

WILLAMETTE VALLEY FISH PASSAGE MONITORING – BULK MARKING & RESERVOIR DISTRIBUTION

Bi-Weekly Report: December 16, 2023 – December 31, 2023



Prepared for: United States Army Corps of Engineers

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January 8, 2024

BULK MARKING SCHEDULE

Table 1. Tentative release schedule for brood year 2022. Green rows highlight the release groups that have been tagged and released so far this year. Orange rows highlight release groups that have been tagged but have not yet been released.

Release Year	Release Date (estimated)	Release Basin	Release Area	Release Location	Life stage	N
2023	February	North Santiam	Detroit Reservoir	Breitenbush River	fry	3750
2023	February	North Santiam	Detroit Reservoir	North Santiam River	fry	3750
2023	March	MF Willamette	Fall Creek Reservoir	Head of Reservoir	fry	5000
2023	March	MF Willamette	Lookout Point Reservoir	Head of Reservoir	fry	5000
2023	March	MF Willamette	Hills Creek Reservoir	Head of Reservoir	fry	5000
2023	March	SF McKenzie	Cougar Reservoir	Head of Reservoir	fry	5000
2023	March	SF McKenzie	Cougar Reservoir	Head of Reservoir	fry	5000
2023	March	MF Willamette	Fall Creek Reservoir	Head of Reservoir	fry	5000
2023	April	MF Willamette	Lookout Point Reservoir	Head of Reservoir	fry	5000
2023	April	North Santiam	Detroit Reservoir	Breitenbush River	fry	3750
2023	April	North Santiam	Detroit Reservoir	North Santiam River	fry	3750
2023	April	South Santiam	Green Peter Reservoir	Middle Santiam	fry	2500
2023	April	South Santiam	Green Peter Reservoir	Quartzville Creek	fry	2500
2023	April	MF Willamette	Hills Creek Reservoir	Head of Reservoir	fry	5000
2023	April	South Santiam	Green Peter Reservoir	Middle Santiam	fry	2500
2023	April	South Santiam	Green Peter Reservoir	Quartzville Creek	fry	2500
2023	August	South Santiam	Foster Reservoir	Tailrace	sub-yearling	1000
2023	August	South Santiam	Foster Reservoir	Head of Reservoir	sub-yearling	2000
2023	September	MF Willamette	Dexter Reservoir	Tailrace	sub-yearling	2000
2023	September	MF Willamette	Lookout Point Reservoir	Head of Reservoir	sub-yearling	5000
2023	September	MF Willamette	Lookout Point Reservoir	Forebay	sub-yearling	5000
2023	September	SF McKenzie	Cougar Reservoir	Head of Reservoir	sub-yearling	3000
2023	September	South Santiam	Green Peter Reservoir	Middle Santiam	sub-yearling	2500
2023	September	South Santiam	Green Peter Reservoir	Quartzville Creek	sub-yearling	2500
2023	October	North Santiam	Big Cliff Reservoir	Big Cliff Reservoir Tailrace	sub-yearling	8000
2023	October	North Santiam	Detroit Reservoir	Breitenbush River	sub-yearling	5000
2023	October	North Santiam	Detroit Reservoir	North Santiam River	sub-yearling	5000
2023	October	MF Willamette	Fall Creek Reservoir	Head of Reservoir	sub-yearling	5000
2023	October	MF Willamette	Fall Creek Reservoir	Tailrace	sub-yearling	1000
2023	October	SF McKenzie	Cougar Reservoir	Forebay	sub-yearling	5000
2023	October	SF McKenzie	Cougar Reservoir	Tailrace	sub-yearling	4000
2023	October	SF McKenzie	Cougar Reservoir	Head of Reservoir	sub-yearling	4000
2023	October	South Santiam	Green Peter Reservoir	Tailrace	sub-yearling	4000
2023	October	South Santiam	Green Peter Reservoir	Middle Santiam	sub-yearling	2500
2023	October	South Santiam	Green Peter Reservoir	Quartzville Creek	sub-yearling	2500
2023	October	South Santiam	Foster Reservoir	Tailrace	sub-yearling	4000
2023	October	South Santiam	Foster Reservoir	Head of Reservoir	sub-yearling	5000

