FISH OPERATIONS PLAN IMPLEMENTATION REPORT

May 2025

U.S. Army Corps of Engineers
Northwestern Division
Portland, OR.

Introduction

The 2025 Fish Operations Plan (2025 FOP) describes the U.S. Army Corps of Engineers' (Corps) planned operations for fish[1] passage at its four lower Snake River and four lower Columbia River dams during the 2025 surface spill operations in March through early April, spring and summer fish migration seasons in early April through August, and surface spill operations September through mid-November. The 2025 FOP is consistent with spill operations for fish passage and the regional forum process for adaptive management and in-season management provisions outlined in the Record of Decision for the Columbia River System Operations Environmental Impact Statement (CRSO EIS ROD) dated September 28, 2020, CRSO Final EIS, 2020 National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS) Columbia River System (CRS) Biological Opinions (2020 CRS BiOps)[2], the Extensions of the 2008 Columbia Basin Fish Accords (Accord Extensions), the Corps' requirements under the Endangered Species Act (ESA), and the ongoing communication with the relevant wildlife agencies to ensure consistency with the Act. The 2025 FOP also incorporates operations outlined in Appendix B of the "U.S. Government Commitments in Support of the Columbia Basin Restoration Initiative" (USG Commitments). The USG Commitments were agreed to as part of the 2023 Memorandum of Understanding (*see* Section 3 of the MOU). Other project operations and water management actions not specifically addressed in this document will be consistent with other guiding operative documents, including the 2025 Water Management Plan (WMP), seasonal WMP updates, and the 2025 Fish Passage Plan (FPP).

The FOP Implementation Reports are produced to reflect implementation of the 2025 FOP for spring and summer fish passage spill. This report describes the Corps' implementation of the 2025 FOP during the month of May. Information in this report includes the following:

- total flow: the total hourly river flow rate;
- generation flow: the hourly flow through the powerhouse units;
- target spill: the spill target for that hour (Table 1);
- adjusted spill: the hourly spill level that can be achieved considering that spill may vary as a function of total river flow, forebay elevation and generator capacity, and is subject to routine

[1] ESA-listed salmon and steelhead.
[2] The Corps, in coordination with the other Action Agencies, and NMFS, employs the Regional Implementation Oversight Group (RIOG) and technical teams including the Technical Management Team (TMT) and Fish Passage Operations & Maintenance (FPOM) coordination group, to coordinate with state, tribal and other federal experts for recommendations for implementing operations consistent with the 2020 BiOps.

operational adjustments that limit the ability to spill to the target spill (see 2025 FOP, Section 4.1);
- actual spill: the hourly flow over the spillway; and,
- resultant 12-hour average TDG for the tailwater at each project.

This report also provides information on issues and unanticipated or emergency situations that arose during implementation of the 2025 FOP in May 2025.

Data Reporting

I. For each project providing fish passage operations, this report contains a graph displaying the performance of the spring fish passage spill program for the month of May, with hourly spill, target spill, adjusted spill, generation, and total flows. The monthly graphs begin on May 1 and end on May 31 and reflect the following operations for the lower Snake River and the lower Columbia River projects:

- The black line represents the average hourly total river flow through the project in thousand cubic feet per second (kcfs).
- The orange line represents the average hourly generation flow through the powerhouse each hour in kcfs.
- The thin solid blue line represents the actual average hourly spill level through the spillway in kcfs.
- The dashed blue line represents the spill cap portion of the target spill estimated to reach the gas cap or target TDG.
- The thick light blue line represents the performance standard spill level portion of the target spill, where applicable.
- The thick dark blue line represents the adjusted spill cap spill: the hourly spill cap level that can be achieved taking into consideration that spill may vary as a function of total river flow, forebay elevation, and generator capacity, and is subject to routine operational adjustments that limit the ability to spill to the target spill (2025 FOP section 4.1).

II. The average daily %TDG for the 12 highest hourly TDG measurements in a calendar day for all projects is shown in the May 2025 Average Percent TDG Values Table (Table 4). Red numbers indicate that the project exceeded the %TDG cap - i.e. 125% (tailwater) on that day.

General Implementation Remarks

For all projects that spill for fish passage, the actual spill may vary from the adjusted spill due to various conditions as described below. When actual spill varied from adjusted spill levels during periods of planned spill, the change in spill level is described below in the May 2025 Spill Variance Table (Table 2).[3] The Spill Variance Table includes average hourly data; but when spill varies from adjusted spill for a portion of an hour, it is characterized as a variance for a full hour. There are instances when the hourly adjusted spill levels are not achievable due to mechanical limitations in setting spill gates to implement the regionally coordinated spill pattern. The project operator sets the spill gate stops to most closely approximate the adjusted spill to the extent practicable. Other routine activities that changed spill levels, which were coordinated with regional partners, are identified in the monthly Pre-Coordinated Operations Table (Table 3).

"Low flow" operations at the lower Columbia and lower Snake projects are triggered when inflow is insufficient to provide both minimum generation and the target spill levels. For this report, the decrease in target spill is represented as adjusted spill. In these situations, the projects operate at minimum generation and pass the remainder of project outflow as spill and through other routes, such as fish ladders, sluiceways, and navigation locks. As flows transition from higher flows to low flows, there may be situations when flows recede at a higher rate than forecasted. In addition, inflows provided by nonfederal projects upstream are variable and uncertain.

The combination of these factors may result in instances when unanticipated changes to inflow result in forebay elevations dropping to the low end of the Minimum Operating Pool (MOP). Since these projects have limited operating flexibility, maintaining minimum generation, MOP elevation, and the target spill may not be possible throughout every hour.

Actual spill levels at Corps projects may vary up to ±2 kcfs, or ±1% when targeting an hourly percent of outflow, within the hour as compared to the target spill rate, except as otherwise noted in the 2025 FOP. A number of factors influence actual spill, including hydraulic efficiency, exact spillway gate opening calibration, spillway gate hoist cable stretch due to temperature changes, and forebay elevation (e.g., a higher forebay results in a greater level of spill since more water can pass under the spill gate or over the surface spillway weir). Transition periods between gas cap spill and performance standard spill hours may result in actual hourly spill levels that are slightly higher or lower than target spill levels. Occurrences requiring an adjustment in operations and/or regional coordination are described in greater detail in the “Operational Adjustments” section below.

[3] Forced spill conditions shown in the graphs are not considered variances and are not reported in the Spill Variance Table. Forced spill conditions may result from lack of load, high river inflows that exceed available powerhouse capacity, scheduled or unscheduled turbine unit outages or transmission outages of various durations, passing debris, etc.

