

Marine Mammal Monitoring Report
City and Borough of Sitka GPIP Multipurpose Dock Project
Sawmill Cove
Sitka, AK
POA-2016-576; NMFS AKR-2017-9686

On November 23, 2016, the U.S. Army Corps of Engineers issued a Letter of Permission (LOP; USACE# POA-2016-576) to the City and Borough of Sitka authorizing the construction of a multipurpose dock at Gary Paxton Industrial Park at Sawmill Cove, Sitka, Alaska. The LOP required compliance with the Endangered Species Act and implementation of National Marine Fisheries Service's (NMFS) Incidental Harassment Authorization (NMFS# AKR-2017-9686) dated September 29, 2017 and compliance with the U.S. Fish and Wildlife Service's (USFWS) Observer Protocols for Pile Driving, Dredging and Placement of Fill dated August 2, 2012.

From late fall to early winter 2017, Turnagain Marine Construction constructed the multipurpose dock on behalf of the City and Borough of Sitka. To prevent noise associated with pile installation and removal from harming marine mammals, monitoring zones were established based on the species and type of in water work being done. This included an exclusion (shutdown) zone, and two levels of monitoring where protected species were noted, but work was not required to stop unless cumulative counts became excessive. Refer to Table 1 for details.

If a marine mammal appeared likely to enter their respective exclusion zone, construction would be shut down. A protected species observer was present prior to and during all pile driving and pile extraction activities to monitor marine mammal presence and communicate with the construction foreman about marine mammal presence and the need for shutdowns. Some incidental take was authorized for this project (see Table 2).

Monitors were present during twenty-two days of in water work. This included ten days between October 9th and 20th for wooden piling removal, where only one monitor was present each day and twelve days between October 22nd and November 9th, where both observer were monitoring during new piling installation.

During the monitoring, three species of protected mammals were observed, including Steller's sea lions, humpback whales, and harbor seals. These species were primarily observed swimming or milling, as well as some feeding/foraging behavior. Both humpback whales and Steller sea lions were more common outside the monitoring area near the mouth of Silver Bay and out into Eastern Channel. Small numbers of sea lions occasionally travelled into or through the monitoring area, mostly near the shore line. Humpback whales stayed more in the middle of the bay or towards the far shore (opposite the dock project), sometimes coming in briefly before moving back out, but occasionally venturing further up the bay. With a couple of exceptions, whales observed tended to be individuals or pairs.

Marine mammal observation commenced at least 30 minutes before in water work, however due to difficulty predicting when exactly in water work would begin, observers were routinely present and monitoring well before. Table 3 includes all observations recorded by the observers, even those well outside the pre/post monitoring periods.

There were 141 sighting events recorded of individuals or groups of marine mammals. Around 60% of these sightings (86) occurred when in-water work was not occurring. The remaining sightings were all in Level B zones for the mammal and activity, and no shut-down was required. Even with conservative counting, the cumulative number of protected species within the monitoring zones during in-water work was well below authorized levels.

Table 1: Shutdown Zones, Level A Monitoring Zones, and Level B Monitoring zones (meters)

