

# WILLAMETTE VALLEY FISH PASSAGE MONITORING – BULK MARKING & RESERVOIR DISTRIBUTION

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Bi-Weekly Report: January 1, 2024 – January 15, 2024



*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**

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The bulk marking crew focused their efforts on tagging the 51,000 additional Middle Fork Willamette Chinook salmon that were added to the project scope as part of a contract modification. The fish were located at Dexter where space to hold tagged fish is limited. Additionally, we were operating with the understanding that all fish had to be tagged and released from the rearing ponds as soon as possible due to a scheduled dewatering slated for late January. The decision to tag and release the same day was discussed between the USACE and CFS and was approved. A total of 18,367 brood year 2022 Middle Fork Willamette juvenile Chinook salmon were subsequently tagged and released at the head of Lookout Point Reservoir.

As the crew prepared for the second week of tagging, we were informed that there was actually a shortfall of 60,000 juvenile Chinook salmon at Dexter Ponds. The USACE and ODFW collaborated and came up with a solution that resulted in our crew disinfecting the trailer and moving operations back up to Willamette Hatchery. Tagging the remaining 51,000 Middle Fork Willamette fish will resume on January 15<sup>th</sup>.

### **Recaptures**

A total of 12 PIT tagged juvenile Chinook salmon were recaptured or otherwise observed passing PIT tag arrays during this reporting period. The majority of detections occurred at the Lebanon Dam PIT tag array (n = 10). Notably, there was a single detection at Sauvie Island Dairy Creek, a recapture location that we have not had any detections on so far during the project's duration. We estimate that a total of 2,784 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
Lookout Point Head of Reservoir – Black Canyon Boat Ramp	1/3/2024 16:45	4,634	7.6	7.7	7.1
Lookout Point Head of Reservoir – Black Canyon Boat Ramp	1/4/2024 16:30	4,828	7.6	7.7	7.2
Lookout Point Head of Reservoir – Black Canyon Boat Ramp	1/8/2024 15:40	3,790	6.9	7.0	6.1
Lookout Point Head of Reservoir – Black Canyon Boat Ramp	1/9/2024 16:15	5,115	6.7	6.8	6.0

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	Capture Method	Season Total	Reporting Period Total
CGR - Cougar Dam	Screw Trap	1,625	0
FAL - Fall Creek Dam (USACE), MF Willamette River	Screw Trap	434	0
HCR - Hills Creek Dam, Middle Fork Willamette River	Screw Trap	227	0
MCKESF - South Fork McKenzie River	Screw Trap	133	0
LD3 - Lebanon Dam Diversion Bypass	Passive	89	4
LD2 - Lebanon Dam North Ladder	Passive	52	5
LD1 - Lebanon Dam South Ladder	Passive	49	1
LOP - Lookout Point Dam (USACE), MF Willamette River	Screw Trap	38	0
GPD - Green Peter Dam	Screw Trap	32	0
LD4 - Lebanon Dam Spillway	Passive	24	1
NSANTR - North Santiam River, Oregon	Bypass Sub-Sample	24	0
DEX - Dexter Dam (USACE), Middle Fork Willamette River	Screw Trap	20	0
PD7 - Columbia River Estuary rkm 70	Passive	19	0
BCL - Big Cliff Dam - North Santiam River	Screw Trap	6	0
LOP - Lookout Point Dam (USACE), MF Willamette River	Gillnet Fishery or Research	6	0
NSANTR - North Santiam River, Oregon	Screw Trap	3	0
LOP - Lookout Point Dam (USACE), MF Willamette River	Fyke Net	1	0

SID - Sauvie Island Dairy Creek	Passive	1	1
WILRMF - Middle Fork Willamette River	Screw Trap	1	0

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## **Reservoir Distribution Summary**

Reservoir sampling will resume in February 2024.

