FISH OPERATIONS PLAN IMPLEMENTATION REPORT

June 2019

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

Introduction

The U.S. Army Corps of Engineers (Corps) developed this report in accordance with the 2019 Fish Operations Plan[1] (2019 FOP). The 2019 FOP describes the Corps' planned operations for juvenile fish passage at its four lower Snake River and four lower Columbia River dams during the 2019 spring and summer fish migration seasons, generally April 3 through August 31. The 2019 FOP is consistent with spill operations for juvenile fish passage and the regional forum process for adaptive management and in-season management provisions outlined in the 2019 NOAA Fisheries Columbia River System Biological Opinion (2019 BiOp)[2], the 2018 Extensions of the 2008 Columbia Basin Fish Accords (Accord Extensions), the 2019-2021 Spill Operation Agreement (Agreement), the Corps' requirements under the Endangered Species Act (ESA), and is the subject of ongoing consultation and communications with the relevant wildlife agencies to ensure consistency with the ESA. Other project operations and water management actions not specifically addressed in this document will be consistent with the 2019 BiOp and other guiding operative documents, including the 2019 Water Management Plan (WMP), seasonal WMP updates, and the 2019 Fish Passage Plan (FPP).

This report describes the Corps' implementation of the 2019 FOP during the month of June 2019. In particular, 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 and 2);
- adjusted spill: the hourly spill 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 (see 2019 FOP, section 4.1);
- actual spill: the hourly flow over the spillway; and,

[1] The 2019 FOP was posted to the Technical Management Team (TMT) website on April 1, 2019 (http://pweb.crohms.org/tmt/documents/fpp/2019/).

[2] The Corps, in coordination with the other Action Agencies, and National Marine Fisheries Service (NMFS), employs the Regional Implementation Oversight Group (RIOG) and technical teams including the Technical Management Team (TMT) and Fish Passage Operations & Maintenance (FPOM), to coordinate with state, tribal and other federal experts for recommendations for implementing operations consistent with NMFS' Columbia River System Biological Opinions.

- resultant 12-hour average TDG for the tailwater at each project and for the next project's forebay downstream[3].

This report also provides information on issues and unanticipated or emergency situations that arose during implementation of the 2019 FOP in June 2019.

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 June, with hourly spill, target spill, adjusted spill, generation, and total flows. The monthly graphs begin on June 1 and end on June 30 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 thin dashed blue line represents the spill cap portion of the target spill estimated to reach the gas cap (spring only).
- The thick light blue line represents the performance standard spill level portion of the target spill (spring only).
- The dotted blue line represents the hourly target summer spill in kcfs (summer only).
- 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 (2019 FOP section 4.1).

II. The average daily %TDG for the 12 highest hours for all projects is shown in the June 2019 Average Percent TDG Values Table (Table 4). The numbers in red indicate the project exceeded the %TDG cap - i.e. 120% (tailwater) for each project and 115% (forebay of the next downstream dam, summer only).

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 voluntary spill, the change in spill level is described below in the June 2019

[3] Averages reported are consistent with the current and applicable Oregon TDG standard modification (120% tailwater) and Washington TDG criteria adjustments (120% tailwater during spring spill and 120% tailwater/115% forebay during summer spill). The Oregon TDG standard modification and the Washington TDG criteria adjustments during summer spill have different methodologies for calculating TDG. When the standards vary or conflict, the Corps applies the more stringent standard. See 2019 FOP section 2.1.

Spill Variance Table (Table 3).[4] 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 4).

"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 inflow 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 within the hour (except as otherwise noted in the 2019 FOP for Bonneville and The Dalles dams,[5] which may range up to ±3 kcfs) as compared to a target spill. A number of factors influence actual spill, including hydraulic efficiency, exact 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). 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.

June Operations

The month of June was characterized by below average flows for the lower Snake and lower Columbia Rivers with above average air temperatures and well below average precipitation in the Columbia Basin. Observed precipitation in June was 33% of average on the Snake River above Ice Harbor and 41% of average on the Columbia River above The Dalles[6]. The NOAA

[4] Involuntary spill conditions shown in the graphs are not considered variances and are not reported in the Spill Variance Table. Involuntary 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.

[5] As specified in the 2019 FOP section 3.

[6] Retrieved 1 July 2019: https://www.nwrfc.noaa.gov/water_supply/wy_summary/wy_summary.php?tab=5

Northwest River Forecast Center runoff summary for June indicated that the adjusted runoff for the Snake River at Lower Granite was 90% of the 30-year average (1981-2010) with a volume of 5.4 MAF (Million acre-feet). The adjusted runoff for the Columbia River at The Dalles was 74% of the 30-year average (1981-2010) with a volume of 19.4 MAF[7].

The 2019 spring fish passage spill operation at the Corps' eight lower Snake and lower Columbia River projects differs from previous years' operations as a result of the Agreement signed in December 2018. 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. Spring target spill levels for June 2019 through the dates listed above at each project are defined in Table 1.

Table 1: Summary of 2019 spring target spill levels at lower Snake River and lower Columbia River projects.

PROJECT	GAS CAP SPILL (at least 16 hours per day)[1, 2, 3, 5]	PERFORMANCE STANDARD SPILL (up to 8 hours per day)[2, 4, 5]
Lower Granite	120% Gas Cap	20 kcfs
Little Goose	120% Gas Cap	30%
Lower Monumental	120% Gas Cap (uniform spill pattern)	30 kcfs
Ice Harbor	120% Gas Cap	30%
McNary	120% Gas Cap	48%
John Day	120% Gas Cap	32%
The Dalles	120% Gas Cap[6]	40%
Bonneville	120% Gas Cap[7]	100 kcfs

1. Uncertainty remains about how the system will respond to these new operations, therefore existing adaptive management processes will be employed to help address any unintended consequences that may arise in-season as a result of implementing these proposed spill operations.
2. Spill may be temporarily reduced at any project if necessary to ensure navigation safety or transmission reliability.
3. 120% Gas Cap spill is spill to the maximum level that meets, but does not exceed, the TDG criteria allowed under state laws/water quality standards.
4. The 8 hours of Performance Standard spill can occur in up to two blocks per calendar day, an AM block and a PM block. An AM block is defined as beginning in the AM (but may end in the PM) and a PM block is defined as beginning in the PM (but may end in the AM). Only Little Goose would be set to at least 4 hours in the AM (beginning near dawn and not to exceed 5 hours in the AM) and no more than 4 hours in the PM (generally near dusk) to help with adult passage issues. All other projects could spill up to 5 hours of performance standard spill either in the AM or PM time period with the remaining hours occurring in the alternate time period (not to exceed 8 hours in a day).
5. No ponding above current Snake River MOP/John Day MIP assumptions (to provide a 1 ft. useable range and a 1.5 ft. useable range, respectively).
6. Spill to the 120 % Gas Cap restricted to spillbays 1-8 (within the spillwall) when river flows is ≤ 350 kcfs).
7. Spill to the 120% Gas Cap, not to exceed 150 kcfs.