Source	Humpback Whale	Killer Whale	Harbor Porpoise	Harbor Seal	Steller's sea lion, California Sea lion	Sea otter
Vibratory Pile Driving						
12 and 16-inch wood (removal)	Shutdown: 10 B (monitoring): 2,200	Shutdown: 10 B (monitoring): 2,200	Shutdown: 10 B (monitoring): 2,200	Shutdown: 10 B (monitoring): 2,200	Shutdown: 10 B (monitoring): 2,200	Shutdown: 300
30-inch steel (removal and installation)	Shutdown: 10 B (monitoring): 9,500	Shutdown: 10 B (monitoring): 9,500	Shutdown: 10 B (monitoring): 9,500	Shutdown: 10 B (monitoring): 9,500	Shutdown: 10 B (monitoring): 9,500	Shutdown: 500
48-inch steel (removal and installation)	Shutdown: 10 B (monitoring): 9,500	Shutdown: 10 B (monitoring): 9,500	Shutdown: 10 B (monitoring): 9,500	Shutdown: 10 B (monitoring): 9,500	Shutdown: 10 B (monitoring): 9,500	Shutdown: 1000
Impact Pile Driving						
30-inch steel (installation)	Shutdown: 390 B (monitoring): 2,600	Shutdown: 25 B (monitoring): 2,600	Shutdown: 200 A (monitoring): 460 B (monitoring): 2,600	Shutdown: 150 A (monitoring): 210 B (monitoring): 2,600	Shutdown: 25 B (monitoring): 2,600	Shutdown: 2000
48-inch steel (installation)	Shutdown: 1,100 B (monitoring): 3,800	Shutdown: 25 B (monitoring): 3,800	Shutdown: 200 A (monitoring): 1,260 B (monitoring): 3,800	Shutdown: 150 A (monitoring): 570 B (monitoring): 3,800	Shutdown: 50 B (monitoring): 3,800	Shutdown: 2000

Table 2: Authorized and actual counts for incidental take of protected species during GPIIP multipurpose dock construction work

Species	Level A Authorized	Level A Observed	Level B Authorized	Level B Observed
Humpback Whale	0	0	64	25
Killer Whale	0	0	16	0
Harbor Porpoise	10	0	10	0
Harbor Seal	6	0	32	14
Steller Sea Lion	0	0	224	73
California Sea Lion	0	0	16	0
Northern Sea Otter	0	0	0	0

