Safer Seward Highway Project
Seward Highway MP 98.5 to 118, Bird Flats to Rabbit Creek

Project No.:
Z566310000/0A31034

Environmental Assessment

DRAFT

December 2025

Prepared for:

Alaska Department of Transportation and Public Facilities

Prepared by:

HDR, Inc.
582 E. 36th Avenue, Suite 500
Anchorage, AK 99503-4169
907-644-2000 Phone | 907-644-2022 Fax

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by DOT&PF pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated April 13, 2023, and executed by FHWA and DOT&PF.

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SAFER SEWARD HIGHWAY PROJECT, SEWARD HIGHWAY MP 98.5 TO 118, BIRD FLATS TO RABBIT CREEK

DRAFT ENVIRONMENTAL ASSESSMENT

Project Number:
Z566310000/0A31034

Authored By:
The State of Alaska
Department of Transportation and Public Facilities (DOT&PF)

This action complies with: Executive Orders 11988 (Floodplain Management), 11990 (Protection of Wetlands); 13112/13751 (Invasive Species); Fish and Wildlife Coordination Act; Section 106 of the National Historic Preservation Act; Section 6(f) of the Land and Water Conservation Act; and U.S. DOT Act Section 4(f).

Recommended for Public Availability by:

12/24/2025
Date

Signed by:
Luke Bowland
775BE2E04D534FE...
Luke Bowland, P.E., Regional Preconstruction Engineer
State of Alaska Department of Transportation and Public Facilities

12/24/2025
Date

DocuSigned by:
Douglas Kolwaite
3961A903E8954D8...
Douglas Kolwaite, Statewide Environmental Program Manager
State of Alaska Department of Transportation and Public Facilities

The following person may be contacted for additional information concerning this document:
Brian Elliott, Regional Environmental Manager
DOT&PF Central Region
4111 Aviation Drive
Anchorage, AK 99519
907-269-0539

The Project's purpose is to reduce crash rates and severity, improve mobility and reliability, and safely accommodate mixed uses in the corridor. The Proposed Action would construct a divided four-lane highway with a separated multi-use pathway and rebuild portions of the railroad tracks. Additional improvements include expanded parking areas, improved trailhead facilities, frontage roads construction, drainage improvements, and roadside hardware upgrades.

Comments on this Draft Environmental Assessment and Draft Section 4(f) Evaluation are **due by February 12, 2026**. Submit comments electronically to the DOT&PF Central Region Environmental Manager via the website at http://www.safersewardhighway.com.

TITLE VI POLICY STATEMENT

The State of Alaska Department of Transportation and Public Facilities (DOT&PF) hereby gives public notice that it is the policy of the DOT&PF to assure full compliance with Title VI of the Civil Rights Act of 1964, the Civil Rights Restoration Act of 1987, and related statutes and regulations in all programs and activities. Title VI and related nondiscrimination statutes require that no person in the United States of America shall, on the grounds of race, color, sex, national origin, disability, or age, be excluded from the participation in, be denied the benefits of, or be otherwise subjected to discrimination under, any program or activity for which the DOT&PF receives federal financial assistance.

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1 Purpose and Need

1.1 Introduction

The State of Alaska Department of Transportation and Public Facilities (DOT&PF) is proposing to improve the Seward Highway from Mileposts (MPs) 98.5 to 118, Bird Flats to Rabbit Creek, also called the Safer Seward Highway Project (Project). The Project lies entirely within the Municipality of Anchorage (MOA), and includes the communities of Rainbow, Indian, and Bird. The proposed Project would be developed with a combination of State and Federal-Aid Highway Program funds administered by Federal Highway Administration (FHWA).

This environmental assessment (EA) document was developed in accordance with the National Environmental Policy Act (NEPA) and Section 4(f) of the U.S. Department of Transportation (USDOT) Act of 1966, and prepared following the DOT&PF *Environmental Procedures Manual* (DOT&PF 2024a). The environmental review, consultation, and other actions required by applicable federal environmental laws for this Project are being, or have been, carried out by DOT&PF pursuant to 23 U.S. Code (U.S.C.) 327 and a Memorandum of Understanding dated April 13, 2023, and executed by FHWA and DOT&PF.

1.1.1 Project Termini

DOT&PF has determined that the Seward Highway from MPs 98.5 (Bird Flats) to 118 (Rabbit Creek Road intersection) is of sufficient length to ensure that the analyses presented in this EA consider environmental matters, and transportation improvements, broadly in a way that covers the entire project corridor, meeting FHWA guidance (USDOT 2024) and regulations (23 Code of Federal Regulations (CFR) 771.111(f)).

Traveling southbound from Anchorage, the Seward Highway undergoes a distinct shift in character and design as it changes from a four-lane, urban, divided, controlled-access highway corridor north of the Rabbit Creek Rifle Range to a two-lane, rural arterial roadway that extends southward just beyond the community of Bird. In this 20-mile corridor, the highway is characterized by tight curves, few opportunities for safe passing, and numerous pullouts and intersections for recreation and local community. Beyond the end of the Project area, south of MP 98.5, the highway design has been improved to current design standards. It is straighter and has enhanced visibility, passing lane sections, fewer physical or topographical constraints, limited recreational access points, and no residential intersections.

The Project is located within U.S. Geological Survey (USGS) map quadrangles Anchorage A-8, Seward D-7, and Seward D-8 within (1) Sections 5, 6, 8 through 10, 14, and 15; Township 10 North (N), Range 1 West (W); (2) Sections 1 through 3, Township 10N, Range 2W; Sections 30 through 34; Township 11N, Range 2W; (3) Sections 4, 9, 10, 15, 22, 23, 25, and 26; Township 11N, Range 3W; and (4) Section 33, Township 12N, Range 3W.

The beginning of Project (BOP) is Latitude 60.9511, Longitude -149.4027 (MP 98.5 at Bird Flats); the end of Project (EOP) is Latitude 61.0871, Longitude -149.8344 (MP 118, north of Potter Marsh, at the intersection/ overpass to Rabbit Creek Road). For ease of reading, the Project is described in this EA from north (EOP) to south (BOP).

1.1.2 Project Area Description

Originally completed in 1951, the Seward Highway extends northward approximately 130 miles from Seward to Anchorage, Alaska. It is the only road corridor between Anchorage and

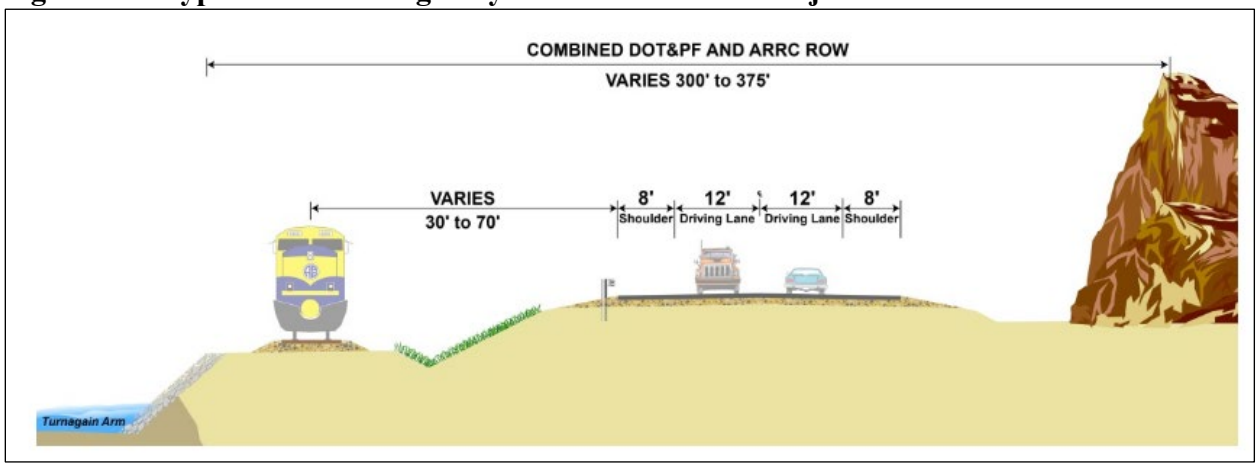
communities to the south along Turnagain Arm; the Kenai Peninsula; and the Alaska Marine Highway System terminals at Whittier, Seward, and Homer. The highway is part of the National Highway System (NHS), designated partially as Interstate A-3, and provides overland travel between local and major cities, ports, and airports. The Seward Highway supports commercial, tourist, industrial, and residential traffic, and typical vehicle types range from passenger cars to recreational vehicles (RVs) to industrial heavy trucks.