[7] Retrieved 1 July 2019: https://www.nwrfc.noaa.gov/runoff/runoff_summary.php?date=07/01/2019

Summer spill operations occur June 21–August 31 at the four lower Snake River projects, and June 16–August 31 at the four lower Columbia River projects (Table 2).

Table 2: Summary of 2019 summer target spill levels at lower Snake River and lower Columbia River projects.

PROJECT	2019 SUMMER SPILL[1] (24 hrs/day)
Lower Granite	18 kcfs
Little Goose	30%
Lower Monumental	17 kcfs
Ice Harbor	30%
McNary	57%
John Day	35%
The Dalles	40%
Bonneville	95 kcfs

1. Spill may be temporarily reduced below the 2019 FOP summer target spill level at any project if necessary to ensure navigation safety or transmission reliability, or to avoid exceeding State TDG standards.

In its implementation of the 2019 FOP in June, the Corps evaluated conditions every day to establish spill caps at a level that was estimated to meet, but not exceed, the gas cap in the tailrace (see Table 5).[8] 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). For the month of June 2019, conditions constraining the spill cap at Bonneville and The Dalles dams did not occur (see Table 1 fn 6,7).

Operational Adjustments

1. Little Goose

From June 1 through June 20, BPA and the Corps continued the TMT-coordinated modified 30% spill operation that began May 31 to spill 30% for 8 consecutive hours per day (0400-1200) in order to minimize adult Chinook salmon delay at Little Goose.[9] Flows above hydraulic capacity were stored in the forebay above MOP (633.0 – 634.5 feet) if necessary to maintain spill at 30% for 8 consecutive hours; any volume of water stored above MOP was then drafted by 0400 the following day. This operation was coordinated with TMT at the meetings on June 5, 12, and 19, and regional sovereigns either supported or did not object.

From June 5 through June 12, the Corps and BPA also implemented a modified operation of the Adjustable Spillway Weir (ASW) to switch from low crest to high crest for 16 hours/day (0400-2000). The intent of this operation was to reduce the proportion of spill through the ASW to improve tailrace hydraulics for adult passage. Starting on June 12, the ASW was maintained in high crest 24 hours/day due to declining river flows that were approaching the trigger of 85 kcfs

[8] See 2019 FOP section 2.2

[9] Operational adjustments that occurred in May are included in the May FOP Implementation Report.

defined in the 2019 Fish Passage Plan (FPP). The FPP flow criteria were met on June 13. This operation was coordinated with TMT at the meetings on June 5 and June 12, and regional sovereigns either supported or did not object.

On June 19 and 20, the Corps and BPA implemented a modified spring unit priority order that moved Unit 6 to last priority (1, 2, 3, 4, 5, 6) instead of the order defined in the 2019 FPP that has Unit 6 as second priority during spring spill (1, 6, 2, 3, 4, 5). The intent of this operation was to prioritize units on the south side of the powerhouse and maintain attraction flow to the adult ladder entrance while Unit 1 was out of service. Starting on June 21, the FPP summer unit priority order went into effect that has Unit 6 as last priority (1, 2, 3, 4, 5, 6). This operation was coordinated with TMT at the meeting on June 19 and regional sovereigns either supported or did not object.

Table 3: Spill Variances - June 2019 (6/1 to 6/30)

Project	Parameter	Date	Time[10]	# of Hours	Type	Reason
The Dalles	Additional Spill	6/11/19	0200	1	Human Error	Hourly spill increased to 43% (greater than 40% ±1 %) due to delay in changing to the appropriate target.
Ice Harbor	Reduced Spill	6/17/19	0500-0600	2	Operational Limitation	Hourly spill was less than adjusted spill while minimum generation exceeded the range for Unit 1 (8.4-10.1 kcfs[11]) to 10.4 kcfs. Normal system operations and river conditions can result in operations outside the minimum generation flow range.

[10] Data collected for reporting spill variances are reported as hourly averages. Therefore, while spill may be increased or decreased for only a portion of an hour, it is represented as an hour. The hourly average data is reported at the end of the hour (i.e., hour ending).

[11] Range does not include ±2% due to generating unit governor "dead band." When ±2% is applied to the minimum generation flow ranges for Ice Harbor turbine unit 1, the range is 8.2-10.3 kcfs. See FOP section 4.3.1.

Table 4: Pre-Coordinated Operations - June 2019 (6/1 to 6/30)

Project	Parameter	Date	Time[12]	# of Hours	Type	Reason
Little Goose	Reduced Spill	6/1/19 6/2/19 6/3/19 6/4/19 6/5/19 6/6/19 6/7/19 6/8/19 6/9/19 6/10/19 6/11/19 6/12/19 6/13/19 6/14/19 6/15/19 6/16/19 6/17/19 6/18/19 6/19/19 6/20/19	1000-1200 1000-1200 1000-1200 1000-1200 1000-1200 1000-1200 1000-1200 1000-1200 1000-1200 1000-1200 1000-1200 1000-1200 1000-1200 1000-1200 1000-1200 1000-1200 1000-1200 1000-1200 1000-1200 1000-1200	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Adaptive Management	Extended the AM block of performance standard spill by 3 hours and removed the 3-hour PM block. Regionally coordinated at the 5/28/19 TMT meeting
Lower Monumental	Reduced Spill	6/2/19 6/6/19 6/8/19 6/10/19 6/12/19 6/14/19 6/16/19 6/18/19 6/20/22 6/22/19 6/24/19 6/27/19 6/28/19 6/30/19	1700 1800-1900 1700-1800 1700-1800 1700-1800 1700-1800 1700-1800 1700-1800 1800-1900 1800 1700-1800 0800, 1300 1800 1700-1800	1 2 2 2 2 2 2 2 2 1 2 2 1 2	Navigation	Hourly spill reduced below target spill for safe navigation. Regionally coordinated via 2019 FOP, Sections 4.1 and 4.6.
Lower Monumental	Additional Spill	6/4/19 6/5/19 6/6/19	1400-1700 1000-1900 1000-1500	4 10 6	Maintenance	Hourly spill increased to 50 to 100 kcfs (greater than 42 kcfs) while performing STS screen inspection. Regionally coordinated via 2019 FPP, page LMN-12.
Lower Monumental	Additional Spill	6/7/19	0800-1800	11	Research Related	Hourly spill increased to 60-75 kcfs (greater than 42 kcfs). Units 2 and 3 were taken out of service to change head gate cylinders as part of a Fish Guidance Efficiency research study. Regionally coordinated via 2019 FPP, Appendix A, page A-13.
John Day	Reduced Spill	6/30/19	0100	1	Transmission Reliability	Hourly spill decreased to 33% (less than 35% ±1 %) due to providing balancing reserves. 24-hr average was 34.9%. Regionally coordinated via 2019 FOP, Section 4.1.