Table 3: Table of Observations

Date	Time	Observer	Observer Location	Species	Number	Within Shutdown Zone	Resighting	Distance (m)	Notes	Construction Activity	Level A Take	Level B Take
9 October	08:55:00 AM	MG	Shore	SSL	1	No	N	not recorded		No in-water activity	No	N
9 October	09:17:00 AM	MG	Shore	SSL	1	No	UNK	not recorded		No in-water activity	No	N
9 October	09:34:00 AM	MG	Shore	SSL	1	No	UNK	not recorded		No in-water activity	No	N
9 October	09:51:00 AM	MG	Shore	SSL	2	No	N	not recorded		No in-water activity	No	N
9 October	09:53:00 AM	MG	Shore	SSL	2	No	N	not recorded		No in-water activity	No	N
9 October	09:59:00 AM	MG	Shore	SSL	2	No	Y	not recorded		No in-water activity	No	N
9 October	12:24:00 PM	MG	Shore	SSL	1	No	UNK	not recorded		No in-water activity	No	N
9 October	12:28:00 PM	MG	Shore	SSL	1	No	Y	not recorded		No in-water activity	No	N
9 October	12:34:00 PM	MG	Shore	SSL	1	No	Y	not recorded		No in-water activity	No	N
9 October	12:36:00 PM	MG	Shore	SSL	1	No	Y	not recorded		No in-water activity	No	N
9 October	12:36:00 PM	MG	Shore	HW	2	No	N	not recorded		No in-water activity	No	N
9 October	12:38:00 PM	MG	Shore	SSL	2	No	UNK	not recorded		No in-water activity	No	N
9 October	12:44:00 PM	MG	Shore	HW	1	No	UNK	not recorded		No in-water activity	No	N
9 October	12:45:00 PM	MG	Shore	SSL	2	No	Y	not recorded		No in-water activity	No	N
9 October	12:47:00 PM	MG	Shore	SSL	1	No	UNK	not recorded		No in-water activity	No	N
9 October	12:50:00 PM	MG	Shore	HW	1	No	UNK	not recorded		No in-water activity	No	N
9 October	12:54:00 PM	MG	Shore	SSL	1	No	Y	not recorded		No in-water activity	No	N
9 October	12:56:00 PM	MG	Shore	HW	1	No	Y	not recorded		No in-water activity	No	N
9 October	12:58:00 PM	MG	Shore	HW	1	No	Y	not recorded		No in-water activity	No	N
9 October	12:59:00 PM	MG	Shore	SSL	1	No	Y	not recorded		No in-water activity	No	Y
9 October	01:06:00 PM	MG	Shore	SSL	2	No	UNK	not recorded		No in-water activity	No	Y
9 October	01:10:00 PM	MG	Shore	SSL	1	No	Y	not recorded		Piling Removal	No	Y
9 October	01:12:00 PM	MG	Shore	SSL	1	No	Y	not recorded		Piling Removal	No	N
9 October	01:12:00 PM	MG	Shore	HW	1	No	UNK	not recorded		Piling Removal	No	Y
9 October	02:04:00 PM	MG	Shore	SSL	1	No	UNK	not recorded		Piling Removal	No	Y
9 October	02:25:00 PM	MG	Shore	SSL	1	No	UNK	not recorded		No in-water activity	No	N
10 October	09:00:00 AM	LK	Shore	HW	5	No	N	not recorded		No in-water activity	No	N
10 October	09:00:00 AM	LK	Shore	SSL	1	No	N	not recorded		No in-water activity	No	N
10 October	09:20:00 AM	LK	Shore	SSL	4	No	N	not recorded		No in-water activity	No	N
10 October	09:45:00 AM	LK	Shore	SSL	4	No	Y	not recorded		No in-water activity	No	N
10 October	10:20:00 AM	LK	Shore	SSL	1	No	UNK	not recorded		Piling Removal	No	Y
10 October	11:00:00 AM	LK	Shore	SSL	1	No	Y	not recorded		No in-water activity	No	N
10 October	12:30:00 PM	LK	Shore	SSL	3	No	Y	not recorded		No in-water activity	No	N
10 October	12:45:00 PM	LK	Shore	HW	1	No	Y	not recorded		No in-water activity	No	N
10 October	01:00:00 PM	LK	Shore	SSL	1	No	N	not recorded		No in-water activity	No	N
10 October	02:00:00 PM	LK	Shore	SSL	1	No	Y	not recorded		Piling Removal	No	Y
10 October	02:45:00 PM	LK	Shore	SSL	4	No	Y	not recorded		Piling Removal	No	Y
11 October	08:00:00 AM	MG	Shore	HW	10	No	N	2000	Only briefly in bay	No in-water activity	No	N
11 October	08:56:00 AM	MG	Shore	SSL	1	No	N	500		Piling Removal	No	Y
11 October	09:01:00 AM	MG	Shore	SSL	1	No	UNK	250		Piling Removal	No	Y
11 October	09:14:00 AM	MG	Shore	SSL	2	No	UNK	750		Piling Removal	No	Y
11 October	09:19:00 AM	MG	Shore	SSL	1	No	UNK	250		Piling Removal	No	Y
11 October	12:11:00 PM	MG	Shore	SSL	1	No	UNK	250		No in-water activity	No	N
11 October	12:58:00 PM	MG	Shore	SSL	1	No	UNK	300		Piling Removal	No	Y
12 October	08:45:00 AM	LK	Shore	SSL	4	No	N	1500		No in-water activity	No	N
12 October	10:00:00 AM	LK	Shore	SSL	3	No	UNK	1500		No in-water activity	No	N
12 October	10:30:00 AM	LK	Shore	SSL	1	No	UNK	1000		No in-water activity	No	N
12 October	12:10:00 PM	LK	Shore	SSL	1	No	Y	500		No in-water activity	No	N
13 October	09:07:00 AM	MG	Shore	SSL	1	No	N	150		Piling Removal	No	Y
13 October	09:12:00 AM	MG	Shore	SSL	1	No	N	2000		Piling Removal	No	Y
13 October	09:40:00 AM	MG	Shore	SSL	2	No	N	1800		No in-water activity	No	N
13 October	09:48:00 AM	MG	Shore	SSL	1	No	UNK	1500		No in-water activity	No	N
13 October	09:51:00 AM	MG	Shore	SSL	1	No	Y	1500		No in-water activity	No	N
16 October	08:10:00 AM	MG	Shore	SSL	1	No	N	200		Piling Removal	No	Y