May Operations

The May 2025 observed precipitation was well below normal with 57% of average precipitation observed at the Snake River above Ice Harbor and 65% of average precipitation observed at the Columbia River above The Dalles.[4] The NOAA Northwest River Forecast Center runoff summary for May indicated that the adjusted runoff for the Snake River at Lower Granite was 87% of the 30-year average (1991-2020) with a volume of 6.4 MAF (Million acre-feet). The May 2025 adjusted runoff for the Columbia River at The Dalles was 82% of the 30-year average (1991-2020) with a volume of 22.5 MAF.[5]

Spring spill operations occur April 3–June 20 at the four lower Snake River projects, and April 10–June 15 at the four lower Columbia River projects. The Corps initiates spill at 0001 hours, or shortly after midnight, at each of the projects on the start date. Target spill levels for spring 2025 at each project are defined in Table 1 (Table 4 in the 2025 FOP). If adverse impacts of the proposed spill operations are observed in-season, existing adaptive management processes may be employed to address the cause of the impacts. Spill may be temporarily reduced at any project to ensure navigation safety or transmission reliability, or in the event of adult salmonid migration delay (see 2025 FOP section 7.1). In order to operate consistently with state water quality standards, spill may also be reduced if observed gas bubble trauma (GBT) levels exceed those identified in state water quality standards (*See* WASH. ADMIN. CODE § 173-201A-200(l)(f)(ii)(B)(III) and *Order Approving a Modification to the Oregon's Water Quality Standard for Total Dissolved Gas in the Columbia River Mainstem*, page 5).

Spill up to the 125% Gas Cap is spill to the maximum level that meets, but does not exceed, the TDG criteria allowed under state laws. This includes a criterion for not exceeding 126% TDG for the average of the two greatest hourly values within a day.

In implementation of the 2025 FOP in May, the Corps evaluated conditions every day to establish spill caps at a level that was estimated to meet, but not exceed, the gas cap or target TDG in the tailrace (see Table 4).[6] This evaluation considered environmental conditions (e.g., river flow, wind, water temperature, barometric pressure, incoming TDG from upstream, and water travel time) and project operations (e.g., spill level, spill pattern, tailwater elevation, proportion of flow through the turbines, and project configuration).

[4] Retrieved June 2, 2025: https://www.nwrfc.noaa.gov/water_supply/wy_summary/wy_summary.php?tab=5
[5] Retrieved June 2, 2025: https://www.nwrfc.noaa.gov/runoff/runoff_summary.php

[6] See 2025 FOP, Section 2.2

Table 1: Summary of 2025 spring target spill levels at lower Snake River (April 3 – June 20) and lower Columbia River (April 10 – June 15) projects (Table 4 in the 2025 FOP).

PROJECT	SPRING SPILL DATES	SPRING SPILL OPERATION
Lower Granite [A, C]	April 3 - June 20	24 hours/day: 125% Gas Cap
Little Goose [B, C]	April 3 – June 20	125% Gas Cap 24 hours/day (until adult criteria met) *then* 16 hours/day: 125% Gas Cap; 8 hours/day: 30% of outflow (Performance Standard)
Lower Monumental [A]	April 3 - June 20	24 hours/day: 125% Gas Cap
Ice Harbor	April 3 – June 20	24 hours/day: 125% Gas Cap
McNary	April 10 – June 15	24 hours/day: 125% Gas Cap
John Day [D]	April 10 – June 15	Daytime hours: 40% of outflow; Nighttime hours: 125% Gas Cap
The Dalles [E]	April 10 – June 15	24 hours/day: 40% of outflow (Performance Standard)
Bonneville [F]	April 10 – June 15	24 hours/day: 125% Gas Cap

A. Lower Granite and Lower Monumental Adult Delay Criteria – See Section 7.1.
B. Little Goose Adult Criteria –Within 1 business day of when the earliest of the following conditions occurs: (1) a cumulative total of 25 adult spring Chinook salmon (not including jacks) pass Lower Monumental Dam; or (2) a cumulative total of 50 adult spring Chinook salmon (not including jacks) pass Ice Harbor Dam; or (3) April 24, 2025, the Corps will implement performance standard spill at Little Goose Dam for 8 consecutive AM hours (April 3–15 starting at 0500 hours; April 16–June 20 starting at 0400 hours) to target hours of peak adult passage. If lack of load conditions preclude the implementation of performance standard spill during the targeted periods, performance standard spill will begin as soon as practicable during AM hours and continue for up to 8 consecutive hours. If a second block is needed, it will start as soon as load conditions allow, continue for at least two consecutive hours, and conclude no later than 2000.
C. During periods of high river flow that exceeds powerhouse hydraulic capacity, implementing 8 consecutive hours of spill as described in Footnotes A and B may result in storing additional inflow in the forebay above MOP. If it is necessary to pond water to achieve the 8-hour block of spill during high inflow, water stored above MOP should be drafted out over the remaining hours by increasing spill to pass inflow from 1200-1600 hours, then increasing spill as necessary from 1600-0400 to draft the pool back to MOP. If it is forecasted that the drafting spill will result in exceeding 130% TDG in the tailrace, all 16 hours will be used to return the pool to MOP. In lack of load conditions performance standard spill blocks will be prioritized at Little Goose, Lower Monumental, and Lower Granite dams, in that order.
D. John Day Dam – Daytime hours are defined in FPP Chapter 4, Table JDA-5. Daytime hourly spill target of 40% river flows with ±5% flexibility in river flow for balancing reserves, consistent with current target spill level calculations.
E. The Dalles Dam –TDG in The Dalles tailrace may fluctuate up to 125% prior to reducing spill at upstream projects or reducing spill at The Dalles below 40%. Maintain 40% spill for 24 hours at The Dalles and reduce John Day spill below the 125% TDG spill cap as needed for TDG management. Spill above 40%, up to 125% TDG, may occur for TDG management or for carrying reserves.
F. Bonneville Dam – Spill for fish passage should not exceed 150 kcfs due to erosion concerns.

Operational Adjustments

1. Lower Monumental

On May 19, the adult delay criteria specified in the 2025 FOP section 7.1 were met and so spill was reduced to performance standard levels (40% of outflow) at Lower Monumental for 8 hours per day in the morning to target hours of peak adult fish passage. Starting May 20 and continuing through May 26, the Corps implemented the 40% spill operation for 8 hours per day with a targeted start time between 0400-0800. On May 27, the 24/7 125% Gas Cap operation was resumed following a single day without observed delay, per the FOP. This operation was coordinated during the May 21 TMT meeting and TMT Members did not object to implementation of this operation as described in the 2025 FOP.