Release Year	Release Date (estimated)	Release Basin	Release Area	Release Location	Life stage	N
2023	November	MF Willamette	Fall Creek Reservoir	Head of Reservoir	sub-yearling	5000
2023	November	MF Willamette	Fall Creek Reservoir	Tailrace	sub-yearling	1000
2023	November	North Santiam	Big Cliff Reservoir	Tailrace	sub-yearling	6000
2023	November	SF McKenzie	Cougar Reservoir	Forebay	sub-yearling	5000
2023	November	SF McKenzie	Cougar Reservoir	Tailrace	sub-yearling	4000
2023	November	SF McKenzie	Cougar Reservoir	Head of Reservoir	sub-yearling	4000
2023	November	MF Willamette	Hills Creek Reservoir	Head of Reservoir	sub-yearling	5000
2023	November	MF Willamette	Hills Creek Reservoir	Tailrace	sub-yearling	3000
2023	November	MF Willamette	Hills Creek Reservoir	Forebay or Mid Reservoir	sub-yearling	5000
2024	February	MF Willamette	Hills Creek Reservoir	Head of Reservoir	yearling	5000
2024	February	MF Willamette	Hills Creek Reservoir	Tailrace	yearling	3000
2024	February	MF Willamette	Hills Creek Reservoir	Forebay or Mid Reservoir	yearling	5000
2024	February	MF Willamette	Fall Creek Reservoir	Head of Reservoir	yearling	5000
2024	February	MF Willamette	Fall Creek Reservoir	Tailrace	yearling	1000
2024	March	MF Willamette	Lookout Point Reservoir	Head of Reservoir	yearling	5000
2024	March	MF Willamette	Dexter Reservoir	Tailrace	yearling	2000
2024	March	MF Willamette	Lookout Point Reservoir	Forebay	yearling	5000
2024	February	SF McKenzie	Cougar Reservoir	Forebay	yearling	2000
2024	February	SF McKenzie	Cougar Reservoir	Tailrace	yearling	1000
2024	February	SF McKenzie	Cougar Reservoir	Head of Reservoir	yearling	2000
2024	March	SF McKenzie	Cougar Reservoir	Forebay	yearling	2000
2024	March	SF McKenzie	Cougar Reservoir	Tailrace	yearling	1000
2024	March	SF McKenzie	Cougar Reservoir	Head of Reservoir	yearling	2000
2024	March	MF Willamette	Fall Creek Reservoir	Head of Reservoir	yearling	5000
2024	March	MF Willamette	Fall Creek Reservoir	Tailrace	yearling	1000
2024	March	MF Willamette	Lookout Point Reservoir	Head of Reservoir	yearling	5000
2024	March	MF Willamette	Dexter Reservoir	Tailrace	yearling	2000
2024	March	MF Willamette	Lookout Point Reservoir	Forebay	yearling	5000
2024	April	North Santiam	Big Cliff Reservoir	Tailrace	yearling	2000
2024	April	North Santiam	Detroit Reservoir	Breitenbush River	yearling	2000
2024	April	North Santiam	Detroit Reservoir	North Santiam River	yearling	2000
2024	April	South Santiam	Green Peter Reservoir	Tailrace	Yearling	1000
2024	April	South Santiam	Green Peter Reservoir	Forebay	Yearling	2000
2024	April	South Santiam	Green Peter Reservoir	Middle Santiam	Yearling	1000
2024	April	South Santiam	Green Peter Reservoir	Quartzville Creek	Yearling	1000
2024	April	South Santiam	Green Peter Reservoir	Mid Reservoir	Yearling	2000
2024	April	South Santiam	Foster Reservoir	Tailrace	Yearling	5000
2024	April	South Santiam	Foster Reservoir	Head of Reservoir	Yearling	5000
2024	April	South Santiam	Foster Reservoir	Tailrace	Yearling	2000
2024	April	South Santiam	Foster Reservoir	Head of Reservoir	Yearling	1000
2024	April	South Santiam	Foster Reservoir	Head of Reservoir	Yearling	2000

BULK MARKING SUMMARY

The bulk marking crew focused their efforts on tagging the remaining brood year 2022 juvenile Chinook salmon from the South Santiam basin during this most recent reporting period. A total of 10,376 South Santiam juvenile Chinook salmon were tagged. We estimate that we have a total of 61,300 fish left to tag from the 2022 brood year (51,000 MFW from the contract modification, 10,3000 McKenzie stock).

After completing the South Santiam tag group, our crew scouted Dexter Ponds, and through collaboration with USACE biologists and ODFW hatchery managers developed a plan for tagging the 51,000 additional RM&E fish that were allotted under the contract modification. Tagging of those fish is slated to begin after the new year.

Recaptures

A total of 89 PIT tagged juvenile Chinook salmon were recaptured or otherwise observed passing PIT tag arrays during this reporting period. The majority of observations occurred at the Cougar RO rotary screw trap (n = 25) and the Hill Creek Dam Regulating Outlet tailrace rotary screw trap (n = 14). In addition, there were 20 PIT tags detected at the Lebanon Dam PIT tag array, with 11 observed at the Diversion Bypass, five observed at the North Ladder, and four observed at the South Ladder. We estimate that a total of 2,618 PIT tagged fish from this project have been detected so far this year (Table 4).

Table 2. Bulk marking summary statistics. Total number of fish marked (N), mean fork length (FL), mean weight, start date of marking, end date of marking, total mortalities from start of tagging to release, mortality percentage, total shed tags from start of tagging to release, and shed tag percentage.

