

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

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Bi-Weekly Report: January 16, 2024 – January 31, 2024



*Prepared for: United States Army Corps of Engineers*

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February 4, 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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During the most recent reporting period the Bulk Marking project finished tagging the additional 51,000 brood year 2022 Middle Fork Willamette stock fish (Table 2). In addition, we released 7,634 PIT tagged yearling juvenile Chinook salmon at the head of Lookout Point Reservoir on 26 January 2024 (Table 3). We are waiting for the completion of a permit modification to release the remaining additional MFW into the Hills Creek Dam tailrace. We anticipate that release will occur during the first week of February, 2024.

### **Recaptures**

Two PIT tagged juvenile Chinook salmon were recaptured or otherwise observed passing PIT tag arrays during this reporting period (Lebanon Dam and Sauvie Island Dairy Creek). We estimate that a total of 2,825 PIT tagged fish from this project have been detected so far during this project (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	Mort	Mort. %	Sheds	Shed %
Green Peter Head of Reservoir - Middle Santiam	5,071	56.2	NA	5/15/2023	5/16/2023	74	1.46	32	0.63
Green Peter Head of Reservoir - Quartzville Creek	5,203	58.5	NA	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	64.7	2.9	5/30/2023	6/1/2023	22	0.22	9	0.09
Fall Creek Head of Reservoir	10,040	67.4	3.2	6/1/2023	6/7/2023	68	0.68	30	0.3
Detroit Head of Reservoir Breitenbush Arm	7,530	66.9	3.6	6/13/2023	6/14/2023	82	1.09	24	0.32
Detroit Head of Reservoir - North Santiam Arm	7,528	66.9	3.6	6/14/2023	6/15/2023	83	1.10	25	0.32
Cougar Head of Reservoir	5,626	67.7	3.5	6/20/2023	6/20/2023	475	8.40	44	0.78
North Santiam – Fall 23 & Spring 24 Bulk Group	30,680	67.3	3.5	6/26/2023	7/20/2023	3,437	10.6	99	0.32
M.F. Willamette – Fall 23 & Spring 24 Bulk Group	85,233	NA	NA	7/26/2023	12/7/2023	380	0.45	340	0.40
South Santiam – Fall 23 & Spring 2024 Bulk Group	43,407	NA	NA	8/14/2023	12/20/2023	128	0.29	101	0.23
McKenzie– Fall 23 & Spring 24 Bulk Group	36,001	NA	NA	8/30/2023	9/8/2023	987	2.74	60	0.17
M.F. Willamette – Additional 51,000 Group	51,000	145.1	35.9	1/01/2024	1/31/2021	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.

Basin	Release Location	Release Date	Fish	Mean FL (mm)	Mean Weight (g)	Release Temp (C)
SST	Green Peter Head of Reservoir - Quartzville Creek Arm	5/22/2023	5171	58.5	NA	18.30
SST	Green Peter Head of Reservoir - Middle Santiam Arm	5/22/2023	4961	56.2	NA	18.00
MFW	LOP Head of Reservoir - Black Canyon	5/30/2023	9647	63.1	2.9	13.20
MFW	Hills Creek Head of Reservoir	6/5/2023	9784	64.7	2.8	11.40
MFW	Fall Creek Head of Reservoir - Old Boat Ramp	6/12/2023	9649	67.4	3.2	19.00
NST	Marion Forks Hatchery Escape	6/16/2023	1247	NA	NA	NA

