Flood Risk Management Requirements
Report #4 for Water Year 2016
Issue Date: 16 March 2016

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 Division (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.
A deviation request was approved for Libby Reservoir allowing the end of February Flood Risk Management elevation requirement to be increased from 2407 ft to 2410 ft. This deviation has now concluded. A 29 kaf storage shift from Dworshak Reservoir to Grand Coulee Reservoir has been applied to the March 31 and April 15 flood risk management requirements.

Change from 10 March 2016 FRM requirements: Brownlee Reservoir to Grand Coulee Reservoir storage shifts of 150 kaf and 75 kaf have been applied to the March 31 and April 15 flood risk management requirements, respectively.

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 March 2016 official forecast is 86,527 kaf. All other forecasts can be found in Table 2 or at:
http://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. The Initial Controlled Flow (ICF) based on the March forecast is 320 kcfs. See the FCOP for how the ICF is computed. More details on the values used can be found at:
http://www.nwd-wc.usace.army.mil/report/storcorr/

D. System Flood Risk Management Refill Requirement Discussion.
No system refill requirements at this time.

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

Table 1. Flood Risk Management Requirements

Project	31Jan	29Feb	15Mar	31Mar	15 Apr	30 Apr[3]	31 May[3]	30 Jun[3]	31 Jul[3]
MCDB (kaf) [2]	1648	2824	n/a	4080	4080	4080	2448	286	0
ARDB (ft)	1430.5	1422.9	n/a	1414.1	1414.1	1414.1	1423.9	1443.2	1444.0
DCDB (ft)	1839.8	1813.8	1811.1	1811.1	1811.1	1811.1	1836.4	1877.8	1892.0
LIB (ft) [4]	2411.0	2407.0	n/a	2397.8	2397.8	2397.8	2433.4	2459.0	2459.0
LIB (cfs)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
HGH (ft)	3547.0	3547.9	n/a	3545.4	3544.7	3544.1	3556.1	3560.0	3560.0
SKQ (ft)[5]	n/a	n/a	n/a	n/a	2883.0	n/a	2890.0	2893.0	2893.0
ALF (ft) [1]	2060.0	2060.0	n/a	2056.0	n/a	2056.0	2062.5	2062.5	2062.5
GCL (ft)	1290.0	1290.0	n/a	1274.7	1259.2	1244.6	1268.6	1289.6	1290.0
BRN (ft)	2077.0	2051.6	n/a	2061.1	2055.9	2049.0	2073.1	2077.0	2077.0
DWR (ft)	1556.4	1557.0	n/a	1569.0	1571.2	1569.4	1587.0	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 (RGC) 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. Sėliš Ksanka Qĺispė Dam, formerly known as Kerr Dam.

Table 2. Water Supply Forecasts (Kaf)

Project	Forecast Period	Jan	Feb	Mar	Apr	May	Jun	Jul	Current month Forecast % of Normal
MCDB	Apr-Aug	11010	11230	11021					100
ARDB	Apr-Aug	22136	22618	21989					100
DCDB	Apr-Aug	2063	1978	1961					98
LIB	Apr-Aug	6249	6318	6472					110
HGH	May-Sep	1629	1531	1573					93
SKQ[1,2]	Apr-Jul	4785	5061	5165					89
ALF[1]	Apr-Jul	10294	10381	10478					89
GCL[1]	Apr-Aug	52783	54491	56411					99
BRN[1]	Apr-Jul	4693	4689	4623					84
DWR	Apr-Jul	1913	1986	2025					84
TDA[1]	Apr-Aug	82621	83221	86527					99

Notes:
1. Official water supply forecasts for SKQ (KERM), ALF, GCL, BRN and TDA are the ESP 5-day-QPF median values published by the NWRFC on the following days for 2016: Jan 8, Feb 5, Mar 7, Apr 7, May 6, Jun 7, and Jul 8.
2. Sėliš Ksanka Qĺispė Dam, formerly known as Kerr Dam.

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William Proctor, P.E.
Ch., Hydrologic Engineering and Power Branch