

2018 COOK INLET PIPELINE PROJECT

MARINE MAMMAL MONITORING & MITIGATION REPORT NATIONAL MARINE FISHERIES SERVICE INCIDENTAL HARASSMENT AUTHORIZATION



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ACRONYMS AND ABBREVIATIONS

4MP	Marine Mammal Monitoring and Mitigation Program
AHT	Anchor Handling Tugs
BPL	Beluga Pipeline
CFR	Code of Federal Regulations
CIPL	Cook Inlet Pipeline
dB re 1 μ Pa	decibels referenced to one microPascal
deg	degree
DSV	dive support vessel
FR	Federal Register
ft	feet
FWS	Fairweather Science LLC
Harvest Alaska	Harvest Alaska LLC
hr	hour
IHA	Incidental Harassment Authorization
ITS	Incidental Take Statement
in	inch
kg	kilogram
km	kilometers
kt	knot
lb	pound
m	meter
min	minute
MMPA	Marine Mammal Protection Act
M/V	marine vessel
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
OSV	offshore supply vessel
PSO	Protected Species Observer
QAQC	Quality analysis and quality control
rms	root mean square
R/V	research vessel
SZ	Safety Zone
Tyonek W 10	Tyonek W 10 gas pipeline
Tyonek W 8	Tyonek W 8 oil pipeline

EXECUTIVE SUMMARY

Harvest Alaska, LLC (Harvest Alaska) contracted Fairweather Science, LLC (FWS) to implement the Marine Mammal Monitoring and Mitigation Program (4MP) during their *2018 Cook Inlet Pipeline (CIPL) Cross Inlet Extension Project* in Cook Inlet, Alaska. Vessel activities took place on the west side of middle Cook Inlet between Ladd Landing near Beluga, Alaska and the Tyonek Platform. Marine mammal observation during Incidental Harassment Authorization (IHA; Appendix A)-specified activities began on May 9 and continued until September 15, 2018. A total of 11 vessels operated over the duration of the CIPL project, including 2 anchor handling tugs (AHT *Hawaii*, AHT *Washington*), 1 pipe pull barge (*Ninilchik*), 3 dive support vessels (M/V *Polar Bear*, DSV *Sand Island*, M/V *Peregrine Falcon*), 2 general offshore support vessels (OSV *Resolution*, M/V *Naknek Spirit*), 2 research survey vessels (R/V *Woldstad*, R/V *Qualifier 105*), and 1 crew vessel (M/V *Journey*). The project utilized land and platform-based Protected Species Observers (PSO); 2 PSOs were stationed at Ladd Landing and/or the Tyonek Platform depending on in-water work location and progress. PSOs monitored nearshore, middle, and offshore work zones between the two observation stations during daylight hours.

The actual duration of on-effort PSO monitoring, with duplicate observation effort when PSOs were stationed at both locations removed, was 2,067.3 hours (hr). The total on-effort monitoring time was 3,116.0 hr; PSOs at Ladd Landing recorded 1,464 hr of observation and PSOs on the Tyonek Platform recorded a total of 1,652 hr. Eighty-four percent (1,734.9 hr) of actual PSO observation was spent monitoring during periods of no work, 8.5% (176.6 hr) during anchor handling, 4.8% (98.5 hr) during pipe pulling, 0.3% (6.5 hr) during obstruction removal and stabilization, 0% (0 hr) during in-water trenching, and 2.5% (50.8 hr) during other activities.

A total of 493 sightings (i.e., groups) of approximately 1,184 individual marine mammals were observed from May 9-September 15, 2018 (Table 1). Harbor seals (*Phoca vitulina*) were the most frequently observed species with 313 sightings (~316 individuals), followed by beluga whales (*Delphinapterus leucas*) with 143 sightings (~814 individuals), and harbor porpoises (*Phocoena phocoena*) with 29 sightings (~44 individuals). Also observed were 2 sightings (~3 individuals) of humpback whales (*Megaptera novaeangliae*), 1 sighting of ~1 Steller sea lion (*Eumetopias jubatus*), 3 sightings of ~3 individual unidentified pinnipeds, 1 sighting of ~1 individual unidentified marine mammal.

Mitigation measures identified in the IHA were incorporated into the PSO field protocol and implemented during the project. Prior to initiation of vessel activities, PSOs cleared the monitoring area for 30 minutes (min) and requested additional time if marine mammals were present. Additionally, a work shut-down was implemented if a marine mammal was observed within the safety zone (SZ) during vessel activities. During the CIPL project, 25 marine mammal sightings occurred while the SZ was being cleared and 1 sighting resulted in a work shut-down of vessel activities.

A total of 18 marine mammals were observed within the Level B (120 decibels referenced to one microPascal root mean square [dB re 1 μ Pa rms]) SZ during vessel activities, resulting in 18 Level B exposures. Marine mammals observed within the Level B SZ included 17 sightings of ~17 individual harbor seals and 1 sighting of a single humpback whale. There was one marine mammal carcass observed during the CIPL project which was recorded as a Level A sighting; the marine mammal's death was not due to CIPL project activities. The dead animal was unidentifiable, and all necessary notifications and reporting took place in a timely manner.

As required by the National Marine Fisheries Service (NMFS), weekly and monthly reports were submitted during the CIPL project. The reports summarized completed and ongoing operations, cumulative numbers of marine mammal sightings, number and type of mitigation measures implemented, and number of exposures recorded.

Table 1. Summary of Marine Mammal Sightings, Shutdowns, and Level B Exposures

Marine Mammal Species	No. of Sightings¹	Estimated No. of Individuals²	No. of Shutdowns	No. Level B Exposures	No. of Allowable Level B Takes
Humpback whale	2	3	0	1	5
Gray whale	0	0	0	0	5
Beluga whale	143	814	1	0	40
Killer whale	0	0	0	0	10
Harbor porpoise	29	44	0	0	100
Stellar sea lion	1	2	0	0	6
California sea lion	0	0	0	0	5
Harbor seal	313	316	0	17	972
Other (carcass)	1	1	0	0	NA
Unidentified pinniped	3	3	0	0	NA
Unidentified marine mammal	1	1	0	0	NA
TOTAL	493	1,184	1	18	1,144

¹One sighting equals one group

²Resights of individual animals are not included in total counts

1.0 INTRODUCTION

The National Marine Fisheries Service (NMFS) issued Harvest Alaska, LLC (Harvest Alaska) an Incidental Harassment Authorization (IHA) on April 25, 2018 under the authority of section 101(a)(5)(D) of the Marine Mammal Protection Act (MMPA; 16 U.S.C. 1371 *et. seq*) to harass small numbers of marine mammals, by Level B harassment, incidental to pipelines installation activities associated with the 2018 Cook Inlet Pipeline (CIPL) Cross Inlet Extension Project in Cook Inlet, Alaska. The IHA authorized small numbers of takes (Table 1) of the following species: Cook Inlet beluga whale (*Delphinapterus leucas*), humpback whale (*Megaptera novaeangliae*), gray whale (*Eschrichtius robustus*), killer whale (*Orcinus orca*), harbor porpoise (*Phocoena phocoena*), Steller sea lion (*Eumetopias jubatus*), harbor seal (*Phoca vitulina*), and California sea lion (*Zalophus californianus*).

The objectives of the Marine Mammal Monitoring and Mitigation Plan (4MP) were described in detail in Harvest Alaska's IHA Application and in the IHA issued by NMFS, and consisted of the following:

- Establish real-time mitigation procedures as required by the IHA.
- Collect information needed to estimate the number of exposures of marine mammals to sound levels that may result in harassment, which must be reported to NMFS.
- Collect data on occurrence and activities of marine mammals in the area and timing of the Project activities.
- Provide an opportunity to collect information on behavioral responses of marine mammals to vessels.
- Provide a communication channel to coastal communities.

The CIPL project included the installation of two new steel subsea pipelines in the waters of Cook Inlet, Alaska. Work was limited to the pipeline corridor between Ladd Landing (near Beluga, AK) and the Tyonek Platform. The installation of the subsea pipelines, specifically the presence of and noise generated from work vessels, had the potential to take marine mammals by harassment.

A complete description of the specified activity may be found in the NMFS notice of the proposed IHA (83 Federal Register [FR] 8437; February 27, 2018) and the Incidental Take Statement (ITS) (83 FR 09242; May 2, 2018).

2.0 COOK INLET PIPELINE PROJECT

The CIPL project involved the installation of two new steel subsea pipelines in the waters of west middle Cook Inlet between the Tyonek Platform and the Beluga Pipeline (BPL) Junction: a 10-inch (in) nominal diameter Tyonek W 10 gas pipeline (Tyonek W 10) and an 8-in nominal diameter Tyonek W 8 oil pipeline (Tyonek W 8) (Figure 1). The length of the Tyonek W 10 is approximately 11.1 kilometers (km) with 2.3 km onshore and 8.9 km offshore in Cook Inlet waters. The Tyonek W 8 is approximately 8.9 km long in Cook Inlet waters. The new 8-in oil pipeline was placed and capped for future service.

Pipeline installation activities were conducted in phases and included moving subsea obstacles out of the pipeline corridor, pulling two pipelines (one oil, one gas) into place on the seafloor, securing the pipelines with sandbags, and connecting the pipelines to the existing Tyonek Platform. The positioning and installation of the offshore pipeline was accomplished using a variety of pipe pulling, positioning, and securing methods supported by dive boats, tug boats, a barge with winches, and onshore winches.

Operations associated with pipeline installation occurred from May 9, 2018 through September 15, 2018. During this time, the vessels described in the following sections supported the CIPL project. The project components outlined in the IHA are described in Table 2.

Table 2. Project Components and Noise Sources

Project Component	Description of Activities/Noise Source
Obstruction Removal and Stabilization	Tugs, dive boat, sonar boat, and barge used to remove obstacles from seafloor in pipeline path.
Trenching ¹	Tugs, backhoe, and crane used to bury pipeline in the tidal transition zone.
Pipeline Pulling	Barge used to pull pipeline segment from shore and place on seafloor. This particular operation does not require shut down but does require clearing.
Anchor Handling	The barge with the winch has to be stationary when pulling pipe, so tugs deploy and retrieve anchors to keep the barge in place and move as needed.

¹Trenching was planned as part of this project, however, in-water trenching did not occur.

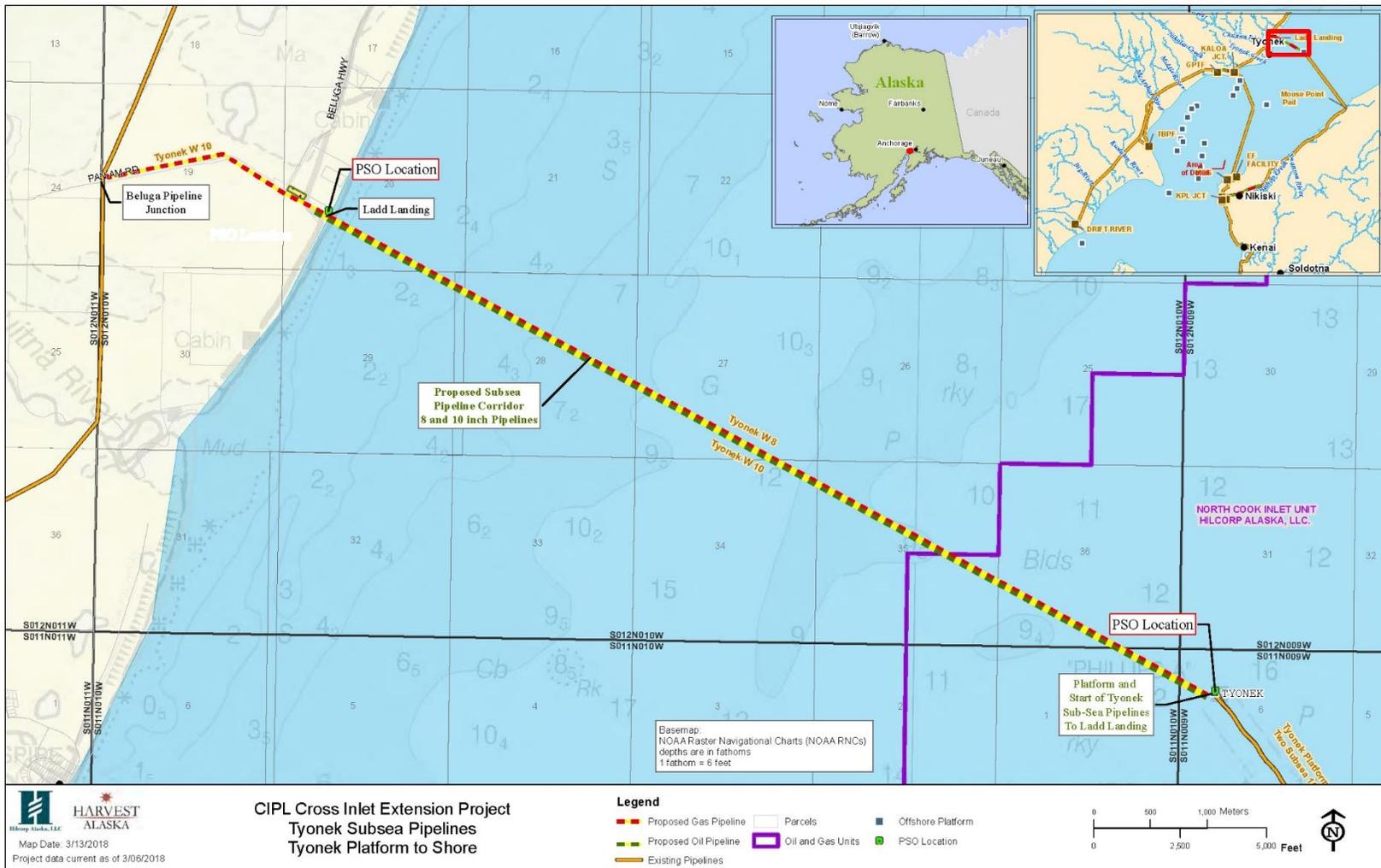


Figure 1. Project Location

2.1 PROJECT AREA

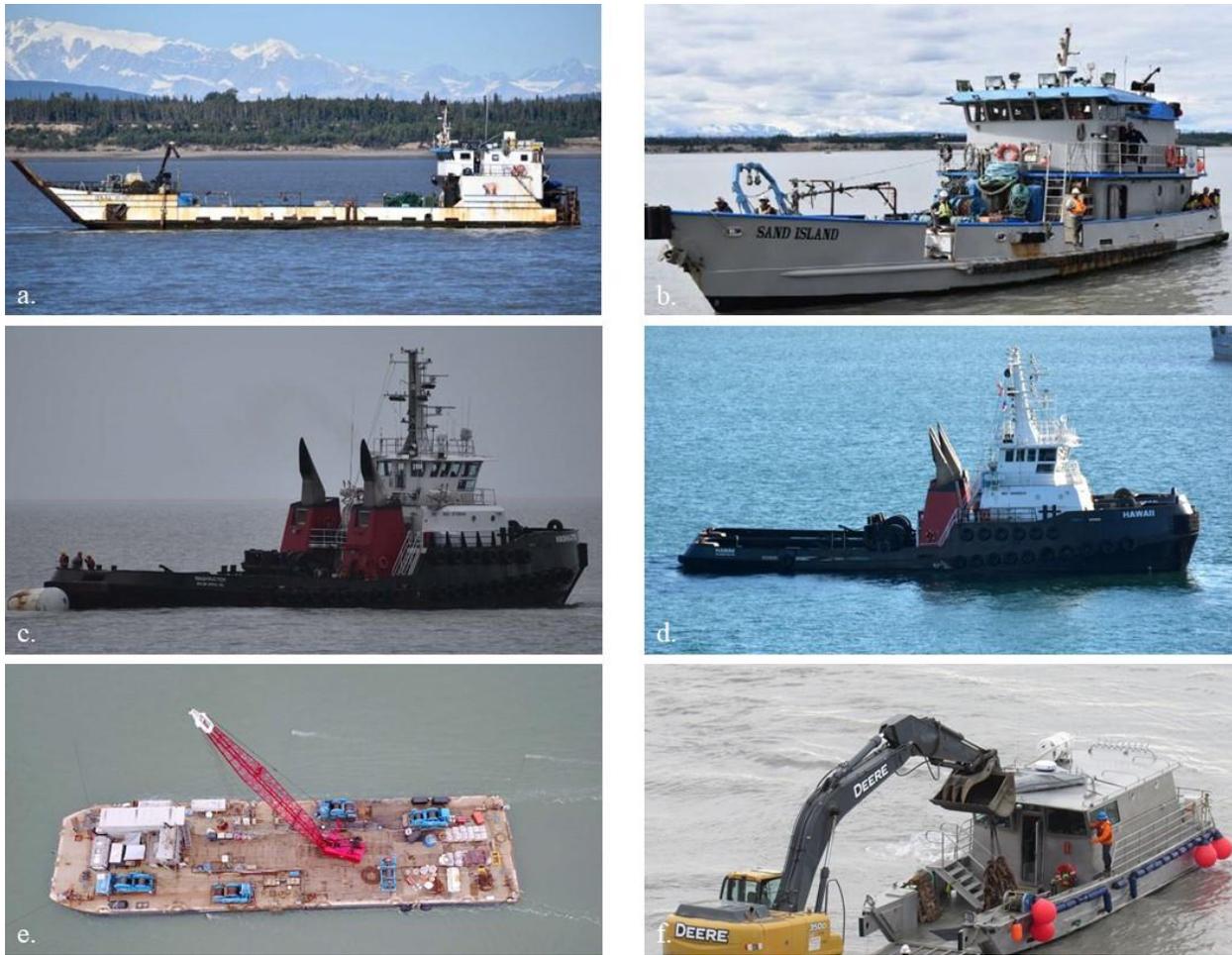
The CIPL project was located on the west side of middle Cook Inlet, Alaska, approximately 6 km north of the Village of Tyonek. Operations occurred between Ladd Landing (8 km south of Beluga, Alaska) and the Tyonek Platform (Figure 1).

2.2 DESCRIPTION OF VESSELS AND ACTIVITIES

Eleven vessels operated over the project duration, and are described in the table below (Table 3). The main vessels included the AHT *Washington* (anchor tug), AHT *Hawaii* (anchor tug), barge *Ninilchik* (pipe pull barge), DSV *Sand Island* (dive support vessel), M/V *Polar Bear* (dive support vessel), and the M/V *Journey* (crewboat). The other vessels listed in Table 3 served a supporting role and were on-site for shorter periods of time. Vessel activities included obstacle removal, trenching, pipeline pulling, anchor handling, and other, and are described in the following sections.

Table 3. Project Vessel Information

Vessel Name	Type	Project Support	Length (m)	Width (m)	Draft (m)
<i>Washington</i>	Anchor Handling Tug	Anchor Tug	34	11	6
<i>Hawaii</i>	Anchor Handling Tug	Anchor Tug	32	11	5
<i>Ninilchik</i>	Pipe Pull/Winch	Pipe Pull Barge	80	24	2
<i>Sand Island</i>	Dive Support Vessel	Diving Operations	26	8	2
<i>Polar Bear</i>	Dive Support Vessel	Diving Operations	46	10	2
<i>Resolution</i>	Offshore Support Vessel	Support Vessel	48	12	4
<i>Woldstad</i>	Research Vessel	Survey Vessel	36	9	4
<i>Qualifier 105</i>	Research Vessel	Survey Vessel	32	9	2
<i>Journey</i>	Landing Craft	Crew Vessel	15	5	1
<i>Peregrine Falcon</i>	Marine Vessel	Diving Operations	26	8	1
<i>Naknek Spirit</i>	Marine Vessel	Support Vessel	35	10	3



a. M/V *Polar Bear*, b. DSV *Sand Island*, c. AHT *Washington*, d. AHT *Hawaii*, e. *Ninilchik*, f. M/V *Journey*.

Figure 2. Photos of the Main Cook Inlet Pipeline Project Vessels

2.2.1 Obstruction Removal

Prior to initiating pulling activities, obstructions (e.g., boulders) along the pipeline corridor were removed or repositioned. A subsea sonar survey was conducted in spring 2017 to identify obstructions that could damage the pipe during installation or impede the pipe pulling activities. A number of items 1.5 meters (m; 5 feet [ft]) in diameter or greater were identified during the survey and these objects were relocated to a position that did not interfere with the pipeline route. The equipment needed to move obstructions included the barge with crane and winch, two tugs, and a dive boat. When the barge winch was used, it pulled a wire cable onto a drum (i.e., bucket) to move the obstacle. The obstruction was moved the minimum distance to clear the route. During slack tide, divers attached the pull device to the obstruction which was then repositioned using the crane or tug. The tug boat was used to reposition smaller obstructions using the main engines.

2.2.2 Trenching

At the end of the subsea pipeline installation, the pipeline was exposed on the ground surface in the tidal transition zone. The exposed pipelines were buried (via trenching) through the tidal transition zone and

connected to the respective onshore pipeline and shutdown valve station. Each pipeline was buried in a separate trench.

The trench from the cut in the bluff at Ladd Landing was continued into the tidal zone area and dug from the beach as far offshore as possible during low tide. This effort was conducted with onshore equipment (excavator) as well as equipment (crane, clam shell bucket, and backhoe) located on the barge (*Ninilchik*), which was anchored near the beach. Trenching in the tidal transition zone took place during low tide to allow shore-based excavators maximum distance into the tidal zone. Excavators were able to complete trenching operations during onshore operations only. All subsequent references to ‘trenching’ in this report refer to in-water trenching, which did not occur during the project. Therefore, there is limited mention and discussion regarding this vessel activity throughout the text.

2.2.3 Pipeline Pulling

Pipeline installation was accomplished by pulling the pipe from Ladd Landing to the Tyonek Platform. An onshore pipe fabrication and pulling area was developed at Ladd Landing where pipe sections were welded together, section splice welds inspected, and coatings applied to welds. The pipeline was fabricated in approximately 0.8 km segments until approximately half of the entire offshore length of the pipeline, approximately 4 km, was pulled offshore.

The Tyonek W 10 and Tyonek W 8 pipelines were installed concurrently, parallel to each other offshore from Ladd Landing to the Tyonek Platform. The 10-in line was connected to Tyonek Platform. The 8-in line was capped subsea adjacent to the platform and will be connected to the platform in the future. Pipeline segments/sections were pulled from shore using a winch mounted on an anchored pull barge (*Ninilchik*) to pull the tag line to the main winch line. Two anchor handling tugs (AHT *Washington* and AHT *Hawaii*) were used to move the barge into place to conduct pipe pulling operations. Pulling generally occurred between slack tides with repositioning occurring during the slack water periods. Anchor tugs were powered 24-hr a day during pipe pulling activities, however, the engines were only at full power when actual pulling occurred. The maximum velocity during pulling was 0.2 knots (kts; 20 ft/min). A sonar array, located on the DSV *Sand Island*, was used to confirm that the pipe was being installed in the correct position and location.

2.2.4 Anchor Handling

The barge had six anchors, which were set at slack tide by the two anchor handling tugs. Each anchor weighed 15,900 kilograms (kg; 35,000 pounds [lbs]), with 4.6 m (15 ft) of chain and 1,280 m (4,200 ft) of wire cable.

2.2.5 Other

Vessel activities which did not fall into a specific category described by the IHA, but involved moving the barge, were classified as ‘other’. Protected Species Observers (PSOs) recorded vessel activities as ‘other’ during operations, including guide setting, pulling tow cables, adjusting chains, repairs to the barge, fleeting, and preparing, pulling, and adjusting messenger lines.

2.3 SCHEDULE OF OPERATIONS

A general schedule of actual operations is presented in Table 4; Figure 3.

Table 4. 2018 Schedule of Operations

Week	Dates	Activities
1	May 9-13	Anchor handling
2	May 14-20	Anchor handling, Obstruction removal and stabilization, Other
3	May 21-27	Anchor handling, Obstruction removal and stabilization, Other
4	May 28-June 3	Other
5	June 4-10	Anchor handling, Pipe pulling, Other
6	June 11-17	Anchor handling, Pipe pulling, Other
7	June 18-24	Anchor handling, Pipe pulling
8	June 25-July 1	Anchor handling, Pipe pulling
9	July 2-8	Anchor handling, Pipe pulling
10	July 9-15	Anchor handling, Pipe pulling
11	July 16-22	Anchor handling, Other
12	July 23-29	Anchor handling, Other
13	July 30-August 5	Anchor handling, Pipe pulling, Other
14	August 6-12	Anchor handling, Pipe pulling
15	August 13-19	Anchor handling, Pipe pulling
16	August 20-26	Anchor handling, Pipe pulling
17	August 27-September 2	Anchor handling, Pipe pulling
18	September 3-9	Anchor handling, Pipe pulling, Other
19	September 10-15	Anchor handling, Pipe pulling, Other

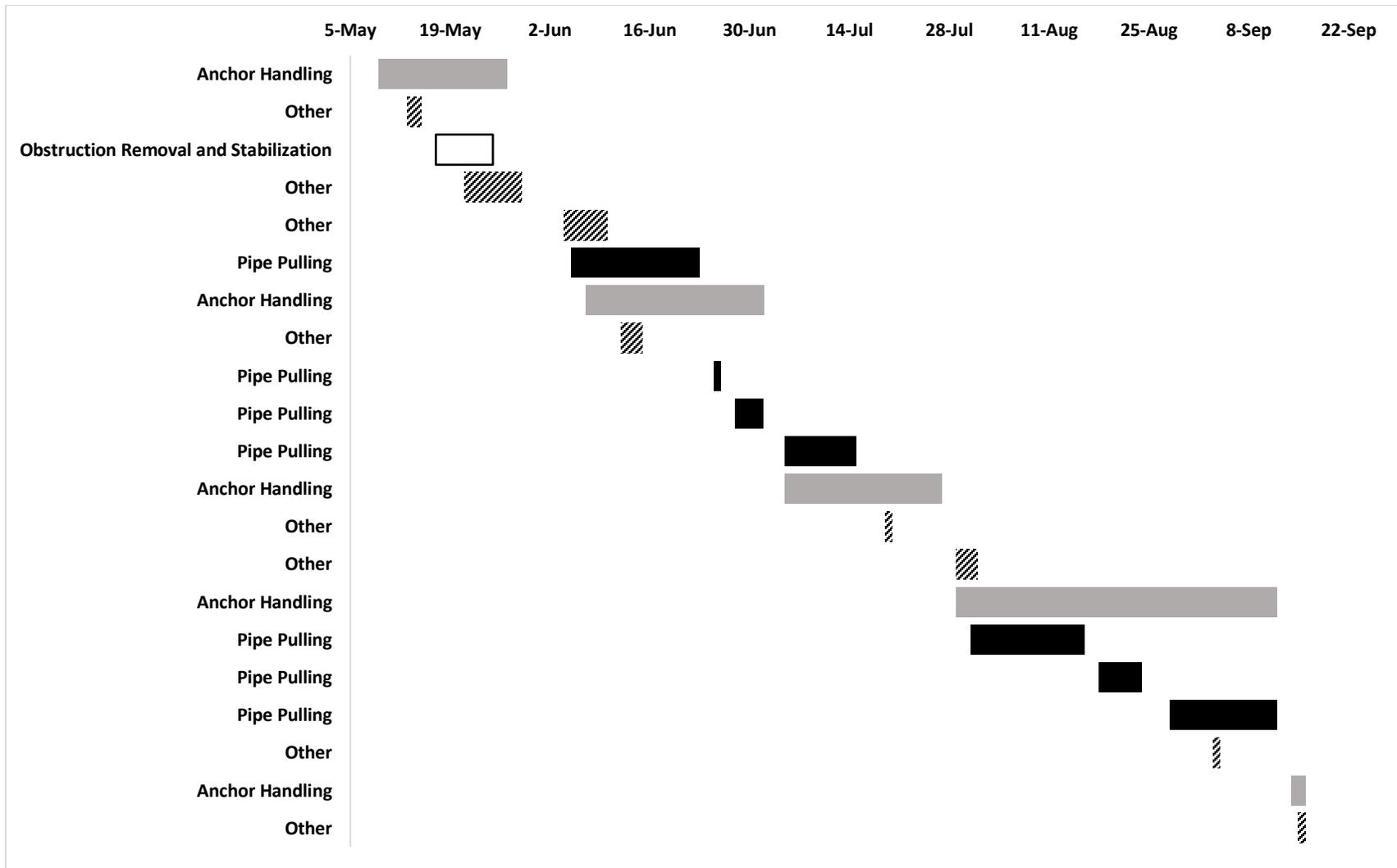


Figure 3. 2018 Schedule of Operations

3.0 MARINE MAMMAL MONITORING AND MITIGATION PROGRAM

The IHA issued to Harvest Alaska authorized the taking of small numbers of the Cook Inlet beluga whale, humpback whale, gray whale, killer whale, harbor porpoise, Steller sea lion, California sea lion, and harbor seal by Level B harassment, incidental to pipeline activities associated with the CIPL project.

3.1 PROTECTED SPECIES OBSERVERS

Harvest Alaska's 2018 CIPL project utilized land and platform-based PSOs for marine mammal monitoring and mitigation. The PSO team had two primary areas of responsibility:

1. **Monitoring:** Record numbers, behaviors, and locations of marine mammals during periods of vessel activity and no work. Document animal reactions (when applicable), and environmental variables that may affect the ability to sight marine mammals.
2. **Mitigation:** Detect marine mammals within, or about to enter, the applicable SZ. Initiate necessary communication and mitigation protocols, including work shut down or request additional zone clearing time. Estimate the number of marine mammals potentially exposed to sound generated by vessel activity.

All PSOs had previous experience in marine mammal research and/or monitoring and were approved by NMFS prior to the start of the program or their rotation into the project. PSOs were trained on specific project details and requirements, and sighting information for marine mammals occurring in the project area prior to deployment.

3.2 VISUAL OBSERVATIONS

A maximum of 4 PSOs (2 per station) were deployed during the CIPL project, and a maximum of 2 PSOs (1 per station) observed the monitoring area simultaneously. The PSOs at Ladd Landing observed from a bluff facing east/southeast. PSOs observed from a conex stationed on the bluff during inclement weather and maintained a full range of view through the conex window. At the Tyonek Platform, PSOs were generally located on an outdoor deck facing west/northwest. Equipment at both observation sites included 7x50 Fujinon reticle binoculars, BigEye binoculars (25/40x100), Bushnell rangefinders, Suunto clinometers, Canon Powershot cameras, Olympus Digital Voice Recorders (DVR), and laptops with data collection programs.

The monitoring area was separated into three zones and PSOs were stationed at Ladd Landing, the Tyonek Platform, or both sites, based on the location of operations (Figure 4). PSOs were stationed at Ladd Landing when operations were within 0-2 km from shore (nearshore zone or zone 1), at both Ladd Landing and the Tyonek Platform when operations were 2-6.5 km from shore (middle zone or zone 2), and at the Tyonek Platform when operations were greater than 6.5 km from shore (offshore zone or zone 3). PSOs monitored during daylight hours while operations were underway, starting observations 30 min before 'dawn' and ending when conditions were dark. On days when no

operational activities were planned or performed, PSOs observed from approximately 0600 to 1800. At both Ladd Landing and the Tyonek Platform, one PSO at a time was on-watch during observation periods and each PSO was limited to shifts of ≤ 4 hr with no more than 12 hr per day of watch for fatigue management purposes.