16 October	08:40:00 AM	MG	Shore	SSL	1	No	UNK	200		Piling Removal	No	Y
16 October	09:01:00 AM	MG	Shore	SSL	1	No	UNK	100		No in-water activity	No	N
16 October	09:10:00 AM	MG	Shore	SSL	1	No	N	1800		No in-water activity	No	N
16 October	09:15:00 AM	MG	Shore	SSL	1	No	UNK	400		No in-water activity	No	N
16 October	09:53:00 AM	MG	Shore	SSL	1	No	UNK	2000		No in-water activity	No	N
16 October	10:24:00 AM	MG	Shore	SSL	2	No	N	1000		No in-water activity	No	N
16 October	11:32:00 AM	MG	Shore	SSL	2	No	N	300		Piling Removal	No	Y
16 October	11:40:00 AM	MG	Shore	SSL	2	No	Y	300		Piling Removal	No	N
16 October	11:44:00 AM	MG	Shore	SSL	2	No	Y	300		Piling Removal	No	N
17 October	09:30:00 AM	LK	Shore	SSL	1	No	N	250		No in-water activity	No	N
17 October	11:00:00 AM	LK	Shore	SSL	1	No	UNK	300	stayed feeding for ~1hr	Piling Removal	No	Y
17 October	01:00:00 AM	LK	Shore	SSL	1	No	UNK	250		No in-water activity	No	N
18 October	09:20:00 AM	MG	Shore	HW	5	No	N	1800		No in-water activity	No	N
18 October	01:35:00 PM	MG	Shore	HW	2	No	N	1800		Piling Removal	No	Y
18 October	01:44:00 PM	MG	Shore	HW	1	No	Y	1800	far side; continuing	Piling Removal	No	N
18 October	01:49:00 PM	MG	Shore	HW	1	No	Y	1800	far side; moving into bay	Piling Removal	No	N
18 October	02:07:00 PM	MG	Shore	HW	1	No	Y	2000	moving to inner bay	Piling Removal	No	N
19 October	11:05:00 AM	LK	Shore	SSL	2	No	N	200		No in-water activity	No	N
19 October	12:30:00 PM	LK	Shore	HW	1	No	N	1200		No in-water activity	No	N
19 October	01:00:00 PM	LK	Shore	SSL	2	No	N	400		No in-water activity	No	N
19 October	02:30:00 PM	LK	Shore	HW	1	No	N	2000		Piling Removal	No	Y
19 October	04:00:00 PM	LK	Shore	HW	1	No	N	1800		Piling Removal	No	Y
20 October	02:30:00 PM	MG	Shore	SSL	3	No	N	100	heading out [towards mouth of bay]	No in-water activity	No	N
20 October	02:35:00 PM	MG	Shore	SSL	2	No	N	200	near SMC river mouth	No in-water activity	No	N
20 October	02:50:00 PM	MG	Shore	HW	1	No	N	1800	heading out of bay	No in-water activity	No	N
20 October	03:15:00 PM	MG	Shore	HW	3	No	N	1800	towards mouth of bay	Piling Removal	No	Y
22 October	10:00:00 AM	LK+MG	Shore+Skiff	SSL	3	No	N	100		No in-water activity	No	N
22 October	01:15:00 PM	LK+MG	Shore+Skiff	SSL	1	No	N	200		No in-water activity	No	N
22 October	01:30:00 PM	LK+MG	Shore+Skiff	SSL	1	No	UNK			Vibration Hammer (30")	No	Y
22 October	02:20:00 PM	LK+MG	Shore+Skiff	SSL	1	No	UNK	3500		Vibration Hammer (30")	No	Y
