APPENDIX S

STELLER SEA LION TECHNICAL REPORT

JUNEAU ACCESS IMPROVEMENTS
SUPPLEMENTAL DRAFT
ENVIRONMENTAL IMPACT STATEMENT

STATE PROJECT NUMBER: 71100
FEDERAL PROJECT NUMBER: STP-000S (131)

Prepared for

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ACRONYMS AND ABBREVIATIONS

ADF&G	Alaska Department of Fish and Game
AMHS	Alaska Marine Highway System
CFR	Code of Federal Regulations
dBA	A-weighted decibel scale
DEIS	Draft Environmental Impact Statement
DOT&PF	(Alaska) Department of Transportation & Public Facilities
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FHWA	Federal Highway Administration
FVF	fast vehicle ferry
FR	Federal Register
ips	inches per second
kHz	kilohertz
$L_{(eq)}$	equivalent noise level
$L_{eq(h)}$	peak-hour equivalent noise level
MMPA	Marine Mammal Protection Act
N	North
NAC	Noise Abatement Criteria
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NPS	National Park Service
SDEIS	Supplemental Draft Environmental Impact Statement
U.S.	United States
U.S.C.	United States Code
USEPA	United States Environmental Protection Agency
W	West

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EXECUTIVE SUMMARY

The Marine Mammal Protection Act (MMPA) of 1972 (16 United States Code [U.S.C.] 1361 *et seq*.), as amended, gives management and regulatory authority for Steller sea lions (*Eumetopias jubatus*) to the National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS). The eastern stock of Steller sea lions, including the animals in Lynn Canal, are listed as "threatened" under the Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531 *et seq.*). In contrast to the dramatic decline of the western stock of Steller sea lions, the population of the eastern stock has been increasing or remaining stable over the past 20 years. Only one site within the Juneau Access Improvements Project area, the Gran Point haulout, has been designated as a Steller sea lion Critical Habitat Area (Title 50 Code of Federal Regulations [CFR], Chapter 226.202).

The *1997 Draft Juneau Access Improvements Environmental Impact Statement (DEIS)* described periodic observations by resource agency personnel indicating that Steller sea lions use the Gran Point haulout for most of the year except from mid-summer to perhaps late fall. The DEIS proposed mitigation measures that included long-term monitoring of the Gran Point and Met Point haulouts and construction only during periods when sea lions were not present. The 1997 DEIS concluded that these measures would avoid construction disturbance and that the proposed project would not have adverse impacts on sea lions or their critical habitat. As required under Section 7 of the ESA, Alaska Department of Transportation and Public Facilities (DOT&PF) sent a letter to NMFS in August 1998 containing a biological assessment and requesting concurrence with the conclusion that the project would not be likely to adversely affect Steller sea lions. NMFS responded (Attachment A) that it would concur with a finding of no adverse impact if DOT&PF agreed to expand the haulout monitoring program and ensure that construction would cease immediately within the Gran Point Critical Habitat Area if sea lions were present at the haulout. DOT&PF did not formally respond to NMFS Section 7 letter because the EIS process was delayed for reasons not related to sea lions.

In anticipation of the need for monitoring data when the EIS process was reinitiated, DOT&PF conducted two haulout monitoring studies. The first survey was completed between July 1998 and January 1999 and consisted of observations of Gran Point, Met Point, and Point Saint Mary by pilots from a commercial commuter flight between Juneau and Skagway. These overflight surveys were reinitiated between December 2003 and September 2004. The second study was initiated at the end of 2002 and involved installation of a remote video camera system at Gran Point. These surveys indicated that attendance at Met Point was similar to that at Gran Point. In 2003, sea lions were only absent from the haulouts from mid-July to the last week in August. In 2004, sea lions were present at Gran Point everyday of the year except for one week in mid-August and a few other scattered days. Although the timing and numbers of sea lions using the haulouts are likely to vary from year to year, the video camera data indicates that many sea lions were typically present during most of the year. Sea lions are also known to congregate in areas where there are spring spawning aggregations of herring and eulachon (e.g., Berners Bay, see Figure 2).

The 1997 DEIS described three alternative alignments through the Gran Point Critical Habitat Area, including two tunneling options and one highway trenching option (excavating the highway into the hillside without opening up the downhill side). When the EIS process was reinitiated in 2003, only the trench alignment was retained for consideration. DOT&PF now has better survey data (e.g., more accurate contour mapping data, bald eagle surveys, and Steller sea lion monitoring), so highway alignments were refined to minimize impacts to resources. Because of this additional information, DOT&PF is reassessing the potential impacts of the proposed project on sea lions. This document is intended to update and build on the information presented in the 1997 DEIS.

The following analysis uses the same disturbance factors considered in the 1997 DEIS but includes updated traffic forecasts and new noise analysis data. Construction activities would cause a short-term increase in noise levels above background levels. The actual construction schedule and measures to mitigate impacts to Steller sea lions at Gran and Met Points would be determined through close coordination with NMFS through the Section 7 process. Highway traffic is not expected to substantially increase background noise levels.

The highway design includes several structural elements, including steep rock-cut embankments and concrete walls designed to minimize pedestrian access to the traditional haulouts at Gran and Met Points. Large rock outcrops and steep forested terrain between the haulout and the highway would also inhibit pedestrian access. It is likely that the combination of highway barriers and natural terrain features would effectively prohibit pedestrian access to the haulout area. If through monitoring it were determined that these barriers were not sufficient, further measures would be implemented.

No direct effects to Steller sea lions would occur under Alternatives 1, 3, 4A, 4B, 4C, and 4D. Potential direct effects would occur under Alternatives 2, 2A, 2B, and 2C because an East Lynn Canal Highway would pass close to the Gran Point and Met Point haulouts. The actual amount of disturbance caused during construction and use of this highway would depend on the types of mitigation measures required by NMFS under ESA Section 7 consultation. Section 7 consultation will be reinitiated on the basis of this Supplemental DEIS. DOT&PF is committed to working with NMFS to protect Steller sea lions from adverse impacts of the proposed project.

1.0 PROJECT DESCRIPTION AND ALTERNATIVES

1.1 Project Purpose and Need

The purpose of and need for the Juneau Access Improvements Project is to provide improved surface transportation to and from Juneau within the Lynn Canal corridor that will:

- Provide the capacity to meet the transportation demand in the corridor
- Provide flexibility and improve opportunity for travel
- Reduce travel time between Lynn Canal communities
- Reduce state costs for transportation in the corridor
- Reduce user costs for transportation in the corridor

1.2 Project Description

Lynn Canal, located approximately 25 miles north of Juneau, is the waterway that connects Juneau with the cities of Haines and Skagway via the Alaska Marine Highway System (AMHS). At present there is no roadway connecting these three cities. The Glacier Highway originates in Juneau and ends at Echo Cove, approximately 40.5 miles to the northwest.

As required by the National Environmental Policy Act (NEPA), the Supplemental Draft Environmental Impact Statement (SDEIS) for the Juneau Access Improvements Project considers the following reasonable alternatives:

Alternative 1 – No Action Alternative – The No Action Alternative includes a continuation of mainline AMHS service in Lynn Canal as well as the operation of the fast vehicle ferry (FVF) *M/V Fairweather* between Auke Bay and Haines and Auke Bay and Skagway. The *M/V Aurora* would provide shuttle service between Haines and Skagway, beginning as early as 2005.

Alternative 2 (Preferred) – East Lynn Canal Highway with Katzehin Ferry Terminal – This alternative would construct a 68.5-mile-long highway from the end of Glacier Highway at the Echo Cove boat launch area around Berners Bay to Skagway. A ferry terminal would be constructed north of the Katzehin River delta, and operation of the *M/V Aurora* would change to shuttle service between Katzehin and the Lutak Ferry Terminal in Haines. Mainline ferry service would end at Auke Bay, and the existing Haines/Skagway shuttle service would be discontinued. The *M/V Fairweather* would be redeployed on other AMHS routes.

Alternative 2A – East Lynn Canal Highway with Berners Bay Shuttles – This alternative would construct a 5.2-mile highway from the end of Glacier Highway at Echo Cove to Sawmill Cove in Berners Bay. Ferry terminals would be constructed at both Sawmill Cove and Slate Cove, and shuttle ferries would operate between the two terminals. A 52.9-mile highway would be constructed between Slate Cove and Skagway. A ferry terminal would be constructed north of the Katzehin River delta, and the *M/V Aurora* would operate between the Katzehin and the Lutak Ferry Terminals. Mainline ferry service would end at Auke Bay, and the existing Haines/Skagway shuttle service would be discontinued. The *M/V Fairweather* would be redeployed on other AMHS routes.

Alternative 2B – East Lynn Canal Highway to Katzehin with Shuttles to Haines and Skagway – This alternative would construct a 50.5-mile highway from the end of Glacier Highway at Echo Cove around Berners Bay to Katzehin, construct a ferry terminal at the end of the new highway, and run shuttle ferries to both Skagway and Haines from the Katzehin Ferry Terminal. The Haines to Skagway shuttle service would continue to operate, two new shuttle

ferries would be constructed, and the *M/V Aurora* would be part of the three-vessel system. Mainline AMHS service would end at Auke Bay. The *M/V Fairweather* would be redeployed on other AMHS routes.

Alternative 2C – East Lynn Canal Highway with Haines/Skagway Shuttle – This alternative would construct a 68.5-mile highway from the end of Glacier Highway at Echo Cove around Berners Bay to Skagway with the same design features as Alternative 2. The *M/V Aurora* would continue to provide service to Haines. No ferry terminal would be constructed at Katzehin. Mainline ferry service would end at Auke Bay, and the *M/V Fairweather* would be redeployed on other AMHS routes.

Alternative 3 – West Lynn Canal Highway – This alternative would extend the Glacier Highway 5.2 miles from Echo Cove to Sawmill Cove in Berners Bay. Ferry terminals would be constructed at Sawmill Cove and William Henry Bay on the west shore of Lynn Canal, and shuttle ferries would operate between the two terminals. A 38.9-mile highway would be constructed between William Henry Bay and Haines with a bridge across the Chilkat River/Inlet connecting to Mud Bay Road. The *M/V Aurora* would continue to operate as a shuttle between Haines and Skagway. Mainline ferry service would end at Auke Bay, and the *M/V Fairweather* would be redeployed on other AMHS routes.

Alternatives 4A through 4D – Marine Options – The four marine alternatives would construct new shuttle ferries to operate in addition to continued mainline service in Lynn Canal. All of the alternatives would include a minimum of two mainline vessel round trips per week, year-round, and continuation of the Haines/Skagway shuttle service provided by the *M/V Aurora*. The *M/V Fairweather* would no longer operate in Lynn Canal. All of these alternatives would require construction of a new double stern berth at Auke Bay.

Alternative 4A – FVF Shuttle Service from Auke Bay – This alternative would construct two FVFs to provide daily summer service from Auke Bay to Haines/Skagway.

Alternative 4B – FVF Shuttle Service from Berners Bay – This alternative would extend the Glacier Highway 5.2 miles from Echo Cove to Sawmill Cove in Berners Bay, where a new ferry terminal would be constructed. Two FVFs would be constructed to provide daily service from Sawmill Cove to Haines/Skagway in the summer and from Auke Bay to Haines/Skagway in the winter.