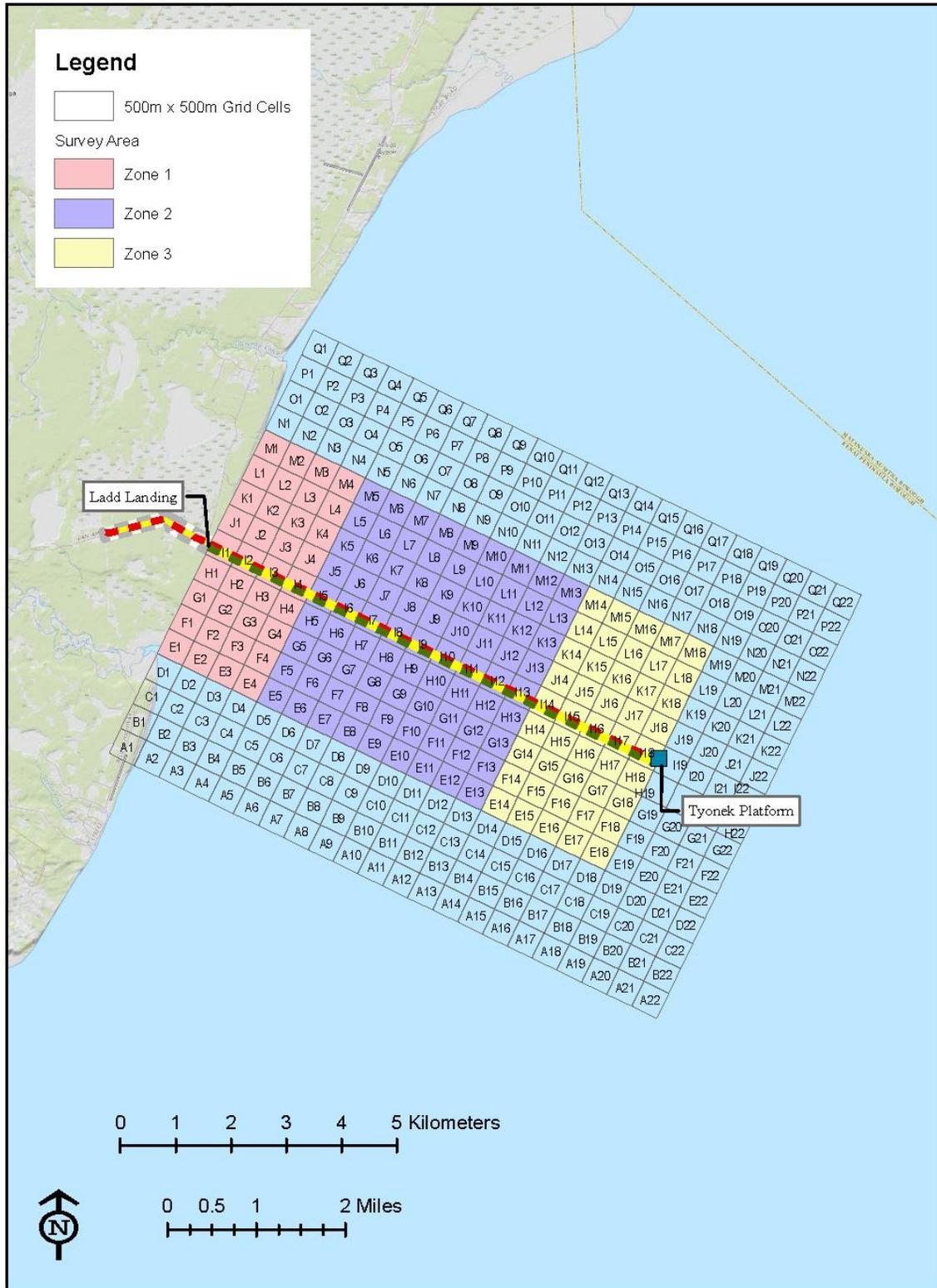


Figure 4. Monitoring Zones (Zone 1 = Nearshore, Zone 2 = Middle, Zone 3 = Offshore)

3.2.1 Effort Data

Effort data were recorded at the beginning and end of each observation period, every 30 min, whenever there was a change in environmental conditions (e.g., sea state, visibility, etc.) and/or a change in vessel activity, and when there was an observer shift change. Effort and Sighting data fields, units, and descriptions are provided in Appendix B.

3.2.2 Marine Mammal Sighting Data

Sightings were recorded each time a marine mammal, or group of marine mammals, was visually observed by a PSO, whether or not the sighting occurred in the monitoring zone. Confirmed resightings of the same individual(s) were recorded using the ID number (Appendix C) assigned to the original sighting, and with descriptive notes detailing the resight. Appendix C details each specific data entry collected per sighting.

3.2.3 Behavioral Data Collection

PSOs recorded the initial and secondary behaviors (as applicable) of each marine mammal sighting. Marine mammals were observed until they were no longer in view. PSOs also recorded any potential reactions that marine mammals may have had in response to project vessels and operations. If the animal did not appear to acknowledge the vessel or ongoing activity, reaction was coded as no reaction (none). For sightings with more than one animal, the most common behavior of the group was recorded. Effort-specific data, including vessel activity was also recorded at the time of the sighting.

3.2.4 Reporting Injured or Dead Marine Mammals

PSOs were trained to follow the below protocol for injured or dead marine mammals observed in the monitoring area:

- In the unlikely event that a marine mammal is injured or killed due to the project (ship strike, entanglement, etc.), cease all operations and report to the PSO Field Lead immediately.
- If a marine mammal carcass is seen and fresh, but cause of death is unknown, please document as above and report immediately to the PSO Field Lead. Operations may continue.
- If a carcass in an advanced stage of decomposition is sighted, please report as above within 24 hours. Operations may continue.

Strandings are discussed in Section 5.7 and Stranding Reports are provided in Appendix D.

3.3 MITIGATION MEASURES

Harvest Alaska established a monitoring zone which extended 2.2 km from the pipeline corridor, as well as 2.2-km monitoring zones (SZ) from any working vessel, which represented the estimated 120 dB disturbance harassment threshold (Table 5). Vessel operations listed in the IHA included obstacle removal, anchor handling, trenching (in-water), and pipe pulling. Activities which did not conform to one of these categories, but involved moving the barge, were defined as ‘other’ (Section 2.2.5).

3.3.1 Clearing/Shutdown Protocol

PSOs were tasked with clearing the SZ before operations began. PSOs coordinated with the Barge Master to determine when work was scheduled to begin, and cleared the SZ for 30 min prior to commencement of vessel activities. If a marine mammal was sighted within the SZ during clearing, 15 min of additional clearing time (30 min for humpback whales) was requested by the PSOs to give the marine mammal(s) adequate time to exit the area.

If a marine mammal was sighted within or approaching the SZ while pipe pulling operations were underway, the PSO relayed distance and direction from the vessel to the Barge Master, and that no action was needed. The PSO recorded the behavior and any potential reactions of the animal, and new activities were not started until the animal left the monitoring area.

If a marine mammal was sighted within or approaching the SZ after operations other than pipe pulling had started, the following protocol was adhered to:

- Beluga sighting
 - PSO relayed distance, direction, and heading from the vessel to the Barge Master and requested a shutdown of activity.
 - If it was safe to do so, the Barge Master ceased operations. PSOs monitored behavior and notified the Barge Master when the beluga(s) left the area or had not been resighted for 15 min and operations could begin again.
 - If it was not safe to stop, the Barge Master notified the PSOs that operations would continue. PSOs monitored behavior and notified the Barge Master when the beluga(s) left the area or had not been resighted for 15 min. New activities were not started until the beluga(s) had left the area or had not been resighted for 15 min.
- Other marine mammal sighting
 - PSO relayed distance and direction from the vessel to the Barge Master, and that no action was needed. The PSO recorded the behavior and any potential reactions of the animal.

PSOs communicated to the Barge Master when the marine mammal was observed leaving the SZ or after the SZ had been clear for 15 min, or 30 min if a humpback whale was observed. Activities recommenced once the SZ was cleared.

Table 5. Clearing and Safety Zones by Species

	Beluga whale	Humpback whale	Gray whale, Killer whale, Harbor porpoise, Steller sea lion, California sea lion, Harbor seal
Monitoring zone	2.2 km	2.2 km	2.2 km
Delay time	15 min	30 min	15 min
Mitigation	Request shut down	Monitor	Monitor

4.0 MARINE MAMMAL MITIGATION AND MONITORING ANALYSIS

This section describes data analysis methods and the estimated number of marine mammals exposed to IHA-specified vessel activities during the CIPL project. Terminology and definitions used in the following discussion are provided in Table 6.

Table 6. Definitions of Data Collection and Analysis Terminology

Term	Definition
Total PSO Effort	Sum of all on-effort data entries, i.e. total PSO working hours including duplication during simultaneous observation of zones from both station locations. Does not include “Off” or “Opportunistic” effort entries.
Total Actual Effort	Considers actual observation duration only. Corrects for simultaneous zone observation and time duplication. Does not include “Off” or “Opportunistic” effort entries.
Sighting	An observation of one or more individual marine mammals. One sighting equals one group.
Sighting Rate	The number of marine mammal groups (or individuals) seen per hour of total actual effort.

4.1 MONITORING EFFORT AND ENVIRONMENTAL CONDITIONS

Monitoring effort was based on PSO effort records, and total actual effort was determined by extracting final effort data from each weekly report. During instances where PSOs from both stations monitored simultaneously, only one observation station’s (Ladd Landing or the Tyonek Platform) effort data was selected for determining effort/activity duration. This selection was based on factors such as vessel and work location, crew changes, and efficacy of communication.

Effort by environmental conditions included the Beaufort sea state and visibility. Effort by Beaufort sea state was calculated per observation station and presented by Beaufort sea state 0-8. Effort by visibility was calculated per observation station and presented at distances of 0-1.0 km, 1.1-4.0 km, 4.1-7.0 km, and 7.1-10.0 km.

4.2 VISUAL OBSERVATIONS

Visual observations (sightings) were counted by month, station, and during vessel activity and no work. Data on the number of marine mammal sightings are presented to the species level whenever possible in species summary tables, however, some sightings were not identified to species or genus when PSOs could not confirm this information with confidence. Environmental factors including high Beaufort sea state, poor visibility, observer eye height above sea level, and glare could potentially limit ability to identify marine mammals to species. Sightings which could not accurately be identified contain the keyword “unidentified” in the species entry field.

4.2.1 Land-based PSO Sighting Corrections

4.2.1.1 Bearing Corrections

All PSOs were directed to utilize a clock face to assist in identifying the relative bearing at which each sighting was observed. Although this method of evaluating sighting position yielded consistent results and was straightforward to use in the field, human error was magnified at Ladd Landing during PSO

assessments of sightings near the waterline due to the >45 m of shore between the PSOs and the waters of Cook Inlet. For example, during spatial analyses, marine mammals sighted at ‘0900’ and ‘0300’ appeared on land in direct NNE/SSW alignment with Ladd Landing. To correct, sightings recorded at ‘0900’ (25 degrees [deg], NNE) were adjusted to a bearing of 35 deg, and sightings recorded at ‘0300’ (205 deg, SSW) were adjusted to a bearing of 195 deg. These adjustments were made in order to most accurately represent the actual position of the sighting in consideration of the PSOs’ true line of sight in context of the location of the waterline.

4.2.1.2 Distance Corrections

PSOs were required to estimate the distance between their observation station (Ladd Landing or Tyonek Platform) and each observed sighting. PSOs used landmarks, vessel communications, and a grid system digitally overlaid on the CIPL project area to estimate each distance-to-sighting as quickly and accurately as possible. Human error was identified during spatial analyses of sightings in proximity to Ladd Landing. The position of the Ladd Landing station on a bluff overlooking the water resulted in some inaccurate distance estimates due to underestimation of station distance-to-waterline. To correct sighting points located landward of the waterline, distance (km) was measured from the Ladd Landing station to the mean high tide waterline along each bearing using ArcMap 10.6 software. The sighting point nearest Ladd Landing along each bearing was assumed to represent the waterline, and its sighting distance was adjusted to match that of the bearing-specific distance-to-waterline. Sighting distances of subsequent landward points along each bearing were then updated using a relative calculation:

$$\textit{Updated Sighting Distance (m)} = X + (Y - Z)$$

Where:

X = bearing-specific distance from Ladd Landing to waterline (m)

Y = originally recorded distance from Ladd Landing to sighting (m)

Z = distance from Ladd Landing to nearest point along bearing (m)

4.2.2 Methods for Calculating Sightings and Sighting Rates

Marine mammal observations are presented as counts of sightings per species (where one sighting equals one group), number of individuals per sighting, number of sightings per month, and number of sightings per observation station. Spatial representations of marine mammal sightings (total and per observed species) are provided in sighting maps.

Sighting rates (number of sightings per hour of effort) were calculated based on total actual effort hours (Table 6) and were calculated for overall project duration, per observation location, and per vessel activity, including no work.

4.2.3 Marine Mammal Behavior

Marine mammal movement relative to the PSOs and vessels, initial and secondary behavior states, reactions, and associated ongoing vessel activities were recorded for each marine mammal sighting based on pre-defined protocol and ethograms provided to the PSOs during training. These behavior parameters followed those presented in numerous other 90-day reports associated with vessel operations (e.g., Aerts et al. 2008; Blees et al. 2010; Lomac-MacNair et al. 2014). Cetacean sightings during the CIPL project included harbor porpoises, humpback whales, and beluga whales. Pinniped sightings consisted of harbor seals, Steller sea lions, and unidentified pinnipeds, and are pooled into a collective pinniped analysis group

to compare the relative frequency of initial behaviors and reactions between periods of no work and vessel activity.

4.2.4 Number of Exposures

NMFS considers exposures of cetaceans and pinnipeds to anthropogenic non-impulsive received sound levels ≥ 120 dB re 1 μ Pa rms to be a Level B take by harassment that could potentially result in disturbance of marine mammals (NMFS 2005, 71 FR 50027). The total number of program exposures was based on direct observations/counts of marine mammals during ongoing vessel activities and their proximations to the working vessel(s). As requested by NMFS and outlined in the IHA, estimates of take by Level B harassment were based on marine mammal presence in the 120 dB SZ, which was delineated as a constant area (2.2-km radius) around each operating vessel. During the program, “presence” in the SZ was determined by visual observation of a sighting located within the SZ. Additionally, each marine mammal sighting that occurred during vessel activities was location-verified by data managers within 24 hr of initial documentation. The geographic coordinates of each sighting and the position of the working, or proxy (used when working vessel geographic coordinates were unavailable), vessel at the time of sighting were mapped using Google Earth Pro and the radial proximity to one another were measured in order to confirm exposure status (i.e., confirmed as an exposure if within 2.2 km of vessel activity).

4.2.5 Implemented Mitigation Measures

Number of mitigation measures implemented for each species was counted. Mitigation measures included clearing the SZ, shut down, and none. Marine mammal sightings observed during clearing that caused a work delay (i.e., were present in the 2.2 km SZ during clearing) are described in section 5.5.

5.0 RESULTS

5.1 EFFORT AND ENVIRONMENTAL CONDITIONS

5.1.1 Monitoring Effort

Total actual duration of effort while PSO visual observation took place from one or both observation stations was 2,067.3 hr during May 9 through September 15, 2018 (Table 7). Total observation effort for PSOs at Ladd Landing was 1,464 hr and total observation effort for Tyonek Platform PSOs was 1,652 hr (Table 8), for a combined PSO effort total of 3,116 hr, including simultaneous observation time.

Table 7. Total PSO Effort and Actual Effort per Observation Station and Month

Month	Ladd Landing (HH:MM:SS)	Tyonek Platform (HH:MM:SS)	Total PSO Effort (HH:MM:SS)	Total Actual Effort ¹ (HH:MM:SS)
May	212:28:58	258:06:23	470:35:21	339:55:02
June	525:43:12	360:56:00	886:39:12	515:22:12
July	258:15:00	465:29:00	723:44:00	501:04:00
August	266:28:00	413:40:00	680:08:00	492:25:00
September	201:08:00	153:48:00	354:56:00	218:32:00
TOTAL	1,464:03:10	1,651:59:23	3,116:02:33	2,067:18:14

¹Actual observation duration accounting for simultaneous observation from both observation stations

Table 8. Total and Actual Project Activity Duration per Observation Station

Vessel Activity	Tyonek Platform Effort (HH:MM:SS)	Ladd Landing Effort (HH:MM:SS)	Total Actual Duration ¹ (HH:MM:SS)
Anchor Testing	158:48:03	107:50:35	176:37:23
Obstruction Removal and Stabilization	6:27:44	6:13:18	6:27:44
Pipe Pulling	79:57:00	74:00:52	98:32:52
Trenching ²	0:00:00	0:00:00	0:00:00
No Work	1,385:37:05	1226:43:49	1,734:54:57
Other	21:09:32	49:14:34	50:45:18
TOTAL	1,651:59:24	1,464:03:08	2,067:18:14

¹Actual observation duration accounting for simultaneous observation from both observation stations

²In water trenching did not occur; see section 2.2.2.

5.1.2 Monitoring Effort by Environmental Conditions

In general, the environmental conditions were conducive to effectively monitor for marine mammals throughout the duration of the CIPL project. If weather conditions were poor (i.e., foggy conditions during clearing), PSOs proceeded with protocol to the extent visibly possible.

PSO observation effort (hr) from both Ladd Landing and the Tyonek Platform most frequently took place in Beaufort sea state 2 (1,365.5 total PSO hr), 1 (767.3 total PSO hr) and 3 (582.2 total PSO hr), followed

by a Beaufort sea state of 4 (284.3 total PSO hr) and 5 (90.5 total PSO hr; Figure 5). Occasionally, effort took place during a Beaufort sea state of 0 (7.0 total PSO hr) and 6 (13.3 total PSO hr), and Beaufort sea states of 7 and 8 were observed from the Tyonek Platform only (3.5 hr, 1.0 hr, respectively; Figure 5).

PSO observation effort (hr) most frequently took place when visibility was greater than 8 km (2,248.2 total PSO hr), followed by visibility of 6-8 km (399.8 total PSO hr; Figure 6). Visibility between 1-6 km was recorded for a total of 299.8 PSO hr, and visibility was less than 1 km for 68.2 total PSO hr (Figure 6).

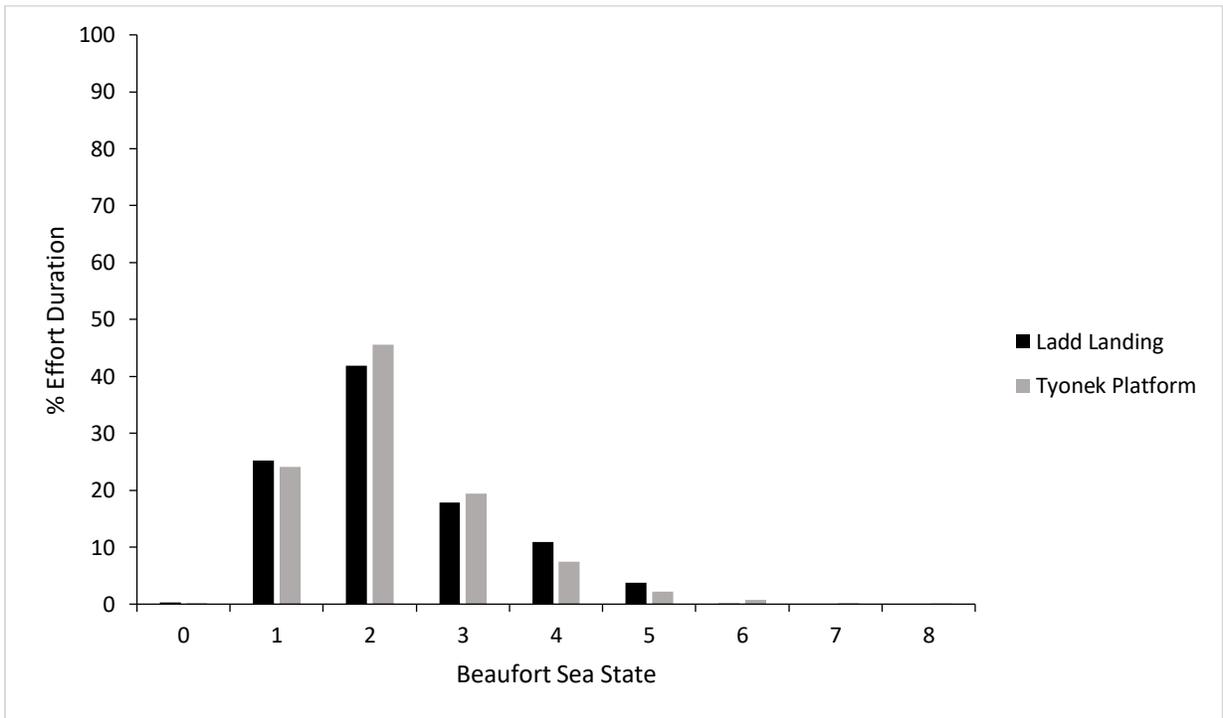


Figure 5. Total PSO Observation Effort (Percent) by Beaufort Sea State

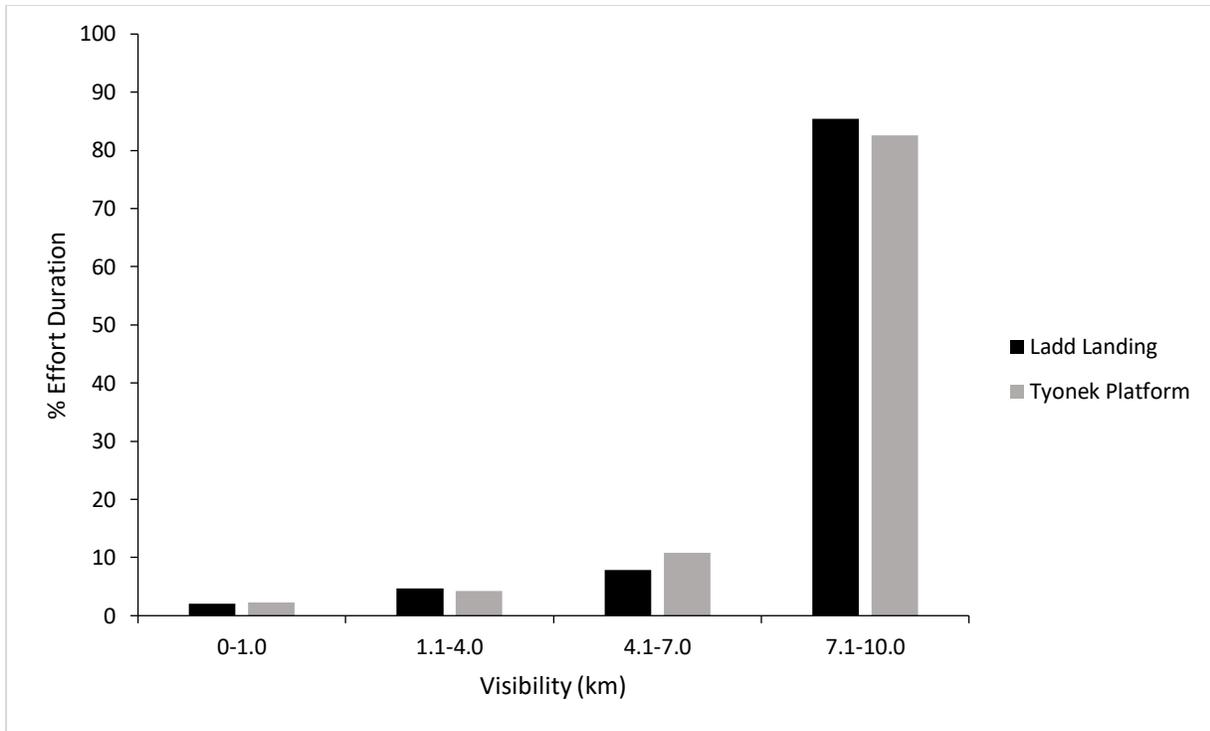


Figure 6. Total PSO Observation Effort (Percent) by Visibility

5.2 MARINE MAMMAL VISUAL OBSERVATIONS

A total of 493 sightings (i.e., groups) of approximately 1,184 individual marine mammals were visually observed from May 9-September 15, 2018 (Table 9; Figure 7, Figure 8; Appendix C). Harbor seals were the most commonly observed species with 313 sightings (~316 individuals; Table 9; Figure 9), followed by beluga whales with 143 sightings (~814 individuals; Table 9; Figure 10), harbor porpoises with 29 sightings (~44 individuals; Table 9; Figure 11), 3 sightings of unidentified pinnipeds (~3 individuals; Table 9, Figure 12), 2 sightings of humpback whales (~3 individuals; Table 9; Figure 13), 1 Steller sea lion sighting (~2 individuals; Table 9; Figure 14), 1 unidentified marine mammal sighting (~1 individual; Table 9, Figure 12), and 1 ‘other’ sighting of a marine mammal carcass (Table 9; Figure 12).

Table 9. Total Number of Marine Mammal Sightings and Estimated Individual Counts.

Species	No. Sightings ¹	No. Estimated Individuals
Humpback whale	2	3
Gray whale	0	0
Beluga whale	143	814
Killer whale	0	0
Harbor porpoise	29	44
Stellar sea lion	1	2
California sea lion	0	0
Species	No. Sightings ¹	No. Estimated Individuals
Harbor seal	313	316
Other (carcass)	1	1
Unidentified pinniped	3	3
Unidentified marine mammal	1	1
TOTAL	493	1,184