The highway segment within the Project area is tightly constrained between the tidal waters of Turnagain Arm, the Alaska Railroad Corporation (ARRC) tracks, and the steep slopes of the Chugach Mountains. At the northern terminus, the highway and rail embankments traverse in parallel through the southern end of the Anchorage Coastal Wildlife Refuge (ACWR), between the mudflats and the constructed wetlands that form the Potter Marsh Recreation Area. From MP 115 to the southern Project terminus at MP 98.5, the highway and rail corridors are within the boundaries of Chugach State Park (CSP), with a few private inholdings as well as MOA- and state-owned lands near the communities of Rainbow (MP 108.5), Indian (MPs 103 to 104), and Bird (MPs 100 to 101).

1.1.2.1 Existing Roadway Facilities

The Seward Highway is classified as a Rural Principal Arterial roadway[1] and Interstate[2]. The current configuration consists of two 12-foot-wide travel lanes and 6- to 8-foot-wide shoulders with rumble strips at the centerline and lane edges (see Figure 1-1). The highway is located within a 300-foot-wide DOT&PF right-of-way (ROW), which is adjacent to and frequently overlapping a 200-foot-wide ARRC ROW. The highway segment within the Project area has a 55-mile-per-hour (mph) posted speed limit, except for a short section with a 65-mph posted speed limit near the BOP. As the highway corridor passes through communities, many private driveways and road intersections connect with the highway.

Figure 1-1. Typical Seward Highway section within the Project area.



Source: DOWL 2019

[1] https://dot.alaska.gov/stwdplng/fclass/

[2] All routes that comprise the Dwight D. Eisenhower National System of Interstate and Defense Highways belong to the Interstate functional classification (https://www.fhwa.dot.gov/planning/processes/statewide/related/hwy-functional-classification-2023.pdf).

1.1.2.2 Existing Non-Motorized Facilities

Numerous developed trailhead parking lots to access trails and recreational activities within CSP are within the Project corridor. Additionally, numerous paved and unpaved pullouts provide access to recreational activities such as hiking, biking, rock climbing, photography, and scenic and wildlife viewing. These parking lots and pullouts occur on both sides of the Seward Highway. The Indian to Girdwood Bike Path (commonly referred to as the "Bird to Gird" Trail) is a separated, multi-use pathway that parallels the roadway between the communities of Indian (MP 104) and Girdwood (MP 90; south of the Project area). The path lies within DOT&PF, CSP, and ARRC ROWs. No separated multi-use pathway exists between the northern Project terminus and the community of Indian; at present, non-motorized users must use the roadway's shoulders.

1.1.3 Project History

The effort to improve safety along the Seward Highway between Girdwood and Anchorage began during the early 2000s. A NEPA Categorical Exclusion for Seward Highway Safety Improvements, Indian to Potter Marsh MPs 105–115 was approved in 2004 to add passing lanes; however, design and permitting efforts were suspended. In 2013, DOT&PF started re-evaluating the safety project to focus on Windy Corner (MPs 105–107). After a lengthy project development process, DOT&PF extended the project northward to include Rainbow Point in 2021. DOT&PF further expanded the project corridor in 2023 and renamed it Seward Highway Reconstruction MP 98.5 to 118, Bird Flats to Rabbit Creek (also known as the Safer Seward Highway Project), which is the subject of this EA.

1.2 Purpose of and Need for Action

1.2.1 Project Purpose

The purpose of the Project is to improve safety by reducing crash rates and severity, improve mobility and reliability, and safely accommodate mixed uses within the corridor.

1.2.2 Project Needs

This is a safety project driven by three interrelated needs:

- **Need 1: Reduce crash rates and crash severity**. In 2006, this stretch of the Seward Highway was designated as the state's first Highway Safety Corridor. Despite additional enforcement presence, community education, improved signage and safety improvement projects, high crash rates and crash severity issues remain. Crashes are caused by limited passing opportunities, curvy and constrained road geometry, and poor access management. Extreme driving conditions—including atmospheric (high winds, rain, snow, and dark conditions) and road surface (wet, icy, snowy, and changes that occur at the freeze-thaw line)—increase the risk of drivers losing control and sliding off the road or into oncoming traffic. Due to heavy summer seasonal traffic volumes, drivers spend considerable time following vehicles without safe passing opportunities, resulting in frustrated drivers making high-risk passing maneuvers and increasing the risk of head-on collisions.
- **Need 2: Improve mobility and reliability.** Highway traffic mobility refers to the ability of people and goods to move effectively and efficiently through the transportation network, and it is measured using several metrics: follower density, level of service, free flow speed, and segment density (see Appendix E *Highway Configuration Development and Selection Memorandum*). Mobility for vehicular users within the Seward Highway corridor begins to fail during summer weekend peaks. Summer traffic volumes can result in long platoons

(i.e., lines) of vehicles. When vehicles slow to turn or pull over for scenic or wildlife viewing, these actions pulse back through the lines, causing variable speeds. Mobility is also degraded by high truck and RV volumes; uncontrolled access to and from scenic turnouts and trailheads, driveways, and intersections; and difficult weather and road conditions. Reliability addresses how predictable travel experiences would be on the highway. Crashes, vehicle breakdowns, and poor weather or road conditions can cause unexpected delays, which reduces reliability. Emergency lane or road closures following collisions, rockfall, or avalanches cause miles- and hours-long backups since no alternative road routes exist through the Project area. Access to the emergency location is limited by the two-lane facility, slowing the response times of emergency services in the event of lane closure or backup. Mobility for bicyclists and pedestrians is limited as there are non-motorized facilities along less than 30 percent of the highway corridor within the Project area.

- **Need 3: Safely accommodate mixed uses in the corridor.** The Project corridor's multitude of scenic, natural, and recreational attractions contribute to the highway's designation as a National Forest Scenic Byway, All-American Road, and Alaska Scenic Byway. However, the popularity of the attractions alongside—and including—the road exacerbates the safety, mobility, and reliability issues. The need exists to maintain the corridor's scenic qualities while safely accommodating the needs of all users, including recreators and tourists accessing attractions, local residents accessing their homes and communities, commercial and through-travelers making long-distance trips, and bicyclists and pedestrians. Numerous access points to pullouts and private driveways mean that vehicles are making many turning movements throughout the corridor. Vehicles pulled onto the highway shoulders create safety hazards. Gaps in non-motorized pathways result in people biking and walking along or across the highway to access attractions, creating safety and mobility issues.

See Appendix C (*Project Purpose and Need Memorandum*) for greater detail on the Project history and characteristics of the existing highway corridor that contribute to its safety issues.

2 Alternatives

This chapter describes the Project alternatives, including the Proposed Action and No Action alternatives, as well as alternatives considered and not advanced. More detailed descriptions of alternatives can be found in Appendix D (*Alternatives Development Memorandum*).