Basin	Release Location	Release Date	Fish	Mean FL (mm)	Mean Weight (g)	Release Temp (C)
NST	Detroit Head of Reservoir - Breitenbush River	7/13/2023	7000	66.9	3.6	12.50
NST	Detroit Head of Reservoir - North Santiam River	7/13/2023	6638	66.9	3.6	13.00
SST	Foster Tailrace - South Santiam Hatchery	8/23/2023	1030	115.7	18.2	10.00
SST	Foster Reservoir Head of Reservoir - Cascadia Covered Bridge	8/24/2023	2059	105.6	14.5	15.30
MCK	Cougar Head of Reservoir - Cougar Crossing Bridge	8/29/2023	5200	NA	NA	10.10
MFW	LOP Head of Reservoir - Black Canyon	9/18/2023	4998	122.9	23.8	20.90
MFW	LOP Forebay - Signal Point	9/18/2023	5002	128.3	25.1	13.60
MFW	LOP Tailrace - Pengra	9/19/2023	2011	128.4	25.2	19.30
SST	Green Peter Head of Reservoir - Quartzville Creek Arm	9/20/2023	2518	113.5	19.5	14.80
SST	Green Peter Head of Reservoir - Middle Santiam Arm	9/21/2023	2508	117.1	20.7	12.50
NST	Detroit Head of Reservoir - Breitenbush River	9/26/2023	5002	106.5	11.8	10.50
NST	Detroit Head of Reservoir - North Santiam River	9/26/2023	4997	102.6	10.4	10.30
NST	Big Cliff Tailrace - Packsaddle Boat Ramp	9/27/2023	8009	106.5	11.9	12.70
MFW	Fall Creek Head of Reservoir - Old Boat Ramp	9/28/2023	5006	133.5	29.1	13.80
MFW	Fall Creek Tailrace	9/28/2023	1001	134.8	29.8	18.30
MCK	Cougar Head of Reservoir - Cougar Crossing Bridge	10/2/2023	5006	117.2	18.9	8.30
MCK	Cougar Head of Reservoir - Cougar Crossing Bridge	10/2/2023	3006	116.7	19	8.70
SST	Green Peter Head of Reservoir - Quartzville Creek Arm	10/3/2023	2502	122.8	25.1	12.50
SST	Green Peter Head of Reservoir - Middle Santiam Arm	10/4/2023	2516	119.6	23.8	13.30
SST	Green Peter Tailrace - Sunnyside Boat Ramp	10/9/2023	4002	125.9	26.4	18.10
SST	Foster Reservoir Head of Reservoir - Cascadia Covered Bridge	10/10/2023	5000	125.8	24.5	13.20
SST	Foster Tailrace - South Santiam Hatchery	10/11/2023	4000	135.2	31.8	12.00
MCK	Cougar Head of Reservoir - Cougar Crossing Bridge	10/18/2023	3979	118.4	19.8	8.00
MCK	Cougar Forebay	10/18/2023	5010	120.8	21	15.40
MCK	Cougar Tailrace - USGS	10/19/2023	3997	112.5	16.8	10.50
MFW	Fall Creek Head of Reservoir - Old Boat Ramp	11/6/2023	5000	139.4	32.2	10.80
MFW	Fall Creek Tailrace	11/6/2023	1000	134.9	30.2	11.30
MFW	Hills Creek Head of Reservoir	11/7/2023	5000	135.2	28.6	8.70
MFW	Hills Creek Mid Reservoir - Packard Creek Boat Ramp	11/8/2023	4999	145.3	36.9	14.30
MFW	Hills Creek Dam Tailrace	11/9/2023	2999	129.4	26.9	12.50
MCK	Cougar Head of Reservoir - Cougar Crossing Bridge	11/13/2023	3999	121.3	23	8.00

