



Marine Mammal Monitoring Report for the
Statter Harbor Phase IIIB Project of the
City and Borough of Juneau

US Army Corps of Engineers Permit Number: POA-2008-00782-M4

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Docks & Harbors, City and Borough of Juneau

Contents

Executive Summary.....	2
Introduction.....	2
Methods.....	3
Daily Observation Logs.....	4 - 13
Observation Summary.....	14 - 15

Executive Summary

Construction for harbor improvements was undertaken in Statter Harbor, Juneau, Alaska with in-water work starting in January 2021. In-water work on the project consisted of installation of steel piles (for timber floats), down-the-hole drilling to socket the piles, and associated activities. This work required the issuance of an Incidental Harassment Authorization requiring marine mammal observation and allowing for take of several species. Harbor seals were abundant in the action area with an estimated 20 - 30 individuals resident in the immediate vicinity. Steller sea lions were also frequently present with numbers ranging from solitary individuals to large rafts of 9 - 18 members. Few sightings and no take of any other species occurred. For the duration of the project, 891 Level B and 21 Level A take of Harbor seals and 361 Level B take of Steller sea lions were recorded, figures well below the allotted amount of each take type.

Introduction

In-water construction work began in January 2021 on the second stage of the third phase of the City and Borough of Juneau (CBJ) project to reduce congestion at and improve the functionality of Statter Harbor for its many users. Operations during this project stage included uplands pile and construction work, in-water installation via vibratory hammer of steel piles, removal of existing piles via the same method as needed, down-the-hole drilling of pile sockets, and installation of floating timber docks with associated structures. The in-water work was completed in late February 2021, with substantial completion of the project reached in June 2021. Throughout the duration of the project, the area continued to function as a busy, active harbor.

A number of different marine mammal species occur in the action area of the project. The most common of these is the Harbor seal (*Phoca vitulina*), for which both Level A and B take was authorized under the project's Incidental Harassment Authorization (IHA). Take was also authorized for Steller sea

lion (*Eumetopias jubatus*), Orca (*Orcinus orca*), Humpback whale (*Megaptera novaeangliae*), and other less commonly encountered species. The IHA established the required shutdown and monitoring zones for these species for each of the planned construction activities.

Additional details can be found in the initial Incidental Harassment Authorization Request for the project.

Methods

The methodology employed for the monitoring of the construction activity followed that outlined in the Marine Mammal Monitoring Plan (MMMP) provided with the IHA request. Further information not contained in the MMMP can be found below.

Distance calculations

In-situ distances of sighted marine mammals were determined with the use of laser range-finding equipment. The distances recorded by the observers were later used in conjunction with trigonometric formulas to calculate more precise distances of sighted marine mammals to construction activities. Observers were also equipped with maps showing the shutdown zones for quick assessment of sighting locations and if a cessation of operations was required.

Individual identification efforts

In an effort to distinguish between individual animals and repeated incidences of take, observers were instructed to follow animals in the water which were sighted in the monitoring zones. Subsequent sightings of these individuals were recorded as re-sightings rather than new ones as possible. This effort was aided in particular by the short dive time of the Harbor seals in the area as well as the high vantage point of the observers, i.e., typically on the walkway along the harbor basin or in the second floor of the Auke Bay Marine Station.

A population estimate of resident seals and sea lions based on sightings of groups in the action area was determined and is discussed in greater detail in the “Observation Summary” section below.

Correction factors

In general, correction factors due to weather or visibility conditions were determined to not be necessary for the majority of this project. The vantage point of the observer, good to excellent weather conditions, use of a roving vessel based observer, and construction operations being confined within the harbor basin provided excellent visibility of the shutdown and monitoring zones, even in the few instances of sub-optimal weather conditions. Furthermore, the nature of the usage of the area by a resident seal population increases our confidence that all individuals were accounted for during the course of operations.

Daily Observation Logs

Note: All Takes are Level B unless otherwise indicated. Non-take observations occurred during active construction and without.

	Date	December 18, 2020	January 6, 2021	January 7, 2021	January 13, 2021
Monitoring time	Start	9:30	11:46	8:19	7:45
	End	12:00	15:09	12:56	12:58
Construction Activity		No in-water work	Installation of steel piles with vibratory hammer	Installation of steel piles with vibratory hammer	Installation of steel piles with vibratory hammer
Weather parameters	Visibility	Good to Excellent	Good to Excellent	Good	Moderate to Good
	Glare	5%	5%	5%	5%
	Condition	Overcast with rain later	Overcast with rain	Overcast with rain	Overcast with periods of rain
	Waves	Low	Low	Low	Low
	Beaufort	0 to 1	0 to 2	1 to 2	0 to 1
Take observations	Sighting designation	None	1.4; 4.1; 11; 12; 17; 19; 19; 20	1.4; 6; 8; 11; 11A; 12; 20	6; 9.1; 10 - 14; 17
	PSO position		Auke Bay station & Harbor boat launch	Auke Bay station & Harbor boat launch	Auke Bay station & Harbor walkway
	Species and Number		1.4: Steller sea lion- 14; 4.1: Harbor seal- 2; 11: Harbor seal- 3; 12: Harbor seal- 8; 17: Harbor seal- 2; 18: Harbor seal- 8; 19: Harbor seal- 1; 20: Harbor seal-1	1.4: Steller sea lion- 14; 6, 8, 20: Harbor seal- 1 each; 11: Harbor seal- 2; 11A: Harbor seal- 3; 12: Harbor seal- 12	6, 12, 14, 17: Harbor seal- 1 each; 9.1: Harbor seal- 3; 10: Steller sea lion- 6; 11: Steller sea lion- 1; 13: Harbor seal- 2
	Distance and bearing from construction		1.4: 286m, 34°; 4.1: 243m, 358°; 11: 83m, 204°; 12: 98m, 213°; 17: 196m, 239°; 18: 267m, 253°; 19: 119m, 206°; 20: 166m, 239°	1.4: 168m, 234°; 6: 85m, 167°; 8: 122m, 230°; 11: 123m, 232°; 11A: 374m, 349°; 12: 186m, 360°; 20: 420m, 5°	6: 119m, 246°; 9.1: 446m, 352°; 10: 379m, 10°; 11: 402m, 357°; 12: 421m, 350°; 13: 437m, 350°; 14: 446m, 347°; 17: 411m, 351°
	Behavior		1.4: Swimming (W), Milling, Look, Playing; 4.1: Milling, Look, Sink; 11: UNK; 12: Milling, Look, Sink; 17 & 18: Swimming (N), Diving; 19 & 20: Milling, Sink	1.4: Porpoising, Playing, Diving, Milling; 6: Look, Sink; 8: Milling, Sink; 11: Splash, Diving; 11A: Traveling; 12: Milling; 20: Look, Sink	6: Look, Sink; 9.1: Milling, Sink; 10: Swimming (E), Diving; 11: Milling, Sink; 12: UNK; 13: Milling; 14: Milling; 17: Look, Sink
Marine mammal obs., non-take	Num. of add'l. sightings	Harbor seal- 20; Steller sea lion- 3; Humpback whale- 1	Harbor seal- 25; Steller sea lion- 2; Humpback whale- 1	Harbor seal- 24; Steller sea lion- 1; Humpback whale- 1	Harbor seal- 17; Steller sea lion- 2
	Species and Total number	Harbor seal- 27; Steller sea lion- 3; Humpback whale- 1	Harbor seal- 74; Steller sea lion- 3; Humpback whale- 1	Harbor seal- 124; Steller sea lion- 14; Humpback whale- 1	Harbor seal- 48; Steller sea lion- 15
	General behavior	Harbor seal- Milling, Look, Sink; Steller sea lion- Foraging; Humpback whale- Diving	Harbor seal- Milling, Look, Swimming, Sink; Steller sea lion- Milling, Swimming, Playing, Porpoising, Diving; Humpback whale- Blow	Harbor seal- Milling, Look, Sink; Steller sea lion- Milling, Swimming, Playing, Porpoising, Diving; Humpback whale- Swimming	Harbor seal- Milling, Look, Sink; Steller sea lion- Milling, Swimming, Diving
Take Numbers	Level A	None	None	None	None
	Level B	None	Harbor seal- 25; Steller sea lion- 14	Harbor seal- 20; Steller sea lion- 14	Harbor seal- 9; Steller sea lion- 7
Mitigation		N/A	N/A	N/A	Construction start delayed 18 mins