¹One sighting equals one group

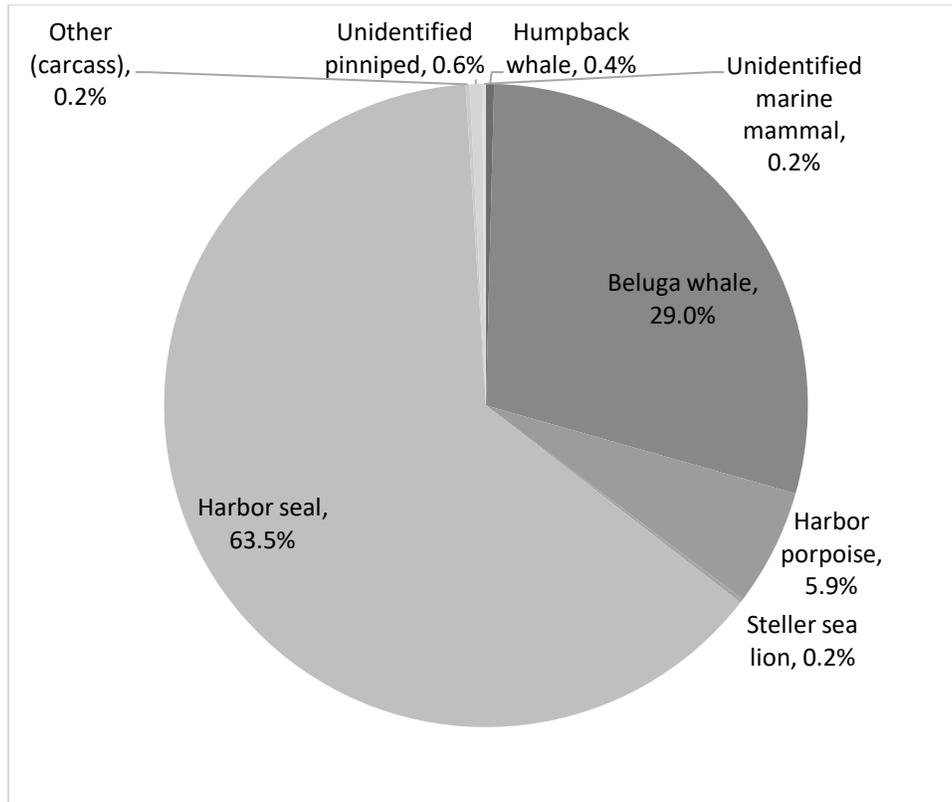


Figure 7. Total Marine Mammal Sightings During the 2018 CIPL Project

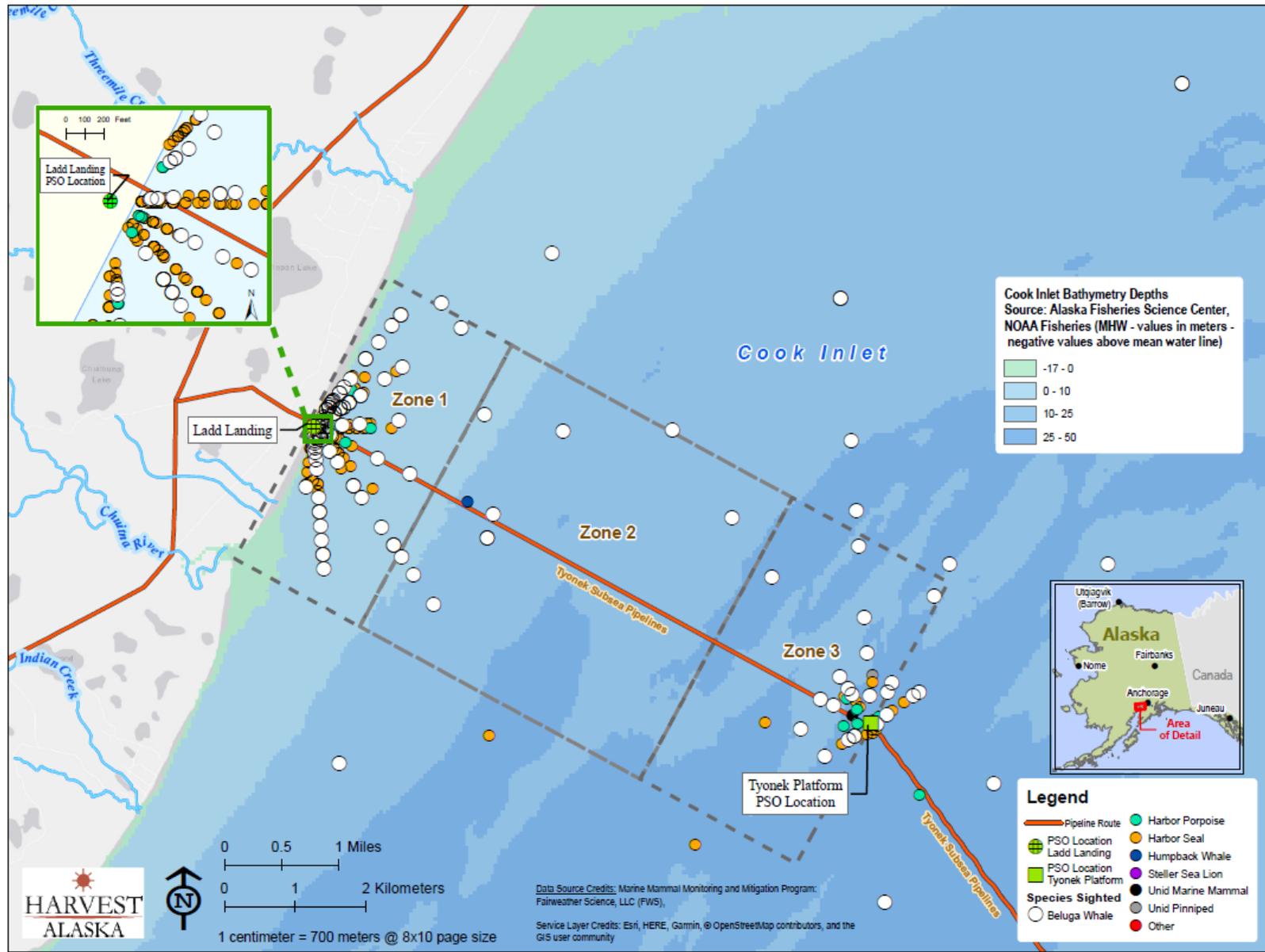


Figure 8. Total 2018 Marine Mammal Sightings

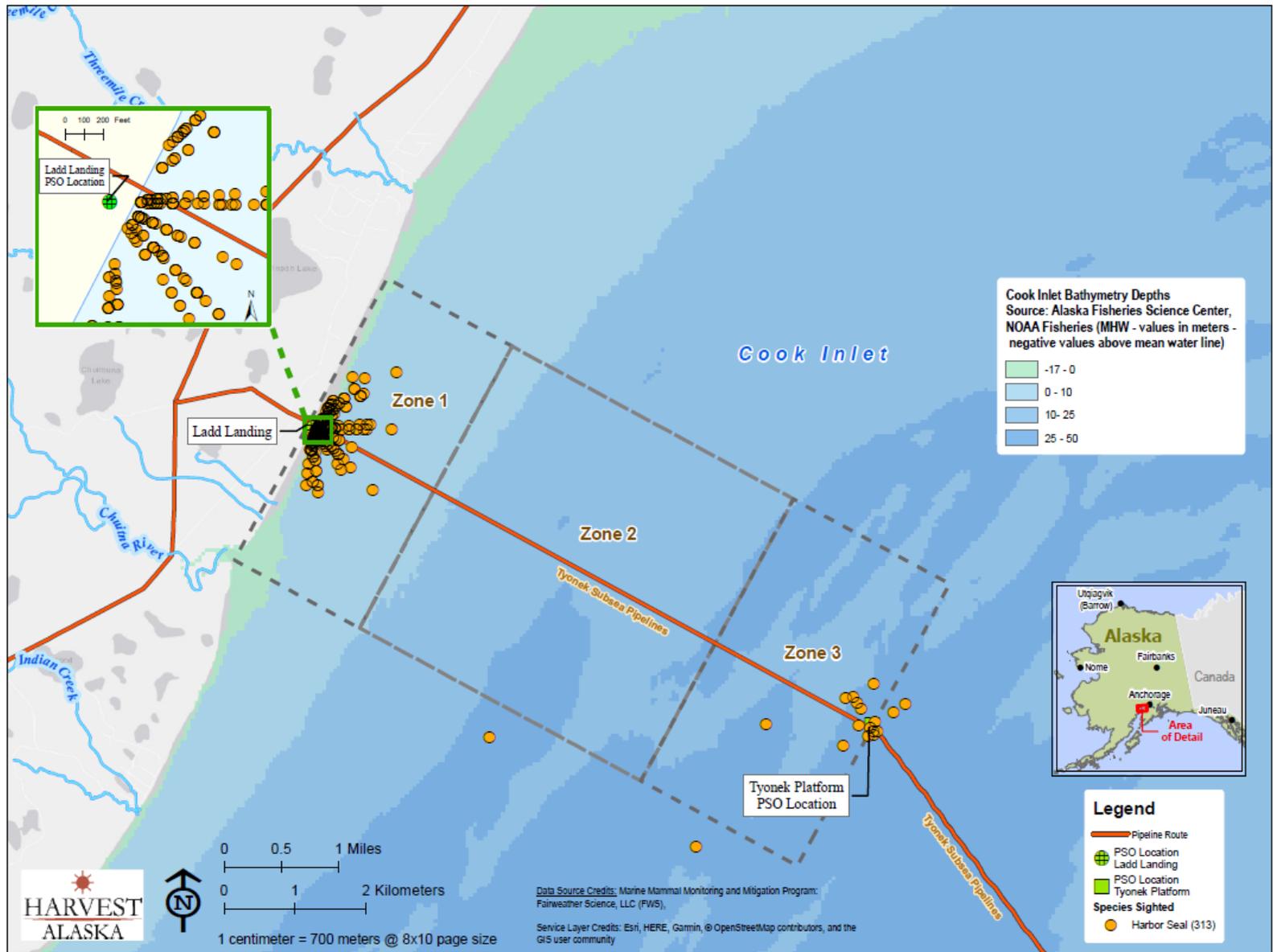


Figure 9. 2018 Total Harbor Seal Sightings

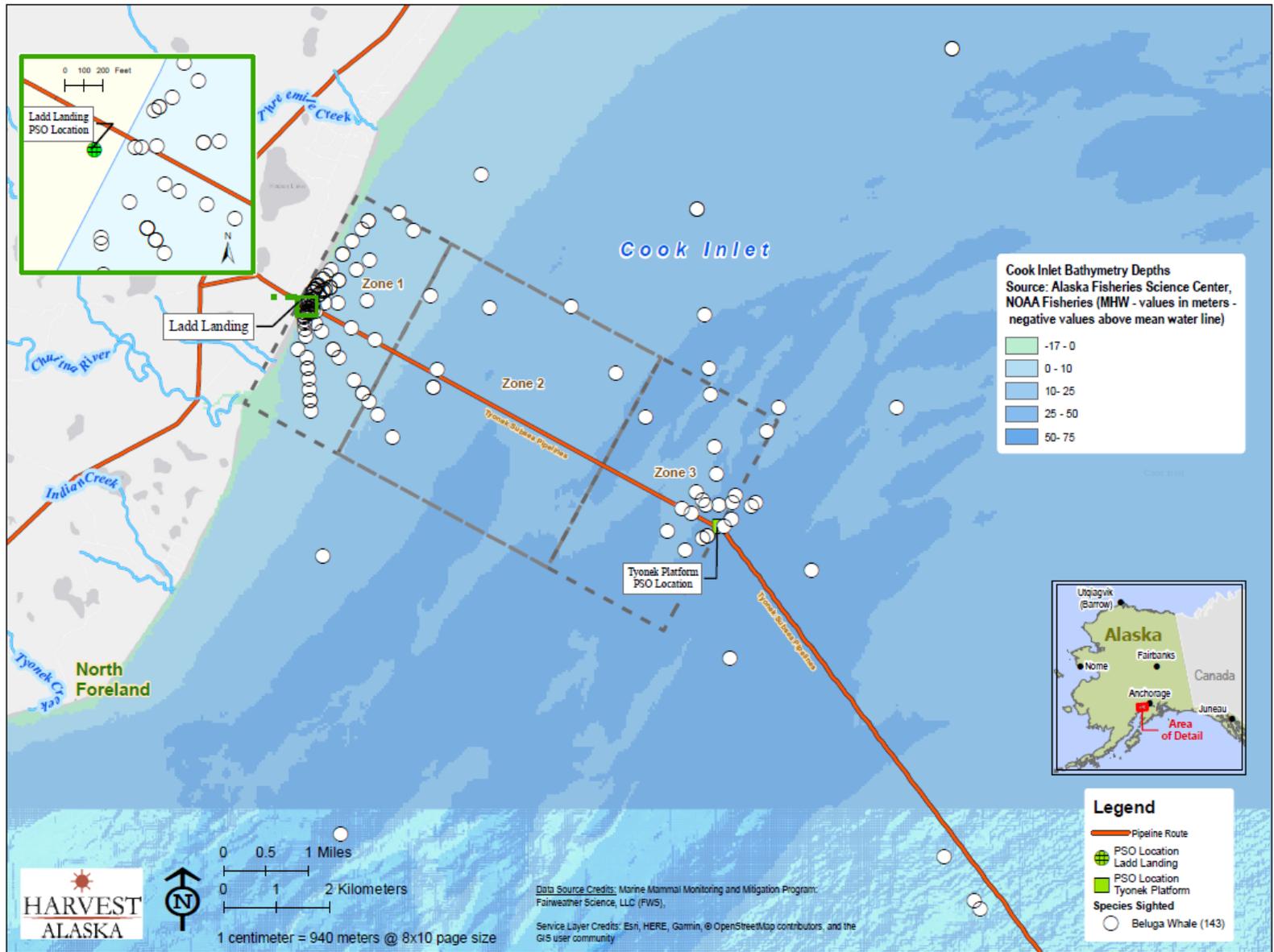


Figure 10. 2018 Total Beluga Whale Sightings

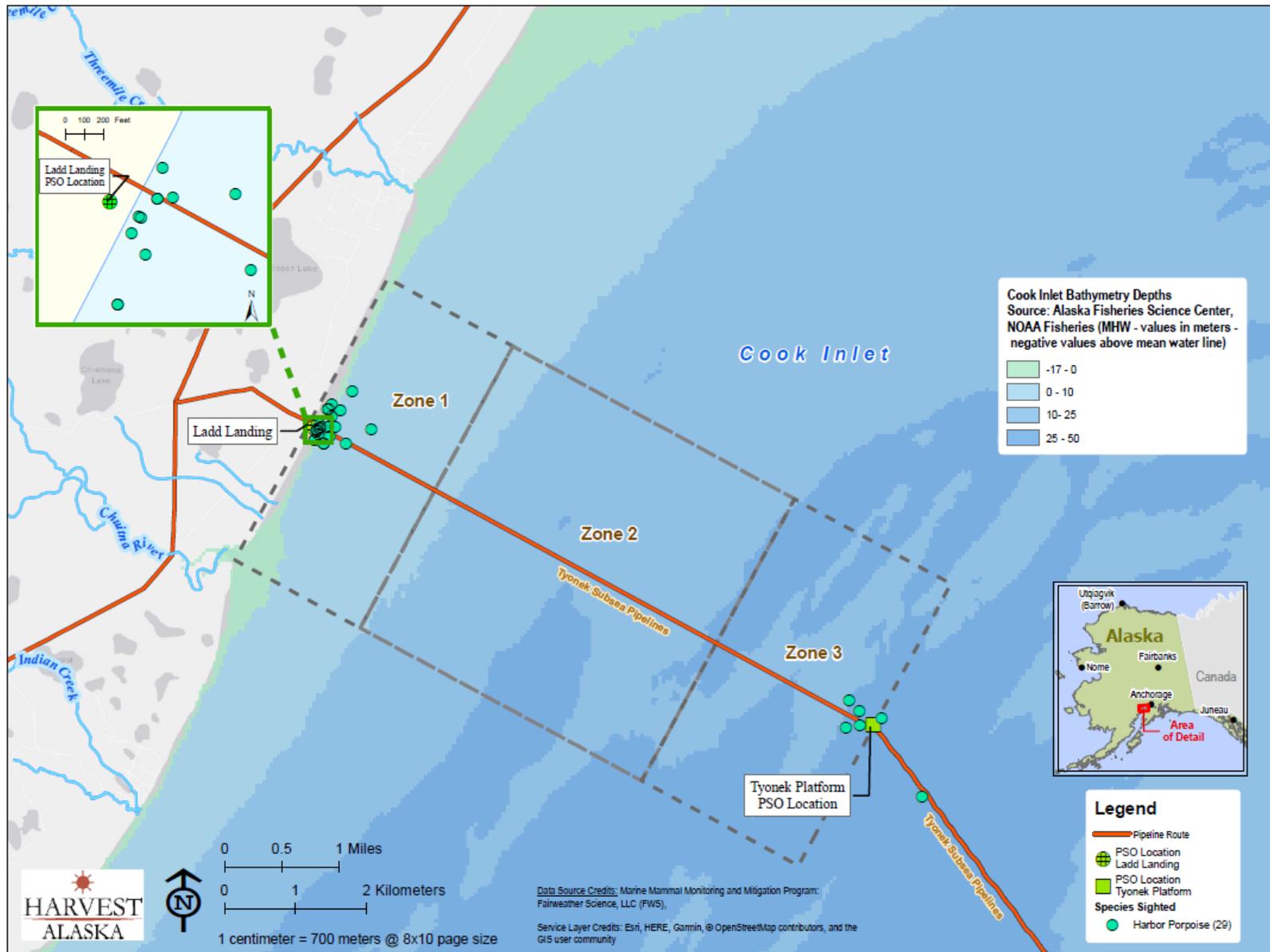


Figure 11. 2018 Total Harbor Porpoise Sightings

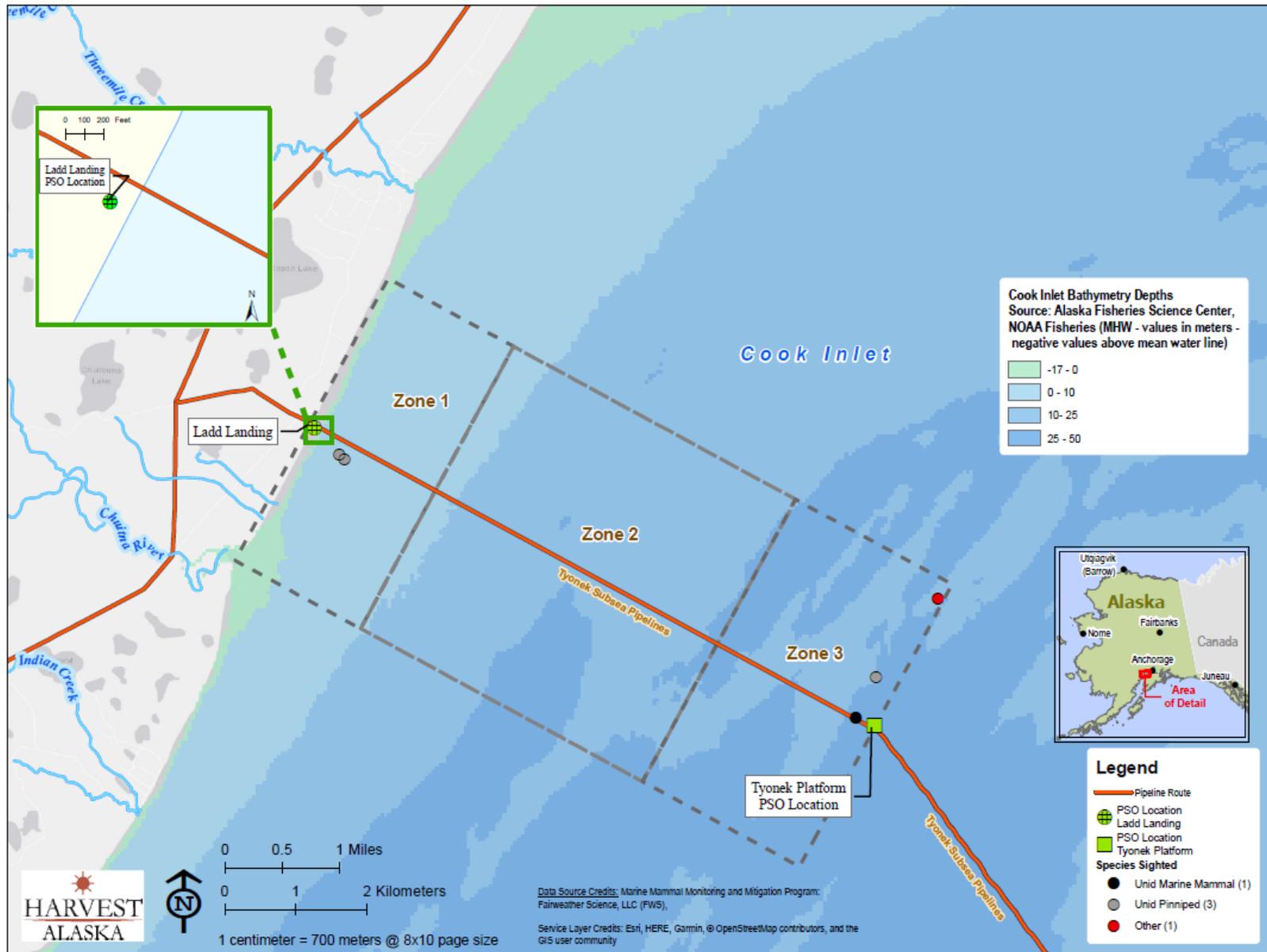


Figure 12. 2018 Total Unidentified and Other Sightings

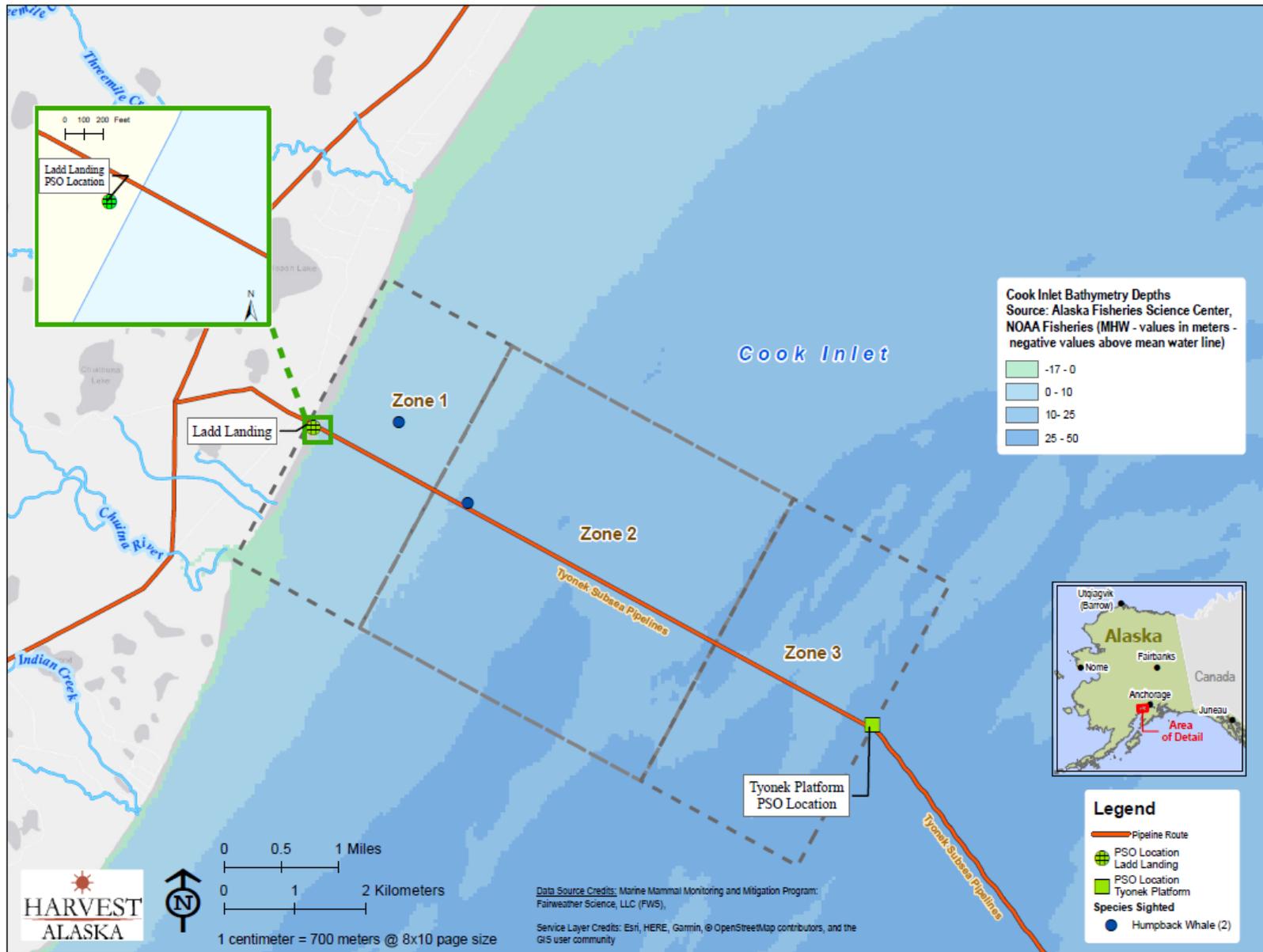


Figure 13. 2018 Total Humpback Whale Sightings

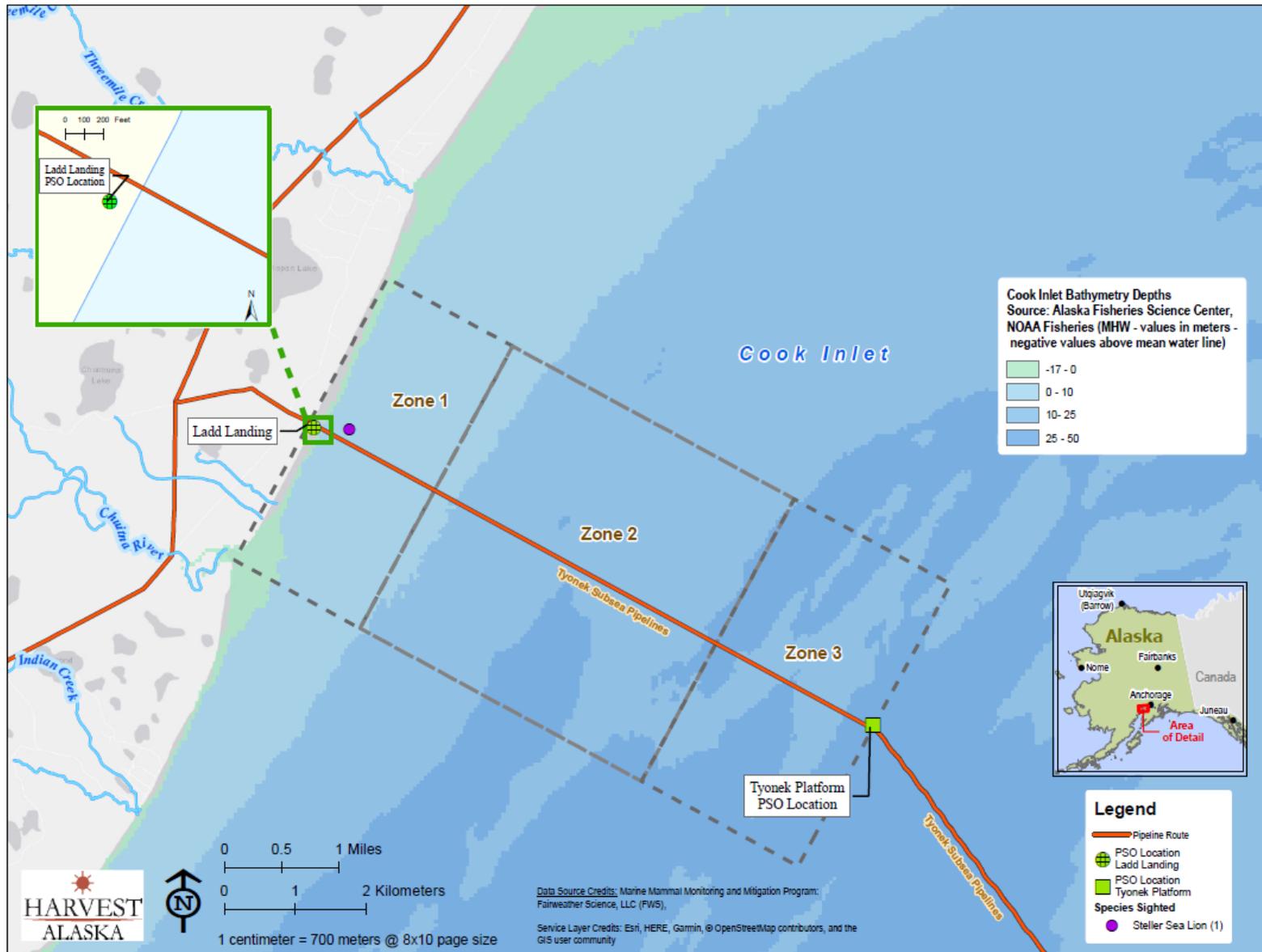


Figure 14. 2018 Total Steller Sea Lion Sightings

5.2.1 Marine Mammal Sightings Per Observation Station

Of the 493 total marine mammal sightings, 56 were observed from the Tyonek Platform and 437 were observed from Ladd Landing (Table 10).

Table 10. Total Marine Mammal Sightings and Estimated Individual Counts per Observation Station

Marine Mammal Species	Tyonek Platform		Ladd Landing		Total Sightings	Total Individuals
	No. of Sightings ¹	Estimated No. of Individuals	No. of Sightings	Estimated No. of Individuals		
Humpback whale	0	0	2	3	2	3
Gray whale	0	0	0	0	0	0
Beluga whale	37	206 ²	106	608	143	814
Killer whale	0	0	0	0	0	0
Harbor porpoise	5	11	24	33	29	44
Steller sea lion	0	0	1	2	1	2
California sea lion	0	0	0	0	0	0
Harbor seal	11	11	302	305 ³	313	316
Other (carcass)	1	1	0	0	1	1
Unidentified pinniped	1	1	2	2	3	3
Unidentified marine mammal	1	1	0	0	1	1
Total	56	231	437	953	493	1,184

¹One sighting equals one group

²38 individuals subtracted from total to account for resightings

³Two individuals subtracted from total to account for resightings

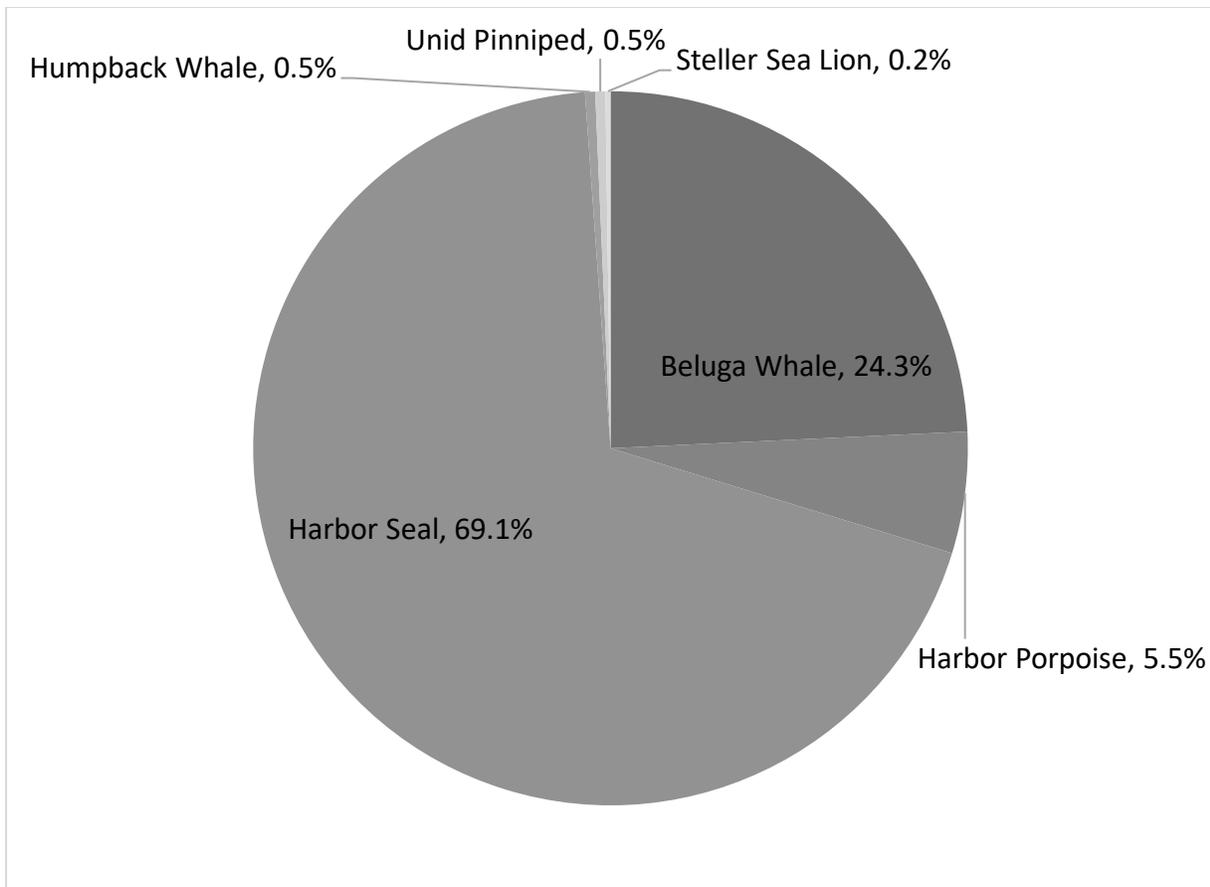


Figure 15. Total Marine Mammal Sightings from Ladd Landing

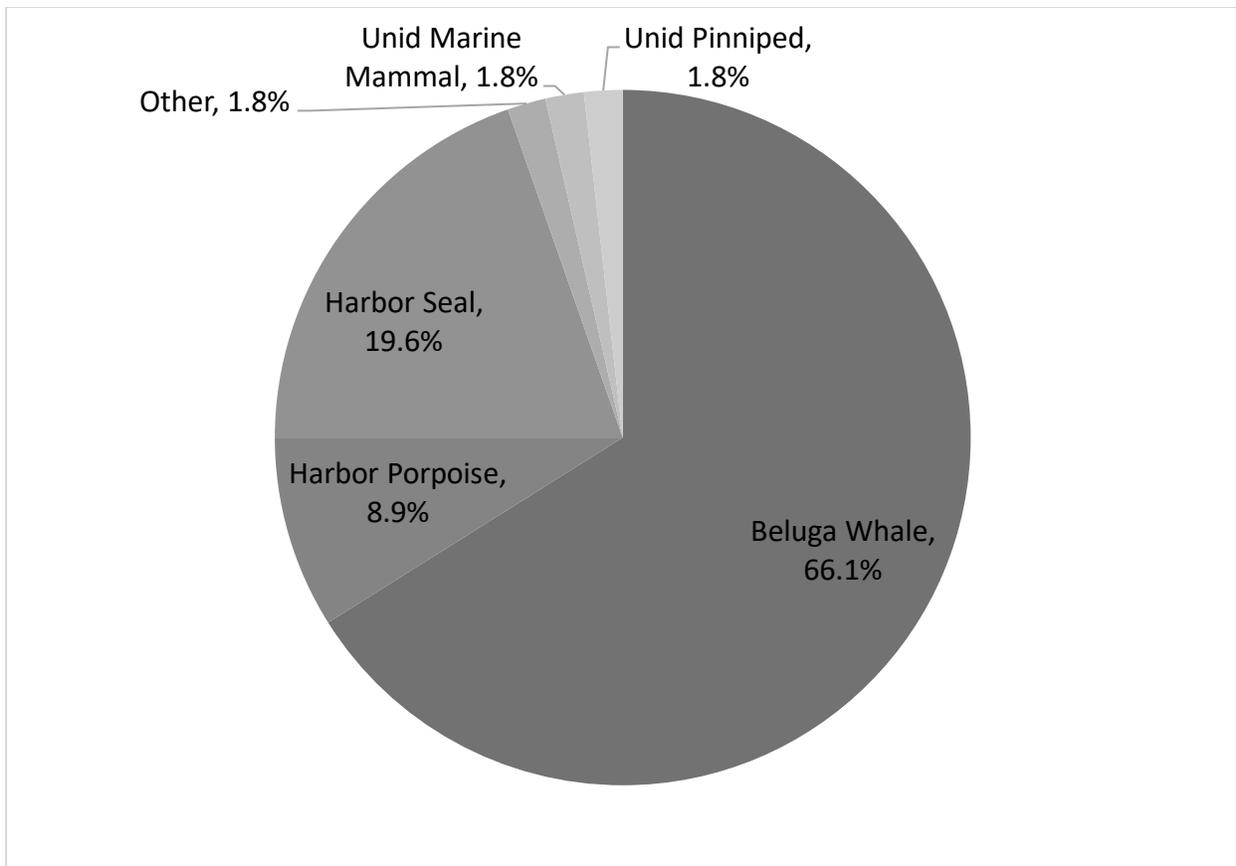


Figure 16. Total Marine Mammal Sightings from the Tyonek Platform

5.2.2 Marine Mammal Sighting Rates

Of the 493 total marine mammal sightings, 73 (15%) occurred during vessel activities which included anchor handling, pipeline pulling, obstruction removal and stabilization, and other. The 73 marine mammal sightings during vessel activities included 58 sightings of harbor seals (79.5%), 11 sightings of beluga whales (15.1%), and 1 sighting each of humpback whales (1.4%), harbor porpoises (1.4%), unidentified pinnipeds (1.4%), and other (carcass) (1.4%).

Overall, harbor seals had the highest sighting rate per actual effort hour (0.151), followed by beluga whales (0.069), harbor porpoises (0.014), and unidentified pinnipeds (0.002) (Table 11, Figure 17). Steller sea lions, unidentified marine mammals, other (carcass), and humpback whales each were sighted at a rate of 0.001 animal per hour (Table 11, Figure 17). Marine mammals sighted at rates of ≥ 0.003 during vessel activity and no work (beluga whales, harbor porpoises, and harbor seals) are shown for visual comparison in Figure 18.