Basin	Release Location	Release Date	Fish	Mean FL (mm)	Mean Weight (g)	Release Temp (C)
MCK	Cougar Forebay	11/14/2023	4995	124.6	23.8	8.10
MCK	Cougar Tailrace - USGS	11/15/2023	2412	120.1	21.5	8.40
NST	Big Cliff Tailrace - Packsaddle Boat Ramp	11/20/2023	5998	112.4	16.6	10.50
MFW	LOP Head of Reservoir – Black Canyon Campground	1/3/2024	4634	143.3	33.7	7.1
MFW	LOP Head of Reservoir – Black Canyon Campground	1/4/2024	4828	143.3	33.7	7.2
MFW	LOP Head of Reservoir – Black Canyon Campground	1/8/2024	3790	148.3	37.2	6.1
MFW	LOP Head of Reservoir – Black Canyon Campground	1/9/2024	5115	148.3	37.2	6.0
MFW	LOP Head of Reservoir – Black Canyon Campground	1/25/2024	7634	143.6	34.3	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	1,630	0
FAL - Fall Creek Dam (USACE), MF Willamette River	Screw Trap	434	0
HCR - Hills Creek Dam, Middle Fork Willamette River	Screw Trap	256	0
MCKESF - South Fork McKenzie River	Screw Trap	133	0
LD3 - Lebanon Dam Diversion Bypass	Passive	90	1
LD2 - Lebanon Dam North Ladder	Passive	52	0
LD1 - Lebanon Dam South Ladder	Passive	49	0
LOP - Lookout Point Dam (USACE), MF Willamette River	Screw Trap	39	0
GPD - Green Peter Dam	Screw Trap	32	0
LD4 - Lebanon Dam Spillway	Passive	24	0
NSANTR - North Santiam River, Oregon	Bypass Sub-Sample	24	0
DEX - Dexter Dam (USACE), Middle Fork Willamette River	Screw Trap	21	0
PD7 - Columbia River Estuary rkm 70	Passive	19	0
BCL - Big Cliff Dam - North Santiam River	Screw Trap	9	0
LOP - Lookout Point Dam (USACE), MF Willamette River	Gillnet Fishery or Research	6	0
NSANTR - North Santiam River, Oregon	Screw Trap	3	0

SID - Sauvie Island Dairy Creek	Passive	2	1
LOP - Lookout Point Dam (USACE), MF Willamette River	Fyke Net	1	0
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

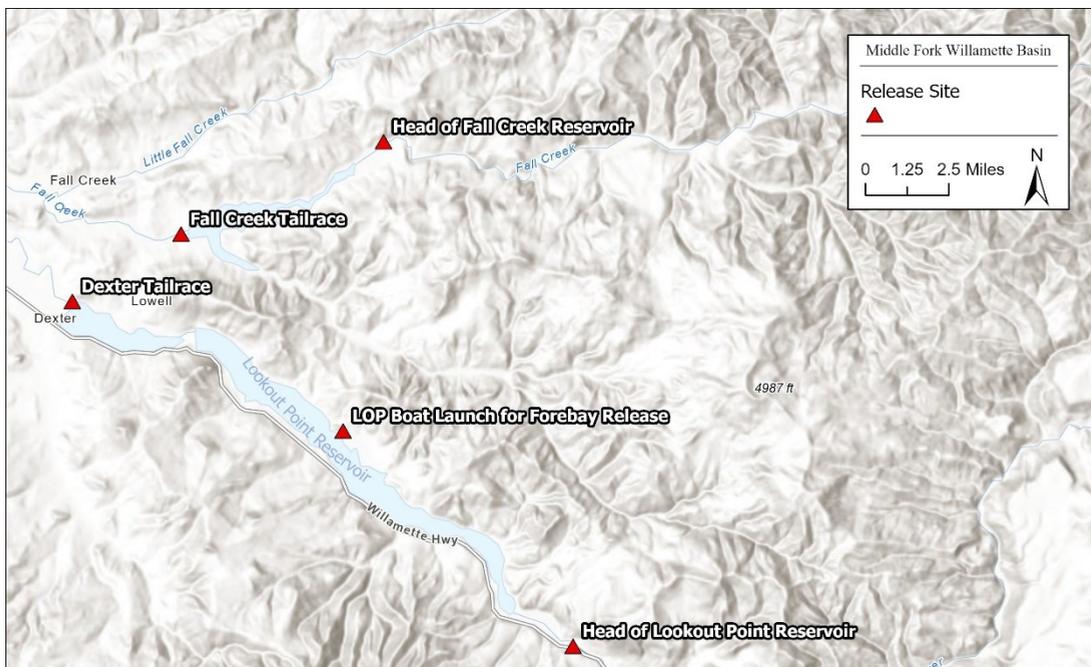


Figure 1. Map of Lookout Point, Dexter tailrace and Fall Creek release locations within the Middle Fork Willamette Basin.