2.1 Proposed Action

2.1.1 Overview

The Proposed Action would reconstruct the Seward Highway corridor between MPs 98.5 and 118 to be a four-lane divided highway with a 55-mph design speed. The typical cross section would include a barrier, median, or vertical separation to keep north- and southbound travel separated; the use of each option is determined by location and topography. The Proposed Action includes a new multi-use pathway, with at least a 10-foot separation from the highway shoulders.

The Proposed Action would straighten six curves between MPs 105 and 110 (two at Windy Corner, three near Rainbow Point, and one just north of Beluga Point) to meet current design standards for a 55-mph design speed. Turn-lane pockets would be constructed where warranted to provide breaks in the divided highway, allowing left-turning movements. Improvements to intersections, culverts and drainage, parking and recreational access, and signage are also included. Parking would be expanded at the Beluga Point Scenic Overlook (with a pedestrian overcrossing of the railroad tracks), Rainbow Trailhead, and Windy Corner Trailhead.

The Proposed Action includes several breaks within the highway facility to facilitate access and turning movements. Throughout the corridor, most existing small pullouts and parking areas would be closed to consolidate parking and highway access. Breaks in the divided highway would be limited to the following locations:

- Potter Marsh North Boardwalk/Rabbit Creek Shooting Park (MP 117.8)
- Potter Valley Road (access to Potter Marsh South Viewing Area and a relocated Potter Creek Trailhead frontage road)
- DOT&PF Weigh Station at the northern and southern ends of the weigh station (MP 114.8)
- McHugh Day Use Area (MP 111.75)
- Beluga Point Scenic Overlook (MP 110.25)
- Rainbow Trailhead/Rainbow Valley Road (MP 108.5)
- Windy Corner Trailhead (MP 106.5)
- Boretide Road (MP 103)
- Bird Creek Access Parking (MP 101.75)
- Bird/Sawmill Creek Road/Bird Creek Campground (MP 100.75)
- Avalanche Gate Pullout (MP 99.3)

The Potter Section House, Rainbow Point Scenic Overlook, and Windy Corner Scenic Overlook would only be accessible from southbound lanes as "right in-right out" turns. Falls Creek, Indianhouse Mountain, and Bird Ridge trailheads would only be accessible from northbound lanes as right in-right out turns. Frontage roads in the communities of Indian and Bird would be constructed to remove direct driveway connections to the highway, including to the Bird Creek Overflow Camping/Parking area. Existing pullouts along Potter Marsh would be retained but accessible only by the new multi-use pathway; all other scenic overlooks/pullouts would be removed (see Figure 3-2 in Section 3.3.1 for map of major scenic viewpoints).

The Indian Community Ballfield (also known as Boulder Ballfield) and associated Indian Creek Trailhead parking area would be reconstructed just south of the current location with right in-right out access only, and a new parking area would be constructed on the mountain side of the highway along the frontage road to access the Indian to Girdwood Bike Path just north of Indian Creek.

A multi-use pathway would be constructed beginning at MP 118 and connecting to the existing Indian to Girdwood Bike Path at MP 103.5. Where the pathway crosses the highway, undercrossings would be used. A new undercrossing would be constructed at approximately MP 115 (Potter Creek Trailhead), MP 106.5 (Windy Corner Trailhead), and MP 104, while undercrossing reconstruction would occur at approximately MPs 100.5 and 99.

The adjacent ARRC track and embankment would be realigned and reconstructed along 7 miles of track where highway reconstruction would widen toward the water side (Turnagain Arm). Within these areas, the standard offset between the separated pathway and the new ARRC track would be 50 feet (Figure 1-1), and fencing would be installed to separate the railroad from the highway facility. The exact location and design of the fencing would be determined later in the design process as well as in discussions between DOT&PF and ARRC (see Section 3.3.1).

To establish the standard 300-foot easement for the highway, DOT&PF would acquire 150 feet of ROW on each side of the centerline of the proposed Project alignment. DOT&PF may require additional ROW within areas of high mountainside cuts to properly maintain the rock cuts and

highway segments. Within areas where the highway ROW overlaps ARRC ROW, DOT&PF intends to continue to manage the facility under its current ROW agreement with ARRC.

Utilities would be relocated as needed for road widening and ARRC track realignments.

Detailed descriptions are available in Appendix E (*Highway Configuration Development and Selection Memorandum*), and maps are provided in Appendix F (Proposed Action Mapbook).

2.1.2 Construction

Construction is anticipated to begin in fall 2026 and take 15 to 20 years until Project completion. The Proposed Action would be completed in phases and opened for traffic as each phase is completed. The Proposed Action is anticipated to cost approximately $1.4 billion (2024 dollars).

The Proposed Action is anticipated to generate approximately 18 million cubic yards of cut material and require approximately 5.8 million cubic yards of fill for use in widening the road and constructing rail embankment. Most construction fill materials would be obtained from rock blasting and excavation activities within the Project footprint. Should additional or specialized construction materials not be obtained from roadway excavations (e.g., riprap for coastal armoring), it would be imported from outside the Project corridor. Excess material would be hauled off site by truck or rail. Material and equipment storage and haul routes would be located within the existing DOT&PF and ARRC ROWs.

Aside from intermittent closures for blasting, road and rail traffic would be maintained throughout construction activities, along with access to businesses and residences. Existing or temporary bridges would be used to maintain traffic flows while new bridges are constructed.

During construction, there would be lane closures and traffic control measures for work along and adjacent to the highway, with full road and track closures during blasting and other major construction events. Because no alternative route options exist to provide a traffic detour route during blasting, it would likely be limited to no more than once per day; this would minimize disruptions to the traveling public. Emergency response vehicles would be guided through the work area during closures, as needed.

2.1.3 No Action Alternative

In the No Action alternative, the Project corridor would not be reconstructed. DOT&PF would continue to make Seward Highway improvements in discrete locations as needs are identified and funding is available; however, a corridor-wide safety improvement project would not occur. Currently programmed state and federal-aid projects with independent utility within the corridor would be constructed, including adding a southbound left-turn lane into McHugh Day Use Area (MP 112) and additional rockfall mitigation between MPs 112.5 and 113.2 (Grunge Wall/ice fall area).

No improvements to highway access would be constructed, and crash clusters around certain areas within the corridor would likely remain. Accident rates and severity would presumably continue on similar trends (see Appendix G *Traffic and Safety Analysis*). Parking and access to trailheads and viewpoints would not be improved. Without a non-motorized facility between MPs 104 and 118, pedestrians and bicyclists would continue to use the highway shoulder to traverse the corridor.

Highway maintenance such as pavement resurfacing and bridge replacements would continue in accordance with DOT&PF guidelines. Snow removal, street sweeping, brush clearing within

DOT&PF's ROW to maintain clear zones, trash removal, and other similar maintenance and operation (M&O) activities would continue to occur.