## Appendix A. Release Site Maps

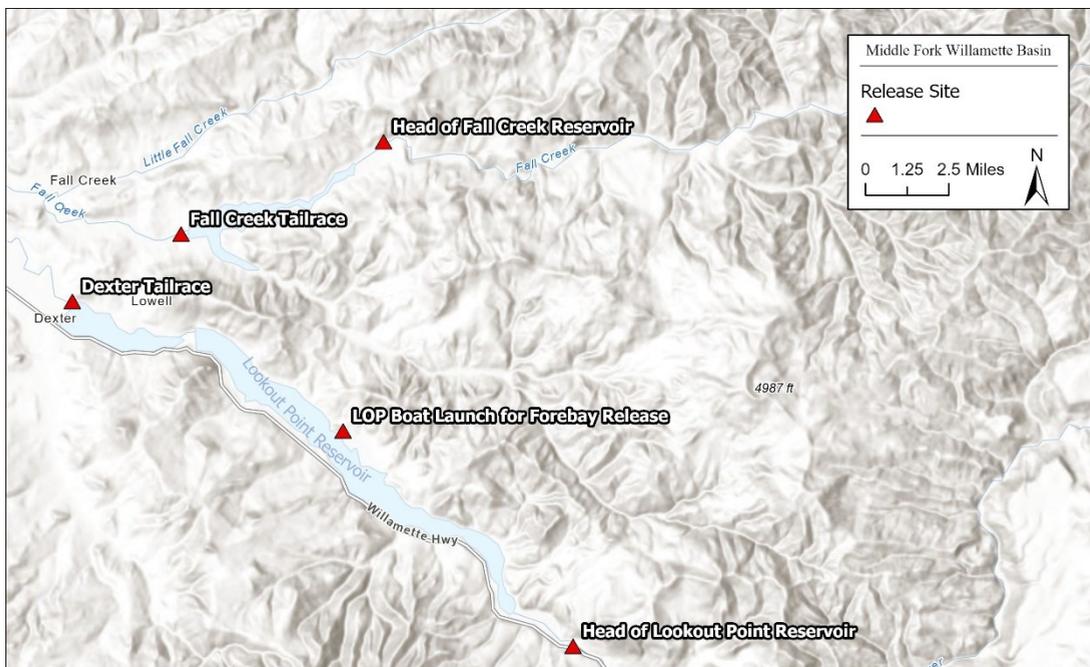


Figure 1. Map of Lookout Point, Dexter tailrace and Fall Creek release locations within the Middle Fork Willamette Basin.

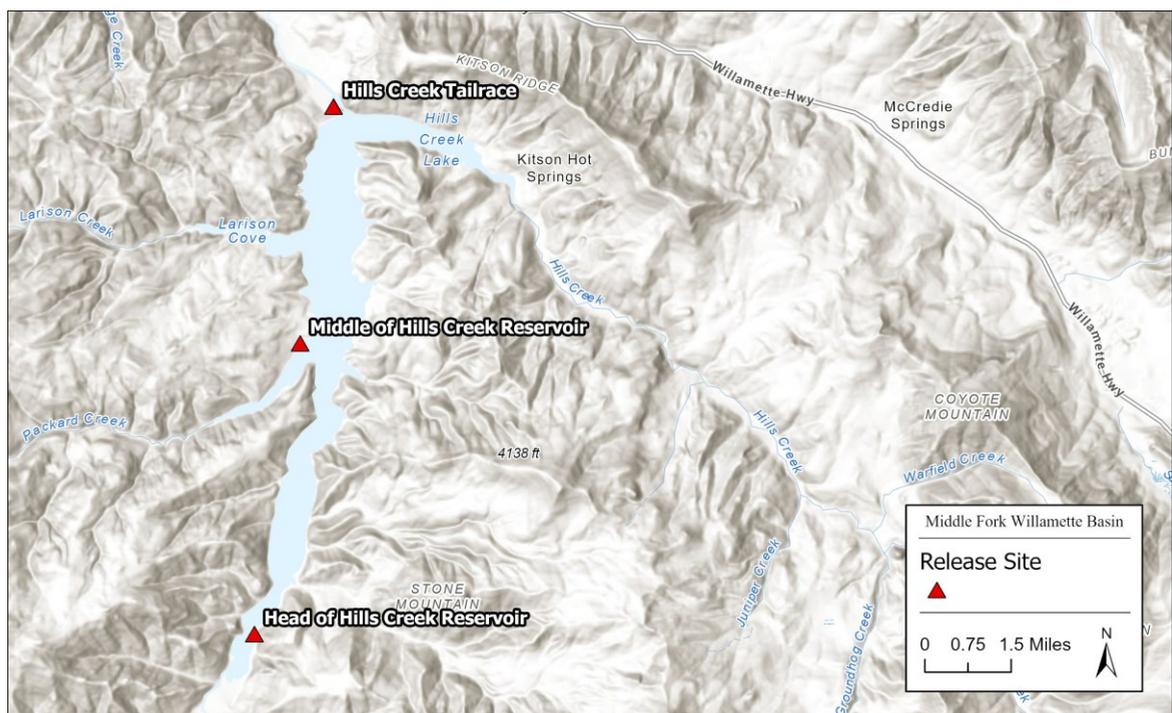


Figure 2. Map of Hills Creek Reservoir release locations within the Middle Fork Willamette Basin.

