



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

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

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Contents

Executive Summary.....	2
Introduction.....	2
Methods.....	3
Daily Observation Logs.....	5 - 33
Observation Summary.....	33 - 37

Executive Summary

Construction for harbor improvements was undertaken in Statter Harbor, Juneau, Alaska with work being conducted from October 2019 to September 2020. In-water work on the project consisted of demolition of existing facilities, dredging and excavation, blasting of bedrock, 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 frequently present in the action area with an estimated 20 - 30 individuals resident in the immediate vicinity. Few sightings or take of other species occurred. For the duration of the project, 1,434 Level B and two (2) Level A take of Harbor seals were recorded with an additional two (2) Level B take of Steller sea lions.

Introduction

In-water construction work began in October 2019 on 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 user bases. Operations during this project phase included the demolition of existing facilities (including timber pile removal), dredging and off-shore disposal of associated material, construction of two successive drill pads, and bore-hole drilling followed by blasting and excavation of bedrock in the harbor basin. This work continued primarily through April 2020 with two additional days of dredging required in late September 2020. 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 take was authorized under the project's Incidental Harassment Authorization (IHA) dated February 25, 2019. Take was also authorized for Steller sea lion (*Eumetopias jubatus*), Harbor porpoise (*Phocoena phocoena*), and Humpback whale (*Megaptera*

novaeangliae). 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 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. 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.

A proposal of photo identification of individual Harbor seals was discussed; however, this idea was ultimately not pursued due to a lack of regulatory support. Had this been implemented, a more accurate assessment would be possible of the population size of resident seals in the action area. Furthermore, photo identification would enable precise distinction between the number of individual animals taken and the number of incidences of take for the project.

A population estimate of resident seals 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 combined with construction operations being confined within the harbor basin provided excellent visibility of the shutdown and monitoring zones, even in 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. A correction factor was employed for blasting operations to account for individuals sighted in the area just prior to and after the blast was conducted.

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Daily Observation Logs

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

Date		October 14, 2019	November 19, 2019	November 20, 2019	November 21, 2019
Monitoring time	Start	9:37	7:40	6:00	6:00
	End	14:28	18:30	14:51	15:32
Construction Activity		Removal of timber piles via dead-pull method and with vibratory hammer	Dredging	Dredging	Dredging
Weather parameters	Visibility	Excellent	Bad to Good	Moderate to Good	Moderate
	Glare	0%	15%	15%	0%
	Condition	Partly Cloudy	Overcast with light rain	Overcast with light rain	Overcast with light rain
	Waves	Low	Low	Low	Low to moderate
	Beaufort	1	1	1 to 2	1
Take observations	Sighting designation	6; 7; 19	14 - 23	37 - 49	18 - 21, 34, 35, 37, 38.1, 39 - 44
	PSO position	Auke Bay Station; Harbor walkway	All: Harbor walkway	All: Harbor walkway	All: Harbor walkway
	Species and Number	6: Harbor seal- 1; 7: Harbor seal- 1; 19: Harbor seal- 1	14 - 23: Harbor seal- 1 each sighting	37, 39 - 49: Harbor seal- 1 each sighting; 38: Harbor seal- 7	18, 19, 34 - 44: Harbor seal- 1 each; 20: Harbor seal- 2
	Distance and bearing from construction	6: 503m, 320°; 7: 468m, 262°; 19: 411m, 261°	14: 84m, 268°; 15: 74m, 264°; 16: 55m, 143°, 17: 48m, 132°; 18: 77m, 229°; 19: 51m, 143°; 20: 56m, 91°; 21: 55m, 156°; 22: 63m, 193°; 23: 53m, 161°	37: 45m, 136°; 38: 50m, 152°; 39: 31m, 117°; 40: 59m, 185°; 41: 54m, 170°; 42: 46m, 90°; 43: 60m, 189°; 44: 31m, 108°; 45: 50m, 135°; 46: 54m, 158°; 47: 36m, 107°; 48: 32m, 148°; 49: 55m, 180°	18: 84m, 205°; 19: 90m, 197°; 20: 81m, 268°; 21: 91m, 263°; 34: 108m, 223°; 35: 59m, 135°; 37: 61m, 150°; 38.1: 100m, 221°; 39: 53m, 204°; 40: 80m, 210°; 41: 49m, 100°; 42: 56m, 224°; 43: 70m, 136°; 44: 67m, 95°
	Behavior	6: Look, Sink; 7: Look, Sink; 19: Swimming (North)	14: UNK; 15: Milling, Diving; 16: Swimming; 17: Porpoising, Look, Swimming, Milling; 18: Look, Sink, Milling; 19: Look, Sink, Milling; 20: Swimming, Look, Sink; 21: Swimming (E); 22: Milling; 23: Look, Sink, Milling	37 - 49: Look, Sink	18: Swimming, Sink; 19 - 42: Look, Sink; 43: UNK; 44: Look, Sink
Marine mammal obs., non-take	Num. of add'l. sightings	Harbor seal- 15; Steller sea lion- 1	21	36	30
	Species and Total number	Harbor seal- 18; Steller sea lion- 1	Harbor seal- 38	Harbor seal- 64	Harbor seal- 37
	General behavior	Look, Sink, Swimming	Look, Swimming, Milling, Sink	Look, Swimming, Sink	Look, Sink, Swimming, Foraging
Take Numbers	Level A	None	None	None	None
	Level B	Harbor seal-3	Harbor seal- 7	Harbor seal-19	Harbor seal-15
Mitigation		Soft start procedures conducted as required	N/A	N/A	N/A

		Date	November 22, 2019	November 23, 2019	December 1, 2019	December 2, 2019
Monitoring time	Start		6:00	6:00	6:00	6:00
	End		16:05	15:34	14:53	14:04
Construction Activity			Dredging	Dredging	Dredging	Dredging
Weather parameters	Visibility		Excellent	Moderate to Excellent	Moderate to Excellent	Poor to Good
	Glare		0%	20%	15%	10%
	Condition		Overcast with light rain	Overcast with light rain	Overcast with periods of rain and snow	Overcast with periods of rain and fog
	Waves		Low	Low	Low	Low
	Beaufort		1	1	0 to 1	1
Take observations	Sighting designation		8; 13; 15 - 21; 31; 32; 34	5 - 7; 10; 11	6 - 18	12 - 15
	PSO position		All: Harbor walkway	All: Harbor walkway	6 - 18: Boat launch; 19: Harbor walkway	All: Harbor walkway
	Species and Number		8, 13, 15, 16, 18 - 34: Harbor seal- 1 each; 17: Harbor seal- 2	All: Harbor seal- 1 each	6 - 9, 11, 12, 14 - 18: Harbor seal- 1 each; 10: Harbor seal- 2; 13: Harbor seal- 6	12 - 14: Harbor seal- 1 each; 15: Harbor seal- 9
	Distance and bearing from construction		8: 98m, 174°; 13: 69m, 209°; 15: 94m, 229°; 16: 71m, 223°; 17: 62m, 183°; 18: 52m, 172°; 19: 75m, 221°; 20: 57m, 182°; 21: 46m, 168°; 31: 87m, 236°; 32: 65m, 215°; 34: 46m, 195°	5: 66m, 218°; 6: 59m, 219°; 7: 33m, 177°; 10: 48m, 208°; 11: 47m, 237°	6: 83m, 226°; 7: 92m, 242°; 8: 198m, 254°; 9: 95m, 232°; 10: 113m, 234°; 11: 120m, 242°; 12: 109m, 232°; 13: 271m, 256°; 14: 162m, 249°; 15: 87m, 232°; 16: 171m, 251°; 17: 83m, 233°; 18: 109m, 237°; 19: 67m, 247°	12: 44m, 320°; 13: 96m, 295°; 14: 108m, 337°; 15: 109m, 254°
	Behavior		8, 13, 15, 16, 18, 20, 21, 32, 34: Look, Sink; 17: Look, Sink, Swimming; 19: Look, Sink, Milling; 31: Swimming	5: Milling; 6: UNK; 7, 10, 11: Look, Sink	6, 7, 9, 10, 12, 15 - 18: Milling; 8, 11, 14: Swimming; 13: Milling, Hauled out	12, 13: Look, Sink; 14, 15: Milling
Marine mammal obs., non-take	Num. of add'l. sightings		25	6	14	Harbor seal- 15; Humpback whale- 1
	Species and Total number		Harbor seal-28	Harbor seal-6	Harbor seal- 29	Harbor seal- 33; Humpback whale- 2
	General behavior		Look, Milling, Sink	Look, Milling, Sink	Look, Milling, Sink	Harbor seal- Look, Swimming, Milling; Humpback whale- Milling, Breaching, Diving
Take Numbers	Level A		None	None	None	None
	Level B		Harbor seal-13	Harbor seal-5	Harbor seal- 8	Harbor seal-12
Mitigation			N/A	N/A	N/A	N/A

		Date	December 3, 2019	December 4, 2019	December 5, 2019	December 6, 2019	December 7, 2019
Monitoring time	Start		6:00	6:00	6:02	6:00	6:00
	End		15:50	15:30	16:03	15:51	14:20
Construction Activity			Dredging	Dredging	Dredging	Dredging	Dredging
Weather parameters	Visibility		Bad to Good	Poor later Excellent	Moderate to Good	Poor to Excellent	Good
	Glare		5%	5%	5%	5%	0%
	Condition		Partly cloudy with snow	Overcast later partly cloudy	Partly cloudy with periods of rain	Overcast	Overcast with light rain
	Waves		Low	Low	Low	Low	Low
	Beaufort		0 to 1	0 to 1	0 to 1	0 to 1	0 to 1
Take observations	Sighting designation		45, 46, 52, 53	10, 11, 12	86, 87, 88, 90	8	11, 13, 14, 15, 36, 37
	PSO position		All: Harbor walkway	All: Mid-basin station	All: Harbor walkway	All: Harbor walkway	All: Mid-basin station
	Species and Number		45 - 53: Harbor seal- 1 each	10, 11, 12: Harbor seal- 1 each	86, 87, 88, 90: Harbor seal- 1 each	8: Harbor seal- 1	11: Harbor seal- 3; 13: Harbor seal- 2; 14, 15, 36, 37: Harbor seal- 1 each
	Distance and bearing from construction		45: 85m, 254°; 46: 61m, 260°; 52: 71m, 251°; 53: 70m, 251°	10: 89m, 265°; 11: 29m, 257°; 12: 48m, 237°	86: 49m, 243°; 87: 69m, 252°; 88: 104m, 271°; 90: 75m, 237°	8: 51m, 207°	11: 65m, 260°; 13: 95m, 249°; 14: 81m, 242°; 15: 44m, 148°; 36: 100m, 236°; 37: 85m, 232°
	Behavior		45, 46: Look, Sink; 52, 53: Milling	10, 11, 12: Milling	86: Look, Sink; 87, 88: Swimming; 90: Milling	8: Look	11, 13, 14: Milling; 15: Look, Sink; 36, 37: Swimming
Marine mammal obs., non-take	Num. of add'l. sightings		49	36	89	7	41
	Species and Total number		Harbor seal- 61	Harbor seal- 42	Harbor seal- 179	Harbor seal- 7	Harbor seal- 156
	General behavior		Look, Milling, Sink	Milling	Look, Milling, Sink, Swimming	Look, Sink	Look, Sink, Milling
Take Numbers	Level A		None	None	None	None	None
	Level B		Harbor seal-4	Harbor seal- 3	Harbor seal-4	Harbor seal- 1	Harbor seal- 9
Mitigation			N/A	N/A	N/A	N/A	N/A