2.2 Alternatives Considered and Not Advanced

Refer to Appendix D (*Alternatives Development Memorandum*) for additional detail on the alternatives considered and not advanced in this EA, including their defining features, potential advantages and disadvantages, followed by DOT&PF's reasoning for not advancing them further in this EA. DOT&PF considered the following alternatives and dismissed them because they did not meet the Project's purpose and need:

- **Stacked Structure.** This alternative would elevate northbound lanes on long bridge structures above the southbound lanes or railroad track to separate travel lanes.
- **Tunneling through Curves.** This alternative would add tunnels at tight curve locations within the Seward Highway corridor, specifically at Beluga Point (MP 110), Rainbow Point (MP 109), and Indian Point (MP 104) to avoid some impacts on CSP and Waters of the United States (WOTUS) by eliminating the need to move the highway and railroad into CSP and/or Turnagain Arm.
- **Intermittent Passing Lanes (Three-Lane) Highway (both divided and undivided configurations).** This alternative would add alternating passing lanes throughout the corridor, also referred to as a three-lane concept, to provide occasional additional opportunities for passing maneuvers within the corridor.
- **Improvements Solely within Existing DOT&PF ROW.** This alternative would attempt to make all identified improvements within the existing highway ROW.
- **Non-Construction Methods.** These alternatives would use operational improvements or driver incentive/behavior strategies to maintain or restore highway transportation system performance without construction or adding capacity. These include:
    - **Expand Multimodal Alternatives and Mobility Services.** This alternative would use non-construction strategies that include transit management, improving the bicycle and pedestrian network, and "mobility on demand."
    - **Expand Public Transit.** This alternative would add public transit to the corridor, where none currently exists.
    - **Commuter Rail Service.** This alternative considers a regular commuter rail service within the Project corridor, where none currently exists.

3 Affected Environment and Environmental Consequences

This EA describes the affected environment of the Project study areas for each resource as well as the direct and indirect impacts associated with the No Action and Proposed Action alternatives. The Affected Environment describes resources that may experience environmental effects resulting from implementing the No Action alternative or Proposed Action (as described in Chapter 2). The study area for each resource is the Project area, unless otherwise specified. Immediately following the Affected Environment section for each resource is the Environmental Consequences section, which describes the environmental impacts associated with the No Action and Proposed Action. This discussion is followed by a description of proposed avoidance, minimization, and mitigation measures, as needed.

Analyses of the environmental consequences focus on those areas of concern identified during public and agency coordination as well as environmental consequences that are inherent to the Proposed Action. As FHWA guidance (FHWA 1987) indicates that impact areas that do not have

a reasonable possibility for individual or cumulative significant impacts need not be discussed, this EA does not discuss the Alaska Coastal Management Program or Farmlands.

3.1 Physical Environment

3.1.1 Geology, Soils, Seismicity, Avalanche, Rockfall, and Icefall

3.1.1.1 Affected Environment

Geology and Soils

Turnagain Arm is a glacially scoured valley with steep mountain walls and dynamic, tidally influenced channels. The area is constantly experiencing deposition and erosion from alluvial processes and influx/outflow of marine sediments. The surficial geology that overlays most of the bedrock is in the form of frost-shattered rocks within the high alpine areas, colluvium and glacial drift on the side slopes, and alluvium and glacially deposited materials on the valley floors (Combellick 1984).

Soils along Turnagain Arm vary relative to their position on the landscape and microclimate. Soil formation is dependent on the parent material from which it was formed, and the soils along Turnagain Arm are relatively young because of the steepness of the side slopes and the recent presence of glaciers within the valleys (Bradley et al. 2009). Additional details on geology and soils can be found in Appendix H *Geotechnical Data Review* and Appendix I *Wetland/ Waterbody Preliminary Jurisdictional Determination Report*.

Seismicity

Alaska is the most seismically active state in the country and has had multiple substantial earthquakes. The 9.2 magnitude 1964 Good Friday Earthquake caused widespread, permanent, land-level changes that are still visible in Girdwood, where the land dropped approximately 6 feet (USGS 2016). The magnitude 7.1 2018 Anchorage Earthquake directly impacted roadway infrastructure due to several rockfalls along the Seward Highway, resulting in temporary road closures (Grant et al. 2020). Turnagain Arm is predisposed to earthquakes and is located north of the Alaska-Aleutian Megathrust, from where the 1964 Good Friday Earthquake originated. Other sources of potentially damaging earthquakes near the Project area include the Wadati-Benioff zone beneath Anchorage, and the active belt of faulting and folding in Upper Cook Inlet.

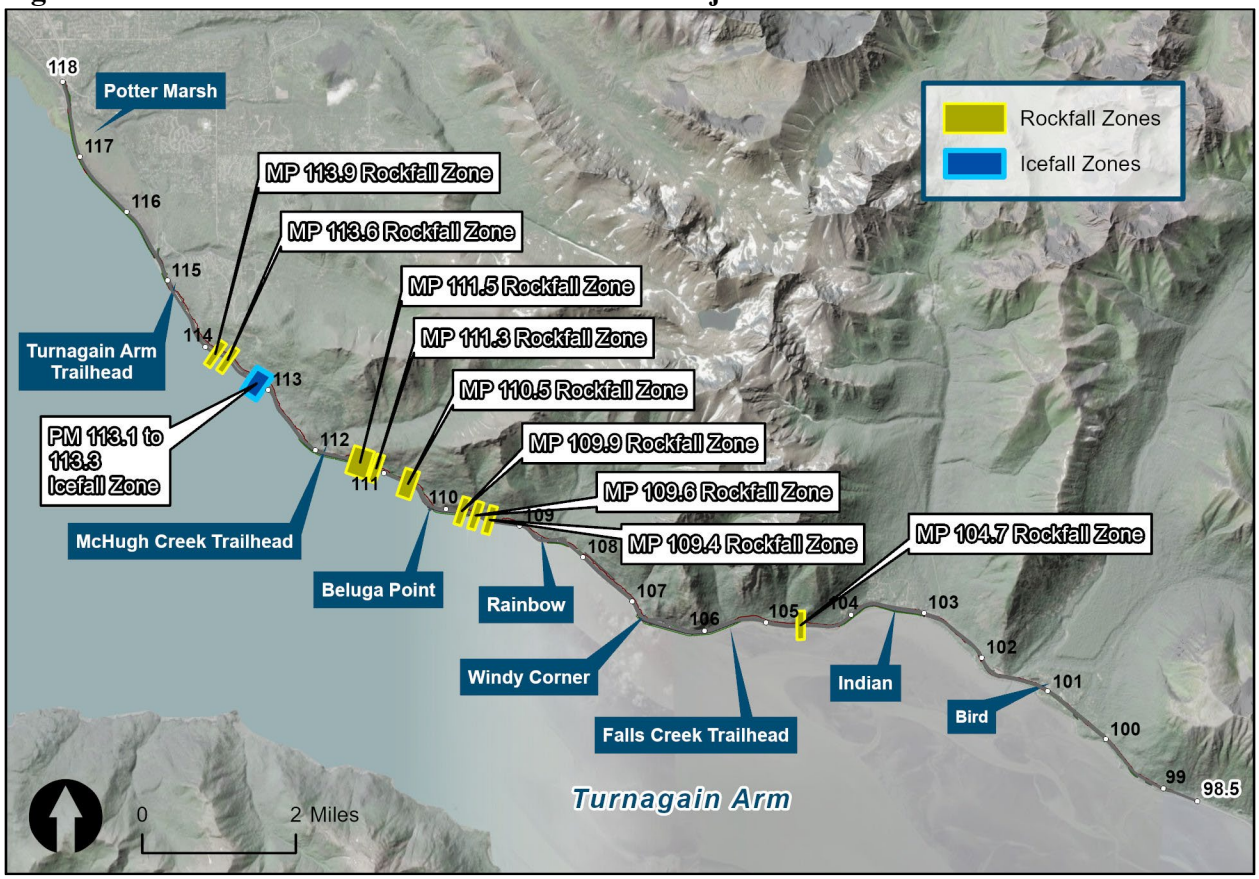
Avalanche

The Project area is characterized by steeply sloped mountains, heavy snowfall, and strong winds, which can combine to create avalanche hazards. These steep slopes hold a continuous pitch up to high alpine basins that are separated with rocky ribs, creating multiple and complex avalanche starting zones (Murphy n.d.). Strong winds are also common along Turnagain Arm, which can cross load the avalanche starting zones with deep snow. The Seward Highway crosses two avalanche zones within the Project area: the Bird Flats Avalanche Zone (MPs 97.5 to 99), which includes four avalanche paths; and the Windy Corner Avalanche Zone (MPs 105 to 107), which includes three avalanche paths (DGGS 1982). DOT&PF stages avalanche artillery equipment near MP 99 during winter and uses gates to close the highway if necessary. Avalanches that reach the road occur frequently. During the early 2000s, DOT&PF and ARRC realigned the highway and railroad near Bird Flats farther into Turnagain Arm to reduce avalanche incidents.