Date		January 14, 2021	January 26, 2021	January 30, 2021	February 1, 2021	February 2, 2021
Monitoring time	Start	7:45/13:49	7:45	8:36	8:31	7:30
	End	12:30/15:10	14:14	11:03	16:03	15:25
Construction Activity		Installation of steel piles with vibratory hammer	Pile socket drilling	Installation and removal of steel piles with vibratory hammer	Pile socket drilling; Installation and removal of steel piles with vibratory hammer	Pile socket drilling; Installation and removal of steel piles with vibratory hammer
Weather parameters	Visibility	Good	Good to Excellent	Good	Poor to Good	Excellent
	Glare	0%	0%	5%	0%	10%
	Condition	Overcast with light rain	Sunny	Overcast with snow later	Overcast with snow later	Sunny
	Waves	Low	Low	Low	Moderate	Low
	Beaufort	0 to 2	0 to 1	0 to 1	0 to 6	0 to 1
Take observations	Sighting designation	14; 19; 21.1	None	6; 15; 24	1; 4; 5.4; 10A; 10 (Level A); 11 (Level A); 13	8; 9; 12; 15
	PSO position	Auke Bay station & Harbor walkway		Auke Bay station & Harbor walkway	Harbor walkway, Auke Bay station, roving vessel	Harbor walkway, Auke Bay station, roving vessel
	Species and Number	14, 19, 21.1: Steller sea lion- 1 each		6: Harbor seal- 1; 15: Harbor seal- 4; 24: Harbor seal- 2	1: Steller sea lion- 9; 4: Steller sea lion- 1; 5.4: Steller sea lion- 8; 10A, 10, 11: Harbor seal- 1 each; 13: Harbor seal- 2	8: Harbor seal- 12; 9: Harbor seal- 15; 12: Steller sea lion- 7; 15: Steller sea lion- 1
	Distance and bearing from construction	14: 328m, 356°; 19: 440m, 348°; 21.1: 448m, 349°		6: 141m, 324°; 15: 374m, 351°; 24: 446m, 354°	1: 356m, 348°; 4: 1563m, 43°; 5.4: 395m, 351°; 10A: 368m, 347°; 10: 29m, 259°; 11: 37m, 111°; 13: 290m, 345°	8: 81m, 265°; 9: 149m, 265°; 12: 318m, 3°; 15: 260m, 25°
	Behavior	14: Milling; 19: Look, Sink; 21.1: Milling		6: Look, Sink; 15: Milling, Sink; 24: Milling, Sink	1, 10, 11: Milling, Sink; 4, 10A: Look, Sink; 5.4: Milling, Porpoising, Diving; 13: Milling, Look	8, 15: Milling, Sink; 9: Milling, Diving; 12: Milling, Look, Sink
Marine mammal obs., non-take	Num. of add'l. sightings	Harbor seal- 22; Steller sea lion- 7	Harbor seal- 53; Steller sea lion- 8	Harbor seal- 27; Steller sea lion- 4	Harbor seal- 24; Steller sea lion- 7	Harbor seal- 27; Steller sea lion- 9
	Species and Total number	Harbor seal- 24; Steller sea lion- 9	Harbor seal- 70; Steller sea lion- 10	Harbor seal- 64; Steller sea lion- 5	Harbor seal- 36; Steller sea lion- 52	Harbor seal- 48; Steller sea lion- 48
	General behavior	Harbor seal- Milling, Look, Swimming, Diving, Sink; Steller sea lion- Milling, Look, Swimming, Sink	Harbor seal- Milling, Look, Swimming, Diving, Sink; Steller sea lion- Milling, Look, Swimming, Sink	Harbor seal- Milling, Look, Sink; Steller sea lion- Milling, Sink	Harbor seal- Milling, Sink, Diving; Steller sea lion- Milling, Swimming, Sink, Foraging, Diving	Harbor seal- Milling, Look, Sink; Steller sea lion- Milling, Swimming, Diving
Take Numbers	Level A	None	None	None	Harbor seal- 2	None
	Level B	Steller sea lion- 3	None	Harbor seal- 7	Harbor seal- 3; Steller sea lion- 18	Harbor seal- 27; Steller sea lion- 8
Mitigation		N/A	N/A	N/A	None (see "Mitigation" section in text for details)	N/A

