LIBBY DAM OPERATIONS WATER YEAR 2023

Date: 16 October 2023

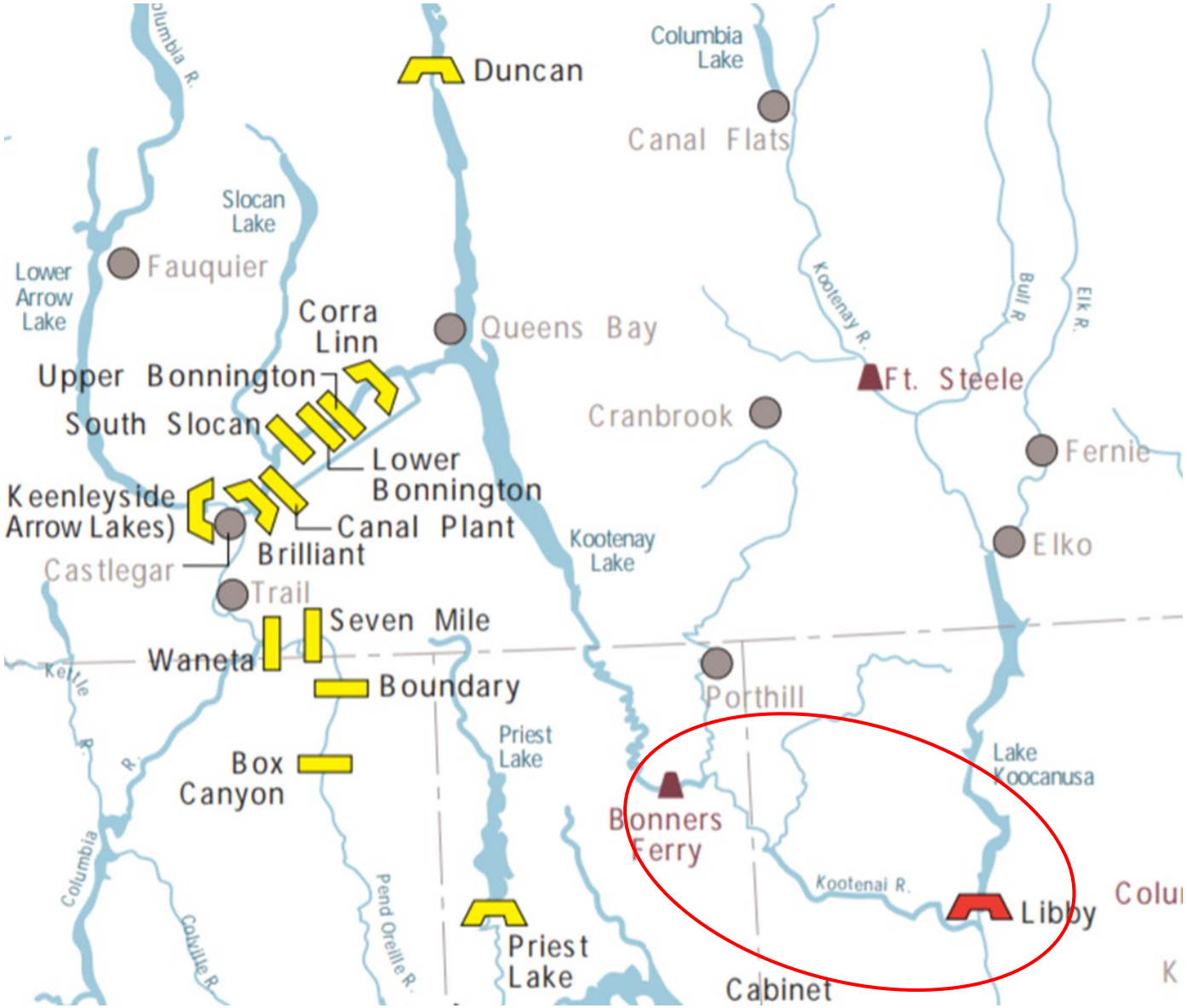
Leon Basdekas
Greg Hoffman

U.S. ARMY

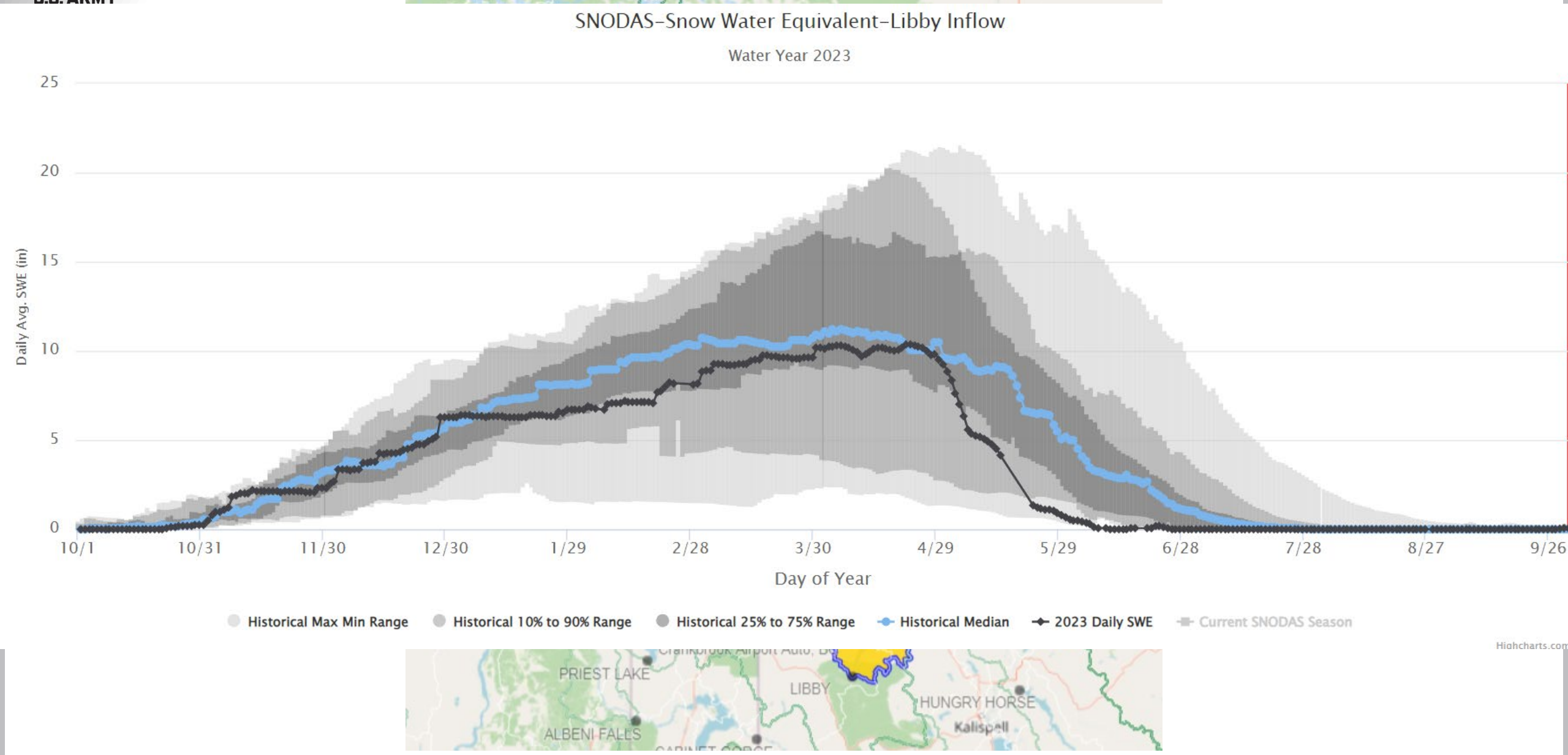
US Army Corps of Engineers®

U.S. ARMY

GENERAL BACKGROUND



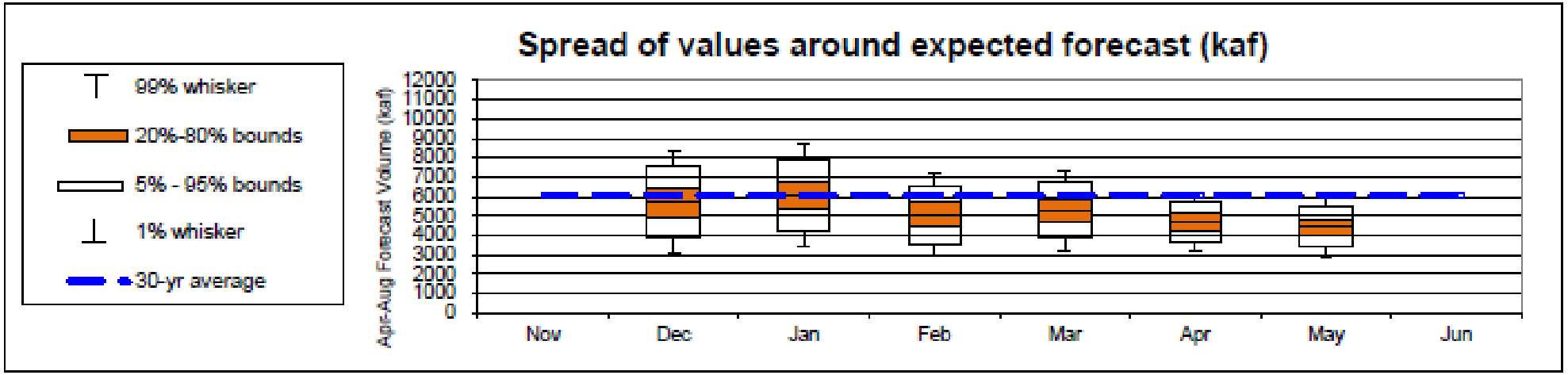
BASIN SNOW


SNODAS–Snow Water Equivalent–Libby Inflow
Water Year 2023
Daily Avg. SWE (in)
25
20
15
10
5
0
10/1
10/31
11/30
12/30
1/29
2/28
3/30
4/29
5/29
6/28
7/28
8/27
9/26
Day of Year
Historical Max Min Range
Historical 10% to 90% Range