Rockfall and Icefall

The Seward Highway has experienced safety concerns related to rockfall since its construction. DOT&PF installed rockfall mitigation measures in 1992 at several rock slopes between MPs 104 and 114, adjacent to the highway. Since installation of the mitigation measures, rockfall activity has either permanently damaged or destroyed some of these mitigation measures. This was especially true as a result of the 2018 Anchorage Earthquake. Within the Project area, nine rock slopes adjacent to the existing highway between MPs 104 and 114 were identified as areas of safety concern (HGS 2023; see Figure 3-1). Rockfall mitigation, consisting of blasting, rockfall attenuators, rock bolts, rock dowels, and draped wire mesh, was completed in 2023 at most of these sites.

Figure 3-1. Rockfall and icefall zones within the Project area.



Surface water overflow appears to be the primary causative factor for generation of large ice slab formations along the highway corridor. When the rock slope temperatures exceed 32 degrees Fahrenheit (°F), the adhesive bond is compromised, and ice slabs may be subject to failure (Scarpato 2018). One icefall zone at MP 113.2 experiences ice column formation almost every winter due to existing drainage patterns uphill of the rock cut. The ice buildup on the rock face collapses each spring during breakup, and large blocks of ice commonly cover the traffic lanes (Scarpato 2018). DOT&PF constructed a widened shoulder at MP 113.2 to accommodate shifting traffic lanes when (or prior to) these icefall events occur.

3.1.1.2 Environmental Consequences

No Action Alternative

Under the No Action alternative, the corridor would continue to have rockfall and icefall events with insufficient rock catchment zones along the Seward Highway's northbound lanes. This presents a safety hazard for the traveling public. The avalanche hazards would be unchanged from existing conditions. Seismicity would continue to pose potential safety hazards on the existing highway under the No Action alternative.

Proposed Action

Geology and Soils

Proposed Action impacts on geology would include re-grading and cutting portions of the undisturbed surface rock adjacent to the Seward Highway. The Proposed Action would require excavation and/or blasting of approximately 18 million cubic yards of rock and soils to widen the highway and establish sufficient rock catchment zones. Rock excavation would occur along approximately 39 percent of the Proposed Action's 20-mile length (see Table 3-1). Rock cuts would reach up to 300 feet in elevation above the travel lanes. This does not include the medians between the north- and southbound lanes when grade-separated, which would be excavated to a 2H:1V slope (horizontal to vertical rise) and could reach up to 100 feet in additional height. Visual impacts associated with the rock excavation and cuts are discussed in Section 3.3.1.

Table 3-1. Rock cut heights for the Proposed Action corridor.

Rock Cut Heights (feet)	Length (feet)	Length (miles)	Percent of Project (%)
30–90	21,780	4.13	20.7
90–150	9,390	1.78	8.9
150–210	5,750	1.09	5.5
Over 210	3,780	0.72	3.6
Total	**40,700**	**7.72**	**38.7**

Source: HDR 2024a

Geotechnical drilling investigations would occur to inform final design and confirm whether the rock would structurally support these steeper slopes, as well as whether the underlying geology would support grade-separating the northbound lanes higher in elevation on the mountain side. Geotechnical analysis would also support hydrological evaluations and drainage design to address surface and groundwater flows that would change due to the highway construction.

The Proposed Action would permanently disturb approximately 605 acres of soils from excavation, placement of fill, or other ground-disturbance during development of the widened highway. Permanent impacts include changes to the natural landscape such as the removal of the vegetative mat and topsoil, which can lead to erosion and loss of soil fertility. Drainage patterns and capacity may occur due to altering the area's natural drainage patterns and increasing the area of impervious surfaces and localized soil compaction, leading to increased runoff.

Avalanches

The best way to reduce or eliminate avalanche hazards is to move the highway alignment away from avalanche paths; however, this could increase seismic or tidal risks (Murphy n.d.). Between MPs 106.25 and 106.75, the Proposed Action would shift the highway southward into Turnagain

Arm as it crosses the northernmost avalanche path within the Windy Corner Avalanche Zone, which should decrease hazards associated with this avalanche path.

Between MPs 105 and 106.25 and MPs 106.75 and 107, travelers in the northbound lanes may have increased exposure to avalanche hazards due to those travel lanes being elevated farther up and into the mountainside as it crosses the avalanche paths. Exposure to avalanche hazards would be unchanged for southbound travelers. It is anticipated that the avalanche hazards would be unchanged from existing conditions where the Project corridor traverses the Bird Flats Avalanche Zone paths because there is little change to the highway alignment or width in this location. DOT&PF intends to maintain a pullout to stage avalanche mitigation staff and equipment near MP 99.3, keep avalanche gates at MP 99.2 in place, and provide a break in the highway median to provide turnaround capabilities in case of closure.

Seismicity

Seismicity would continue to pose a potential safety hazard under the Proposed Action because it is not possible to predict the time and location of the next earthquake. All bridge and structural (e.g., retaining wall) designs would comply with DOT&PF guidelines and design manuals. Highway and rail segments constructed into the mudflats would be designed and constructed to avoid liquefaction during seismic events.

Rockfall and Icefall

Under the Proposed Action, between MPs 104 and 114—where the majority of the rockfall occurs—the highway would be realigned and widened toward the mountains, except near McHugh Creek, Beluga Point, Rainbow, and Windy Corner, where the highway alignment would shift south toward Turnagain Arm. In some sections, the northbound lanes would be constructed at a higher elevation to take advantage of topography as well as reduce the height and volume of rock cuts. The northbound lane would potentially reduce rockfall hazards by shifting the alignment vertically to move the highway away from the base of the rock slope and onto an existing, naturally occurring bench. Rock faces would have a 70-degree, or less, cut slope to reduce the possibility of rockfall hazards.

Ice accumulation would likely occur within different locations than the existing highway because Proposed Action blasting and excavation activities may alter groundwater movements and expose them to the surface. Geotechnical drilling as well as hydraulic and hydrologic efforts during design would identify, design, and manage the drainage to prevent accumulations and icefall onto the highway. The known icefall area at MP 113.2 is anticipated to be addressed by an independent Highway Safety Improvement Program project scheduled for 2026 construction. If that project is not constructed, then the water movement would be changed by rock excavation associated with the Proposed Action, potentially reducing the ice accumulation and icefall risk at that location.

The Proposed Action would include a minimum 22-foot rock (and ice) catchment area, increased to at least 30 feet when cuts exceed 75 feet in height to reduce risk of fallen rock and ice blocks falling on to the travel way or vehicles.

Construction Impacts

Rock blasting and excavation activities are a substantial effort for the Proposed Action and may span the entire 15- to 20-year construction period for the Proposed Action. It is anticipated that only one blasting event would likely occur within the Project area each day due to wildlife mitigation commitments as well as requirements to maintain highway traffic and railroad

activities. After the blasting event, rocks would need to be cleared from the highway and railroad corridors prior to re-opening the highway and tracks. Materials blasted/excavated for highway widening would be used as fill within the Proposed Action corridor. Excess material would be hauled by truck or rail for use in other projects, either to Anchorage or the Portage area.