22 October	02:40:00 PM	LK+MG	Shore+Skiff	SSL	2	No	UNK	200		Vibration Hammer (30")	No	Y
23 October	01:00:00 PM	LK+MG	Shore+Skiff	HW	3	No	N	5000	breaching	No in-water activity	No	N
23 October	01:30:00 PM	LK+MG	Shore+Skiff	HW	3	No	Y	3000		No in-water activity	No	N
23 October	02:00:00 PM	LK+MG	Shore+Skiff	HW	1	No	N	500		No in-water activity	No	N
23 October	03:00:00 PM	LK+MG	Shore+Skiff	HW	2	No	Y	2000		No in-water activity	No	N
23 October	04:30:00 PM	LK+MG	Shore+Skiff	SSL	2	No	N	2000		Vibration Hammer (48")	No	Y
23 October	04:30:00 PM	LK+MG	Shore+Skiff	HS	1	No	N	2000		Vibration Hammer (48")	No	Y
23 October	04:45:00 PM	LK+MG	Shore+Skiff	SSL	5	No	UNK	2000		Vibration Hammer (48")	No	Y
24 October	10:30:00 AM	LK+MG	Shore+Skiff	SSL	2	No	N	500		No in-water activity	No	N
24 October	10:40:00 AM	LK+MG	Shore+Skiff	SSL	3	No	N	2200		No in-water activity	No	N
24 October	10:40:00 AM	LK+MG	Shore+Skiff	HS	1	No	N	2200		No in-water activity	No	N
24 October	10:50:00 AM	LK+MG	Shore+Skiff	SSL	3	No	Y	2200		Impact Hammer (48")	No	Y
24 October	01:00:00 PM	LK+MG	Shore+Skiff	SSL	2	No	N	300		Impact Hammer (48")	No	Y
28 October	10:45:00 AM	LK+MG	Shore+Skiff	HW	1	No	N	1200		No in-water activity	No	N
28 October	11:40:00 AM	LK+MG	Shore+Skiff	SSL	1	No	N	200		No in-water activity	No	N
28 October	11:40:00 AM	LK+MG	Shore+Skiff	SSL	6	No	N	5800	Bear Cove	No in-water activity	No	N
28 October	12:00:00 PM	LK+MG	Shore+Skiff	HS	1	No	N	2200		No in-water activity	No	Y
28 October	12:20:00 PM	LK+MG	Shore+Skiff	SSL	1	No	UNK	2000		Vibration Hammer (30")	No	Y
28 October	01:30:00 PM	LK+MG	Shore+Skiff	SSL	1	No	UNK	300		No in-water activity	No	N
28 October	02:45:00 PM	LK+MG	Shore+Skiff	SSL	2	No	UNK	400		No in-water activity	No	N
28 October	04:00:00 PM	LK+MG	Shore+Skiff	HW	2	No	N	1800		Impact Hammer (30")	No	Y
29 October	09:25:00 AM	LK+MG	Shore+Skiff	HW	2	No	N	2300		No in-water activity	No	Y
29 October	09:45:00 AM	LK+MG	Shore+Skiff	HW	2	No	N	1200		Vibration Hammer (30")	No	Y
29 October	10:30:00 AM	LK+MG	Shore+Skiff	HS	1	No	N	5700	Bear Cove	Vibration Hammer (30")	No	Y
29 October	10:40:00 AM	LK+MG	Shore+Skiff	SSL	1	No	N	5700	Bear Cove	Vibration Hammer (30")	No	Y
29 October	12:20:00 PM	LK+MG	Shore+Skiff	SSL	1	No	N	600		Impact Hammer (30")	No	Y
1 November	08:30:00 AM	LK+MG	Shore+Skiff	HW	2	No	N	3000		No in-water activity	No	Y
1 November	09:00:00 AM	LK+MG	Shore+Skiff	SSL	4	No	N	3000		Vibration Hammer (30")	No	Y