Alternative 4C – Conventional Monohull Shuttle Service from Auke Bay – This alternative would construct two conventional monohull vessels to provide daily summer service from Auke Bay to Haines/Skagway. In winter, shuttle service to Haines and Skagway would be provided on alternate days.

Alternative 4D – Conventional Monohull Shuttle Service from Berners Bay – This alternative would extend the Glacier Highway 5.2 miles from Echo Cove to Sawmill Cove in Berners Bay, where a ferry terminal would be constructed. Two conventional monohull vessels would be constructed to provide daily service from Sawmill Cove to Haines/Skagway in the summer and alternating day service from Auke Bay to Haines/Skagway in the winter.

2.0 STUDIES AND COORDINATION

2.1 1997 Draft Environmental Impact Statement and Endangered Species Act Section 7 Consultation

Prior to the development of the *1997 Juneau Access Improvements Draft Environmental Impact Statement (DEIS)*, scoping documents identified the need for research on Steller sea lion's use of haulouts in the project area, including the Gran Point Critical Habitat Area and Met Point. Since that time, investigations have focused on documenting the intensity of haulout use throughout the year in an attempt to ascertain whether there are particular time periods when sea lions are not present. Such information could be factored into the construction schedule of the East Lynn Canal Highway alternatives to reduce disturbance impacts on the sea lions. Initial efforts consisted of opportunistic sightings by Alaska Department of Fish and Game (ADF&G) and project personnel during reconnaissance work in 1994 and by an AMHS ferry in transit between Juneau and Skagway. These observations indicated that sea lions stopped using the haulout in early July and did not return until fall or early winter.

This information was presented in the 1997 DEIS with a tentative plan to construct sections of the highway near Gran Point and Met Point over a three-year period. The following mitigation measures were included to minimize impacts on sea lions:

- Initiate multi-year monitoring study to provide additional information on year-round sea lion use of Gran Point and Met Point haulouts if the East Lynn Canal Highway were selected as the preferred alternative;
- Maintain as large a distance and vegetation buffer between the highway and the haulouts as possible;
- Limit road construction within the Gran Point Critical Habitat Area to times when sea lions were not present at the haulout unless authorized by National Marine Fisheries Service (NMFS); and
- Install signage and fencing along the highway near Gran Point and Met Point to discourage pedestrian disturbance of sea lions, if deemed necessary.

The 1997 DEIS concluded that these measures would avoid construction disturbance and that overall impacts to sea lions would not adversely affect their chances of recovery or adversely modify their critical habitat. Alaska Department of Transportation and Public Facilities (DOT&PF) sent a letter to NMFS in August 1998 requesting concurrence with the conclusion that the project would not be likely to adversely affect Steller sea lions (Attachment A).

NMFS responded (Attachment A) that it would concur with a finding of no adverse impact if DOT&PF agreed to follow the mitigation measures described in the 1997 DEIS and the following 3 conditions:

- No boat launches or structures that enhance boat access will be constructed anywhere along the East Lynn Canal Highway;
- Expand year-round monitoring at Gran Point and Met Point to include an assessment of human behavior around the haulouts. This study is to be conducted for a period of at least three years after the highway is constructed and should focus on whether access from the highway is causing disturbance to sea lions. If human disturbance is documented, additional mitigation measures will be required; and

- Employ independent observers during construction to ensure that sea lions are not present at the Gran Point haulout. If sea lions are present at any time during construction in the Gran Point Critical Habitat Area, all work must cease and NMFS must be consulted before any further construction proceeds.

2.2 Steller Sea Lion Surveys 1998 to Present

DOT&PF did not formally respond to these additional requirements from NMFS in 1998 because the Environmental Impact Statement (EIS) process was put on hold for other reasons. However, realizing that year-round monitoring data would be needed whenever the EIS process was reinitiated, DOT&PF funded two haulout surveys. The first survey was conducted between July 1998 and January 1999 and consisted of observations by pilots from a commercial commuter flight between Juneau and Skagway. These observations were made once a day, except for days when visibility was poor, and recorded presence or absence of sea lions at the Point Saint Mary, Met Point, and Gran Point haulouts. No sea lions were present at any of the haulouts until August 23, 1998 when sea lions were observed at Met Point. Sea lions were observed at Met Point about half of the days until mid-September. After this, sea lions were observed at Met Point everyday for the rest of the year. At Gran Point, the first sea lions were observed on September 27, 1998 and were observed everyday after that until the end of the survey. No sea lions were observed at Point Saint Mary during these overflights. Overflight surveys of Gran Point and Met Point were reinitiated in December 2003 and continued through September 2004. These data indicate that ”many” sea lions were observed at one or both sites almost everyday until about mid-August and then again by the end of August, and at least in some years, sea lions are not absent from the haulouts for any extended period. The Met Point site was not used as consistently or as long into the summer as the Gran Point haulout.

DOT&PF contracted with SeeMore Wildlife Systems in 2002, under permit from NMFS, to install a remote-control video camera system at the Gran Point haulout site. Images are transmitted to Haines where they are digitized and uploaded to an internet site. DOT&PF project personnel have been recording the presence or absence of sea lions daily since January 2003 and continue to monitor through the present. NMFS also has access to the video stream and has been recording its own set of data.

The results of the video camera monitoring are summarized in Table 1. Except for very stormy days, sea lions were present at the Gran Point haulout every day throughout the winter and spring months, often with over 100 sea lions visible at a time. In 2003, the numbers of sea lions present at the haulout began to decline in early July. By the middle of July, sea lions stopped using the haulout. A few sea lions began hauling out at Gran Point again during the last week in August of 2003 and by mid-September over 100 sea lions were present at the haulout daily. In 2004, the camera results were consistent with the overflight surveys and found that sea lions were present at Gran Point on a daily basis throughout the summer, with the exception of one week in mid-August and a few scattered days when no sea lions were ovserved. By the beginning of September 2004 there were over 100 sea lions counted everyday.

During periods of high use, sea lions also haulout on smaller rocks to the north and south within 400 yards of the main haulout. Starting in early July, the numbers of sea lions present at the haulout began to decline. By the middle of July, sea lions stopped using the haulout. A few sea lions began hauling out at Gran Point again during the last week in August and by mid-September over 100 sea lions were present at the haulout daily. Based on aerial observations, sea lions use the haulout area at Point Saint Mary and the point of rocks on the east side of Slate Cove, as well as numerous other rocks in the vicinity, in the spring as they move south to Berners Bay during the eulachon run, and again as they return north after the run.

The feeding ecology of Steller sea lions has also been the subject of a great deal of research, especially in relation to the decline of the western stock versus the simultaneous increase in the eastern stock of Steller sea lions. Recent investigations indicate that sea lions in the Lynn Canal area are strongly attracted to spring spawning aggregations of Pacific herring (*Clupea pallasi*) and eulachon (*Thaleichthys pacificus*) (Marston *et al*., 2002; Womble *et al*., 2003). Haulouts close to forage fish spawning areas, such as Berners Bay and Chilkoot Inlet, may be especially important for sea lions as they store energy for the energetically expensive breeding season (Womble *et al*., 2003). Although eulachon are energy-rich, they are poor sources of certain nutrients that are essential for proper pup development (Schaufler and Vollenweider, 2003). The availability of other forage species, including herring, walleye pollock, Pacific cod, and sand lance, are also likely to play important roles in the selection of haulout sites by sea lions.

2.3 Supplemental DEIS

The 1997 DEIS described three alternative alignments through the Gran Point Critical Habitat Area, including two tunneling options and one with the highway running through a deep, steep-sided trench near the designated haulout (i.e., excavating the road into the hillside without opening up the downhill side). When the EIS process was reinitiated in 2003, only the trench alignment was retained for consideration. In addition, DOT&PF used new survey data (e.g., more accurate contour mapping data, bald eagle surveys, and Steller sea lion video camera monitoring) to adjust the highway alignment and minimize impacts to resources. For these reasons, DOT&PF is reassessing the potential impacts of the proposed project on sea lions. This document is intended to update and build on the information presented in the 1997 DEIS. The following analysis uses the same disturbance factors considered in the 1997 DEIS but includes new traffic predictions and noise analysis data.

Table 1
Summary Of Steller Sea Lion Monitoring At Gran Point
Haulout With Remote Video Camera System

Date	System Status	Sea Lion Presence	Notes
12/23/2002 – 1/20/2003	Intermittent	Present when system functional	System startup difficulties
1/21/2003 – 1/24/2003	System functional	No sea lions present	Very stormy weather, high seas
1/25/2003 – 2/01/2003	Intermittent	Present when system functional	
2/02/2003 – 2/18/2003	System functional	Few to many sea lions present	
2/19/2003	System functional	No sea lions present	Strong northerly wind
2/20/2003 – 7/06/2003	System mostly functional	Many sea lions present daily	Occasional short-term system failure
7/07/2003 – 7/15/2003	System functional	Decreasing numbers of sea lions present	
7/16/2003 – 7/18/2003	System functional	No sea lions present	
7/19/2003 – 7/20/2003	System functional	Few to many sea lions present	
7/21/2003 – 8/23/2003	System mostly functional	No sea lions present	Occasional short-term system failure
8/24/2003 – 9/01/2003	System mostly functional	Few sea lions present most days	Occasional short-term system failure
9/02/2003 – 9/12/2003	System functional	No sea lions present	
9/13/2003 – 12/10/2003	System mostly functional	Many sea lions present daily	
12/10-200. – 01/26/2004	System mostly not functional	Present when system functional	
1/27/2004 – 08/06/2004	System functional	Many sea lions present daily	Camera maintenance trip to haulout on 08/06/2004
08/07/2004 – 08/13/2004	System functional	No sea lions present	
08/14/2004 – 08/31/2004	System functional	Few to many sea lions present most days	
09/01/2004 – 09/30/2004	System functional	Many sea lions present daily	

Source: Information summarized by URS Corporation from Gran Point Video Camera Monitoring Log (2002 - 2004) provided by DOT&PF.

3.0 AFFECTED ENVIRONMENT

3.1 Life History

The Steller sea lion (*Eumetopias jubatus*), also found in the literature as Steller's sea lion and northern sea lion, is the largest member of the eared seals (Family Otariidae). Sea lions are strongly dimorphic, meaning that mature males and females look very different. Females weigh up to 600 pounds and reach 7 feet in length, while males can reach 2,000 pounds and reach 10.5 feet in length (Burt and Grossenheider, 1976). Steller sea lions have a highly polygamous mating system, with males fighting each other for territories that attract many females. Pupping and breeding occur in rookeries on remote islands, rocks, and reefs. In southeast Alaska, rookeries are located in Gulf of Alaska waters and are not found in the Lynn Canal area.

Sea lions also use sites known as "haulouts" for resting between feeding forays or during seasonal movements. Some of the haulouts are occupied almost year-round, while others are used seasonally or sporadically. Haulouts are usually in remote and exposed areas and can include rock shelves, ledges, and boulder, cobble, gravel, or sand beaches. All ages and both sexes haul out in large aggregations during the non-breeding season.

There appears to be an east-west seasonal movement of Steller sea lions in southeastern Alaska waters. Work by Calkins and Pitcher (1982) suggests that, "(T)here appears to be a shift from inside waters in the winter to more exposed, outside waters in the summer breeding season." Immature animals tend to disperse farther than adults, but as they approach breeding age, they have a propensity to stay in the general vicinity of the breeding islands and, as a general rule, return to their island of birth to breed as adults (Raum-Suryan *et al*., 2002).