Table 2: Spill Variance Table – May 2025 (5/1 to 5/31)

Project	Parameter	Date	Time[7]	# of Hours	Type	Reason
Little Goose	Additional Spill	5/5	0800	1	Maintenance	Hourly spill was 32% (greater than adjusted spill target of 30 ± 1 %) after the ASW was moved to low crest coincident with the spillway Gate 2 outage. GDACs could not be used during this time to automatically set gate openings.
Lower Monumental	Reduced Spill	5/3	2100	1	Program Error	Hourly spill decreased to 68 kcfs (less than adjusted spill target of 74 kcfs) due to the malfunction of the program that manages generation.
John Day	Increased Spill	5/17	0600	1	Human Error	Hourly spill was 73% (greater than adjusted spill target of 40%) when the daytime spill hours were not adjusted per 2025 FPP JDA Table JDA-5.
The Dalles	Reduced Spill	5/9	1800	1	Program Error	Hourly spill decreased to 38% (less than adjusted spill target of 40% ± 1%) due to a data systems issue.
Bonneville	Reduced Spill	5/29	1200	1	Maintenance	Hourly spill decreased to 143 kcfs (less than adjusted spill target of 150 ±3 kcfs) when spill gate 6 was raised and lowered during commissioning. Regionally coordinated via MFR 25BON024.

[7] Note: Data collected for reporting spill variances is reported using hourly-averaged data. Therefore, while spill may be increased or decreased for only a portion of an hour, it is represented in the table as an hour.

Table 3: Pre-Coordinated Operations – May 2025 (5/1 to 5/31)

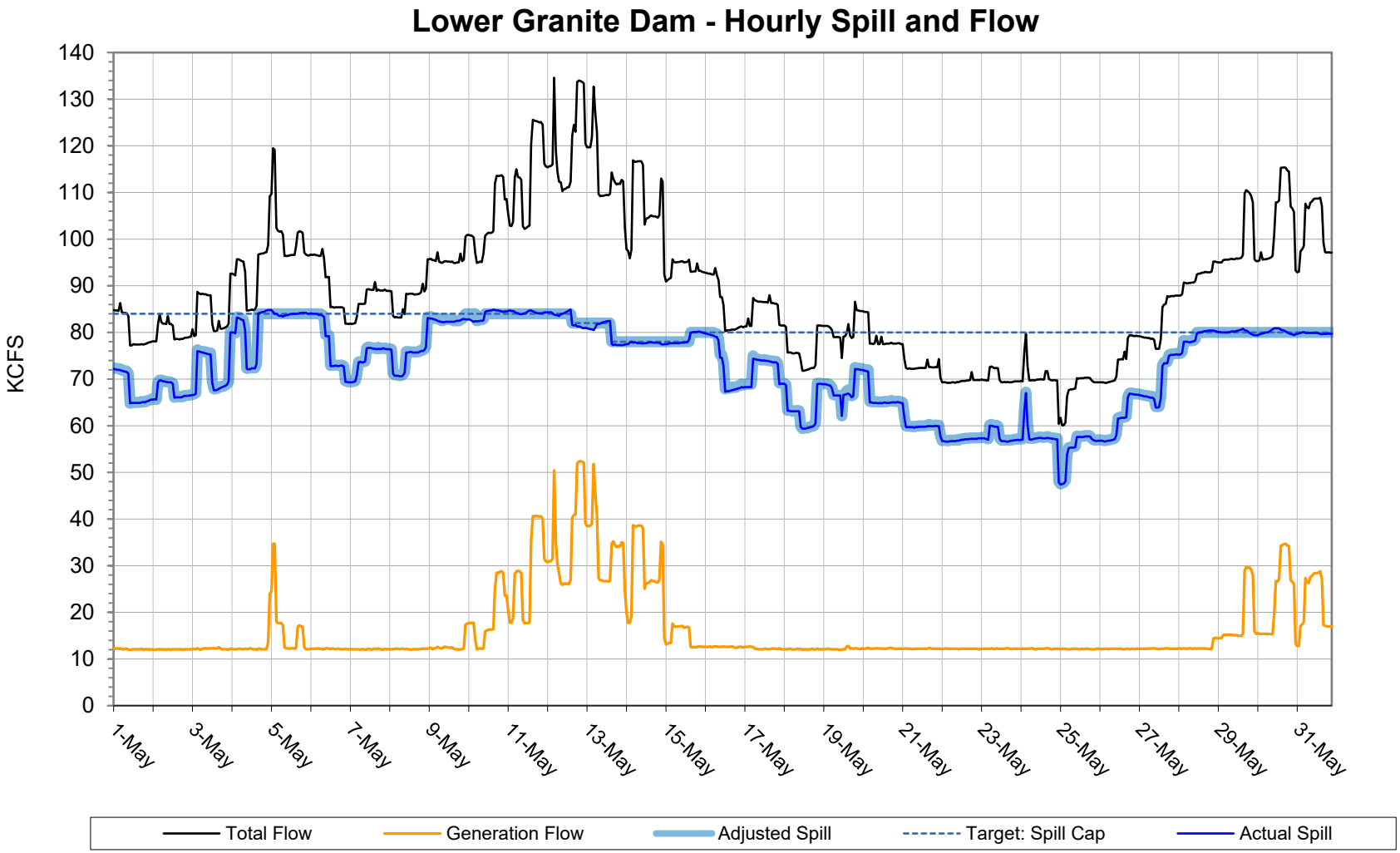
Project	Parameter	Date	Time	# of Hours	Type	Reason
Lower Monumental	Reduced Spill	5/1 5/2 5/3 5/4 5/5 5/6 5/7 5/8 5/9 5/10 5/11 5/12 5/13 5/16 5/18 5/20 5/22 5/24 5/26 5/28 5/30	1700-1800 1800-2000 1900-2000 1800-2000 1800-1900 1800-1900 1900-2000 1800-1900 1700-1900 1800-1900 1800-2000 1800-2000 1800-1900 1900-2100 1800, 2000 1900-2100 1800-2100 1800-2000 1700-1900 1900-2100 1700-1900	2 3 2 3 2 2 2 2 3 2 3 3 2 3 2 3 4 3 3 3 3	Navigation	Hourly spill decreased to between 13 and 88 kcfs (less than adjusted spill target of between 34 and 103 kcfs) for navigation safety. Regionally coordinated via 2025 FOP, Sections 4.1 and 4.6.
John Day	Reduced Spill	5/3 5/9 5/10	0200 0500 0300	1 1 1	Navigation	Hourly spill decreased to between 165 and 184 kcfs (less than adjusted spill target of between 180 and 194 kcfs) for navigation safety. Regionally coordinated via 2025 FOP, Sections 4.1 and 4.6.