Construction impacts may include an additional 95 acres of temporary impacts on soils due to use of construction equipment within 10 feet of the Proposed Action footprint. Equipment operations would temporarily increase sedimentation and localized soil compaction, which could affect the soils' ability to hold and retain water. Temporary access roads and staging areas may be needed during construction; these areas would be restored and revegetated following construction.

Certain geotechnical information may not be available until excavation activities commence that would require vertical or horizontal realignment design changes. To appropriately address and revise Project design to address this new information, Project activities may be delayed.

3.1.1.3 Avoidance, Minimization, and Mitigation Measures

- Blasting, rockfall attenuators, rock bolts, rock dowels, and draped wire mesh will be used to further reduce rockfall hazards on the realigned highway.
- Blasting operations will be coordinated to avoid impacts on wildlife (see Sections 3.2.4.3 and 3.2.5.3).
- The catchment area width will be increased where possible to reduce the possibility of rockfall and icefall hazards and occurrence.
- All bridge and structural (e.g., retaining wall) designs will comply with DOT&PF guidelines and the *Highway Preconstruction Manual* (DOT&PF 2025), *Alaska Bridges and Structures Manual* (DOT&PF 2023a), and *Load and Resistance Factor Design Bridge Specifications* (AASHTO 2020).
- Highway and rail segments constructed into the mudflats will be designed and constructed to avoid liquefaction during seismic events.
- Temporary access roads and staging areas needed during construction will be restored and revegetated following construction.

3.1.2 Air Quality

Clean air is vital to human health and protected by federal, state, and local regulations. Ambient (outdoor) air quality is affected by climate, topography, meteorological conditions, and airborne pollutants produced by natural or human-made sources, and is typically characterized by comparing the concentration of various pollutants with the standards set by federal and state agencies. Under the authority of the Clean Air Act (CAA), the U.S. Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS) for six air pollutants: carbon monoxide (CO), ozone (O_3), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), airborne lead, and particulate matter (PM_{10} and $PM_{2.5}$). The Alaska Department of Environmental Conservation (ADEC) also adopted the Alaska Ambient Air Quality Standards (AAAQS; 18 Alaska Administrative Code [AAC] 50.010). Nitrogen oxides (NO_x) and volatile organic compounds (VOCs) are also regulated by the CAA, but no NAAQS or AAAQS have been established for these pollutants.

EPA also established emissions and equipment standards for 187 listed hazardous air pollutants for several industrial categories. Additionally, greenhouse gases became regulated pollutants on January 2, 2011, because of their contribution to global climate change effects.

3.1.2.1 Affected Environment

Protected by the Chugach Mountains and Alaska Range, and warmed by Pacific Ocean currents, Anchorage has a temperate maritime climate. Temperatures range from a normal daily high (22.7°F) to low (11.0°F) temperature during January, to a normal daily high (66.2°F) to low (52.9°F) temperature during July (WRCC 2022). Winter inversion conditions can lead to higher concentrations of CO as well as $PM_{2.5}$ and PM_{10} as emissions accumulate from vehicles; these are experienced in Anchorage but less so along the Project corridor.

In general, Anchorage has low levels of most types of air pollution. Although Anchorage presently maintains air quality standards for all criteria pollutants, it does incur elevated levels of PM_{10} during the early spring melt season (typically mid-March through April) and may also experience episodes of high daily concentrations of $PM_{2.5}$ during spring or summer, whenever smoke from large-scale wildfires is present in Southcentral Alaska (AMATS 2020).

Due to historical exceedances of the CO NAAQS within the Anchorage Bowl and exceedances of the PM_{10} NAAQS in Eagle River, Anchorage and the State of Alaska are committed to CO and PM_{10} maintenance plans, which have been incorporated into the Alaska *State Implementation Plan* (ADEC 2021). Anchorage has completed its 20-year maintenance period and is no longer required to address transportation conformity for CO. Nevertheless, this Project is outside the Anchorage CO and Eagle River PM_{10} Maintenance Area boundaries.

3.1.2.2 Environmental Consequences

No Action Alternative

The Project area is not located within a non-attainment area and has no record of violating NAAQS. Considering the historically good air quality within the Project area, the No Action alternative is not expected to exceed air quality standards within the Project area or to have any adverse regional effects compared to existing conditions. It is anticipated that improvement in per vehicle emissions would offset any traffic increase, so any incremental changes to pollutants are anticipated to be negligible.

Proposed Action

Considering the historically good air quality within the Project area, the Proposed Action is not expected to exceed air quality standards within the Project area or have any adverse regional effects. Vehicle emissions generally are proportional to the number of vehicle miles traveled. The number of trips on the highway and within the Project area is anticipated to increase by the same amount under both the Proposed Action and No Action alternatives within the life of the Project (by 2052). However, EPA has reported a downward trend in the new vehicle real-world carbon dioxide emission rate for model year 2023 and predicted for model year 2024 due to factors such as improved fuel economy and increased electric vehicle production (EPA 2024a). Decreased vehicle emissions would reduce hazardous air pollutant emissions, diminishing but not eliminating the impact of the predicted traffic increases on air pollutants.

The Proposed Action is not anticipated to exceed NAAQS. Incremental summer M&O activities would include additional painting, crack sealing, and repaving of additional lanes. These M&O activities are not anticipated to contribute to adverse air quality impacts.

Construction Impacts

Construction of the Proposed Action would result in impacts on air quality from increased dust and PM from vehicle and equipment emissions throughout the anticipated 15 to 20 years of

construction activities within the Project corridor. Dust from dirt, rock, and other fine materials would become airborne during blasting operations; when uncovered trucks transported materials; and when vehicles cross dry, unpaved surfaces. Ambient CO and NOx levels are expected to increase during construction due to concentrated activity by large construction equipment and slowed or halted vehicle traffic, but these are not expected to exceed air quality standards. Most construction activity and associated emissions would occur during summer, when atmospheric dispersion tends to be greater. The construction-related exhaust emissions and dust generation would occur across the construction area, rather than being concentrated at a single location.

3.1.2.3 Avoidance, Minimization, and Mitigation Measures

- DOT&PF will prepare an Erosion and Sediment Control Plan (ESCP) as part of the construction contract package. The ESCP will include best management practices (BMPs) that protect air quality during construction of the Proposed Action such as use of plastic coverings to protect soils, rock slope armor, stabilized construction exits, tire washes, and temporary seeding.
- Construction equipment engines will be properly maintained and use appropriate exhaust controls to reduce PM in diesel engine exhaust.

3.1.3 Floodplains and Hydrology

Due to the importance of floodplains, Executive Order (EO) 11988 (*Floodplain Management*) dictates that federal agencies work to minimize the impacts of flooding on human health and safety, and to preserve the beneficial values of floodplains if no practicable alternative exists. FHWA regulations in 23 CFR 650 Subpart A apply to encroachments in all 1 percent annual exceedance probability (AEP) floodplains. An encroachment is defined as any action (construction, reconstruction, rehabilitation, repair, improvement) within the limits of the base floodplain.

For background information on floodplains and definitions, refer to Appendix J *Location Hydraulic Study*.

3.1.3.1 Affected Environment

The Project area is bordered by the slopes of the Chugach Mountains on one side and the waters of Turnagain Arm on the other. Minimal potential for flooding exists in the steepest drainages. Turnagain Arm experiences extreme tidal fluctuations with strong currents and seasonal ice scour. At high tide, the waters of Turnagain Arm reach the ARRC embankment; in numerous places, they flow beneath the existing transportation corridor, impounding water between the Seward Highway and the surrounding mountains.