Population assessment for Steller sea lions has been achieved primarily by aerial surveys and on-land pup counts at rookeries and certain haulout sites. In contrast to the precipitous decline of the western stock during the past 20 years, the eastern stock has been stable or increasing in most parts of its range. Current estimates place the eastern stock abundance at 30,453 sea lions, which is considered a minimum estimate because there was no correction for animals that may have been at sea during the surveys (Angliss and Lodge, 2002). In just the southeast Alaska part of the range, it is estimated that the Steller sea lion population increased by an average of 5.9 percent per year from 1979 to 1997, based on counts of pups at the three rookeries in the region (Calkins *et al*., 1999). Counts of non-pup sea lions at the three rookeries and ten haulout sites showed an overall increase of 29.3 percent from 1990 to 2000, or an average annual increase of 1.9 percent (Sease *et al*., 2001). For southeast Alaska, surveys in 1998 and 2000 yielded a minimum estimate of 12,417 non-pups and 4,257 pups for a total of 16,674 sea lions (Angliss and Lodge, 2002).

3.2 Distribution Within Lynn Canal

Traditional haulouts in the Lynn Canal project area include Gran Point, Met Point, and Point Saint Mary near the mouth of Berners Bay (Figures 1 through 4). The Gran Point and Met Point haulouts are used consistently through most of the year, while Point Saint Mary is used occasionally.

Surveys for spawning aggregations of eulachon and herring have been aided by the presence of predators such as gulls, eagles, and sea lions. Large numbers of sea lions have been associated with these aggregations in Berners Bay (Marston *et al*., 2002; Womble *et al*., 2003). Smaller numbers of sea lions have been seen near the Katzehin River as well as William Henry Bay and the Endicott River on the west side of Lynn Canal (Figure 1).

3.3 Legal Protections and Management Authority

Steller sea lions are under the management jurisdiction of NMFS Protected Resources Division, as established by the Marine Mammal Protection Act (MMPA) of 1972 (16 United States Code [U.S.C.] 1361 *et seq*.), as amended through 1996. In November 1990, NMFS listed Steller sea lions as "threatened" range-wide under the United States (U.S.) Endangered Species Act (ESA) (55 Federal Register [FR] 49204) in response to a population decrease of 50 to 60 percent during the previous 10 to 15-year period. Only one stock of Steller sea lions was recognized in Alaskan waters prior to 1997, when it was split into two separate stocks based on differences in genetics, morphology, and population trends (Bickham *et al*., 1996; Loughlin, 1997). The eastern stock, including all sea lions in the Juneau Access Improvements Project area, occurs east of 144° W longitude (approximately at Cape Suckling) from southeast Alaska southward to California. The western stock occurs westward of Cape Suckling to Russia and Japan, including the Bering Sea. The western stock was listed as "endangered" in June 1997 (62 FR 24345). The eastern stock remains classified as threatened. There has been no documented exchange of breeding animals between the eastern and western stocks (Raum-Suryan *et al*., 2002).

Critical habitat for Steller sea lions was designated in 1993 (50 CFR 226.202) and consists of major rookeries and haulouts (as well as key foraging areas in the Gulf of Alaska and Bering Sea). In the Juneau Access Improvements Project area, only one haulout site, Gran Point (59° 08.0' N latitude, 135° 14.5' W longitude), is designated as Critical Habitat (Figure 4). In southeast Alaska, Critical Habitat includes all the land and water within a 3,000-foot radius of a listed latitude and longitude. Critical Habitat designation does not automatically preclude particular activities, such as highway construction or commercial fishing, but it defines areas that are important to the continued survival and recovery of ESA-listed species. The ESA (Section 7) requires the responsible agency, in this case NMFS, to assess whether proposed activities in the range of ESA-listed species would jeopardize the continued existence or recovery of the species or adversely modify its critical habitat. These assessments are made for all federally funded or managed activities that might impact the listed species, including the Juneau Access Improvements Project.

The MMPA regulates the conduct of people, including pedestrians and people on marine vessels, around marine mammals, including Steller sea lions. The MMPA prohibits the "take" of all marine mammal species in U.S. waters. Take means, "to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill." Harassment is defined as, "any act of pursuit, torment, or annoyance which has the potential to injure a marine mammal or marine mammal stock in the wild; or has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to migration, breathing, nursing, breeding, feeding, sheltering." NMFS has developed a guide that is available at the following website, http://www.fakr.noaa.gov/protectedresources/mmviewingguide.html, and is intended to help people avoid violating this law.

It recommends that people remain at least 300 feet away from marine mammals and limit the time they spend watching a given animal to 30 minutes or less. While these guidelines are only suggestions, NMFS believes that, in most cases, following these guidelines will avoid taking marine mammals, including harassment (67 FR 4379).

4.0 ENVIRONMENTAL IMPACTS

This section contains the direct effects analysis for potential impacts to Steller sea lions. The key issue in regard to direct impacts of the proposed project on Steller sea lions is disturbance, especially at the Gran Point Critical Habitat Area and Met Point haulout. Disturbance could be the result of noise, unexpected visual movements, ground shaking (from blasting activity and heavy equipment), or the presence of people. Reactions of Steller sea lions to various sources of disturbance range from mild interest and vocalizations to immediate departure from the area (Hoover, 1988). Reactions can also vary depending upon the time of year (Johnson *et al*., 1990) and the sex/age of the animal (Calkins *et al*., 1999).

The ability of an animal to detect a sound depends on many factors, including the amount of noise there is in the background. Higher levels of background noise tend to mask or obscure other sounds. The ability of sea lions to detect and potentially respond to highway construction and traffic noises will thus depend in part on the background noise level at any one time. Such factors as waves, wind, and passing aircraft and marine vessels will likely cause background noise levels to fluctuate substantially. The DEIS estimated that background noise level at the Gran Point haulout on a calm day is 47 decibels (dBA) (1997 DEIS, *Steller Sea Lion Technical Report*). Current background noise conditions were measured in September 2003 at a number of undeveloped shorelines along the proposed route. Short-term noise levels were in the range of 35 to 49 dBA while long-term noise levels in remote areas were measured in the mid-30s to mid-50s dBA range (see *Noise Analysis Technical Report,* appended to the SDEIS).

> Unlike many species of marine mammals, Steller sea lions spend considerable time out of water and are thus exposed to potentially disruptive noises both in air and in water. There is a lack of quantitative information in the literature on threshold sound levels that cause disturbance to Steller sea lions at rookeries or haulout sites. In fact, as indicated by Johnson *et al*. (1990), there is "no quantitative information describing threshold sound levels which cause disturbance to pinnipeds." Sound sensitivity measurements are typically conducted on specially trained captive animals. Although Steller sea lions have not been tested (National Park Service [NPS], 2003), sound sensitivity measurements have been conducted on two other species of eared seals (otariids), the California sea lion (Schusterman *et al*., 1972) and the northern fur seal (Moore and Schusterman, 1987). Otariids appear to have similar hearing ranges in both air and water, with the high end at a frequency of 36 to 40 kilohertz (kHz) and low tones at a frequency of 0.1 to 1 kHz. Sensitivity appears to be greatest in the 2 to 17 kHz range. The hearing range for humans is around 0.1 to 20 kHz.

Sea lions have been observed to approach and investigate marine vessels and other noise sources and appear to adapt to noise and human presence under some conditions (Richardson *et al*., 1995). Several major haulouts are located near busy shipping lanes and ports along the Pacific coast, with sea lions exhibiting little disturbance even as human activities increase (Johnson *et al*., 1989). In some areas, sea lions haul out on man-made structures close to humans (Richardson *et al*., 1995). However, in a study of Steller sea lions at a haulout in Glacier Bay National Park, the proximity and behavior of approaching marine vessels affected the activity rate of sea lions at the haulout (Mathews, 1997). Vessels that maintained a slow, steady course and kept the engines on seemed to disturb sea lions less than vessels with erratic course or speed. This may indicate that private vessels, which are more maneuverable and whose operators may be less aware of protection rules, might actually disturb Steller sea lions more than larger commercial vessels (NPS, 2003).

The following potential direct effects were used in the analysis:

- Noise from construction or maintenance activities near haulout sites;
- Noise from vehicular traffic;
- Noise from marine traffic; and
- Presence of people.

Although changes in ferry traffic could theoretically affect the interactions of these vessels with sea lions, no adverse interactions have been noted to date with AMHS vessels or any other marine vessels other than active fishing vessels (Angliss and Lodge, 2002).

4.1 Alternative 1 – No Action Alternative

Alternative 1 would use the existing AMHS ferry terminals and would not result in the construction of any new highways or ferry terminals. A shuttle ferry would operate between Haines and Skagway. There are no haulouts along the shuttle ferry route and it is likely that disturbance to Steller sea lions encountered in the water would be negligible.

AMHS mainline ferries do not travel through the Gran Point Critical Habitat Area or approach any other haulout or foraging concentration area for sea lions in Lynn Canal. There are no records of any adverse interactions between sea lions and AMHS ferries in the past. No direct effects for Steller sea lions were identified for Alternative 1.

4.2 Alternative 2 – East Lynn Canal Highway with Katzehin Ferry Terminal

This alternative includes construction of a highway from Echo Cove around Berners Bay, continuing along the east coast of Lynn Canal to Skagway, and construction of a new ferry terminal in the Katzehin River area. This alternative discontinues mainline ferry service from Auke Bay in Lynn Canal.

Sea lions do not have any consistently used haulouts between the Katzehin River and Haines. Smaller numbers of sea lions have been found near the Katzehin River during spring eulachon and herring runs. It is likely that most animals would habituate to the predictable noise and movements of new shuttle ferries and that long-term disturbance would be negligible.

4.2.1 Gran Point Highway Alignment

The highway alignment through the Gran Point Critical Habitat Area (Figure 4 and Attachment B) would consist of a combination of steep bench cuts, retaining walls, screening structures, and bridge structures that would minimize the highway footprint, block public access to the haulout, and provide a visual barrier. Approximately 550 feet of bridge structures would be constructed in two locations. These would be either full bridge structures or a combination of a partial bench cut and half bridge structure. Four sections of retaining walls totaling 800 feet would be used to minimize embankment fill. Screening would be provided by steep backslopes cut into the rock (four sections, 1,000 feet total) and 8 to 10-foot-high concrete walls (5,000 feet total) along remaining sections within the Critical Habitat Area.

The Gran Point Critical Habitat Area is defined as the area within a 3,000-foot radius of a given latitude and longitude point (59 08.0 N, 135 14.5 W). Video camera data from 2003 indicate that there were often more than 100 sea lions visible at the camera site during the fall, winter, and spring months. DOT&PF and NMFS are aware that Steller sea lions sometimes haulout on rocks beyond the range of the video system; however, that use is considered as a supplemental overflow areas when the main haulout area is full.

The highway would be shielded from the designated haulout behind a large bedrock formation as well as a heavily forested buffer zone. The highway is as far inland as practicable to maximize the separation from Gran Point. The centerline of the highway alignment is 285 feet behind and 140 feet above the designated haulout coordinates with a total slope distance of approximately 320 feet. The highway alignment makes its closest approach to the shoreline approximately 750 feet north of Gran Point where it crosses over a steep gully 50 feet from shore (Figure 4, Attachment B).