Date		December 8, 2019	December 9, 2019	December 10, 2019	December 11, 2019	December 12, 2019
Monitoring time	Start	6:00	6:00	6:05	6:00	6:00
	End	15:30	13:07	15:51	17:35	17:45
Construction Activity		Dredging	Dredging	Dredging	Dredging	Dredging
Weather parameters	Visibility	Poor to Good	Poor	Moderate to Excellent	Poor to Excellent	Moderate to Excellent
	Glare	20%	5%	10%	15%	15%
	Condition	Light rain	Overcast	Overcast with periods of rain and fog	Overcast with light rain	Partly cloudy with periods of light rain
	Waves	Low	Low	Low	Low	Low
	Beaufort	0 to 1	1	0 to 1	0 to 1	0 to 1
Take observations	Sighting designation	25 - 27, 28.1, 29, 30, 32, 33	None	5 - 10	5 - 16, 18 - 25, 20B	10, 12 - 25, 10B
	PSO position	All: Harbor walkway		All: Harbor walkway	All (expect 25, 20B): Harbor walkway; 25: Tug; 20B: Mid-basin station	All: Harbor walkway
	Species and Number	25, 27: Harbor seal- 5 each; 26, 29, 32: Harbor seal- 1 each; 28.1: Harbor seal- 3; 30, 33: Harbor seal- 2		5, 6, 7, 9, 10: Harbor seal- 1 each; 8: Harbor seal- 2	5 - 16, 18 - 24, 20B: Harbor seal- 1 each; 25: Steller sea lion- 1	10, 12 - 25, 10B: Harbor seal- 1 each
	Distance and bearing from construction	25: 58m, 269°; 26: 35m, 203°; 27: 82m, 237°; 28.1: 65m, 229°; 29: 54m, 222°; 30: 61m, 230°; 32: 54m, 213°; 33: 59m, 220°		5: 36m, 221°; 6: 57m, 240°; 7: 32m, 212°; 8: 63m, 257°; 9: 63m, 240°; 10: 85m, 248°	5: 83m, 251°; 6: 94m, 253°; 7: 103m, 258°; 8: 97m, 257°; 9: 100m, 255°; 10: 89m, 250°; 11: 87m, 248°; 12: 81m, 246°; 13: 89m, 248°; 14: 96m, 251°; 15: 74m, 251°; 16: 107m, 254°; 18: 90m, 251°; 19: 70m, 243°; 20: 69m, 248°; 21: 80m, 249°; 22: 73m, 233°; 23: 79m, 234°; 24: 75m, 234°; 25: 71m, 225°; 20B: 95m, 258°	10: 75m, 239°; 12: 67m, 239°; 13: 92m, 242°; 14: 81m, 241°; 15: 89m, 242°; 16: 95m, 243°; 17: 76m, 243°; 18: 84m, 242°; 19: 79m, 243°; 20: 72m, 242°; 21: 64m, 233°; 22: 87m, 241°; 23: 78m, 240°; 24: 73m, 241°; 25: 81m, 242°; 10B: 88m, 265°
	Behavior	25: Swimming, Look, Sink; 26, 27: Milling; 28.1: Milling, Look; 29: Swimming, Sink; 30: Look, Milling; 32, 33: Look, Sink		5 - 10: Look, Sink	5, 14, 20, 21, 24: Look, Sink; 6, 8, 9, 10, 16, 19, 25: Swimming; 7, 11, 12, 13, 15, 18, 22, 23, 20B: Milling	10, 13, 14, 17, 19, 21, 22, 24: Milling; 12: Traveling; 15, 16, 20, 23, 10B: Swimming; 18, 25: Look, Sink
Marine mammal obs., non-take	Num. of add'l. sightings	27	13	5	43	25
	Species and Total number	Harbor seal- 36	Harbor seal- 32	Harbor seal-5	Harbor seal- 98	Harbor seal- 37
	General behavior	Look, Sink, Milling	Look, Milling, Sink, Swimming	Look, Sink	Look, Sink, Milling, Swimming	Look, Sink, Milling, Swimming
Take Numbers	Level A	None	None	None	None	None
	Level B	Harbor seal-20	None	Harbor seal- 7	Harbor seal- 20; Steller sea lion- 1	Harbor seal- 16
Mitigation		N/A	N/A	N/A	N/A	N/A

		Date	December 13, 2019	December 14, 2019	December 15, 2019	December 16, 2019
Monitoring time	Start	6:00	6:00	6:00	6:00	6:00
	End	18:12	18:06	18:01	16:36	16:36
Construction Activity		Dredging	Dredging	Dredging	Dredging	Dredging
Weather parameters	Visibility	Poor to Excellent	Poor to Good	Bad early, later Moderate	Bad to Good	Bad to Good
	Glare	15%	10%	15%	15%	15%
	Condition	Partly cloudy with periods of light rain	Partly cloudy, later overcast	Partly cloudy	Overcast with snow	Overcast with snow
	Waves	Low	Low	Low	Low	Low
	Beaufort	0 to 3	0 to 1	0 to 1	0 to 1	0 to 1
Take observations	Sighting designation	17, 19 - 29, 40	2, 16	7, 8, 4B - 11B	18, 21 - 23, 25, 26, 30, 35, 36, 41, 45, 47 - 49, 51, 52, 53.1, 55, 56	
	PSO position	All (except 40): Harbor walkway; 40: Tug	2: Harbor walkway; 16: Mid-basin station	All: Harbor walkway	18, 21 - 23: Harbor walkway; All others: Launch ramp dock	
	Species and Number	17: Harbor seal- 2; 19, 22, 24 - 29: Harbor seal- 1 each; 20: Harbor seal- 4; 21, 23: Harbor seal- 5	2, 16: Harbor seal- 1 each	7, 8, 4B - 8B, 10B: Harbor seal- 1 each; 9B, 11B: Harbor seal- 2 each	18, 21 - 23, 26, 30, 35, 36, 49, 55, 56: Harbor seal- 1 each; 25, 45, 48, 52: Harbor seal- 2 each; 41: Harbor seal- 4; 47, 51: Harbor seal- 3 each; 53.1: Harbor seal- 6	
	Distance and bearing from construction	17: 106m, 262°; 19: 90m, 232°; 20: 76m, 261°; 21: 80m, 264°; 22: 90m, 268°; 23: 85m, 267°; 24: 73m, 227°; 25: 73m, 256°; 26: 62m, 214°; 27: 61m, 182°; 28: 62m, 192°; 29: 85m, 224°; 40: 110m, 181°	2: 89m, 259°; 16: 68m, 182°	7: 64m, 188°; 8: 41m, 145°; 4B: 80m, 176°; 5B: 60m, 110°; 6B: 57m, 107°; 7B: 73m, 181°; 8B: 64m, 131°; 9B: 88m, 201°; 10B: 60m, 140°; 11B: 55m, 184°	18: 90m, 236°; 21: 69m, 231°; 22: 63m, 218°; 23: 37m, 171°; 25: 60m, 336°; 26: 72m, 311°; 30: 100m, 319°; 35: 83m, 334°; 36: 77m, 262°; 41: 105m, 331°; 45: 81m, 347°; 47: 74m, 306°; 48: 70m, 236°; 49: 87m, 244°; 51: 86m, 336°; 52: 69m, 235°; 53.1: 91m, 265°; 55: 72m, 301°; 56: 60m, 350°	
	Behavior	17, 19, 24, 25: Milling; 20 - 23, 26 - 29: Look, Sink; 40: UNK	2: Swimming (W); 16: Look	7, 8, 4B: Look, Sink; 5B - 11B: Milling	18, 21 - 23, 55, 56: Look, Sink; 25, 26, 35, 36, 51: Look; 30, 41, 45, 47, 49, 53.1: Milling; 48: Look, Milling; 52: Swimming	
Marine mammal obs., non-take	Num. of add'l. sightings	31	14	3	40	
	Species and Total number	Harbor seal- 51	Harbor seal- 27	Harbor seal- 13	Harbor seal- 53	
	General behavior	Look, Sink, Milling, Swimming	Look, Sink, Milling	Look, Sink, Milling, Swimming	Look, Sink, Milling, Swimming	
Take Numbers	Level A	None	None	None	None	
	Level B	Harbor seal-25	Harbor seal-2	Harbor seal- 12	Harbor seal- 27	
Mitigation		N/A	N/A	N/A	N/A	

		Date	December 17, 2019	December 18, 2019	December 19, 2019
Monitoring time	Start		6:00	6:05	6:00
	End		12:00	18:05	16:13
Construction Activity			Dredging	Dredging	Dredging
Weather parameters	Visibility		Bad, later Poor to Excellent	Moderate to Excellent, Poor late	Moderate to Excellent, Poor late
	Glare		20%	5%	5%
	Condition		Fog early, later overcast	Overcast with periods of snow and rain	Overcast with rain
	Waves		Low	Low	Low
	Beaufort		0	0 to 1	1
Take observations	Sighting designation		76 - 82, 85, 86, 88 - 90, 92, 94 - 96, 98, 99, 102 - 105	31 - 36, 38, 39, 41 - 43, 46, 45.1, 49, 52, 53, 55, 57 - 77, 91 - 93	14, 15, 16, 17
	PSO position		All: Launch ramp dock	All: Harbor walkway	All: Harbor walkway
	Species and Number		76, 77 - 82, 86, 88 - 90, 95, 102 - 105: Harbor seal- 1 each; 77, 94, 96, 98, 99: Harbor seal- 2 each; 85: Harbor seal -15; 92: Harbor seal- 3	31, 33 - 36, 38, 41 - 43, 46, 49, 53, 55, 57, 58, 61, 65 - 69, 72 - 77, 91 - 93: Harbor seal- 1 each; 32, 39, 52, 62, 63, 70, 71: Harbor seal- 2 each; 45.1: Harbor seal- 4; 59: Harbor seal- 5; 60, 64: Harbor seal- 3	14, 15, 16, 17: Harbor seal- 1 each
	Distance and bearing from construction		76: 73m, 253°; 77: 82m, 328°; 78: 106m, 324°; 79: 78m, 284°; 80: 96m, 250°; 81: 93m, 308°; 82: 71m, 249°; 85: 107m, 270°; 86: 108m, 257°; 88: 77m, 315°; 89: 72m, 298°; 90: 83m, 316°; 92: 67m, 314°; 94: 64m, 328°; 95: 53m, 279°; 96: 75m, 315°; 98: 98m, 299°; 99: 92m, 260°; 102: 90m, 337°; 103: 91m, 270°; 104: 94m, 301°; 105: 87m, 337°	31: 66m, 260°; 32: 94m, 265°; 33: 81m, 263°; 34: 82m, 267°; 35: 100m, 268°; 36: 85m, 260°; 38: 84m, 262°; 39: 83m, 260°; 41: 99m, 262°; 42: 71m, 258°; 43: 90m, 263°; 46: 72m, 261°; 45.1: 107m, 263°; 49: 72m, 257°; 52: 89m, 260°; 53: 107m, 262°; 55: 102m, 263°; 57: 73m, 260°; 58: 103m, 262°; 59: 22m, 191°; 60: 88m, 129°; 61: 15m, 104°; 62: 62m, 209°; 63: 53m, 193°; 64: 11m, 156°; 65: 46m, 188°; 66: 26m, 196°; 67: 55m, 224°; 68: 50m, 233°; 69: 56m, 224°; 70: 55m, 221°; 71: 32m, 173°; 72: 54m, 225°; 73: 59m, 218°; 74: 42m, 203°; 75: 54m, 244°; 76: 19m, 116°; 77: 66m, 220°; 91: 66m, 256°; 92: 58m, 253°; 93: 74m, 254°	14: 99m, 265°; 15: 82m, 265°; 16: 69m, 267°; 17: 102m, 267°
	Behavior		76, 77, 81, 82, 85, 86, 90, 94, 96, 98, 99, 102 - 104: Milling; 78, 79, 95: Look, Sink; 80, 89: Swimming; 88, 105: Look; 92: Look, Milling	31, 35, 36, 66, 68, 69, 75, 93: Look, Sink; 34: UNK; 55: Foraging; 61, 65, 76, 91: Swimming; All others: Milling	14, 15: Milling; 16, 17: Look, Sink
Marine mammal obs., non-take	Num. of add'l. sightings		103	54	14
	Species and Total number		Harbor seal- 226	Harbor seal- 78	Harbor seal- 16
	General behavior		Look, Sink, Milling, Swimming, Foraging	Look, Sink, Milling	Look, Sink
Take Numbers	Level A		None	None	None
	Level B		Harbor seal- 43	Harbor seal- 59	Harbor seal- 4
Mitigation			N/A	N/A	N/A