Historical 25% to 75% Range
Historical Median
2023 Daily SWE
Current SNODAS Season
Highcharts.com
PRIEST LAKE
LIBBY
HUNGRY HORSE
Kalispell
ALBENI FALLS

MAY 1ST WATER SUPPLY FORECAST AND BIOP OBJECTIVES

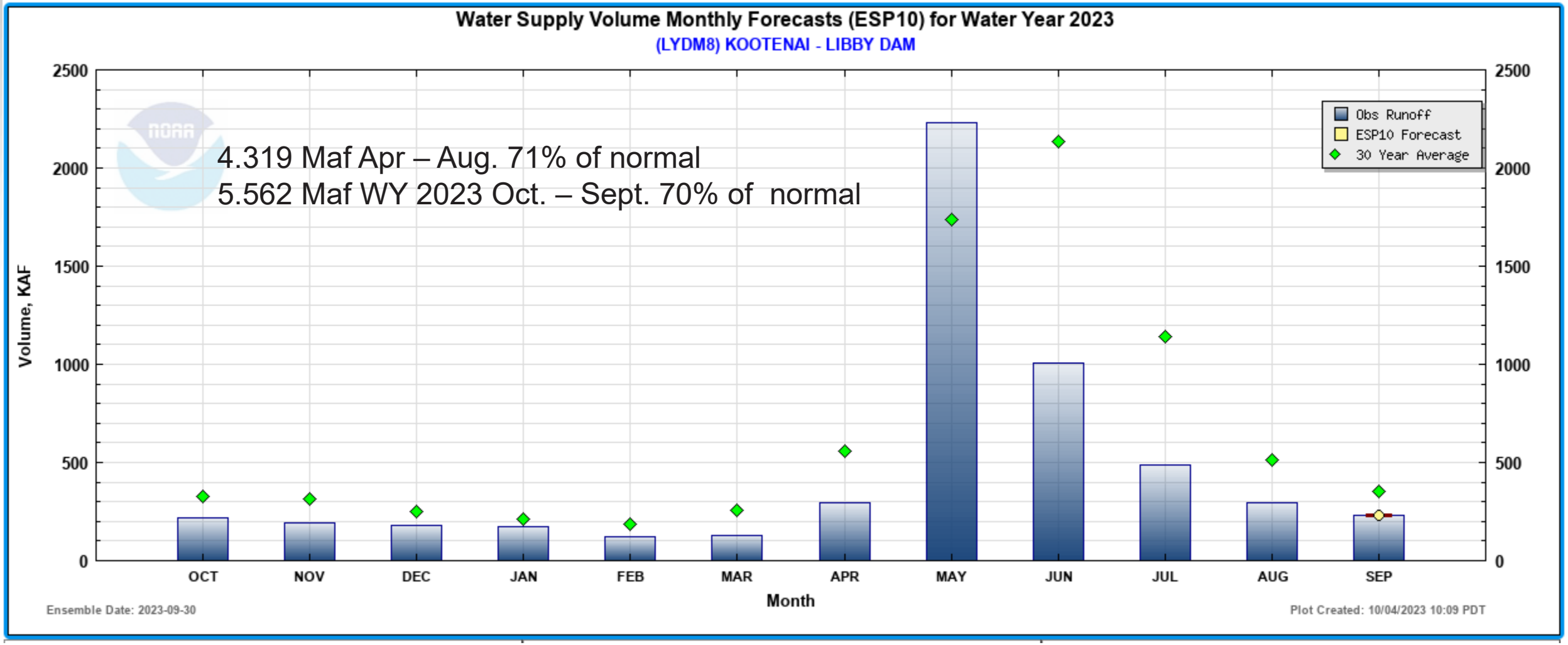
- April-August inflow forecast for Libby Dam is 4.41 million acre-feet (MAF)
  - Forecast is 72% of average
  - Sturgeon Volume is 0.0 MAF, WSF < 4.8 MAF
  - Bull trout minimum flows May 15th through Sept 30 is 6 kcfs
  - Libby flow augmentation draft 2439.0 ft for end of September (< 15th percentile)