[12] Data collected for reporting pre-coordinated operations are reported as hourly averages. Therefore, while spill may be increased or decreased for only a portion of an hour, it is represented as an hour. The hourly average data are reported at the end of the hour (i.e., hour ending).

Project	Parameter	Date	Time[12]	# of Hours	Type	Reason
The Dalles	Reduced Spill	6/30/19	0100	1	Transmission Reliability	Hourly spill decreased to 38% (less than 40% ±1 %) due to providing balancing reserves. 24-hr average was 39.8%. Regionally coordinated via 2019 FOP, Section 4.1.

Table 5: June 2019 Average Percent TDG Values Table (6/1 to 6/30)

Date	FIXED MONITORING STATIONS															
	LWG	LGNW	LGSA	LGSW	LMNA	LMNW	IHRA	IDSW	MCNA	MCPW	JDY	JHAW	TDA	TDDO	BON	CCIW
	Lower Granite FB	Lower Granite TW	Little Goose FB	Little Goose TW	Lower Monumental FB	Lower Monumental TW	Ice Harbor FB	Ice Harbor TW	McNary FB	McNary TW	John Day FB	John Day TW	The Dalles FB	The Dalles TW	Bonneville FB	Bonneville TW
Gas Cap %:	120 115[13]	120	120 115	120	120 115	120	120 115	120	120 115	120	120 115	120	120 115	120	120 115	120
6/1/2019	106	120	116	123	122	124	120	123	116	120	118	120	118	122	118	121
6/2/2019	107	120	117	124	124	125	121	124	117	120	119	119	117	121	117	120
6/3/2019	107	120	116	124	123	124	121	124	116	120	116	119	114	119	114	121
6/4/2019	106	120	114	126	123	126	120	125	114	120	114	119	114	119	114	121
6/5/2019	107	120	115	124	125	125	123	123	115	120	113	119	115	120	115	120
6/6/2019	107	120	115	121	123	123	121	121	115	120	112	119	114	119	115	120
6/7/2019	106	120	113	119	119	122	119	120	110	119	110	118	113	117	113	119
6/8/2019	104	119	111	120	117	120	115	119	108	119	108	118	112	117	111	119
6/9/2019	104	119	111	120	118	119	116	119	110	119	108	118	117	120	114	119
6/10/2019	106	119	114	120	122	119	118	118	113	124	108	118	117	121	118	119
6/11/2019	106	120	116	120	122	119	118	118	114	124	110	118	117	120	118	120
6/12/2019	107	120	118	120	122	119	120	117	116	123	115	118	119	121	119	120
6/13/2019	107	119	119	121	123	119	121	118	116	119	118	118	118	121	119	120
6/14/2019	106	119	117	120	121	119	119	118	114	119	116	118	113	118	113	119
6/15/2019	105	120	117	120	120	120	118	118	113	118	117	118	116	118	110	119
6/16/2019	104	120	116	120	121	120	118	117	113	117	117	117	117	119	110	118
6/17/2019	104	120	117	120	121	119	118	117	113	117	117	116	115	118	110	117
6/18/2019	104	120	117	120	120	119	118	117	112	117	114	115	112	116	110	117
6/19/2019	104	119	115	120	118	118	116	116	112	117	109	115	109	115	108	117
6/20/2019	103	119	112	120	116	119	115	115	110	116	107	114	106	113	106	117
6/21/2019	103	116	111	119	115	117	113	114	108	117	106	114	107	114	106	117
6/22/2019	101	114	111	111	114	114	113	115	107	116	105	114	108	114	107	117
6/23/2019	101	113	111	111	115	112	113	115	106	116	104	113	108	114	107	117
6/24/2019	102	114	111	111	113	113	112	114	108	116	104	114	106	114	108	117
6/25/2019	103	115	111	111	111	113	112	114	109	117	104	114	108	115	109	117
6/26/2019	103	116	111	111	111	113	113	114	109	•[14]	104	114	108	115	110	117
6/27/2019	103	116	110	111	111	113	113	113	109	•	105	114	107	115	110	117
6/28/2019	103	116	111	112	110	114	111	113	108	•	105	114	108	•	111	117
6/29/2019	103	116	112	111	110	117	111	112	108	•	105	114	108	•	111	117
6/30/2019	102	116	112	111	111	117	111	112	109	•	107	115	109	•	112	117
Exceedances:				7		7		6		3	2		1	5		3

[13] The Washington Criteria Adjustment for the summer states that TDG must not exceed an average of 115% as measured in the forebays of the next downstream dams and must not exceed an average of 120% as measured in the tailraces of each dam.

[14] Red shaded cells indicate no data due to malfunctioning gauge.