Table 11. Marine Mammal Sighting Rates per Vessel Activity

Marine mammal species	Vessel activity ¹ (332.4 hr effort)		No work (1,734.9 hr effort)		Total No. Sightings (2,067.3 ² hr effort)	
	No. Sightings ³	Sighting Rate (sighting/hr)	No. Sightings	Sighting Rate (sighting/hr)	No. Sightings	Sighting Rate (sighting/hr)
Humpback whale	1	0.003	1	0.001	2	0.001
Gray whale	0	0.000	0	0.000	0	0.000
Beluga whale	11	0.033	132	0.076	143	0.069
Killer whale	0	0.000	0	0.000	0	0.000
Harbor porpoise	1	0.003	28	0.016	29	0.014
Steller sea lion	0	0.000	1	0.001	1	0.001
California sea lion	0	0.000	0	0.000	0	0.000
Harbor seal	58	0.174	255	0.147	313	0.151
Other (carcass)	1	0.003	0	0.000	1	0.001
Unid. Mar. Mammal	0	0.000	1	0.001	1	0.001
Unid. Pinniped	1	0.003	2	0.001	3	0.002
TOTAL	73	0.220	420	0.242	493	0.238

¹Includes anchor handling/testing, pipeline pulling, obstruction removal and stabilization, and other

²Based on total non-duplicate observation period

³One sighting equals one group

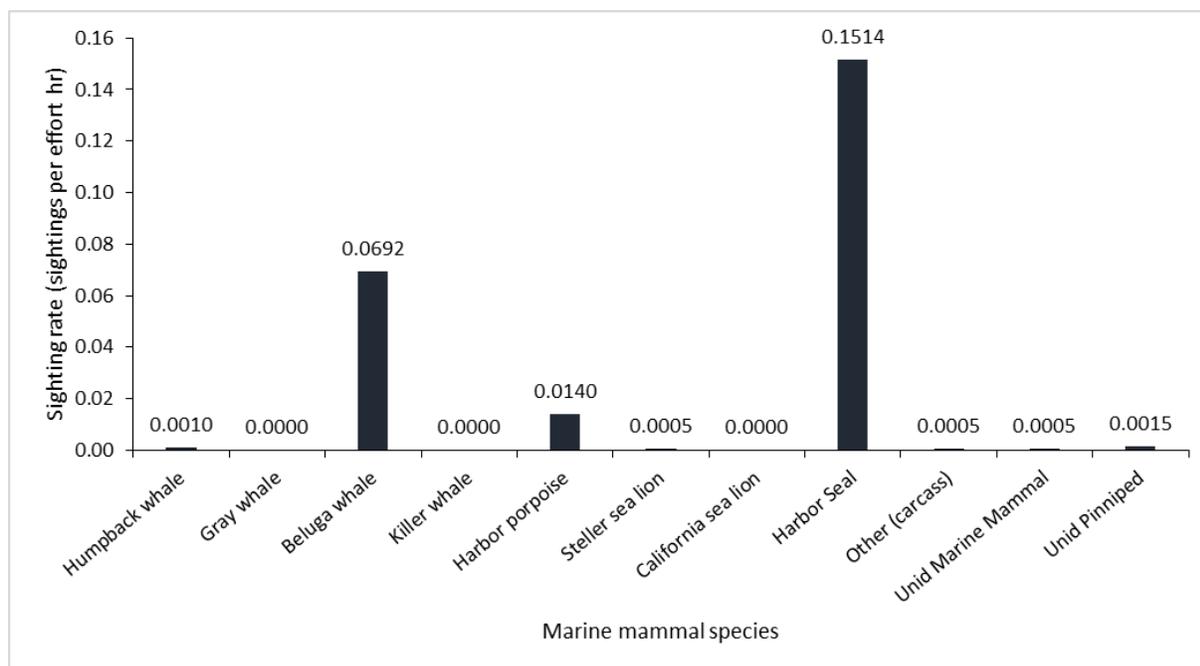


Figure 17. Overall Sighting Rates (Number of Sightings per Actual Effort Hour) for All Marine Mammals

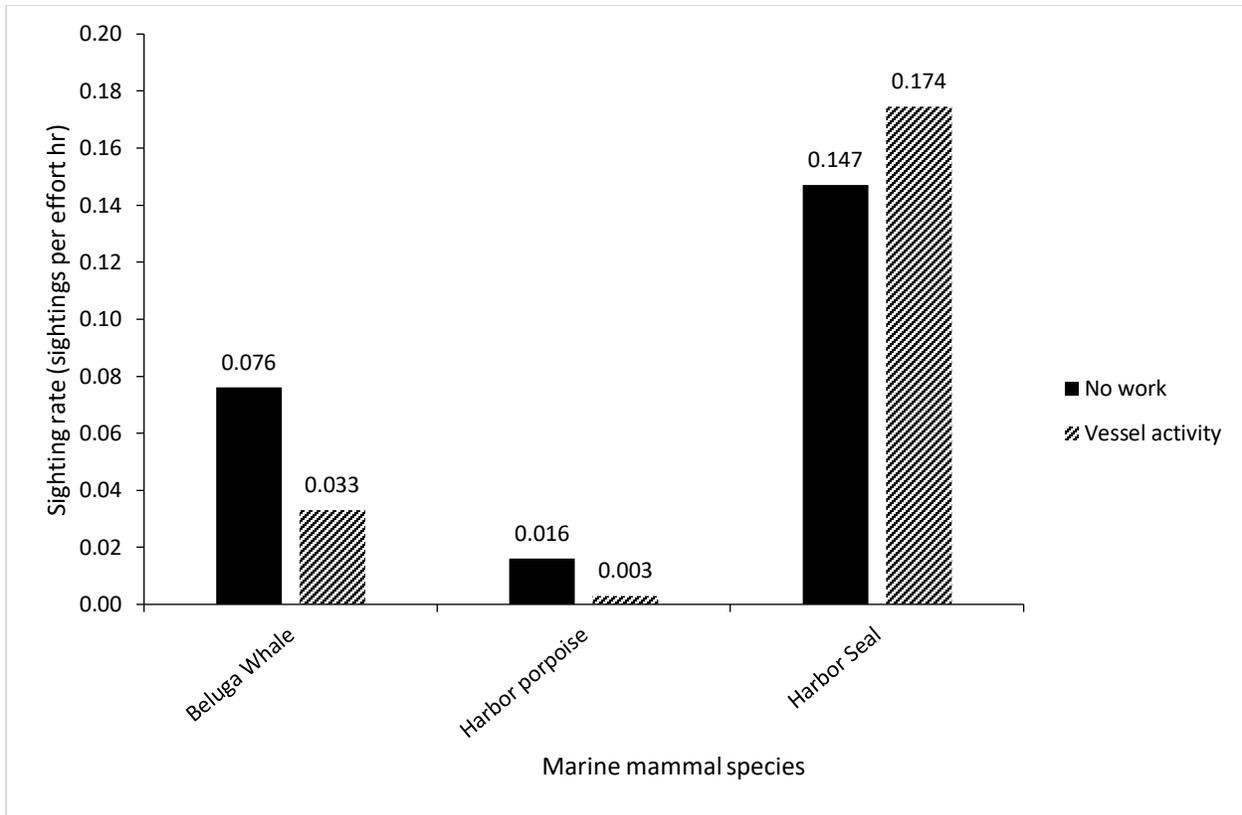


Figure 18. Sighting Rates (Number of Sightings per Actual Effort hr) for Marine Mammals Sighted at Rates ≥ 0.003 During No Work and Vessel Activity

5.3 MARINE MAMMAL BEHAVIOR

5.3.1 Behavior Summary

During the project, marine mammals exhibited a wide array of initial and secondary behaviors, as well as occasional reactions during periods of vessel activity and no work. Cetacean initial behaviors consisted of; blow, breach, dive, feed, mill, surface active, swim, and travel. Cetacean secondary behaviors included blow, bubbles, dive, feed, fluke, mill, other, spyhop, swim, travel, and unknown. Pinniped initial behaviors consisted of; dive, feed, look, mill, other, rest, side scanning, snorkel, surface active, swim, travel, and unknown. Pinniped secondary behaviors included dive, feed, look, mating, mill, other, rest, sink, snorkel, socialize, surface active, swim, travel, and unknown. Reactions during periods of vessel activity and no work were infrequently recorded during the project. Total cetacean reactions included avoidance, and unknown. Total pinniped reactions included approach, paralleling, and unknown. All sighting behaviors and reactions observed during the CIPL project are discussed in detail in the following sections.

5.3.1.1 Cetaceans

Humpback whale. There was 1 sighting of 1 individual humpback whale observed during operations (anchor testing). Observed behavior included travel as initial behavior and fluke as secondary behavior. There was no observed reaction to the operations.

There was 1 sighting of 2 humpback whales observed during no work. Observed behavior included blow as initial behavior and feed as secondary behavior. There was no observed reaction.

Harbor porpoise. There was 1 sighting of 1 individual harbor porpoise during ‘other’ operations. Observed behavior included swim as initial behavior and dive as secondary behavior. There was no observed reaction.

Twenty-eight sightings of 43 individual harbor porpoises were observed during periods of no work. Observed behavior consisted of swim (39%) and travel (61%). There was one reaction of avoidance, likely in response to vessel presence, and there was no observed reactions to the remaining 27 sightings.

Beluga whale. Nine sightings of 55 individual beluga whales (individual count excludes one re-sighting) were recorded during anchor handling (42 individuals) and pipeline pulling (13 individuals). Observed behavior during anchor handling (n = 5) included travel (60%), feed (20%), and swim (20%), and there was no reaction observed for all of the 5 sightings. Observed behavior during pipeline pulling (n = 4) included travel (100%), and there was no reaction observed for all of the 4 sightings.

Two sightings of 10 individual beluga whales were recorded during ‘other’ activity. The observed behavior for both sightings consisted of travel (100%) as initial behavior and there was no reaction observed.

Most (92%, n = 143) of the beluga sightings occurred during periods of no work. Observed behavior of sightings recorded during no work (n = 132) included travel (47%), swim (25%), feed (20%), dive (4%), mill (2%), surface active (0.8%), and breach (0.8%; Figure 19). The majority of beluga sightings observed during periods of no work exhibited no reaction (87%) or were characterized as having an unknown potential reaction (12%). There was one incidence of an avoidance reaction (0.8%), which involved a solitary beluga whale altering its swimming direction to avoid the Tyonek Platform.

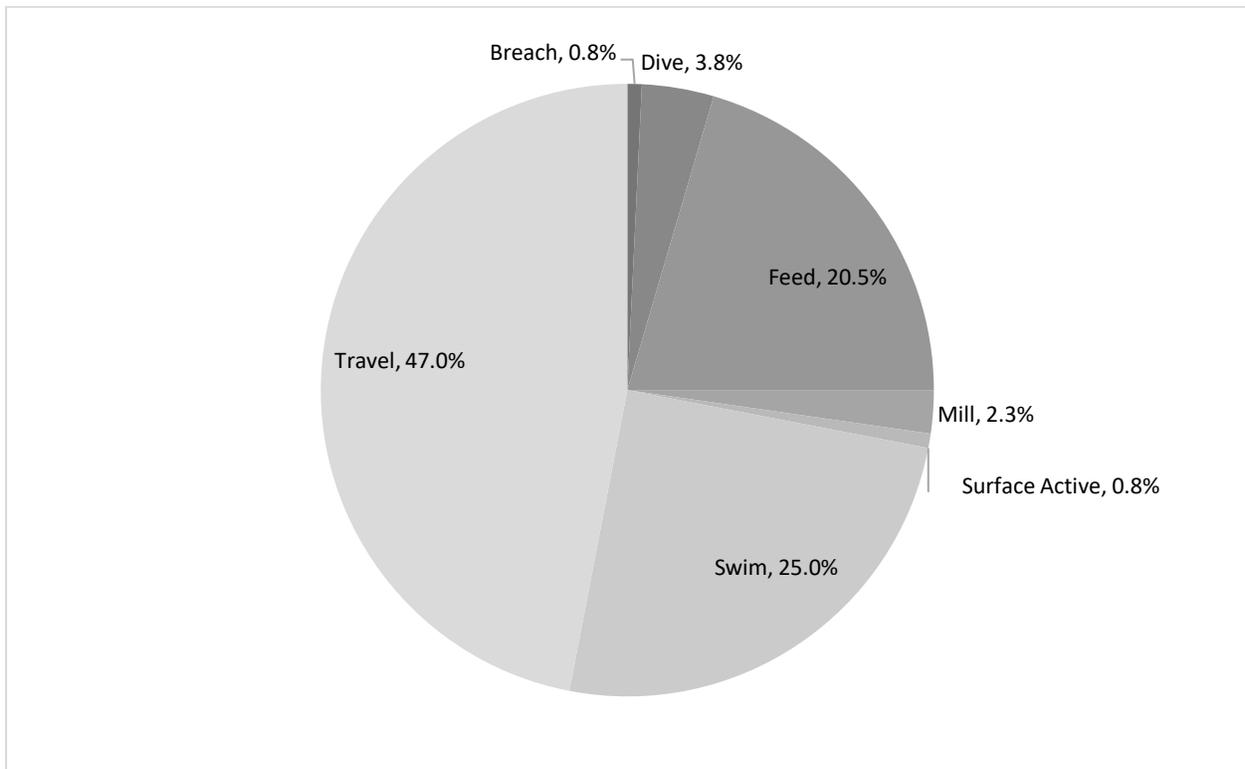


Figure 19. Beluga Whale Initial Behaviors Recorded During No Work

5.3.1.2 Pinnipeds

There were 59 sightings of pinnipeds during periods of vessel activity, which included anchor handling, pipeline pulling, obstruction removal and stabilization, and other. Pinniped behaviors during vessel activity included swim (47%), look (42%), dive (3%), feed (2%), mill (2%), travel (2%), and other (2%; Figure 20). Pinniped reactions during vessel activities (n = 59) included unknown (8%) and approach (2%), and the remaining sightings demonstrated no reaction (none; 90%; Figure 21).

Behaviors during no work for all pinniped sightings, including harbor seals, Steller sea lions, and unidentified pinnipeds, (n = 258) included look (58%), swim (30%), rest (4%), snorkel (2%), travel (1%), surface active (1%), other (1%), mill (1%), unknown (1%), and side scanning (0.4%; Figure 20). Pinniped reactions during no work (n = 258) included unknown (4%), approach (1%), and paralleling (0.4%), and the remaining sightings demonstrated no reaction (none; 95%; Figure 21).

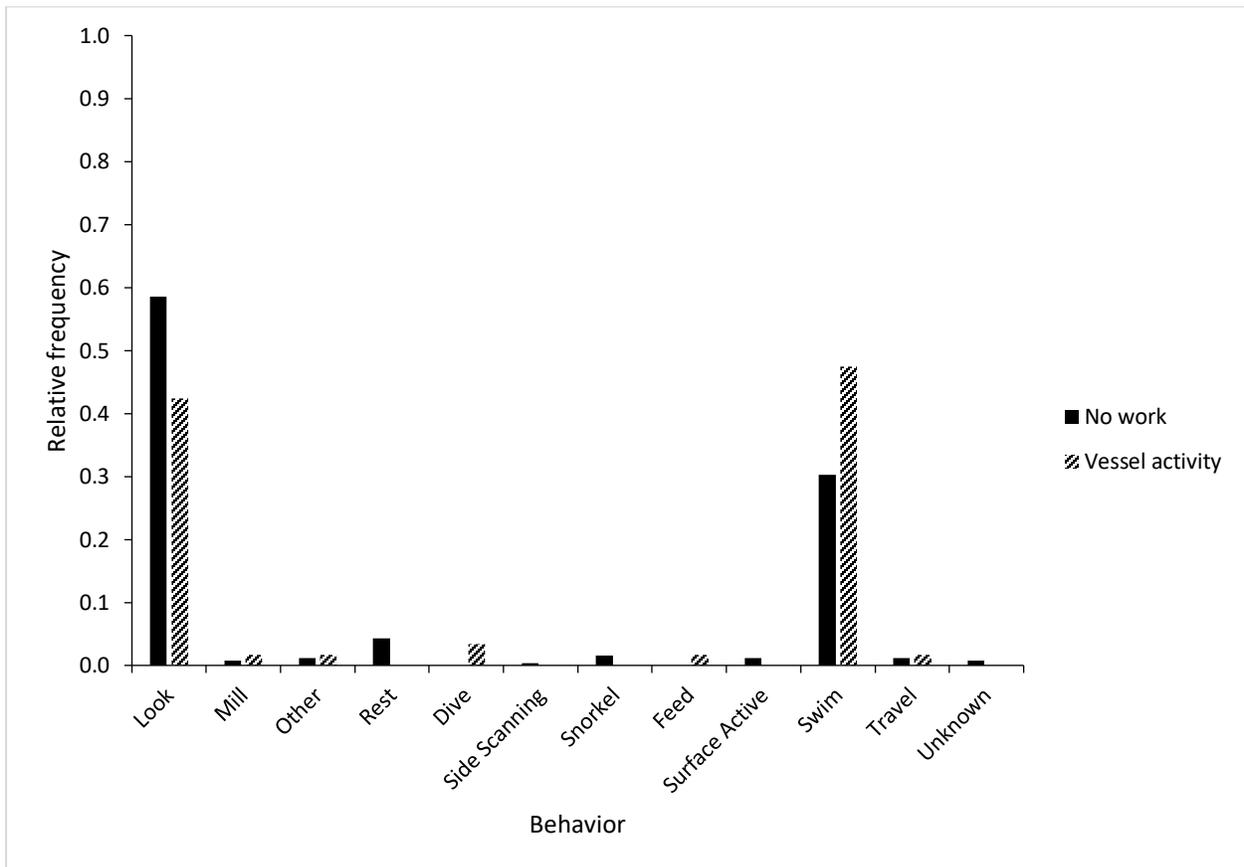


Figure 20. Relative Frequency of Pinniped Initial Behaviors During No Work and Vessel Activity

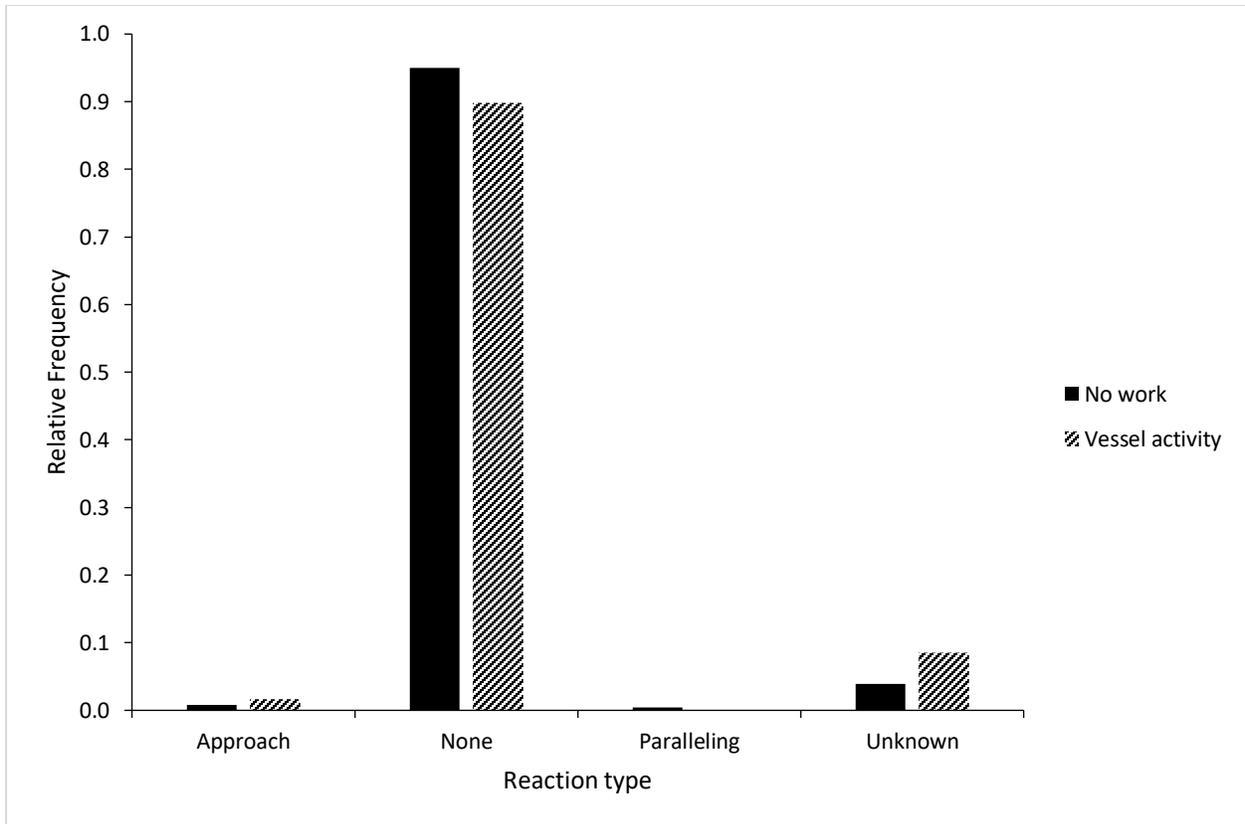


Figure 21. Relative Frequency of Pinniped Reactions During No Work and Vessel Activity

5.4 MARINE MAMMAL EXPOSURES

Over the duration of the project, a total of 18 marine mammal sightings (17 sightings of 17 individual harbor seals and 1 sighting of 1 humpback whale) were observed within the 2.2-km SZ surrounding ongoing vessel activities, resulting in Level B exposures (Table 12; Appendix E). Vessel activities underway at the times of exposure included obstruction removal and stabilization (3 sightings; 3 harbor seals), anchor handling (10 sightings; 9 harbor seals, 1 humpback whale), and pipeline pulling (5 sightings; 5 harbor seals). Within the 2.2-km SZ, distances from the sighted and exposed marine mammal to the working or proxy vessel ranged from 510 m to 2,169 m.

Table 12. 2018 CIPL Project Marine Mammal Exposures

Species	Cumulative No. of Exposures to the Level B Zone	No. Authorized Level B Takes (Table 1. in IHA)	Percent (%) of Species Exposures by Authorized Take
Humpback whale	1	5	20.0%
Gray whale	0	5	0%
Beluga whale	0	40	0%
Killer whale	0	10	0%
Harbor porpoise	0	100	0%
Steller sea lion	0	6	0%
California sea lion	0	5	0%
Harbor seal	17	972	1.7%
Unidentified pinniped	0	NA	NA
Unidentified marine mammal	0	NA	NA
Other (carcass)	0	NA	NA
Total	18	1,143	1.6%

5.5 SUMMARY OF MITIGATION MEASURES

Twenty-five sightings occurred during clearing the SZ (14 beluga whales, 10 harbor seals, and 1 unidentified marine mammal). Four sightings during clearing involved marine mammal ingress into the 2.2 km SZ, resulting in additional clearing time requested. In all 4 instances, the start-work delay totaled 15 minutes or less.

One shut down was implemented due a beluga whale sighting that entered the 2.2 km SZ during anchor handling. Work was able to stop safely and immediately, and no exposure was issued due to successful mitigation implementation.

5.6 STRANDING REPORTS

One marine mammal carcass was observed over the project duration (Appendix D); the animal's death was not the result of CIPL project activities. On June 12 a suspected marine mammal carcass approximately 1.2 m in length with no identifiable appendages or orifices was sighted. The AHT *Hawaii* tug aided in approaching the carcass to gather details and photos, and a Level A stranding report was submitted to NMFS personnel (Jaclyn Daly; jaclyn.daly@noaa.gov and Greg Balogh; greg.balogh@noaa.gov) on June 14.

6.0 DISCUSSION

The 2018 Harvest Alaska CIPL project 4MP was successfully implemented during operations. Field programs often present opportunities to constructively evaluate procedures with the intent to increase efficiency in the future. Here, we provide a brief discussion on selected key elements.

6.1 VISUAL OBSERVATIONS USING STATION-BASED PSOs

Fairweather Science's contracted PSO team was composed of professionals with high levels of expertise, many of whom had previous experience observing in Cook Inlet. The level of PSO coverage for this program consisted of 2 persons per observation station, which was sufficient to cover rotating 4-hr shifts for 12 hr per day. There was 1 lead PSO per station, which resulted in timely data quality analysis and quality control (QAQC) and daily submission to FWS data managers.

When vessel activities occurred in the middle work zone (Figure 4), PSOs were stationed at both Ladd Landing and the Tyonek Platform to provide maximum coverage. During the first two weeks of the program (May 9-June 3, 2018), PSOs assessed maximum sightability from each station and determined that effective marine mammal monitoring could occur up to 4 km away from each respective station. This information proved advantageous later in the program (August-September) when vessel schedules changed frequently and with short notice. As work entered and exited the various zones, we were confident that vessel activity was monitored effectively 100% of the time.

On June 9, Fairweather Science implemented revised field data collection protocol involving Excel data entry, Marine Exchange AIS online data software, and sighting and vessel track mapping via Google Earth Pro. This system proved highly effective and provided a streamlined, program-specific method of collecting data and generating detailed weekly reports.

A key issue relevant to shore and platform-based PSOs is the additional level of distance estimation required while assessing a sighting. In addition to estimating the relative distance from the PSO to the marine mammal sighting, the PSO must approximate the distance between the sighting and vessel(s) performing operations in order to effectively assess whether or not an exposure occurred. To mitigate human error, a verification system was implemented in which FWS data managers used mapping tools to confirm the position of each marine mammal sighting relative to the operating vessel(s) (see section 4.2.3). Sightings were confirmed as exposures or non-exposures within 24 hours of PSO data submission.

At Ladd Landing additional human error was introduced during distance estimation between the PSO observation station and nearshore marine mammal sightings. Due to underestimation of distance-to-water, and overestimation of sighting bearing, a handful of sightings were located on land during post-season data mapping (section 4.2.1). To mitigate this in future programs, we will ensure that land-based PSOs are equipped with data software which limits bearing selection relative to the observation station, as well as provides an adjusted list of sighting distance selections based on the chosen bearing and distance-to-water from the PSO at that angle.

6.2 IMPLEMENTATION OF MITIGATION MEASURES

The implementation of mitigation measures (clearing of work zone, shut down) was efficient and successful during the CIPL project. Prior to the start of the season, communication protocols were established by FWS, the PSO team, and Harvest Alaska. The PSOs were diligent in establishing regular communication with the CIPL project vessels, especially during changing work schedules and vessel personnel. Requests for

additional wait time during clearing and for work shut down (see section 5.5) were quickly and effectively communicated by the PSOs and complied with immediately and safely by the vessel crews.

6.3 EQUIPMENT

PSOs were able to supplement marine mammal monitoring and data collection by using the provided observing equipment. While a majority of marine mammals were sighted with the naked eye (95%, n = 493), Fujinon 7x50 binoculars were occasionally used and were effective for species confirmation and recording details such as behavior/reaction, group size, group composition, etc. BigEye binoculars (25/40x100) were purchased from BigEye Binoculars (Victoria, British Columbia, Canada) for use on land and platform observation stations. Unfortunately, this particular model of BigEye binoculars did not effectively augment sightability and data collection, however, the trial use equipped us with valuable lessons learned. The BigEyes were mounted on adjustable wooden tripods for portability and eye-height customization. The Tyonek Platform was an unsuitable location for standing or fixed observing equipment due to platform vibrations which transferred to the BigEyes, causing image blurring and significant loss of clarity. PSOs from both observing locations commented that the BigEye optics of this model were not ideal for the field; sighting detection and observation within 0-3 km were not significantly improved by using BigEyes, and graininess and lack of stability increased with magnification. Additionally, wooden and non-water-resistant components are not suitable for wet and windy field conditions, and greater attention will be devoted to materials and manufacture of all future equipment. PSOs provided suggestions regarding future equipment during the post-season review. Handheld equipment (e.g., scope) is preferred to tripods/mounting, and improved internal stabilization and magnification clarity is an overall necessity. Additionally, significant improvements to PSO cameras are necessary for future projects, especially those which intend to support ongoing beluga whale photo ID work (see Section 6.4). Canon SX50s were supplied for the CIPL project, however these point-and-shoot cameras were cumbersome and did not capture photos of significantly higher resolution than personal iPhone cameras. Photos captured by PSOs were deemed unsuitable in terms of level of detail required for beluga photo ID. FWS will acquire upgraded cameras and lenses for future projects in order to adequately support beluga ID work.

6.4 BELUGA WHALE SIGHTINGS

There was not a large enough sample size of beluga whale sightings during vessel activity to justify comparisons between behaviors and reactions during periods of no work vs. vessel activity. Beluga whale initial behaviors primarily consisted of travel, swim, and feed. FWS is currently examining the data for patterns in daily/weekly/monthly heading trends as well as timing of feeding events and potential relationships with tide stage and fish count from nearby anadromous streams.

On June 21, with permission from Harvest Alaska and NMFS, FWS began sharing CIPL project beluga whale sighting data with relevant researchers, organizations, and agencies. PSOs compiled weekly beluga whale sighting data and distributed to a ‘beluga sharing group’ comprised of representatives from various agencies and organizations, including NMFS, ADFG, LGL, Beluga Whale Alliance, HDR, Hilcorp Alaska, and Cook Inlet Beluga Photo Identification project. These data consisted of basic sighting demographics, and all project-specific information (i.e., vessel activity, mitigation measure, project-related notes) was removed prior to distribution.

In future Cook Inlet marine mammal monitoring programs, FWS intends to more effectively support the ongoing Cook Inlet Beluga Whale Photo-ID project, which aims to track individual beluga whale movements based on individual colorations and markings identified by photography. This may entail

upgrades to our cameras (see Section 6.3), additional material presented during pre-season PSO training, and would facilitate additional collaboration between industry and scientific objectives.

6.5 REPORTING

FWS data managers reviewed PSO data daily and discussed questions and/or discrepancies during daily PSO calls. Data reports were sent to NMFS weekly and monthly, and a Harvest Alaska representative was given the opportunity to review each report prior to final submission. Questions and comments from NMFS regarding the data presented were addressed by FWS data managers in a timely manner.

Fairweather Science holds post-season After Action Review meetings during which PSOs, logistics coordinators, and Harvest Alaska representatives discuss the season's operations, communication, data reporting, logistics, and safety in a constructive manner. This allows for modification of future programs as necessary.

6.6 STAKEHOLDER ENGAGEMENT SUMMARY

Through this project, Harvest Alaska engaged stakeholders to identify concerns and used this feedback to inform project operational decision-making. Stakeholders included not only local people directly affected by the project, but also agencies that have a role in the permitting review process, elected representatives, Alaska Native villages and regional corporations, tribal governments, co-management organizations, non-governmental organizations, and Alaska residents. Tyonek was identified as the only community located near the project area, or near a transit route.

Stakeholder groups were identified and Harvest Alaska reached out to a number of organizations to discuss the project. Conventions and other meetings with stakeholders (outlined below) were documented in the form of meeting notes. Any action items identified were highlighted in the meeting notes and addressed. All questions or concerns from stakeholders were routed to the appropriate point of contact, and correspondence was documented to ensure timely follow-up. No conflicts with subsistence activities occurred during operations

2017 Community Meeting Summary

- In July, 2017, Hilcorp Alaska and Harvest Alaska began conducting community outreach for the CIPL project. A detailed stakeholder engagement tracking spreadsheet was kept for all meetings, phone call and emails.
- On July 11, 2017, a meeting was held in Tyonek with the Tyonek Native Corporation and the Native Village of Tyonek where Hilcorp Alaska/Harvest Alaska presented details on the CIPL project. No subsistence issues were raised at this meeting. Between July 13 and July 24, 2018, several follow-up emails were sent to the Native Village of Tyonek providing more details on the project.
- On August 9, 2017, Hilcorp Alaska/Harvest Alaska attended the Native Village of Tyonek's Tribal Council meeting in Tyonek, Alaska. Hilcorp Alaska/Harvest Alaska presented details on the CIPL project, results of summer surveys and the beginning of the construction lay down area at Ladd Landing. No subsistence issues were raised.
- On September 9, 2017, Hilcorp Alaska/Harvest Alaska met with the Tyonek Native Corporation in Anchorage to discuss the details of the CIPL project.

- On October 20, 2017, Hilcorp Alaska/Harvest Alaska attended a meeting with the Tyonek Corporation in Anchorage and presented the latest CIPL project updates. No marine mammal subsistence issues were raised. Email correspondence has continued between Hilcorp Alaska/Harvest Alaska and the Tyonek Native Corporation regarding the project.

2018 Community Meeting Summary

- On May 9, 2018, a meeting was held in Anchor Point by the Anchor Point Chamber of Commerce. This meeting provided an overview of the CIPL project. Email correspondence has continued between Hilcorp Alaska/Harvest Alaska and the Anchor Point Chamber of Commerce regarding the project.
- On September 7, 2018, Hilcorp Alaska/Harvest Alaska presented information about the CIPL project to the Cook Inlet Regional Citizens Advisory Council in Kodiak, Alaska. Email correspondence has continued between Hilcorp Alaska/Harvest Alaska and the Cook Inlet Regional Citizens Advisory Council regarding the project.
- On September 10, 2018, Hilcorp Alaska/Harvest Alaska contacted the Kenai Peninsula Fisherman's Association, the United Cook Inlet Drift Association, the United Fisherman of Alaska, and the Kenai Peninsula Borough via email to discuss the CIPL project amongst other planned programs.
- On September 11, 2018, Hilcorp Alaska/Harvest Alaska contacted the Kenaitze Indian Tribe and the Ninilchik Tribal Council to discuss the CIPL project.
- On September 17, 2018, Hilcorp Alaska/Harvest Alaska contacted the Kenai Peninsula Economic Development Division to discuss the CIPL project.