Noise from construction activities near haulout – Construction activities would include clearing and grubbing, blasting, and use of heavy equipment, all of which could cause disturbance of sea lions through noise and/or ground vibration. NMFS indicated during previous Section 7 consultation that construction activities should not be conducted within the Gran Point Critical Habitat Area while Steller sea lions are present without further consultation.

The following analysis provides information on the level of noise that construction activities may generate and is a summary of pertinent information presented in the *Noise Analysis Technical Report* (appended to the SDEIS), which contains descriptions of methodology and noise modeling parameters. Noise levels during various phases of typical public works construction projects have been evaluated for the U.S. Environmental Protection Agency (USEPA) (1971). The magnitude of construction noise varies over time because construction activity and power demands on construction equipment are intermittent. Average noise levels where all pertinent equipment is present and operating at a reference distance of 50 feet are as follows:

- Ground Clearing - 84±8 dBA
- Excavations - 88±7 dBA
- Foundations - 88±8 dBA
- Erection of Structures - 79±9 dBA
- Finishing (i.e., Paving) - 84±7 dBA

Noise levels generated by construction equipment (or by any “point source”) decrease at a rate of approximately 6 dBA per doubling of distance away from the source with no shielding (Diehl, 1973). Therefore, if a particular construction activity generated average noise levels of 88 dBA at 50 feet, the equivalent noise level (L_{eq}) would be 82 dBA at 100 feet, 76 dBA at 200 feet, and so on. Shielding, such as from trees, rocks, and earth between the haulout and the noise source, would decrease noise levels an additional 5 dBA or more per doubling of distance. Assuming this full shielding effect, typical construction noise levels (L_{eq}) would be, for example, 88 dBA at 50 feet, 77 dBA at 100 feet, 66 dBA at 200 feet, and 55 dBA at 400 feet.

For reference purposes, Federal Highway Administration (FHWA) noise regulations define peak-noise-hour levels of 65 dBA ($L_{eq(h)}$) as the reference point where an increase of 10 dBA or more over background peak-noise-hour is considered a substantial increase (e.g., residences, picnic areas, etc.). Background noise levels at remote shorelines in Berners Bay have been measured at an average of 52 dBA (2003 Noise Technical Report). The proposed highway centerline is approximately 285 feet behind and 140 feet above the Gran Point haulout for a total slope distance of 320 feet (Figure 4). Using the example above for the rate of decrease in noise, typical highway construction activities would be similar to estimated ambient noise levels at the Gran Point haulout.

To estimate the effects that construction blasting might have on sea lions using the haulout, the 1997 DEIS modeled and analyzed blast effects (1997 DEIS *Steller Sea Lion Technical Report*). Two major components of blasting disturbance are the air blast and ground vibration. Ground

vibration levels expected at the haulout were calculated to estimate possible disturbance to sea lions. Vibration is expressed in terms of inches per second (ips), which represents the velocity of the particles in the ground during the seismic wave caused by the blasting. According to the Bureau of Mines (1997 DEIS), human tolerance levels to ground vibrations often depend upon the individual's feelings about the blasting activity. If an individual that is hostile or objects to the blasting, the level can be lower than 0.1 ips. For those in support of the activity, the tolerance level can be as high as 0.50 ips. The level of 0.1 ips was used as the disturbance threshold for sea lions.

Calculations of ground velocity at the haulout site were developed using the standard blasting formula and delayed charge weights of 20 pounds, 50 pounds, and 100 pounds. The following results were obtained for ground vibration at the haulout site: 20-pound charge = 0.048 ips, 50 pounds =0.096 ips, and 100 pounds = 0.16 ips. It is estimated that 20-pound delayed charges will be used during construction. The estimated vibration would therefore be half of the threshold level of 0.1 ips. The separation and terrain between highway construction areas and the haulout would further reduce the ground vibrations felt at the haulout site.

Noise from vehicular traffic – After construction, the most consistent source of potential disturbance would be traffic noise from accelerating and decelerating vehicles and periodic noise from snowplows, brush cutters, and other highway maintenance equipment. As described above, the design of the highway through the Gran Point Critical Habitat Area includes steep cutbanks, screening structures, a forested buffer zone between the highway and the haulout, and no areas of the highway that provide a direct line of sight to the haulout area (Attachment B). These features should substantially attenuate the noise level at the haulout generated by vehicles using the highway. Modeling studies indicate that peak-noise-hour noise levels (estimated peak summer traffic) would be approximately 65 dBA $L_{eq(h)}$ at 35 feet from centerline (see *Noise Technical Report*, appended to the SDEIS). Using a worse case scenario of noise decreasing at a rate of approximately 6 dBA per doubling of distance away from the source with no shielding, the noise from peak summer traffic would be attenuated to ambient levels at approximately 150 feet from centerline. As stated previously, the proposed highway total slope distance is approximately 320 feet from the Gran Point haulout. Average traffic levels would not create a substantial increase in noise above background levels.

Noise modeling results are based on average measurements from a sample of locations and may not accurately reflect actual noise levels everywhere that sea lions haulout along the shore. Furthermore, the noise thresholds for sea lion disturbance are poorly known and likely vary among individuals. As previously stated, in some locations sea lions have appeared to adapt to human activity and the associated noise. Although average operational noise levels may be below disturbance thresholds for most sea lions, the potential remains for some sea lions to be disturbed by traffic and maintenance noise at some haulout locations.

Disturbance from presence of people – As described above, the highway design includes several structural elements, including steep rock-cut embankments and concrete walls designed to minimize pedestrian access to the haulout. Large rock outcrops and steep forested terrain between the haulout and the highway would also inhibit pedestrian access. It is likely that the combination of highway barriers and natural terrain features would effectively prohibit pedestrian access to the haulout area. If through monitoring it were determined that these barriers were not sufficient, further measures would be implemented.

4.2.2 Met Point Highway Alignment

Although the Met Point haulout is not a designated Critical Habitat Area, the highway would be designed to minimize noise and potential pedestrian disturbance of sea lions. Similar to the Gran Point area, the highway design would include a combination of steep bench cuts, retaining walls, and screening structures but no bridge structures. (Figure 3 and Attachment C) Three sections of retaining walls totaling 1,500 feet would be used to minimize embankment fill. Screening would be provided by one 300-foot-long rock back-cut and 4,100 feet of 8 to10-foot-high concrete walls. Sea lions have been observed to haul out in several areas along the Met Point coast although there is one primary location that may be used by up to 200 animals (J. Womble, personal communication, 2003)). The centerline of the highway alignment is approximately 180 feet behind and 160 feet above this primary haulout location. In addition to the highway screening structures, the haulout would be separated from the highway by an approximately 200-foot buffer of old-growth forest.

Noise from construction activities near haulout – The Met Point haulout is 360 feet behind and 165 feet above the proposed highway alignment for a total slope distance of approximately 400 feet (Figure 3). Using the example in the Gran Point discussion for the rate of decrease in noise, typical highway construction activities would be similar to the estimated ambient noise levels at the Met Point haulout. Highway construction in the Met Point area would require less blasting than that proposed in the Gran Point area, but would produce vibration levels comparable to those discussed under Gran Point.

Noise from vehicular traffic – Traffic noise levels at the Met Point haulout would be very similar to the results derived for Gran Point. The Gran Point analysis indicated that average traffic levels would not create a substantial increase in noise above background levels.

Disturbance from presence of people – The combination of highway screening structures and difficult natural terrain is expected to provide a strong deterrent to pedestrian traffic at the Met Point haulout. If through monitoring it were determined that these barriers were not sufficient, further measures would be implemented.

4.3 Alternative 2A – East Lynn Canal Highway with Berners Bay Shuttle

This alternative has the same highway alignment as Alternative 2 except that it eliminates the section of highway around Berners Bay and constructs two ferry terminals, one at Sawmill Cove and one at Slate Cove. Mainline ferry service would be discontinued north from Auke Bay.

Steller sea lions are attracted to spring spawning aggregations of eulachon and Pacific herring in Berners Bay. Sea lions occasionally use a haulout on the point of land that forms the southwestern corner of Slate Cove during this time of year.

Noise from construction activities near haulouts – Alternative 2A would have the same highway alignment and design elements near the Gran Point and Met Point haulouts as Alternative 2. The potential for disturbance at these locations would be the same as discussed above. Construction of the Slate Cove Ferry Terminal under Alternative 2A would have the potential to disturb sea lions hauled out nearby during spring forage fish aggregations. Construction of the ferry terminal and connecting highway would involve the same types of equipment and noise levels as discussed under Alternative 2. In addition, the ferry terminal would include in-water pile driving that would generate loud, percussive, underwater noise. However, in order to protect anadromous fish populations, pile driving and other in-water construction activities would be limited to seasons when such fish are not aggregated in Berners Bay (see *Anadromous and Resident Fish Streams Technical Report*). These seasonal construction restrictions would effectively minimize potential disturbance of sea lions as well.

Noise from vehicular traffic – Noise levels at the Gran Point and Met Point haulouts would be the same as discussed under Alternative 2. Traffic noise on the proposed highway near Slate Creek would not create an increase in noise above background levels at the Point Saint Mary seasonal haulout since the haulout is approximately 3-miles away.

Disturbance from presence of people – The Point Saint Mary seasonal haulout is approximately 3-miles from the proposed Slate Creek ferry terminal. Although the haulout is potentially accessible to pedestrian traffic along the beach at low tide, the difficulty of traversing the rocky shoreline and adjacent forested areas is expected to deter motorists from walking out to the area.

Noise from marine traffic – Shuttle ferries between Slate Cove and Sawmill Cove would introduce a new source of potential disturbance to sea lions in Berners Bay. This may cause some seasonal, short-term disruption of nearby foraging and hauled out sea lions. However, since ferry traffic would be relatively slow and consistent in both direction and speed, it is likely that sea lions would habituate to these non-threatening vessels in the same way they tolerate existing marine vessels that pass other haulouts. Disturbance from shuttle ferries is therefore likely to be minimal.

4.4 Alternative 2B – East Lynn Canal Highway to Katzehin, Shuttles to Haines and Skagway

This alternative has the same highway alignment as Alternative 2 except that the highway would end at the Katzehin Ferry Terminal, eliminating the highway segment along east Taiya Inlet between the Katzehin Ferry Terminal and Skagway.

Sea lions do not have any consistently used haulouts or concentration areas between the Katzehin River and Skagway. The direct effects of Alternative 2B on Steller sea lions would therefore be the same as discussed under Alternative 2.

4.5 Alternative 2C – East Lynn Canal Highway to with Shuttles to Haines and Skagway

This alternative includes construction of the same highway as Alternative 2 except that the Katzehin Ferry Terminal would not be constructed. The direct effects of Alternative 2C on Steller sea lions would therefore be the same as discussed under Alternative 2 except that it would eliminate the incremental increase in marine traffic noise from the Katzehin shuttle ferries.

4.6 Alternative 3 – West Lynn Canal Highway

This alternative includes construction of a highway from Echo Cove to Sawmill Cove, construction of new ferry terminals at Sawmill Cove and William Henry Bay, and construction of a highway along the west side of Lynn Canal from William Henry Bay to Haines. Mainline ferry service would not extend north of Auke Bay. This alternative would not include any construction or facilities that are near traditional or consistently used Steller sea lion haulout areas.