Table 4: May 2025 Average Percent TDG Values Table (5/1 to 5/31)

Station:	LWG	LGNW	LGSA	LGSW	LMNA	LMNW	IHRA	IDSW	MCNA	MCPW	JDY	JHAW	TDA	TDDO	BON	CCIW
Gas Cap %:		125		125		125		125		125		125		125		125
5/1/2025	103	122	117	122	122	121	119	117	112	122	111	119	119	121	115	122
5/2/2025	105	122	121	122	124	120	121	117	113	123	111	118	118	121	118	123
5/3/2025	104	122	121	122	122	120	120	116	113	122	110	118	113	118	115	122
5/4/2025	104	124	118	123	120	121	117	117	110	120	111	117	114	118	111	122
5/5/2025	102	125	117	125	121	122	118	122	111	122	114	117	117	120	114	122
5/6/2025	103	125	120	125	125	122	122	118	114	123	116	118	120	122	117	122
5/7/2025	105	124	123	124	127	120	122	117	115	121	115	118	118	121	119	121
5/8/2025	105	•	122	122	124	121	120	117	112	122	113	117	116	119	115	121
5/9/2025	105	•	122	124	123	122	120	119	112	123	116	119	121	122	117	122
5/10/2025	105	•	123	124	125	122	123	120	114	124	119	119	119	122	118	121
5/11/2025	106	•	125	125	126	123	124	123	114	124	119	119	119	121	117	121
5/12/2025	105	•[8]	124	125	126	124	123	125	114	124	117	119	119	121	117	122
5/13/2025	104	127	122	125	125	124	122	125	113	123	116	118	115	119	114	122
5/14/2025	103	125	120	124	124	122	121	122	112	121	113	117	113	117	112	121
5/15/2025	104	124	117	124	122	122	119	118	110	120	111	117	113	117	110	121
5/16/2025	104	124	117	123	121	121	119	118	110	121	110	116	114	118	111	121
5/17/2025	105	124	118	123	122	122	120	117	111	121	109	117	115	118	114	122
5/18/2025	104	122	118	121	120	120	119	116	110	119	108	115	112	116	111	121
5/19/2025	103	123	118	123	119	119	117	117	108	117	107	115	111	116	112	121
5/20/2025	103	122	116	122	119	118	116	117	107	118	107	115	112	117	111	121
5/21/2025	103	122	116	122	119	118	117	117	108	119	108	117	113	117	113	121
5/22/2025	103	121	118	121	120	119	118	116	109	118	109	118	116	119	114	121
5/23/2025	104	121	119	122	121	119	119	116	112	120	108	116	115	119	114	121
5/24/2025	104	121	120	121	121	120	119	117	112	119	109	117	117	119	116	122
5/25/2025	104	121	121	122	121	118	120	117	113	117	110	117	117	120	115	121
5/26/2025	103	122	121	122	121	118	119	117	112	117	110	116	113	117	112	119
5/27/2025	103	123	119	123	120	120	117	116	111	118	112	117	114	118	113	121
5/28/2025	104	124	120	124	122	122	120	117	113	120	115	117	118	120	114	122
5/29/2025	104	125	120	125	123	122	121	118	113	123	114	117	115	119	114	122
5/30/2025	104	125	120	125	122	123	119	122	110	123	112	118	117	120	115	122
5/31/2025	104	125	121	125	126	121	123	120	111	123	112	118	117	120	117	122
Exceedances:		1		0		0		0		0		0		0		0

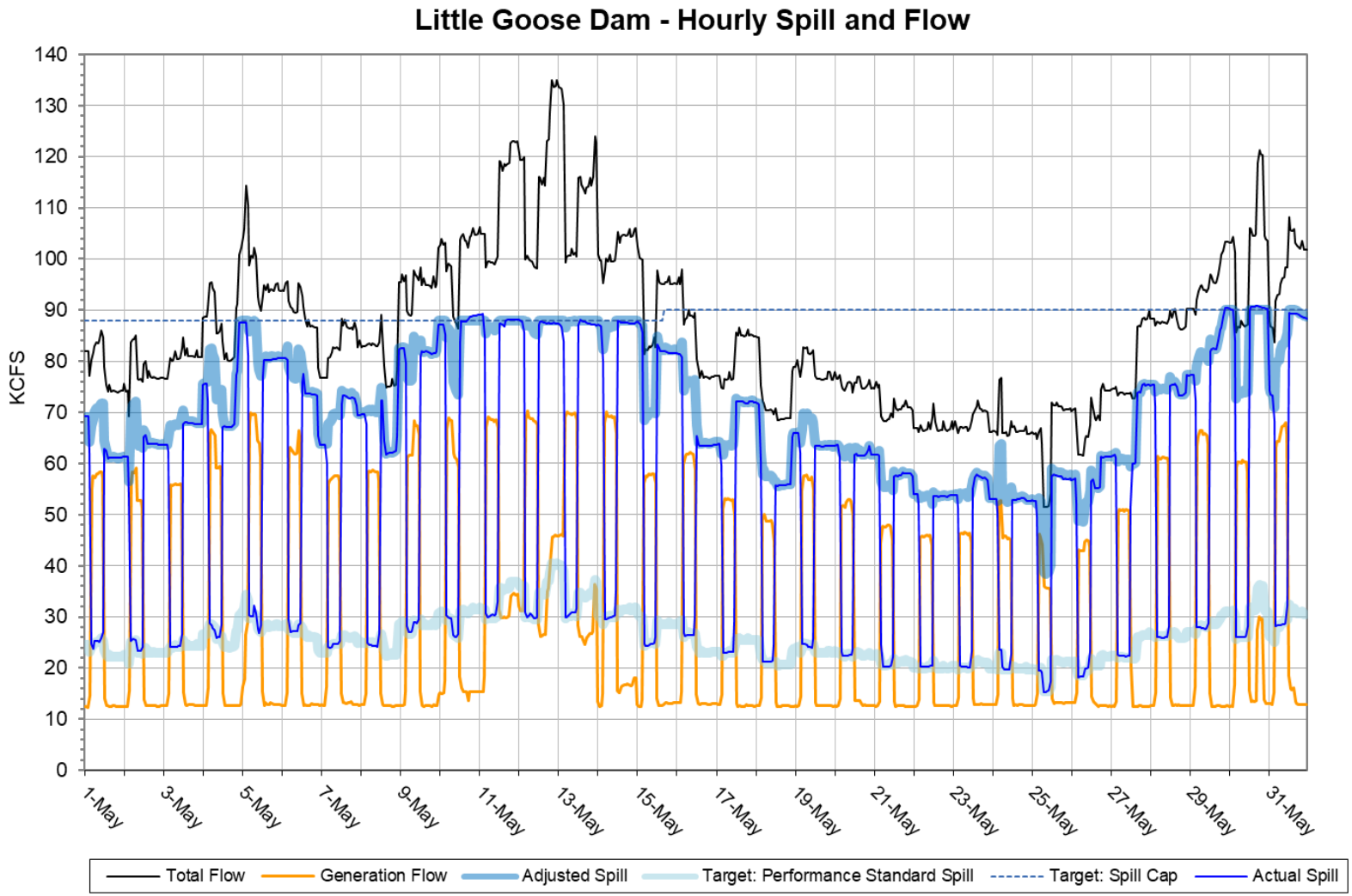
[8] Missing data at LGNW due to a failed sensor.