7.0 REFERENCES

- Aerts, L., M. Bles, S. Blackwell, C. Greene, K. Kim, D. Hannay and M. Austin. 2008. Marine mammal monitoring and mitigation during BPXA Liberty OBC seismic survey in Foggy Island Bay, Beaufort Sea, July-August 2008: 90- day report. LGL Rep. P1011-1. Prepared by LGL Alaska Research Associates Inc., LGL Ltd., Greeneridge Sciences Inc., and JASCO Research Ltd. for BP Exploration Alaska, Anchorage, AK.
- Bles, M.K., K.G. Hartin, D.S. Ireland, and D. Hannay. 2010. Marine mammal monitoring and mitigation during open water seismic exploration by Statoil USA E&P Inc. in the Chukchi Sea, August-October 2010: 90-day Report. LGL Report P1119. Prepared by LGL Alaska Research Associates Inc., LGL Ltd., and JASCO Research Ltd. for by Statoil USA E&P Inc., National Marine Fisheries Service, and U.S. Fish and Wildlife Service. 102 pp., plus appendices.
- Lomac-MacNair, K., M.A. Smultea and G. Campbell. 2014. Draft NMFS 90-Day Report for Marine Mammal Monitoring and Mitigation during Apache's Cook Inlet 2014 Seismic Survey, 2 April – 27 June 2014. Prepared for Apache Alaska Corporation, 510 L Street #310, Anchorage AK 99501. Prepared by Smultea Environmental Sciences (SES), P.O. Box 256, Preston, WA 98050.

APPENDIX A. INCIDENTAL HARRASSMENT AUTHORIZATION



INCIDENTAL HARASSMENT AUTHORIZATION

Harvest Alaska, LLC (Harvest) is hereby authorized under section 101(a)(5)(D) of the Marine Mammal Protection Act (MMPA; 16 U.S.C. 1371(a)(5)(D)) to harass marine mammals incidental to pipelines installation activities associated with the Cook Inlet Pipeline Cross Inlet Extension Project in Cook Inlet, Alaska, when adhering to the following terms and conditions.

1. This Incidental Harassment Authorization (IHA) is valid for a period of one year from the date of issuance.
2. This IHA is valid only for oil and gas pipeline installation activities associated with the Cook Inlet Pipeline Cross Inlet Extension Project in Cook Inlet, Alaska.
3. General Conditions
 - (a) A copy of this IHA must be in the possession of Harvest its designees, and work crew personnel operating under the authority of this IHA.
 - (b) The species authorized for taking are the Cook Inlet beluga whale (*Delphinapterus leucas*), humpback whale (*Megaptera novaeangliae*), gray whale (*Eschrichtius robustus*), killer whale (*Orcinus orca*), harbor porpoise (*Phocoena phocoena*), Steller sea lion (*Eumetopias jubatus*), harbor seal (*Phoca vitulina*), and California sea lion (*Zalophus californianus*).
 - (c) The taking, by Level B harassment only, is limited to the species listed in condition 3(b). See Table 1 (attached) for numbers of take authorized, by species.
 - (d) The taking by injury (Level A harassment), serious injury, or death of any of the species listed in condition 3(b) of the Authorization or any taking of any other species of marine mammal is prohibited and may result in the modification, suspension, or revocation of this IHA.
 - (e) Harvest shall conduct briefings between construction supervisors and crews, vessel captains and crew, dive team, marine mammal monitoring team, and, if applicable, UAS monitoring team prior to the start of all in-water work, and when new personnel join the work, in order to explain responsibilities, communication procedures, marine mammal monitoring protocol, and operational procedures.



4. Mitigation Measures

The holder of this Authorization is required to implement the following mitigation measures:

- (a) Harvest shall establish a monitoring zone which extend 2.2 km from any working vessel and the pipeline corridor. Working vessels are defined as those conducting operational activities¹.
- (b) Prior to commencing operational activities, a NMFS-approved Protected Species Observers (PSO) shall clear the monitoring area for 30 minutes; if no marine mammals are observed within those 30 minutes, activities may commence.
- (c) If a marine mammal(s) is observed within the safety zone during the clearing, the PSO shall continue to watch until the animal(s) is outside of and on a path away from the safety zone or 15 minutes have elapsed if the species was a pinniped or cetacean other than a humpback whale; for humpback whales the watch shall extend to 30 minutes. Once the PSO has cleared the area, operations may commence.
- (d) Should a marine mammal be observed during pipe-pulling, the PSO shall monitor and carefully record any reactions observed until the pipe is secure. No new operational activities would be started until the animal leaves the monitoring area.
- (e) All vessel engines shall be placed in idle when not working or maintaining steerage.
- (f) All sonar equipment shall operate at or above 200 kHz.
- (g) Harvest shall abide by NMFS marine mammal viewing guidelines while operating vessels or land-based personnel (for hauled-out pinnipeds); including not actively approaching marine mammals within 100 yards (in-water or on land) and slowing vessels to the minimum speed necessary.
- (h) If a species for which authorization has not been granted, or a species for which authorization has been granted but the authorized takes are met, is observed approaching or within the monitoring zone, in-water work shall be delayed or shut-down (other than pipe pulling if already initiated). Activities must not resume until the animal has been confirmed to have left the area or the observation time period, as indicated in 4(c) above, has elapsed.
- (i) If unmanned aerial systems (UAS) are used, the UAS shall not fly below 500 ft in the presence of marine mammals.

¹ Operational activities subject to all mitigation measures include obstacle removal, trenching, pipe pulling, and moving the barge (including deploying/retrieving anchors).

5. Monitoring

(a) The holder of this Authorization is required to conduct marine mammal and acoustic monitoring during all in-water work associated with pipeline installation activities in accordance with Harvest's Marine Mammal Monitoring and Mitigation Plan, dated March 15, 2018 (with the exception identified in condition 5(b)).

(b) A PSO shall be stationed at Ladd Landing when activities are occurring 0-2 kms from shore. A PSO shall be stationed at the Tyonek Platform when activities are occurring greater than 6.5 km from shore. When project activities are occurring from 2 to 6.5 kms from shore, a PSO shall be stationed at both Ladd Landing and the Tyonek Platform.

(c) PSOs shall scan the monitoring area systematically with the naked eye, 7x50 reticle binoculars, and 20-25x100 big-eye binoculars.

(d) PSOs shall be in communication with the all vessel captain via VHF radio and/or cell phones at all times and alert vessel captains to all marine mammal sightings relative to the vessel location.

(e) Qualified PSOs shall be trained biologists, with the following minimum qualifications:

(i) Visual acuity in both eyes (correction is permissible) sufficient for discernment of moving targets at the water's surface with ability to estimate target size and distance; use of binoculars may be necessary to correctly identify the target;

(ii) Advanced education in biological science or related field (undergraduate degree or higher required);

(iii) Experience and ability to conduct field observations and collect data according to assigned protocols (this may include academic experience);

(iv) Experience or training in the field identification of marine mammals, including the identification of behaviors;

(v) Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations;

(vi) Writing skills sufficient to prepare a report of observations including but not limited to the number and species of marine mammals observed; dates and times when in-water construction activities were conducted; dates and times when in-water construction activities were suspended to avoid potential incidental injury from construction sound of marine mammals observed within a defined shutdown zone; and marine mammal behavior; and

(vii) Ability to communicate orally, by radio or in person, with project personnel to provide real-time information on marine mammals observed in the area as necessary.

(f) PSOs shall scan the monitoring zone 30 minutes prior to commencing work at the beginning of each day, and prior to re-starting work after any stoppage of 30 minutes or greater.

- (g) PSOs shall scan the waters for at least 30 minutes after activities have been completed each day, and after each stoppage of 30 minutes or greater.
- (h) PSOs shall scan the waters using binoculars, spotting scopes, and unaided visual observation.
- (i) PSOs shall use NMFS-approved construction and sighting forms developed for this project as described in Appendix A of Harvest's IHA application.
- (j) Daily construction forms will filled out by at least one PSO. Information shall, at minimum, include the following:
 - (i) general start and end time each construction day;
 - (ii) start and end time for each operational activity as defined above;
 - (iii) a description of other in-water activities (*e.g.*, tugs idle, divers in water, etc.) and associated time frames;
 - (iv) any other human activity in the project area, and
 - (v) marine mammal detection capability (estimated range of observer coverage); and
 - (vi) number of marine mammals, by species, observed.
- (k) Marine Mammal Sighting forms shall include the following information:
 - (i) Construction activities occurring during each observation period;
 - (ii) weather parameters (*e.g.*, percent cover, visibility);
 - (iii) water conditions (*e.g.*, sea state, tide state);
 - (iv) species, numbers and if possible, sex and age class of marine mammals;
 - (v) description of any marine mammal behavior patterns, including bearing and direction of travel and distance from activity;
 - (vi) distance from activities to marine mammals;
 - (vii) distance from the observation point to marine mammals; and
 - (viii) description of implementation of mitigation measures (*e.g.*, shutdown or delay).
- (l) Harvest shall deploy and recover an acoustic mooring consisting of an acoustic recorder, acoustical release and subsurface float package, and an echolocation logger.

6. Reporting

The holder of this Authorization is required to:

- (a) Submit weekly and monthly marine mammal monitoring and construction reports to NMFS. Harvest shall also submit a draft final report on all monitoring conducted under the IHA within ninety calendar days of the completion of marine mammal monitoring. A final report shall be prepared and submitted within thirty days following resolution of comments on the draft report from NMFS. This

report must contain the informational elements described in condition 11.), and shall also include:

- (i) Detailed information about any implementation of delays or shutdowns, including the distance of animals to a specified operational activity and description of specific actions that ensued and resulting behavior of the animal, if any (See Condition 5(k)).
 - (ii) Description of attempts to distinguish between the number of individual animals taken and the number of incidences of take, such as ability to track groups or individuals.
 - (iii) Detailed information on construction activities including date, start/end time for each operational activities as well as barge GPS data (see Condition 5(j)).
- (b) Harvest shall submit a draft acoustic monitoring reporting within 6 months of project completion. The report shall include an analysis of baseline and operational soundscapes, including, broadband sound pressure levels (dB rms), power spectral density, percentile spectra, and 1/3 octave band levels. For each background noise condition, acoustic metrics will be calculated for 24 h periods, peak current time, and slack time based on nearest reference tidal station (*i.e.*, Nikiski). Beluga detections shall also be included in the report.
- (c) Harvest shall notify NMFS Office of Protected Resource should the amount of marine mammals taken, by species, be approaching the authorized take amount.
- (d) Reporting injured or dead marine mammals:
- (i) In the unanticipated event that the specified activity clearly causes the take of a marine mammal in a manner prohibited by this IHA, such as an injury (Level A harassment), serious injury, or mortality, Harvest shall immediately cease the specified activities and report the incident to the Office of Protected Resources (301-427-8401), NMFS, and the Alaska Region Marine Mammal Stranding Coordinator (877-925-7773), NMFS. The report must include the following information:
 1. Time and date of the incident;
 2. Description of the incident;
 3. Environmental conditions (e.g., wind speed and direction, Beaufort sea state, cloud cover, and visibility);
 4. Description of all marine mammal observations and operational activities in the 24 hours preceding the incident;
 5. Species identification or description of the animal(s) involved;

6. Fate of the animal(s); and
7. Photographs or video footage of the animal(s).

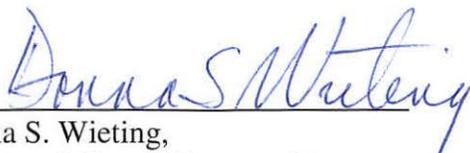
Activities shall not resume until NMFS is able to review the circumstances of the prohibited take. NMFS will work with Harvest to determine what measures are necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. Harvest may not resume their activities until notified by NMFS.

- (ii) In the event that Harvest discovers an injured or dead marine mammal, and the lead observer determines that the cause of the injury or death is unknown and the death is relatively recent (*e.g.*, in less than a moderate state of decomposition), Harvest shall immediately report the incident to the Office of Protected Resources, NMFS, and the Alaska Region Stranding Coordinator, NMFS.

The report must include the same information identified in 6(b)(i) of this IHA. Activities may continue while NMFS reviews the circumstances of the incident. NMFS will work with Harvest to determine whether additional mitigation measures or modifications to the activities are appropriate.

- (iii) In the event that Harvest discovers an injured or dead marine mammal, and the lead observer determines that the injury or death is not associated with or related to the activities authorized in the IHA (*e.g.*, previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), Harvest shall report the incident to the Office of Protected Resources, NMFS, and the Alaska Region Stranding Coordinator, NMFS, within 24 hours of the discovery. Harvest shall provide photographs or video footage or other documentation of the stranded animal sighting to NMFS.

7. This Authorization may be modified, suspended or withdrawn if Harvest fails to abide by the conditions prescribed herein, or if NMFS determines the authorized taking is having more than a negligible impact on the species or stock of affected marine mammals.



Donna S. Wieting,
Director, Office of Protected Resources,
National Marine Fisheries Service.

APR 25 2018

Date

Table 1. Number of marine mammals, by species, authorized to be taken by Harvest during pipeline installation activities associated with the Cross Inlet Pipeline Extension Project, Cook Inlet, Alaska.

Species	Stock	Level B Take
Cook Inlet beluga whale (<i>Delphinapterus leucas</i>)	Cook Inlet	40
Humpback whale (<i>Megaptera novaeangliae</i>)	Central North Pacific	5
Killer whale (<i>Orcinus orca</i>)	Alaska Resident, Gulf of Alaska, Aleutian, Bering Sea Transient	10
Harbor porpoise (<i>Phocoena phocoena</i>)	Gulf of Alaska	100
Harbor seal (<i>Phoca vitulina</i>)	Cook Inlet/Shelikof Strait	972
Steller sea lion (<i>Eumetopias jubatus</i>)	Western U.S.	6
California sea lion (<i>Zalophus californianus</i>)	U.S.	5
Gray whale (<i>Eschrichtius robustus</i>)	Eastern North Pacific	5

APPENDIX B. DATA ENTRY FIELDS

2018 Harvest Alaska Cook Inlet Pipeline Extension Program - Effort Entry Data

Name	Entry Type	Description	Data Entry Choices
Date	DD/MM/YYYY	Day, month, year of this record	N/A
Time	HH:MM	Time of observation	N/A
Duration	Calculation (HH:MM)	Duration of effort	N/A
Observation Site	Text	Location from where the PSO observed	Ladd Landing, Tyonek Platform
Observer	Text	Observer first and last name	FWS PSO names
Effort	Fixed List	Observation status during effort time	On, Off, Opportunistic
Beaufort Sea State	Fixed List	Sea surface conditions	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
Glare	Integer (%)	Glare of sunlight on water	N/A
Visibility	Integer (m)	Maximum distance clearly visible from station	N/A
Precipitation	Fixed List	Precipitation type	None, Light Rain, Heavy Rain, Drizzle, Light Fog, Heavy Fog, Snow, Graupel, Hail
Cloud Cover	Integer (%)	Cloud cover	N/A
Sightability	Text	Overall evaluation of environmental conditions conducive to observing	Poor, good, fair, excellent
Vessel Activity	Fixed List	Vessel activity status	Anchor Testing, Obstruction Removal and Stabilization, Pipeline Pulling, Trenching, No Work, Other
Vessel Location	Fixed List	In which work zone the vessel activity is taking place	Near Shore, Midline, Offshore, Not Present
Mitigation Action	Fixed List	List any mitigation that occurs	Clearing, None, Shut Down

Name	Entry Type	Description	Data Entry Choices
Notes	Text	Notes/additional comments not otherwise captured by data entry fields	N/A

2018 Harvest Alaska Cook Inlet Pipeline Extension Program - Sighting Entry Data

Name	Entry Type	Description	Data Entry Choices
Date	DD/MM/YYYY	Day, month, year of this record	N/A
Time	HH:MM	Time of observation	N/A
Observation Site	Text	Location from where the PSO observed	Ladd Landing, Tyonek Platform
Observer	Text	Observer first and last name	FWS PSO names
Sighting ID	Text	Unique ID for each sighting (with exception of resights) containing a letter for each station plus a chronological number	NA
Species	Fixed list	Marine mammal sighting identified to species	Beluga Whale, California Sea Lion, Gray Whale, Harbor Porpoise, Harbor Seal, Humpback Whale, Killer Whale, Steller Sea Lion, Unidentified Marine Mammal, Unidentified Pinniped
Optics Type	Fixed list	What visual aids (if any) were used to observe the sighting	Naked eye, Fujinon 7x50, BigEye binoculars
Reticle	Integer (milliradian [mil])	Reticle value from binocular reading	N/A
Sighting Distance (m)	Integer (m)	Estimated distance from the observation station to the sighting	N/A
Observed Bearing	Integer (hr)	From the perspective of a clock face, the location of the sighting relative to the observer	N/A
Station Bearing	Integer (degrees)	Conversion of initial degree reading to correct for true north	N/A
Sighting Latitude	Integer	Latitude coordinate for sighting	N/A
Sighting Longitude	Integer	Longitude coordinate for sighting	N/A
Grid Number	Text	Grid number in which sighting was initially observed	N/A

Name	Entry Type	Description	Data Entry Choices
Group Size	Integer	Number of individual marine mammals composing the sighting group	N/A
Juveniles	Integer	Number of juveniles within the sighting group	N/A
Number Calves/Pup/Neonate	Integer	Number of calves, pups, and/or neonates within the sighting group	N/A
Sex	Text	Sex of the animal, if able to determine	N/A
Group Heading	Integer	Heading direction based on clock face reading	N/A
Group Formation (Beluga Only)	Fixed list	Formation/pattern in which group of belugas are congregated/swimming	Circular, Echelon, Linear, No Formation, Parallel
Group Spread in Body Length (Beluga Only)	Fixed list	How far apart belugas are within group using body length to determine	1, 2, 3, 4, 5
Color (Beluga Only)	Fixed list	Coloring of belugas	Mixed, White, Gray, Dark Gray
Behavior 1	Fixed list	Initial behavior observed	Blow, Breach, Dead, Dive, Feed, Look, Mill, Other, Side Scanning, Snorkel, Surface Active, Swim, Travel, Unknown
Behavior 2	Fixed list	Secondary behavior (if applicable) observed	Blow, Bubbles, Dive, Feed, Fluke, Look, Mating, Mill, Other, Rest, Sink, Snorkel, Socialize, Spyhop, Surface Active, Swim, Travel, Unknown
Reaction	Fixed list	Reaction to anthropogenic sound or presence	Approach, Avoidance, None, Paralleling, Unknown
Behavior Pace	Fixed list	Rate at which the behavior is occurring	Moderate, None, Slow, Unknown, Vigorous

Name	Entry Type	Description	Data Entry Choices
Vessel Activity	Fixed list	Vessel activity status	Anchor Testing, Obstruction Removal and Stabilization, Pipeline Pulling, Trenching, No Work, Other
Mitigation Action	Fixed list	List any mitigation that occurs	Clearing, None, Shut Down
Photo	Fixed list	Indicates whether or not a photo of the sighting was taken	Yes, No
Beaufort Sea State	Fixed List	Sea surface conditions	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
Glare	Integer (%)	Glare of sunlight on water	N/A
Visibility	Integer (m)	Maximum distance clearly visible from station	N/A
Cloud Cover	Integer (%)	Cloud cover	N/A
Sightability	Text	Overall evaluation of environmental conditions	Poor, fair, good, excellent

APPENDIX C. SIGHTING DATA

Red fields indicate duplicate sighting IDs (resight of individual or group)

Date	Time (AKDT)	Obs Site	Sgt Id	Species	Optics Type	Sgt Dist (m)	Grp Size	Beh 1	Vessel Activity	Mitigation Action
9-May-18	17:10:15	Tyonek	T1	Unid Pinniped	Naked Eye	700	1	Unknown	No Work	None
16-May-18	7:15:40	Tyonek	T3	Harbor Seal	Naked Eye	200	1	Swim	No Work	None
16-May-18	10:33:41	Tyonek	T4	Harbor Seal	Naked Eye	550	1	Swim	No Work	None
18-May-18	7:23:36	Ladd	L1	Harbor Seal	Naked Eye	200	1	Swim	No Work	None
18-May-18	8:25:36	Ladd	L1	Harbor Seal	Naked Eye	600	1	Look	No Work	None
18-May-18	9:15:00	Tyonek	T2	Harbor Porpoise	Naked Eye	300	4	Swim	No Work	None
18-May-18	11:20:37	Ladd	L2	Unid Pinniped	Naked Eye	600	1	Swim	Anchor Testing	None
18-May-18	20:59:19	Ladd	L3	Harbor Seal	Naked Eye	50	1	Look	No Work	Clearing
18-May-18	22:46:54	Ladd	L4	Harbor Seal	Naked Eye	100	1	Swim	Anchor Testing	None
19-May-18	14:37:25	Ladd	L5	Harbor Seal	Naked Eye	50	1	Look	No Work	None
19-May-18	15:53:10	Ladd	L6	Harbor Seal	Naked Eye	50	1	Look	No Work	None
19-May-18	19:49:13	Tyonek	T5	Harbor Porpoise	Naked Eye	500	2	Swim	No Work	None
19-May-18	20:19:54	Ladd	L7	Harbor Seal	Naked Eye	50	1	Look	No Work	None
19-May-18	22:58:32	Ladd	L8	Harbor Seal	Naked Eye	100	1	Swim	Obstruction Removal and Stabilization	None
20-May-18	5:43:55	Tyonek	T6	Harbor Seal	Naked Eye	1500	1	Swim	Obstruction Removal and Stabilization	None
20-May-18	6:09:20	Ladd	L9	Harbor Seal	Naked Eye	100	1	Swim	Obstruction Removal and Stabilization	None
20-May-18	7:50:19	Tyonek	T7	Harbor Porpoise	Naked Eye	200	1	Swim	No Work	None
20-May-18	8:10:28	Ladd	L10	Harbor Seal	Naked Eye	100	1	Swim	No Work	None
20-May-18	10:21:12	Ladd	L11	Harbor Seal	Naked Eye	50	1	Swim	No Work	Clearing
20-May-18	12:49:08	Ladd	L12	Harbor Seal	Naked Eye	75	1	Swim	No Work	None
20-May-18	13:55:00	Tyonek	T8	Harbor Porpoise	Naked Eye	150	1	Swim	No Work	None
20-May-18	14:27:34	Ladd	L13	Harbor Seal	Naked Eye	200	1	Swim	No Work	None
20-May-18	20:21:26	Ladd	L14	Harbor Seal	Naked Eye	50	1	Swim	No Work	None
20-May-18	22:55:34	Ladd	L15	Harbor Seal	Naked Eye	75	1	Swim	No Work	None
21-May-18	7:33:27	Ladd	L16	Harbor Seal	Naked Eye	100	1	Look	No Work	None

21-May-18	20:15:16	Ladd	L17	Steller Sea Lion	Naked Eye	500	2	Swim	No Work	None
21-May-18	22:16:39	Ladd	L18	Harbor Seal	Naked Eye	75	1	Look	No Work	None
22-May-18	4:48:42	Ladd	L19	Harbor Seal	Naked Eye	100	1	Look	No Work	None
22-May-18	7:20:42	Ladd	L20	Harbor Seal	Naked Eye	150	1	Swim	Other	None
22-May-18	9:25:35	Ladd	L21	Harbor Seal	Naked Eye	100	1	Swim	No Work	None
22-May-18	13:22:50	Ladd	L22	Harbor Seal	Naked Eye	300	1	Swim	Anchor Testing	None
22-May-18	15:04:26	Ladd	L23	Harbor Seal	Naked Eye	400	1	Side Scanning	No Work	None
22-May-18	15:21:06	Ladd	L24	Harbor Seal	Naked Eye	800	1	Swim	No Work	None
22-May-18	15:25:26	Ladd	L25	Harbor Seal	Naked Eye	1000	1	Swim	No Work	None
22-May-18	22:25:27	Ladd	L26	Harbor Seal	Naked Eye	50	1	Swim	No Work	None
23-May-18	5:23:25	Ladd	L27	Harbor Seal	Naked Eye	300	1	Other	No Work	None
23-May-18	5:48:11	Tyonek	T9	Harbor Seal	Naked Eye	600	1	Swim	No Work	None
23-May-18	7:27:11	Ladd	L28	Unid Pinniped	Naked Eye	500	1	Other	No Work	None
23-May-18	9:56:31	Ladd	L29	Harbor Seal	Naked Eye	50	1	Swim	Other	None
23-May-18	11:22:43	Ladd	L30	Harbor Seal	Naked Eye	50	1	Swim	Other	None
23-May-18	12:29:40	Ladd	L31	Harbor Seal	Naked Eye	400	1	Other	No Work	None
23-May-18	22:53:10	Ladd	L32	Harbor Seal	Naked Eye	50	1	Swim	Other	None
24-May-18	5:30:46	Ladd	L33	Harbor Seal	Naked Eye	500	1	Swim	No Work	None
24-May-18	8:39:11	Ladd	L34	Harbor Seal	Naked Eye	50	1	Swim	No Work	None
25-May-18	6:16:33	Ladd	L35	Harbor Seal	Naked Eye	300	1	Look	No Work	None
25-May-18	11:57:38	Ladd	L36	Harbor Seal	Naked Eye	300	1	Swim	Other	None
25-May-18	13:26:37	Ladd	L37	Harbor Seal	Ladd-Fujinon7x50	750	1	Swim	No Work	None
25-May-18	14:19:08	Ladd	L38	Harbor Seal	Ladd-Fujinon7x50	600	1	Swim	No Work	None
25-May-18	15:14:53	Ladd	L39	Harbor Seal	Naked Eye	600	1	Swim	No Work	None
25-May-18	16:08:00	Ladd	L40	Harbor Seal	Naked Eye	600	1	Swim	No Work	Clearing
25-May-18	16:47:04	Ladd	L41	Harbor Seal	Naked Eye	500	1	Swim	Anchor Testing	None
25-May-18	16:51:45	Ladd	L42	Harbor Seal	Naked Eye	700	1	Swim	Anchor Testing	None
25-May-18	17:49:32	Ladd	L43	Harbor Seal	Naked Eye	100	1	Swim	Anchor Testing	None
25-May-18	19:38:12	Ladd	L44	Harbor Seal	Naked Eye	50	1	Swim	No Work	None
26-May-18	6:42:44	Ladd	L45	Harbor Seal	Naked Eye	500	1	Look	Other	None
26-May-18	8:55:48	Ladd	L46	Harbor Seal	Naked Eye	100	1	Swim	No Work	None
26-May-18	11:29:58	Ladd	L47	Harbor Seal	Naked Eye	800	1	Swim	No Work	None

26-May-18	15:21:38	Ladd	L49	Harbor Seal	Naked Eye	250	1	Swim	Other	None
26-May-18	16:14:05	Ladd	L48	Harbor Seal	Naked Eye	150	1	Look	Other	None
26-May-18	23:16:56	Ladd	L50	Harbor Seal	Naked Eye	250	1	Look	Other	None
27-May-18	6:12:10	Ladd	L51	Harbor Seal	Naked Eye	100	1	Look	No Work	None
27-May-18	7:45:57	Ladd	L52	Harbor Seal	Naked Eye	10	1	Surface Active	No Work	None
27-May-18	8:36:49	Ladd	L53	Harbor Seal	Naked Eye	200	1	Look	No Work	None
27-May-18	12:18:45	Ladd	L54	Harbor Seal	Naked Eye	100	1	Swim	No Work	None
27-May-18	14:55:13	Ladd	L55	Harbor Seal	Naked Eye	250	1	Look	No Work	None
27-May-18	16:54:55	Ladd	L56	Harbor Seal	Naked Eye	400	1	Look	No Work	None
28-May-18	9:29:33	Ladd	L51a	Harbor Seal	Naked Eye	5	1	Look	No Work	None
28-May-18	17:42:53	Ladd	L52a	Harbor Seal	Naked Eye	300	1	Look	Other	None
29-May-18	6:37:45	Ladd	L53a	Harbor Seal	Naked Eye	125	1	Look	No Work	None
29-May-18	7:14:20	Ladd	L54a	Harbor Seal	Naked Eye	300	1	Look	No Work	None
29-May-18	7:35:21	Ladd	L55a	Harbor Seal	Naked Eye	350	1	Look	No Work	None
29-May-18	8:09:30	Ladd	L56a	Harbor Seal	Naked Eye	500	1	Swim	No Work	None
29-May-18	8:58:49	Ladd	L57	Harbor Seal	Naked Eye	200	1	Rest	No Work	None
29-May-18	9:10:02	Ladd	L59	Harbor Seal	Naked Eye	20	1	Look	No Work	Clearing
29-May-18	9:22:55	Ladd	L58	Harbor Seal	Naked Eye	75	1	Rest	No Work	None
29-May-18	11:53:15	Ladd	L60	Harbor Seal	Naked Eye	300	1	Look	No Work	None
29-May-18	12:13:52	Ladd	L61	Harbor Seal	Naked Eye	350	1	Look	No Work	None
29-May-18	14:21:18	Ladd	L62	Harbor Seal	Naked Eye	200	1	Look	No Work	None
29-May-18	14:29:26	Ladd	L63	Harbor Seal	Naked Eye	300	1	Look	No Work	None
29-May-18	15:06:01	Ladd	L64	Harbor Seal	Naked Eye	200	1	Look	No Work	None
29-May-18	15:59:38	Ladd	L65	Harbor Seal	Naked Eye	60	1	Look	No Work	None
29-May-18	16:38:25	Ladd	L66	Harbor Seal	Naked Eye	400	1	Look	No Work	None
29-May-18	17:16:42	Ladd	L67	Harbor Seal	Naked Eye	250	1	Look	No Work	None
29-May-18	17:41:28	Ladd	L68	Harbor Seal	Naked Eye	100	1	Look	No Work	None
30-May-18	6:10:38	Ladd	L69	Harbor Seal	Naked Eye	500	1	Swim	No Work	None
30-May-18	6:14:28	Ladd	L70	Harbor Seal	Naked Eye	350	1	Look	No Work	None
30-May-18	7:21:12	Ladd	L71	Harbor Seal	Naked Eye	750	1	Swim	No Work	None
30-May-18	7:48:07	Ladd	L72	Harbor Seal	Naked Eye	600	1	Swim	No Work	None
30-May-18	8:09:20	Ladd	L73	Harbor Seal	Naked Eye	250	1	Swim	No Work	None
30-May-18	8:35:16	Ladd	L74	Harbor Seal	Naked Eye	200	1	Swim	No Work	None
30-May-18	9:18:26	Ladd	L75	Harbor Seal	Naked Eye	400	1	Swim	No Work	None
30-May-18	11:25:02	Ladd	L76	Harbor Seal	Naked Eye	75	1	Swim	No Work	None
30-May-18	11:35:56	Ladd	L77	Harbor Seal	Naked Eye	40	1	Look	No Work	None