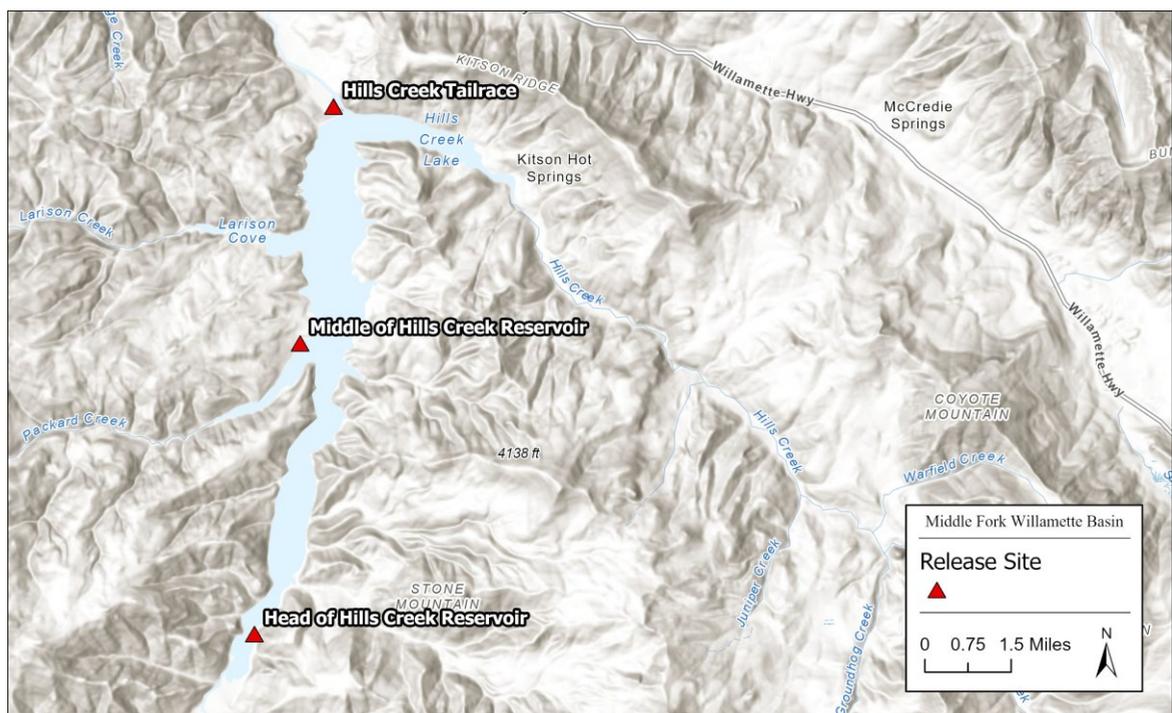


Figure 2. Map of Hills Creek Reservoir release locations within the Middle Fork Willamette Basin.