Noise from marine traffic – Steller sea lions have been observed foraging during fish spawning runs in Berners Bay and William Henry Bay. Shuttle ferries between Sawmill Cove and William Henry Bay would introduce a new source of potential disturbance to sea lions in Berners Bay and William Henry Bay. This may cause some seasonal, short-term disruption of nearby foraging. However, since ferry traffic would be relatively slow and consistent in both direction and speed, it is likely that sea lions would habituate to these non-threatening vessels in the same way they tolerate existing marine vessels that pass other haulouts. Disturbance from shuttle ferries is therefore likely to be minimal. However, no adverse interactions have been noted to date with AMHS vessels (Angliss and Lodge, 2002); therefore, no direct effects to Steller sea lions were identified for Alternative 3.

4.7 Alternatives 4A, 4B, 4C, and 4D – Marine Options

The marine alternatives retain mainline ferry service from Auke Bay north and include options for improving ferry system service by increasing the number and frequency of shuttles operating in Lynn Canal. Alternatives 4A and 4B would use FVF while Alternatives 4C and 4D would use dayboats.

Alternatives 4A and 4C do not include any new construction at existing ferry terminals. Alternatives 4B and 4D include construction of a new highway from Echo Cove to a new shuttle ferry terminal at Sawmill Cove.

None of these alternatives would require any construction or facilities that are near the Gran Point Critical Habitat Area or any other consistently used sea lion haulout areas. Changes in ferry traffic volumes are not expected to result in any direct effects to sea lions. No direct effects were identified for Alternatives 4A, 4B, 4C, or 4D.

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FIGURES

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LEGEND

Alternative 1 No Action (Existing Mainline. Dayboat Shuttle, and FVF Ferry System not shown)

Alternative 2 Highway Segment 2 / Ferry Segment 2

Alternative 2A Highway Segment 2A / Ferry Segment 2A

Alternative 2B Highway Segment 2B / Ferry Segment 2B

Alternative 2C Highway Segment 2C / Ferry Segment 2C

Alternative 3 Highway Segment 3 / Ferry Segment 3

New Multi-span Bridge

Existing Highway

Alternative 4A
Alternative 4C New double stern berth at existing Auke Bay terminal with ferry service from Auke Bay to Haines and Skagway

Alternative 4B
Alternative 4D New ferry terminal at Sawmill Cove with ferry service to Haines and Skagway

Ferry routes not shown for Alternatives 1, 4A, 4B, 4C, and 4D

Steller Sea Lions

Sea Lion Haulout

Sea Lion Forage Area

Figure Index

0 1 2 3 4 Miles

1 inch equals 3.5 miles

Lynn Canal

Skagway
Klondike Highway
Klondike Gold Rush National Historical Park
Katzehin Ferry Terminal
Lutak Ferry Terminal
Lutak Road
Haines
Haines Highway
Mud Bay Road
Sawmill Cove Ferry Terminal
Slate Cove Ferry Terminal
William Henry Bay Ferry Terminal
Glacier Highway
Figure 2
Figure 3
Figure 4
Berners Bay
William Henry Bay
Point Saint Mary
Met Point
Gran Point
Sherman Rock
Eldred Rock
Chilkat Islands
Sullivan Island
Glacier Point
Pyramid Island
Sullivan Mountain
Mount Young
Yang-Webster Peak
Chilkat Ra
Tanani
Port Chilkoot
Chilkoot
Lily Lake
Chilkat Peninsula
DESHU ISTHMUS
Taiya Inlet
Lutak Inlet
Halutu Ridge
Face Mountain
Mount Harding
Mount Ripinski
Haines Airport
Twin Dewey Peaks
Upper Dewey Reservoir
Devils Punch Bowl
SCHUBEE GLACIER
Mount Villard
Katzehin River
Kakuhan Range
Sinclair Mountain
Veldagaiga Creek
Comet
Sweeny Creek
Ivanhoe Mine
Comet Mines
Kensington Mine
Horrible Mine
Ophir Mine
Jualin Mine
Johnson Creek
Slate Creek
Lace River
Berners River
Antler River
Antler Lake
Gilkey River
Sawmill Creek
Echo Cove
Cowee Creek
Beardslee River
William Henry Creek
Endicott River
Sullivan River
Ferebee River
Burro Creek
Dayehas Creek
Kosidaya Creek
Luduveska Creek
DAVIDSON GLACIER
GARRISON GLACIER
Mount Emmerich
Mount Rice
Chilkat River

Juneau Access Improvements

Steller Sea Lions Alternatives Figure Index

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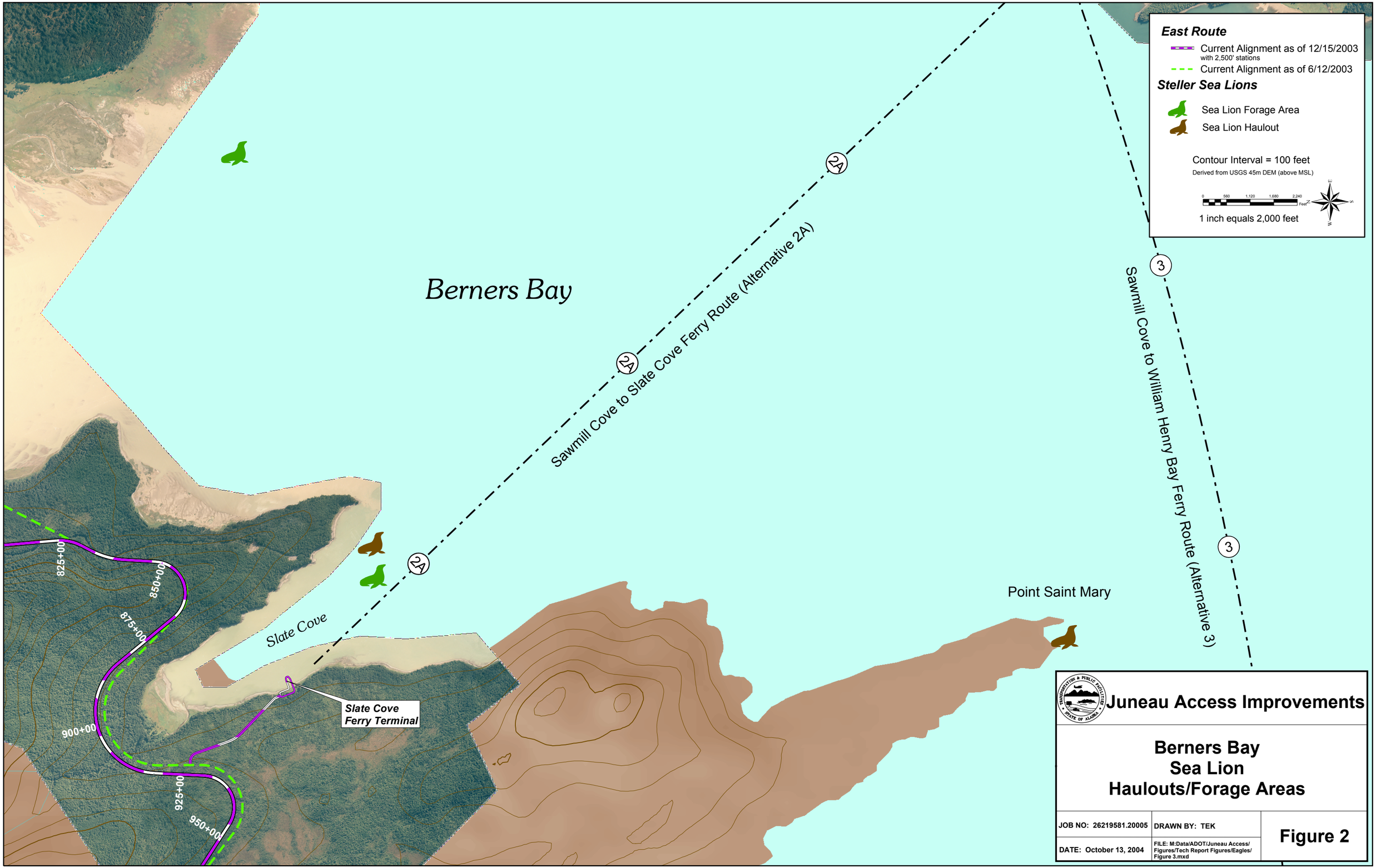

Juneau Access Improvements

Berners Bay
Sea Lion
Haulouts/Forage Areas

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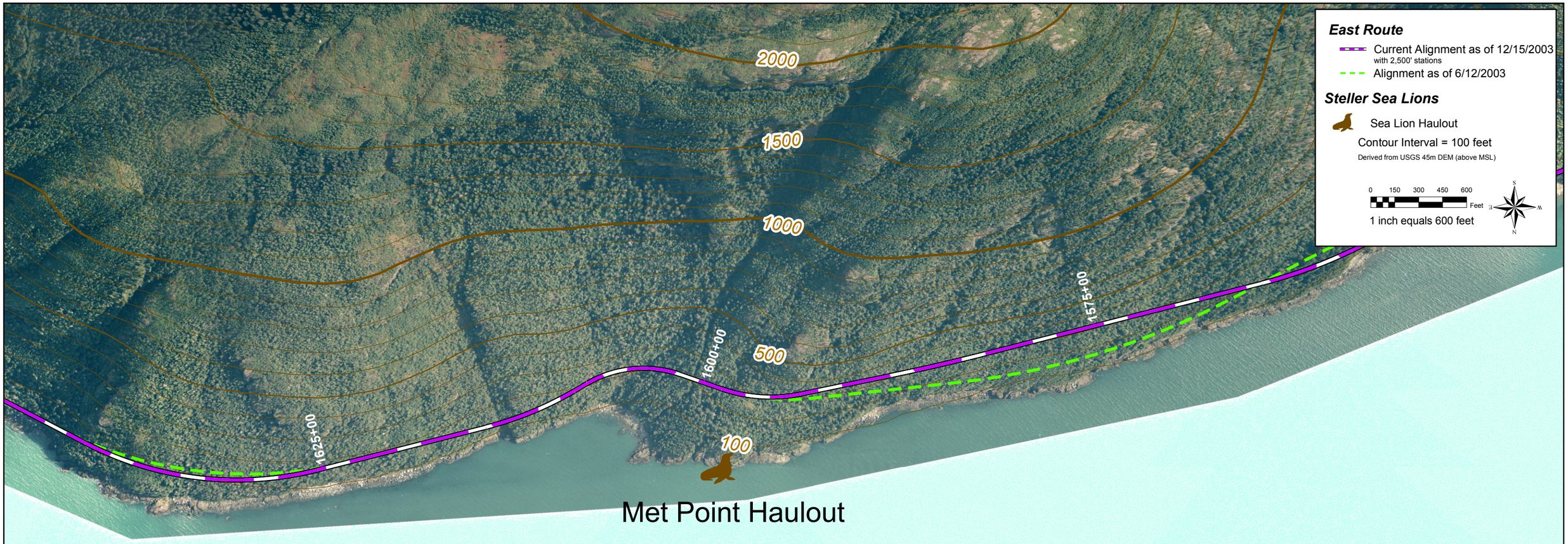