- Libby Water Supply Forecast Trend:



U.S. ARMY

OBSERVED INFLOWS



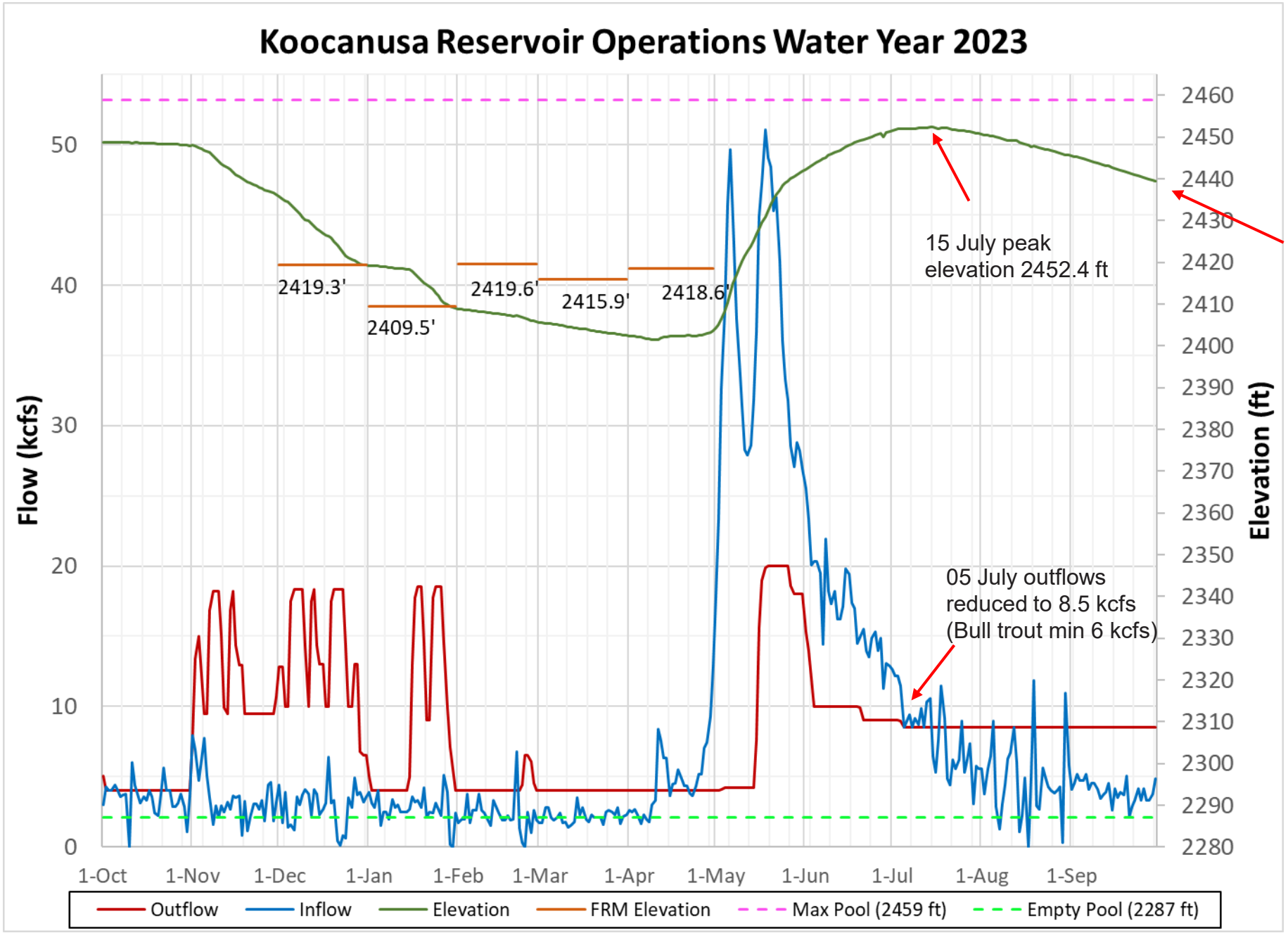
U.S. ARMY

REFILL AND FLOW PLAN OBJECTIVES (FROM MAY MEETING)

- Meet Lake Koocanusa refill objective of 2454.0 ft; earlier than typical.
- Meet end of September draft requirement of 2439.0 ft.
- Control refill as to not fill too early or too much. Median fill date (2454.0 ft) is July 1 with a peak on July 11 at 2454.71 ft.
  - Capture early runoff.
  - Allow enough time to draft end September and avoid double peaking.
- Shape the volume of water released from 16 May to mid-June to be more hydrologically and ecologically normative.
- Releases are not a sturgeon pulse. The outflow shape simply mimics a more natural runoff hydrograph.
- As with all our plans, we will adjust to real time conditions with more or less water than is currently forecast to best meet the above objectives.