Figure 1

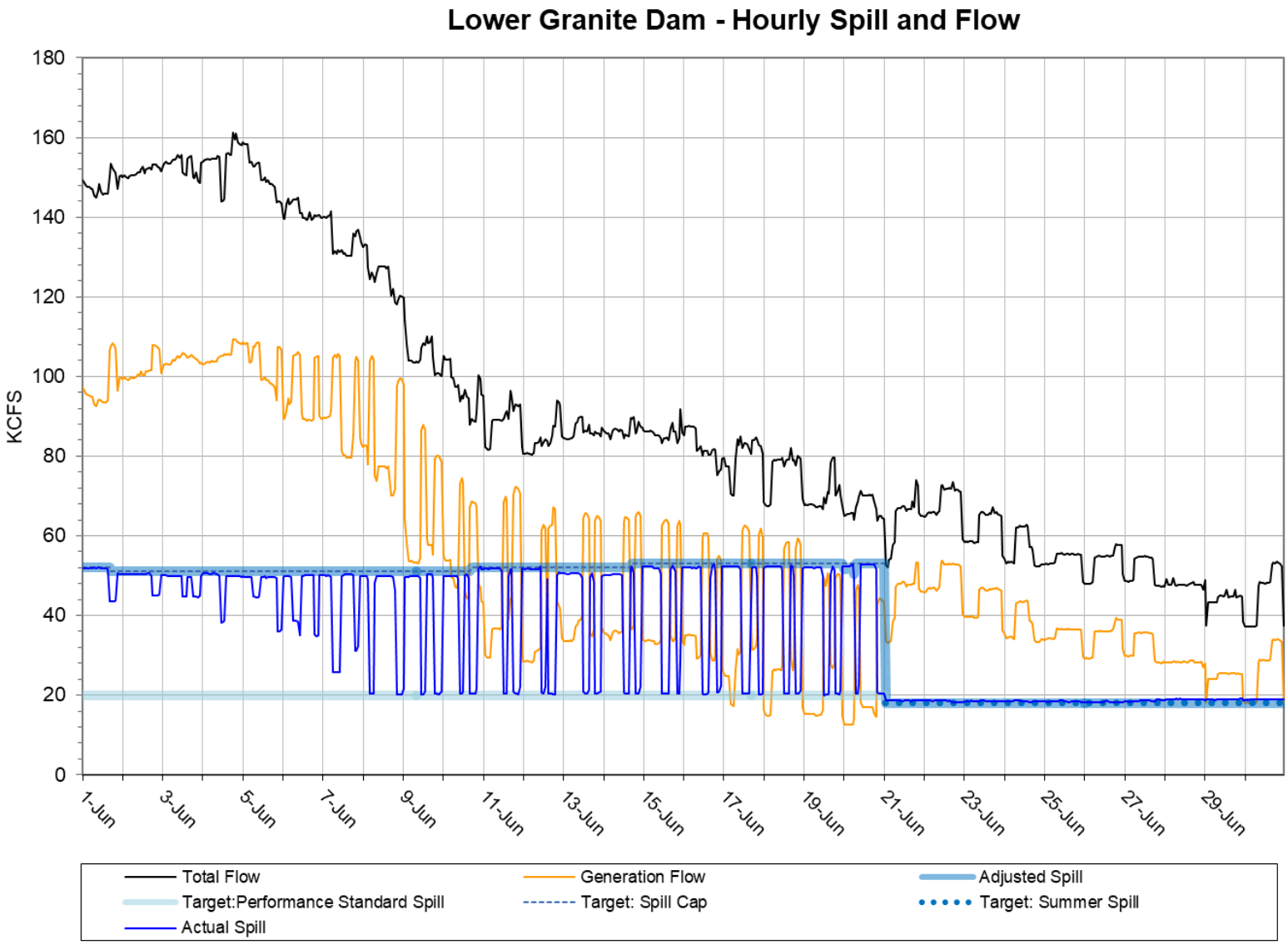

Lower Granite Dam - Hourly Spill and Flow
KCFS
180
160
140
120
100
80
60
40
20
0
1-Jun
3-Jun
5-Jun
7-Jun
9-Jun
11-Jun
13-Jun
15-Jun
17-Jun
19-Jun
21-Jun
23-Jun
25-Jun
27-Jun
29-Jun
Total Flow
Generation Flow
Adjusted Spill
Target:Performance Standard Spill
Target: Spill Cap
Target: Summer Spill
Actual Spill

Figure 2

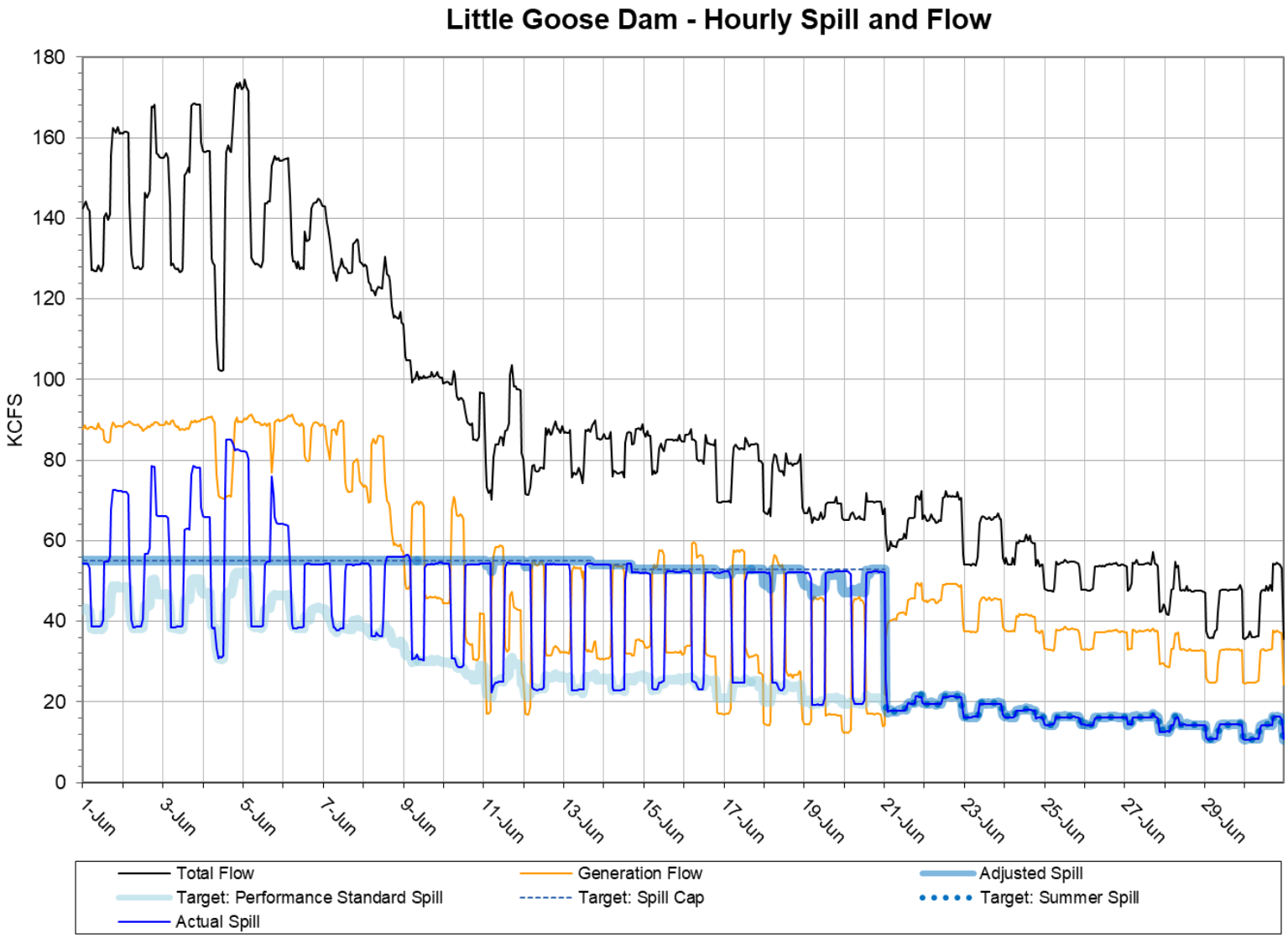

Little Goose Dam - Hourly Spill and Flow
KCFS
180
160
140
120
100
80
60
40
20
0
1-Jun
3-Jun
5-Jun
7-Jun
9-Jun
11-Jun
13-Jun
15-Jun
17-Jun
19-Jun
21-Jun
23-Jun
25-Jun
27-Jun
29-Jun
Total Flow
Generation Flow
Adjusted Spill
Target: Performance Standard Spill
Target: Spill Cap
Target: Summer Spill
Actual Spill