		Date	December 20, 2019	December 23, 2019	December 27, 2019
Monitoring time	Start	6:00		12:00	6:00
	End	16:37		17:00	10:00
Construction Activity		Dredging		In-water fill placement	In-water fill placement
Weather parameters	Visibility	Good to Excellent		Moderate to Excellent	Bad early, later Good
	Glare	5%		5%	20%
	Condition	Partly cloudy		Partly cloudy	Overcast with snow early
	Waves	Low		Low	Low
	Beaufort	1		1	0
Take observations	Sighting designation	77 - 85, 87, 92, 93, 95, 97 - 99, 101 - 103, 105 - 115, 117 - 131, 134		None	None
	PSO position	All (except 134): Launch ramp dock; 134: Harbor walkway			
	Species and Number	77 - 79, 81 - 85, 87, 92, 93, 95, 99, 101 - 103, 105 - 115, 117, 119 - 121, 122, 124, 134: Harbor seal- 1 each; 80, 125: Harbor seal- 3 each; 97: Harbor seal- 19; 98, 129, 130, 131: Harbor seal- 2 each; 118: Harbor seal- 17; 121: Harbor seal- 13; 123, 126, 128: Harbor seal- 14 each; 127: Harbor seal- 4			
	Distance and bearing from construction	77: 35m, 233°; 78: 44m, 245°; 79: 53m, 254°; 80: 53m, 257°; 81: 50m, 253°; 82: 43m, 305°; 83: 59m, 294°; 84: 71m, 277°; 85: 105m, 340°; 87: 86m, 328°; 92: 89m, 325°; 93: 65m, 247°; 95: 74m, 347°; 97: 58m, 251°; 98: 74m, 328°; 99: 59m, 250°; 101: 48m, 246°; 102: 36m, 233°; 103: 31m, 222°; 105: 54m, 246°; 106: 55m, 252°; 107: 96m, 264°; 108: 88m, 270°; 109: 64m, 254°; 110: 51m, 245°; 111: 100m, 288°; 112: 57m, 253°; 113: 55m, 254°; 114: 106m, 268°; 115: 68m, 258°; 117: 52m, 266°; 118: 61m, 311°; 119: 51m, 256°; 120: 94m, 332°; 121: 80m, 313°; 122: 68m, 338°; 123: 67m, 268°; 124: 56m, 303°; 125: 60m, 255°; 126: 49m, 252°; 127: 43m, 245°; 128: 38m, 244°; 129: 57m, 294°; 130: 74m, 313°; 131: 77m, 270°; 134: 97m, 267°			
	Behavior	77, 102, 103, 105, 107, 113: Look; 93, 106, 117, 125: Swimming; All others: Milling			
Marine mammal obs., non-take	Num. of add'l. sightings	95		Harbor seal- 187; Steller sea lion- 1	58
	Species and Total number	Harbor seal- 174		Harbor seal- 748; Steller sea lion- 1	Harbor seal- 93
	General behavior	Look, Milling		Harbor seal- Milling; Steller sea lion- Swimming, Milling	Milling
Take Numbers	Level A	None		None	None
	Level B	Harbor seal- 72		None	None
Mitigation		N/A		N/A	N/A

		Date	January 4, 2020	January 5, 2020	January 6, 2020
Monitoring time	Start		7:10	12:00	14:45
	End		13:45	14:00	17:00
Construction Activity			Dredging	None	Dredging
Weather parameters	Visibility		Good to Excellent	Excellent	Good to Poor
	Glare		5%	15%	8%
	Condition		Overcast with periods of snow	Sunny, later partly cloudy	Overcast with periods of snow
	Waves		Low	Low	Low
	Beaufort		1	1	1
Take observations	Sighting designation		8 - 11, 20, 18.2, 21, 24, 28, 29, 33, 37	None	5 - 16
	PSO position		All: Launch ramp dock		All: Launch ramp dock
	Species and Number		8, 10, 11, 20, 21, 24, 28, 29, 33, 37: Harbor seal- 1 each; 9: Harbor seal- 6; 18.2: Harbor seal- 11		5, 8, 10, 13, 15: Harbor seal- 2 each; 6: Harbor seal- 7; 7, 11: Harbor seal- 4 each; 9: Harbor seal- 5; 12, 14, 16: Harbor seal- 1 each
	Distance and bearing from construction		8: 38m, 340°; 9: 54m, 339°; 10: 87m, 346°; 11: 52m, 254°; 20: 51m, 344°; 18.2: 69m, 306°; 21: 66m, 308°; 24: 48m, 314°; 28: 84m, 290°; 29: 41m, 255°; 33: 81m, 357°; 37: 91m, 291°		5: 76m, 264°; 6: 61m, 261°; 7: 67m, 265°; 8: 57m, 265°; 9: 70m, 269°; 10: 78m, 275°; 11: 70m, 263°; 12: 56m, 268°; 13: 90m, 267°; 14: 61m, 267°; 15: 70m, 269°; 16: 107m, 267°
	Behavior		8: Look, Sink; 9, 37: Milling; 10: Swimming, Milling, Sink; 11: Look, Sink, Swimming; 20: Swimming, Diving; 18.2: Milling, Swimming, Look, Diving; 21: Milling, Look, Sink; 24: Look, Diving; 28: Swimming (SW); 29: Look, Swimming, Diving; 33: Milling, Look, Diving		5: Milling, Look, Diving; 7: Milling, Swimming, Look; 4: Milling; 8, 9, 10, 11, 12, 14 - 16: Milling, Look; 13: Milling, Look, Diving, Hauled out
Marine mammal obs., non-take	Num. of add'l. sightings		42	20	5
	Species and Total number		Harbor seal- 80	Harbor seal- 70	Harbor seal- 16
	General behavior		Look, Sink, Swimming, Milling	Milling	Look, Sink, Swimming, Milling
Take Numbers	Level A		None	None	None
	Level B		Harbor seal- 27	None	Harbor seal- 33
Mitigation			N/A	N/A	N/A

		Date	January 7, 2020	January 8, 2020	January 9, 2020
Monitoring time	Start	6:10	8:00	6:00	
	End	16:49	10:13	17:39	
Construction Activity		Armor rock placement	Armor rock placement	Armor rock placement	
Weather parameters	Visibility	Poor to Good	Moderate to Excellent	Poor to Excellent	
	Glare	10%	5%	15%	
	Condition	Overcast with snow	Partly cloudy then sunny then overcast	Partly cloudy	
	Waves	Low	Low	Low	
	Beaufort	0 to 1	0 to 1	0	
Take observations	Sighting designation	11, 13, 14	None	2 - 10, 13 - 30, 34, 37 - 43, 45, 44.1, 46 - 50	
	PSO position	All: Harbor walkway		All: Launch ramp dock	
	Species and Number	11, 14: Harbor seal- 1 each; 13: Harbor seal- 2		8, 34, 40, 42, 47: Harbor seal- 2 each; 37, 45: Harbor seal- 3 each; All others: Harbor seal- 1 each	
	Distance and bearing from construction	11: 97m, 265°; 13: 59m, 264°; 14: 55m, 264°		2: 65m, 238°; 3: 44m, 230°; 4: 88m, 249°; 5: 53m, 234°; 6: 46m, 236°; 7: 83m, 248°; 8: 76m, 249°; 9: 35m, 241°; 10: 51m, 232°; 13: 79m, 247°; 14: 85m, 253°; 15: 68m, 264°; 16: 78m, 253°; 17: 58m, 264°; 18: 65m, 264°; 19: 72m, 244°; 20: 63m, 241°; 21: 43m, 224°; 22: 68m, 264°; 23: 47m, 230°; 24: 43m, 224°; 25: 110m, 269°; 26: 87m, 249°; 27: 106m, 254°; 28: 41m, 234°; 29: 76m, 251°; 30: 51m, 245°; 34: 109m, 263°; 37: 104m, 267°; 38: 78m, 265°; 39: 105m, 262°; 40: 77m, 259°; 41: 56m, 251°; 42: 88m, 262°; 43: 76m, 268°; 45: 100m, 269°; 44.1: 99m, 268°; 46: 93m, 259°; 47: 79m, 256°; 48: 50m, 337°; 49: 67m, 297°; 50: 70m, 280°	
	Behavior	11: Look, Diving; 13, 14: Milling, Look, Sink		2, 3, 6, 7, 9, 10: Milling; 4, 5, 16, 18 - 20: Milling, Look; 14, 21, 23, 24, 27 - 30, 48, 50: Look, Sink; 15: Swimming (SW), Diving; 17: Swimming (SW); 25, 34, 37 - 40, 42, 47, 49: Milling, Sink; 26, 46: Swimming, Sink; 41: Swimming (N); 43: Milling, Swimming, Diving	
Marine mammal obs., non-take	Num. of add'l. sightings	11	None	8	
	Species and Total number	Harbor seal- 19	N/A	Harbor seal- 8	
	General behavior	Milling, Look, Dive	N/A	Milling, Sink	
Take Numbers	Level A	None	None	None	
	Level B	Harbor seal- 4	None	Harbor seal- 51	
Mitigation		N/A	N/A	N/A	

		Date	January 10, 2020	January 12, 2020	January 13, 2020	January 14, 2020
Monitoring time	Start		7:30	11:30	6:30	6:30
	End		19:35	14:00	14:10	15:32
Construction Activity			Armor rock placement	Dredging (material disposal only)	In-water fill placement	In-water fill placement
Weather parameters	Visibility		Poor to Excellent	Excellent	Poor early, Excellent later	Bad early, Excellent later
	Glare		10%	10%	15%	5%
	Condition		Partly cloudy, later overcast with snow	Sunny	Clear, Sunny	Clear, Sunny
	Waves		Low	Low	Low	Low
	Beaufort		0 to 2	2	0 to 1	1
Take observations	Sighting designation		6 - 11, 13, 14, 16 - 21, 29 - 32, 1B	None	9	1, 3, 4, 6, 7.1, 8, 9, 10, 12 - 14, 15.1, 16, 18 - 22
	PSO position		All: Harbor walkway		All: Harbor walkway	All: Harbor walkway
	Species and Number		6 - 11, 13, 14, 16 - 21, 29 - 32, 1B: Harbor seal-1 each		9: Harbor seal- 1	1, 6, 8, 9, 10, 12 - 14, 15.1, 18 - 22: Harbor seal- 1 each; 3, 4, 7.1: Harbor seal- 2 each; 9, 16: Harbor seal- 3 each
	Distance and bearing from construction		6: 36m, 348°; 7: 94m, 253°; 8: 93m, 357°; 9: 93m, 355°; 10: 74m, 337°; 11: 51m, 309°; 13: 74m, 279°; 14: 62m, 355°; 16: 38m, 288°; 17: 83m, 326°; 18: 97m, 267°; 20: 66m, 257°; 21: 73m, 315°; 29: 101m, 258°; 30: 106m, 258°; 31: 100m, 257°; 32: 103m, 258°; 1B: 68m, 250°		9: 41m, 124°	1: 44m, 121°; 3: 80m, 239°; 4: 110m, 229°; 6: 105m, 227°; 7.1: 85m, 256°; 8: 104m, 229°; 8: 108m, 225°; 9: 95m, 251°; 10: 76m, 187°; 12: 68m, 232°; 13: 68m, 171°; 14: 102m, 225°; 15.1: 104m, 223°; 16: 90m, 253°; 18: 72m, 170°; 19: 75m, 197°; 20: 67m, 249°; 21: 82m, 195°; 22: 72m, 167°
	Behavior		6, 8 - 11, 14, 16 - 21, 29, 31, 32: Look, Sink; 7, 13: Milling; 30, 1B: Milling, Sink		9: Milling, Look, Diving	1, 13: Look, Sink; 3, 4, 6, 7.1, 8, 9, 10, 12, 14, 15.1, 18 - 22: Milling; 16: Look, Milling
Marine mammal obs., non-take	Num. of add'l. sightings		15	Steller sea lion- 1	25	3
	Species and Total number		Harbor seal- 19	Steller sea lion- 1	Harbor seal- 48	Harbor seal- 5
	General behavior		Milling, Sink	Swimming	Look, Sink, Milling	Milling
Take Numbers	Level A		None	None	None	None
	Level B		Harbor seal-18	None	Harbor seal- 1	Harbor seal-26
Mitigation			N/A	N/A	N/A	N/A