		Date	February 3, 2021	February 4, 2021	February 5, 2021
Monitoring time	Start		8:10	7:30	7:20
	End		16:10	15:30	15:02
Construction Activity			Pile socket drilling; Installation and removal of steel piles with vibratory hammer	Pile socket drilling; Installation and removal of steel piles with vibratory hammer	Pile socket drilling; Installation and removal of steel piles with vibratory hammer
Weather parameters	Visibility		Moderate	Moderate to Good	Good to Excellent
	Glare		0%	5%	5%
	Condition		Overcast with snow	Overcast to partly cloudy	Partly cloudy
	Waves		Low	Low	Low
	Beaufort		0 to 1	0 to 1	0 to 1
Take observations	Sighting designation		7; 6.2; 8; 9; 16; 17 (Level A); 18 - 22; 22A; 23 - 30; 33; 34	7.1; 8; 9; 11; 15.1; 16.1; 17.1; 18 - 23; 24.1	2; 4 (Level A); 5 (Level A); 6; 7; 8; 11; 12.2; 13; 16; 32; 33; 36 - 39; 41.4; 44.2
	PSO position		Harbor walkway, Auke Bay station, roving vessel	Auke Bay station & Harbor walkway	Auke Bay station & Harbor walkway
	Species and Number		7, 6.2, 8, 9, 16 - 22, 25, 26, 30, 33: Harbor seal- 1 each; 22A: Harbor seal- 15; 23: Steller sea lion- 7; 24: Harbor seal- 19; 27, 28, 34: Harbor seal- 2 each; 29: Harbor seal- 3	7.1: Harbor seal- 19; 8, 16.1: Harbor seal- 1 each; 9: Harbor seal- 5; 11: Harbor seal- 4; 15.1, 20: Harbor seal- 9 each; 17.1, 23: Steller sea lion- 2 each; 18: Steller sea lion- 1; 19: Harbor seal- 6; 21: Harbor seal- 2; 22: Harbor seal- 18	2, 12.2: Harbor seal- 4 each; 4: Harbor seal- 3; 5, 7, 11, 16, 36: Harbor seal- 1 each; 6: Harbor seal- 5; 8, 13: Harbor seal- 2 each; 32: Harbor seal- 12; 33, 37, 38, 39: Steller sea lion- 1 each; 41.4: Harbor seal- 7; 44.2: Harbor seal- 15
	Distance and bearing from construction		7: 72m, 226°; 6.2: 58m, 154°; 8: 58m, 145°; 9: 61m, 131°; 16: 64m, 103°; 17: 50m, 95°; 18: 86m, 213°; 19: 74m, 205°; 20: 90m, 216°; 21: 90m, 215°; 22: 65m, 149°; 22A: 256m, 347°; 23: 257m, 2°; 24: 249m, 347°; 25: 386m, 344°; 26: 404m, 344°; 27: 470m, 343°; 28: 380m, 344°; 29: 475m, 343°; 30: 394m, 345°; 33: 387m, 343°; 34: 424m, 346°	8: 133m, 273°; 7.1: 97m, 323°; 9: 107m, 328°; 11: 132m, 273°; 15.1: 502m, 347°; 16.1: 284m, 354°; 17.1: 567m, 1°; 18: 437m, 353°; 19: 493m, 352°; 20: 493m, 352°; 21: 533m, 354°; 22: 317m, 347°; 23: 514m, 13°; 24.1: 487m, 352°	2: 61m, 159°; 4: 46m, 264°; 5: 46m, 179°; 6: 76m, 153°; 7: 72m, 165°; 16: 57m, 209°; 8: 453m, 351°; 11: 406m, 349°; 12.2: 461m, 353°; 13: 460m, 353°; 32: 350m, 349°; 33: 449m, 5°; 36: 431m, 349°; 37: 438m, 4°; 38: 596m, 352°; 39: 450m, 4°; 41.4: 281m, 354°; 44.2: 463m, 1°
	Behavior		7, 16 - 22, 22A, 34: Milling, Sink; 6.2, 8, 9, 30: Look, Sink; 23: Swimming (S), Porpoising, Milling, Sink, Diving; 24, 25, 26, 28, 29, 33: Milling; 27: Look, Milling	7.1, 9, 15.1, 16.1, 22, 23: Milling; 8, 11: Hauled out; 17.1: Milling, Look, Diving; 18: Look, Sink; 19: Milling, Sink; 20: Milling, Swimming (S); 21: Milling, Look, Sink	2, 4, 8, 12.2, 13, 41.4, 44.2: Milling, Sink; 5, 7, 39: Look, Sink; 6: Milling, Look; 16: Milling, Look, Sink; 11: Swimming (S), Sink; 32: Swimming (S), Milling; 36: Swimming (S); 37: Milling; 38: Swimming (NW)
Marine mammal obs., non-take	Num. of add'l. sightings		Harbor seal- 42; Steller sea lion- 18	Harbor seal- 37; Steller sea lion- 5	Harbor seal- 48; Steller sea lion- 5; Orca- 1
	Species and Total number		Harbor seal- 133; Steller sea lion- 54	Harbor seal- 144; Steller sea lion- 7	Harbor seal- 112; Steller sea lion- 5; Orca- 2
	General behavior		Harbor seal- Milling, Swimming, Sink; Steller sea lion- Milling, Swimming, Sink, Diving	Harbor seal- Milling, Look, Sink; Steller sea lion- Milling, Swimming, Look, Sink	Harbor seal- Milling, Look, Traveling, Sink; Steller sea lion- Milling, Sink; Orca- Milling, Traveling, Sink
Take Numbers	Level A		Harbor seal- 1	None	Harbor seal- 4
	Level B		Harbor seal- 57; Steller sea lion- 7	Harbor seal- 74; Steller sea lion- 5	Harbor seal- 55; Steller sea lion- 4
Mitigation			Construction could not be safely shutdown before Harbor seal seen leaving the Level A zone	N/A	Construction shutdown for 8mins