Figure 3

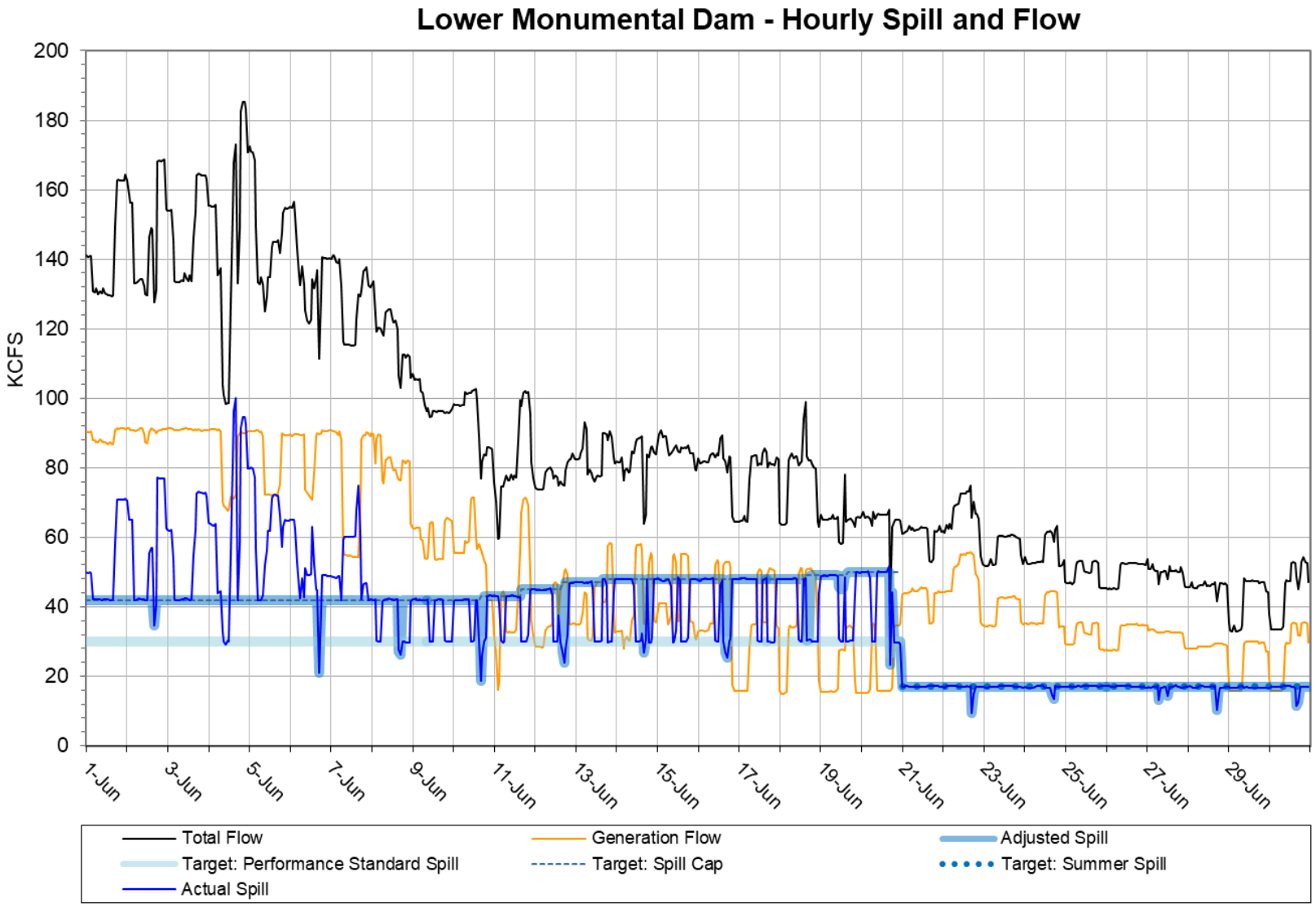

Lower Monumental Dam - Hourly Spill and Flow
KCFS
200
180
160
140
120
100
80
60
40
20
0
1-Jun
3-Jun
5-Jun
7-Jun
9-Jun
11-Jun
13-Jun
15-Jun
17-Jun
19-Jun
21-Jun
23-Jun
25-Jun
27-Jun
29-Jun
Total Flow
Generation Flow
Adjusted Spill
Target: Performance Standard Spill
Target: Spill Cap
Target: Summer Spill
Actual Spill