		Date	January 15, 2020	January 16, 2020	January 17, 2020
Monitoring time	Start	6:30	6:30	6:30	
	End	16:00	16:26	16:37	
Construction Activity		In-water fill placement	In-water fill placement	In-water fill placement	
Weather parameters	Visibility	Poor to Excellent	Moderate to Excellent	Bad to Good	
	Glare	5%	5%	15%	
	Condition	Clear, Sunny	Overcast	Partly cloudy	
	Waves	Low	Low	Low	
	Beaufort	0 to 1	1	1	
Take observations	Sighting designation	1 - 4, 6 - 10, 11.1, 12, 14 - 19, 22 - 24, 25.1, 26 - 30, 32 - 34, 36 - 39	4 - 11, 13, 14, 16 - 19, 21 - 27, 30, 32 - 37, 39 - 52, 54, 56 - 61	2, 23, 37, 38, 39, 55.1, 36.7, 64	
	PSO position	All: Harbor walkway	All: Harbor walkway	All: Launch ramp dock	
	Species and Number	9: Harbor seal- 3; 14: Harbor seal- 4; 24, 25.1, 26: Harbor seal- 2 each; All others: Harbor seal- 1 each	21, 24, 30, 41, 46, 54: Harbor seal- 2 each; 27: Harbor seal- 3; All others: Harbor seal- 1 each	2, 23, 37, 38, 39, 64: Harbor seal- 1; 55.1: Harbor seal- 2; 36.7: Harbor seal- 12	
	Distance and bearing from construction	1: 66m, 188°; 2: 45m, 97°; 3: 101m, 261°; 4: 88m, 251°; 6: 38m, 134°; 7: 73m, 170°; 8: 75m, 241°; 9: 108m, 248°; 10: 109m, 226°; 11.1: 96m, 222°; 12: 18m, 195°; 14: 102m, 259°; 15: 103m, 263°; 16: 85m, 202°; 17: 73m, 226°; 18: 94m, 215°; 19: 91m, 213°; 22: 86m, 198°; 23: 62m, 150°; 24: 51m, 259°; 25.1: 73m, 205°; 26: 74m, 189°; 27: 94m, 217°; 28: 22m, 240°; 29: 86m, 203°; 30: 87m, 202°; 32: 74m, 174°; 33: 43m, 245°; 34: 74m, 165°; 36: 60m, 136°; 37: 69m, 170°; 38: 56m, 111°; 39: 73m, 150°;	4: 103m, 221°; 5: 98m, 222°; 6: 63m, 246°; 7: 86m, 223°; 8: 54m, 256°; 9: 91m, 205°; 10: 74m, 174°; 11: 92m, 220°; 13: 26m, 117°; 14: 75m, 185°; 16: 47m, 108°; 17: 49m, 159°; 18: 86m, 222°; 19: 80m, 193°; 21: 92m, 222°; 22: 90m, 223°; 23: 62m, 114°; 24: 94m, 220°; 25: 90m, 223°; 26: 81m, 203°; 27: 89m, 216°; 30: 102m, 220°; 32: 91m, 209°; 33: 100m, 225°; 34: 80m, 218°; 35: 72m, 179°; 36: 92m, 229°; 37: 93m, 224°; 39: 98m, 221°; 40: 85m, 202°; 41: 77m, 209°; 42: 80m, 203°; 43: 99m, 224°; 44: 104m, 223°; 45: 38m, 110°; 46: 107m, 223°; 47: 79m, 210°; 49: 86m, 219°; 48: 72m, 180°; 50: 94m, 209°; 51: 99m, 217°; 52: 91m, 220°; 54: 47m, 108°; 56: 58m, 186°; 57: 62m, 132°; 58: 95m, 220°; 59: 88m, 213°; 60: 97m, 225°; 61: 78m, 183°; 63: 81m, 199°	2: 56m, 228°; 23: 98m, 252°; 37: 97m, 341°; 38: 99m, 334°; 39: 86m, 345°; 36.3: 73m, 206°; 55.1: 83m, 360°; 36.7: 93m, 312°; 64: 107m, 274°	
	Behavior	6, 7, 10, 36, 39: Look, Sink; 27: Swimming (S), Look, Sink; 33: Swimming (N); 38: Swimming (W); All others: Milling	6, 9, 18, 23, 52, 57: Look, Sink; 44: Swimming (S); 54: Milling, Look; 60: Swimming (N); All others: Milling	2: Milling, Look, Sink; 23: Swimming; 37, 38, 39, 55.1, 36.7, 64: Milling	
Marine mammal obs., non-take	Num. of add'l. sightings	3	13	67	
	Species and Total number	Harbor seal-4	Harbor seal- 20	Harbor seal- 99	
	General behavior	Look, Sink, Milling	Milling	Look, Sink, Swimming, Milling	
Take Numbers	Level A	None	None	None	
	Level B	Harbor seal- 41	Harbor seal- 59	Harbor seal- 20	
Mitigation		N/A	N/A	N/A	

		Date	January 18, 2020	January 21, 2020	January 22, 2020
Monitoring time	Start		6:30	6:34	6:30
	End		11:53	16:35	17:14
Construction Activity			In-water fill placement	In-water fill placement	In-water fill placement
Weather parameters	Visibility		Bad early, Good later	Moderate to Excellent	Poor to Good
	Glare		10%	0%	10%
	Condition		Partly cloudy	Overcast with periods of fog and snow	Overcast with snow and light rain
	Waves		Low	Low	Low
	Beaufort		1	0 to 1	0 to 1
Take observations	Sighting designation		14.1, 20, 22	1, 4 - 6, 8, 10 - 18, 20, 22, 24 - 29	11, 13, 19, 20, 22, 21.1, 24, 25, 31, 35, 38, 43, 45, 46, 52, 56, 60, 62, 88, 93, 94, 103, 111, 115, 130 - 133, 139, 140, 142, 143, 145, 147.1
	PSO position		All: Launch ramp dock	All: Harbor walkway	All: Launch ramp dock
	Species and Number		14.1, 20, 22: Harbor seal- 1 each	1, 4, 5, 8, 10, 12, 13, 16, 17, 20, 22, 24 - 29: Harbor seal-1 each; 6, 11, 14, 15, 18: Harbor seal- 2 each	22, 142, 147.1: Harbor seal- 5 each; 21.1, 25, 43, 45, 88: Harbor seal- 2 each; 56: Harbor seal- 4; 94: Harbor seal- 12; 3: Harbor seal- 3; 143: Harbor seal- 6; 145: Harbor seal- 8; All others: Harbor seal- 1 each
	Distance and bearing from construction		14.1: 89m, 338°; 20: 66m, 351°; 22: 80m, 323°	1: 86m, 298°; 4: 39m, 184°; 5: 73m, 351°; 6: 104m, 290°; 8: 61m, 337°; 10: 91m, 292°; 11: 83m, 259°; 12: 70m, 324°; 13: 94m, 277°; 14: 66m, 286°; 15: 65m, 291°; 16: 94m, 288°; 17: 109m, 284°; 18: 62m, 282°; 20: 70m, 351°; 22: 109m, 304°; 24: 81m, 312°; 25: 83m, 276°; 26: 105m, 332°; 27: 88m, 290°; 28: 83m, 306°; 29: 76m, 327°	11: 53m, 349°; 13: 68m, 316°; 19: 54m, 352°; 20: 57m, 333°; 22: 64m, 289°; 21.1: 60m, 293°; 24: 63m, 286°; 25: 84m, 235°; 31: 77m, 261°; 35: 78m, 257°; 38: 95m, 239°; 43: 55m, 288°; 45: 53m, 213°; 46: 39m, 130°; 52: 55m, 350°; 56: 34m, 221°; 60: 67m, 332°; 62: 86m, 246°; 88: 53m, 240°; 93: 89m, 301°; 94: 68m, 266°; 103: 47m, 212°; 111: 90m, 236°; 115: 67m, 223°; 130: 43m, 194°; 131: 82m, 312°; 132: 45m, 215°; 133: 86m, 292°; 139: 69m, 304°; 140: 75m, 348°; 142: 86m, 354°; 143: 82m, 334°; 145: 92m, 314°; 147.1: 71m, 228°
	Behavior		14.1, 22: Milling, Look, Sink; 20: Look, Sink	1, 13 - 18, 25 - 29: Milling; 4, 6: Milling, Sink; 5, 10, 12, 20, 24: Look, Sink; 22: Swimming (S)	19, 35, 45, 46, 60, 93, 94, 103, 115: Look, Sink; 20, 24, 43: Look; 22, 21.1: Milling, Look; 62: Swimming; All others: Milling
Marine mammal obs., non-take	Num. of add'l. sightings		39	13	121
	Species and Total number		Harbor seal- 109	Harbor seal- 16	Harbor seal- 188
	General behavior		Look, Sink, Milling, Diving	Look, Swimming, Milling	Look, Sink, Milling
Take Numbers	Level A		None	None	None
	Level B		Harbor seal-3	Harbor seal- 27	Harbor seal- 79
Mitigation			N/A	N/A	N/A

Date		January 23, 2020	January 26, 2020	January 28, 2020	January 29, 2020	January 30, 2020	January 31, 2020
Monitoring time	Start	6:30	7:00	10:30	6:30	6:45	6:00
	End	9:50	11:50	18:00	17:59	18:17	18:32
Construction Activity		In-water fill placement	Drilling	Drilling	Drilling	Drilling	Drilling
Weather parameters	Visibility	Poor	Good to Excellent	Excellent, later Bad	Good	Poor	Good to Excellent
	Glare	20%	0%	10%	0%	10%	0%
	Condition	Snow	Overcast with periods of light rain	Partly cloudy	Rain	Snow, later rain	Partly cloudy
	Waves	Low	Low	Low	Low	Low	Low
	Beaufort	0	1 to 2	1 to 2	1 to 2	0	0 to 1
Take observations	Sighting designation	4, 20	None	None	None	23, 25	11
	PSO position	All: Harbor walkway				All: Harbor walkway	All: Harbor walkway
	Species and Number	4, 20: Harbor seal- 1 each				23, 25: Harbor seal- 1 each	11: Harbor seal- 3
	Distance and bearing from construction	4: 80m, 285°; 20: 107m, 272°				23: 29m, 202°; 25: 30m, 192°	11: 33m, 165°
	Behavior	4: Milling, Look, Sink; 20: Look, Sink				23, 25: Look, Sink	11: Milling
Marine mammal obs., non-take	Num. of add'l. sightings	41	25	14	17	23	12
	Species and Total number	Harbor seal- 49	Harbor seal- 75	Harbor seal- 17	Harbor seal- 19	Harbor seal- 30	Harbor seal- 17
	General behavior	Look, Sink, Swimming, Milling	Look, Sink, Swimming, Milling	Look, Sink, Milling	Look, Sink, Milling	Look, Sink	Milling
Take Numbers	Level A	None	None	None	None	None	None
	Level B	Harbor seal- 2	None	None	None	Harbor seal- 2	Harbor seal- 3
Mitigation		N/A	N/A	N/A	N/A	N/A	N/A

Date		February 1, 2020	February 2, 2020	February 3, 2020	February 4, 2020	February 5, 2020	February 6, 2020
Monitoring time	Start	6:30	6:00	6:00	6:00	6:00	6:00
	End	18:57	12:23	18:22	18:13	18:20	18:48
Construction Activity		Drilling	Drilling	Drilling	Drilling	Drilling	Drilling
Weather parameters	Visibility	Moderate to Excellent	Poor to Good	Bad to Good	Bad to Moderate	Poor to Good	Poor to Good
	Glare	10%	10%	10%	5%	5%	0%
	Condition	Partly cloudy with snow	Overcast with snow early	Snow	Mix rain and snow	Partly cloudy with light rain	Overcast with light rain
	Waves	Low	Low	Low	Low	Low	Low
	Beaufort	0 to 1	1 to 2	1	1	0 to 1	0 to 1
Take observations	Sighting designation	None	None	3.1	4; 13; 16; 17; 18 (Level A); 24	None	None
	PSO position			All: Harbor walkway	All: Harbor walkway		
	Species and Number			3.1: Harbor seal- 1	4, 13, 16, 18 (Level A), 24: Harbor seal- 1 each; 17: Harbor seal- 15		
	Distance and bearing from construction			3.1: 28m, 93°	4: 29m, 147°; 13: 25m, 229°; 16: 34m, 179°; 17: 16m, 249°; 18 (Level A): 8m, 238°; 24: 34m, 178°		
	Behavior			3.1: Milling, Look	4: Look, Sink; 13: Milling, Sink; 16: UNK; 17: Milling; 18 (Level A): Swimming, Sink; 24: Look, Sink		
Marine mammal obs., non-take	Num. of add'l. sightings	13	5	11	21	14	21
	Species and Total number	Harbor seal- 18	Harbor seal- 20	Harbor seal- 14	Harbor seal- 42	Harbor seal- 15	Harbor seal- 24
	General behavior	Look, Sink, Milling	Look, Sink, Milling, Diving	Milling, Sink	Look, Sink, Milling, Diving	Look, Sink, Milling	Look, Sink, Milling
Take Numbers	Level A	None	None	None	Harbor seal- 1	None	None
	Level B	None	None	Harbor seal- 1	Harbor seal- 19	None	None
Mitigation		N/A	N/A	N/A	None required as seal seen quickly transiting zone	N/A	N/A