		Date	February 6, 2021	February 7, 2021	February 8, 2021
Monitoring time	Start		7:19	7:50	8:00
	End		13:53	13:50	15:49
Construction Activity			Pile socket drilling; Installation and removal of steel piles with vibratory hammer	Pile socket drilling; Installation and removal of steel piles with vibratory hammer	Pile socket drilling; Installation and removal of steel piles with vibratory hammer
Weather parameters	Visibility		Good to Excellent	Excellent	Good to Excellent
	Glare		10%	5%	5%
	Condition		Partly cloudy, later sunny	Sunny to partly cloudy	Overcast to partly cloudy
	Waves		Low	Low	Low
	Beaufort		0 to 2	0 to 1	1 to 2
Take observations	Sighting designation		2.3; 3; 4; 5; 20; 21; 23; 24; 28.1; 30; 32	1 (Level A); 2; 3; 5.1; 7 - 15; 22 - 25	6 (Level A); 6A; 7 - 20
	PSO position		Harbor walkway, Auke Bay station, roving vessel	Auke Bay station & Harbor walkway	Auke Bay station & Harbor walkway
	Species and Number		2.3, 24, 32: Harbor seal- 1 each; 3, 30: Harbor seal- 3 each; 4: Steller sea lion- 13; 5, 21: Steller sea lion- 1 each; 20: Harbor seal- 5; 23: Harbor seal- 6; 28.1: Harbor seal-23	1: Harbor seal- 12; 2, 11, 12, 14: Steller sea lion- 1 each; 3, 7, 13, 15, 22, 23, 25: Harbor seal- 1 each; 5.1: Steller sea lion- 12; 8: Harbor seal- 4; 9, 10: Steller sea lion- 2 each; 24: Harbor seal- 2	6, 6A, 7, 10 - 14, 17, 18: Harbor seal- 1 each; 8, 15, 19, 20: Steller sea lion- 1 each; 9, 16: Harbor seal- 2 each
	Distance and bearing from construction		2.3: 417m, 350°; 3: 263m, 360°; 4: 372m, 12°; 5: 261m, 50°; 23: 235m, 267°; 24: 56m, 205°; 28.1: 94m, 252°; 30: 96m, 253°; 32: 97m, 251°; 20: 134m, 267°	1: 32m, 124°; 2: 172m, 257°; 3: 54m, 209°; 5.1: 416m, 1°; 7: 503m, 3°; 8: 419m, 349°; 9: 489m, 359°; 10: 481m, 359°; 11: 254m, 354°; 12: 452m, 6°; 13: 540m, 1°; 14: 452m, 6°; 15: 379m, 0°; 22: 477m, 339°; 23: 399m, 350°; 24: 500m, 350°; 25: 461m, 350°	6: 47m, 234°; 6A: 462m, 353°; 7: 397m, 351°; 8: 479m, 2°; 9: 461m, 350°; 10: 454m, 351°; 11: 393m, 351°; 12: 465m, 352°; 13: 410m, 352°; 14: 393m, 351°; 15: 444m, 357°; 16: 471m, 351°; 17: 476m, 351°; 18: 428m, 351°; 19: 573m, 354°; 20: 444m, 10°
	Behavior		2.3, 32: Look, Sink; 3: Milling, Look, Sink; 4: Milling, Look, Diving; 5, 21, 23, 24: Milling, Sink; 20: Milling; 28.1: Swimming (SW), Milling, Diving, Sink; 30: Swimming (NW)	1: UNK; 2: Swimming, Porpoising, Diving; 3: Swimming, Diving; 5.1: Look, Splash, Diving; 7, 8, 22, 24: Milling, Look, Sink; 9 - 13, 23: Look, Sink; 14: Swimming (SW); 15: Milling; 25: Milling, Sink	6: Look, Swimming (S); 6A: Swimming (NE), Sink; 7, 10, 19, 20: Look, Sink; 8: Swimming (NW); 9, 17: Milling, Sink; 11: Milling; 12: Swimming (SW); 13, 14, 18: Milling, Look, Sink; 15: Swimming (NW), Sink; 16: Swimming (E), Sink
Marine mammal obs., non-take	Num. of add'l. sightings		Harbor seal- 30; Steller sea lion- 11; Orca- 1	Harbor seal- 18; Steller sea lion- 5	Harbor seal- 20; Steller sea lion- 4
	Species and Total number		Harbor seal- 105; Steller sea lion- 47; Orca- 5	Harbor seal- 72; Steller sea lion- 5	Harbor seal- 38; Steller sea lion- 15
	General behavior		Harbor seal- Milling, Look, Sink; Steller sea lion- Milling, Look, Sink; Orca- Swimming	Harbor seal- Milling, Look, Sink; Steller sea lion- Milling, Swimming, Look, Splash, Porpoising, Diving	Harbor seal- Milling, Look, Swimming, Sink; Steller sea lion- Milling, Swimming, Look, Sink
Take Numbers	Level A		None	Harbor seal- 12	Harbor seal- 1
	Level B		Harbor seal- 43; Steller sea lion- 15	Harbor seal- 13; Steller sea lion- 20	Harbor seal- 13; Steller sea lion- 4
Mitigation			Construction start delayed for 15mins	Construction shutdown for 17mins	Harbor seal seen leaving zone before shutdown initiated