Figure 4

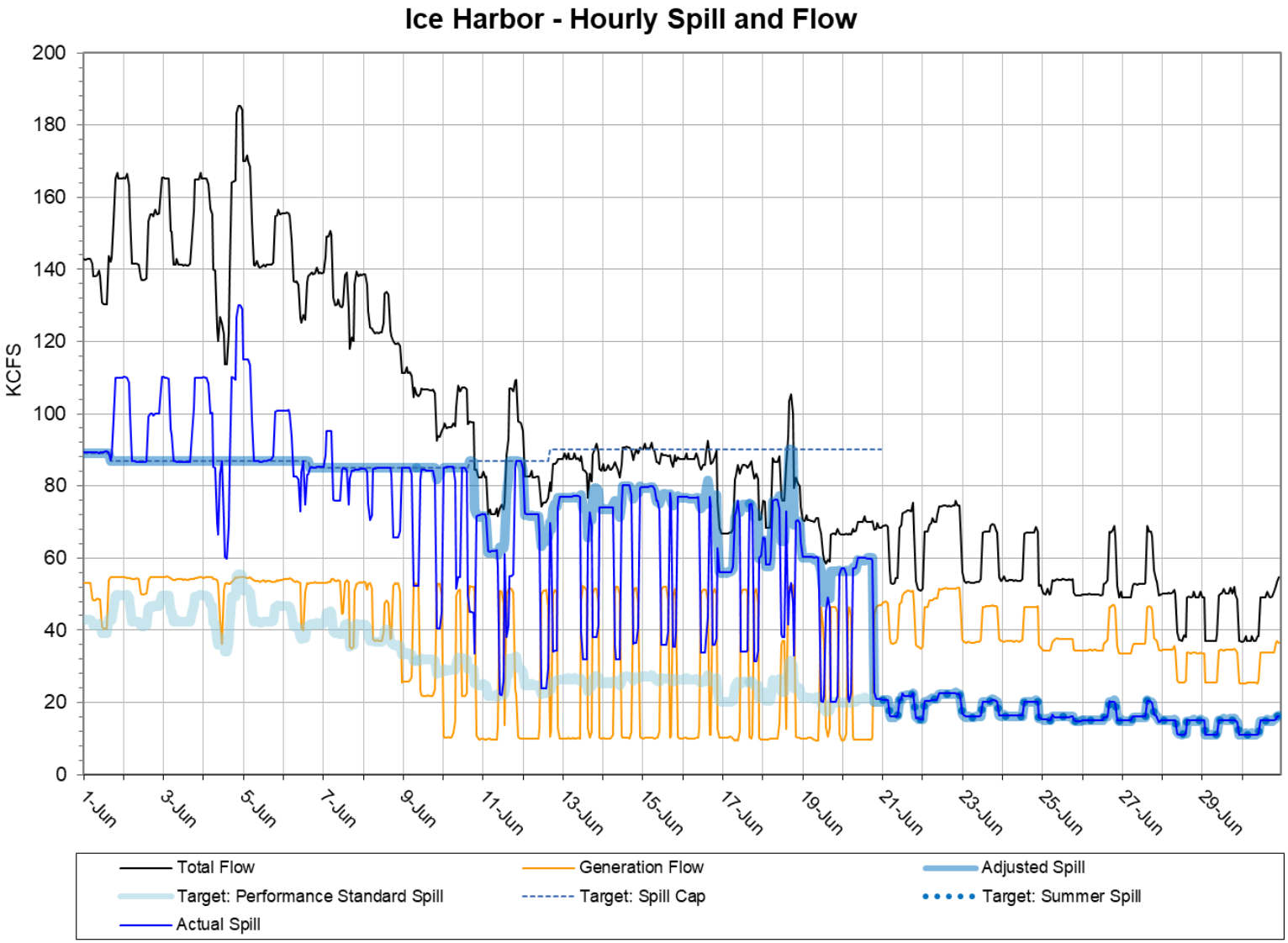

Ice Harbor - Hourly Spill and Flow
KCFS
200
180
160
140
120
100
80
60
40
20
0
1-Jun
3-Jun
5-Jun
7-Jun
9-Jun
11-Jun
13-Jun
15-Jun
17-Jun
19-Jun
21-Jun
23-Jun
25-Jun
27-Jun
29-Jun
Total Flow
Generation Flow
Adjusted Spill
Target: Performance Standard Spill
Target: Spill Cap
Target: Summer Spill
Actual Spill

Figure 5

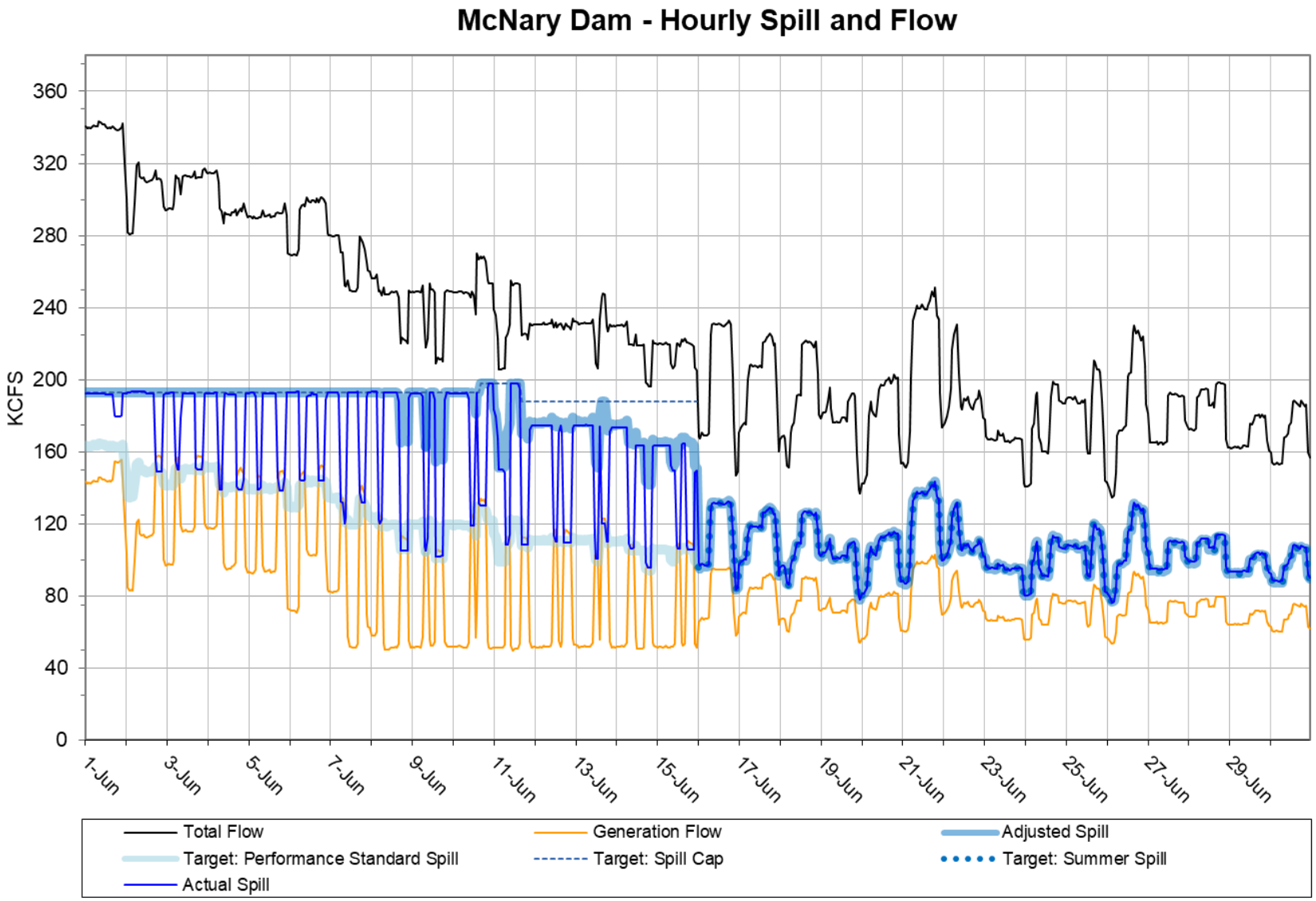

McNary Dam - Hourly Spill and Flow
KCFS
360
320
280
240
200
160
120
80
40
0
1-Jun
3-Jun
5-Jun
7-Jun
9-Jun
11-Jun
13-Jun
15-Jun
17-Jun
19-Jun
21-Jun
23-Jun
25-Jun
27-Jun
29-Jun
Total Flow
Generation Flow
Adjusted Spill
Target: Performance Standard Spill
Target: Spill Cap
Target: Summer Spill
Actual Spill