Juneau Access Improvements		
Met Point Sea Lion Haulout		
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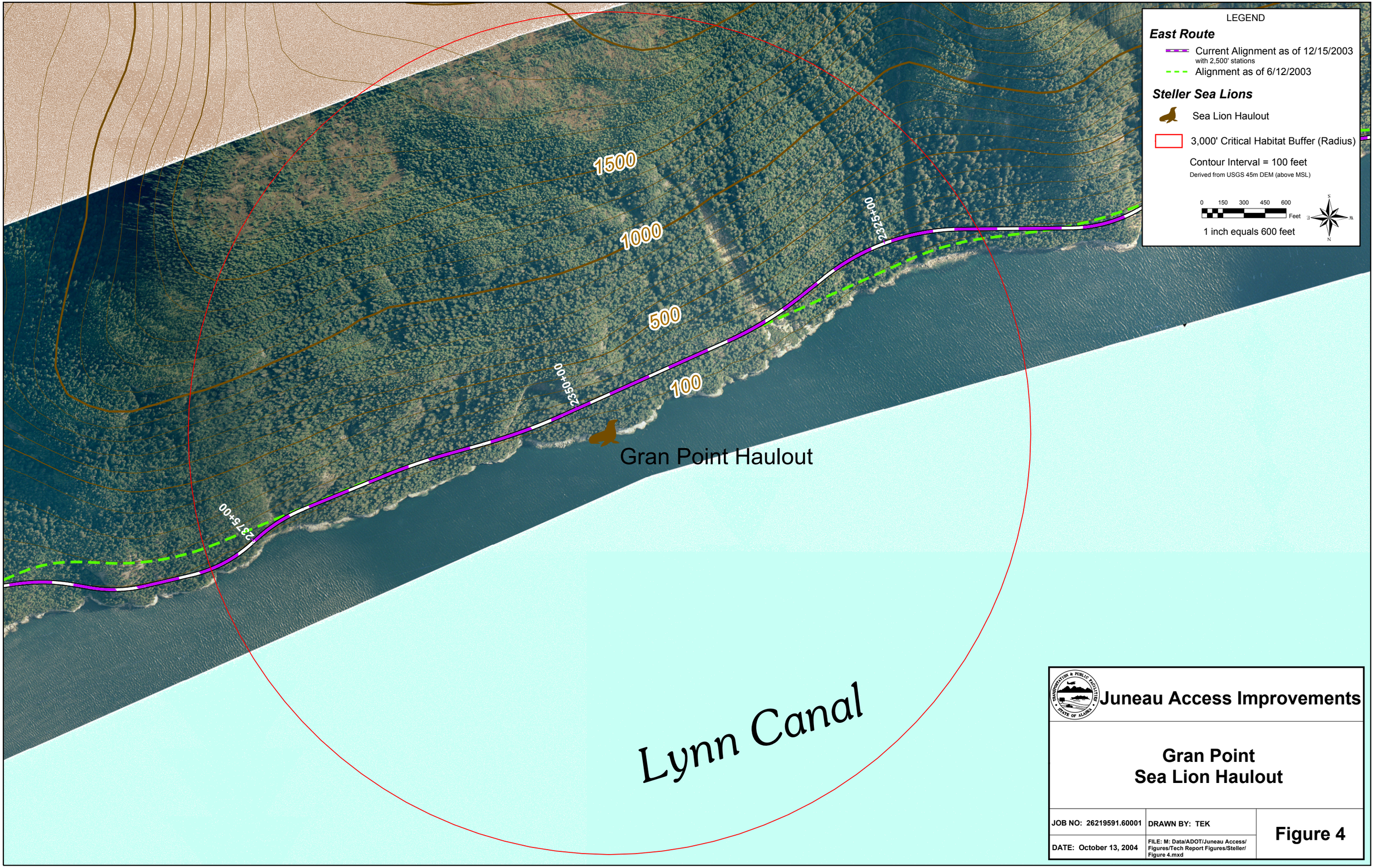

LEGEND

East Route

Current Alignment as of 12/15/2003
with 2,500' stations

Alignment as of 6/12/2003

Steller Sea Lions

Sea Lion Haulout

3,000' Critical Habitat Buffer (Radius)

Contour Interval = 100 feet

Derived from USGS 45m DEM (above MSL)

0 150 300 450 600 Feet

1 inch equals 600 feet

Juneau Access Improvements

Gran Point
Sea Lion Haulout

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ATTACHMENT A

ESA SECTION 7 CONSULTATION

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802-1668

August 24, 1998

Mr. Bill Ballard
Regional Environmental Coordinator
Alaska Department of Transportation and Public Facilities
6860 Glacier Highway
Juneau, Alaska 99801-7999

Dear Mr. Ballard:

Thank you for your letter of August 13, 1998, describing the current status of the Juneau Access Improvements, Draft Environmental Impact Statement, description of the project, analysis of impacts to the threatened Steller sea lion (*Eumetopias jubatus*), list of mitigative measures, and request, pursuant to Section 7 of the Endangered Species Act (ESA), for concurrence that the East Lynn Canal Highway project will not likely adversely affect the threatened Steller sea lion.

Based on the information in your letter, the National Marine Fisheries Service (NMFS) will concur with your conclusion that the project will not likely adversely affect the threatened Steller sea lion, provided the mitigation measures given in your letter and additional measures, listed below, are fully implemented as part of the project. Our additional mitigation measures are as follows:

1) No boat launches or structures that enhance boat access will be constructed anywhere along the East Lynn Canal Highway road alignment. This measure is intended to minimize disturbance of Steller sea lions at the Gran Point and Met Point haulouts from recreational boating activity, which has been known to be a significant factor in disturbance of Steller sea lions at the Benjamin Island haulout near Juneau.

2) Expansion of the year-round monitoring study of sea lion use of the Gran Point and Met Point haulouts to include an assessment of human behavior around the areas of the haulout. Such a study should essentially determine, over a period of not less than three years, how and to what extent people may be using the road to access the haulouts, and whether such access is resulting in disturbance of sea lions.

If human disturbance from the roads is documented at either haulout, additional measures, as appropriate, must be taken to minimize human access, such as road barriers, gates, restricted area signs, etc.

3) Independent observers should be employed during construction through the Gran Point Critical Habitat Area to ensure that sea lions are not present at the haulout. If sea lions are present at the Gran Point haulout at any time during construction in this area, all work must cease and NMFS must be consulted before any further work is to proceed.

If you agree to these measures then Section 7 ESA consultation with NMFS is concluded for this project. If you do not agree to these measures, NMFS believes the project is likely to adversely affect the threatened Steller sea lion and formal consultation must be initiated. If consultation may be concluded with your agreement to our measures, please be advised that should project plans change, or new information becomes available that changes the basis for that decision, then consultation should be reinitiated.

NMFS requests a written response indicating whether you agree to our mitigation measures. Please contact Linda Shaw of my staff at 586-7510 if you have any questions or need additional information. We look forward to continued coordination with you.

Sincerely,

Ronald J. Berg

For Steven Pennoyer
Administrator, Alaska Region

STATE OF ALASKA

TONY KNOWLES, GOVERNOR

DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

Steven T. Zimmerman, Ph.D.
Assistant Administrator for Habitat
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802-1668

August 13, 1998

Dear Mr. Zimmerman:

As you know the Alaska Department of Transportation and Public Facilities (ADOT&PF) completed the *Juneau Access Improvements, Draft Environmental Impact Statement* (DEIS). Since completion of the DEIS the department has been analyzing comments received and conducting an internal review on how best to proceed with the project. Our schedule calls for a staff recommendation on a preferred alternative by the end of the year and a management selection of a preferred alternative in early 1999. We are currently evaluating funding opportunities available in the new Highway Bill (TEA 21), awaiting passenger and vehicle data from the Malaspina "day boat", and conducting additional studies to assist in the recommendation of a preferred alternative including a reevaluation of fast ferries types. In my meeting with your staff last spring, I agreed to provide you with a letter that documents our evaluation of the effects upon Steller sea lions in particular at the Gran Point Critical Habitat Area and the Met Point haulout by the East Lynn Canal alternative of the subject project. That evaluation is as follows.

The East Lynn Canal Highway begins at the terminus of Glacier Highway at Echo Cove and ends at Skagway, a distance of approximately 105 kilometers (65 miles). The first 4.5 kilometers (2.8 miles) is within an existing Forest Service right-of-way through Goldbelt Inc., property. The alignment would bear east, away from the shore near Sawmill Creek to minimize effects on wetlands and recreational values in the area and avoid the remnants of a historic sawmill.

The alignment continues north, above the beach fringe where practicable, for 5 kilometers (3.1 miles) to the head of Berners Bay, where the alignment continues north approximately 1.6 kilometers (1 mile) east of the Antler River for another 3.2 kilometers (2 miles). There it curves to the northwest, crossing the Antler River then curves to the west-southwest, for approximately 2.4 kilometers (1.5 miles) to the Lace River. Upon reaching the West Side of Berners Bay, 1.6 kilometers (1 mile) south of Johnson Creek, the alignment generally parallels the shoreline until it crosses Slate Creek. Approximately 0.8 kilometers (0.5 miles) southwest of Slate Creek the alignment curves northwest climbing to an elevation of 60 meters (200 feet). The alignment meets the eastern shore of Lynn Canal 6.5 kilometers (3.5 miles) north of Point St. Mary.

The alignment turns north following along the moderate to heavily forested slopes generally 200 meters (656 feet) or more inland from the Lynn Canal except through Comet Landing (the site of the Coeur' Alaska, Kensington Mine).

From Independence Lake to the Katzehin River, a distance of 35 kilometers (22 miles), the alignment follows steep terrain along the base of the Kakuhan Range. The alignment ranges in elevation from 10 meters (32 feet) to 70 meters (224 feet) above Lynn Canal to take advantage of terrain features. Two Steller sea lion haulouts are located between Independence Lake and the Katzehin River (Met Point and Gran Point). The Met Point haulout is 5.6 kilometers (3.5 miles) northwest of Independence Lake. The alignment along Met Point is approximately 200 meters (656 feet) horizontally from the haulout in a 20-meter (65-foot) high through-cut.

The Gran Point haulout is 8 kilometers (5 miles) south of Katzehin River at the Gran Point Critical Habitat Area. The highway through the critical habitat area consists of a combination of low bench cuts, retaining walls and bridge structures. Approximately 450 meter (1475-foot) of bridge structures in four locations are used. These structures would either be a full width bridge or a combination of a partial bench cut and half width bridge. Five sections of retaining walls totaling approximately 350 meters (1,150 feet) are used to minimize embankment fill that maximizes the separation of the haulout from the alignment. Retaining walls reduce the disturbance to large Sitka spruce trees that provide additional screening between the haulout and the alignment.

The alignment is kept as far from the haulout as practicable, approximately 100 meters (328 feet) to the nearest point, to shield the sea lions from view of the highway. In areas where structures are used, slopes are kept nearly vertical to restrict human access to the haulout. In some areas, visual barriers are used to block the view of the haulout from the highway.