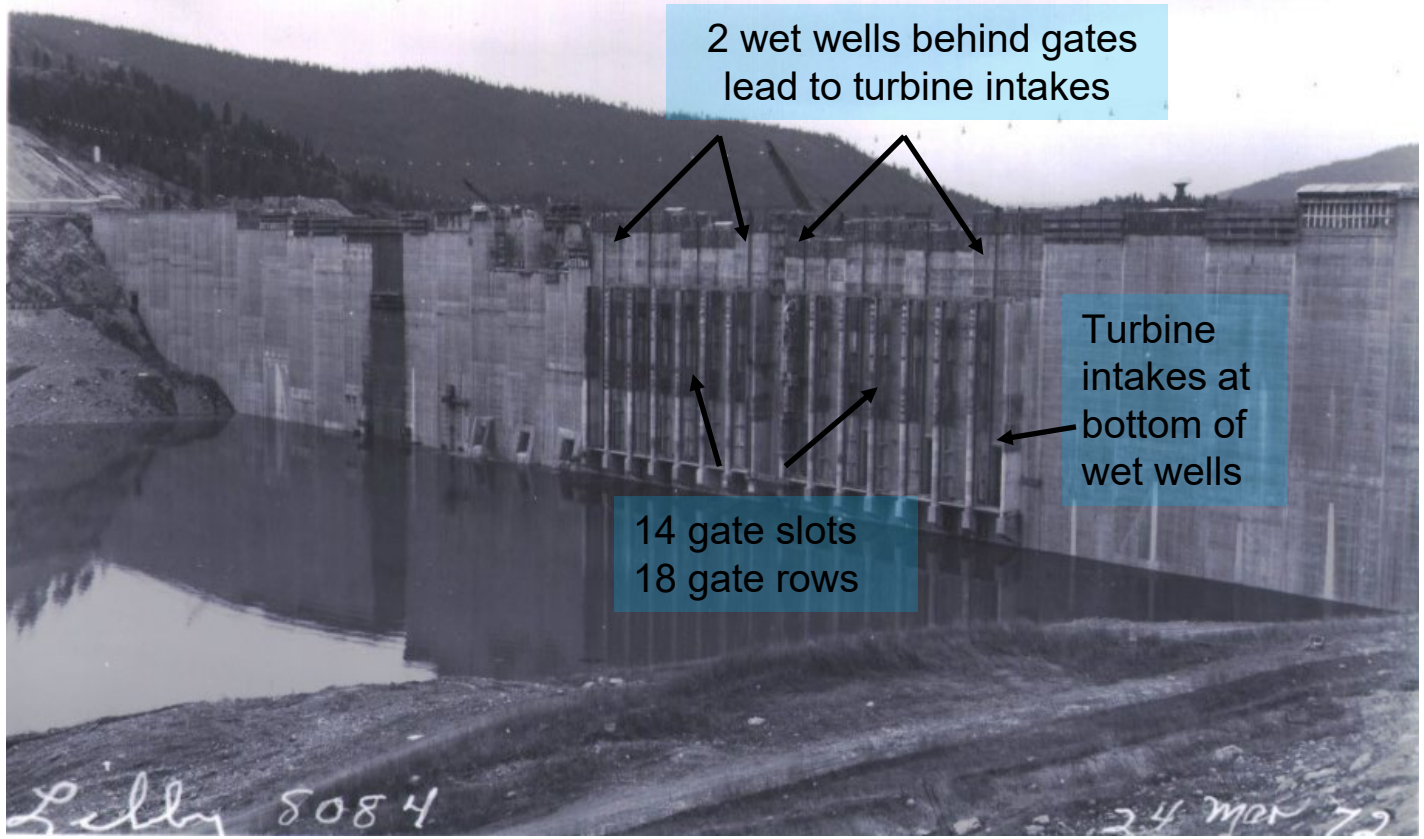
U.S. ARMY

Koocanusa Reservoir Operations Water Year 2023



U.S. ARMY

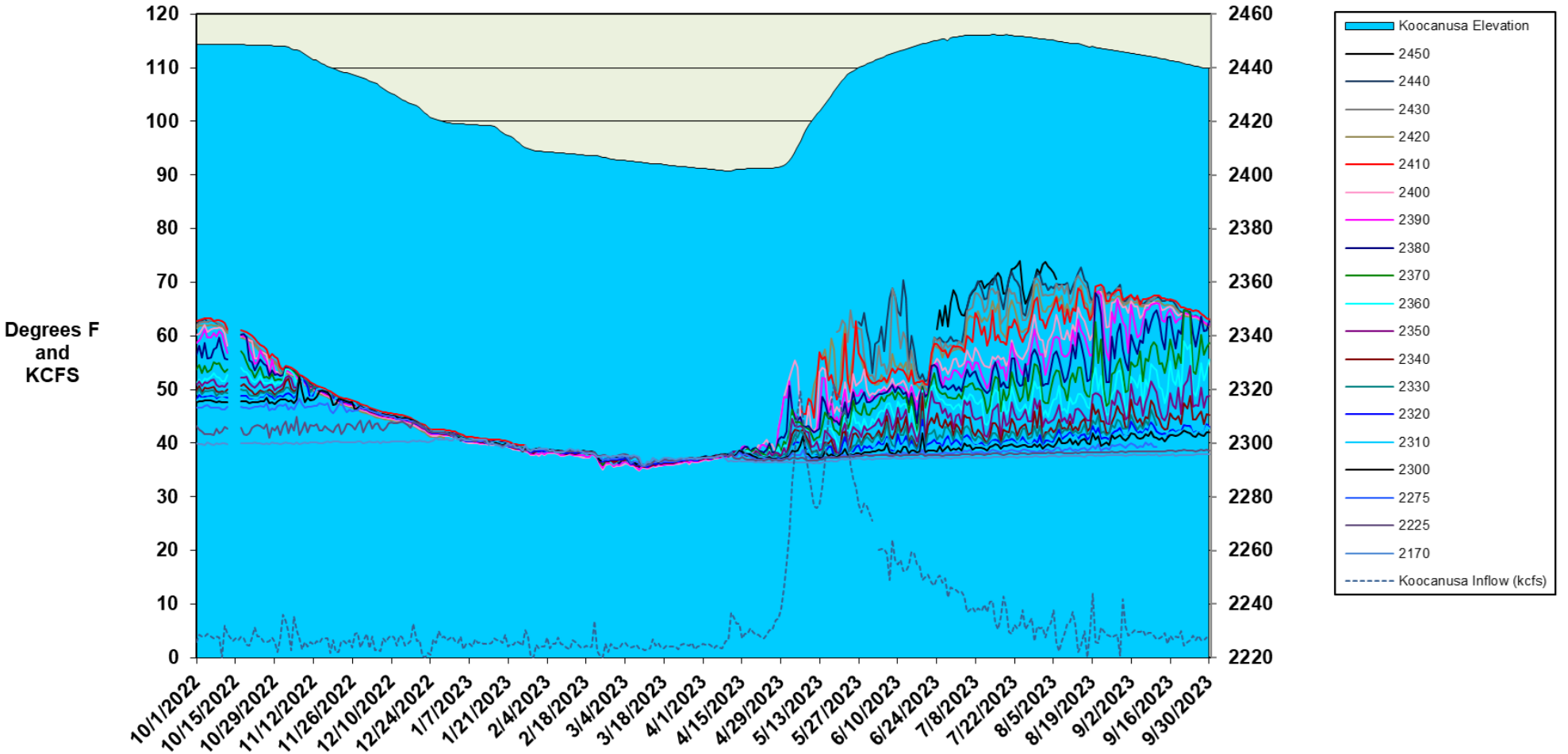
Libby Dam Temperature Management System



This 1972 photo of Libby Dam under construction shows various passage routes for water exiting the dam. Sluice ports (bottom left), are at bottom of reservoir where water is coldest. Vertical gate slots hold 252 panels that are stacked such that temperature-stratified water can be drawn over the top of the panels. Water then flows into one of two wet wells behind the panels and down into turbine intakes. Spillway entry (top left) is not useful for temperature management until reservoir fills to 30 feet above that level. Slots 1-7 (right to left) serve turbines 1-4. Slots 8-14 now serve only turbine 5 but would serve turbine 6 if added.