Mark Group	N	Mean FL (mm)	Mean Weight (g)	Date Start	Date End	Mor ts	Mort. %	Sheds	Shed %
Green Peter Head of Reservoir - Middle Santiam Arm	5,071	56.1		5/15/2023	5/16/2023	74	1.46	32	0.63
Green Peter Head of Reservoir - Quartzville Creek Arm	5,203	58.5		5/17/2023	5/18/2023	18	0.35	19	0.37
Lookout Point Head of Reservoir	10,041	63.1	2.9	5/22/2023	5/24/2023	39	0.39	53	0.53
Hills Creek Head of Reservoir	10,117	64.6	2.9	5/30/2023	6/1/2023	22	0.22	9	0.09
Fall Creek Head of Reservoir	10,040	67.3	3.2	6/1/2023	6/7/2023	68	0.68	30	0.30
Detroit Head of Reservoir - Breitenbush Arm	7,530	66.9	3.6	6/13/2023	6/14/2023	70	0.92	24	0.32
Detroit Head of Reservoir - North Santiam Arm	7,528	66.9	3.6	6/14/2023	6/15/2023	70	0.92	25	0.32
Cougar Head of Reservoir	5,626	67.7	3.5	6/20/2023	6/21/2023	475	8.4	44	0.78
North Santiam Basin – Fall 2023 and Spring 2024	30,680	67.3	3.5	6/26/2023	7/20/2023	TBD	TBD	TBD	TBD
Middle Fork Willamette – Fall 2023 and Spring 2024	85,233	NA	NA	7/26/2023	12/7/2023	TBD	TBD	TBD	TBD
South Santiam Basin – Fall 2023 and Spring 2024	43,407	NA	NA	8/14/2023	12/20/2023	TBD	TBD	TBD	TBD
McKenzie Basin – Fall 2023	36,001	NA	NA	8/30/2023	9/08/2023	TBD	TBD	TBD	TBD

Table 3. Release summary statistics. Date of release, number of marked fish released, transport tank water temperature and the beginning and end of the transport, and water temperature at the release location.

Release Location	Release Date	N	Transport Temp Start	Transport Temp End	Release Site Temp
Green Peter Head of Reservoir - Quartzville Creek Arm	5/22/2023 14:35	5,203	12	13.2	18
Green Peter Head of Reservoir - Middle Santiam Arm	5/22/2023 20:35	5,071	11.9	12.9	18.3
Lookout Point Head of Reservoir - Black Canyon Boat Ramp	5/30/2023 10:35	9,741	11.9	12.5	13.2
Hills Creek Head of Reservoir - Bingham Boat Ramp	6/5/2023 10:35	9,817	12.9	13.2	11.4
Fall Creek Head of Reservoir	6/12/2023 15:00	9,642	16.5	17.4	19
Detroit Head of Reservoir - Breitenbush River	7/13/2023 9:35	7,000	11.5	11.5	12.5
Detroit Head of Reservoir - North Santiam River	7/13/2023 11:45	6,640	11.5	13.1	13

Release Location	Release Date	N	Transport Temp Start	Transport Temp End	Release Site Temp
Foster Tailrace	8/23/2023 16:40	1,031	12.7	11.7	10
Foster Head of Reservoir	8/24/2023 10:10	2,063	13.1	13.3	15.3
Cougar Head of Reservoir	8/29/2023 11:40	5,151	14.2	11.8	10.1
Lookout Point Head of Reservoir - Black Canyon Boat Ramp	9/18/2023 8:25	5,000	12.9	13	13.6
Lookout Point Forebay - Signal Point	9/18/2023 17:10	5,004	14	14.9	20.9
Dexter Dam Tailrace - Pengra Boat Ramp	9/19/2023 11:40	2,011	12.6	17.7	19.3
Green Peter Head of Reservoir - Quartzville Creek Arm	9/20/2023 14:10	2,518	11.2	11.9	14.8
Green Peter Head of Reservoir - Middle Santiam Arm	9/21/2023 13:50	2,508	10.1	11.2	12.5
Detroit Head of Reservoir - Breitenbush River	9/26/2023 10:55	5,002	7.6	9.3	10.3
Detroit Head of Reservoir - North Santiam River	9/26/2023 16:10	4,999	6.9	8.9	10.5
Big Cliff Dam Tailrace	9/27/2023 15:45	8,009	7.1	10.7	12.7
Fall Creek Head of Reservoir	9/28/2023 14:45	5,006	11.6	12.2	13.8
Fall Creek Dam Tailrace	9/28/2023 19:25	1,001	12.5	16.3	18.3
Cougar Head of Reservoir	10/2/2023 14:25	5,006	10.5	9.9	8.3
Cougar Head of Reservoir	10/2/2023 19:10	3,006	8.8	9.1	8.7
Green Peter Head of Reservoir - Quartzville Creek Arm	10/3/2023 12:55	2,502	11	11.8	12.5
Green Peter Head of Reservoir - Middle Santiam Arm	10/4/2023 14:45	2,516	11.5	12.6	13.3
Green Peter Tailrace - Sunnyside	10/9/2023 16:10	4,002	11.5	16.1	18.1
Foster Head of Reservoir	10/10/2023 14:25	5,001	11.5	12.2	13.2
Foster Tailrace	10/11/2023 15:20	4,000	10.6	11.3	12
Cougar Head of Reservoir	10/18/2023 11:55	4,000	11.3	10	8
Cougar Forebay	10/18/2023 18:05	5,010	13.2	13.6	15.4
Cougar Tailrace	10/19/2023 12:45	4,000	11.2	11.7	10.5
Fall Creek Head of Reservoir	11/6/2023 15:45	5,000	10.1	10.8	10.8
Fall Creek Dam Tailrace	11/6/2023 19:05	1,000	9.4	9.4	11.3
Hills Creek Head of Reservoir - Bingham Boat Ramp	11/7/2023 15:50	5,000	9.2	9.3	8.7
Hills Creek Mid Reservoir - Packard Creek Boat Ramp	11/8/2023 15:20	5,000	7.7	12.3	14.3
Hills Creek Dam Tailrace	11/9/2023 14:40	3,000	7	10.5	12.5
Cougar Head of Reservoir	11/13/2023 13:15	4,005	9.1	9.3	8