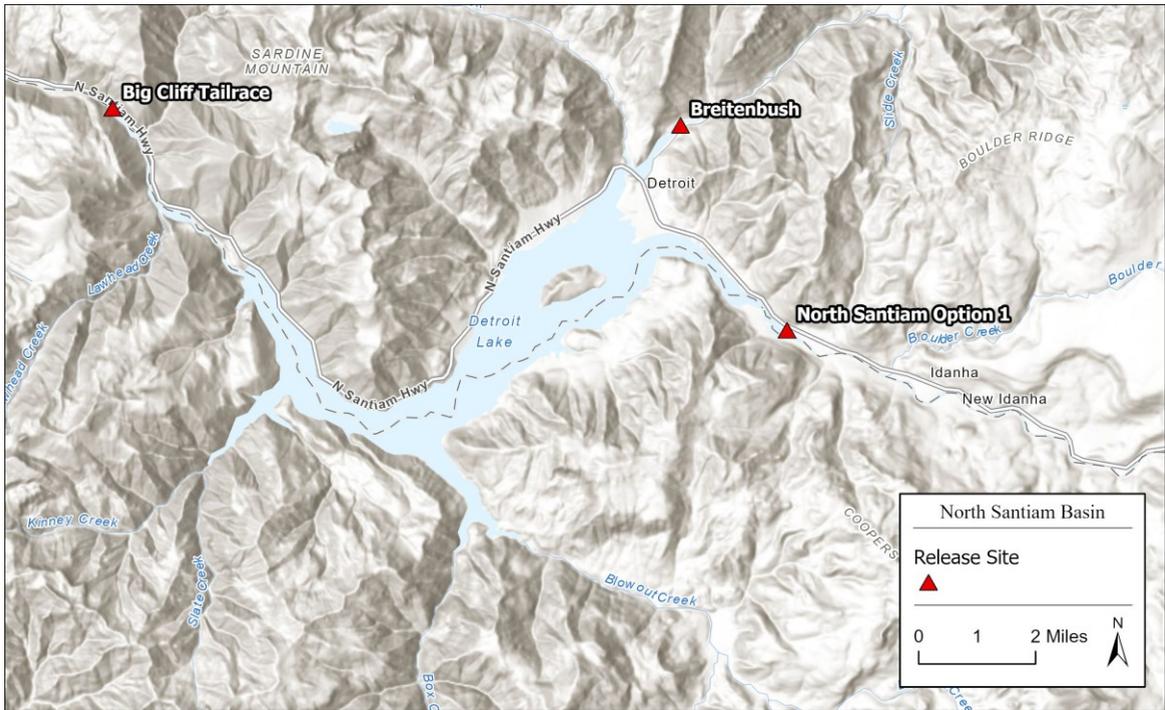


Figure 3. Map of release locations within the North Santiam Basin.