1 November	09:30:00 AM	LK+MG	Shore+Skiff	SSL	6	No	N	5700	Bear Cove	Vibration Hammer (30")	No	Y
1 November	09:30:00 AM	LK+MG	Shore+Skiff	HS	1	No	N	5700	Bear Cove	Vibration Hammer (30")	No	Y
1 November	10:45:00 AM	LK+MG	Shore+Skiff	HW	5	No	N	1200		Vibration Hammer (30")	No	Y
1 November	10:50:00 AM	LK+MG	Shore+Skiff	SSL	3	No	UNK	2000		Vibration Hammer (30")	No	Y
2 November	11:30:00 AM	LK+MG	Shore+Skiff	HW	1	No	N	3000	did not see again	No in-water activity	No	N
2 November	01:00:00 PM	LK+MG	Shore+Skiff	SSL	4	No	N	5700	Bear Cove	No in-water activity	No	N
2 November	02:15:00 PM	LK+MG	Shore+Skiff	SSL	2	No	N	2000		No in-water activity	No	N
2 November	02:15:00 PM	LK+MG	Shore+Skiff	HS	1	No	N	2000		No in-water activity	No	N
2 November	04:30:00 PM	LK+MG	Shore+Skiff	HW	1	No	N	2000		Vibration Hammer (48")	No	Y
2 November	04:40:00 PM	LK+MG	Shore+Skiff	SSL	6	No	Y	5700	Bear Cove (there earlier in day as well)	Vibration Hammer (48")	No	Y
2 November	04:55:00 PM	LK+MG	Shore+Skiff	HS	1	No	UNK	3000		No in-water activity	No	Y
2 November	06:30:00 PM	LK+MG	Shore+Skiff	HW	1	No	N	2000		Impact Hammer (48")	No	Y
3 November	03:30:00 PM	LK+MG	Shore+Skiff	HS	1	No	N	200		No in-water activity	No	N
3 November	03:50:00 PM	LK+MG	Shore+Skiff	HW	1	No	N	1000		No in-water activity	No	N
3 November	03:50:00 PM	LK+MG	Shore+Skiff	SSL	3	No	N	5700	Bear Cove	No in-water activity	No	Y
3 November	04:00:00 PM	LK+MG	Shore+Skiff	HS	1	No	UNK	2000		No in-water activity	No	Y
3 November	04:00:00 PM	LK+MG	Shore+Skiff	SSL	2	No	N	400		No in-water activity	No	Y
5 November	11:30:00 AM	LK+MG	Shore+Skiff	SSL	8	No	N	2000		No in-water activity	No	N
5 November	11:30:00 AM	LK+MG	Shore+Skiff	HS	2	No	N	2000		No in-water activity	No	N
5 November	02:00:00 PM	LK+MG	Shore+Skiff	HS	3	No	N	2000	Likely present throughout	No in-water activity	No	Y
5 November	02:00:00 PM	LK+MG	Shore+Skiff	SSL	7	No	Y	2000	Likely present throughout	No in-water activity	No	Y
5 November	04:15:00 PM	LK+MG	Shore+Skiff	HW	1	No	N	2000		No in-water activity	No	N
5 November	04:55:00 PM	LK+MG	Shore+Skiff	SSL	2	No	N	1800		Vibration Hammer (30")	No	Y
6 November	10:00:00 AM	LK+MG	Shore+Skiff	SSL	1	No	N	9000	Far end of Silver Bay	No in-water activity	No	N
7 November	12:00:00 PM	LK+MG	Shore+Skiff	HS	2	No	N	3000		No in-water activity	No	N
7 November	01:20:00 PM	LK+MG	Shore+Skiff	HS	1	No	N	2000		Impact Hammer (30")	No	Y
9 November	08:30:00 AM	LK+MG	Shore+Skiff	SSL	1	No	N	400		Vibration Hammer (30")	No	Y
9 November	08:45:00 AM	LK+MG	Shore+Skiff	HS	3	No	N	200		Vibration Hammer (30")	No	Y
9 November	09:00:00 AM	LK+MG	Shore+Skiff	SSL	3	No	N	2000		Vibration Hammer (30")	No	Y
9 November	09:00:00 AM	LK+MG	Shore+Skiff	HS	1	No	N	2000		Vibration Hammer (30")	No	Y