Date		February 7, 2020	February 8, 2020	February 9, 2020	February 10, 2020	February 11, 2020
Monitoring time	Start	6:02	6:00	1:25	2:04	2:52
	End	18:00	19:00	18:37	11:45	13:09
Construction Activity		Drilling	Drilling	Drilling	Drilling	Drilling
Weather parameters	Visibility	Good	Moderate to Good	Poor to Good	Poor	Poor to Excellent
	Glare	0%	5%	10%	5%	10%
	Condition	Fog the partly cloudy	Overcast with periods of rain and snow	Partly cloudy	Rain	Partly cloudy
	Waves	Low	Low	Low	Low	Low
	Beaufort	0 to 1	1	0 to 1	1	0 to 1
Take observations	Sighting designation	7, 13, 14, 15.1, 16, 17	None	3, 8, 12	None	1, 5, 8, 14
	PSO position	All: Harbor walkway		All: Harbor walkway		All: Harbor walkway
	Species and Number	7, 13, 14, 15.1, 17: Harbor seal- 1 each; 16: Harbor seal- 2		3, 8, 12: Harbor seal- 1 each		1, 5, 8, 14: Harbor seal- 1 each
	Distance and bearing from construction	7: 31m, 163°; 13: 27m, 162°; 14: 26m, 179°; 15.1: 35m, 166°; 16: 31m, 139°; 17: 21m, 180°		3: 30m, 106°; 8: 31m, 199°; 12: 32m, 124°		1: 30m, 114°; 5: 25m, 229°; 8: 26m, 236°; 14: 29m, 135°
	Behavior	7: Look, Sink; 13 - 17: Milling		3: Swimming (W); 8: Milling, Look; 12: Milling		1: Swimming (W); 5, 8, 14: Milling
Marine mammal obs., non-take	Num. of add'l. sightings	15	14	12	2	13
	Species and Total number	Harbor seal- 16	Harbor seal- 21	Harbor seal- 13	Harbor seal- 2	Harbor seal- 16
	General behavior	Look, Sink, Milling	Look, Sink, Milling	Look, Sink, Milling	Look, Sink, Milling	Milling
Take Numbers	Level A	None	None	None	None	None
	Level B	Harbor seal- 7	None	Harbor seal- 3	None	Harbor seal- 4
Mitigation		N/A	N/A	N/A	N/A	N/A

Date		February 12, 2020	February 13, 2020	February 14, 2020	February 15, 2020	February 16, 2020	February 17, 2020
Monitoring time	Start	4:00	4:30	6:00	Continued from previous day	13:00	Continued from previous day
	End	14:15	17:18	Continued to next day	22:32	Continued to next day	Continued to next day
Construction Activity		Drilling	Drilling	Drilling	Drilling	Drilling	Drilling
Weather parameters	Visibility	Moderate to Good	Poor to Good	Bad to Good	Bad to Poor	Poor to Moderate	Poor to Good
	Glare	5%	10%	15%	5%	5%	5%
	Condition	Overcast with rain	Partly cloudy with periods of light rain	Snow	Snow	Overcast	Overcast with snow
	Waves	Low	Low	Low	Low	Low	Low
	Beaufort	1 to 2	0 to 1	0	0	0	0
Take observations	Sighting designation	None	None	10, 13, 15	None	None	None
	PSO position			All: Harbor walkway			
	Species and Number			10: Harbor seal- 1; 13: Harbor seal- 1; 15: Harbor seal- 3			
	Distance and bearing from construction			10: 32m, 152°; 13: 28m, 241°; 15: 33m, 116°			
	Behavior			10: Milling; 13: Milling; 15: Look, Sink			
Marine mammal obs., non-take	Num. of add'l. sightings	10	1	12	13	17	4
	Species and Total number	Harbor seal-30	Harbor seal-1	Harbor seal- 20	Harbor seal- 18	Harbor seal- 20	Harbor seal- 4
	General behavior	Look, Sink, Milling	Look, Sink, Milling	Milling	Look, Sink, Milling	Look, Sink	Milling
Take Numbers	Level A	None	None	None	None	None	None
	Level B	None	None	Harbor seal- 5	None	None	None
Mitigation		N/A	N/A	N/A	N/A	N/A	N/A

		Date	February 18, 2020	February 19, 2020	February 20, 2020	February 21, 2020
Monitoring time	Start		Continued from previous day	Continued from previous day	7:20	9:15
	End		Continued to next day	13:39	14:15	12:46
Construction Activity			Drilling	Drilling	Charge emplacement	Blast
Weather parameters	Visibility		Poor to Excellent	Poor to Good	Moderate to Good	Good to Excellent
	Glare		10%	10%	5%	0%
	Condition		Overcast with light rain early	Overcast with light rain	Overcast with periods of rain and snow	Overcast with rain
	Waves		Low	Low	Low	Low
	Beaufort		0 to 1	0 to 1	0 to 2	0 to 2
Take observations	Sighting designation		5, 8	None	None	FH9, FH10, BC12
	PSO position		All: Harbor walkway		5 PSOs on watch: Harbor walkway, boat launch, C float, Auke Bay station; and onboard patrol vessel outside of harbor	5 PSOs on watch: Boat launch, C float, Auke Bay station; and onboard patrol vessels inside and outside of harbor
	Species and Number		5: Harbor seal- 1; 8: Harbor seal- 1		None	FH9: Steller sea lion- 1; FH10: Harbor seal- 3; BC12: Harbor seal- 6
	Distance and bearing from construction		5: 21m, 266°; 8: 27m, 118°		None	FH9: 260m, 226°; FH10: 309m, 176°; BC12: 242m, 236°
	Behavior		5: Milling, Sink; 8: Milling, Look, Sink			FH9: Swimming; FH10, BC10: Milling, Look, Sink
Marine mammal obs., non-take	Num. of add'l. sightings		19	3	Approximately 20 individual Harbor seals	Approximately 15 individual Harbor seals
	Species and Total number		Harbor seal- 26	Harbor seal- 3		
	General behavior		Look, Sink, Diving, Milling	Look, Milling	Swimming, Milling, Look, Sink	Swimming, Milling, Look, Sink
Take Numbers	Level A		None	None	None	None
	Level B		Harbor seal- 2	None	None	Harbor seal- 13 (9 confirmed, 4 extrapolated); Steller sea lion- 1
Mitigation			N/A	N/A	Delay of charge emplacement for approx. 6.5 hours	Delay of blasting for approx. 2 hours

		Date	February 24, 2020	February 25, 2020	February 26, 2020
Monitoring time	Start		7:00	6:30	6:30
	End		12:55	13:00	14:11
Construction Activity			In-water fill placement	In-water fill placement	In-water fill placement
Weather parameters	Visibility		Poor early, Excellent later	Poor to Good	Moderate to Good
	Glare		10%	5%	0%
	Condition		Partly cloudy with periods of snow	Partly cloudy with snow	Overcast with light rain
	Waves		Low	Low	Low
	Beaufort		0	0 to 1	0 to 1
Take observations	Sighting designation		5, 6, 8 - 35	6 - 36	23 - 33
	PSO position		All: Harbor walkway	All: Harbor walkway	All: Harbor walkway
	Species and Number		5 - 14, 16 - 19, 21 - 35: Harbor seal- 1 each; 15, 20: Harbor seal- 2 each	6 - 10, 12, 14, 16 - 25, 27 - 31, 33 - 36: Harbor seal- 1 each; 11, 13, 15, 26, 32: Harbor seal- 2 each	23 - 27, 30 - 33: Harbor seal- 1 each; 28: Harbor seal- 2
	Distance and bearing from construction		5: 56m, 221°; 6: 65m, 223°; 8: 88m, 241°; 9: 83m, 172°; 10: 91m, 242°; 11: 60m, 233°; 12: 74m, 154°; 13: 84m, 178°; 14: 66m, 232°; 15: 82m, 163°; 16: 59m, 231°; 17: 53m, 224°; 18: 78m, 232°; 19: 49m, 213°; 20: 83m, 171°; 21: 90m, 188°; 22: 73m, 94°; 23: 79m, 155°; 24: 85m, 170°; 25: 83m, 162°; 26: 83m, 162°; 27: 76m, 100°; 28: 83m, 164°; 29: 54m, 193°; 30: 39m, 173°; 31: 67m, 196°; 32: 63m, 196°; 33: 56m, 191°; 34: 76m, 153°; 35: 67m, 128°	6: 66m, 135°; 7: 71m, 158°; 8: 76m, 234°; 9: 72m, 171°; 10: 69m, 187°; 11: 72m, 170°; 12: 60m, 176°; 13: 68m, 190°; 14: 93m, 217°; 15: 72m, 172°; 16: 70m, 159°; 17: 52m, 156°; 18: 69m, 180°; 19: 68m, 153°; 20: 74m, 174°; 21: 60m, 176°; 22: 51m, 178°; 23: 26m, 96°; 24: 29m, 149°; 25: 46m, 133°; 26: 38m, 140°; 27: 73m, 145°; 28: 73m, 170°; 29: 54m, 94°; 30: 57m, 205°; 31: 56m, 94°; 32: 63m, 109°; 33: 74m, 213°; 34: 74m, 171°; 35: 75m, 177°; 36: 73m, 175°	23: 49m, 142°; 24: 87m, 169°; 25: 65m, 223°; 26: 63m, 225°; 27: 59m, 219°; 28: 83m, 156°; 29: 60m, 224°; 30: 64m, 180°; 31: 74m, 145°; 32: 27m, 183°; 33: 74m, 193°
	Behavior		5: UNK; 6, 9, 13 - 16, 18, 19, 28, 29, 31 - 34: Milling, Sink; 8: Milling; 10: Milling, Look, Sink; 11, 17: Swimming; 12: Look, Sink; 20 - 22, 25, 27, 35: Milling, Swimming; 26: Milling, Swimming, Sink; 30: Swimming, Sink	6 - 14, 28 - 36: Milling, Swimming; 15 - 26: Milling; 27: Milling, Swimming, Porpoising	23 - 27: Milling, Sink; 28: Swimming (S), Sink; 29 - 33: Look, Sink
Marine mammal obs., non-take	Num. of add'l. sightings		4	7	22
	Species and Total number		Harbor seal-4	Harbor seal- 10	Harbor seal- 25
	General behavior		Sink, Milling	Swimming, Milling	Milling, Sink
Take Numbers	Level A		None	None	None
	Level B		Harbor seal- 32	Harbor seal- 36	Harbor seal- 12
Mitigation			N/A	N/A	N/A