Release Location	Release Date	N	Transport Temp Start	Transport Temp End	Release Site Temp
Cougar Forebay	11/14/2023 15:15	5,000	8.9	9.3	8.1
Cougar Tailrace	11/15/2023 11:45	2,412	9	9.3	8.4
Big Cliff Tailrace – Packsaddle Boat Ramp	11/20/2023 16:50	6,000	4.5	8.5	10.5

Table 4. PIT tag recovery summary at established interrogation sites, rotary screw traps (RST), and reservoir sampling locations. Recoveries during screw trap efficiency testing that were recaptured during the test (i.e., within one week of release) are not included in this table.

Observation Location	Season Total	Reporting Period Total
Cougar Dam-RO	1,572	25
Hills Creek Dam-RO	101	14
Cougar Dam-PH 2	21	11
LD3 - Lebanon Dam Diversion Bypass	85	11
Hills Creek Dam-PH	76	6
Lookout Dam Tailrace-PH 2	10	6
Cougar Dam-PH 1	48	5
LD2 - Lebanon Dam North Ladder	47	5
LD1 - Lebanon Dam South Ladder	48	4
Lookout Dam Tailrace-Spill	17	1
PD7 - Columbia River Estuary rkm 70	19	1
Big Cliff Dam-8 ft	7	0
CGR - Cougar Dam	1	0
Cougar Dam Head of Reservoir-5 ft	3	0
DEX - Dexter Dam (USACE), Middle Fork Willamette River	2	0
Detroit Head of Reservoir- North Santiam River-5 ft	1	0
Dexter Dam Tailrace-5 ft	19	0
FAL - Fall Creek Dam (USACE), MF Willamette River	1	0
Fall Creek Dam Tailrace-8 ft	434	0

Green Peter Tailrace - Middle Santiam River-8 ft	33	0
HCR - Hills Creek Dam, Middle Fork Willamette River	13	0
LD4 - Lebanon Dam Spillway	22	0
Lookout Dam Tailrace-PH 1	11	0
Lookout Point Head of Reservoir-5 ft	1	0
NSANTR - North Santiam River, Oregon	26	0

Reservoir Distribution Summary

Reservoir sampling will resume in February 2024.

Appendix A. Release Site Maps

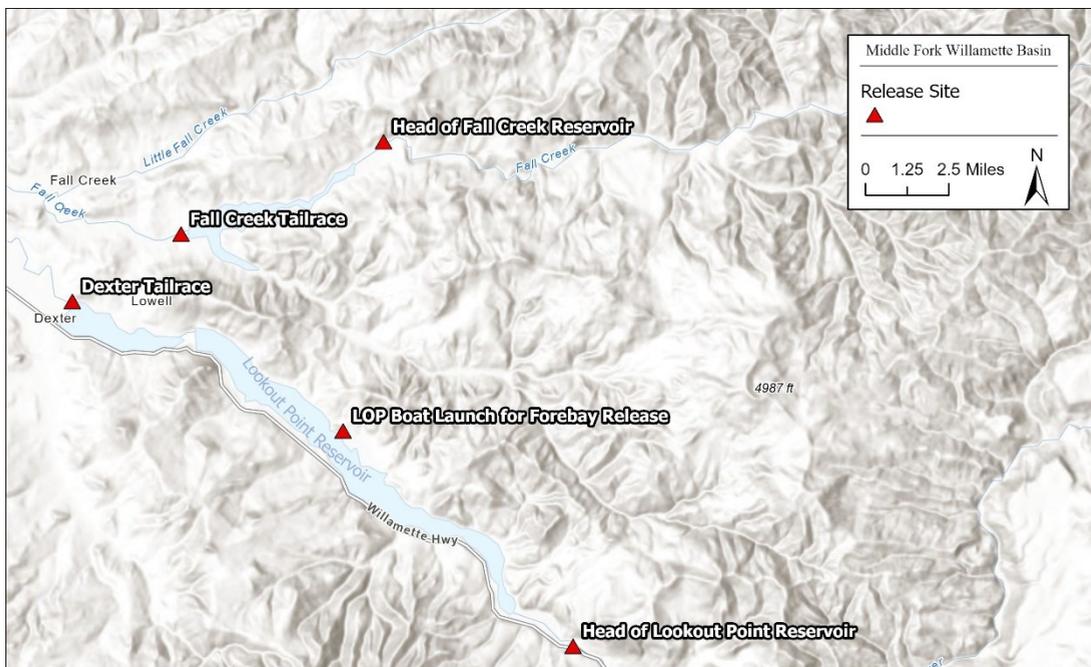


Figure 1. Map of Lookout Point, Dexter tailrace and Fall Creek release locations within the Middle Fork Willamette Basin.