Beyond the Critical Habitat Area, the alignment continues along steep terrain to the Katzehin River. The alignment crosses the river near its confluence with Lynn Canal then proceeds northwest for approximately 2 kilometers (1.2 miles) across the Katzehin River delta. The Haines commuter ferry terminal would be located near the north end of the Katzehin River delta.

The alignment continues along the shoreline for another 4 kilometers (2.5 miles) to Low Point, at the beginning of Taiya Inlet. There the highway alignment turns northeast along Taiya Inlet for 20 kilometers (12.5 miles) to Skagway. Taiya Inlet has the steepest, most rugged terrain of the entire route. The alignment takes advantage of terrain features wherever practicable but extensive cuts and fills would be required. Numerous viaducts and combinations of partial cuts and structures would likely be used along Taiya Inlet to minimize rock excavation and visual impacts.

The alignment crosses the northern boundary of the Tongass National Forest 2.8 kilometers (1.7 miles) south of Skagway. It enters Skagway along the shore, at an elevation of 10 meters (33 feet), tying into the White Pass Dock to avoid the cliff-side paintings known as the Ship Registry. The Ship Registry, which dates back to 1918, is included in the National Registry of Historic Places.

Steller, or northern, sea lions (Eumetopias jubatus) are the largest members of the eared seals and range from southern California around the Pacific rim to northern Honshu, Japan, and Korea (Hoover 1988). Sexual dimorphism is characteristic of the species, with the bulls being much

larger, some exceeding 3 meters (10 feet) in length and 1000 kilograms (2200 pounds) in weight (Johnson et al. 1989).

Sea lions use traditional, well-established sites, referred to as "rookeries" to breed, give birth and nurture the pups. When not at rookeries, sea lions use sites known as "haulouts" or "haul sites" for resting between feeding forays or during migration (Hoover 1988). Some of the haulouts are occupied year round, while others are used seasonally but both types are usually well established sites. Both rookeries and haulouts are usually in remote and exposed areas, such as: rock shelves, ledges, and boulder, cobble, gravel, or sand beaches (Hoover 1988).

Throughout their range, Steller sea lions breed between the end of May and late July. Soon after fertilization, further development of the embryo ceases for about three months. The embryo implants in late September or October (Gentry and Withrow 1986). This allows for birth of the pups from mid-May to mid-June, with the peak occurring in June (Hoover 1988).

Steller sea lions eat a wide variety of fish and marine invertebrates, including octopus, squid, flatfishes, rockfishes, salmon, sandlances, and pollock. There are, however, regional variances in their diets. Both males and females appear to be opportunistic feeders, with feeding occurring mostly at night, with the sea lions leaving the rookeries or haulouts in the evening and returning in the morning (Gentry and Withrow 1986, Hoover 1988).

Gran Point on the east side of Lynn Canal near Haines is designated as a Steller sea lion critical habitat area under the Endangered Species Act. It is located south of the Katzehin River on the east side of Lynn Canal at Gran Point [N 59 07'52. 7", W 135 14' 23.1" (NAD 1983)] and extends 915 meters (3,000 feet) in all directions from Gran Point. The haulout lies on a sloping rocky ledge at the base of a steep timbered mountainside. Steep bedrock shorelines extend north and south of the haulout. The water depth in front of the haulout reaches a depth of over 100 fathoms.

The Met Point haulout is several hundred meters south of the USGS Met triangulation site (Met Point). The site is located on the east shoreline of Lynn Canal approximately three miles southeast of Eldred Rock lighthouse (58 56.4' N latitude, 135 10.4' W longitude). The haulout is on a rocky ledge located approximately 400 m (1320 ft) south of Met Point at the base of a rocky slope about 20 m (65 ft) high. Above the rocky slope is a moderately steep timbered hillside. According to your staff, ADF&G biologists have seen as many as 200 Steller sea lions at Met Point haulout. During our avalanche observation flights (1995, 1997, and 1998), sea lions are routinely seen at the haulout in numbers between 10 and 30 animals.

In our analysis, evaluation of disturbance factors from a highway upon sea lions and the Critical Habitat Area include both short-term and long-term human disturbance. Short-term disturbance factors include design and geotechnical surveys, and construction activity. They could include such things as noise disturbance from helicopter flights, drilling, blasting and heavy equipment operation. Long-term disturbance refers to factors resulting from use of the highway once it is completed. Such factors include traffic noise, vehicle lights, and human disturbance from people actually climbing down to the haulout.

There is a general lack of quantitative information in the literature on threshold sound levels, which cause disturbance to Steller sea lions and other pinnipeds at rookeries or haulout sites. In fact, as indicated by Johnson, et al. (1990) there is "no quantitative information describing threshold sound levels which cause disturbance to pinnipeds." Sea lions respond to both airborne and water sounds; however, they are more sensitive to sounds in the water. Research on the California sea lion has shown that sea lions are significantly less sensitive to airborne sounds below 10,000 Hz than are humans (Richardson, et al, 1991). The hearing range for humans is around 100 to 20,000 Hz, while that for the California sea lions is in the range of 1,000 to 30,000 Hz. In the lower frequency ranges, normal human hearing is more sensitive to sounds than sea lions. However above the 10,000 Hz frequency, sea lions can detect sounds with the same sensitivity as humans, although the limit of human hearing is approached at this high frequency. Consequently, humans appear to be more sensitive to airborne sounds than sea lions and at a lower frequency.

Available research indicates that sea lions are not noise sensitive and there is suggestion that Steller sea lions can adapt to noise and human presence. Johnson et al. (1989) report that information from the Canadian Department of Fisheries and Oceans (DFO) indicates that Steller and California sea lions have been hauling out since 1978 on the Steveston jetty. The jetty is in British Columbia adjacent to the middle arm of the Fraser River near its mouth on the Strait of Georgia. The jetty is near [less than 500 meters (1640 feet)] the main shipping channel. Similarly at Race Rocks in Juan de Fuca Strait, British Columbia, up to 800 Steller and California sea lions haul out near a busy shipping lane. According to the DFO, this haulout area has been heavily used during the past two decades with no major disturbance to the sea lions, even though there has been increasing shipping activity. In addition, Calambokidis et al. (1987) report that at Port Gardiner, Washington, over 500 California sea lions use log booms as haulout sites.

We did an analysis of vehicular traffic noise that could be expected at Gran Point. A weighted noise scale, dBA, used to simulate human hearing ranges, was used to approximate sea lion hearing. To determine the background noise level that could be expected at the haulout site from use of the proposed highway, noise level readings were taken at comparable sites with road access. In addition, a reading of background noise level on a calm day at a beach similar to the haulout site was also obtained. The current estimated background noise level at the haulout site on a calm day is 47 dBA. The noise level at the haulout site would not substantially increase because the road would be located behind the large rock outcropping that forms Gran Point.

Human activity or predators (Allen et al. 1984, Moss 1992) can disturb pinnipeds on rookeries or haulout sites. Results from such disturbance can range from complete and immediate departure from the site to little or no reaction (Hoover, 1988) and can vary depending upon the time of year (Johnson, et al. 1989). Sea lions have been completely forced off a rookery site by human disturbance, but did repopulate the rookery once the human disturbance ended. One study by Pike and Maxwell (1958) found that construction activity apparently caused a Steller sea lion colony along the British Columbia coast to disband and emigrate.

Prior to the early 1900's Triangle Island, which is located northwest of Vancouver Island, was the location of a large Steller sea lion rookery. During the period 1909 to 1920 the building and servicing of a lighthouse on the island apparently caused the colony to disband. "Some pupping was observed in 1913, but none in 1916." The rookery was, however, apparently repopulated after

closure of the lighthouse. According to Bigg (1988) the lighthouse was abandoned in 1920 and "many animals were present by 1938."

There appears to be an east-west seasonal movement of Steller sea lions in southeastern Alaska waters. Work done by Don Calkins, ADF&G (1982, also cited in Hoover 1988) suggests that in southeast Alaska "(T)here appears to be a shift from inside waters in the winter to more exposed, outside waters in the summer breeding season." A similar seasonal movement has been documented in British Columbia (Bigg 1988) and Washington (Calambokidis et al. 1987) and occurs at Gran and Met Points based on observations by ADOT&PF project staff and NMFS staff.

Sea lion use at Gran Point and Met Point haulouts vary depending on the time of the year. There are few sea lions at the haulouts in January and February. But, their numbers increase rapidly through June, especially at Gran Point. In July the numbers decline rapidly with virtually no sea lions present in August. According to observation by ADF&G biologist Kip Kermoian use of the haulout has increased each year for the last several years.

A ground survey of the Gran Point haulout was conducted on August 12, 1994, in cooperation with NMFS and ADF&G. Present during the survey were Sue Mello (NMFS), Jon Lewis (ADF&G), and Art Dunn and Rick Reed both with FPE/Roen-Lochner. There were no sea lions present during the survey. Sue and Jon felt that the haulout had not been used by sea lions for several weeks prior to the visit based upon the condition of scat samples they collected.

Since most of the initial construction requires significant amounts of blasting, it was essential to determine what effect blasting might have on sea lions using the haulout. Expected blast effects were modeled and analyzed based on ground vibration. Ground vibrations are expected at the haulout site and estimated levels were calculated to determine if they would cause a disturbance to sea lions. Vibration is expressed in terms of inches per second (ips) which represents the velocity of the particles in the ground during the seismic wave caused by the blasting. According to the Bureau of Mines (Richard Dick, et al 1983), human tolerance levels to ground vibrations often depend upon the individual's feelings about the blasting activity. In an individual that is hostile to the blasting, the level can be lower than 0.1 ips. For those in support of the activity, the tolerance level can be as high as 0.50 ips. The level of 0.1 ips was used as the disturbance threshold for sea lions.

Calculations of ground velocity at the haulout site were developed using the standard blasting formula and delayed charge weights of 20 lbs, 50 lbs, and 100 lbs. (E.I. du Pont de Nemours 1977). The results obtained for ground vibration at the haulout site were: 20 lbs charge = 0.048 ips, 50 lbs = 0.096 ips, and 100 lbs = 0.16 ips. It is estimated that 20 lbs delayed charges will be used during construction. Thus the estimated vibration at the haulout would be less than half of the threshold level. These "pre-shear" charges are set to produce a clean break between the back slope and the surrounding rock. This results in a separation between the surrounding rock and the larger production charges. This separation would further reduce the ground vibrations felt at the haulout site.

Based upon the above calculations and considerations, no disturbance to sea lions is anticipated from the blasting activities associated with construction. Additional options to further reduce

construction disturbance factors include: locating marine support landing sites out of visual range of the haulout and prohibiting access to the haulout site by workers.

In addition, road construction in the rest of the Critical Habitat Area would be limited to the time that sea lions do not appear to use the haulout (Alaska Department of Transportation and Public Facilities 1996a, 1996b). We anticipate that this would be from August to late fall or early winter within the Critical Habitat Area. The timing restrictions are necessary minimize disturbance to sea lions, and to protect Bald eagle nests which are active between approximately March 1 and August 20. We believe this timing window through the Critical Habitat Area not have a long-term impact on the use of the haulout.

Long-term human disturbance is minimized by use of the barriers, structures and steep rock cuts through the Gran Point Critical Habitat Area. These features also will significantly reduce noise and visual disturbance factors. The steep forested hillside above and between the haulout and the highway will remain undisturbed. The steep topography at the haulout location, combined with use of thru-cuts and structures, will make human access from the highway to the haulout site extremely difficult.