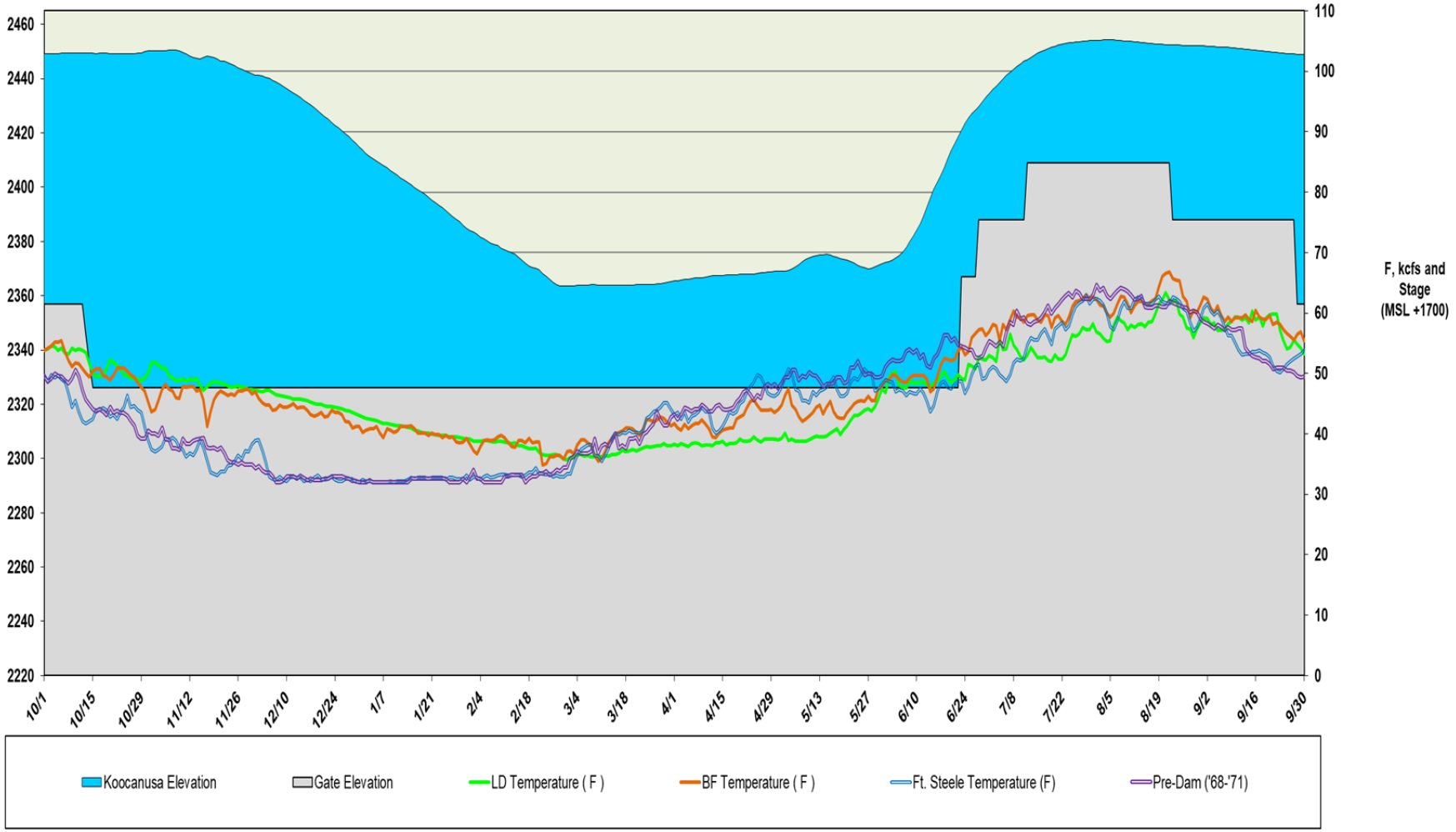
U.S. ARMY

Koocanusa Reservoir Temperatures
Water Year 2023



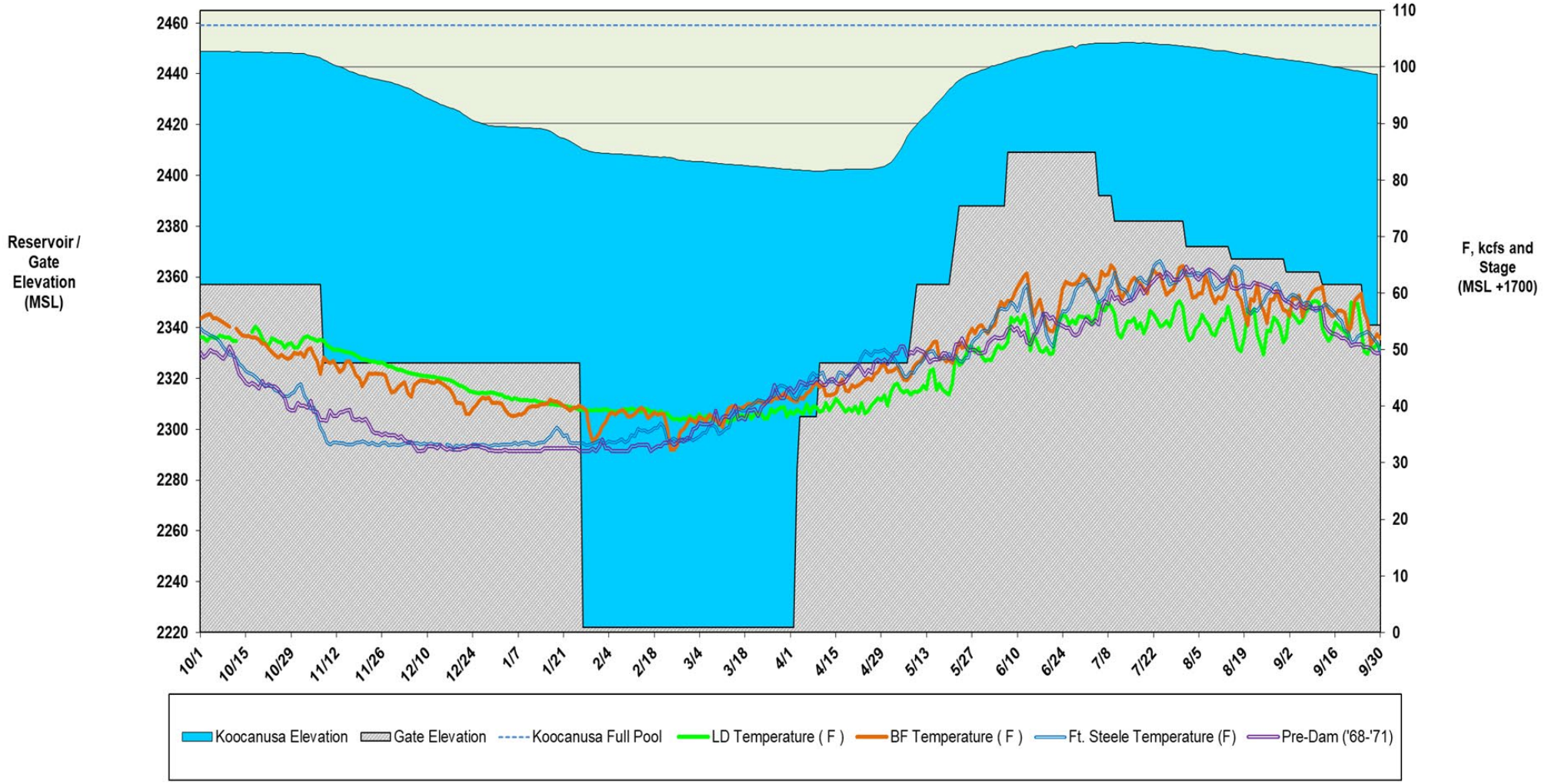
U.S. ARMY

Kootenai River and Koocanusa Reservoir Temperatures