The largest flood zone within the Project area is Potter Marsh, which is a 564-acre, tidally influenced, freshwater and brackish wetland at the northern end of the Project area. The entire wetland is drained by Rabbit Creek, which passes under the Seward Highway and railroad at MP 117.5 using three side-by-side, 60-inch-diameter culverts. The two largest creek crossings within the Project area are Indian and Bird Creeks; the lower reaches of both are tidally influenced. Marine waters between MPs 115.5 and 117.5, as well as Bird Creek, are designated Federal Emergency Management Agency (FEMA) Flood Zone A, Special Flood Hazard Area (SFHA). Zone A areas are considered high risk, with a 1 percent AEP, but have not had their base flood elevation (BFE) determined. Potter Marsh, the lower reaches of Rabbit Creek, and Indian Creek have been designated Flood Zone AE, areas of high risk that have had BFEs determined. Much of the rest of the Project area has been designated as Flood Zone D, indicating

they are "areas of undetermined risk," meaning that the risk of flooding within this zone has not been assessed.

3.1.3.2 Environmental Consequences

No Action Alternative

The No Action alternative would maintain existing infrastructure at all stream crossings. Crossings at Indian, Bird, and Bear Creeks were upgraded in 2022 to meet current design standards, and a new culvert crossing was installed at McHugh Creek in 2023. However, culverts at Rabbit, Potter, and Rainbow Creeks as well as MP 98.5 are still fish passage impediments and likely undersized for both current conditions and climate projections that anticipate increased precipitation, storm intensities, and sea level rise. These factors combined could lead to more frequent and intense flooding in tidally influenced drainages within the Project area. Even without expanding the transportation infrastructure within the Project area, it is likely that culverts designed for historical flows would need to be replaced in most locations along the highway to accommodate climate-driven changes.

Proposed Action

The Proposed Action would widen the road and rail corridor throughout the Project area, requiring both blasting of the steep hillsides and placement of fill into Turnagain Arm and at numerous stream crossings, including 11.5 acres between MPs 115.5 and 117.5 mapped as Zone A. The MOA has indicated that any encroachment into regulated floodplains (Zones A and AE) will require a Flood Hazard Permit (FHP). FHPs would not be required for encroachments on unregulated floodplains (e.g., Zone D) if no nearby structures could be affected by the proposed work (Ellis 2024). All other instances of marine fill placement for this Project, estimated as up to 105 acres total, are in Zone D.

Floodplain encroachments would occur at the outlet of both Indian and Bird Creeks. At Indian Creek, approximately 0.3 acre of area would be impacted by the Project footprint between the ARRC tracks and Seward Highway, narrowing an already constrained and tidally influenced reach. At Bird Creek, less than 0.2 acre of area below high tide line (HTL) would be impacted from the planned placement of the retaining walls on the upstream side of the existing bridge abutments.

Eight smaller crossings within Zone D areas would not need FHPs because no structures are nearby that could be affected by changes to drainage from the road redesign. The Rabbit Creek crossing culverts drain FEMA-mapped floodplains (Zone AE within Potter Marsh and Zone A at the outlet) and would require a floodplain permit. The expanded footprint of the Proposed Action would lead to considerably longer subsurface conveyance of water at all the smaller crossings currently drained by culverts. This is not anticipated to increase flood danger because existing culverts would be replaced with new ones that would be properly sized for the expected flow conditions and, in many cases, upgraded to allow for fish passage (MBI 2024a; see Appendix J).

Construction Impacts

Increased flood hazards may exist during construction activities from the use of temporary roads, bridges, and culverts. These impacts would be mitigated by the development of a Project-specific ESCP and Stormwater Pollution Prevention Plan (SWPPP) to ensure appropriate control measures are installed and maintained, and soils are stabilized.

3.1.3.3 Avoidance, Minimization, and Mitigation Measures

- All bridge and culvert crossings will be hydraulicly designed based on DOT&PF's *Alaska Highway Drainage Manual* (DOT&PF 2006).
- Replacement culverts will be designed to meet current standards with additional fish passage design considerations at streams listed in the ADF&G Anadromous Waters Catalog (AWC; Giefer and Evers 2025), and compliant with ADF&G and DOT&PF's 2025 Memorandum of Agreement for the design, permitting, and construction of culverts for fish passage (ADF&G and DOT&PF 2025).
- Final bridge design has not been completed for the Indian and Bird Creek crossings at this time; because both creeks are designated SFHAs, the final design will ensure that the BFE is not increased by the encroachments.

3.1.4 Water Quality

EPA is responsible for regulating water quality per Sections 401, 402, and 404 of the Clean Water Act (CWA). In 2008, ADEC assumed primacy from EPA for developing water quality standards (18 AAC 70); addressing nonpoint source pollution; assessing surface water quality, including determination of 303(d) listed waters; providing quality assurance assistance; developing regulations; and administering the Alaska Pollutant Discharge Elimination Program (APDES), which regulates discharge water quality. The State of Alaska also approves drinking water protection areas and requires minimum separation distance for private water systems (18 AAC 72.100) to prevent potential contamination of groundwater used for drinking water.

DOT&PF is a co-permittee with the MOA for the Municipal Separate Storm Sewer System (MS4) discharge permit (AKS052558) that authorizes the discharge of stormwater pollutants under the APDES program. This permit covers the Project area.

3.1.4.1 Affected Environment

Freshwater

Most creeks within the Project area originate within CSP at high elevations and flow down toward the Seward Highway and finally to Turnagain Arm (waterbodies are shown on maps in Appendix F). The intermittent streams within the Project area tend to flow during spring breakup and the rain season (July to October). The lower portions of major perennial streams (Bird, Indian, and Rabbit Creeks) are tidally influenced by Turnagain Arm. In most cases, the creeks within the Project area are conveyed through culverts along and under the Seward Highway. Indian and Bird Creeks are the only creeks within the Project area that freely flow without conveyance structures to Turnagain Arm. McHugh Creek flows into a pool on the mountain side of the Seward Highway and has a culvert that passes under the Seward Highway for overflow.

Runoff from impervious surfaces such as roadbeds, parking areas, and pullouts are captured through various drainage structures along the Seward Highway, and are discharged into creeks and ultimately to Turnagain Arm. These discharges are covered under the MS4 permit and Construction General Permit (CGP). The runoff typically contains sediment from the impervious surfaces and can also contain chemicals from vehicles, including petroleum hydrocarbons, copper from brake pads, and 6-PPDq (a rubber preservative that is known to impact salmon) (EPA 2024b; Tian et al. 2021).

According to ADEC's approved *2022 Final Integrated Report* (ADEC 2022), Little Rabbit Creek, which flows into Rabbit Creek, is categorized as a 4A impaired waterbody for fecal coliform with a recovery plan in place. Little Survival Creek, which flows into Potter Marsh, is

also listed as a 4A impaired waterbody for fecal coliform with a Total Maximum Daily Load in place.

Groundwater

Groundwater within the Project area is typically shallow, with seeps often daylighting along the Seward Highway and rock cuts that occurred during construction of the current highway alignment. Businesses and residential buildings in Bird, Indian, Rainbow, and portions of the area around Potter Marsh are supplied with drinking water through groundwater wells. ADEC maintains a database of drinking water protection areas within the state. Four protection areas are along the Project corridor, all associated with transient non-community well systems: Rabbit Creek Rifle Range (AK2219554) near MP 117, Birch and Alder (AK2216512) and Brown Bear Saloon (AK2213726) in Indian, and Shoreside Petroleum Essential-1 gas station (AK2213352) in Bird.