It is not anticipated a highway constructed along the eastside of Lynn Canal would result in substantial adverse effects upon Steller sea lion prey species from construction or chronic disturbance factors. The alignment is located as far as practicable from the shore and all anadromous fish streams are bridged. Critical migration and spawning areas of eulachon, herring and salmon are avoided.

The following mitigative measures will be taken to minimize the impact of the highway on Steller sea lions:

- A multi-year monitoring study will provide addition information on year round sea lion use of the Gran Point and Met Point haulouts. This monitoring will confirm seasonal use of the haulout by sea lions (we recently contracted Skagway Air to conduct observations during their flights between Skagway and Juneau). We expect to contract with ADF&G or a qualified consultant
- to conduct the monitoring study if the east Lynn Alternative is selected as the preferred alternative.

- As large as possible buffer of undisturbed vegetation will be retained between the highway and the Gran Point and Met Point haulouts.

- Road construction within the Critical Habitat area will be limited to the time sea lion are not present at the Gran Point haulout unless authorized by NMFS.

- Regulatory signing and fencing, if deemed necessary, will be installed along the road in the vicinity of the Gran Point and Met Point haulout to discourage human disturbance of sea lions using the haulout site.

Based upon our review of known information and consultation with marine mammal experts on disturbance, we do not believe a East Lynn Canal highway would have a long-term effect on Steller sea lions using the Gran Point Critical Habitat Area or the Met Point haulout.

We hereby ask your concurrence. If you have any questions, please do not hesitate to contact me.

Sincerely,

Bill Ballard

Bill Ballard
Regional Environmental Coordinator

xc: Jim Bryson, Reality/Environmental Officer, FHWA
Jack Beedle, P.E., Project Manager
Loren Rasmussen, P.E., Preliminary Engineering/Environmental/Special Project

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ATTACHMENT B

PLAN AND PROFILE SHEET FOR GRAN POINT CRITICAL HABITAT AREA

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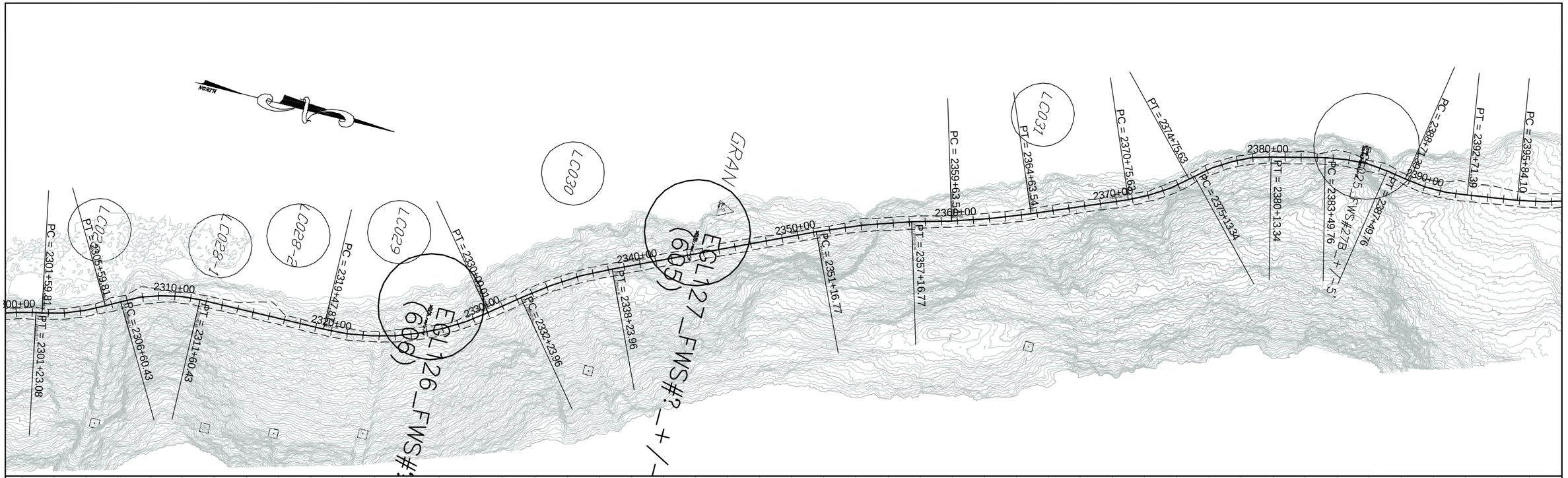

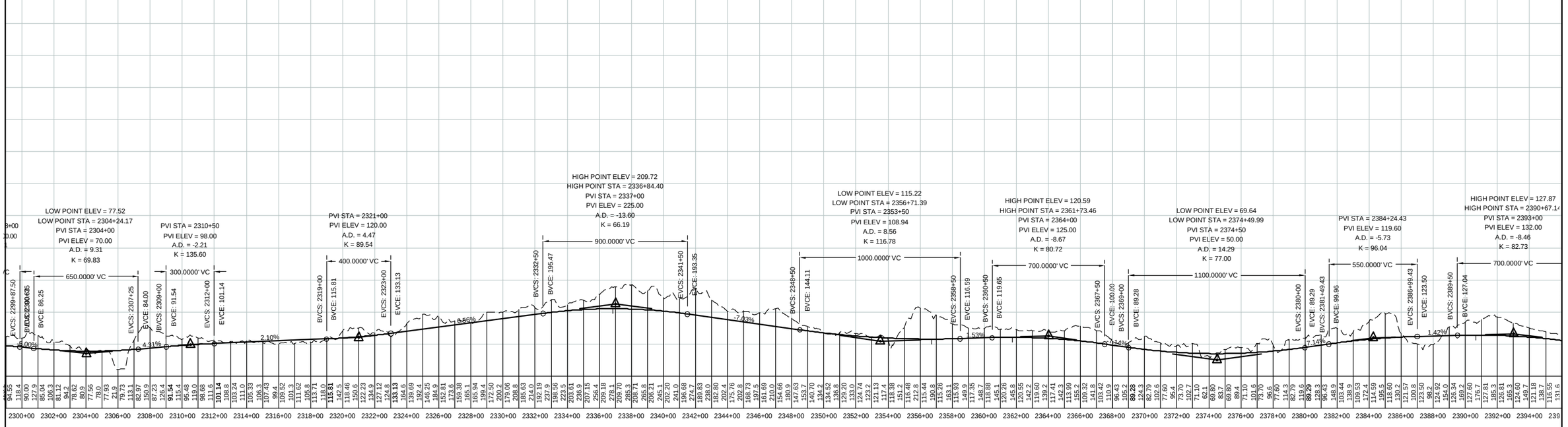

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STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
SOUTHEAST REGION DESIGN & CONSTRUCTION

JUNEAU *JUNEAU ACCESS* *ALASKA*
PROJECT NO. 71100

EAST LYNN CANAL
GRAN POINT SEALION HAULOUT

DESIGNED BY:	PROJECT NO. *71100*
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ATTACHMENT C

PLAN AND PROFILE SHEETFOR
MET POINT HAULOUT AREA

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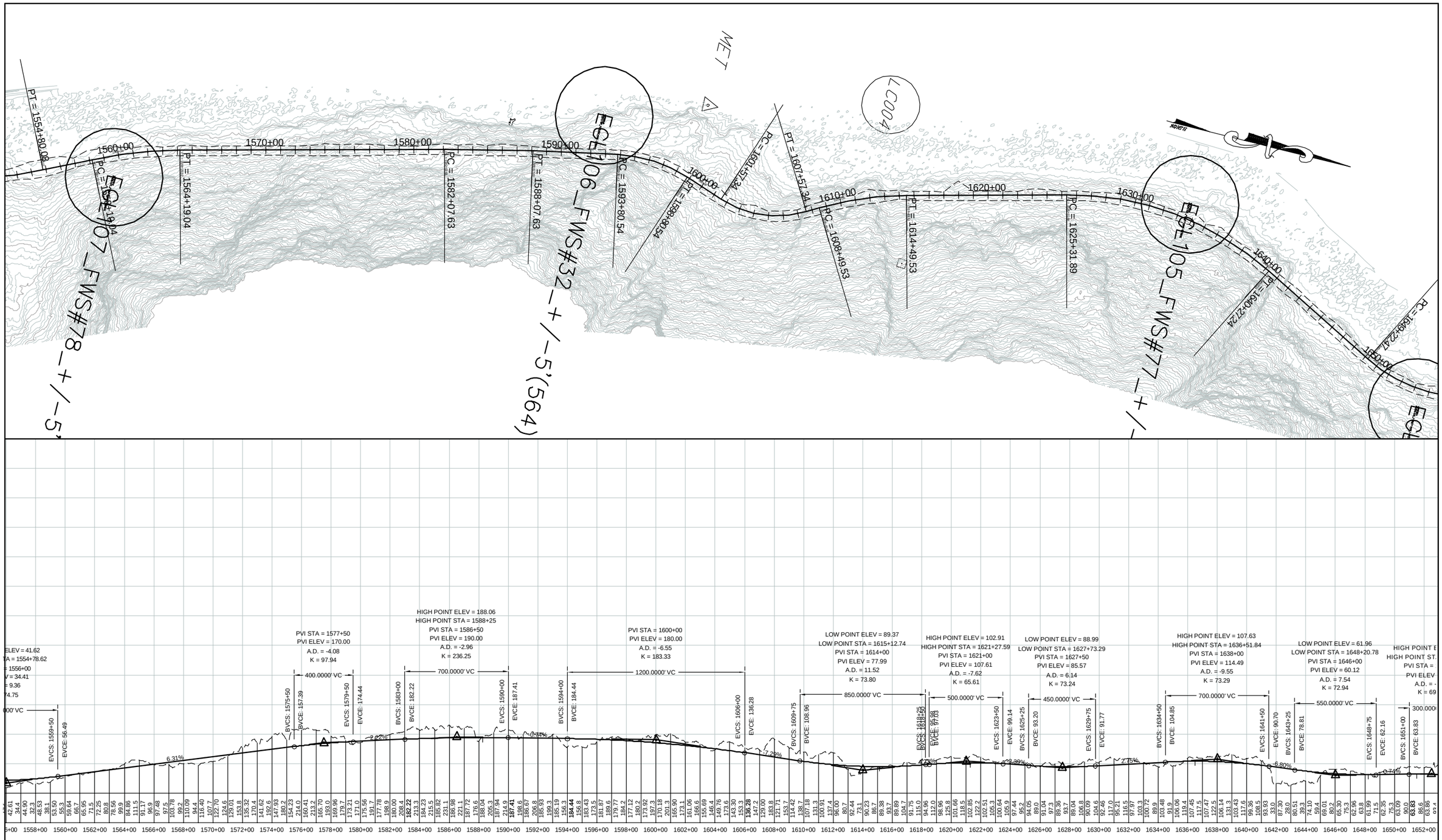

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STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
SOUTHEAST REGION DESIGN & CONSTRUCTION

JUNEAU *JUNEAU ACCESS* *ALASKA*
PROJECT NO. 71100

EAST LYNN CANAL
MET POINT SEALION HAULOUT

DESIGNED BY:	PROJECT NO. *71100*
DRAWN BY:	DATE: *2004*
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