	Date	February 27, 2020	March 6, 2020	March 7, 2020	March 8, 2020
Monitoring time	Start	6:30	14:30	12:00	16:00
	End	10:32	18:40	19:55	22:00
Construction Activity		In-water fill placement	Excavation	In-water fill placement	Excavation
Weather parameters	Visibility	Poor	Excellent, then Poor to Moderate	Poor to Good	Moderate to Good
	Glare	0%	5%	15%	0%
	Condition	Rain	Overcast	Overcast with snow later	Snow
	Waves	Low	Low	Low	Low
	Beaufort	1	1	1	0 to 1
Take observations	Sighting designation	3 - 7, 10.2, 11 - 16, 18 - 24, 26 - 32	4 - 12	1 - 13, 15 (Level A), 18, 20 - 23	15, 27, 28, 29
	PSO position	All: Harbor walkway	All: Launch ramp dock	All: Launch ramp dock	All: Launch ramp dock
	Species and Number	3 - 6, 11 - 29, 31, 32: Harbor seal- 1 each; 7: Harbor seal- 4; 10.2, 30: Harbor seal- 2 each	4 - 12: Harbor seal- 1 each	1 - 3, 5 - 13, 15 (Level A), 18, 20 - 23: Harbor seal- 1 each; 4: Harbor seal- 2	15, 27, 28, 29: Harbor seal- 1 each
	Distance and bearing from construction	3: 74m, 130°; 4: 76m, 124°; 5: 85m, 174°; 6: 74m, 108°; 7: 87m, 204°; 10.2: 84m, 174°; 11: 34m, 155°; 12: 80m, 149°; 13: 67m, 210°; 14: 57m, 222°; 15: 79m, 138°; 16: 60m, 164°; 18: 52m, 176°; 19: 49m, 160°; 20: 51m, 208°; 21: 48m, 160°; 22: 48m, 208°; 23: 78m, 181°; 24: 66m, 163°; 26: 88m, 184°; 27: 52m, 206°; 28: 52m, 211°; 29: 65m, 153°; 30: 44m, 197°; 31: 58m, 216°; 32: 60m, 166°	4: 67m, 93°; 5: 80m, 226°; 6: 57m, 243°; 7: 48m, 186°; 8: 63m, 147°; 9: 61m, 98°; 10: 67m, 102°; 11: 62m, 177°; 12: 25m, 140°	1: 87m, 96°; 2: 60m, 197°; 3: 50m, 137°; 4: 82m, 223°; 5: 66m, 134°; 6: 86m, 177°; 7: 81m, 227°; 8: 79m, 175°; 9: 62m, 167°; 10: 69m, 105°; 11: 72m, 221°; 12: 67m, 159°; 13: 68m, 154°; 15 (Level A): 4m, 246°; 18: 84m, 231°; 20: 23m, 148°; 21: 69m, 198°; 22: 44m, 162°; 23: 82m, 99°	15: 103m, 224°; 27: 70m, 215°; 28: 72m, 220°; 29: 87m, 211°
	Behavior	3: UNK; 4 - 10.2, 14, 20, 22 - 32: Milling; 11 - 13, 15 - 19, 21: Look, Sink	4 - 6, 8 - 10, 12: Look, Sink; 7, 11: Swimming (N)	1, 15 (Level A): Look; 2 - 4, 6 - 9, 11, 12: Milling; 5, 10, 13: Look, Sink; 18, 20: Look, Swimming; 21 - 23: Milling, Sink	15: Swimming (W); 27, 28, 29: Milling, Sink
Marine mammal obs., non-take	Num. of add'l. sightings	20	3	4	25
	Species and Total number	Harbor seal-31	Harbor seal-8	Harbor seal- 4	Harbor seal-39
	General behavior	Milling	Look, Sink	Look, Swimming	Look, Sink, Milling
Take Numbers	Level A	None	None	Harbor seal- 1	None
	Level B	Harbor seal-31	Harbor seal-9	Harbor seal- 19	Harbor seal- 4
Mitigation		N/A	N/A	None required as seal seen transiting zone	N/A

Date		March 9, 2020	March 10, 2020	March 11, 2020	March 12, 2020
Monitoring time	Start	17:00	6:00	7:01	8:00
	End	22:20	22:28	11:31	15:55
Construction Activity		Excavation	Excavation	Excavation	In-water fill placement
Weather parameters	Visibility	Excellent	Moderate to Good	Moderate to Excellent	Excellent
	Glare	10%	8%	5%	30%
	Condition	Mixed rain and snow	Mixed rain and snow then overcast	Snow early, then partly cloudy	Sunny
	Waves	Low	Low	Low	Low
	Beaufort	1	0 to 1	1	0
Take observations	Sighting designation	7 - 12	2, 3, 5, 6	12 - 16	55 - 74, 77 - 88, 93 - 107
	PSO position	All: Launch ramp dock	All: Launch ramp dock	All: Launch ramp dock	All: Launch ramp dock
	Species and Number	7 - 10, 12: Harbor seal- 1 each; 11: Harbor seal- 11	2, 3, 5, 6: Harbor seal- 1 each	12 - 16: Harbor seal- 1 each	56: Harbor seal- 4; 57, 59, 63, 65, 78, 82, 83, 85, 88, 97, 98: Harbor seal- 2 each; 66: Harbor seal- 5; 79: Harbor seal- 3; All others: Harbor seal- 1 each
	Distance and bearing from construction	7: 48m, 102°; 8: 58m, 95°; 9: 70m, 101°; 10: 82m, 230°; 11: 95m, 273°; 12: 64m, 95°	2: 91m, 183°; 3: 44m, 161°; 5: 85m, 188°; 6: 50m, 108°	12: 89m, 96°; 13: 102m, 200°; 14: 94m, 213°; 15: 66m, 210°; 16: 80m, 101°	55: 57m, 143°; 56: 61m, 90°; 57: 66m, 139°; 58: 59m, 138°; 59: 17m, 193°; 60: 64m, 249°; 61: 60m, 96°; 62: 17m, 169°; 63: 81m, 190°; 64: 62m, 96°; 65: 45m, 96°; 66: 52m, 98°; 67: 60m, 181°; 68: 54m, 95°; 69: 30m, 117°; 70: 67m, 96°; 71: 40m, 118°; 72: 42m, 135°; 73: 26m, 94°; 74: 58m, 97°; 77: 55m, 102°; 78: 51m, 98°; 79: 47m, 96°; 80: 48m, 92°; 81: 43m, 92°; 82: 62m, 98°; 83: 27m, 97°; 84: 54m, 106°; 85: 28m, 97°; 86: 64m, 96°; 87: 40m, 92°; 88: 11m, 164°; 93: 47m, 109°; 94: 33m, 96°; 95: 65m, 94°; 96: 39m, 95°; 97: 48m, 94°; 98: 40m, 109°; 99: 69m, 104°; 100: 60m, 93°; 101: 32m, 112°; 102: 54m, 254°; 103: 81m, 178°; 104: 81m, 197°; 105: 47m, 154°; 106: 64m, 155°; 107: 21m, 131°
	Behavior	7, 8, 9, 12: Look, Sink; 10: Swimming (E); 11: Milling	2, 6: Look, Swimming, Sink; 3: Look, Sink; 5: Milling	12, 13, 14: Look, Sink; 15, 16: Milling	56, 79, 85, 93, 94: Milling, Look, Sink; 59, 63, 95 - 99, 103, 104, 106: Look, Sink; 100: Milling, Look; 102, 105, 107: Swimming (N); All others: Milling
Marine mammal obs., non-take	Num. of add'l. sightings	7	5	12	64
	Species and Total number	Harbor seal-17	Harbor seal-5	Harbor seal- 16	Harbor seal- 165
	General behavior	Swimming, Playing, Milling	Look, Sink, Milling	Look, Sink, Milling, Swimming	Look, Sink, Milling
Take Numbers	Level A	None	None	None	None
	Level B	Harbor seal-16	Harbor seal-4	Harbor seal- 5	Harbor seal-62
Mitigation		N/A	N/A	N/A	N/A

	Date	March 13, 2020	March 14, 2020	March 15, 2020	March 16, 2020	March 17, 2020
Monitoring time	Start	6:45	6:00	6:00	6:00	6:45
	End	18:15	18:01	18:17	16:45	Continued to next day
Construction Activity		In-water fill placement	Drilling	Drilling	Drilling	Drilling
Weather parameters	Visibility	Good to Excellent	Good to Excellent	Poor to Excellent	Bad early, Good to Excellent later	Poor to Good
	Glare	20%	10%	5%	5%	5%
	Condition	Sunny	Sunny	Clear, then sunny	Overcast	Overcast, then partly cloudy
	Waves	Low	Low	Low	Low	Low
	Beaufort	0 to 1	0 to 1	1	1	1
Take observations	Sighting designation	5 - 13	35, 46, 61, 64, 66, 70, 74, 75, 90	7, 9, 10, 13, 14	None	None
	PSO position	All: Launch ramp dock	All: Harbor walkway	All: Harbor walkway		
	Species and Number	5 - 13: Harbor seal- 1 each	35, 46, 61, 64, 66, 70, 74, 75, 90: Harbor seal- 1 each	7, 9, 10, 13: Harbor seal- 1 each; 14: Harbor seal- 2		
	Distance and bearing from construction	5: 56m, 221°; 6: 58m, 221°; 7: 68m, 113°; 8: 57m, 107°; 9: 62m, 107°; 10: 58m, 105°; 11: 33m, 111°; 12: 88m, 135°; 13: 50m, 106°	35: 27m, 181°; 46: 24m, 206°; 61: 35m, 209°; 64: 33m, 202°; 66: 24m, 201°; 70: 34m, 183°; 74: 34m, 226°; 75: 30m, 186°; 90: 34m, 171°	7: 33m, 178°; 9: 34m, 117°; 10: 30m, 100°; 13: 30m, 187°; 14: 26m, 135°		
	Behavior	5 - 12: Look, Sink; 13: Swimming (N), Sink	35: Milling, Swimming; 46: Milling; 61: Swimming (NE), Milling, Sink; 64, 66, 70, 74, 75, 90: Milling, Sink	7, 10, 13: Milling; 9, 14: Milling, Swimming		
Marine mammal obs., non-take	Num. of add'l. sightings	72	82	10	10	35
	Species and Total number	Harbor seal- 121	Harbor seal- 105	Harbor seal- 10	Harbor seal- 10	Harbor seal- 36
	General behavior	Look, Sink, Milling	Look, Sink, Swimming, Milling	Look, Swimming, Milling	Look, Sink, Swimming	Look, Sink, Milling
Take Numbers	Level A	None	None	None	None	None
	Level B	Harbor seal-9	Harbor seal- 9	Harbor seal-6	None	None
Mitigation		N/A	N/A	N/A	N/A	N/A

Date		March 18, 2020	March 19, 2020	March 20, 2020	March 21, 2020	March 22, 2020	March 23, 2020
Monitoring time	Start	Continued from previous day	Continued from previous day	Continued from previous day	Continued from previous day	Continued from previous day	5:00
	End	Continued to next day	Continued to next day	Continued to next day	Continued to next day	18:20	19:14
Construction Activity		Drilling	Drilling	Drilling	Drilling	Drilling	Drilling
Weather parameters	Visibility	Excellent	Bad early, Good to Excellent later	Bad to Excellent	Bad to Excellent	Bad early, then Good to Excellent	Excellent
	Glare	5%	10%	10%	5%	10%	0%
	Condition	Overcast, then partly cloudy	Partly cloudy, later sunny	Partly cloudy	Overcast with periods of light rain	Partly cloudy with periods of light rain	Sunny
	Waves	Low	Low	Low	Low	Low to Moderate	Low
	Beaufort	0 to 1	0 to 1	0 to 1	0 to 1	0 to 2	0 to 1
Take observations	Sighting designation	2, 6	2.1, 6, 7, 10, 11, 13, 15, 17, 19	14	None	8	5.4, 21, 23, 54
	PSO position	All: Harbor walkway	All: Harbor walkway	All: Harbor walkway		All: Harbor walkway	All: Harbor walkway
	Species and Number	2: Harbor seal- 1; 6: Harbor seal- 2	2.1, 6, 10, 11, 13, 15, 19: Harbor seal- 1 each; 7, 17: Harbor seal- 2 each	14: Harbor seal- 1		8: Harbor seal- 1	5.4, 21, 23, 54: Harbor seal- 1 each
	Distance and bearing from construction	2: 35m, 181°; 6: 33m, 115°	2.1: 33m, 114°; 6: 20m, 218°; 7: 28m, 188°; 10: 33m, 245°; 11: 34m, 220°; 13: 19m, 214°; 15: 20m, 256°; 17: 25m, 255°; 19: 16m, 265°	14: 16m, 140°		8: 29m, 93°	5.4: 34m, 148°; 21: 34m, 116°; 23: 34m, 180°; 54: 31m, 195°
	Behavior	2: Look, Sink; 6: Milling, Look, Sink	2.1, 10, 15, 19: Look, Sink; 6, 7: Look, Sink, Swimming (E); 11: Look; 13: Swimming (NE), Sink; 17: Milling	14: Look, Sink		8: Milling	5.4, 21, 23: Milling; 54: Look, Sink
Marine mammal obs., non-take	Num. of add'l. sightings	38	18	15	20	9	69
	Species and Total number	Harbor seal- 42	Harbor seal- 20	Harbor seal- 16	Harbor seal- 21	Harbor seal- 9	Harbor seal- 73
	General behavior	Look, Sink, Milling	Look, Sink, Swimming, Milling	Look, Sink, Milling	Milling, Sink	Swimming, Milling, Sink	Look, Sink, Swimming, Milling
Take Numbers	Level A	None	None	None	None	None	None
	Level B	Harbor seal-3	Harbor seal- 11	Harbor seal- 1	None	Harbor seal-1	Harbor seal- 4
Mitigation		N/A	N/A	N/A	N/A	N/A	N/A