Figure 1[9]



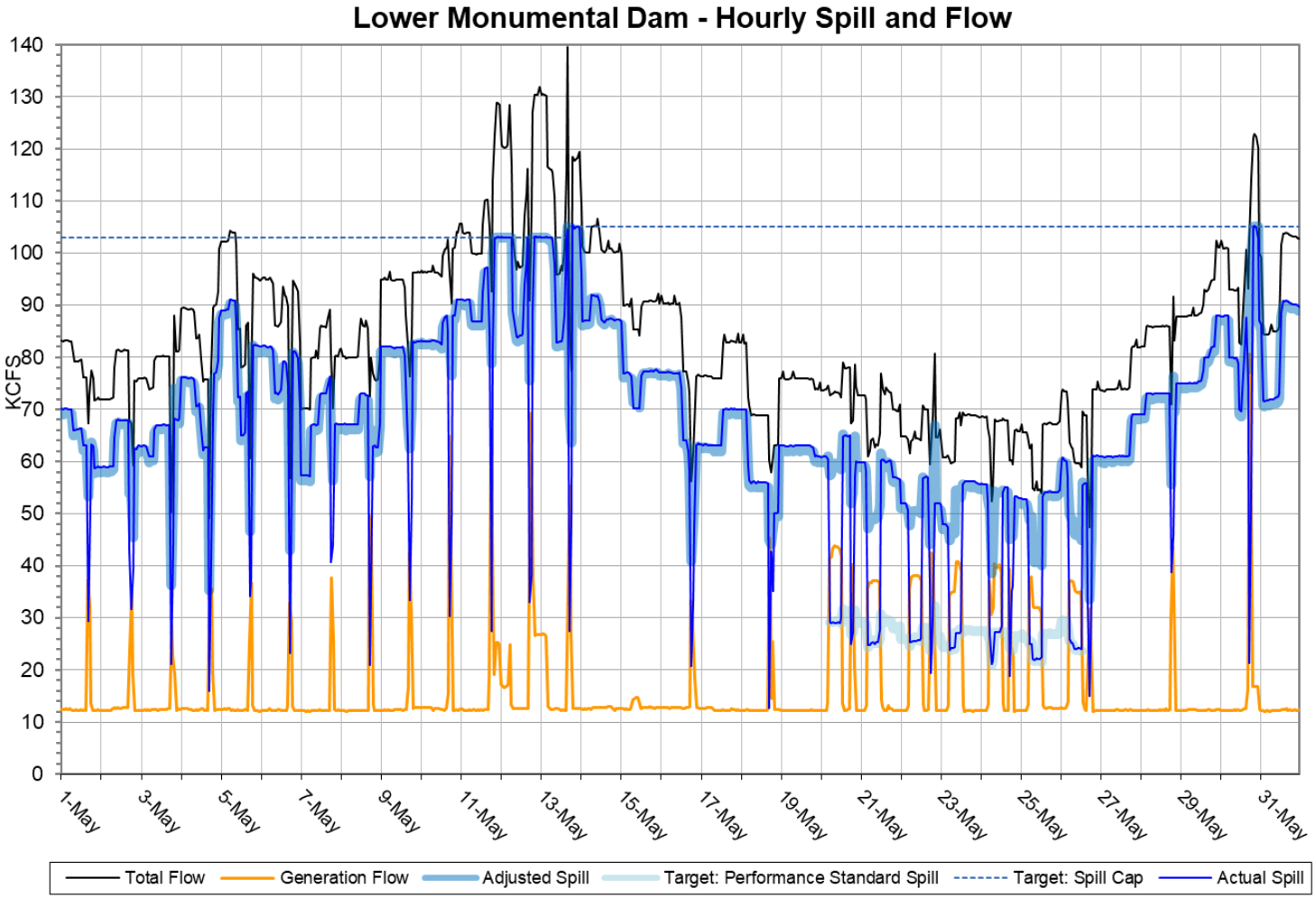
[9] The adjusted spill line is a simplified representation due to limitations of representing a range of minimum generation values. See Tables 2 and 3 for spill variances and pre-coordinated operations.

Figure 2[10]