30-May-18	12:24:52	Ladd	L78	Harbor Seal	Naked Eye	700	1	Swim	No Work	None
30-May-18	12:46:23	Ladd	L79	Harbor Seal	Naked Eye	25	1	Look	No Work	None
30-May-18	12:55:42	Ladd	L80	Harbor Seal	Naked Eye	750	1	Swim	No Work	None
30-May-18	13:49:55	Ladd	L81	Harbor Seal	Naked Eye	50	1	Look	No Work	None
30-May-18	14:08:09	Ladd	L82	Harbor Seal	Naked Eye	200	1	Swim	No Work	None
30-May-18	16:12:49	Ladd	L83	Harbor Seal	Naked Eye	100	1	Look	No Work	None
30-May-18	16:46:56	Ladd	L84	Harbor Seal	Naked Eye	250	1	Look	No Work	None
31-May-18	9:08:18	Ladd	L85	Harbor Seal	Naked Eye	110	1	Look	No Work	None
31-May-18	9:17:09	Ladd	L86	Harbor Seal	Naked Eye	250	1	Look	No Work	None
31-May-18	9:36:06	Ladd	L87	Harbor Seal	Naked Eye	120	1	Look	No Work	None
31-May-18	10:22:27	Ladd	L88	Harbor Seal	Naked Eye	100	1	Look	No Work	None
31-May-18	11:06:24	Ladd	L89	Harbor Seal	Naked Eye	80	1	Look	No Work	None
31-May-18	11:53:32	Ladd	L90	Harbor Seal	Naked Eye	75	1	Look	No Work	None
31-May-18	12:08:22	Ladd	L91	Beluga Whale	Naked Eye	200	2	Travel	No Work	None
31-May-18	13:50:34	Ladd	L92	Harbor Seal	Naked Eye	250	1	Look	No Work	None
31-May-18	15:42:25	Ladd	L93	Harbor Seal	Naked Eye	75	1	Swim	No Work	None
31-May-18	17:20:04	Ladd	L94	Beluga Whale	Naked Eye	3500	3	Travel	No Work	None
31-May-18	17:42:32	Ladd	L95	Beluga Whale	Naked Eye	2500	2	Travel	No Work	None
1-Jun-18	9:43:50	Ladd	L96	Harbor Seal	Naked Eye	60	2	Look	No Work	None
1-Jun-18	12:20:06	Ladd	L97	Harbor Porpoise	Naked Eye	750	2	Travel	No Work	None
1-Jun-18	12:27:44	Ladd	L98	Harbor Seal	Naked Eye	150	1	Look	No Work	None
1-Jun-18	13:00:50	Ladd	L99	Harbor Seal	Naked Eye	200	1	Look	No Work	None
1-Jun-18	15:14:53	Ladd	L100	Harbor Porpoise	Naked Eye	800	1	Swim	No Work	None
1-Jun-18	15:22:31	Ladd	L101	Harbor Seal	Naked Eye	450	1	Look	No Work	None
1-Jun-18	15:48:35	Ladd	L102	Harbor Seal	Naked Eye	1200	1	Swim	No Work	None
2-Jun-18	6:52:45	Ladd	L103	Harbor Seal	Naked Eye	200	1	Rest	No Work	None
2-Jun-18	7:25:24	Ladd	L104	Harbor Seal	Naked Eye	400	1	Swim	No Work	None
2-Jun-18	9:14:03	Ladd	L105	Harbor Seal	Naked Eye	1100	1	Swim	No Work	None
2-Jun-18	12:07:30	Ladd	L106	Harbor Seal	Naked Eye	250	1	Rest	No Work	None
2-Jun-18	14:38:27	Ladd	L107	Harbor Seal	Naked Eye	600	1	Look	No Work	None
2-Jun-18	15:56:18	Ladd	L108	Harbor Seal	Naked Eye	750	1	Look	No Work	None
2-Jun-18	16:14:53	Ladd	L109	Harbor Seal	Naked Eye	500	1	Look	No Work	None
2-Jun-18	17:07:48	Ladd	L110	Harbor Seal	Naked Eye	150	1	Look	No Work	None
2-Jun-18	17:36:24	Ladd	L111	Harbor Seal	Naked Eye	150	1	Rest	No Work	None
3-Jun-18	7:04:53	Ladd	L112	Harbor Seal	Naked Eye	70	1	Look	No Work	None

3-Jun-18	12:51:01	Ladd	L113	Harbor Seal	Naked Eye	100	1	Look	No Work	None
3-Jun-18	14:07:24	Ladd	L114	Harbor Seal	Naked Eye	120	1	Swim	No Work	None
4-Jun-18	7:14:18	Ladd	L115	Harbor Seal	Naked Eye	350	1	Look	No Work	None
4-Jun-18	7:58:01	Ladd	L116	Harbor Seal	Naked Eye	100	1	Look	No Work	None
4-Jun-18	9:52:50	Ladd	L117	Harbor Seal	Naked Eye	120	1	Look	Other	None
4-Jun-18	11:26:06	Ladd	L118	Harbor Seal	Naked Eye	100	1	Look	Other	None
4-Jun-18	12:10:57	Ladd	L119	Harbor Seal	Naked Eye	150	1	Look	No Work	None
4-Jun-18	13:11:01	Ladd	L120	Harbor Seal	Naked Eye	100	1	Look	No Work	None
4-Jun-18	13:24:43	Ladd	L121	Harbor Seal	Naked Eye	400	1	Look	No Work	None
5-Jun-18	8:48:29	Ladd	L122	Harbor Seal	Naked Eye	150	1	Look	No Work	None
5-Jun-18	10:02:06	Ladd	L123	Harbor Seal	Naked Eye	200	1	Look	No Work	None
5-Jun-18	12:28:23	Ladd	L124	Harbor Seal	Naked Eye	350	1	Look	No Work	None
5-Jun-18	13:52:45	Ladd	L125	Harbor Seal	Naked Eye	150	1	Look	No Work	None
5-Jun-18	20:08:10	Ladd	L126	Harbor Seal	Naked Eye	100	1	Look	No Work	None
6-Jun-18	5:03:18	Ladd	L127	Harbor Seal	Naked Eye	75	1	Look	No Work	None
6-Jun-18	5:50:56	Ladd	L128	Harbor Seal	Naked Eye	150	1	Look	No Work	None
6-Jun-18	7:34:43	Ladd	L129	Harbor Seal	Naked Eye	65	1	Swim	Pipeline Pulling	None
6-Jun-18	12:44:16	Ladd	L130	Harbor Seal	Naked Eye	70	1	Swim	Pipeline Pulling	None
6-Jun-18	13:33:24	Ladd	L131	Harbor Seal	Naked Eye	120	1	Look	No Work	None
6-Jun-18	21:32:08	Ladd	L132	Harbor Seal	Naked Eye	100	1	Look	No Work	None
6-Jun-18	22:33:52	Ladd	L133	Harbor Seal	Naked Eye	300	1	Look	No Work	None
7-Jun-18	4:10:18	Ladd	L134	Harbor Seal	Naked Eye	120	1	Swim	No Work	None
7-Jun-18	8:16:49	Ladd	L135	Harbor Seal	Naked Eye	200	1	Look	Other	None
7-Jun-18	10:04:55	Ladd	L136	Harbor Seal	Naked Eye	300	1	Swim	No Work	None
7-Jun-18	13:27:48	Ladd	L137	Harbor Seal	Naked Eye	220	1	Look	Pipeline Pulling	None
7-Jun-18	14:35:28	Ladd	L138	Harbor Seal	Naked Eye	175	1	Swim	No Work	None
7-Jun-18	21:03:26	Ladd	L139	Harbor Seal	Naked Eye	100	1	Look	Anchor Testing	None
7-Jun-18	22:17:17	Ladd	L140	Harbor Seal	Naked Eye	100	1	Rest	No Work	None
8-Jun-18	6:07:30	Ladd	L141	Harbor Seal	Naked Eye	230	1	Look	No Work	None
8-Jun-18	6:45:59	Ladd	L142	Harbor Seal	Naked Eye	500	1	Swim	No Work	None
8-Jun-18	9:29:42	Ladd	L143	Harbor Seal	Naked Eye	50	1	Swim	Pipeline Pulling	None
8-Jun-18	12:37:47	Ladd	L144	Harbor Seal	Naked Eye	170	1	Look	No Work	None
8-Jun-18	13:41:03	Ladd	L146	Harbor Seal	Naked Eye	140	1	Look	No Work	Clearing

8-Jun-18	14:40:23	Ladd	L147	Harbor Seal	Naked Eye	80	1	Swim	Anchor Testing	None
8-Jun-18	22:29:22	Ladd	L148	Harbor Seal	Naked Eye	250	1	Look	Pipeline Pulling	None
9-Jun-18	5:39:01	Ladd	L149	Harbor Seal	Naked Eye	80	1	Look	Other	None
9-Jun-18	9:17:35	Ladd	L150	Harbor Seal	Naked Eye	100	1	Look	No Work	None
9-Jun-18	9:36:52	Ladd	L151	Harbor Seal	Naked Eye	450	1	Look	No Work	None
9-Jun-18	10:37:35	Ladd	L152	Harbor Seal	Naked Eye	75	1	Look	Anchor Testing	None
9-Jun-18	11:41:24	Ladd	L153	Harbor Seal	Naked Eye	200	1	Look	No Work	None
9-Jun-18	14:48:42	Ladd	L154	Harbor Seal	Naked Eye	120	1	Look	No Work	None
9-Jun-18	15:26:34	Ladd	L155	Harbor Seal	Naked Eye	70	1	Swim	Anchor Testing	None
9-Jun-18	17:42:12	Ladd	L156	Harbor Seal	Naked Eye	175	1	Swim	No Work	None
10-Jun-18	7:13:00	Ladd	L157	Beluga Whale	Naked Eye	65	6	Travel	No Work	None
10-Jun-18	7:18:00	Ladd	L158	Beluga Whale	Naked Eye	65	5	Travel	No Work	None
10-Jun-18	8:53:00	Ladd	L159	Harbor Porpoise	Naked Eye	200	3	Travel	No Work	None
10-Jun-18	8:59:00	Ladd	L160	Harbor Seal	Naked Eye	600	1	Look	No Work	None
10-Jun-18	10:00:00	Ladd	L161	Harbor Porpoise	Naked Eye	250	2	Travel	No Work	None
10-Jun-18	14:44:00	Ladd	L162	Harbor Seal	Naked Eye	60	1	Look	No Work	None
10-Jun-18	15:23:00	Ladd	L163	Harbor Seal	Naked Eye	65	1	Swim	No Work	None
10-Jun-18	15:46:00	Ladd	L164	Harbor Seal	Naked Eye	400	1	Look	No Work	None
10-Jun-18	16:17:00	Ladd	L165	Harbor Seal	Naked Eye	600	1	Look	No Work	None
10-Jun-18	20:29:00	Ladd	L166	Harbor Seal	Naked Eye	120	1	Look	No Work	None
11-Jun-18	7:09:00	Ladd	L167	Harbor Seal	Naked Eye	120	1	Look	No Work	None
11-Jun-18	14:24:00	Ladd	L168	Harbor Seal	Naked Eye	200	1	Look	Anchor Testing	None
11-Jun-18	18:12:00	Ladd	L169	Harbor Seal	Naked Eye	225	1	Look	No Work	None
12-Jun-18	4:39:00	Ladd	L170	Harbor Seal	Naked Eye	175	1	Look	Pipeline Pulling	None
12-Jun-18	6:36:00	Ladd	L171	Harbor Seal	Naked Eye	250	1	Dive	Pipeline Pulling	None
12-Jun-18	9:43:00	Ladd	L172	Harbor Seal	Naked Eye	450	1	Look	No Work	None
12-Jun-18	11:15:00	Ladd	L173	Beluga Whale	Naked Eye	175	3	Travel	No Work	None
12-Jun-18	13:55:00	Ladd	L174	Beluga Whale	Naked Eye	1800	5	Travel	Other	None
12-Jun-18	15:23:00	Ladd	L175	Harbor Seal	Naked Eye	200	1	Look	Other	None
12-Jun-18	15:57:00	Ladd	L176	Harbor Seal	Naked Eye	75	1	Look	Other	None
12-Jun-18	16:49:00	Ladd	L177	Harbor Seal	Naked Eye	800	1	Swim	Other	None

12-Jun-18	17:41:00	Ladd	L178	Harbor Seal	Naked Eye	500	1	Look	Other	None
12-Jun-18	23:25:00	Ladd	L179	Beluga Whale	Naked Eye	100	4	Travel	No Work	None
12-Jun-18	12:55:00	Tyonek	T10	Other	Naked Eye	2000	1	Dead	Anchor Testing	None
13-Jun-18	7:32:00	Ladd	L180	Beluga Whale	Naked Eye	70	34	Travel	No Work	None
13-Jun-18	7:49:00	Ladd	L181	Harbor Seal	Naked Eye	350	1	Unknown	No Work	None
13-Jun-18	12:45:00	Ladd	L182	Beluga Whale	Naked Eye	250	9	Feed	No Work	None
13-Jun-18	12:50:00	Ladd	L183	Harbor Seal	Naked Eye	550	1	Look	No Work	None
13-Jun-18	15:05:00	Ladd	L184	Harbor Seal	Naked Eye	60	1	Swim	Anchor Testing	None
13-Jun-18	16:01:00	Ladd	L185	Harbor Seal	Naked Eye	70	1	Look	No Work	None
13-Jun-18	16:12:00	Ladd	L186	Harbor Seal	Naked Eye	150	1	Look	No Work	None
13-Jun-18	16:14:00	Ladd	L187	Beluga Whale	Naked Eye	2500	16	Travel	No Work	None
13-Jun-18	17:22:00	Ladd	L188	Harbor Seal	Naked Eye	125	1	Look	No Work	None
13-Jun-18	17:29:00	Ladd	L189	Harbor Porpoise	Naked Eye	1200	1	Travel	No Work	None
13-Jun-18	17:39:00	Ladd	L190	Beluga Whale	Naked Eye	1900	1	Travel	No Work	None
13-Jun-18	21:29:00	Ladd	L191	Harbor Seal	Naked Eye	75	1	Look	No Work	None
13-Jun-18	23:27:00	Ladd	L192	Beluga Whale	Naked Eye	650	12	Travel	No Work	None
13-Jun-18	12:42:00	Tyonek	T11	Beluga Whale	Naked Eye	6000	8	Swim	No Work	None
13-Jun-18	13:11:00	Tyonek	T11	Beluga Whale	Tyonek - Big Eyes	7500	5	Swim	No Work	None
14-Jun-18	5:33:00	Ladd	L193	Harbor Seal	Naked Eye	200	1	Look	No Work	None
14-Jun-18	6:37:00	Ladd	L194	Harbor Seal	Naked Eye	750	2	Mill	No Work	None
14-Jun-18	11:48:00	Ladd	L195	Harbor Seal	Naked Eye	550	1	Look	No Work	None
14-Jun-18	12:18:00	Ladd	L196	Harbor Porpoise	Naked Eye	450	1	Swim	No Work	None
14-Jun-18	13:15:00	Ladd	L197	Beluga Whale	Naked Eye	300	2	Travel	No Work	Clearing
14-Jun-18	14:39:00	Ladd	L198	Beluga Whale	Naked Eye	125	5	Travel	Other	None
14-Jun-18	14:43:00	Ladd	L199	Harbor Seal	Ladd - Fujinon 7x50	850	1	Look	Other	None
14-Jun-18	23:57:00	Ladd	L200	Beluga Whale	Naked Eye	175	4	Travel	No Work	None
15-Jun-18	6:20:00	Ladd	L201	Harbor Seal	Naked Eye	350	1	Look	No Work	None
15-Jun-18	8:29:00	Ladd	L202	Harbor Seal	Naked Eye	300	1	Travel	Anchor Testing	None
15-Jun-18	14:57:00	Ladd	L203	Harbor Seal	Naked Eye	150	1	Look	No Work	None
15-Jun-18	19:05:00	Ladd	L204	Harbor Seal	Naked Eye	200	1	Look	No Work	None
15-Jun-18	19:21:00	Ladd	L205	Beluga Whale	Naked Eye	150	1	Travel	No Work	None
15-Jun-18	19:33:00	Ladd	L206	Beluga Whale	Naked Eye	150	1	Travel	No Work	None

15-Jun-18	13:15:00	Tyonek	T12	Unid Marine Mammal	Naked Eye	300	1	Swim	No Work	Clearing
16-Jun-18	6:05:00	Ladd	L207	Beluga Whale	Naked Eye	175	6	Travel	No Work	None
16-Jun-18	6:37:00	Ladd	L208	Harbor Seal	Naked Eye	650	1	Swim	No Work	None
16-Jun-18	8:25:00	Ladd	L209	Beluga Whale	Naked Eye	1800	7	Travel	No Work	None
16-Jun-18	8:58:00	Ladd	L210	Beluga Whale	Naked Eye	1200	4	Dive	No Work	None
16-Jun-18	14:02:00	Ladd	L211	Harbor Seal	Naked Eye	70	1	Look	No Work	None
16-Jun-18	15:21:00	Ladd	L212	Harbor Seal	Naked Eye	350	1	Swim	No Work	None
16-Jun-18	17:44:00	Ladd	L213	Beluga Whale	Naked Eye	1000	6	Travel	No Work	None
16-Jun-18	17:51:00	Ladd	L214	Beluga Whale	Naked Eye	1200	12	Travel	No Work	None
16-Jun-18	18:15:00	Ladd	L215	Beluga Whale	Naked Eye	1200	2	Travel	No Work	None
16-Jun-18	18:45:00	Ladd	L216	Harbor Seal	Naked Eye	800	1	Swim	No Work	None
16-Jun-18	20:32:00	Ladd	L217	Beluga Whale	Naked Eye	100	4	Travel	No Work	Clearing
16-Jun-18	20:53:00	Ladd	L218	Harbor Seal	Naked Eye	50	1	Rest	No Work	Clearing
16-Jun-18	21:24:00	Ladd	L219	Beluga Whale	Naked Eye	600	3	Travel	Pipeline Pulling	None
17-Jun-18	7:23:00	Ladd	L220	Beluga Whale	Naked Eye	75	9	Travel	No Work	None
17-Jun-18	7:56:00	Ladd	L221	Harbor Seal	Naked Eye	300	1	Swim	No Work	None
17-Jun-18	9:14:00	Ladd	L222	Beluga Whale	Naked Eye	1500	9	Travel	Anchor Testing	Shut Down
17-Jun-18	9:27:00	Ladd	L223	Beluga Whale	Naked Eye	1200	4	Travel	No Work	Clearing
17-Jun-18	9:37:00	Ladd	L224	Beluga Whale	Naked Eye	1200	11	Travel	No Work	Clearing
17-Jun-18	14:09:00	Ladd	L225	Beluga Whale	Naked Eye	300	7	Swim	No Work	None
17-Jun-18	14:32:00	Ladd	L226	Beluga Whale	Naked Eye	650	1	Travel	No Work	None
17-Jun-18	14:37:00	Ladd	L227	Beluga Whale	Naked Eye	1500	4	Travel	No Work	None
17-Jun-18	15:18:00	Ladd	L228	Beluga Whale	Naked Eye	150	4	Travel	No Work	Clearing
17-Jun-18	15:53:00	Ladd	L229	Harbor Seal	Naked Eye	120	1	Look	No Work	Clearing
17-Jun-18	16:17:00	Ladd	L230	Harbor Seal	Naked Eye	700	1	Look	Anchor Testing	None
17-Jun-18	19:17:00	Ladd	L231	Beluga Whale	Naked Eye	400	3	Travel	No Work	None
17-Jun-18	23:11:00	Ladd	L232	Beluga Whale	Naked Eye	1000	5	Travel	No Work	None
17-Jun-18	15:01:00	Tyonek	T13	Beluga Whale	Tyonek - Big Eyes	10000	2	Swim	No Work	None
17-Jun-18	15:55:00	Tyonek	T14	Beluga Whale	Tyonek - Big Eyes	6000	1	Swim	No Work	Clearing
17-Jun-18	21:14:00	Tyonek	T15	Harbor Seal	Naked Eye	50	1	Swim	No Work	None
18-Jun-18	5:06:00	Ladd	L233	Beluga Whale	Naked Eye	175	3	Travel	No Work	None
18-Jun-18	8:29:00	Ladd	L234	Beluga Whale	Naked Eye	600	9	Dive	No Work	None
18-Jun-18	9:36:00	Ladd	L235	Harbor Seal	Naked Eye	125	1	Look	No Work	None

18-Jun-18	11:49:00	Ladd	L236	Harbor Porpoise	Naked Eye	150	2	Travel	No Work	None
18-Jun-18	13:58:00	Ladd	L237	Harbor Seal	Naked Eye	150	1	Look	No Work	None
18-Jun-18	16:20:00	Ladd	L238	Harbor Seal	Naked Eye	125	1	Look	No Work	None
18-Jun-18	17:55:00	Ladd	L239	Harbor Seal	Naked Eye	100	1	Look	Anchor Testing	None
18-Jun-18	19:25:00	Ladd	L240	Harbor Seal	Naked Eye	100	1	Snorkel	No Work	None
18-Jun-18	19:34:00	Ladd	L241	Beluga Whale	Naked Eye	225	7	Travel	No Work	None
18-Jun-18	19:57:00	Ladd	L242	Beluga Whale	Naked Eye	150	5	Travel	No Work	None
18-Jun-18	21:28:00	Ladd	L243	Harbor Seal	Naked Eye	75	1	Look	No Work	None
18-Jun-18	23:26:00	Ladd	L244	Harbor Seal	Naked Eye	600	2	Look	Pipeline Pulling	None
19-Jun-18	5:12:00	Ladd	L245	Harbor Seal	Naked Eye	125	1	Look	No Work	None
19-Jun-18	6:40:00	Ladd	L246	Harbor Seal	Naked Eye	350	1	Snorkel	No Work	None
19-Jun-18	7:08:00	Ladd	L247	Harbor Seal	Naked Eye	225	2	Mill	No Work	None
19-Jun-18	7:20:00	Ladd	L248	Beluga Whale	Naked Eye	200	3	Travel	No Work	None
19-Jun-18	8:31:00	Ladd	L249	Harbor Seal	Naked Eye	175	1	Look	No Work	None
19-Jun-18	13:14:00	Ladd	L250	Beluga Whale	Naked Eye	450	9	Travel	No Work	None
19-Jun-18	16:16:00	Ladd	L251	Harbor Seal	Naked Eye	65	1	Look	No Work	None
19-Jun-18	16:50:00	Ladd	L252	Beluga Whale	Naked Eye	75	2	Feed	No Work	None
19-Jun-18	16:56:00	Ladd	L253	Beluga Whale	Naked Eye	600	7	Travel	No Work	None
19-Jun-18	18:14:00	Ladd	L254	Beluga Whale	Naked Eye	350	9	Feed	No Work	None
19-Jun-18	18:38:00	Ladd	L255	Harbor Seal	Naked Eye	550	1	Look	No Work	None
19-Jun-18	22:24:00	Ladd	L256	Beluga Whale	Naked Eye	100	2	Travel	No Work	None
19-Jun-18	23:14:00	Ladd	L257	Beluga Whale	Naked Eye	75	2	Feed	No Work	None
19-Jun-18	23:15:00	Ladd	L258	Harbor Seal	Naked Eye	75	1	Look	No Work	None
19-Jun-18	15:52:00	Tyonek	T16	Beluga Whale	Tyonek - Big Eyes	10,000	2	Swim	No Work	None
20-Jun-18	6:01:00	Ladd	L259	Harbor Seal	Naked Eye	55	1	Look	No Work	None
20-Jun-18	6:25:00	Ladd	L260	Beluga Whale	Naked Eye	350	9	Feed	No Work	None
20-Jun-18	9:21:00	Ladd	L261	Beluga Whale	Naked Eye	350	5	Travel	Pipeline Pulling	None
20-Jun-18	11:47:00	Ladd	L262	Harbor Seal	Naked Eye	100	1	Look	Anchor Testing	None
20-Jun-18	12:19:00	Ladd	L263	Humpback Whale	Naked Eye	2400	1	Travel	Anchor Testing	None
20-Jun-18	19:37:00	Ladd	L264	Beluga Whale	Naked Eye	200	5	Feed	Anchor Testing	None
20-Jun-18	20:41:00	Ladd	L265	Harbor Seal	Naked Eye	75	1	Look	No Work	None

20-Jun-18	9:31:00	Tyonek	L261	Beluga Whale	Tyonek - Big Eyes	8500	6	Travel	Pipeline Pulling	None
21-Jun-18	9:52:00	Tyonek	T17	Beluga Whale	Tyonek - Big Eyes	8700	3	Swim	No Work	None
21-Jun-18	13:03:00	Tyonek	T18	Beluga Whale	Tyonek - Big Eyes	7500	8	Swim	No Work	Clearing
21-Jun-18	4:26:00	Ladd	L266	Beluga Whale	Naked Eye	150	1	Travel	No Work	Clearing
21-Jun-18	5:38:00	Ladd	L267	Harbor Seal	Naked Eye	200	1	Look	No Work	Clearing
21-Jun-18	7:32:00	Ladd	L268	Beluga Whale	Naked Eye	175	4	Feed	No Work	Clearing
21-Jun-18	13:23:00	Ladd	L269	Harbor Seal	Naked Eye	300	1	Other	Anchor Testing	None
21-Jun-18	13:56:00	Ladd	L270	Beluga Whale	Naked Eye	450	1	Swim	Anchor Testing	None
22-Jun-18	9:59:00	Ladd	L271	Harbor Seal	Naked Eye	150	1	Look	No Work	None
22-Jun-18	12:08:00	Ladd	L272	Harbor Seal	Naked Eye	200	1	Look	No Work	None
22-Jun-18	17:29:00	Ladd	L273	Harbor Porpoise	Naked Eye	300	1	Travel	No Work	None
22-Jun-18	17:33:00	Ladd	L274	Harbor Seal	Naked Eye	75	1	Look	No Work	None
22-Jun-18	18:25:00	Ladd	L275	Harbor Porpoise	Naked Eye	75	1	Travel	No Work	None
23-Jun-18	8:20:00	Ladd	L276	Harbor Seal	Naked Eye	75	1	Rest	No Work	None
23-Jun-18	10:53:00	Ladd	L277	Harbor Seal	Naked Eye	100	1	Look	No Work	None
23-Jun-18	11:44:00	Ladd	L278	Harbor Seal	Naked Eye	350	1	Travel	No Work	None
24-Jun-18	8:25:00	Ladd	L279	Beluga Whale	Naked Eye	600	6	Travel	No Work	None
24-Jun-18	8:31:00	Ladd	L280	Harbor Seal	Naked Eye	400	1	Look	No Work	None
24-Jun-18	10:06:00	Ladd	L281	Beluga Whale	Naked Eye	175	1	Travel	No Work	None
24-Jun-18	10:35:00	Ladd	L282	Harbor Seal	Naked Eye	75	1	Look	No Work	None
24-Jun-18	11:28:00	Ladd	L283	Beluga Whale	Naked Eye	300	2	Dive	No Work	None
24-Jun-18	11:29:00	Ladd	L284	Harbor Seal	Naked Eye	75	1	Look	No Work	None
24-Jun-18	12:43:00	Ladd	L285	Harbor Seal	Naked Eye	55	1	Snorkel	No Work	None
24-Jun-18	12:44:00	Ladd	L286	Harbor Seal	Naked Eye	175	1	Look	No Work	None
24-Jun-18	12:46:00	Ladd	L287	Harbor Seal	Naked Eye	200	1	Look	No Work	None
24-Jun-18	14:12:00	Ladd	L288	Beluga Whale	Naked Eye	1200	5	Feed	No Work	None
24-Jun-18	14:20:00	Ladd	L289	Harbor Seal	Naked Eye	150	1	Look	No Work	None
24-Jun-18	16:21:00	Ladd	L290	Harbor Porpoise	Naked Eye	250	1	Travel	No Work	None
24-Jun-18	17:28:00	Ladd	L291	Harbor Seal	Naked Eye	75	1	Look	No Work	None
24-Jun-18	19:43:00	Ladd	L292	Beluga Whale	Naked Eye	850	3	Feed	No Work	None
24-Jun-18	14:50:00	Tyonek	T19	Harbor Porpoise	Naked Eye	400	3	Swim	No Work	None

24-Jun-18	15:44:00	Tyonek	T20	Beluga Whale	Tyonek - Big Eyes	3500	1	Swim	No Work	None
24-Jun-18	22:10:00	Tyonek	T21	Harbor Seal	Naked Eye	500	1	Look	No Work	None
25-Jun-18	21:54:00	Tyonek	T22	Beluga Whale	Tyonek - Fujinon 7x50	1000	1	Travel	No Work	None
25-Jun-18	22:33:00	Tyonek	T23	Harbor Seal	Naked Eye	300	1	Rest	No Work	None
25-Jun-18	10:14:00	Ladd	L293	Beluga Whale	Naked Eye	450	6	Travel	No Work	None
25-Jun-18	10:51:00	Ladd	L294	Beluga Whale	Naked Eye	2500	7	Feed	No Work	None
25-Jun-18	14:38:00	Ladd	L295	Beluga Whale	Naked Eye	600	22	Travel	Anchor Testing	None
25-Jun-18	21:43:00	Ladd	L296	Beluga Whale	Naked Eye	800	5	Feed	No Work	None
26-Jun-18	6:08:00	Ladd	L297	Beluga Whale	Naked Eye	75	2	Breach	No Work	None
26-Jun-18	6:55:00	Ladd	L298	Harbor Seal	Naked Eye	60	1	Look	No Work	None
26-Jun-18	11:17:00	Ladd	L299	Beluga Whale	Naked Eye	300	2	Feed	No Work	None
26-Jun-18	11:36:00	Ladd	L300	Harbor Seal	Naked Eye	75	1	Look	No Work	None
26-Jun-18	12:00:00	Ladd	L301	Beluga Whale	Naked Eye	350	14	Feed	No Work	None
26-Jun-18	14:31:00	Ladd	L302	Harbor Seal	Naked Eye	250	1	Swim	No Work	None
26-Jun-18	15:06:00	Ladd	L303	Beluga Whale	Naked Eye	350	5	Travel	No Work	None
26-Jun-18	16:59:00	Ladd	L304	Beluga Whale	Naked Eye	250	3	Travel	No Work	None
26-Jun-18	19:12:00	Ladd	L305	Harbor Seal	Naked Eye	100	1	Look	No Work	None
26-Jun-18	12:54:00	Tyonek	T24	Beluga Whale	Naked Eye	400	3	Swim	No Work	None
26-Jun-18	13:01:00	Tyonek	T25	Beluga Whale	Naked Eye	800	8	Swim	No Work	None
26-Jun-18	14:38:00	Tyonek	T26	Harbor Seal	Tyonek - Big Eyes	3000	1	Look	No Work	None
27-Jun-18	19:52:00	Ladd	L306	Harbor Seal	Naked Eye	300	1	Swim	No Work	None
27-Jun-18	12:04:00	Ladd	L307	Beluga Whale	Naked Eye	200	7	Feed	No Work	None
27-Jun-18	12:38:00	Ladd	L308	Harbor Seal	Naked Eye	450	1	Swim	No Work	None
27-Jun-18	15:37:00	Ladd	L309	Beluga Whale	Naked Eye	400	3	Travel	No Work	None
27-Jun-18	16:23:00	Ladd	L310	Beluga Whale	Naked Eye	350	2	Travel	No Work	None
28-Jun-18	7:38:00	Ladd	L311	Harbor Seal	Naked Eye	80	1	Look	Anchor Testing	None
28-Jun-18	10:58:00	Ladd	L312	Harbor Seal	Naked Eye	50	1	Swim	No Work	None
28-Jun-18	13:03:00	Ladd	L313	Beluga Whale	Naked Eye	500	10	Feed	No Work	None
28-Jun-18	14:00:00	Ladd	L314	Harbor Seal	Naked Eye	60	1	Look	No Work	None
28-Jun-18	15:13:00	Ladd	L315	Harbor Seal	Naked Eye	80	1	Look	No Work	None
28-Jun-18	15:53:00	Ladd	L316	Beluga Whale	Naked Eye	200	6	Travel	No Work	None
28-Jun-18	16:55:00	Ladd	L317	Beluga Whale	Naked Eye	2500	3	Travel	No Work	None
28-Jun-18	17:28:00	Ladd	L318	Harbor Seal	Naked Eye	125	1	Look	No Work	None