		Date	March 24, 2020	March 25, 2020	March 26, 2020	March 27, 2020	March 28, 2020
Monitoring time	Start		5:00	5:15	5:00	5:00	6:00
	End		19:09	19:26	19:30	18:35	11:35
Construction Activity			Drilling	Drilling	Drilling	Drilling	Drilling
Weather parameters	Visibility		Moderate to Excellent	Good to Excellent	Good to Excellent	Bad early, then Moderate to Excellent	Moderate
	Glare		15%	5%	5%	10%	5%
	Condition		Clear, sunny	Partly cloudy	Partly cloudy, then overcast with light rain	Overcast with mixed rain and snow	Overcast
	Waves		Low	Low	Low	Low	Low
	Beaufort		1	0 to 1	0 to 1	0 to 1	1
Take observations	Sighting designation		6.2, 23, 26, 36, 39, 40.1	3, 7, 15, 16	15	None	None
	PSO position		All: Harbor walkway	All: Harbor walkway	All: Harbor walkway		
	Species and Number		6.2, 23, 26, 36, 39, 40.1: Harbor seal- 1 each	3, 7, 15, 16: Harbor seal- 1 each	15: Harbor seal- 2		
	Distance and bearing from construction		6.2: 27m, 137°; 23: 20m, 226°; 26: 35m, 268°; 36: 32m, 144°; 39: 35m, 152°; 40.1: 35m, 133°;	3: 33m, 169°; 7: 31m, 175°; 15: 14m, 209°; 16: 33m, 235°	15: 34m, 165°		
	Behavior		6.2: Milling; 23: Swimming (E), Sink; 26, 36: Look, Sink; 39: Swimming (N), Sink; 40.1: Look, Swimming (S), Sink	3, 7: Milling; 15: Swimming (NW); 16: Milling, Look, Sink	15: Milling, Sink		
Marine mammal obs., non-take	Num. of add'l. sightings		49	20	21	9	15
	Species and Total number		Harbor seal- 52	Harbor seal- 26	Harbor seal- 28	Harbor seal- 10	Harbor seal- 15
	General behavior		Look, Swimming, Sink, Milling	Look, Sink, Swimming, Milling	Look, Sink, Milling	Look, Sink, Swimming, Milling	Swimming, Milling, Sink
Take Numbers	Level A		None	None	None	None	None
	Level B		Harbor seal-6	Harbor seal- 4	Harbor seal-2	None	None
Mitigation			N/A	N/A	N/A	N/A	N/A

		Date	March 30, 2020	March 31, 2020	April 1, 2020
Monitoring time	Start		6:30/14:40	6:30	6:30
	End		7:38/18:13	17:00	17:27
Construction Activity			Charge emplacement and blast	No in-water construction	Excavation
Weather parameters	Visibility		Excellent	Excellent	Excellent
	Glare		20%	0%	0%
	Condition		Partly Cloudy	Partly cloudy, then sunny	Sunny
	Waves		Low	Low	Low
	Beaufort		0 to 2	1	0 to 1
Take observations	Sighting designation		FH3	None	2 - 4, 6 - 50
	PSO position		5 PSOs on watch: Boat launch, C float, Auke Bay station; and onboard patrol vessels inside and outside of harbor		All: Harbor walkway
	Species and Number		FH3: Harbor seal- 1		15, 17, 33: Harbor seal- 3 each; 18, 24, 30 - 34: Harbor seal- 2 each; 23: Harbor seal- 4; All others: Harbor seal- 1 each
	Distance and bearing from construction		FH3: 281m, 184°		2: 89m, 218°; 3: 43m, 96°; 4: 49m, 98°; 6: 41m, 139°; 7: 77m, 227°; 8: 52m, 171°; 9: 50m, 181°; 10: 64m, 216°; 11: 62m, 190°; 12: 66m, 162°; 13: 84m, 213°; 14: 57m, 194°; 15: 73m, 221°; 16: 68m, 201°; 17: 38m, 224°; 18: 36m, 224°; 19: 23m, 200°; 20: 30m, 215°; 21: 72m, 163°; 22: 40m, 235°; 23: 52m, 224°; 24: 49m, 225°; 25: 58m, 112°; 26: 71m, 215°; 27: 56m, 207°; 28: 38m, 213°; 29: 52m, 208°; 30: 69m, 216°; 31: 56m, 143°; 32: 34m, 198°; 33: 34m, 198°; 34: 52m, 206°; 35: 79m, 219°; 36: 58m, 160°; 37: 51m, 214°; 38: 48m, 209°; 39: 67m, 189°; 40: 47m, 209°; 41: 62m, 134°; 42: 47m, 208°; 43: 49m, 206°; 44: 37m, 161°; 45: 47m, 201°; 46: 61m, 227°; 47: 54m, 224°; 48: 60m, 227°; 49: 58m, 228°; 50: 43m, 99°
	Behavior		FH3: Milling		2, 7: Swimming (N), Sink; 3, 19: Look, Swimming (E), Sink; 4, 6, 9, 12, 18, 21, 23, 24, 26 - 30, 33, 36, 44: Look, Sink; 8, 14, 32, 50: Milling, Look, Sink; 10, 11, 13, 34, 35, 37 - 43, 45 - 49: Milling, Sink; 15, 17, 22, 25, 31: Milling; 16: Swimming, Milling; 20: UNK
Marine mammal obs., non-take	Num. of add'l. sightings	Approximately 8 individual Harbor seals	28	4	
	Species and Total number		Harbor seal- 32	Harbor seal- 4	
	General behavior		Milling, Look, Sink, Swimming	Milling	Look, Sink, Milling
Take Numbers	Level A	None	None	None	
	Level B	Harbor seal- 5 (1 confirmed, 4 extrapolated)	None	Harbor seal- 63	
Mitigation			Charge emplacement delayed 38 minutes; blasting delayed by 3 minutes	N/A	N/A

Date		April 2, 2020	April 4, 2020	April 5, 2020	April 6, 2020	April 7, 2020
Monitoring time	Start	6:30	15:00	15:30	16:30	5:00
	End	10:21	17:24	20:15	21:09	21:59
Construction Activity		Excavation	Excavation	Excavation	Excavation	Excavation
Weather parameters	Visibility	Excellent	Excellent	Good	Good	Poor to Excellent
	Glare	5%	5%	0%	15%	5%
	Condition	Clear, then sunny	Partly cloudy	Overcast	Sunny, later snow	Overcast with periods of rain and snow
	Waves	Low	Low	Low	Moderate	Low
	Beaufort	0 to 1	1	1	2 to 3	0 to 1
Take observations	Sighting designation	None	2 - 6, 8 - 13	3	15 - 20	2 - 15, 19 - 23
	PSO position		All: Harbor walkway	All: Harbor walkway	All: Harbor walkway	All: Harbor walkway
	Species and Number		2 - 6, 9 - 11, 13: Harbor seal- 1 each; 8, 12: Harbor seal- 2 each	3: Harbor seal- 1	15 - 20: Harbor seal- 1 each	2 - 13, 15, 19 - 23: Harbor seal- 1 each; 14: Harbor seal- 2
	Distance and bearing from construction		2: 47m, 216°; 3: 45m, 209°; 4: 61m, 220°; 5: 58m, 221°; 6: 87m, 197°; 8: 64m, 219°; 9: 47m, 205°; 10: 47m, 207°; 11: 61m, 156°; 12: 52m, 210°; 13: 54m, 104°	3: 73m, 212°	15: 54m, 227°; 16: 60m, 227°; 17: 39m, 231°; 18: 49m, 216°; 19: 89m, 234°; 20: 95m, 234°	2: 34m, 139°; 3: 43m, 162°; 4: 49m, 164°; 5: 75m, 210°; 6: 25m, 93°; 7: 44m, 262°; 8: 37m, 149°; 9: 37m, 147°; 10: 25m, 121°; 11: 37m, 149°; 12: 44m, 157°; 13: 46m, 158°; 14: 58m, 249°; 15: 35m, 152°; 19: 56m, 169°; 20: 64m, 241°; 21: 62m, 223°; 22: 45m, 199°; 23: 55m, 209°
	Behavior		2, 4, 8, 9, 11 - 13: Milling, Sink; 3: Look, Sink; 5, 6: Milling; 10: Milling, Look, Sink	3: Milling	15, 16, 20: Look, Sink; 17, 18: Look, Milling; 19: Milling	2 - 5, 7 - 11, 14, 15, 20, 23: Look, Sink; 6: Swimming (E), Look, Sink; 12, 13, 22: Milling, Sink; 9: Swimming (N), Look, Sink
Marine mammal obs., non-take	Num. of add'l. sightings	2	10	2	14	26
	Species and Total number	Harbor seal-2	Harbor seal- 12	Harbor seal- 2	Harbor seal- 14	Harbor seal- 30
	General behavior	Look, Sink, Milling	Look, Sink, Milling	Milling, Sink	Look, Sink, Milling	Look, Sink, Swimming, Milling
Take Numbers	Level A	None	None	None	None	None
	Level B	None	Harbor seal- 13	Harbor seal- 1	Harbor seal- 6	Harbor seal- 20
Mitigation		N/A	N/A	N/A	N/A	N/A

		Date	April 8, 2020	April 9, 2020	April 10, 2020	April 11, 2020
Monitoring time	Start		5:30, 18:00	18:30	6:30, 19:00	7:30
	End		10:24; 22:29	22:52	12:13, 23:40	13:15
Construction Activity			Excavation	Excavation	Excavation	Excavation
Weather parameters	Visibility		Poor to Excellent	Excellent	Moderate to Excellent	Excellent
	Glare		5%	20%	15%	10%
	Condition		Snow early, then overcast	Sunny	Clear, sunny	Sunny
	Waves		Low	Low	Low	Low
	Beaufort		1	0	0	0
Take observations	Sighting designation		3 - 7, 11 - 15	9 - 13	11 - 13, 15, 17, 19 - 23, 25 - 30, 31 - 43	3 - 15, 17, 18 - 24, 26, 29
	PSO position		All: Harbor walkway	All: Harbor walkway	All: Harbor walkway	All: Harbor walkway
	Species and Number		3, 5, 6, 11 - 15: Harbor seal- 1 each; 4, 7: Harbor seal- 2 each	9 - 13: Harbor seal- 1 each	20, 21, 27, 28, 30, 32: Harbor seal- 2 each; 26, 37: Harbor seal- 3 each; All others: Harbor seal- 1 each	10, 26: Harbor seal- 2 each; All others: Harbor seal- 1 each
	Distance and bearing from construction		3: 41m, 190°; 4: 81m, 245°; 5: 70m, 242°; 6: 38m, 152°; 7: 51m, 218°; 11: 36m, 161°; 12: 98m, 240°; 13: 58m, 199°; 14: 62m, 232°; 15: 65m, 289°	9: 52m, 231°; 11: 38m, 201°; 10: 61m, 235°; 12: 41m, 193°; 13: 50m, 202°	11: 88m, 209°; 12: 80m, 209°; 13: 90m, 214°; 15: 85m, 206°; 17: 64m, 203°; 19: 87m, 219°; 20: 69m, 196°; 21: 91m, 224°; 22: 97m, 226°; 23: 77m, 209°; 25: 101m, 226°; 26: 88m, 214°; 27: 93m, 221°; 28: 107m, 229°; 29: 84m, 217°; 30: 95m, 224°; 31: 101m, 220°; 32: 61m, 215°; 33: 87m, 214°; 34: 51m, 208°; 35: 78m, 201°; 36: 38m, 182°; 37: 64m, 217°; 38: 75m, 224°; 39: 71m, 220°; 40: 42m, 161°; 41: 109m, 230°; 42: 63m, 203°; 43: 92m, 224°	3: 63m, 193°; 4: 74m, 194°; 5: 70m, 195°; 6: 82m, 202°; 7: 66m, 197°; 8: 110m, 226°; 9: 104m, 220°; 10: 102m, 220°; 11: 87m, 210°; 12: 85m, 219°; 13: 84m, 216°; 14: 94m, 221°; 15: 97m, 217°; 17: 104m, 221°; 18: 79m, 208°; 19: 78m, 197°; 20: 97m, 224°; 21: 78m, 202°; 22: 88m, 216°; 23: 80m, 207°; 24: 94m, 221°; 26: 103m, 222°; 29: 106m, 223°
	Behavior		3 - 7, 11: Look, Sink; 12, 14: Milling; 13: Swimming (SW); 15: Milling, Sink	9: Milling, Diving; 10, 11, 12: Milling, Sink; 13: Milling	11, 13, 41: Look, Sink; 12, 15, 17, 19 - 21, 26, 29, 30, 32 - 36, 42, 43: Milling, Sink; 22, 23, 25, 27, 28, 31, 37 - 40: Milling	3: Swimming (N); 4, 5, 8 - 15, 17, 18, 20 - 22, 26, 29: Milling; 6, 7, 19, 23, 24: Look, Sink
Marine mammal obs., non-take	Num. of add'l. sightings		13	8	23	8
	Species and Total number		Harbor seal-15	Harbor seal-8	Harbor seal- 24	Harbor seal- 9
	General behavior		Look, Sink, Swimming, Milling	Look, Sink, Swimming, Milling	Look, Sink, Milling	Milling
Take Numbers	Level A		None	None	None	None
	Level B		Harbor seal-12	Harbor seal-5	Harbor seal- 39	Harbor seal- 25
Mitigation			N/A	N/A	N/A	N/A