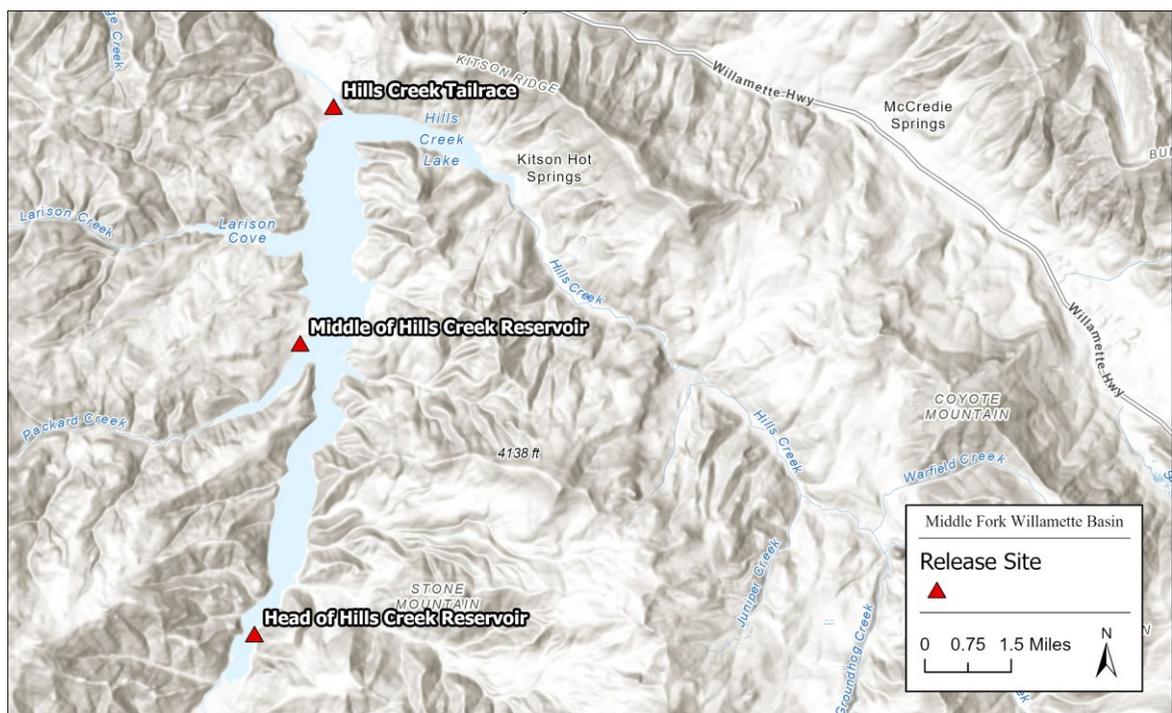


Figure 2. Map of Hills Creek Reservoir release locations within the Middle Fork Willamette Basin.