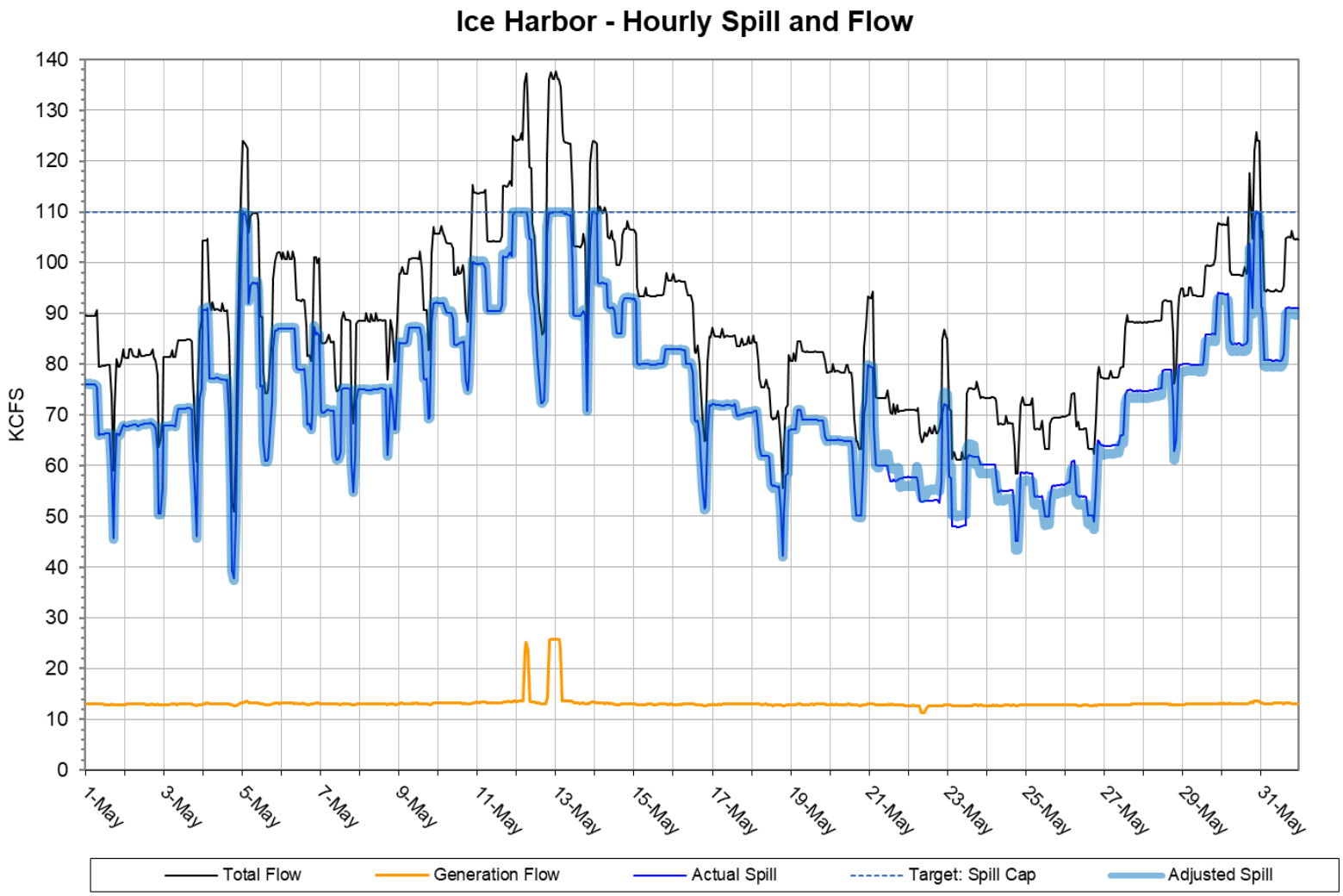
[10] The adjusted spill line is a simplified representation due to limitations of representing a range of minimum generation values. See Tables 2 and 3 for spill variances and pre-coordinated operations.

Figure 3[11]



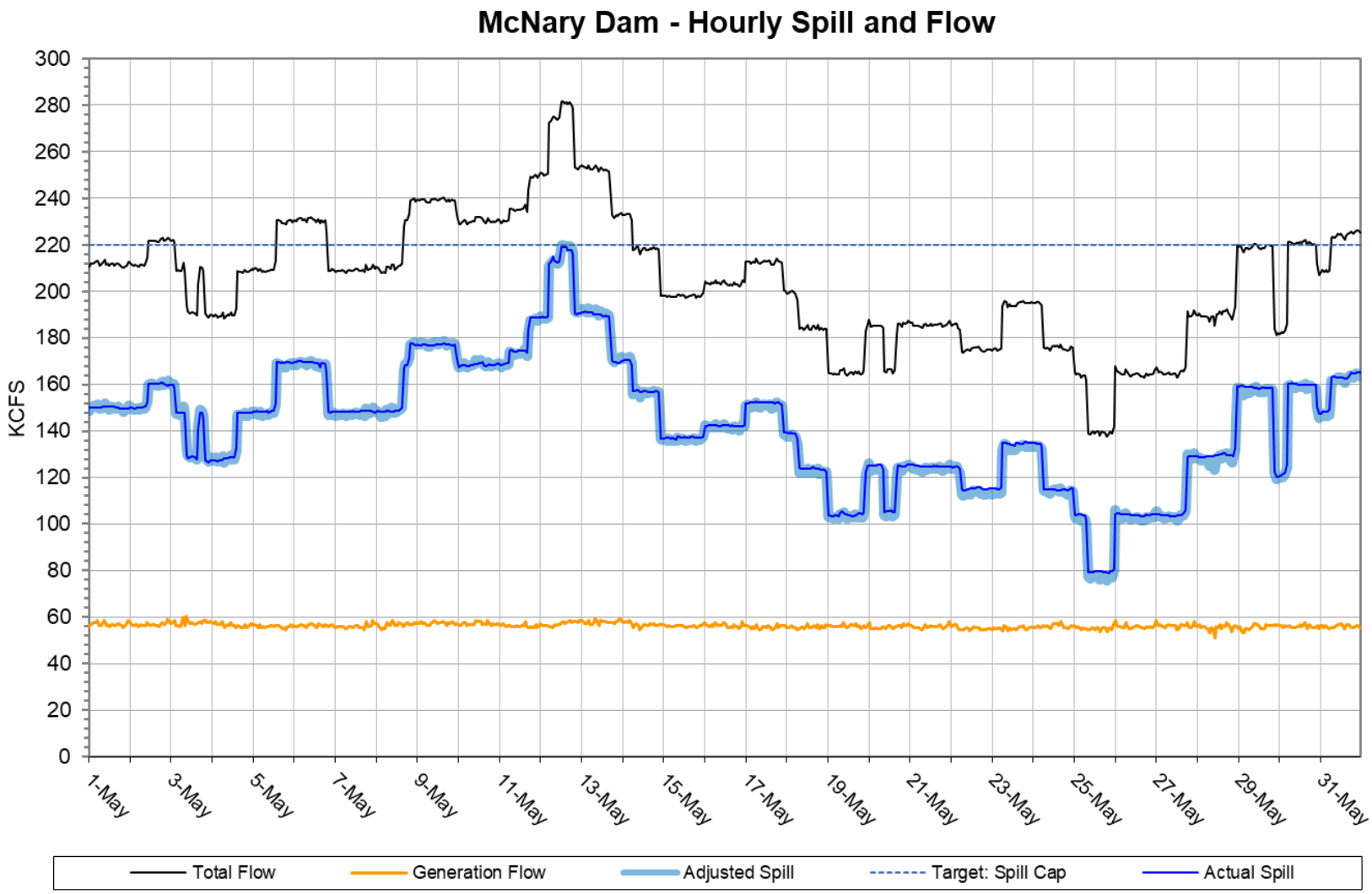
[11] The adjusted spill line is a simplified representation due to limitations of representing a range of minimum generation values. See Tables 2 and 3 for spill variances and pre-coordinated operations.