Date		April 12, 2020	April 13, 2020	April 14, 2020	April 15, 2020	April 16, 2020
Monitoring time	Start	8:45	6:50	9:00	10:50	12:00
	End	12:38	15:05	17:15	17:35	18:40
Construction Activity		Excavation	No in-water construction	No in-water construction	Excavation	Excavation
Weather parameters	Visibility	Excellent	Moderate	Bad to Excellent	Moderate to Good	Good
	Glare	5%	0%	0%	0%	0%
	Condition	Sunny	Overcast with rain	Partly cloudy with periods of fog	Overcast with light rain	Partly cloudy with periods of light rain and fog
	Waves	Low	Low	Low	Low	Low
	Beaufort	0	0	0 to 1	0	0 to 1
Take observations	Sighting designation	4 - 7, 9 - 15	None	None	1 - 3	3 - 7, 9
	PSO position	All: Harbor walkway			All: Harbor walkway	All: Harbor walkway
	Species and Number	9: Harbor seal- 2; All others: Harbor seal - 1 each			1 - 3: Harbor seal- 1 each	3 - 7, 9: Harbor seal- 1 each
	Distance and bearing from construction	4: 86m, 208°; 5: 86m, 204°; 6: 99m, 227°; 7: 68m, 187°; 9: 79m, 216°; 10: 81m, 212°; 11: 81m, 215°; 12: 88m, 213°; 13: 78m, 205°; 14: 51m, 168°; 15: 54m, 185°			1: 67m, 283°; 2: 47m, 265°; 3: 48m, 260°	3: 90m, 258°; 4: 54m, 244°; 5: 67m, 288°; 6: 57m, 270°; 7: 66m, 261°; 9: 92m, 238°
	Behavior	4, 11: Milling, Sink; 5, 6, 9, 13 - 15: Milling; 7, 10: Look, Sink; 12: Milling, Look, Sink			1 - 3: Look, Sink	3 - 7: Milling; 9: Look, Sink
Marine mammal obs., non-take	Num. of add'l. sightings	6	31	11	22	Harbor seal- 2; Steller sea lion- 1
	Species and Total number	Harbor seal-6	Harbor seal- 41	Harbor seal- 11	Harbor seal- 26	Harbor seal- 4, Steller sea lion- 1
	General behavior	Swimming, Milling	Look, Sink, Swimming, Milling	Look, Sink, Swimming, Milling	Look, Sink, Milling	Harbor seal- Milling; Steller sea lion- Milling, Look, Sink
Take Numbers	Level A	None	None	None	None	None
	Level B	Harbor seal- 12	None	None	Harbor seal- 3	Harbor seal- 6
Mitigation		N/A	N/A	N/A	N/A	N/A

		Date	April 17, 2020	April 21, 2020	April 22, 2020
Monitoring time	Start		12:57	4:55	5:30
	End		19:20	10:00	10:45
Construction Activity			Excavation	Excavation	Excavation
Weather parameters	Visibility		Good to Excellent	Poor to Moderate	Good
	Glare		5%	0%	0%
	Condition		Partly cloudy	Rain	Overcast with rain
	Waves		Low	Low	Low
	Beaufort		1	1	0 to 1
Take observations	Sighting designation		2, 3, 14 - 26	4, 5, 7, 8, 11 - 14	4, 6 - 11, 13, 14, 19, 21, 22, 24, 25, 28, 29, 31, 32, 41 - 46
	PSO position		All: Harbor walkway	All: Harbor walkway	All: Harbor walkway
	Species and Number		2, 3, 15, 17 - 19, 22, 24: Harbor seal- 1 each; 14, 16, 20, 21, 23, 25, 26: Harbor seal- 2 each	4, 5, 8, 11 - 14: Harbor seal- 1 each; 7: Harbor seal- 2	4: Harbor seal- 6; 8, 21, 25, 31: Harbor seal- 2 each; 19, 29, 32: Harbor seal- 4 each; 22: Harbor seal- 3; All others: Harbor seal- 1 each
	Distance and bearing from construction		2: 104m, 253°; 3: 99m, 223°; 14: 54m, 268°; 15: 56m, 259°; 16: 67m, 266°; 17: 67m, 262°; 18: 52m, 267°; 19: 81m, 289°; 20: 47m, 238°; 21: 63m, 271°; 22: 108m, 224°; 23: 78m, 476°; 24: 41m, 273°; 25: 99m, 234°; 26: 56m, 217°	4: 67m, 254°; 5: 71m, 247°; 7: 100m, 233°; 8: 73m, 246°; 11: 83m, 264°; 12: 68m, 262°; 13: 72m, 235°; 14: 75m, 247°	4: 54m, 278°; 6: 62m, 244°; 7: 109m, 260°; 8: 96m, 254°; 9: 95m, 223°; 10: 89m, 261°; 11: 86m, 460°; 13: 93m, 252°; 14: 100m, 246°; 19: 101m, 241°; 21: 99m, 232°; 22: 90m, 234°; 24: 87m, 218°; 25: 104m, 256°; 28: 85m, 246°; 29: 76m, 249°; 31: 102m, 257°; 32: 104m, 254°; 41: 108m, 248°; 42: 88m, 264°; 43: 58m, 274°; 44: 102m, 257°; 45: 74m, 251°; 46: 73m, 212°
	Behavior		2, 20, 21, 23, 25, 26: Look, Sink; 3, 14, 17, 19, 22: Milling, Sink; 15: Swimming (E), Diving; 16: Milling; 18, 24: Swimming (E)	4: Swimming (N), Diving; 5: Milling; 7: Milling, Look, Sink; 8: Swimming (E), Sink; 11, 12: Look, Sink; 13: Sink; 14: Swimming (W), Look, Sink	4, 7: Milling, Look; 6: Milling, Diving; 8, 10, 11, 14, 24, 28, 31, 42, 44 - 46: Look, Sink; 9: Swimming (S), Sink; 13, 21, 32: Milling, Look, Sink; 19, 41: Milling, Sink; 22: Swimming (W); 25: Look, Dive; 29: Play, Milling; 43: Sink
Marine mammal obs., non-take	Num. of add'l. sightings		11	6	Harbor seal- 24; Steller sea lion- 2
	Species and Total number		Harbor seal- 14	Harbor seal- 6	Harbor seal- 107; Steller sea lion- 2
	General behavior		Milling, Sink	Look, Swimming, Sink	Harbor seal- Look, Sink, Milling; Steller sea lion- Milling, Look, Diving
Take Numbers	Level A		None	None	None
	Level B		Harbor seal- 22	Harbor seal- 21	Harbor seal- 44
Mitigation			N/A	N/A	N/A

	Date	April 23, 2020	September 29, 2020	September 30, 2020
Monitoring time	Start	6:00	6:35	6:30
	End	11:40	18:56	16:48
Construction Activity		No in-water construction	Dredging	Dredging
Weather parameters	Visibility	Good to Excellent	Poor to Good	Excellent
	Glare	0%	0%	3%
	Condition	Overcast with rain	Overcast with periods of fog	Overcast with periods of light rain
	Waves	Low	Low	Low
	Beaufort	0 to 1	0 to 1	1
Take observations	Sighting designation	None	None	6; 7; 8
	PSO position			All: Launch ramp dock
	Species and Number			6: 1; 7: 1; 8: 1
	Distance and bearing from construction			6: 23m, 228°; 7: 75m, 247°; 8: 64m, 211°
	Behavior			6: Swimming (SW); 7: Look, Sink; 8: Look, Sink
Marine mammal obs., non-take	Num. of add'l. sightings	25	5	8
	Species and Total number	Harbor seal-45	Harbor seal-5	Harbor seal- 8
	General behavior	Look, Sink, Milling	Swimming, Milling, Sink	Milling
Take Numbers	Level A	None	None	None
	Level B	None	None	Harbor seal- 3
Mitigation		N/A	N/A	N/A

Observation Summary

Observation and construction

Observations were conducted for all in-water construction, which occurred on 121 days over an eight (8) month period from October 14, 2019 to September 30, 2020. Most of these observations occurred during dredging and excavation activities. Additionally, there were two periods of observing the 24-hour drilling operations, the first lasted six (6) days and the second lasted eleven (11) days.

Two blasts were conducted to break up the bedrock of the harbor basin, the first on February 21st (with charges being loaded on the 20th) and the second on March 30th.

Takes

A total of 1,434 Level B takes of Harbor seals were recorded for the duration of this project. This represents approximately 85% of the 1,690 allotted takes. Additionally, there were two (2) Level A takes of Harbor seal (2% of the 104 allotted). One of these takes occurred during drilling operations which were not directly in-water, but rather through the drill pad constructed of shot-rock and into the bedrock of the harbor basin. The other Level A take occurred during in-water placement of shot-rock for the construction of the drill pad. In both instances, the seals were observed briefly swimming through the Level A zone before exiting and operations were allowed to continue thereafter.

Two (2) Level B takes of Steller sea lion also occurred during the duration of the project. One of these occurred during off-shore disposal of dredge material and the other was a result of the first blast. No Level A takes of Steller sea lion occurred, nor were there any takes of any other marine mammal species.

Mitigation

Presence of Harbor seals in the shutdown zones for blasting caused delays in charge emplacement for both blasts. The delay for placing the charges for the first blast lasted approximately 6.5 hours as there was a large population of seals within the basin. This long delay meant that the charges would not be ready before sunset and the blast would need to be conducted the next day. The heavy presence of marine mammals continued and resulted in an additional delay of approximately 2 hours on blast day.

Seal presence was significantly lighter on the day of the second blast with a delay of only 38 minutes for charge emplacement in the morning and 3 minutes before the blast in the afternoon.

The aforementioned Level A Harbor seal takes did not trigger further mitigation efforts as they were observed transiting the shutdown zone.

Distribution patterns of infrequently sighted species

Although Harbor seals were the most frequently observed species in the action area, other species were sighted including two (2) instances of Steller sea lion take (as discussed above). A further six (6)

sightings of Steller sea lion occurred during the course of observations. These animals are known to use the vicinity of Statter Harbor intermittently, including for foraging; however, unlike the Harbor seals, they are not considered residents of the basin nor do they utilize it as a haulout.

Additionally, two (2) Humpback whales were sighted together approximately 2.5 km from the dump scow while disposing of dredge material off-shore on December 2, 2019. 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 action area.

Harbor seal 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 (figure 1). Observers noted periods where more than four dozen seals were utilizing this haulout and anecdotal evidence suggests that upwards of 100 individuals have been counted there at one time.



Figure 1: Harbor seals hauled out at Andrew's Marina; photo credit: Brett Mello.

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, including blasting, was recorded.

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 (figure 2). 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.



Figure 2: Example of individually identifiable Harbor seals; photo credit: Brett Mello.

While observers made an effort to follow sightings closely in order to properly classify resightings of individuals, this effort would have been greatly advanced by receiving regulatory approval for and employing a photo identification program with a robust, scientifically sound methodology. The patterns in the pelage of Harbor seals are readily identifiable dry, wet, and even underwater (figure 3) making such a program straightforward to employ.



Figure 3a & b: Identifiable Harbor seal underwater; photo credit: Brett Mello.

The photo ID program would not only be useful for tracking resightings of already accounted for individuals, but also for generating more accurate estimates of resident population size. Furthermore, the data from such a program could be utilized to determine any changes in movement and area usage patterns on individuals in response to the in-water construction activities of a given project.

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