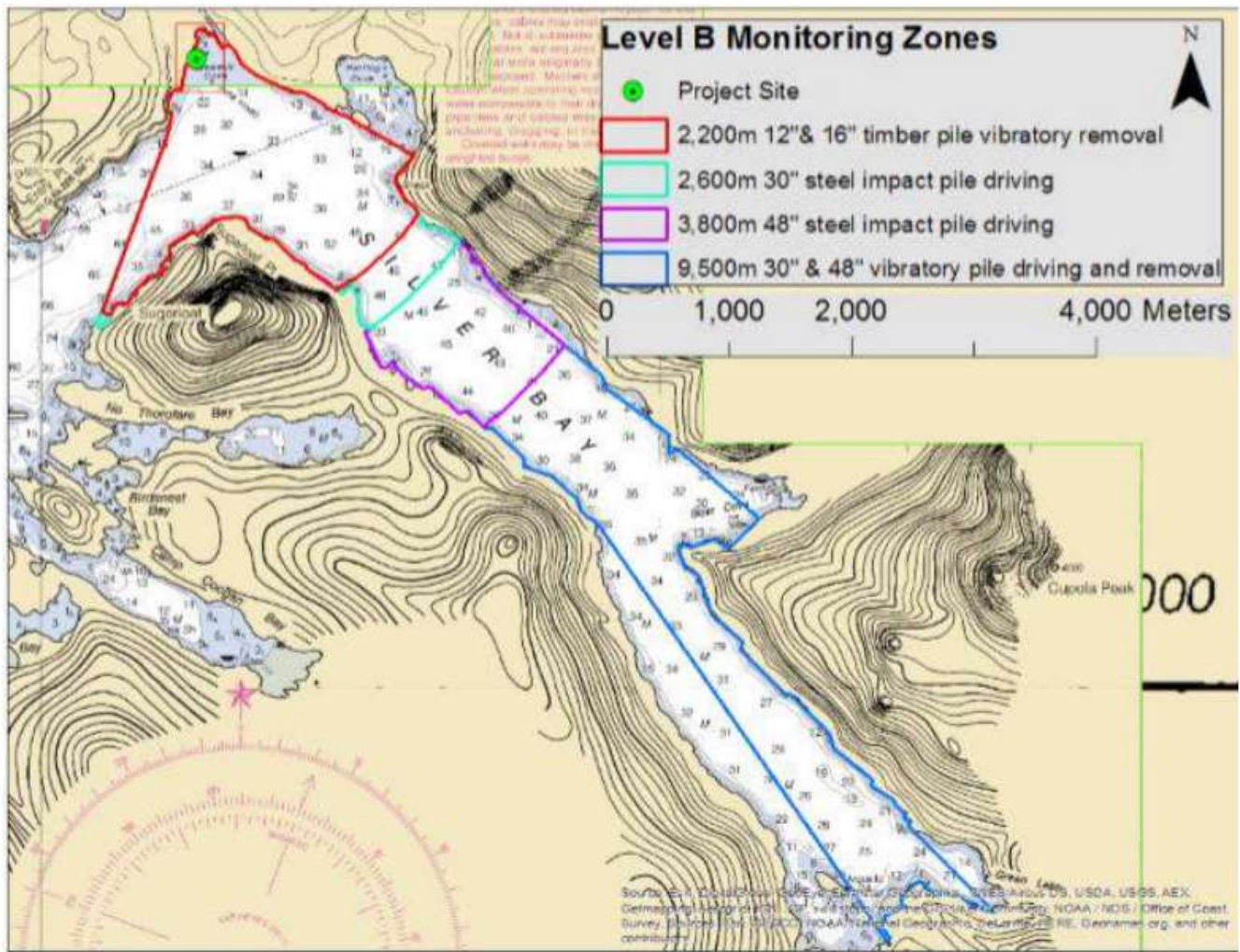


Figure 2: Level B monitoring zones (from the final marine mammal monitor and mitigation plan)