Figure 6

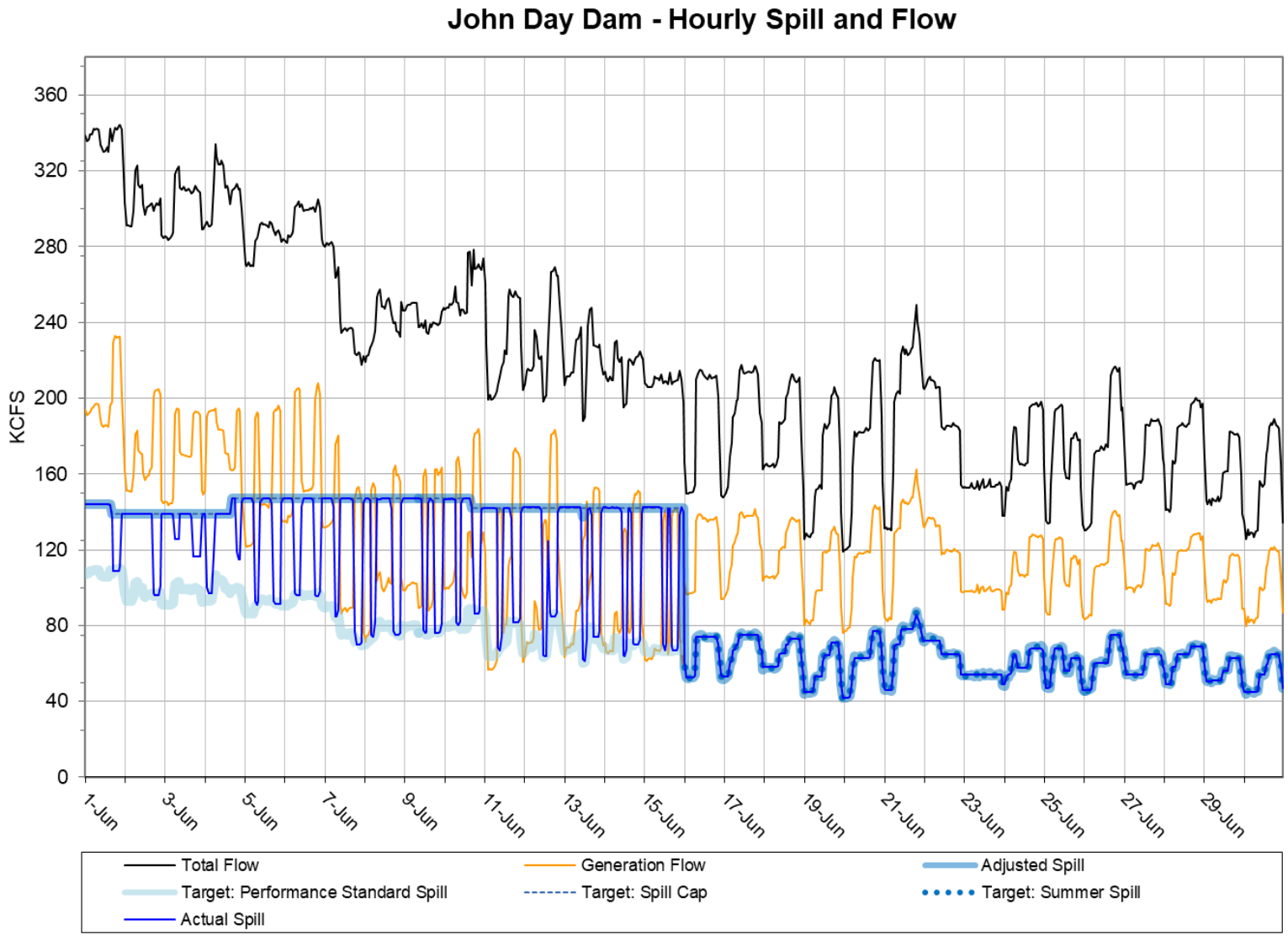


Figure 7

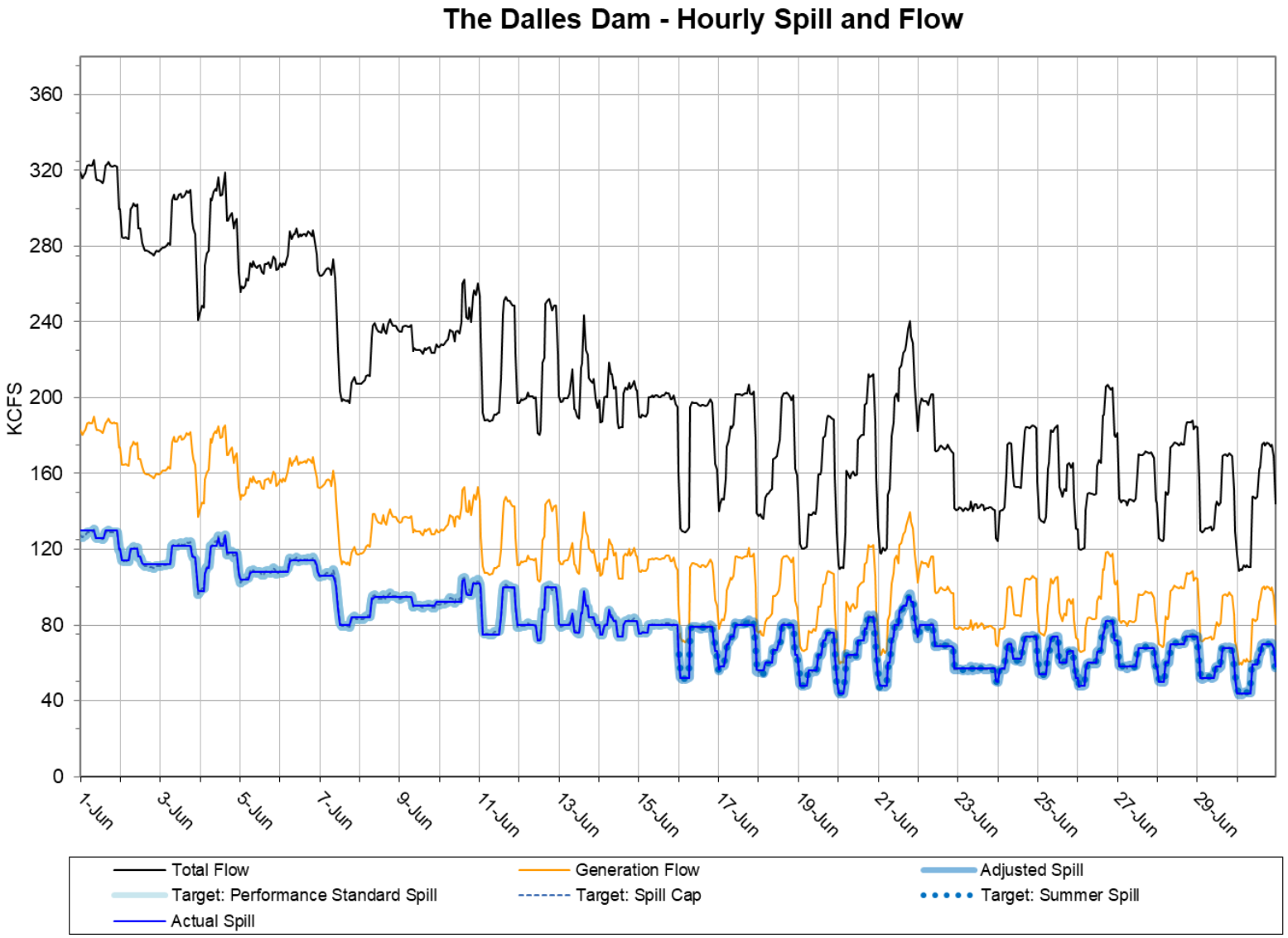
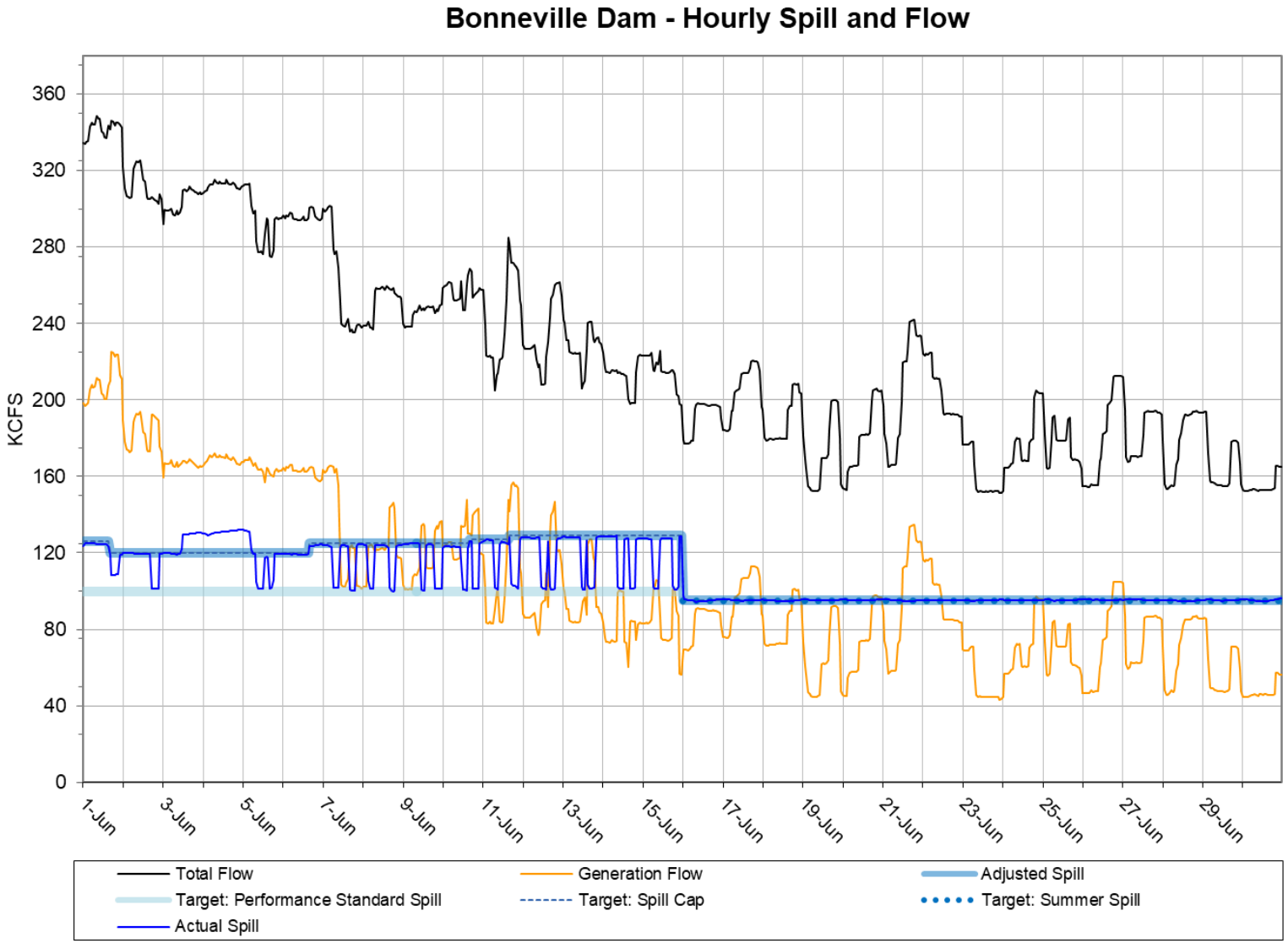

The Dalles Dam - Hourly Spill and Flow
KCFS
360
320
280
240
200
160
120
80
40
0
1-Jun
3-Jun
5-Jun
7-Jun
9-Jun
11-Jun
13-Jun
15-Jun
17-Jun
19-Jun
21-Jun
23-Jun
25-Jun
27-Jun
29-Jun
Total Flow
Generation Flow
Adjusted Spill
Target: Performance Standard Spill
Target: Spill Cap
Target: Summer Spill
Actual Spill

Figure 8


Bonneville Dam - Hourly Spill and Flow
KCFS
360
320
280
240
200
160
120
80
40
0
1-Jun
3-Jun
5-Jun
7-Jun
9-Jun
11-Jun
13-Jun
15-Jun
17-Jun
19-Jun
21-Jun
23-Jun
25-Jun
27-Jun
29-Jun
Total Flow
Generation Flow
Adjusted Spill
Target: Performance Standard Spill
Target: Spill Cap
Target: Summer Spill
Actual Spill