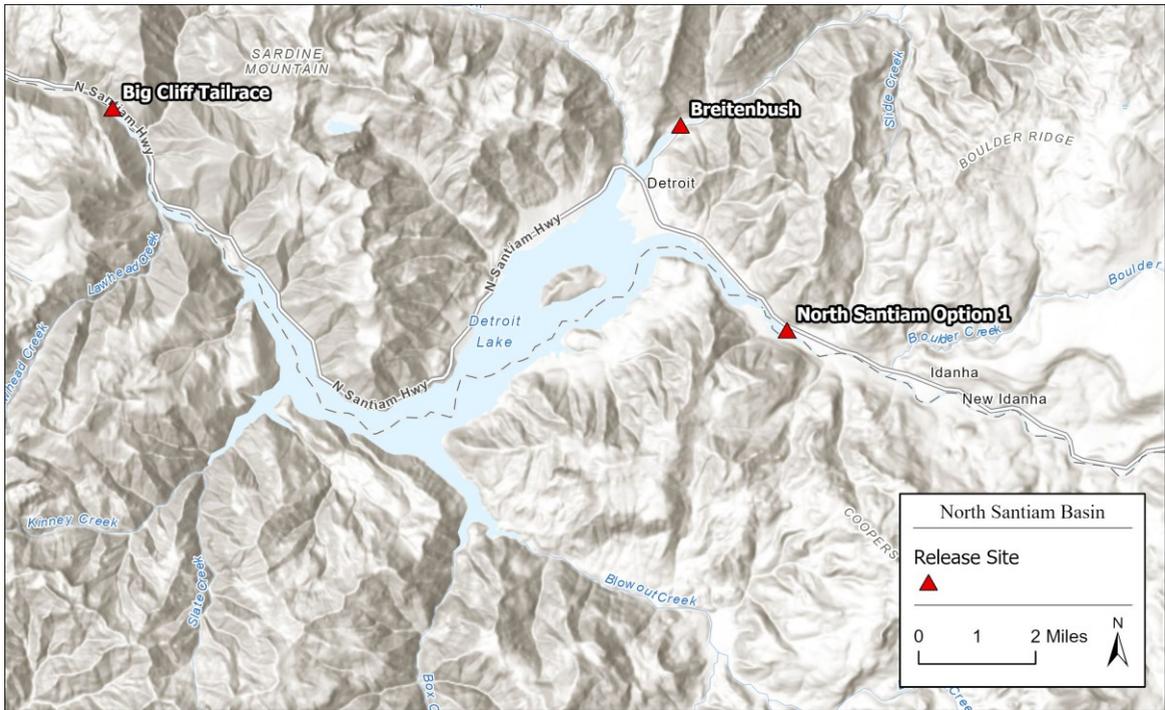


Figure 3. Map of release locations within the North Santiam Basin.