		Date	February 11, 2021	February 12, 2021
Monitoring time	Start		9:00	7:30
	End		10:50	16:51
Construction Activity			No in-water work	Pile socket drilling; Installation and removal of steel piles with vibratory hammer
Weather parameters	Visibility		Excellent	Good to Excellent
	Glare		0%	10%
	Condition		Sunny	Sunny
	Waves		Low	Low
	Beaufort		0 to 2	0 to 1
Take observations	Sighting designation	None		1.4; 6; 8; 30.2; 35 - 45
	PSO position			Auke Bay station & Harbor walkway
	Species and Number			1.4: Harbor seal- 25; 6, 41: Steller sea lion- 1 each; 8, 37: Harbor seal- 3 each; 30.2, 44: Steller sea lion- 4 each; 35: Harbor seal- 12; 36: Harbor seal- 2; 38, 39, 40, 42, 43, 45: Harbor seal- 1 each
	Distance and bearing from construction			1.4: 106m, 253°; 6: 244m, 23°; 8: 119m, 256°; 35: 382m, 351°; 30.2: 493m, 11°; 36: 431m, 357°; 37: 436m, 355°; 38: 458m, 353°; 39: 274m, 358°; 40: 416m, 354°; 41: 431m, 9°; 42: 418m, 354°; 43: 405m, 354°; 44: 358m, 10°; 45: 393m, 351°
	Behavior			1.4, 6: Milling; 8, 36, 38, 42: Look, Sink; 30.2: Porpoising, Splashing, Diving; 35: Swimming (N), Diving; 37, 39, 43, 44, 45: Milling, Look, Sink; 40: Milling, Sink; 41: Swimming (SW), Sink
Marine mammal obs., non-take	Num. of add'l. sightings		Harbor seal- 6; Steller sea lion- 1	Harbor seal- 41; Steller sea lion- 12
	Species and Total number		Harbor seal- 39; Steller sea lion- 5	Harbor seal- 106; Steller sea lion- 24
	General behavior		Harbor seal- Milling, Look, Sink; Steller sea lion- Milling, Splash, Diving	Harbor seal- Milling, Look, Sink; Steller sea lion- Milling, Swimming, Diving, Sink
Take Numbers	Level A		None	None
	Level B		None	Harbor seal- 51; Steller sea lion- 10
Mitigation			N/A	N/A

		Date	February 13, 2021	February 14, 2021
Monitoring time	Start	7:30		7:40
	End	16:01		11:29
Construction Activity		Pile socket drilling; Installation and removal of steel piles with vibratory hammer		No in-water work
Weather parameters	Visibility	Good to Excellent		Excellent
	Glare	5%		5%
	Condition	Sunny		Partly cloudy to sunny
	Waves	Low		Low
	Beaufort	0 to 2		0 to 1
Take observations	Sighting designation	40 - 49; 51 - 53; 57 - 59; 51A - 58A; 61 - 64; 66 - 75		None
	PSO position	Auke Bay station & Harbor walkway		
	Species and Number	40, 58: Steller sea lion- 8 each; 41, 44, 49, 52, 57A: Steller sea lion- 5 each; 42, 51A, 61, 62, 67: Harbor seal- 2 each; 43, 51, 69, 75: Harbor seal- 1 each; 45, 55: Harbor seal- 4 each; 46: Steller sea lion- 3; 47: Steller sea lion- 4; 48, 53, 72: Harbor seal- 3 each; 52A, 57: Harbor seal- 5 each; 53A, 56: Steller sea lion- 6 each; 54: Steller sea lion- 1; 58A, 66: Harbor seal- 12 each; 59, 68, 74: Steller sea lion- 7 each; 63: Harbor seal- 9; 64: Harbor seal- 7; 70, 71, 73: Harbor seal- 8 each		
	Distance and bearing from construction	40: 381m, 14°; 41: 413m, 4°; 42: 481m, 352°; 43: 476m, 356°; 44: 537m, 3°; 45: 414m, 355°; 46: 570m, 8°; 47: 451m, 8°; 48: 462m, 357°; 49: 480m, 3°; 51: 382m, 354°; 52: 391m, 13°; 53: 476m, 356°; 54: 402m, 13°; 55: 386m, 353°; 56: 397m, 14°; 57: 477m, 355°; 58: 382m, 12°; 51: 476m, 356°; 52: 397m, 355°; 53: 381m, 11°; 57: 550m, 8°; 58: 391m, 354°; 59: 459m, 5°; 61: 301m, 353°; 62: 381m, 354°; 63: 398m, 352°; 64: 383m, 354°; 66: 221m, 352°; 67: 372m, 353°; 68: 431m, 10°; 69: 291m, 357°; ; 70: 386m, 354°; 71: 540m, 5°; 72: 250m, 351°; 73: 385m, 355°; 74: 418m, 11°; 75: 492m, 358°		
	Behavior	40 - 43, 45, 48, 49, 51, 54, 55, 56, 53A: Milling, Sink; 44: Swimming (N), Diving; 46: Swimming (W), Sink; 47: Swimming (NW), Sink; 52, 58: Milling, Diving; 53, 57, 51A, 52A: Milling; 57A: Milling, Splashing, Sink; 58A, 62 - 64, 66: Milling, Look, Sink; 59: Milling, Splashing, Swimming (S), Diving; 61, 67, 69, 72, 75: Look, Sink; 68: Milling, Splashing, Diving; 70: Milling, Look, Diving; 71: Look, Splashing, Diving; 73: Swimming (N), Diving; 74: Porpoising, Splashing, Diving		
Marine mammal obs., non-take	Num. of add'l. sightings	Harbor seal- 61; Steller sea lion- 25		Harbor seal- 56; Steller sea lion- 15
	Species and Total number	Harbor seal- 359; Steller sea lion- 74		Harbor seal- 192; Steller sea lion- 42
	General behavior	Harbor seal- Milling, Look, Resting, Sink; Steller sea lion- Milling, Look, Splash, Sink, Diving		Harbor seal- Milling, Look, Sink; Steller sea lion- Milling, Swimming, Look, Splash, Porpoising, Diving
Take Numbers	Level A	None		None
	Level B	Harbor seal- 105; Steller sea lion- 82		None
Mitigation		N/A		N/A

