, June and July are based on estimated normal runoff shape. Under certain circumstances, the Refill Guide Curve (also known as Flood Control Refill Curve) procedure may be used to determine when refill is to begin at each project where applicable.
4. Per the Libby Dam WCM, Rule 1 of the VarQ operating procedures, releases will be limited to the hydraulic capacity of the powerhouse to the best extent possible.
5. Per the Duncan Storage Resevation Diagram, Duncan Reservoir is required to achieve its full flood risk management draft requirement of 1807.7 ft by 15 March.
6. Dworshak is operating to local FRM requirements for the end of May.

Table 2. Water Supply Forecasts (Kaf)

Project	Forecast Period	Jan	Feb	Mar	Apr	May	Jun	Jul	Current month Forecast % of Normal	Residual Runoff[2] (%)
MCDB	Apr-Aug	13115	13050	12846	12727	12507			112	94%
ARDB	Apr-Aug	25497	25513	24959	24662	24656			111	92%
DCDB	Apr-Aug	2361	2398	2339	2314	2226			109	91%
LIB	Apr-Aug	7273	7249	6972	6992	6740			111	88%
HGH	May-Sep	1920	1810	1700	1600	1910			108	84%
SKQ[1]	Apr-Jul	5742	5676	6049	6057	5472			89	74%
ALF[1]	Apr-Jul	11262	11353	11867	11845	10821			87	70%
GCL[1]	Apr-Aug	60042	61575	61433	61846	57157			98	82%
BRN[1]	Apr-Jul	5216	3995	3672	3278	3191			62	68%
DWR	Apr-Jul	3090	2805	2669	2367	2399			97	62%
TDA[1]	Apr-Aug	91310	88817	86386	86007	83250			93	79%

Notes:

1. Official water supply forecasts for SKQ, ALF, GCL, BRN and TDA are the ESP 10-day-QPF median values published by the NWRFC on the following days for 2022: Jan 5, Feb 3, Mar 3, Apr 5, May 4, Jun 3.
2. Residual runoff values are applicable starting in April. Residual runoff (%) is the percentage of the current month's seasonal volume forecast that has yet to runoff during the forecast period. For example, 88% of the forecasted April through August runoff volume for Libby has yet to runoff.

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