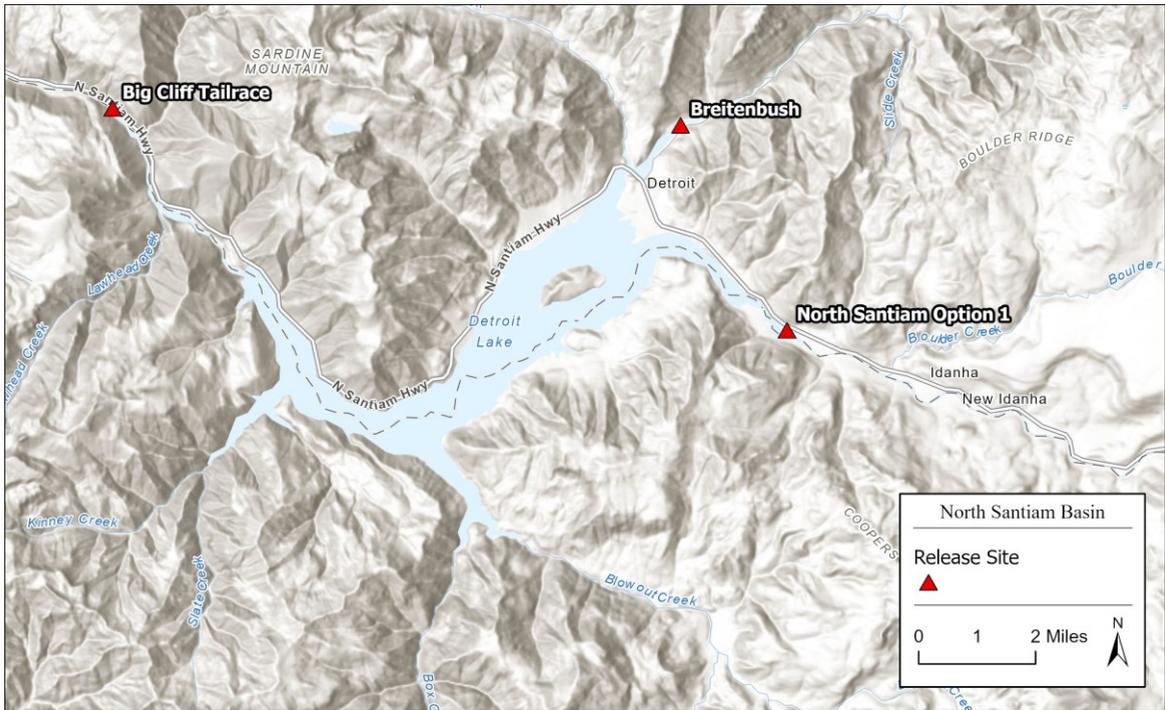


Figure 3. Map of release locations within the North Santiam Basin.

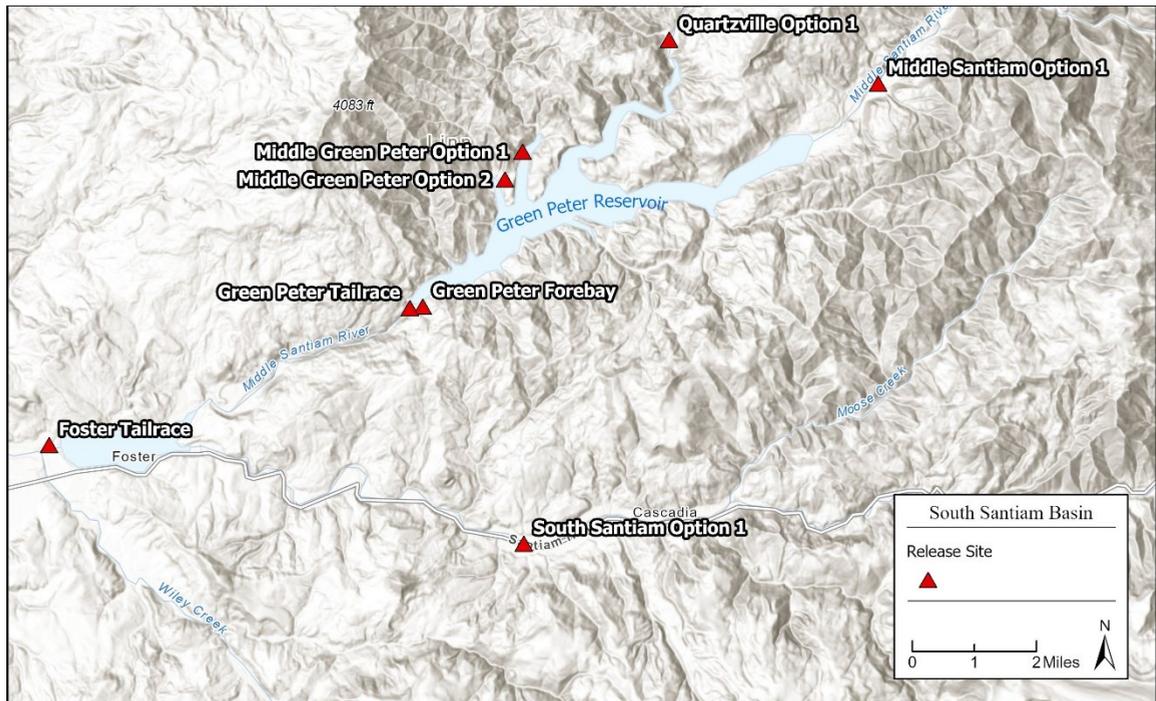


Figure 4. Map of release locations in the Middle/South Santiam basin including Green Peter Reservoir.