WY 2022



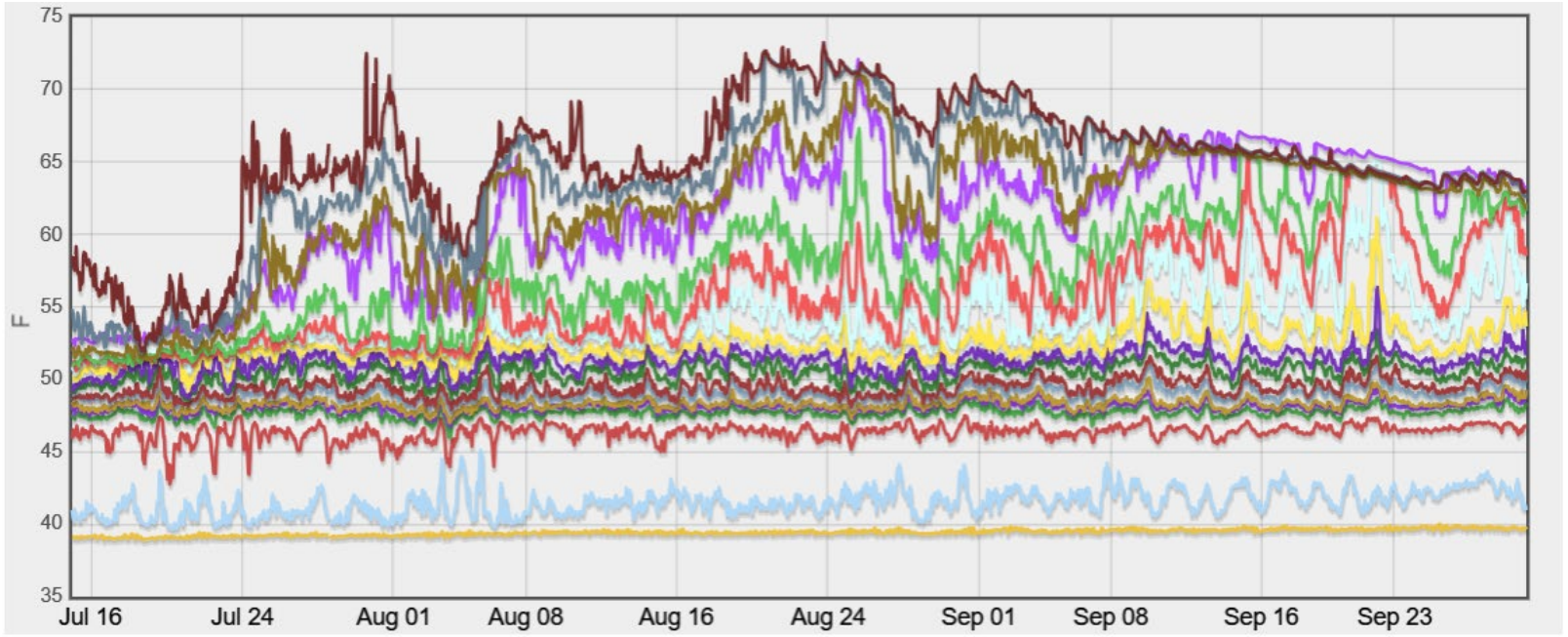
U.S. ARMY

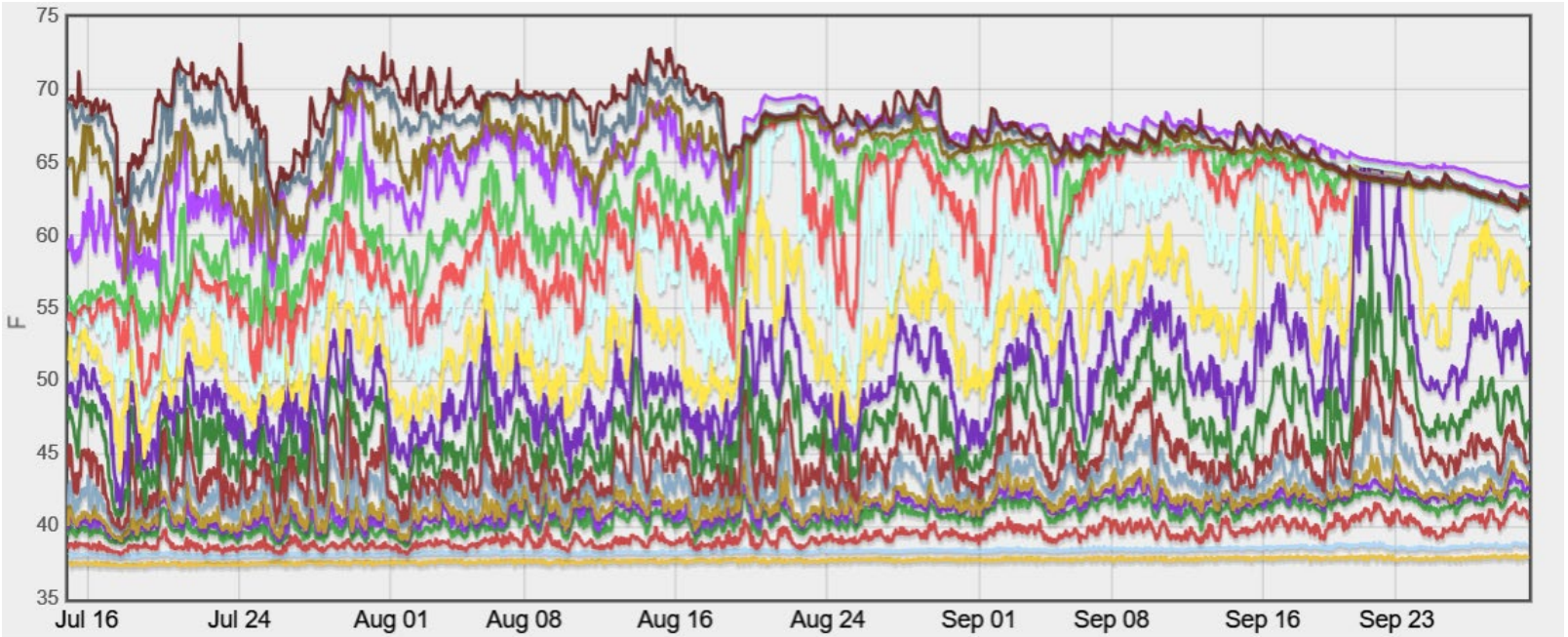
Kootenai River and Koocanusa Reservoir Temperatures
WY 2023