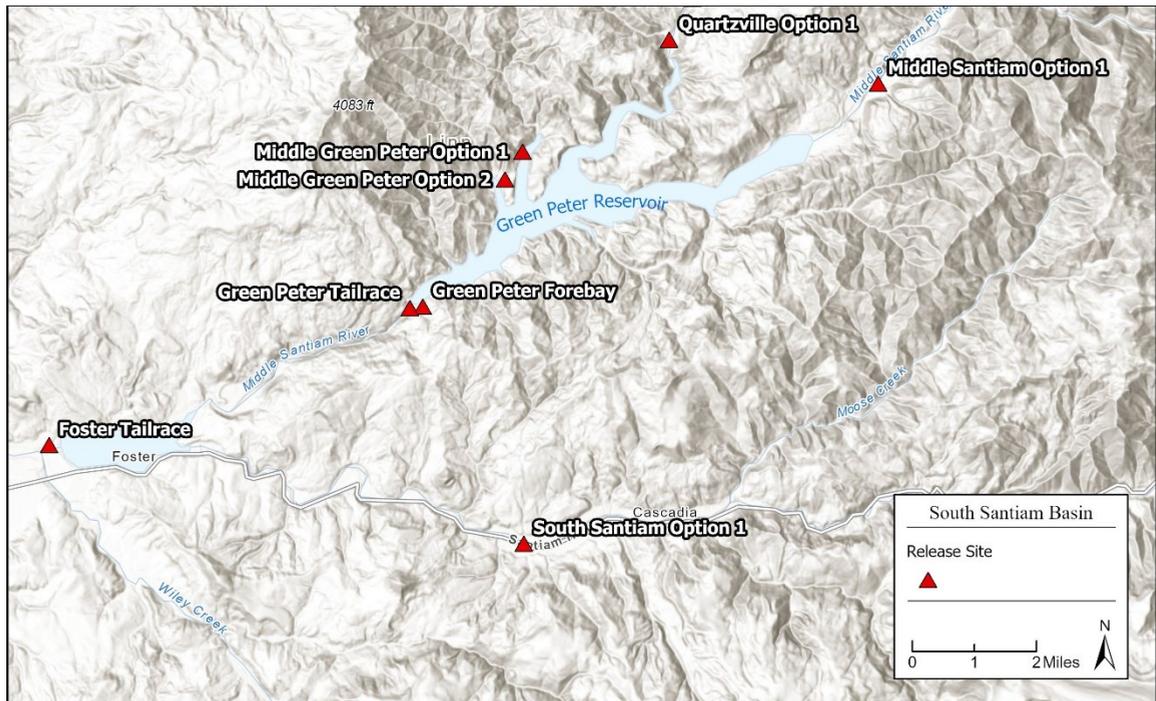


Figure 4. Map of release locations in the Middle/South Santiam basin including Green Peter Reservoir.

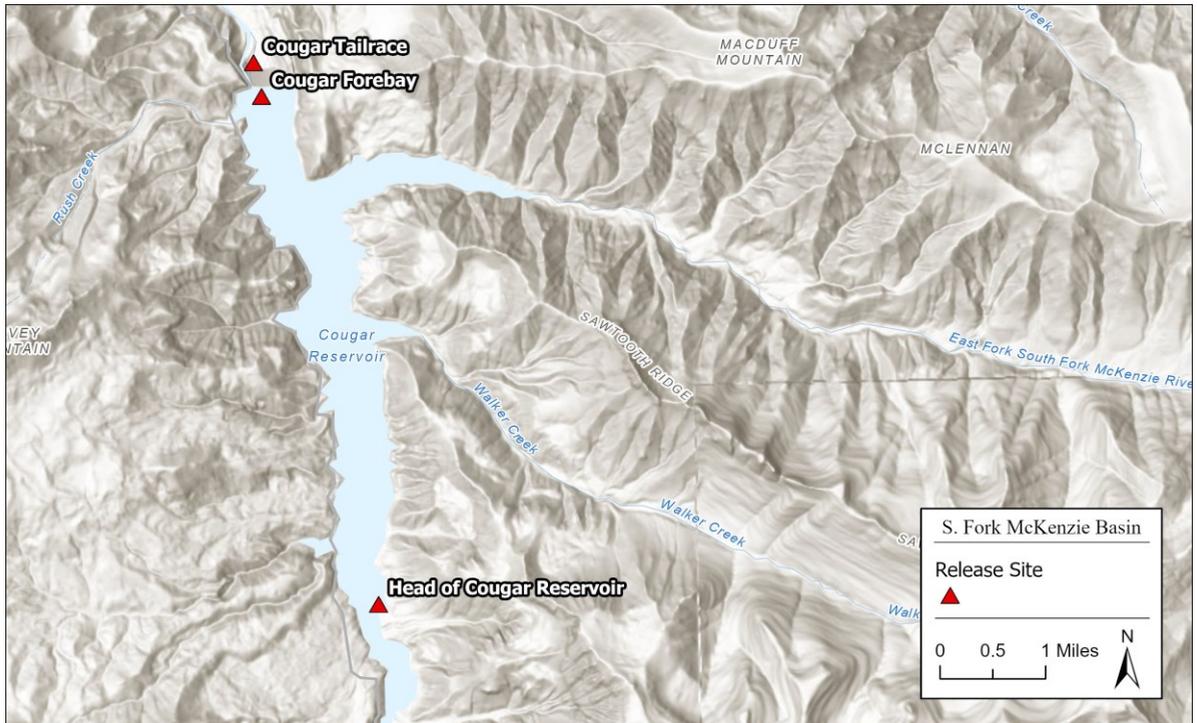


Figure 5. Map of release locations at Cougar Reservoir.