Figure 4[12]



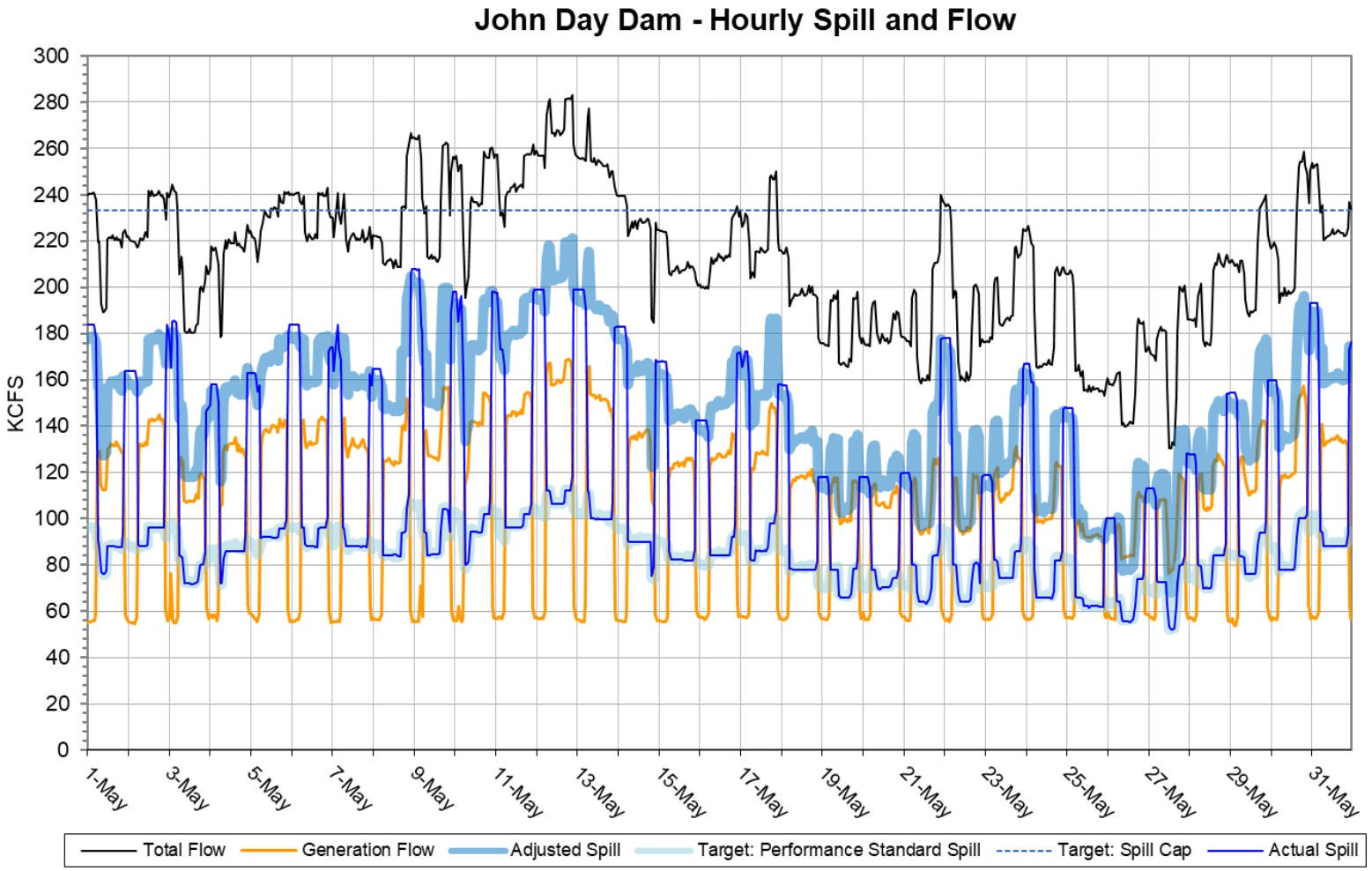
[12] The adjusted spill line is a simplified representation due to limitations of representing a range of minimum generation values. See Tables 2 and 3 for spill variances and pre-coordinated operations.

Figure 5[13]