		Date	February 15, 2021	February 16, 2021
Monitoring time	Start	11:00		10:00
	End	15:32		16:30
Construction Activity		Pile socket drilling		Installation and removal of steel piles with vibratory hammer
Weather parameters	Visibility	Excellent		Moderate to Good
	Glare	5%		10%
	Condition	Overcast		Overcast with snow early
	Waves	Low		Low
	Beaufort	0 to 1		0
Take observations	Sighting designation	4.1; 4.2; 5; 5.1; 6 - 21; 24.3; 25.3; 26		61; 64
	PSO position	Auke Bay station & Harbor walkway		Auke Bay station & Harbor walkway
	Species and Number	4.1, 8, 12, 18, 21: Harbor seal- 2 each; 4.2: Steller sea lion- 9; 5, 14: Harbor seal- 3 each; 5.1: Harbor seal- 7; 6, 7, 13, 15, 20: Steller sea lion- 1 each; 9, 10, 16, 24.3: Harbor seal- 1 each; 11: Harbor seal- 10; 17: Steller sea lion- 8; 19: Harbor seal- 4; 25.3: Harbor seal- 6; 26: Steller sea lion- 5		61: Steller sea lion- 1; 64: Harbor seal- 4
	Distance and bearing from construction	4.1: 129m, 257°; 5: 138m, 255°; 4.2: 388m, 10°; 5.1: 227m, 357°; 6: 327m, 15°; 7: 375m, 44°; 8: 469m, 354°; 9: 442m, 357°; 10: 386m, 30°; 11: 375m, 25°; 12: 439m, 354°; 13: 382m, 37°; 14: 474m, 356°; 15: 458m, 21°; 16: 359m, 38°; 17: 442m, 24°; 18: 446m, 24°; 19: 470m, 357°; 20: 367m, 32°; 21: 469m, 356°; 25.3: 454m, 356°; 24.3: 404m, 351°; 26: 371m, 16°		61: 380m, 353°; 64: 466m, 354°
	Behavior	4.1, 5, 5.1, 12, 14, 21, 24.3: Milling; 4.2: Swimming (NE); 6, 10, 15: Look, Sink; 7: Porpoising, Diving; 8, 16, 19: Milling, Sink; 9, 13, 18, 20: Milling, Look, Sink; 11: Milling, Look, Diving; 17: Look, Splashing, Diving; 25.3: Swimming (W); 26: Milling, Swimming (E)		61: Milling, Look, Sink; 64: Milling
Marine mammal obs., non-take	Num. of add'l. sightings	Harbor seal- 13		Harbor seal- 70; Steller sea lion- 14
	Species and Total number	Harbor seal- 70		Harbor seal- 202; Steller sea lion- 54
	General behavior	Harbor seal- Milling, Look, Swimming, Sink		Harbor seal- Milling, Look, Swimming, Sink; Steller sea lion- Milling, Swimming, Look, Sink
Take Numbers	Level A	None		None
	Level B	Harbor seal- 47; Steller sea lion- 27.		Harbor seal- 4; Steller sea lion- 1
Mitigation		N/A		N/A

	Date	February 17, 2021
Monitoring time	Start	7:00
	End	17:26
Construction Activity		Pile socket drilling
Weather parameters	Visibility	Moderate to Good
	Glare	0%
	Condition	Overcast with periods of rain and snow
	Waves	Low
	Beaufort	0 to 1
Take observations	Sighting designation	14 - 17; 26.1; 27.1; 28.1; 31 - 69
	PSO position	Auke Bay station & Harbor walkway
	Species and Number	14, 16, 17, 26.1, 33, 38, 49, 58, 60, 62, 63: Harbor seal- 1 each; 15: Harbor seal- 8; 27.1, 44, 45, 47, 59, 64: Steller sea lion- 1 each; 28.1, 31, 36, 37, 39, 42, 43, 48, 53, 54, 67, 69: Harbor seal- 2 each; 32, 35: Harbor seal- 4 each; 34, 46, 65: Harbor seal- 10 each; 40: Harbor seal- 15; 41, 55, 56: Harbor seal- 3 each; 50: Harbor seal- 6; 51: Harbor seal- 18; 52, 66, 68: Steller sea lion- 2 each; 57: Harbor seal- 5 each; 61: Steller sea lion- 3
	Distance and bearing from construction	14: 53m, 240°; 15: 102m, 263°; 16: 99m, 261°; 17: 53m, 242°; 26.1: 421m, 355°; 27.1: 295m, 4°; 28.1: 267m, 3°; 31: 292m, 352°; 32: 453m, 355°; 33: 333m, 20°; 34: 231m, 352°; 35: 393m, 330°; 36: 271m, 349°; 37: 443m, 355°; 38: 235m, 349°; 39: 471m, 355°; 40: 443m, 354°; 41: 245m, 345°; 42: 380m, 355°; 43: 378m, 354°; 44: 467m, 358°; 45: 330m, 6°; 46: 473m, 354°; 47: 333m, 20°; 48: 443m, 358°; 49: 371m, 352°; 50: 443m, 357°; 51: 448m, 357°; 52: 359m, 13°; 53: 384m, 353°; 54: 462m, 355°; 55: 382m, 354°; 56: 371m, 355°; 57: 465m, 353°; 58: 458m, 351°; 59: 309m, 8°; 60: 244m, 359°; 61: 379m, 18°; 62: 380m, 352°; 63: 464m, 355°; 64: 375m, 358°; 65: 326m, 20°; 66: 393m, 5°; 67: 473m, 354°; 68: 459m, 22°; 69: 465m, 355°
	Behavior	14, 16, 33, 38, 45, 47, 49, 50, 53: Look, Sink; 15, 34, 36, 37, 39, 41, 48, 51: Milling, Look, Sink; 17: Swimming (W); 26.1, 28.1, 35, 52, 54, 55, 65: Milling, Sink; 27.1: Swimming (NW), Diving; 31, 32: Milling, Look; 40, 43, 64: Milling, Look, Diving; 42: Swimming (S), Look, Sink; 44: Look, Diving; 46, 57, 58, 60, 63, 67, 69: Milling; 56, 59: Swimming (N); 61, 66: Swimming (NW); 62: Swimming (SW); 68: Swimming (W)
Marine mammal obs., non-take	Num. of add'l. sightings	Harbor seal- 39; Steller sea lion- 5
	Species and Total number	Harbor seal- 154; Steller sea lion- 10
	General behavior	Harbor seal- Milling, Look, Sink; Steller sea lion- Milling, Swimming, Look, Sink
Take Numbers	Level A	None
	Level B	Harbor seal- 134; Steller sea lion- 15
Mitigation		N/A