## Appendix B. Reservoir Sampling Zones

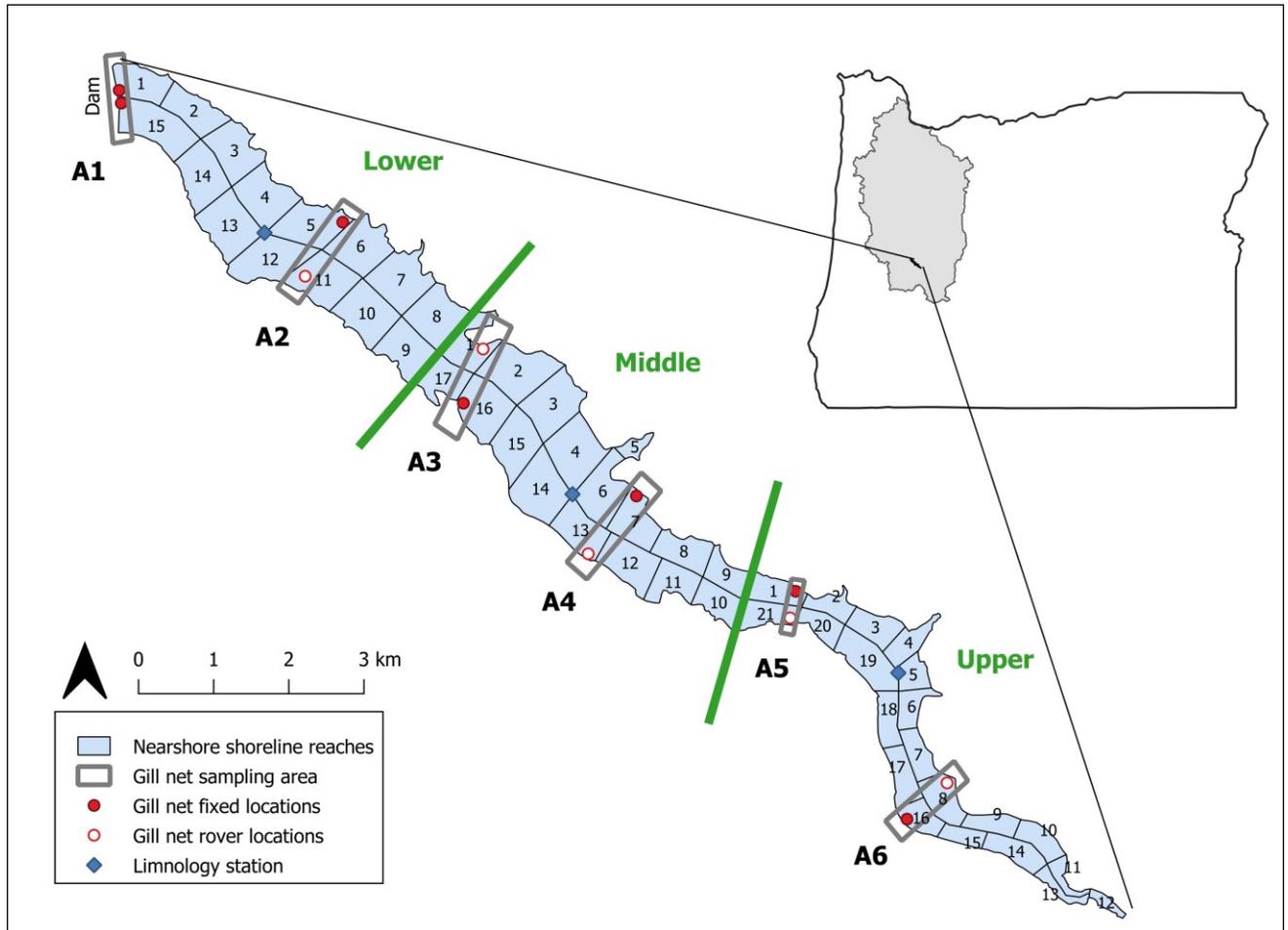


Figure 6. Map of Lookout Point Reservoir nearshore shoreline reaches, reservoir zones (lower, middle and upper), gill netting sampling areas and limnological stations.