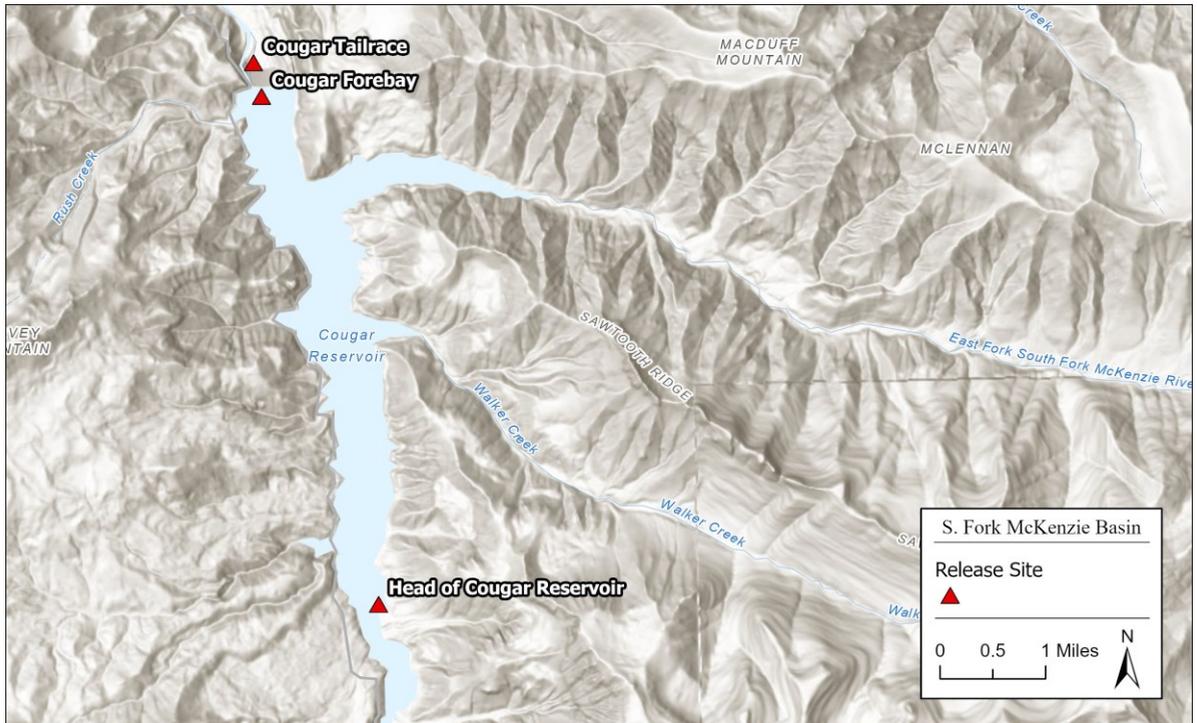


Figure 5. Map of release locations at Cougar Reservoir.