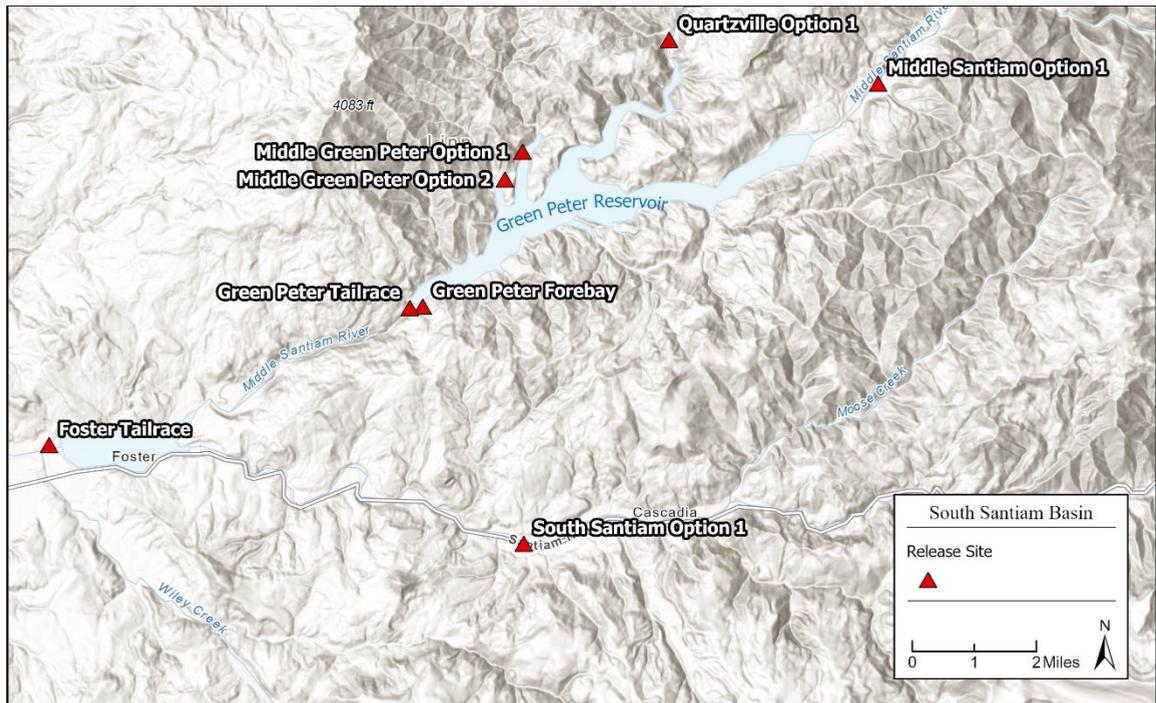


Figure 4. Map of release locations in the Middle/South Santiam basin including Green Peter Reservoir.

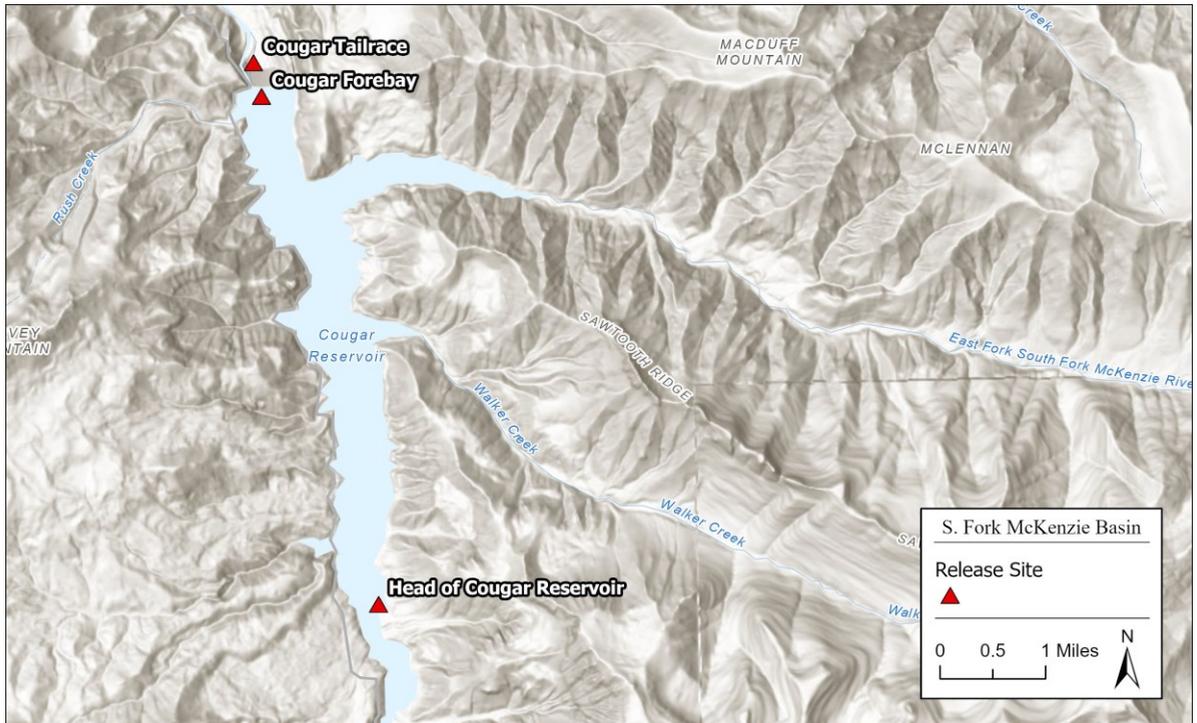


Figure 5. Map of release locations at Cougar Reservoir.