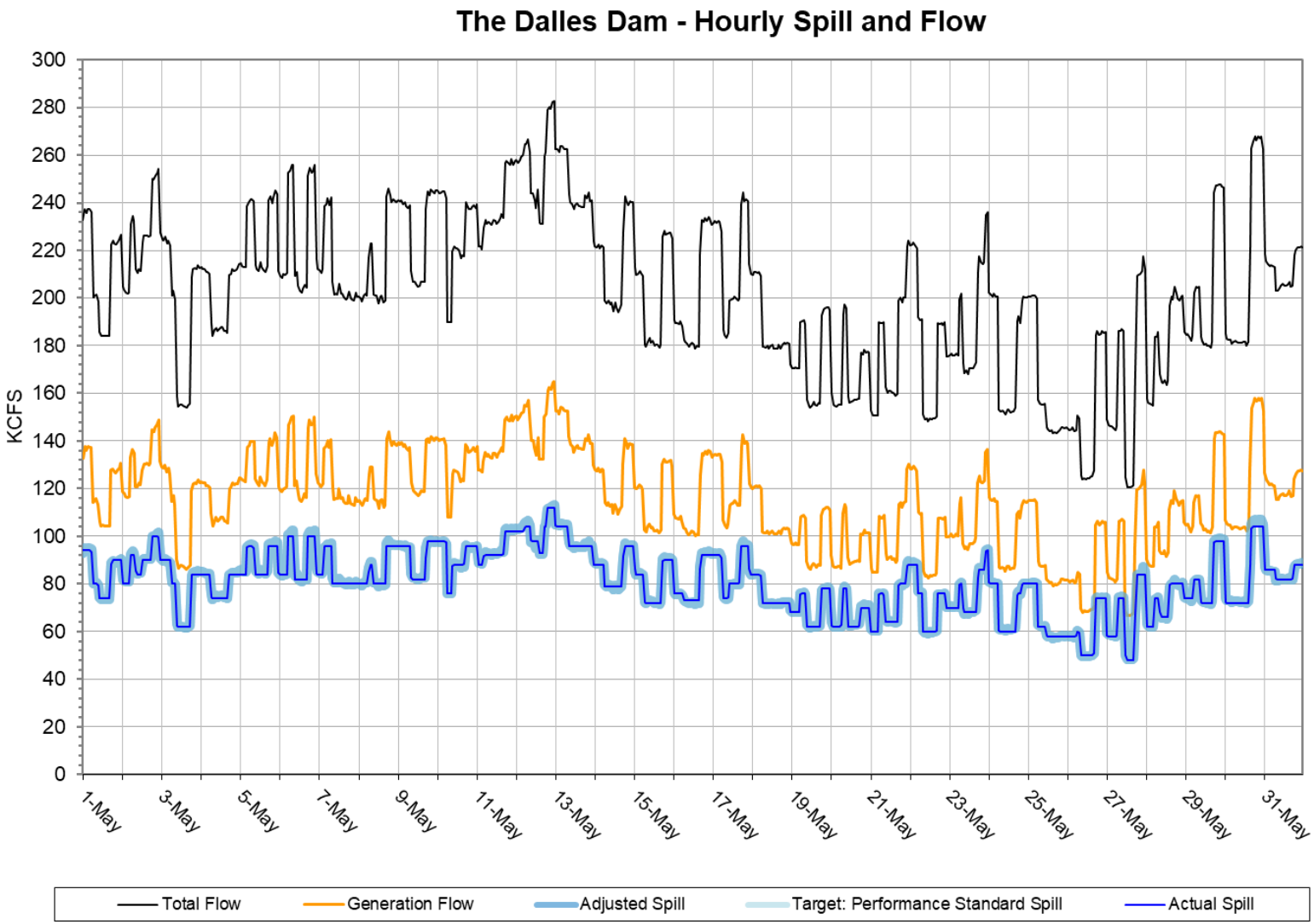
[13] The adjusted spill line is a simplified representation due to limitations of representing a range of minimum generation values. See Tables 2 and 3 for spill variances and pre-coordinated operations.

Figure 6[14]



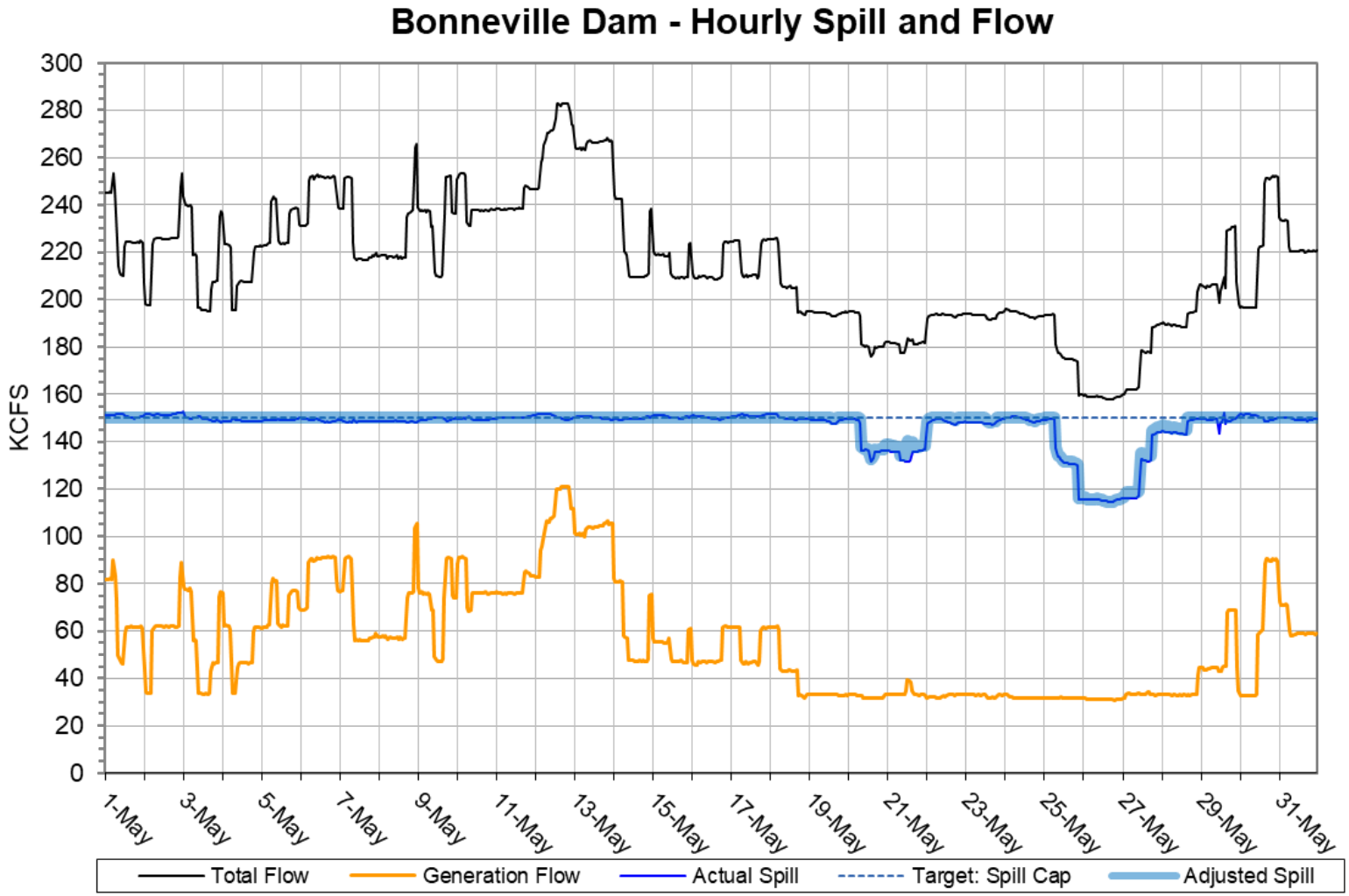
[14] The adjusted spill line is a simplified representation due to limitations of representing a range of minimum generation values. See Tables 2 and 3 for spill variances and pre-coordinated operations.

Figure 7[15]



[15] The adjusted spill line is a simplified representation due to limitations of representing a range of minimum generation values. See Tables 2 and 3 for spill variances and pre-coordinated operations.

Figure 8[16]



[16] The adjusted spill line is a simplified representation due to limitations of representing a range of minimum generation values. See Tables 2 and 3 for spill variances and pre-coordinated operations.