	Date	February 18, 2021
Monitoring time	Start	7:00
	End	17:06
Construction Activity		Pile socket drilling; Installation and removal of steel piles with vibratory hammer
Weather parameters	Visibility	Good to Excellent
	Glare	0%
	Condition	Overcast with periods of rain and snow
	Waves	Low
	Beaufort	0 to 2
Take observations	Sighting designation	2 - 18; 9A; 31 - 59
	PSO position	Auke Bay station & Harbor walkway
	Species and Number	2 - 5, 9, 14, 16, 32, 34, 35, 45, 53 - 55, 58: Harbor seal- 1 each; 6: Harbor seal- 20; 7, 15, 33, 37, 57: Steller sea lion- 1 each; 8, 40, 44: Harbor seal- 5 each; 9A: Harbor seal- 13; 10, 13, 36, 39, 42, 48, 52, 59: Harbor seal- 2 each; 11, 31: Steller sea lion- 2 each; 12: Steller sea lion - 11; 13, 18: Harbor seal- 4 each; 17, 46, 56: Harbor seal- 3 each; 38: Harbor seal- 6; 41: Steller sea lion- 3; 43: Harbor seal- 10; 47: Steller sea lion- 6; 49: Harbor seal- 7; 50: Harbor seal- 15; 51: Steller sea lion- 10
	Distance and bearing from construction	2: 65m, 254°; 3: 121m, 268°; 4: 107m, 253°; 5: 108m, 266°; 9A: 149m, 265°; 6: 382m, 353°; 7: 399m, 5°; 8: 455m, 357°; 9: 365m, 353°; 10: 283m, 357°; 11: 397m, 0°; 12: 526m, 2°; 13: 468m, 357°; 14: 381m, 354°; 15: 353m, 13°; 16: 376m, 354°; 17: 387m, 24°; 18: 441m, 358°; 31: 406m, 11°; 32: 449m, 357°; 33: 374m, 12°; 34: 435m, 356°; 35: 472m, 356°; 36: 443m, 356°; 37: 318m, 21°; 38: 245m, 347°; 39: 377m, 354°; 40: 464m, 357°; 41: 500m, 5°; 42: 379m, 355°; 43: 437m, 356°; 44: 427m, 357°; 45: 456m, 357°; 46: 396m, 356°; 47: 451m, 1°; 48: 450m, 357°; 49: 452m, 357°; 50: 464m, 345°; 51: 549m, 342°; 52: 378m, 352°; 53: 388m, 352°; 54: 416m, 349°; 55: 375m, 350°; 56: 462m, 346°; 57: 376m, 13°; 58: 331m, 2°; 59: 458m, 345°
	Behavior	2, 3, 6, 7, 9, 32, 34, 53, 54, 55, 57, 58: Look, Sink; 4, 10, 36, 46: Milling, Sink; 5, 13, 18, 35, 37, 40, 41, 43, 45, 48, 56, 59: Milling; 8: Resting, Milling; 9A, 39: Swimming (SW); 11: Swimming (S); 12: Swimming (E), Porpoising, Milling; 14, 15: Swimming (W); 16: Swimming, Diving; 17: Swimming (N), Diving; 31, 33, 38, 42: Milling, Diving; 50: Milling, Look, Sink; 44: Milling, Swimming (NW), Diving; 47: Swimming (N); 49: Swimming (NW), Diving; 51: Milling, Splashing, Swimming (NW), Diving; 52: Swimming (NW)
Marine mammal obs., non-take	Num. of add'l. sightings	Harbor seal- 20; Steller sea lion- 6
	Species and Total number	Harbor seal- 55; Steller sea lion- 12
	General behavior	Harbor seal- Milling, Look, Resting, Sink; Steller sea lion- Milling, Swimming, Look, Splash, Porpoising, Diving
Take Numbers	Level A	None
	Level B	Harbor seal- 134; Steller sea lion- 39
Mitigation		N/A

		Date	February 19, 2021	February 20, 2021	February 22, 2021
Monitoring time	Start		7:00	7:00	12:30
	End		15:12	16:20	15:27
Construction Activity			Pile socket drilling; Installation and removal of steel piles with vibratory hammer	Pile socket drilling; Installation and removal of steel piles with vibratory hammer	Installation of steel piles with vibratory hammer
Weather parameters	Visibility		Good to Excellent	Moderate to Good	Poor to Good
	Glare		5%	0%	0%
	Condition		Overcast with periods of rain	Overcast with snow later	Overcast with periods of rain and snow
	Waves		Moderate	Moderate	Moderate
	Beaufort		2 to 7	0 to 6	1 to 3
Take observations	Sighting designation		2; 6; 8; 9.1; 12; 13; 16.5; 18.3; 19.2; 20 - 39	1.4; 7; 8 (Level A); 9; 14; 23; 25; 26; 27	3
	PSO position		Auke Bay station & Harbor walkway	Harbor walkway, Auke Bay station, roving vessel	Auke Bay station & roving vessel
	Species and Number		2: Harbor seal- 10; 6, 19.2: Steller sea lion- 1 each; 8, 12, 18.3, 20, 22, 26, 28, 30 - 32, 34 - 36: Harbor seal- 1 each; 9.1, 13, 21, 24, 25, 37, 38: Harbor seal- 2 each; 16.5: Steller sea lion- 20; 23, 33: Harbor seal- 3 each; 27: Harbor seal- 12; 29: Steller sea lion- 2; 39: Steller sea lion- 3	1.4: Steller sea lion- 13; 7, 8, 9: Harbor seal-1 each; 14: Harbor seal- 10; 23: Steller sea lion- 9; 25: Steller sea lion- 2; 26: Harbor seal- 3; 27: Steller sea lion- 15	3: Steller sea lion- 2
	Distance and bearing from construction		2: 132m, 258°; 6: 416m, 358°; 8: 479m, 358°; 9.1: 486m, 356°; 12: 424m, 356°; 13: 479m, 359°; 20: 410m, 356°; 18.3: 489m, 355°; 19.2: 514m, 358°; 16.5: 622m, 354°; 21: 468m, 354°; 22: 414m, 355°; 23: 420m, 355°; 24: 459m, 353°; 25: 456m, 353°; 27: 465m, 355°; 28: 494m, 356°; 29: 452m, 359°; 20: 440m, 359°; 31: 400m, 356°; 32: 456m, 355°; 26: 414m, 356°; 33: 462m, 356°; 34: 449m, 356°; 35: 500m, 356°; 36: 464m, 358°; 37: 453m, 356°; 38: 467m, 351°; 39: 334m, 18°	1.4: 464m, 31°; 7: 107m, 253°; 8: 25m, 241°; 9: 106m, 248°; 14: 288m, 347°; 23: 440m, 32°; 25: 467m, 21°; 26: 409m, 10°; 27: 379m, 9°	3: 555m, 87°
	Behavior		2: Milling, Sink; 6: Swimming (W), Sink; 8, 20 - 23, 26, 30, 31, 34 - 38: Look, Sink; 9.1, 29, 32: Milling, Sink; 12: Swimming (NW); 13, 19.2, 28: Milling, Look, Sink; 16.5: Milling, Splashing, Look, Porpoising, Diving; 18.3, 24, 25: Milling; 27, 39: Milling, Look, Diving	1.4: Milling, Porpoising, Splashing, Diving; 7, 26: Milling, Sink; 8, 25: Look, Sink; 9: Look, Diving; 14: Milling, Look; 23: Milling, Diving; 27: Milling, Porpoising	3: Look, Sink
	Marine mammal obs., non-take	Num. of add'l. sightings		Harbor seal- 13; Steller sea lion- 8	Harbor seal- 32; Steller sea lion- 8
Species and Total number			Harbor seal- 20; Steller sea lion- 23	Harbor seal- 117; Steller sea lion- 55	Harbor seal- 12; Steller sea lion- 13
General behavior			Harbor seal- Milling, Look, Sink; Steller sea lion- Milling, Swimming, Diving, Look, Sink	Harbor seal- Milling, Look, Swimming, Sink; Steller sea lion- Milling, Splash, Look, Diving, Sink	Harbor seal- Milling, Look, Sink; Steller sea lion- Milling, Swimming, Porpoising, Sink
Take Numbers	Level A		None	Harbor seal- 1	None
	Level B		Harbor seal- 55; Steller sea lion- 27	Harbor seal- 15; Steller sea lion- 39	Steller sea lion- 2
Mitigation			N/A	Harbor seal seen leaving zone before shutdown initiated	N/A