## Appendix B. Reservoir Sampling Zones

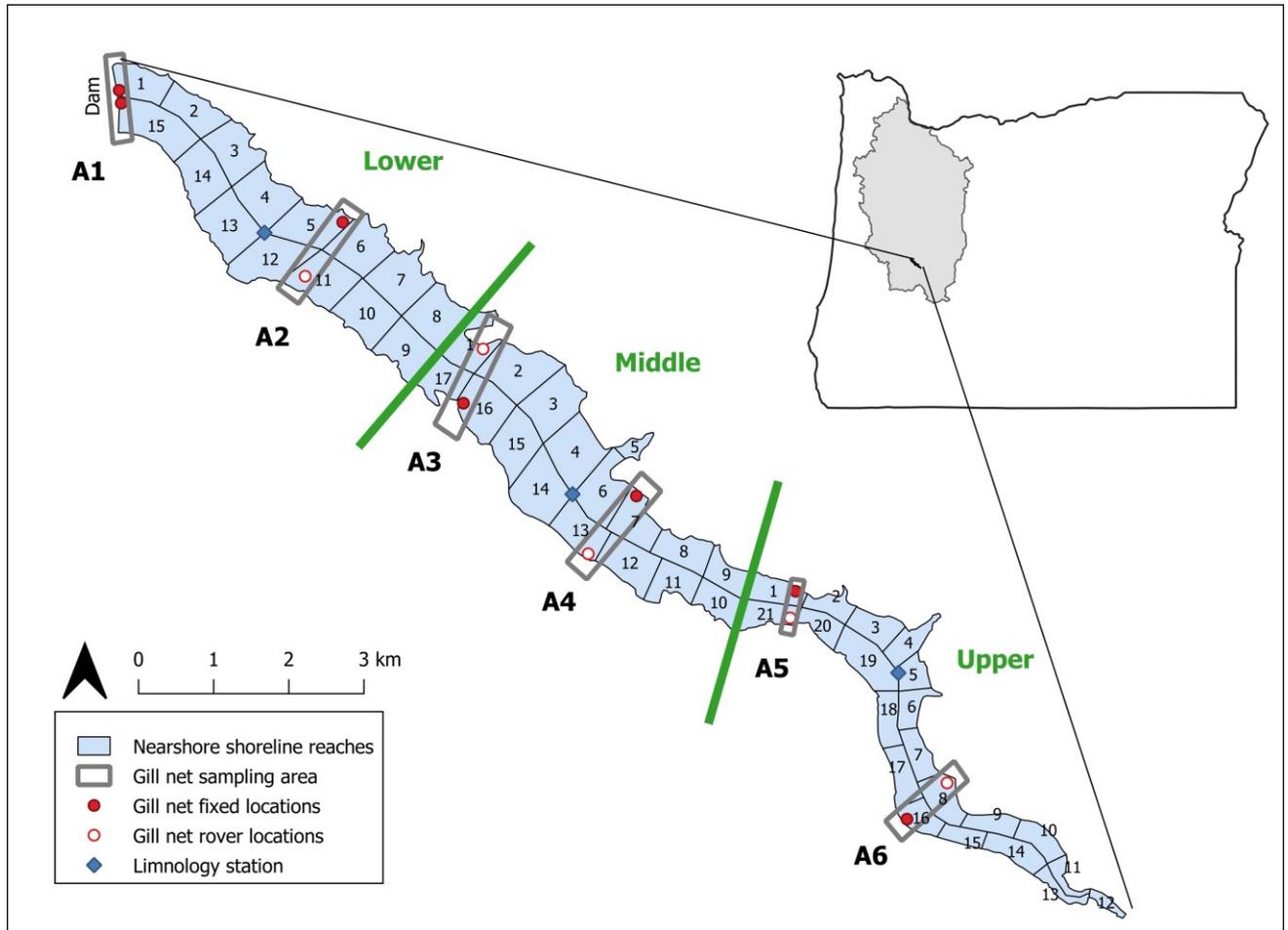


Figure 6. Map of Lookout Point Reservoir nearshore shoreline reaches, reservoir zones (lower, middle and upper), gill netting sampling areas and limnological stations.