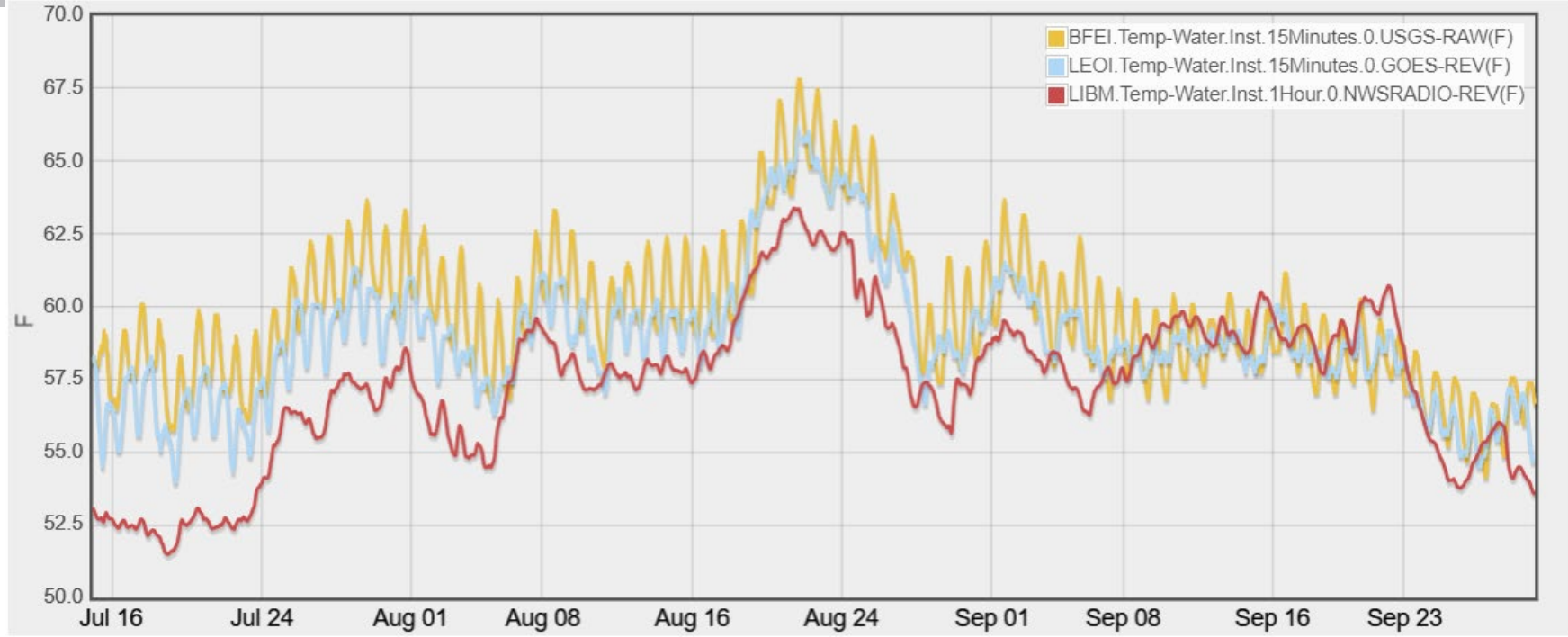


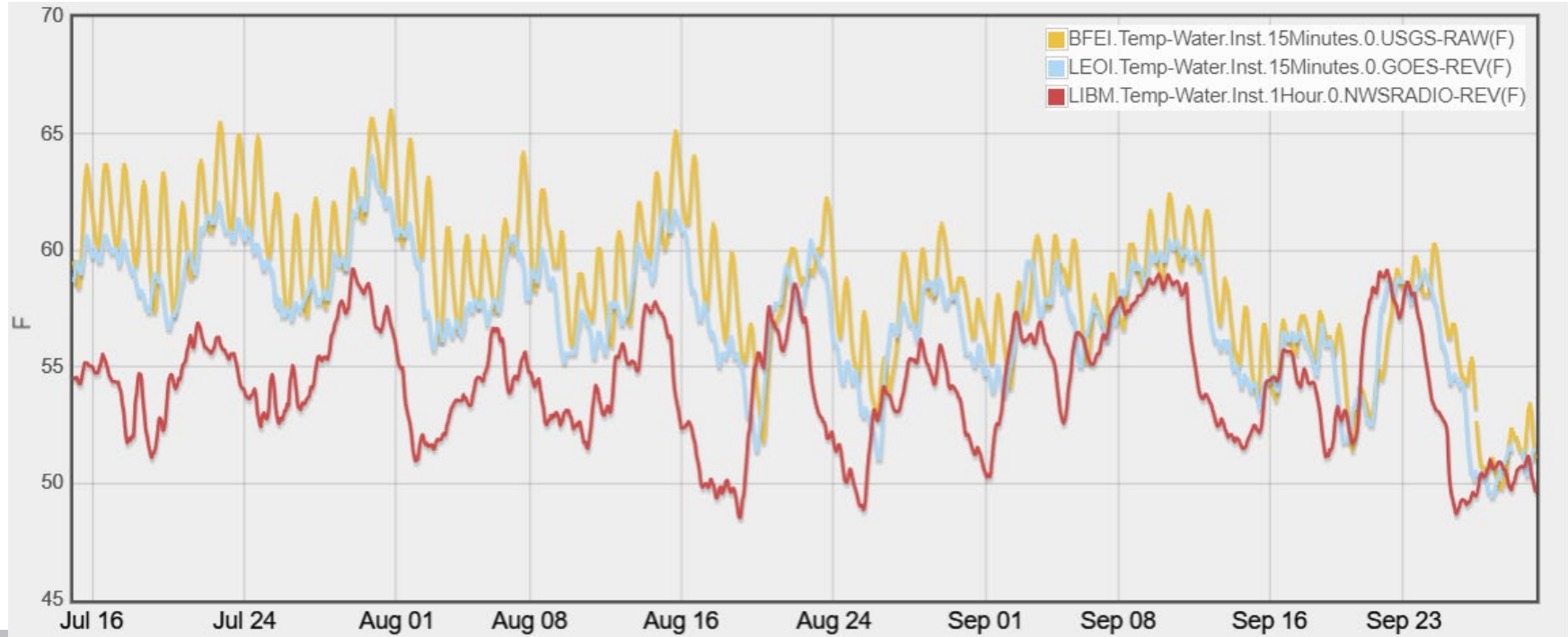
U.S. ARMY

- LBTM_S1-E2170ft.Temp-Water.Inst.1Hour.0.NWSRADIO-REV(F)
- LBTM_S1-E2225ft.Temp-Water.Inst.1Hour.0.NWSRADIO-REV(F)
- LBTM_S1-E2275ft.Temp-Water.Inst.1Hour.0.NWSRADIO-REV(F)
- LBTM_S1-E2300ft.Temp-Water.Inst.1Hour.0.NWSRADIO-REV(F)
- LBTM_S1-E2310ft.Temp-Water.Inst.1Hour.0.NWSRADIO-REV(F)
- LBTM_S1-E2320ft.Temp-Water.Inst.1Hour.0.NWSRADIO-REV(F)
- LBTM_S1-E2330ft.Temp-Water.Inst.1Hour.0.NWSRADIO-REV(F)
- LBTM_S1-E2340ft.Temp-Water.Inst.1Hour.0.NWSRADIO-REV(F)
- LBTM_S1-E2350ft.Temp-Water.Inst.1Hour.0.NWSRADIO-REV(F)
- LBTM_S1-E2360ft.Temp-Water.Inst.1Hour.0.NWSRADIO-REV(F)
- LBTM_S1-E2370ft.Temp-Water.Inst.1Hour.0.NWSRADIO-REV(F)
- LBTM_S1-E2380ft.Temp-Water.Inst.1Hour.0.NWSRADIO-REV(F)
- LBTM_S1-E2390ft.Temp-Water.Inst.1Hour.0.NWSRADIO-REV(F)
- LBTM_S1-E2400ft.Temp-Water.Inst.1Hour.0.NWSRADIO-REV(F)
- LBTM_S1-E2410ft.Temp-Water.Inst.1Hour.0.NWSRADIO-REV(F)