Appendix B. Reservoir Sampling Zones

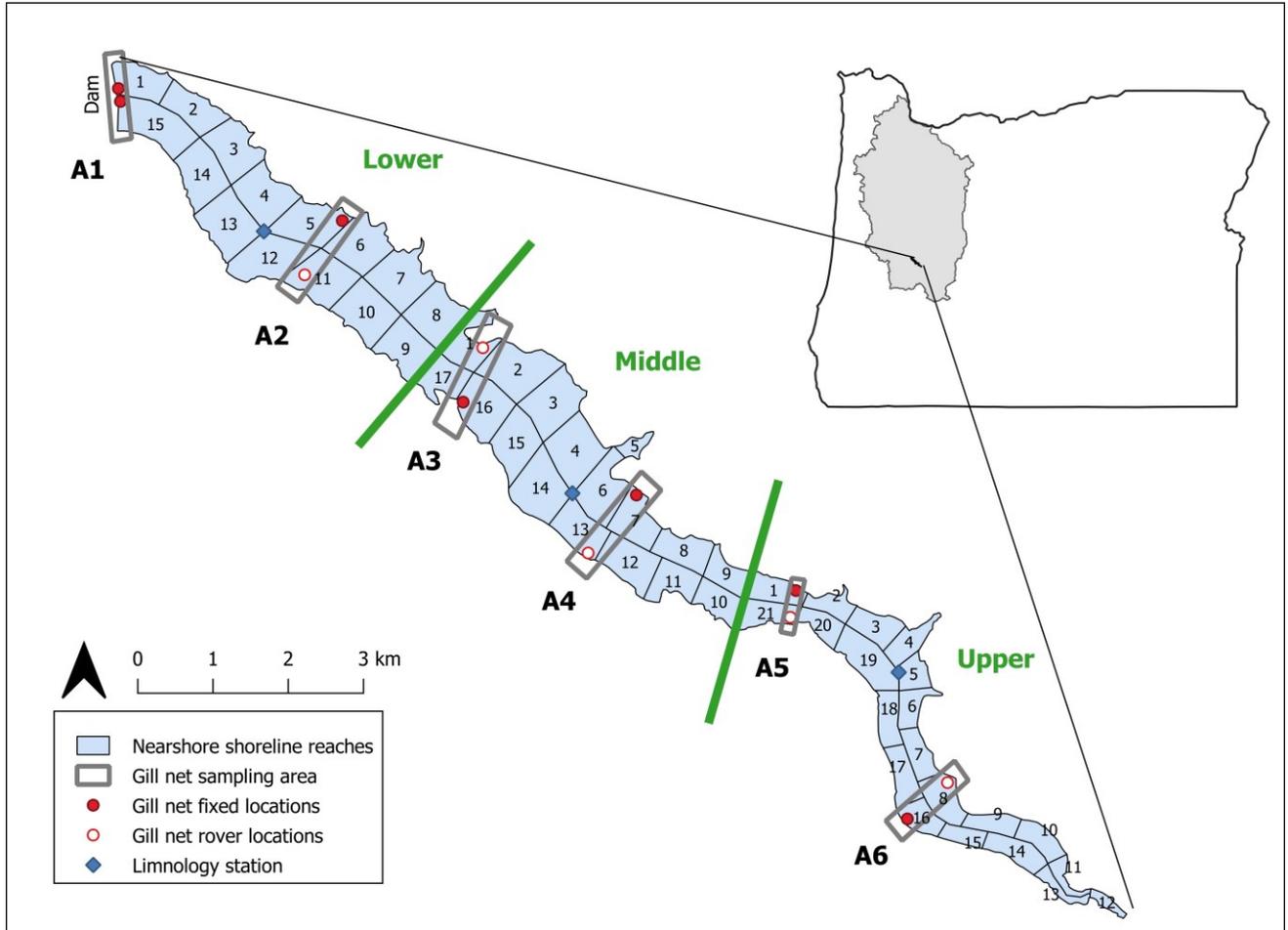


Figure 6. Map of Lookout Point Reservoir nearshore shoreline reaches, reservoir zones (lower, middle and upper), gill netting sampling areas and limnological stations.

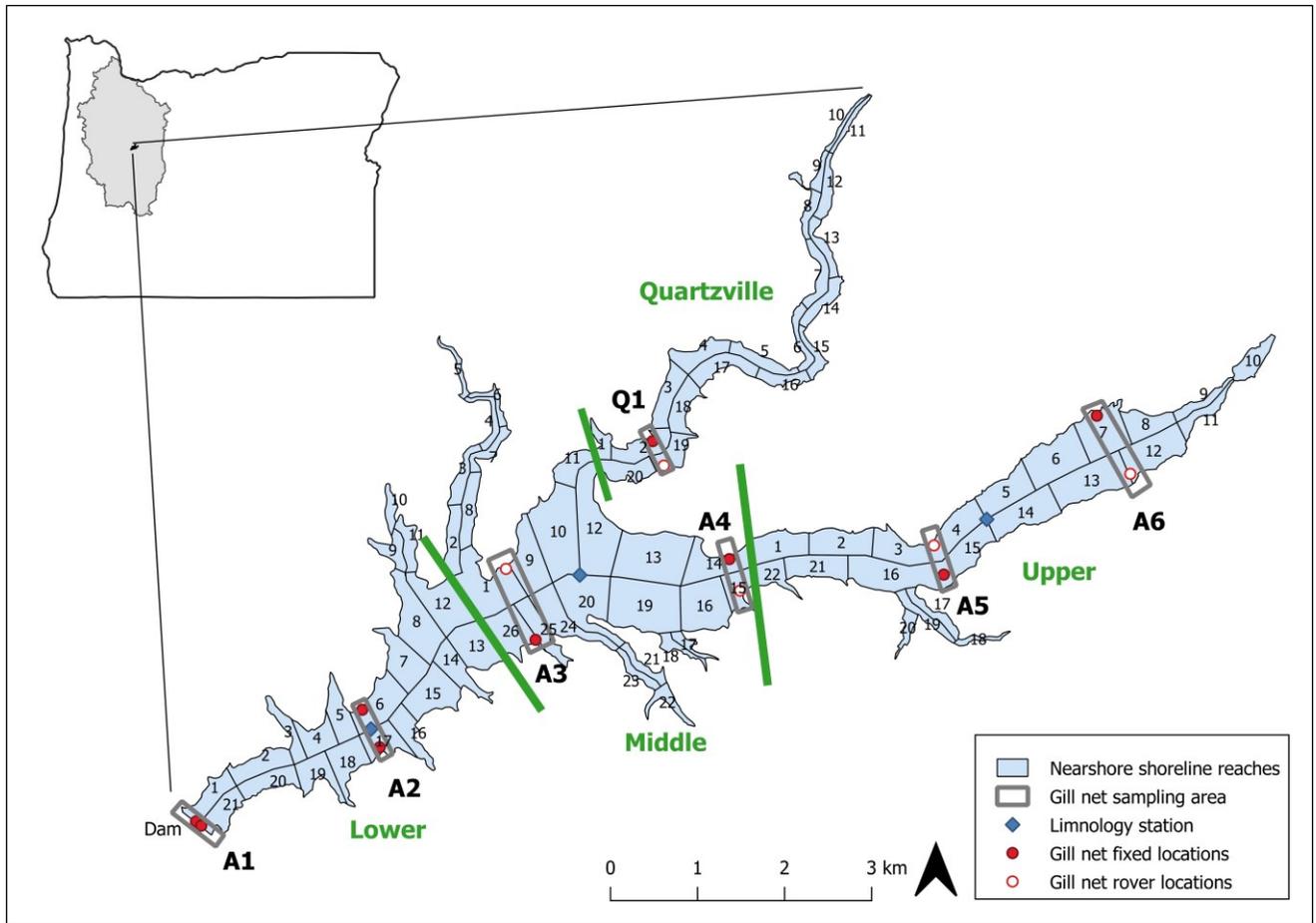


Figure 7. Map of Green Peter Reservoir nearshore shoreline reaches, reservoir zones (lower, middle and upper), gill netting sampling areas and limnological stations.