28-Jun-18	11:13:00	Tyonek	T27	Harbor Seal	Naked Eye	500	1	Rest	No Work	None
29-Jun-18	13:08:00	Ladd	L319	Beluga Whale	Naked Eye	600	15	Feed	No Work	None
29-Jun-18	13:56:00	Ladd	L320	Harbor Seal	Naked Eye	120	1	Look	No Work	None
29-Jun-18	16:48:00	Ladd	L321	Beluga Whale	Naked Eye	700	7	Travel	No Work	None
29-Jun-18	17:22:00	Ladd	L322	Beluga Whale	Naked Eye	150	4	Travel	No Work	None
29-Jun-18	11:16:00	Tyonek	T28	Beluga Whale	Tyonek - Fujinon 7x50	3000	1	Swim	No Work	None
30-Jun-18	6:05:00	Ladd	L323	Beluga Whale	Naked Eye	350	3	Dive	No Work	None
30-Jun-18	13:48:00	Ladd	L324	Beluga Whale	Naked Eye	500	13	Feed	No Work	Clearing
30-Jun-18	16:09:00	Ladd	L325	Beluga Whale	Naked Eye	350	4	Travel	No Work	None
30-Jun-18	19:22:00	Ladd	L326	Beluga Whale	Naked Eye	1000	12	Travel	No Work	None
1-Jul-18	6:26:00	Ladd	L327	Humpback Whale	Naked Eye	1200	2	Blow	No Work	None
1-Jul-18	7:53:00	Ladd	L328	Beluga Whale	Naked Eye	800	7	Feed	No Work	Clearing
1-Jul-18	12:03:00	Ladd	L329	Harbor Seal	Naked Eye	150	1	Look	Pipeline Pulling	None
1-Jul-18	14:20:00	Ladd	L330	Beluga Whale	Naked Eye	1500	8	Feed	No Work	None
1-Jul-18	19:06:00	Ladd	L331	Beluga Whale	Naked Eye	1200	11	Feed	No Work	None
1-Jul-18	14:20:00	Tyonek	L330	Beluga Whale	Tyonek - Big Eyes	10000	12	Swim	No Work	None
1-Jul-18	15:22:00	Tyonek	T29	Beluga Whale	Naked Eye	400	15	Swim	No Work	Clearing
2-Jul-18	6:36:00	Ladd	L332	Beluga Whale	Naked Eye	600	3	Feed	No Work	None
2-Jul-18	6:45:00	Ladd	L333	Harbor Seal	Naked Eye	1400	1	Look	No Work	None
2-Jul-18	7:47:00	Ladd	L334	Harbor Seal	Naked Eye	125	1	Look	No Work	None
2-Jul-18	11:46:00	Ladd	L335	Beluga Whale	Naked Eye	2000	7	Feed	No Work	None
2-Jul-18	11:58:00	Ladd	L336	Beluga Whale	Naked Eye	1200	5	Feed	No Work	None
2-Jul-18	13:29:00	Ladd	L337	Beluga Whale	Naked Eye	350	12	Feed	No Work	None
2-Jul-18	7:15:00	Tyonek	T30	Beluga Whale	Tyonek - Big Eyes	6000	1	Swim	No Work	None
2-Jul-18	8:29:00	Tyonek	T31	Beluga Whale	Tyonek - Big Eyes	6000	15	Dive	No Work	None
2-Jul-18	9:48:00	Tyonek	T32	Beluga Whale	Naked Eye	2500	12	Swim	No Work	None
2-Jul-18	11:06:00	Tyonek	T33	Beluga Whale	Naked Eye	500	2	Swim	No Work	None
2-Jul-18	14:28:00	Tyonek	L335	Beluga Whale	Tyonek - Big Eyes	8000	12	Swim	No Work	None
3-Jul-18	6:00:00	Ladd	L338	Beluga Whale	Naked Eye	850	4	Feed	No Work	None
3-Jul-18	6:13:00	Ladd	L339	Harbor Seal	Naked Eye	900	2	Look	No Work	None
3-Jul-18	8:15:00	Ladd	L340	Beluga Whale	Naked Eye	450	2	Feed	No Work	None
3-Jul-18	8:42:00	Ladd	L341	Harbor Seal	Naked Eye	800	1	Swim	No Work	None

3-Jul-18	11:36:00	Ladd	L342	Harbor Seal	Naked Eye	150	1	Rest	No Work	None
3-Jul-18	12:52:00	Ladd	L343	Beluga Whale	Naked Eye	2000	14	Feed	No Work	None
3-Jul-18	15:47:00	Ladd	L344	Harbor Seal	Naked Eye	200	1	Look	No Work	None
3-Jul-18	17:39:00	Ladd	L345	Beluga Whale	Naked Eye	1200	9	Travel	No Work	None
3-Jul-18	7:34:00	Tyonek	T34	Beluga Whale	Naked Eye	800	6	Swim	No Work	None
3-Jul-18	10:05:00	Tyonek	T35	Beluga Whale	Tyonek - Big Eyes	2000	8	Swim	No Work	None
3-Jul-18	10:20:00	Tyonek	T36	Beluga Whale	Naked Eye	4000	4	Swim	No Work	None
3-Jul-18	10:30:00	Tyonek	T37	Beluga Whale	Tyonek - Big Eyes	2500	20	Mill	No Work	None
3-Jul-18	11:35:00	Tyonek	T38	Beluga Whale	Tyonek - Big Eyes	4000	2	Swim	No Work	None
4-Jul-18	6:24:00	Ladd	L346	Harbor Seal	Naked Eye	100	1	Swim	No Work	None
4-Jul-18	8:11:00	Ladd	L347	Harbor Seal	Naked Eye	800	1	Swim	No Work	None
4-Jul-18	8:52:00	Ladd	L348	Harbor Seal	Naked Eye	600	1	Swim	No Work	None
4-Jul-18	10:39:00	Ladd	L349	Harbor Seal	Naked Eye	100	1	Look	No Work	None
4-Jul-18	12:20:00	Ladd	L350	Harbor Seal	Naked Eye	50	1	Look	No Work	None
4-Jul-18	17:24:00	Ladd	L351	Harbor Seal	Naked Eye	50	1	Look	No Work	None
4-Jul-18	7:23:00	Tyonek	T39	Beluga Whale	Naked Eye	600	20	Swim	No Work	None
4-Jul-18	7:49:00	Tyonek	T40	Beluga Whale	Naked Eye	700	3	Swim	No Work	None
4-Jul-18	8:10:00	Tyonek	T40	Beluga Whale	Naked Eye	800	4	Mill	No Work	None
4-Jul-18	9:53:00	Tyonek	T41	Beluga Whale	Naked Eye	300	10	Swim	No Work	None
4-Jul-18	10:24:00	Tyonek	T42	Beluga Whale	Naked Eye	1500	12	Swim	No Work	None
4-Jul-18	10:34:00	Tyonek	T43	Beluga Whale	Naked Eye	800	8	Mill	No Work	None
4-Jul-18	10:57:00	Tyonek	T44	Beluga Whale	Naked Eye	500	2	Swim	No Work	None
4-Jul-18	10:59:00	Tyonek	T45	Beluga Whale	Naked Eye	1000	1	Swim	No Work	None
4-Jul-18	11:05:00	Tyonek	T46	Beluga Whale	Naked Eye	2500	4	Swim	No Work	None
4-Jul-18	12:22:00	Tyonek	T47	Beluga Whale	Naked Eye	600	15	Swim	No Work	None
5-Jul-18	8:10:00	Ladd	L352	Harbor Seal	Naked Eye	900	1	Look	No Work	None
5-Jul-18	19:39:00	Ladd	L353	Beluga Whale	Naked Eye	2000	5	Travel	Anchor Testing	None
5-Jul-18	21:03:00	Ladd	L354	Beluga Whale	Naked Eye	3000	3	Travel	No Work	Clearing
5-Jul-18	9:55:00	Tyonek	T48	Beluga Whale	Tyonek - Big Eyes	5000	6	Surface Active	No Work	None
6-Jul-18	7:55:00	Ladd	L355	Harbor Seal	Naked Eye	350	1	Look	Anchor Testing	None
6-Jul-18	8:34:00	Ladd	L356	Harbor Seal	Naked Eye	75	1	Look	No Work	None
6-Jul-18	10:31:00	Ladd	L357	Harbor Seal	Naked Eye	100	1	Look	No Work	None
6-Jul-18	12:24:00	Ladd	L358	Harbor Seal	Naked Eye	75	1	Look	No Work	None

6-Jul-18	15:21:00	Ladd	L359	Harbor Seal	Naked Eye	100	1	Dive	Pipeline Pulling	None
6-Jul-18	17:55:00	Ladd	L360	Harbor Seal	Naked Eye	350	1	Look	No Work	None
6-Jul-18	20:59:00	Ladd	L361	Beluga Whale	Naked Eye	2400	2	Travel	No Work	None
6-Jul-18	21:16:00	Ladd	L362	Beluga Whale	Naked Eye	2000	2	Travel	No Work	Clearing
7-Jul-18	14:17:00	Ladd	L363	Harbor Seal	Naked Eye	75	1	Swim	No Work	Clearing
8-Jul-18	6:24:00	Ladd	L364	Harbor Seal	Naked Eye	80	1	Swim	No Work	None
8-Jul-18	9:43:00	Ladd	L365	Harbor Seal	Naked Eye	100	1	Look	No Work	None
8-Jul-18	9:58:00	Ladd	L366	Harbor Seal	Naked Eye	50	1	Surface Active	No Work	None
8-Jul-18	11:51:00	Ladd	L367	Harbor Seal	Naked Eye	75	1	Surface Active	No Work	None
8-Jul-18	8:28:00	Tyonek	T49	Beluga Whale	Naked Eye	300	1	Swim	No Work	None
9-Jul-18	10:28:00	Ladd	L368	Harbor Seal	Naked Eye	75	1	Look	No Work	None
9-Jul-18	12:19:00	Ladd	L369	Harbor Seal	Naked Eye	90	1	Look	No Work	None
9-Jul-18	13:22:00	Ladd	L370	Beluga Whale	Naked Eye	2200	1	Travel	No Work	None
9-Jul-18	13:24:00	Ladd	L371	Beluga Whale	Naked Eye	1800	8	Feed	No Work	None
9-Jul-18	16:53:00	Ladd	L372	Harbor Seal	Naked Eye	200	1	Look	No Work	None
9-Jul-18	20:27:00	Ladd	L373	Beluga Whale	Naked Eye	150	5	Travel	Pipeline Pulling	None
9-Jul-18	21:55:00	Ladd	L374	Harbor Seal	Naked Eye	75	1	Look	No Work	None
9-Jul-18	17:13:00	Tyonek	T50	Harbor Seal	Naked Eye	400	1	Look	No Work	None
10-Jul-18	6:07:00	Ladd	L375	Harbor Seal	Naked Eye	55	1	Snorkel	No Work	None
10-Jul-18	12:28:00	Ladd	L376	Harbor Seal	Naked Eye	100	1	Look	No Work	None
10-Jul-18	14:45:00	Ladd	L377	Harbor Seal	Naked Eye	120	1	Swim	No Work	None
10-Jul-18	16:20:00	Ladd	L378	Harbor Porpoise	Naked Eye	75	1	Travel	No Work	None
10-Jul-18	16:46:00	Ladd	L379	Harbor Seal	Naked Eye	150	1	Travel	No Work	None
10-Jul-18	16:53:00	Ladd	L380	Beluga Whale	Naked Eye	1600	3	Travel	No Work	None
10-Jul-18	17:12:00	Ladd	L381	Beluga Whale	Naked Eye	1400	9	Travel	No Work	None
10-Jul-18	18:29:00	Ladd	L382	Harbor Porpoise	Naked Eye	350	1	Travel	No Work	None
10-Jul-18	19:17:00	Ladd	L383	Beluga Whale	Naked Eye	2800	4	Travel	No Work	None
10-Jul-18	22:09:00	Ladd	L384	Beluga Whale	Naked Eye	150	1	Travel	No Work	None
10-Jul-18	22:19:00	Ladd	L385	Harbor Porpoise	Naked Eye	100	1	Travel	No Work	None
10-Jul-18	22:26:00	Ladd	L386	Harbor Seal	Naked Eye	100	1	Look	No Work	None
11-Jul-18	10:00:00	Ladd	L387	Harbor Seal	Naked Eye	200	1	Look	No Work	None
11-Jul-18	15:56:00	Ladd	L388	Beluga Whale	Naked Eye	1700	4	Travel	No Work	None
11-Jul-18	17:20:00	Ladd	L389	Beluga Whale	Naked Eye	175	1	Travel	No Work	None

11-Jul-18	22:21:00	Ladd	L390	Harbor Seal	Naked Eye	150	1	Look	No Work	None
12-Jul-18	11:13:00	Ladd	L391	Harbor Seal	Naked Eye	100	1	Look	No Work	None
28-Jul-18	9:37:00	Ladd	L392	Harbor Seal	Naked Eye	100	1	Swim	No Work	None
28-Jul-18	10:53:00	Ladd	L393	Harbor Seal	Naked Eye	800	1	Swim	No Work	None
28-Jul-18	17:21:00	Ladd	L394	Harbor Seal	Naked Eye	100	1	Swim	No Work	None
29-Jul-18	17:17:00	Ladd	L395	Harbor Seal	Naked Eye	100	1	Swim	Anchor Testing	None
30-Jul-18	13:10:00	Ladd	L396	Harbor Seal	Naked Eye	100	1	Look	No Work	None
30-Jul-18	13:13:00	Ladd	L396	Harbor Seal	Naked Eye	200	1	Look	No Work	None
31-Jul-18	8:40:00	Ladd	L397	Harbor Seal	Naked Eye	800	1	Feed	Anchor Testing	None
31-Jul-18	21:00:00	Ladd	L398	Harbor Seal	Naked Eye	800	1	Swim	No Work	None
1-Aug-18	13:38:00	Ladd	L399	Harbor Porpoise	Ladd - Fujinon 7x50	250	1	Travel	No Work	None
5-Aug-18	14:03:00	Ladd	L400	Harbor Porpoise	Naked Eye	25	1	Travel	No Work	None
5-Aug-18	14:32:00	Ladd	L401	Harbor Seal	Naked Eye	25	1	Travel	No Work	None
9-Aug-18	7:05:00	Ladd	L402	Harbor Seal	Naked Eye	50	1	Look	No Work	None
9-Aug-18	10:23:00	Ladd	L403	Harbor Seal	Naked Eye	50	1	Swim	No Work	None
9-Aug-18	21:58:00	Ladd	L404	Harbor Porpoise	Naked Eye	50	2	Travel	No Work	None
10-Aug-18	15:36:00	Ladd	L405	Harbor Seal	Naked Eye	25	1	Swim	No Work	None
11-Aug-18	16:55:00	Ladd	L406	Harbor Seal	Naked Eye	25	1	Swim	No Work	None
11-Aug-18	19:30:00	Ladd	L407	Harbor Seal	Naked Eye	25	1	Swim	No Work	None
12-Aug-18	19:40:00	Ladd	L408	Harbor Seal	Naked Eye	50	1	Swim	No Work	Clearing
14-Aug-18	7:47:00	Ladd	L409	Harbor Seal	Naked Eye	50	1	Swim	No Work	None
14-Aug-18	9:26:00	Ladd	L410	Harbor Porpoise	Naked Eye	25	2	Travel	No Work	None
14-Aug-18	20:44:00	Ladd	L411	Harbor Porpoise	Naked Eye	50	1	Travel	No Work	None
15-Aug-18	14:21:00	Ladd	L412	Beluga Whale	Naked Eye	200	3	Swim	No Work	None
28-Aug-18	16:05:00	Ladd	L413	Beluga Whale	Naked Eye	200	4	Swim	No Work	None
2-Sep-18	12:02:00	Ladd	L414	Harbor Porpoise	Naked Eye	100	2	Travel	No Work	None
2-Sep-18	12:52:00	Ladd	L415	Harbor Seal	Naked Eye	200	1	Swim	No Work	None
2-Sep-18	17:17:00	Ladd	L416	Harbor Seal	Naked Eye	300	1	Swim	No Work	None
2-Sep-18	19:31:00	Ladd	L417	Harbor Seal	Naked Eye	300	1	Swim	No Work	None
3-Sep-18	8:41:00	Ladd	L418	Harbor Seal	Naked Eye	150	1	Swim	Other	None
3-Sep-18	10:25:00	Ladd	L419	Harbor Seal	Naked Eye	150	1	Swim	Other	None

5-Sep-18	18:36:00	Ladd	L420	Harbor Porpoise	Naked Eye	150	1	Swim	No Work	None
6-Sep-18	12:27:00	Ladd	L421	Harbor Seal	Naked Eye	300	1	Swim	No Work	None
9-Sep-18	19:42:00	Ladd	L422	Harbor Seal	Naked Eye	300	1	Swim	Anchor Testing	None
10-Sep-18	18:57:00	Ladd	L423	Harbor Porpoise	Naked Eye	300	2	Swim	No Work	None
10-Sep-18	16:50:00	Tyonek	T51	Harbor Seal	Naked Eye	100	1	Mill	Pipeline Pulling	None
12-Sep-18	13:51:00	Ladd	L424	Harbor Porpoise	Naked Eye	100	1	Swim	No Work	None
12-Sep-18	17:17:00	Ladd	L425	Harbor Porpoise	Naked Eye	100	1	Swim	No Work	None
13-Sep-18	19:38:00	Ladd	L426	Harbor Seal	Naked Eye	200	1	Swim	No Work	None
14-Sep-18	11:43:00	Ladd	L427	Harbor Seal	Naked Eye	200	1	Swim	Anchor Testing	None
14-Sep-18	14:23:00	Ladd	L428	Harbor Seal	Naked Eye	50	1	Look	No Work	None
14-Sep-18	18:03:00	Ladd	L429	Harbor Seal	Naked Eye	150	1	Swim	Anchor Testing	None
15-Sep-18	11:41:00	Ladd	L430	Harbor Porpoise	Naked Eye	50	1	Swim	Other	None

APPENDIX D. STRANDING REPORT

MARINE MAMMAL STRANDING REPORT - LEVEL A DATA

FIELD #: _____ NMFS REGIONAL #: _____ NATIONAL DATABASE#: _____
 (NMFS USE) (NMFS USE)

COMMON NAME: Unknown GENUS: N/A SPECIES: N/A

EXAMINER Name: Cara Hesselbach Affiliation: Fairweather Science

Address: _____ Phone: _____

Stranding Agreement or Authority: _____

<p>LOCATION OF INITIAL OBSERVATION</p> <p>State: <u>Alaska</u> County: <u>N/A</u></p> <p>City: <u>Tyonek Platform</u></p> <p>Body of Water: <u>Cook Inlet</u></p> <p>Locality Details: <u>Sighted floating in the tide line approx. 2000 m from platform</u></p> <p>Lat (DD): <u>61° 04' 33.99600"</u> N Long (DD): <u>151° 57' 1.98000"</u> W</p> <p><input type="checkbox"/> Actual <input checked="" type="checkbox"/> Estimated</p> <p>How Determined: (check ONE)</p> <p><input type="checkbox"/> GPS <input type="checkbox"/> Map <input checked="" type="checkbox"/> Internet/Software</p>	<p>OCURRENCE DETAILS <input type="checkbox"/> Restrand GE# _____</p> <p>Group Event: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO (NMFS Use)</p> <p>If Yes, Type: <input type="checkbox"/> Cow/Calf Pair <input type="checkbox"/> Mass Stranding # Animals: _____ <input type="checkbox"/> Actual <input type="checkbox"/> Estimated</p> <p>Findings of Human Interaction: <input type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> Could Not Be Determined (CBD)</p> <p>If Yes, Choose one or more: <input type="checkbox"/> 1. Boat Collision <input type="checkbox"/> 2. Shot <input type="checkbox"/> 3. Fishery Interaction</p> <p><input type="checkbox"/> 4. Other Human Interaction: _____</p> <p>How Determined (Check one or more): <input type="checkbox"/> External Exam <input type="checkbox"/> Internal Exam <input type="checkbox"/> Necropsy</p> <p><input type="checkbox"/> Other: _____</p> <p>Gear Collected? <input type="checkbox"/> YES <input type="checkbox"/> NO Gear Disposition: _____</p> <p>Other Findings Upon Level A: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> Could Not Be Determined (CBD)</p> <p>If Yes, Choose one or more: <input type="checkbox"/> 1. Illness <input type="checkbox"/> 2. Injury <input type="checkbox"/> 3. Pregnant <input type="checkbox"/> 4. Other: _____</p> <p>How Determined (Check one or more): <input type="checkbox"/> External Exam <input type="checkbox"/> Internal Exam <input type="checkbox"/> Necropsy</p> <p><input type="checkbox"/> Other: _____</p>
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INITIAL OBSERVATION

Date: Year: 2018 Month: 06 Day: 12

First Observed: Beach or Land Floating Swimming

CONDITION AT INITIAL OBSERVATION (Check ONE)

1. Alive 4. Advanced Decomposition

2. Fresh dead 5. Mummified/Skeletal

3. Moderate decomposition 6. Condition Unknown

LEVEL A EXAMINATION Not Able to Examine

Date: Year: _____ Month: _____ Day: _____

CONDITION AT EXAMINATION (Check ONE)

1. Alive 4. Advanced Decomposition

2. Fresh dead 5. Mummified/Skeletal

3. Moderate decomposition 6. Unknown

INITIAL LIVE ANIMAL DISPOSITION (Check one or more)

1. Left at Site 6. Euthanized at Site

2. Immediate Release at Site 7. Transferred to Rehabilitation:

3. Relocated Date: Year: _____ Month: _____ Day: _____
 Facility: _____

4. Disentangled 8. Died during Transport

5. Died at Site 9. Euthanized during Transport

10. Other: _____

CONDITION/DETERMINATION (Check one or more)

1. Sick 7. Location Hazardous

2. Injured a. To animal

3. Out of Habitat b. To public

4. Deemed Releasable 8. Unknown/CBD

5. Abandoned/Orphaned 9. Other _____

6. Inaccessible _____

MORPHOLOGICAL DATA

SEX (Check ONE) **AGE CLASS** (Check ONE)

1. Male 1. Adult 4. Pup/Calf

2. Female 2. Subadult 5. Unknown

3. Unknown 3. Yearling

Whole Carcass Partial Carcass

Straight length: 48 cm in actual estimated

Weight: Not able to determine kg lb actual estimated

PHOTOS/VIDEOS TAKEN: YES NO

Photo/Video Disposition: _____

TAG DATA Tags Were:

Present at Time of Stranding (Pre-existing): YES NO

Applied during Stranding Response: YES NO

ID#	Color	Type	Placement* (Circle ONE)	Applied	Present
_____			D DF L LF LR RF RR	<input type="checkbox"/>	<input type="checkbox"/>
_____			D DF L LF LR RF RR	<input type="checkbox"/>	<input type="checkbox"/>
_____			D DF L LF LR RF RR	<input type="checkbox"/>	<input type="checkbox"/>

* D= Dorsal; DF= Dorsal Fin; L= Lateral Body
 LF= Left Front; LR= Left Rear; RF= Right Front; RR= Right Rear

CARCASS STATUS (Check one or more)

1. Left at Site 4. Towed: Lat _____ Long _____ 7. Landfill

2. Buried 5. Sunk: Lat _____ Long _____ 8. Unknown

3. Rendered 6. Frozen for Later Examination 9. Other Left in water

SPECIMEN DISPOSITION (Check one or more)

1. Scientific collection 2. Educational collection

3. Other: _____

Comments: _____

NECROPSIED NO YES Limited Complete

Carcass Fresh Carcass Frozen/Thawed

NECROPSIED BY: _____

Date: Year: _____ Month: _____ Day: _____

ADDITIONAL REMARKS

ADDITIONAL IDENTIFIER: _____ (If animal is reestranded, please indicate any previous field numbers here)

The carcass was sighted North of the project sight approx. 2000 m floating at the surface with an out going tide. The carcass floated within 1000 m of the platform, but observer was unable to determine any definable traits. Observer was assisted by a nearby tug boat crew. Who upon approach of the carcass described it as approx. 4 feet in length, light to white on the exposed portions above the water surface, dark on the bottom, gelatinous, and appearing to be bloated. No definable appendages or orifices were visible from the surface. 2 photos were taken and are included with this report.

DISCLAIMER

THESE DATA SHOULD NOT BE USED OUT OF CONTEXT OR WITHOUT VERIFICATION. THIS SHOULD BE STRICTLY ENFORCED WHEN REPORTING SIGNS OF HUMAN INTERACTION DATA.

DATA ACCESS FOR LEVEL A DATA

UPON WRITTEN REQUEST, CERTAIN FIELDS OF THE LEVEL A DATA SHEET WILL BE RELEASED TO THE REQUESTOR PROVIDED THAT THE REQUESTOR CREDIT THE STRANDING NETWORK AND THE NATIONAL MARINE FISHERIES SERVICE. THE NATIONAL MARINE FISHERIES SERVICE WILL NOTIFY THE CONTRIBUTING STRANDING NETWORK MEMBERS THAT THESE DATA HAVE BEEN REQUESTED AND THE INTENT OF USE. ALL OTHER DATA WILL BE RELEASED TO THE REQUESTOR PROVIDED THAT THE REQUESTOR OBTAIN PERMISSION FROM THE CONTRIBUTING STRANDING NETWORK AND THE NATIONAL MARINE FISHERIES SERVICE.

PAPERWORK REDUCTION ACT INFORMATION

PUBLIC REPORTING BURDEN FOR THE COLLECTION OF INFORMATION IS ESTIMATED TO AVERAGE 30 MINUTES PER RESPONSE, INCLUDING THE TIME FOR REVIEWING INSTRUCTIONS, SEARCHING EXISTING DATA SOURCES, GATHERING AND MAINTAINING THE DATA NEEDED, AND COMPLETING AND REVIEWING THE COLLECTION OF INFORMATION. SEND COMMENTS REGARDING THIS BURDEN ESTIMATE OR ANY OTHER ASPECT OF THE COLLECTION INFORMATION, INCLUDING SUGGESTIONS FOR REDUCING THE BURDEN TO: CHIEF, MARINE MAMMAL AND SEA TURTLE CONSERVATION DIVISION, OFFICE OF PROTECTED RESOURCES, NOAA FISHERIES, 1315 EAST-WEST HIGHWAY, SILVER SPRING, MARYLAND 20910. NOT WITHSTANDING ANY OTHER PROVISION OF THE LAW, NO PERSON IS REQUIRED TO RESPOND, NOR SHALL ANY PERSON BE SUBJECT TO A PENALTY FOR FAILURE TO COMPLY WITH, A COLLECTION OF INFORMATION SUBJECT TO THE REQUIREMENTS OF THE PAPERWORK REDUCTION ACT, UNLESS THE COLLECTION OF INFORMATION DISPLAYS A CURRENTLY VALID OFFICE OF MANAGEMENT AND BUDGET (OMB) CONTROL NUMBER.





Figure D1. Unidentified Marine Mammal Carcass Observed During the CIPL Project on June 12, 2018

APPENDIX E. EXPOSURE DATA

Date	Time (AKDT)	PSO Site	Sighting Id	Species	Optics Type	Sgt Dist (m)	Group Size	Behavior 1	Vessel Activity	Mitigation Action	Notes
19-May-18	22:58:32	Ladd	L8	Harbor Seal	Naked Eye	100	1	Swimming	Obstruction Removal and Stabilization	None	Surfaced in front and slightly to the S of ladd station - Heading S.
20-May-18	5:43:55	Tyonek	T6	Harbor Seal	Naked Eye	1500	1	Swimming	Obstruction Removal and Stabilization	None	One HS swimming slowly near same area as a raft of birds floating on water. No change in behavior or swim direction. HS ID'd by shape of head and profile in water.
20-May-18	6:09:20	Ladd	L9	Harbor Seal	Naked Eye	100	1	Swimming	Obstruction Removal and Stabilization	None	Harbor Seal surface directly off shore, looked around and then swam parallel to shore in a northerly direction before diving. Identified using Fujinons by head profile, features, and coat color.
25-May-18	16:47:04	Ladd	L41	Harbor Seal	Naked Eye	500	1	Swimming	Anchor Testing	None	HS in SZ, anchor transit in progress, radioed NBarge and Washington, no action needed, confirmed by - both NBarge and Washington. Seal shows no reaction, floating at the surface of the water making repeated dives. Possibly foraging.
25-May-18	16:51:45	Ladd	L42	Harbor Seal	Naked Eye	700	1	Swimming	Anchor Testing	None	Second HS in SZ. Anchor transit in progress. Notified Washington and NBarge, no action needed. - Resighted 16:59 in same location, - looking at operations.
25-May-18	17:49:32	Ladd	L43	Harbor Seal	Naked Eye	100	1	Swimming	Anchor Testing	None	HS Id'd by head profile and coat. Tugs are actively moving anchors. Seal is between barge and post, shows no apparent reaction, floating at the surface, making repeated dives and looking towards land. No action was needed.

Date	Time (AKDT)	PSO Site	Sighting Id	Species	Optics Type	Sgt Dist (m)	Group Size	Behavior 1	Vessel Activity	Mitigation Action	Notes
6-Jun-18	7:34:43	Ladd	L129	Harbor Seal	Naked Eye	65	1	Swimming	Pipeline Pulling	None	HS swimming close to beach and pipe; popped up briefly before diving right over pipe. Niniichik was advised that MM is in SZ but no action needed as operations are already underway. -
6-Jun-18	12:44:16	Ladd	L130	Harbor Seal	Naked Eye	70	1	Swimming	Pipeline Pulling	None	HS swimming parallel to shore, diving as it approached pipe which was being pulled (no action needed)
7-Jun-18	13:27:48	Ladd	L137	Harbor Seal	Naked Eye	220	1	Looking	Pipeline Pulling	None	HS surfaced, bobbed upright, looking around, to shore and vessels, for a few minutes. Then swam south ~50 m before surfacing and watching again -
7-Jun-18	21:03:26	Ladd	L139	Harbor Seal	Naked Eye	100	1	Looking	Anchor Testing	None	HS popped up, looked towards the shore and quickly disappeared -
8-Jun-18	9:29:42	Ladd	L143	Harbor Seal	Naked Eye	50	1	Swimming	Pipeline Pulling	None	HS swimming at the surface to the SE, looking towards the shore -
8-Jun-18	14:40:23	Ladd	L147	Harbor Seal	Naked Eye	80	1	Swimming	Anchor Testing	None	HS surfaced right above pipeline, looked towards shore, then swam south parallel to shoreline, before diving and resurfacing later at 14:54.
8-Jun-18	22:29:22	Ladd	L148	Harbor Seal	Naked Eye	250	1	Looking	Pipeline Pulling	None	HS surfaced, looked around for a few moments and dove S -
9-Jun-18	15:26:34	Ladd	L155	Harbor Seal	Naked Eye	70	1	Swimming	Anchor Testing	None	HS popped up and looked towards shore, then sank down and disappeared.
11-Jun-18	14:24:00	Ladd	L168	Harbor Seal	Naked Eye	200	1	Look	Anchor Testing	None	HS head at surface, looked towards shore, then sank down in place and did not reappear in view. Seal was 1,440m away from the Sand Island (proxy vessel) at time of operations, i.e. within the 2,200m safety zone.
13-Jun-18	15:05:00	Ladd	L184	Harbor Seal	Naked Eye	60	1	Swim	Anchor Testing	None	HS surfaced near shore, at 12 O'clock, and slowly swam to 9 o'clock, parallel to shore, before diving. This HS is small, dark and likely a juvenile, based on its size.

Date	Time (AKDT)	PSO Site	Sighting Id	Species	Optics Type	Sgt Dist (m)	Group Size	Behavior 1	Vessel Activity	Mitigation Action	Notes
20-Jun-18	12:19:00	Ladd	L263	Humpback Whale	Naked Eye	2400	1	Travel	Anchor Testing	None	A tall, bushy blow was seen at 11:30 about 2.3 km away. Three more blows, spaced about 30 seconds apart, along with dark body, at surface were seen. Final dive observed was at 12:24 and revealed dark fluke
31-Jul-18	8:40:00	Ladd	L397	Harbor Seal	Naked Eye	800	1	Feed	Anchor Testing	None	Clearly identifiable Harbor Seal sighted near P2 buoy eating a fish at the surface. Active anchor movement operations underway, however seal did not seem to mind. PSO radioed vessels and notified them of the species and position, and reminded them "no action needed". Seal remained at surface eating for approx. 5 minutes, before diving. Seal resurfaced at 8:50 and swam towards NBarge until it was 250m from NBarge and 550m from shore. Seal dove and resurfaced again at 400m from shore/400m from NBarge. Swam slowly on surface parallel to NBarge at this distance heading N. Dove near P1 and did not resurface in view. In total, seal remained in zone for approx 40 minutes, during the majority of operations.