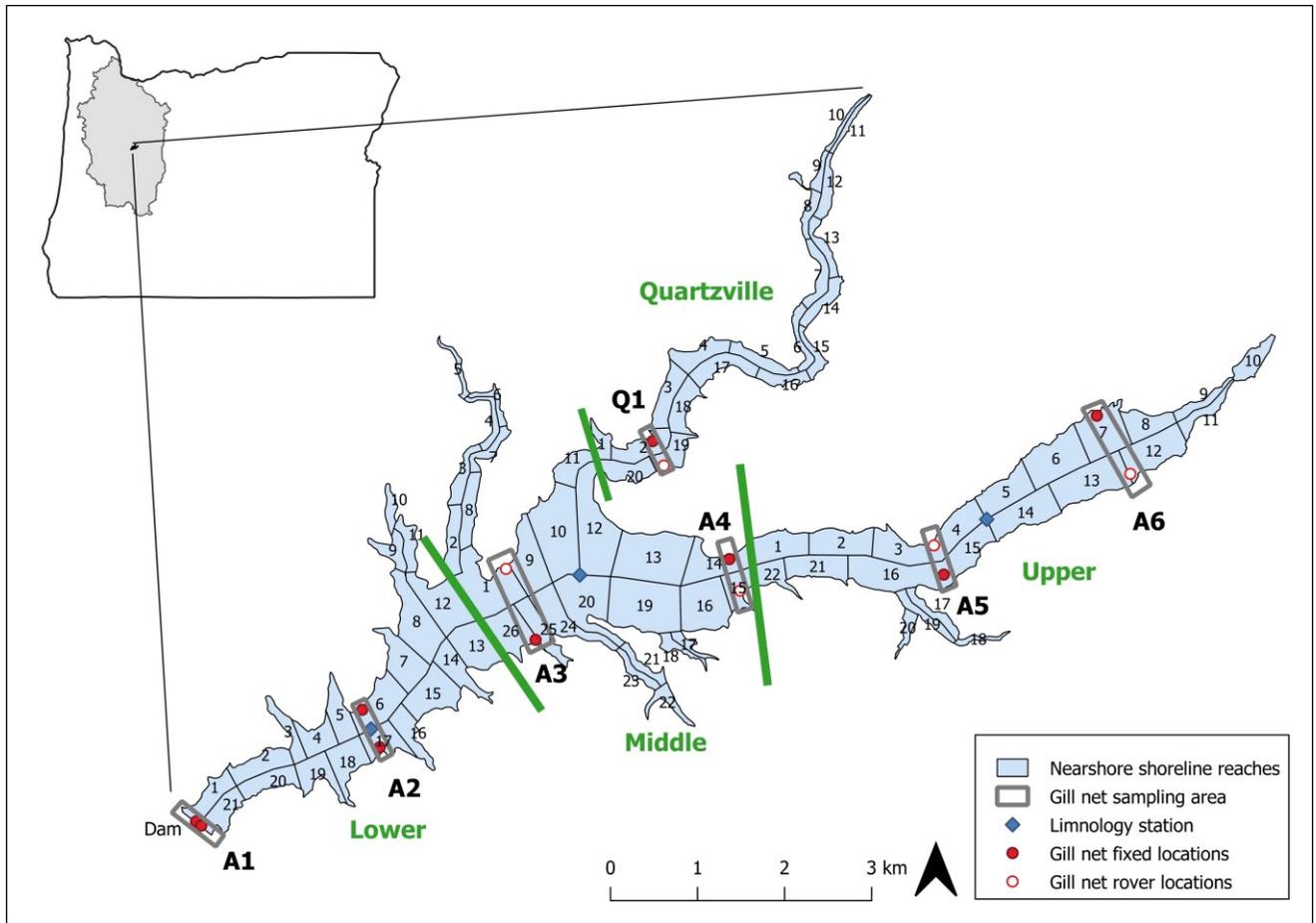


Figure 7. Map of Green Peter Reservoir nearshore shoreline reaches, reservoir zones (lower, middle and upper), gill netting sampling areas and limnological stations.