Observation Summary

Observation and construction

Observations were conducted for all in-water or near water construction, which occurred on 26 days over a three (3) month period from December 18, 2020 to February 22, 2021. Construction work requiring observation primarily consisted of pile removal or driving with a vibratory hammer and down-the-hole pile socket drilling.

Takes

A total of 21 Level A takes and 891 Level B takes of Harbor seals were recorded for the duration of this project. This represents approximately 7.6% of the 276 allotted Level A take and 31.8% of the 2,806 Level B take. Of the Level A takes, 57.1% occurred in a single instance when a group of 12 harbor seals surfaced inside the shutdown zone. There was a similar instance with a group of three; in both cases, the construction operation was shut down until the zone was cleared. In many instances, seals were observed surfacing briefly, as construction was ongoing, before swimming out of or being subsequently sighted outside the Level A zone and operations were allowed to continue thereafter.

As it impossible to visually differentiate between the eastern and western Steller sea lion distinct population segments, all sea lion take was calculated together. Level B takes of Steller sea lion amounted to 361 for the project, or approximately 13.0% of the allotted 2,783 Level B takes. No Level A take of Steller sea lion occurred, nor were there any take of any other marine mammal species.

Mitigation

Presence of Harbor seals in the shutdown zones caused a total of 33 minutes of construction start delays and 25 minutes of shutdown time for the duration of in-water work. In those instances of Harbor seals in the zone, the required operational shutdown was executed smoothly; however, no shutdown was initiated for the takes on February 1st as a result of a miscommunication between the observer and construction teams regarding which operation was being performed at the time. A further instance of a lack of a shutdown occurred on February 3rd. This case resulted from a communication system breakdown. These errors were rectified and were not repeated on any subsequent instances. In both cases, the seals' behavior appeared unaffected by the ongoing operations and they ultimately left the shutdown zone in their own time and of their own accord.

Distribution patterns of infrequently sighted species

Although Harbor seals and Steller sea lions were the most frequently observed species in the action area, there were additional sightings of Humpback whale and Orca. The Orca were sighted on two consecutive days in early February, with the first sighting comprising of two (2) individuals and five (5) for the subsequent sighting. In both cases, the individuals were well outside the monitoring zone for the given construction activity, if any, at the time of sighting.

Additionally, two (2) sightings of solitary Humpback whales occurred on consecutive days in early January. While the majority of Humpbacks migrate to southern breeding grounds for the winter season, some individuals are known to remain in Alaskan feeding grounds or delay their migration to well into the winter season. As such, the sighting of these individuals is not uncommon, although it should be noted that they were far outside the project monitoring zones.

Seal and Sea lion distribution patterns

The wider region of Stephens Passage/Lynn Canal contains a sizable population of Harbor seals which were frequently sighted in the project's action area, as indicated by the large number of Level B takes. A private marina, Andrew's Marina, located adjacent to Statter Harbor serves as a winter haulout for the resident Harbor seal population. Observers noted periods where more than four dozen seals were utilizing this haulout and anecdotal evidence suggests that upwards of 100 individuals have been seen there at one time.

Being residents of the harbor area, these seals appeared to be acclimated to high levels of human activity and not impacted by the addition of construction activities. A range of Harbor seal behaviors, including foraging and resting, were observed inside the harbor basin. Neither a change in distribution nor any noticeable movement out of the area due to construction work was recorded, including from blasting operations as conducted in an earlier stage of this project.

Although there were a high number of takes for this project, it is likely that many of these were of the same individuals throughout the day and duration of the project. Observers reported frequently sighting the same individual seals, as determined by discrete patterns in their pelage. The resident population of the basin was estimated to comprise of 20 to 30 individual Harbor seals with other individuals utilizing the area on a more intermittent basis.

Conversely, Steller sea lions do not typically reside in the harbor area during any season; however, they are frequent visitors. This is particularly the case when the vicinity offers abundant feeding opportunities, as was likely around the time of the construction work. There were several instances of sea lion foraging noted by observers, in addition to the documented presence of a feeding Humpback whale within the harbor a few weeks prior to the project start. Steller sea lions were sighted on most days during the course of the project. The number of individuals in the sighting ranged from single sea lions to a few individuals together and all the way up to 9 to 18 or more sea lions in a tight raft. While it cannot be confirmed for certain, it is likely the same approximately two dozen sea lions were responsible for the majority of sightings during the course of construction.