APPENDIX F. VESSEL ACTIVITY LOGS

2018 Cook Inlet Pipeline Program
 Operation-Specific Activity Log

The table below outlines daily start/stop times for each operational vessel activity for the entire CIPL project duration. Detailed information regarding vessel GPS locations (lat/long) at specific dates and times was recorded via Marine Exchange and is available from Fairweather Science LLC digitally, upon request.

Date	Operation	Start time	End time	Duration (per effort)	Duration (per day)
5/9/2018	Anchor handling	15:09:05	16:18:13	1:09:09	1:09:09
5/10/2018	Anchor handling	10:36:27	11:08:45	0:32:18	0:32:18
5/11/2018	Anchor handling	14:09:15	15:19:59	1:10:44	1:10:44
5/12/2018	Anchor handling	16:31:41	17:29:30	0:57:48	
5/12/2018	Anchor handling	18:09:48	19:51:17	1:41:29	2:39:18
5/13/2018	Anchor handling	19:00:11	21:33:51	2:33:40	2:33:40
5/14/2018	Anchor handling	6:07:16	8:00:18	1:53:02	1:53:02
5/16/2018	Anchor handling	8:05:50	9:30:02	1:24:12	
5/16/2018	Anchor handling	14:57:53	15:54:34	0:56:41	
5/16/2018	Anchor handling	20:44:34	21:13:29	0:28:55	2:49:49
5/17/2018	Anchor handling	15:48:53	16:19:31	0:30:39	
5/17/2018	Anchor handling	21:19:52	22:59:52	1:40:00	2:10:38
5/18/2018	Anchor handling	9:30:43	10:31:08	1:00:25	
5/18/2018	Anchor handling	16:19:43	16:55:15	0:35:32	
5/18/2018	Anchor handling	21:06:05	23:31:18	2:25:13	4:01:10
5/20/2018	Anchor handling	11:23:52	13:01:26	1:37:34	
5/20/2018	Anchor handling	17:44:31	19:16:43	1:32:12	3:09:46
5/21/2018	Anchor handling	11:05:38	11:37:56	0:32:18	0:32:18
5/22/2018	Anchor handling	12:18:58	12:46:08	0:27:09	
5/22/2018	Anchor handling	13:11:06	13:52:29	0:41:23	
5/22/2018	Anchor handling	19:32:16	21:59:10	2:26:54	
5/22/2018	Anchor handling	21:59:10	23:31:16	1:32:06	5:07:32
5/23/2018	Anchor handling	7:59:18	8:43:39	0:44:20	
5/23/2018	Anchor handling	14:11:49	16:30:30	2:18:41	
5/23/2018	Anchor handling	20:43:57	22:30:01	1:46:04	4:49:06
5/24/2018	Anchor handling	13:59:51	16:00:41	2:00:50	2:00:50
5/25/2018	Anchor handling	16:23:33	18:07:39	1:44:06	1:44:06
5/26/2018	Anchor handling	3:55:10	4:37:18	0:42:08	0:42:08
6/7/2018	Anchor handling	20:51:31	21:13:28	0:21:57	0:21:57
6/8/2018	Anchor handling	8:54:00	9:19:15	0:25:15	
6/8/2018	Anchor handling	10:48:54	11:31:14	0:42:21	
6/8/2018	Anchor handling	14:10:31	15:58:40	1:48:09	2:55:45
6/9/2018	Anchor handling	10:33:29	11:03:11	0:29:42	
6/9/2018	Anchor handling	15:08:20	15:49:08	0:40:48	1:10:30
6/10/2018	Anchor handling	11:17:00	11:53:00	0:36:00	
6/10/2018	Anchor handling	16:30:00	17:37:00	1:07:00	1:43:00

2018 Cook Inlet Pipeline Program
 Operation-Specific Activity Log

Date	Operation	Start time	End time	Duration (per effort)	Duration (per day)
6/11/2018	Anchor handling	4:45:00	5:00:00	0:15:00	
6/11/2018	Anchor handling	11:23:00	14:43:00	3:20:00	
6/11/2018	Anchor handling	17:05:00	17:21:00	0:16:00	3:51:00
6/12/2018	Anchor handling	13:26:00	14:00:00	0:34:00	0:34:00
6/14/2018	Anchor handling	19:32:00	20:56:00	1:24:00	1:24:00
6/15/2018	Anchor handling	8:00:00	9:00:00	1:00:00	
6/15/2018	Anchor handling	16:58:00	17:28:00	0:30:00	
6/15/2018	Anchor handling	21:03:00	21:35:00	0:32:00	2:02:00
6/17/2018	Anchor handling	10:49:00	11:31:00	0:42:00	
6/17/2018	Anchor handling	16:13:00	16:27:00	0:14:00	0:56:00
6/18/2018	Anchor handling	10:39:00	10:57:00	0:18:00	
6/18/2018	Anchor handling	17:45:00	18:30:00	0:45:00	1:03:00
6/19/2018	Anchor handling	23:53:00	23:59:00	0:06:00	0:06:00
6/20/2018	Anchor handling	7:10:00	7:35:00	0:25:00	
6/20/2018	Anchor handling	11:39:00	13:06:00	1:27:00	
6/20/2018	Anchor handling	18:49:00	20:31:00	1:42:00	3:34:00
6/21/2018	Anchor handling	13:13:00	14:43:00	1:30:00	
6/21/2018	Anchor handling	20:00:00	21:31:00	1:31:00	3:01:00
6/23/2018	Anchor handling	22:07:00	24:00:00	1:53:00	1:53:00
6/24/2018	Anchor handling	4:52:00	5:02:00	0:10:00	
6/24/2018	Anchor handling	5:56:00	6:09:00	0:13:00	0:23:00
6/25/2018	Anchor handling	14:21:00	14:40:00	0:19:00	
6/25/2018	Anchor handling	18:43:00	19:52:00	1:09:00	1:28:00
6/27/2018	Anchor handling	19:30:00	20:00:00	0:30:00	
6/27/2018	Anchor handling	20:15:00	21:00:00	0:45:00	1:15:00
6/28/2018	Anchor handling	7:25:00	7:50:00	0:25:00	0:25:00
7/1/2018	Anchor handling	9:24:00	10:12:00	0:48:00	
7/1/2018	Anchor handling	15:49:00	17:23:00	1:34:00	2:22:00
7/5/2018	Anchor handling	18:48:00	19:17:00	0:29:00	
7/5/2018	Anchor handling	19:36:00	21:00:00	1:24:00	1:53:00
7/6/2018	Anchor handling	7:28:00	8:31:00	1:03:00	
7/6/2018	Anchor handling	13:16:00	13:28:00	0:12:00	
7/6/2018	Anchor handling	19:10:00	21:00:00	1:50:00	3:05:00
7/7/2018	Anchor handling	4:00:00	4:06:00	0:06:00	
7/7/2018	Anchor handling	8:41:00	8:59:00	0:18:00	
7/7/2018	Anchor handling	15:04:00	15:22:00	0:18:00	0:42:00
7/8/2018	Anchor handling	9:18:00	9:40:00	0:22:00	
7/8/2018	Anchor handling	10:32:00	10:59:00	0:27:00	
7/8/2018	Anchor handling	21:27:00	23:00:00	1:33:00	2:22:00
7/9/2018	Anchor handling	16:19:00	16:28:00	0:09:00	
7/9/2018	Anchor handling	16:35:00	16:47:00	0:12:00	0:21:00

2018 Cook Inlet Pipeline Program
 Operation-Specific Activity Log

Date	Operation	Start time	End time	Duration (per effort)	Duration (per day)
7/10/2018	Anchor handling	4:06:00	4:55:00	0:49:00	0:49:00
7/11/2018	Anchor handling	5:34:00	6:11:00	0:37:00	
7/11/2018	Anchor handling	12:42:00	12:43:00	0:01:00	0:38:00
7/12/2018	Anchor handling	7:07:00	8:32:00	1:25:00	
7/12/2018	Anchor handling	13:27:00	14:16:00	0:49:00	2:14:00
7/13/2018	Anchor handling	6:50:00	8:06:00	1:16:00	
7/13/2018	Anchor handling	14:10:00	14:58:00	0:48:00	2:04:00
7/14/2018	Anchor handling	14:52:00	15:15:00	0:23:00	
7/14/2018	Anchor handling	15:54:00	16:13:00	0:19:00	
7/14/2018	Anchor handling	20:43:00	20:52:00	0:09:00	0:51:00
7/15/2018	Anchor handling	15:24:00	16:51:00	1:27:00	1:27:00
7/17/2018	Anchor handling	10:07:00	11:05:00	0:58:00	
7/17/2018	Anchor handling	23:06:00	23:44:00	0:38:00	1:36:00
7/18/2018	Anchor handling	5:59:00	6:04:00	0:05:00	
7/18/2018	Anchor handling	12:23:00	13:00:00	0:37:00	
7/18/2018	Anchor handling	18:11:00	18:45:00	0:34:00	1:16:00
7/19/2018	Anchor handling	7:01:00	7:36:00	0:35:00	0:35:00
7/20/2018	Anchor handling	13:04:00	13:10:00	0:06:00	
7/20/2018	Anchor handling	14:35:00	14:39:00	0:04:00	0:10:00
7/22/2018	Anchor handling	9:57:00	11:20:00	1:23:00	
7/22/2018	Anchor handling	15:46:00	16:56:00	1:10:00	
7/22/2018	Anchor handling	22:12:00	23:23:00	1:11:00	3:44:00
7/23/2018	Anchor handling	4:39:00	4:49:00	0:10:00	0:10:00
7/25/2018	Anchor handling	18:16:00	19:55:00	1:39:00	1:39:00
7/26/2018	Anchor handling	5:49:00	7:24:00	1:35:00	1:35:00
7/29/2018	Anchor handling	14:45:00	18:00:00	3:15:00	
7/29/2018	Anchor handling	19:24:00	20:30:00	1:06:00	4:21:00
7/30/2018	Anchor handling	8:47:00	9:30:00	0:43:00	
7/30/2018	Anchor handling	11:00:00	11:24:00	0:24:00	
7/30/2018	Anchor handling	20:45:00	21:59:00	1:14:00	2:21:00
7/31/2018	Anchor handling	8:35:00	9:35:00	1:00:00	
7/31/2018	Anchor handling	22:14:00	22:45:00	0:31:00	1:31:00
8/1/2018	Anchor handling	16:48:00	16:59:00	0:11:00	
8/1/2018	Anchor handling	21:56:00	22:56:00	1:00:00	1:11:00
8/2/2018	Anchor handling	5:14:00	5:34:00	0:20:00	
8/2/2018	Anchor handling	17:44:00	17:52:00	0:08:00	
8/2/2018	Anchor handling	17:58:00	18:10:00	0:12:00	0:40:00
8/3/2018	Anchor handling	6:10:00	6:31:00	0:21:00	
8/3/2018	Anchor handling	6:40:00	6:55:00	0:15:00	
8/3/2018	Anchor handling	7:01:00	7:15:00	0:14:00	
8/3/2018	Anchor handling	12:00:00	13:29:00	1:29:00	2:19:00

2018 Cook Inlet Pipeline Program
 Operation-Specific Activity Log

Date	Operation	Start time	End time	Duration (per effort)	Duration (per day)
8/4/2018	Anchor handling	13:00:00	13:43:00	0:43:00	
8/4/2018	Anchor handling	19:35:00	20:59:00	1:24:00	2:07:00
8/5/2018	Anchor handling	7:32:00	7:52:00	0:20:00	
8/5/2018	Anchor handling	8:14:00	8:38:00	0:24:00	0:44:00
8/6/2018	Anchor handling	14:00:00	14:12:00	0:12:00	
8/6/2018	Anchor handling	14:24:00	14:32:00	0:08:00	
8/6/2018	Anchor handling	14:39:00	14:47:00	0:08:00	0:28:00
8/7/2018	Anchor handling	14:50:00	15:02:00	0:12:00	
8/7/2018	Anchor handling	15:07:00	15:16:00	0:09:00	
8/7/2018	Anchor handling	15:29:00	15:39:00	0:10:00	
8/7/2018	Anchor handling	15:45:00	15:59:00	0:14:00	
8/7/2018	Anchor handling	21:42:00	22:50:00	1:08:00	1:53:00
8/8/2018	Anchor handling	11:16:00	11:52:00	0:36:00	
8/8/2018	Anchor handling	16:53:00	17:57:00	1:04:00	1:40:00
8/9/2018	Anchor handling	5:00:00	5:39:00	0:39:00	
8/9/2018	Anchor handling	11:57:00	14:00:00	2:03:00	2:42:00
8/10/2018	Anchor handling	19:08:00	20:40:00	1:32:00	1:32:00
8/11/2018	Anchor handling	7:25:00	8:20:00	0:55:00	
8/11/2018	Anchor handling	14:35:00	15:24:00	0:49:00	1:44:00
8/12/2018	Anchor handling	8:00:00	8:54:00	0:54:00	
8/12/2018	Anchor handling	15:08:00	16:01:00	0:53:00	1:47:00
8/14/2018	Anchor handling	9:52:00	10:55:00	1:03:00	
8/14/2018	Anchor handling	16:19:00	17:16:00	0:57:00	2:00:00
8/15/2018	Anchor handling	5:30:00	5:43:00	0:13:00	
8/15/2018	Anchor handling	17:03:00	18:18:00	1:15:00	1:28:00
8/16/2018	Anchor handling	11:45:00	11:53:00	0:08:00	0:08:00
8/17/2018	Anchor handling	12:01:00	12:12:00	0:11:00	
8/17/2018	Anchor handling	12:26:00	12:48:00	0:22:00	
8/17/2018	Anchor handling	12:52:00	13:14:00	0:22:00	
8/17/2018	Anchor handling	19:15:00	19:34:00	0:19:00	1:14:00
8/18/2018	Anchor handling	12:38:00	13:44:00	1:06:00	1:06:00
8/19/2018	Anchor handling	8:11:00	8:27:00	0:16:00	0:16:00
8/20/2018	Anchor handling	8:55:00	9:13:00	0:18:00	
8/20/2018	Anchor handling	9:17:00	9:37:00	0:20:00	
8/20/2018	Anchor handling	9:44:00	10:22:00	0:38:00	
8/20/2018	Anchor handling	15:27:00	15:40:00	0:13:00	
8/20/2018	Anchor handling	15:56:00	16:09:00	0:13:00	
8/20/2018	Anchor handling	21:00:00	22:01:00	1:01:00	2:43:00
8/21/2018	Anchor handling	10:25:00	11:43:00	1:18:00	
8/21/2018	Anchor handling	16:46:00	16:58:00	0:12:00	
8/21/2018	Anchor handling	17:11:00	17:22:00	0:11:00	1:41:00

2018 Cook Inlet Pipeline Program
 Operation-Specific Activity Log

Date	Operation	Start time	End time	Duration (per effort)	Duration (per day)
8/22/2018	Anchor handling	11:06:00	12:27:00	1:21:00	
8/22/2018	Anchor handling	14:00:00	14:56:00	0:56:00	
8/22/2018	Anchor handling	17:30:00	18:36:00	1:06:00	3:23:00
8/23/2018	Anchor handling	5:45:00	6:28:00	0:43:00	
8/23/2018	Anchor handling	12:27:00	13:00:00	0:33:00	1:16:00
8/24/2018	Anchor handling	7:29:00	7:50:00	0:21:00	
8/24/2018	Anchor handling	8:13:00	8:37:00	0:24:00	
8/24/2018	Anchor handling	13:58:00	14:52:00	0:54:00	
8/24/2018	Anchor handling	18:41:00	19:55:00	1:14:00	2:53:00
8/25/2018	Anchor handling	6:45:00	7:45:00	1:00:00	
8/25/2018	Anchor handling	13:15:00	14:23:00	1:08:00	
8/25/2018	Anchor handling	14:36:00	14:53:00	0:17:00	
8/25/2018	Anchor handling	19:52:00	21:08:00	1:16:00	3:41:00
8/27/2018	Anchor handling	19:59:00	22:00:00	2:01:00	2:01:00
8/28/2018	Anchor handling	8:30:00	9:03:00	0:33:00	
8/28/2018	Anchor handling	14:55:00	15:14:00	0:19:00	
8/28/2018	Anchor handling	15:27:00	15:40:00	0:13:00	
8/28/2018	Anchor handling	15:51:00	16:04:00	0:13:00	
8/28/2018	Anchor handling	16:16:00	16:30:00	0:14:00	
8/28/2018	Anchor handling	21:35:00	22:00:00	0:25:00	1:57:00
8/29/2018	Anchor handling	15:35:00	15:48:00	0:13:00	
8/29/2018	Anchor handling	16:00:00	16:14:00	0:14:00	
8/29/2018	Anchor handling	16:24:00	16:35:00	0:11:00	
8/29/2018	Anchor handling	16:46:00	16:52:00	0:06:00	
8/29/2018	Anchor handling	21:54:00	22:00:00	0:06:00	0:50:00
8/31/2018	Anchor handling	17:00:00	17:15:00	0:15:00	
8/31/2018	Anchor handling	17:26:00	17:42:00	0:16:00	
8/31/2018	Anchor handling	18:00:00	19:00:00	1:00:00	1:31:00
9/1/2018	Anchor handling	6:17:00	7:00:00	0:43:00	
9/1/2018	Anchor handling	10:12:00	11:08:00	0:56:00	
9/1/2018	Anchor handling	13:30:00	14:10:00	0:40:00	
9/1/2018	Anchor handling	17:30:00	18:57:00	1:27:00	3:46:00
9/2/2018	Anchor handling	18:44:00	20:30:00	1:46:00	1:46:00
9/3/2018	Anchor handling	7:39:00	8:20:00	0:41:00	
9/3/2018	Anchor handling	11:55:00	13:35:00	1:40:00	2:21:00
9/5/2018	Anchor handling	9:43:00	10:28:00	0:45:00	
9/5/2018	Anchor handling	15:32:00	16:53:00	1:21:00	2:06:00
9/6/2018	Anchor handling	17:01:00	17:57:00	0:56:00	0:56:00
9/8/2018	Anchor handling	6:30:00	6:54:00	0:24:00	
9/8/2018	Anchor handling	12:59:00	14:33:00	1:34:00	1:58:00
9/9/2018	Anchor handling	6:45:00	7:39:00	0:54:00	

2018 Cook Inlet Pipeline Program
 Operation-Specific Activity Log

Date	Operation	Start time	End time	Duration (per effort)	Duration (per day)
9/9/2018	Anchor handling	13:18:00	15:04:00	1:46:00	
9/9/2018	Anchor handling	19:16:00	21:00:00	1:44:00	4:24:00
9/10/2018	Anchor handling	7:16:00	8:34:00	1:18:00	
9/10/2018	Anchor handling	14:21:00	15:04:00	0:43:00	2:01:00
9/11/2018	Anchor handling	7:52:00	8:39:00	0:47:00	
9/11/2018	Anchor handling	8:48:00	9:16:00	0:28:00	1:15:00
9/14/2018	Anchor handling	10:16:00	10:53:00	0:37:00	
9/14/2018	Anchor handling	11:07:00	13:30:00	2:23:00	
9/14/2018	Anchor handling	16:36:00	17:08:00	0:32:00	
9/14/2018	Anchor handling	17:24:00	20:00:00	2:36:00	6:08:00
9/15/2018	Anchor handling	10:00:00	11:30:00	1:30:00	1:30:00
6/5/2018	Pipeline pulling	17:07:42	17:31:29	0:23:47	0:23:47
6/6/2018	Pipeline pulling	6:55:30	7:50:42	0:55:13	
6/6/2018	Pipeline pulling	12:09:59	12:58:55	0:48:56	1:44:09
6/7/2018	Pipeline pulling	13:00:18	14:18:02	1:17:44	1:17:44
6/8/2018	Pipeline pulling	8:00:08	8:54:00	0:53:52	
6/8/2018	Pipeline pulling	9:19:15	9:58:21	0:39:07	
6/8/2018	Pipeline pulling	20:47:22	22:50:35	2:03:13	3:36:12
6/10/2018	Pipeline pulling	22:59:00	23:59:00	1:00:00	1:00:00
6/11/2018	Pipeline pulling	23:41:00	24:00:00	0:19:00	0:19:00
6/12/2018	Pipeline pulling	4:15:00	5:24:00	1:09:00	
6/12/2018	Pipeline pulling	5:40:00	7:58:00	2:18:00	3:27:00
6/14/2018	Pipeline pulling	15:09:00	18:57:00	3:48:00	3:48:00
6/15/2018	Pipeline pulling	9:57:00	11:10:00	1:13:00	1:13:00
6/16/2018	Pipeline pulling	21:30:00	23:00:00	1:30:00	1:30:00
6/17/2018	Pipeline pulling	4:00:00	5:42:00	1:42:00	
6/17/2018	Pipeline pulling	10:00:00	10:10:00	0:10:00	
6/17/2018	Pipeline pulling	16:48:00	16:50:00	0:02:00	
6/17/2018	Pipeline pulling	21:46:00	22:04:00	0:18:00	2:12:00
6/18/2018	Pipeline pulling	22:26:00	23:31:00	1:05:00	1:05:00
6/20/2018	Pipeline pulling	8:04:00	9:54:00	1:50:00	
6/20/2018	Pipeline pulling	13:06:00	13:22:00	0:16:00	
6/20/2018	Pipeline pulling	14:05:00	15:22:00	1:17:00	3:23:00
6/21/2018	Pipeline pulling	7:46:00	8:29:00	0:43:00	
6/21/2018	Pipeline pulling	9:29:00	9:51:00	0:22:00	
6/21/2018	Pipeline pulling	10:11:00	10:33:00	0:22:00	
6/21/2018	Pipeline pulling	14:43:00	15:14:00	0:31:00	1:58:00
6/22/2018	Pipeline pulling	14:40:00	15:07:00	0:27:00	0:27:00
6/25/2018	Pipeline pulling	12:39:00	13:43:00	1:04:00	1:04:00
6/28/2018	Pipeline pulling	8:36:00	8:42:00	0:06:00	0:06:00
6/29/2018	Pipeline pulling	8:04:00	8:36:00	0:32:00	

2018 Cook Inlet Pipeline Program
 Operation-Specific Activity Log

Date	Operation	Start time	End time	Duration (per effort)	Duration (per day)
6/29/2018	Pipeline pulling	8:57:00	9:04:00	0:07:00	
6/29/2018	Pipeline pulling	9:18:00	9:25:00	0:07:00	0:46:00
6/30/2018	Pipeline pulling	7:36:00	8:43:00	1:07:00	
6/30/2018	Pipeline pulling	14:33:00	15:53:00	1:20:00	
6/30/2018	Pipeline pulling	18:27:00	18:34:00	0:07:00	
6/30/2018	Pipeline pulling	20:36:00	22:50:00	2:14:00	4:48:00
7/1/2018	Pipeline pulling	8:11:00	8:54:00	0:43:00	
7/1/2018	Pipeline pulling	10:59:00	12:04:00	1:05:00	1:48:00
7/5/2018	Pipeline pulling	22:00:00	23:33:00	1:33:00	1:33:00
7/6/2018	Pipeline pulling	14:00:00	15:30:00	1:30:00	
7/6/2018	Pipeline pulling	22:30:00	24:00:00	1:30:00	3:00:00
7/7/2018	Pipeline pulling	16:25:00	18:00:00	1:35:00	
7/7/2018	Pipeline pulling	21:30:00	23:13:00	1:43:00	3:18:00
7/8/2018	Pipeline pulling	7:50:00	8:00:00	0:10:00	0:10:00
7/9/2018	Pipeline pulling	19:35:00	21:37:00	2:02:00	
7/9/2018	Pipeline pulling	23:32:00	24:00:00	0:28:00	2:30:00
7/11/2018	Pipeline pulling	6:46:00	7:37:00	0:51:00	
7/11/2018	Pipeline pulling	23:40:00	24:00:00	0:20:00	1:11:00
7/13/2018	Pipeline pulling	9:04:00	11:50:00	2:46:00	
7/13/2018	Pipeline pulling	15:08:00	16:35:00	1:27:00	
7/13/2018	Pipeline pulling	19:13:00	19:51:00	0:38:00	4:51:00
7/14/2018	Pipeline pulling	10:58:00	11:50:00	0:52:00	
7/14/2018	Pipeline pulling	12:51:00	13:39:00	0:48:00	
7/14/2018	Pipeline pulling	14:00:00	14:15:00	0:15:00	1:55:00
7/31/2018	Pipeline pulling	17:34:00	17:39:00	0:05:00	
7/31/2018	Pipeline pulling	18:23:00	18:31:00	0:08:00	0:13:00
8/1/2018	Pipeline pulling	19:33:00	21:56:00	2:23:00	2:23:00
8/2/2018	Pipeline pulling	20:15:00	22:22:00	2:07:00	2:07:00
8/3/2018	Pipeline pulling	22:15:00	23:00:00	0:45:00	0:45:00
8/4/2018	Pipeline pulling	10:21:00	10:57:00	0:36:00	0:36:00
8/6/2018	Pipeline pulling	22:42:00	23:00:00	0:18:00	0:18:00
8/7/2018	Pipeline pulling	16:32:00	16:59:00	0:27:00	
8/7/2018	Pipeline pulling	17:20:00	17:45:00	0:25:00	
8/7/2018	Pipeline pulling	17:56:00	18:06:00	0:10:00	
8/7/2018	Pipeline pulling	18:46:00	20:02:00	1:16:00	2:18:00
8/8/2018	Pipeline pulling	22:00:00	22:45:00	0:45:00	0:45:00
8/9/2018	Pipeline pulling	11:30:00	11:57:00	0:27:00	0:27:00
8/10/2018	Pipeline pulling	13:30:00	14:05:00	0:35:00	
8/10/2018	Pipeline pulling	16:00:00	18:14:00	2:14:00	2:49:00
8/11/2018	Pipeline pulling	5:00:00	6:09:00	1:09:00	
8/11/2018	Pipeline pulling	6:35:00	7:10:00	0:35:00	1:44:00

2018 Cook Inlet Pipeline Program
 Operation-Specific Activity Log

Date	Operation	Start time	End time	Duration (per effort)	Duration (per day)
8/12/2018	Pipeline pulling	16:30:00	18:06:00	1:36:00	
8/12/2018	Pipeline pulling	20:00:00	20:30:00	0:30:00	2:06:00
8/14/2018	Pipeline pulling	15:30:00	16:19:00	0:49:00	
8/14/2018	Pipeline pulling	17:30:00	18:54:00	1:24:00	2:13:00
8/15/2018	Pipeline pulling	7:16:00	8:00:00	0:44:00	
8/15/2018	Pipeline pulling	11:48:00	13:28:00	1:40:00	2:24:00
8/18/2018	Pipeline pulling	11:02:00	12:27:00	1:25:00	
8/18/2018	Pipeline pulling	14:12:00	14:27:00	0:15:00	
8/18/2018	Pipeline pulling	16:30:00	16:33:00	0:03:00	1:43:00
8/20/2018	Pipeline pulling	5:45:00	6:40:00	0:55:00	
8/20/2018	Pipeline pulling	11:23:00	12:42:00	1:19:00	
8/20/2018	Pipeline pulling	18:51:00	19:20:00	0:29:00	2:43:00
8/21/2018	Pipeline pulling	17:45:00	18:24:00	0:39:00	
8/21/2018	Pipeline pulling	18:54:00	20:34:00	1:40:00	
8/21/2018	Pipeline pulling	21:48:00	22:00:00	0:12:00	2:31:00
8/23/2018	Pipeline pulling	13:16:00	13:28:00	0:12:00	
8/23/2018	Pipeline pulling	13:40:00	15:17:00	1:37:00	
8/23/2018	Pipeline pulling	15:50:00	16:01:00	0:11:00	2:00:00
8/28/2018	Pipeline pulling	7:42:00	8:20:00	0:38:00	
8/28/2018	Pipeline pulling	9:15:00	9:39:00	0:24:00	1:02:00
8/29/2018	Pipeline pulling	9:27:00	11:51:00	2:24:00	2:24:00
8/31/2018	Pipeline pulling	11:04:00	12:46:00	1:42:00	
8/31/2018	Pipeline pulling	13:26:00	14:02:00	0:36:00	2:18:00
9/1/2018	Pipeline pulling	21:00:00	22:00:00	1:00:00	1:00:00
9/4/2018	Pipeline pulling	15:04:00	15:26:00	0:22:00	
9/4/2018	Pipeline pulling	16:20:00	16:53:00	0:33:00	0:55:00
9/5/2018	Pipeline pulling	12:52:00	14:15:00	1:23:00	1:23:00
9/7/2018	Pipeline pulling	12:58:00	13:59:00	1:01:00	
9/7/2018	Pipeline pulling	17:13:00	17:50:00	0:37:00	
9/7/2018	Pipeline pulling	18:23:00	18:45:00	0:22:00	
9/7/2018	Pipeline pulling	19:09:00	19:46:00	0:37:00	2:37:00
9/9/2018	Pipeline pulling	21:13:00	21:30:00	0:17:00	0:17:00
9/10/2018	Pipeline pulling	16:32:00	18:00:00	1:28:00	1:28:00
9/11/2018	Pipeline pulling	15:50:00	16:23:00	0:33:00	0:33:00
5/20/2018	Obstruction removal	4:28:44	7:32:04	3:03:20	
5/20/2018	Obstruction removal	10:33:06	11:23:52	0:50:47	3:54:07
5/21/2018	Obstruction removal	18:36:01	20:00:40	1:24:38	1:24:38
5/22/2018	Obstruction removal	21:59:10	23:31:16	1:32:06	1:32:06

2018 Cook Inlet Pipeline Program
 Operation-Specific Activity Log

Date	Operation	Start time	End time	Duration (per effort)	Duration (per day)
5/13/2018	Other	5:00:21	5:55:03	0:54:42	
5/13/2018	Other	12:00:13	12:47:12	0:46:59	
5/13/2018	Other	17:30:08	17:50:29	0:20:22	2:02:03
5/14/2018	Other	5:45:16	6:07:16	0:22:00	
5/14/2018	Other	13:01:14	13:30:26	0:29:12	0:51:12
5/22/2018	Other	7:12:18	9:31:13	2:18:55	2:18:55
5/23/2018	Other	9:09:28	12:00:34	2:51:06	
5/23/2018	Other	16:30:30	17:00:29	0:29:59	
5/23/2018	Other	22:30:01	23:30:59	1:00:58	4:22:03
5/24/2018	Other	4:30:53	5:01:55	0:31:02	
5/24/2018	Other	10:00:13	11:31:40	1:31:27	
5/24/2018	Other	16:00:41	16:30:00	0:29:19	2:31:48
5/25/2018	Other	9:30:03	12:37:34	3:07:30	3:07:30
5/26/2018	Other	5:01:15	5:30:35	0:29:20	
5/26/2018	Other	6:21:37	7:02:12	0:40:35	
5/26/2018	Other	15:00:53	23:29:49	8:28:56	9:38:51
5/27/2018	Other	11:00:25	18:01:33	7:01:08	7:01:08
6/4/2018	Other	9:00:16	11:30:03	2:29:46	2:29:46
6/5/2018	Other	6:50:42	7:32:23	0:41:41	
6/5/2018	Other	10:02:15	11:00:20	0:58:05	
6/5/2018	Other	23:30:01	24:00:00	0:29:59	2:09:45
6/6/2018	Other	8:31:34	9:00:01	0:28:27	
6/6/2018	Other	19:57:54	21:00:14	1:02:21	1:30:48
6/7/2018	Other	8:01:40	9:30:19	1:28:38	1:28:38
6/9/2018	Other	4:17:57	5:47:46	1:29:48	1:29:48
6/12/2018	Other	14:00:00	18:30:00	4:30:00	4:30:00
7/19/2018	Other	4:00:00	4:45:00	0:45:00	0:45:00
7/31/2018	Other	16:12:00	17:20:00	1:08:00	1:08:00
9/3/2018	Other	8:20:00	11:55:00	3:35:00	3:35:00
9/15/2018	Other	11:30:00	12:00:00	0:30:00	0:30:00