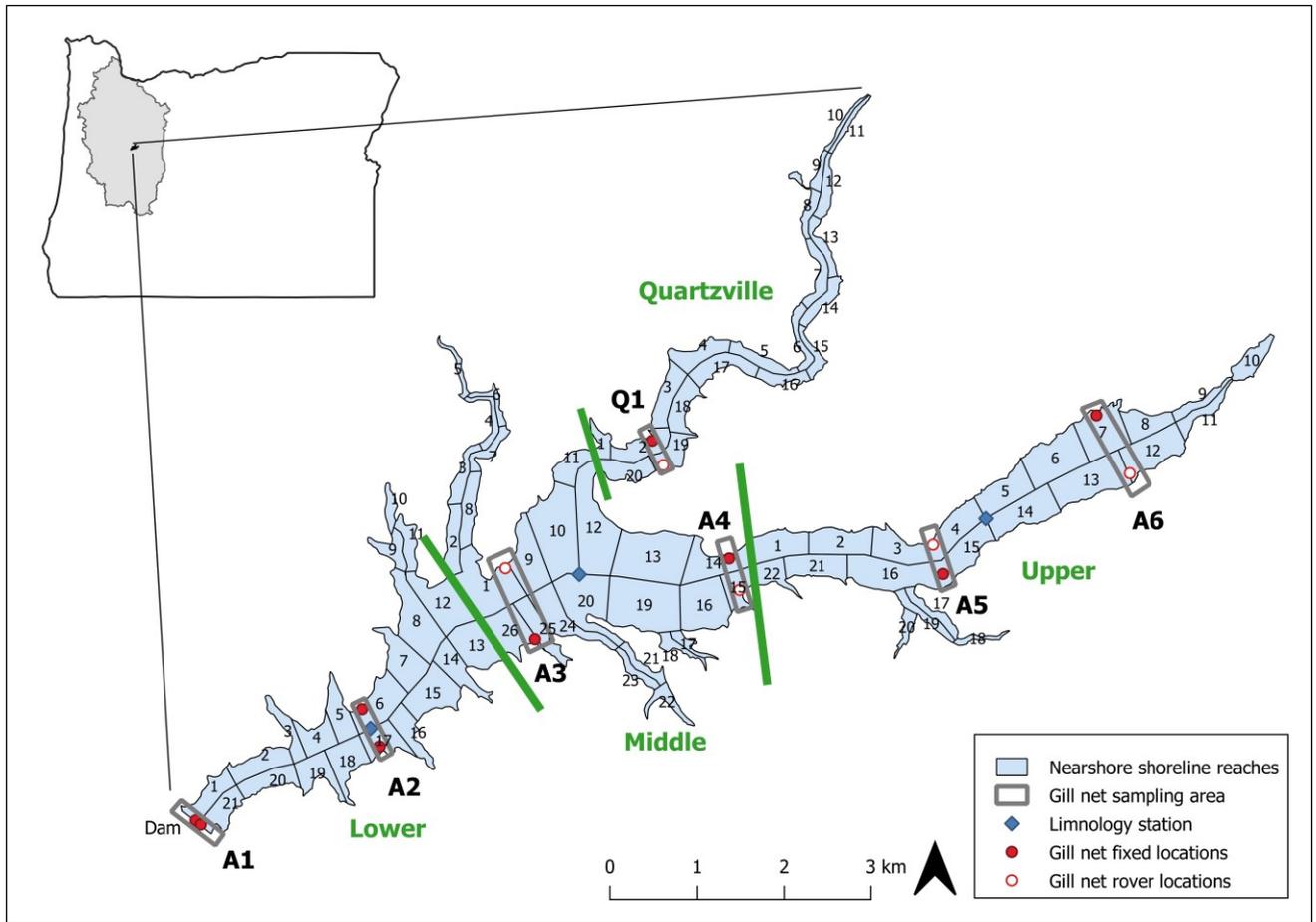


Figure 7. Map of Green Peter Reservoir nearshore shoreline reaches, reservoir zones (lower, middle and upper), gill netting sampling areas and limnological stations.