- LBTM_S1-E2420ft.Temp-Water.Inst.1Hour.0.NWSRADIO-REV(F)
- LBTM_S1-E2430ft.Temp-Water.Inst.1Hour.0.NWSRADIO-REV(F)






BFEI.Temp-Water.Inst.15Minutes.0.USGS-RAW(F)
LEOI.Temp-Water.Inst.15Minutes.0.GOES-REV(F)
LIBM.Temp-Water.Inst.1Hour.0.NWSRADIO-REV(F)
F
70.0
67.5
65.0
62.5
60.0
57.5
55.0
52.5
50.0
Jul 16
Jul 24
Aug 01
Aug 08
Aug 16
Aug 24
Sep 01
Sep 08
Sep 16
Sep 23


BFEI.Temp-Water.Inst.15Minutes.0.USGS-RAW(F)
LEOI.Temp-Water.Inst.15Minutes.0.GOES-REV(F)
LIBM.Temp-Water.Inst.1Hour.0.NWSRADIO-REV(F)
F
70
65
60
55
50
45
Jul 16
Jul 24
Aug 01
Aug 08
Aug 16
Aug 24
Sep 01
Sep 08
Sep 16
Sep 23

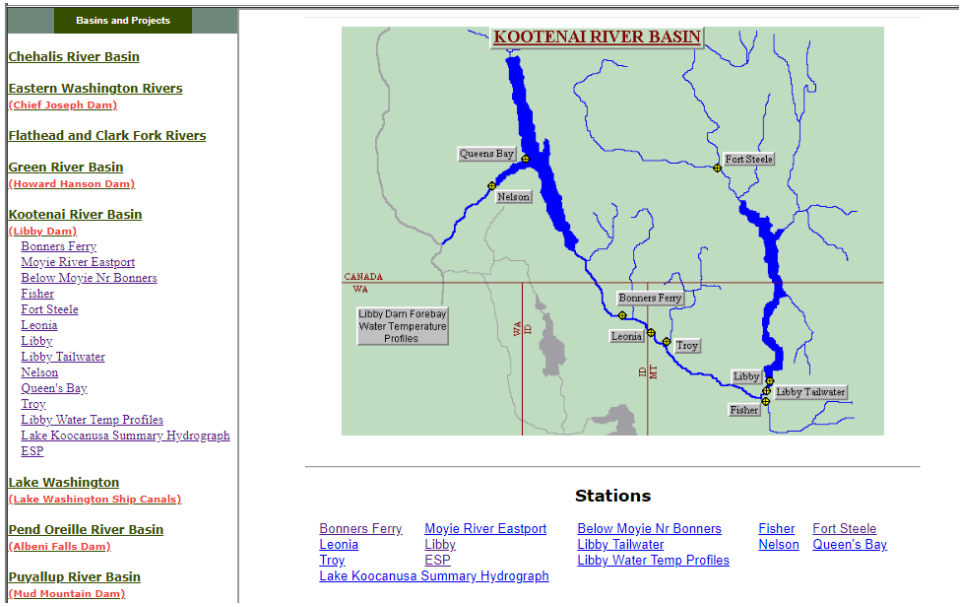
QUESTIONS

For emails regarding release changes and lake level updates email

- UpperColumbiaWM@usace.army.mil
- Leon.Basdekas@usace.army.mil

General Queries call 206-764-6702

Seattle District water management data website :
http://www.nwd-wc.usace.army.mil/nws/hh/www/index.html#



U.S. ARMY

RESERVOIR OPERATIONS 2022