Source Water Assessment summaries for the Birch and Alder and the Brown Bear Saloon well systems state that the well/surface water intake susceptibility is low, but the aquifer susceptibility is very high (ADEC n.d.). Overall vulnerability to potential contaminants is high for bacteria/viruses, nitrates/nitrites, and VOCs. Both wells access the same aquifer, which also supplies the drinking water for private wells within Indian. A Source Water Assessment summary for the Essential-1 gas station well system states that the aquifer susceptibility is high (ADEC 2008), and the Rabbit Creek Rifle Range well system aquifer susceptibility is medium (ADEC 2001).

Marine Water

Turnagain Arm, a branch of Cook Inlet, is a hypertidal, fjord-style estuary where the water quality is highly influenced by the glacially fed streams flowing into Turnagain Arm. Due to very high tidal fluctuations, Turnagain Arm can consist of mostly freshwater at certain tides. Turnagain Arm has a high concentration of glacial silt from glacially fed streams, which settles out of the water column, is redistributed along the bottom of the Arm during drastic tidal changes, and typically has lower salinities than most marine waters due to the high contribution of freshwater.

Currently, stormwater and snowmelt from the Seward Highway roadbed and parking areas discharge into Turnagain Arm as well as open conveyance and ditch systems in communities along the highway under the MS4 permit.

3.1.4.2 Environmental Consequences

No Action Alternative

The No Action alternative would maintain existing conditions and trends. The most likely impact on water quality for the transportation corridor would continue to be stormwater runoff that carries sediment and pollutants from the existing highway into area waters. Stormwater runoff from roadways is known to carry sediment; copper from vehicle brakes; petroleum hydrocarbons; heavy metals from tires, brakes, and engine wear; and tire preservatives such as 6PPDq. Pollutant loads would increase in proportion to the traffic increase, forecasted at approximately 1 percent annually over the life of the Project (HDR 2024b).

Proposed Action

Changes to drainage patterns and seeps would occur due to changes in topography from the Proposed Action, which may lead to increased surface water runoff. The additional paved travel

lanes, turn lanes, shoulders, medians, and paved pathway of the Proposed Action would increase the roadway corridor's impervious surface area, which would result in an increase in stormwater runoff. The new flow patterns could cause water to flow into areas that previously have not conveyed surface runoff. This could increase soil erosion and sediment transport. If necessary, during final Project design, DOT&PF would design various treatment systems to remove the pollutants from the stormwater to maintain the MS4 permit throughout the Project area.

The traffic volumes within the Project area are anticipated to grow similarly under the Proposed Action and No Action alternatives (by year 2052). As such, an increase in pollutant loads that is proportional to the traffic volume increases is anticipated.

Stormwater impacts on marine waters of Turnagain Arm would be negligible. Due to the high energy system and silty substrate, Turnagain Arm has naturally high levels of background sediment.

The Brown Bear Saloon drinking water protection area overlaps with the Proposed Action by 387 square feet (less than 0.01 acre). The Birch and Alder drinking water protection area is within 12 feet of the Proposed Action. The well within this protection area pumps drinking water from the same aquifer as the Brown Bear Saloon. While these overlaps are small, the aquifer is highly susceptible and is the source for drinking water for all Indian residential wells. The Rabbit Creek Rifle Range drinking water protection area overlaps the Proposed Action footprint by 0.9 acre. The Proposed Action is unlikely to affect any of these drinking water protection areas because each area already includes the Seward Highway, has been tested on a consistent basis, and has not shown contamination.

Construction Impacts

The Proposed Action includes placing fill into Turnagain Arm. Construction of the Proposed Action would likely result in short-term impacts on water quality in Turnagain Arm due to the increased sediment load, which would eventually settle out of the water column during placement and be protected from erosion through the placement of riprap. Construction-related impacts on water quality would also occur due to sediment loads introduced into the nearby waterbodies via soil disturbance, rock blasting, water diversion and realignment, culvert installation, and bridge installation. Construction of the Proposed Action could also introduce petroleum hydrocarbons into area waters from construction equipment used to place fill material. Potential spills during construction would be avoided or minimized through the stipulations associated with the CWA Section 401 and 404 permits required for this Project.

3.1.4.3 Avoidance, Minimization, and Mitigation Measures

- The Proposed Action will be designed to incorporate features that will ensure that water flows into new or existing drainage structures and measures, such as placement of armor rock, to decrease erosion.
- Drainage through Indian will be designed to route stormwaters from the highway toward Turnagain Arm to minimize potential impacts on the groundwater aquifer.
- Impacts on water quality will be minimized through compliance with the CGP and MS4 permit requirements. To comply with these requirements, DOT&PF will prepare an ESCP as part of the construction contract package.
- Prior to commencement of construction activities, the construction contractor will prepare and submit a SWPPP that identifies specific BMPs, including erosion prevention and control measures, and a schedule for earth-disturbing activities.

3.2 Biological Environment

3.2.1 Vegetation and Wetlands

3.2.1.1 Affected Environment

The Project area has a diverse array of vegetation and wetlands due to its mountainous terrain, proximity to the coast, and large tides.

Vegetation

Turnagain Arm is composed of diverse habitats between sea level and the surrounding mountain slopes. Spruce, birch, and poplar form most of the tree cover within the Project area. Shrub habitat, dominated by alder and willow, occur both above the forested zone and where natural disturbances such as avalanches, landslides, or fire have promoted vegetation succession. Herbaceous and low-growing species are widely varied and include dwarf dogwood, bluejoint reedgrass, and lowbush cranberry. Mosses and lichens are also prevalent.

Potter Marsh is a large wetland, and contains a mix of sedge and small shrub communities growing along the edges of open water. Smaller wetlands in riparian areas throughout the Project area also have similar vegetation. The Bird and Indian Creek valleys contain the largest river systems within the Project area and contain a mixture of low-elevation forests and shrub-dominated riparian areas. Additional information on vegetation communities within the Project area can be found in Appendix I.

EO 13112 (*Invasive Species*) sets the policy for federal agencies to prevent and control the introduction of invasive species to minimize economic, ecological, and human health effects that invasive species may cause. Highway corridors provide opportunities for the movement of invasive plant species, which are opportunistic and often establish after disturbance to the soil (e.g., fire, vegetation removal, construction activities). Biologists observed 15 different invasive plant species during field surveys in 2023, and 22 invasive or non-native plant species have been documented within or adjacent to the Project area (AKEPIC 2023), several of which are considered prohibited or restricted noxious weeds per 11 AAC 34.020. Most invasive species occur within previously disturbed areas along the highway or pullouts. See Appendix I, Table 5 for list of observed plant species.

Wetlands and Other Waters of the United States (WOTUS)

Wetlands are areas possessing the following three characteristics: a vegetation community dominated by plant species that are typically adapted for life in saturated soils (hydrophytic); wetland hydrology; and hydric soils. Hydric soils are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions (USACE 1987). Other WOTUS within the Project area include estuarine waterbodies associated with Turnagain Arm as well as freshwater ponds and streams.

EO 11990 (*Protection of Wetlands*) provides policy guidelines for federal government agencies to avoid, to the extent possible, any adverse impacts associated with the destruction or modification of wetlands, and to avoid supporting new construction within wetlands whenever a practical alternative exists. DOT&PF carried out mapping sufficient to inform evaluation of the Project under NEPA and to inform a Department of the Army permit application for impacts on wetlands and waterbodies under Section 404 of the CWA (1972, as amended) and Section 10 of the Rivers and Harbors Act of 1899. DOT&PF completed a Preliminary Jurisdictional Determination (PJD) Report to identify wetlands and waterbodies near the Project area

(Appendix I). These efforts identified wetlands within the PJD mapping area. Palustrine emergent wetlands are the most common wetland type identified and are generally found within Potter Marsh as well as within wetland complexes located at the southern end of the Project area. Wetlands are also found within the low-elevation riparian areas adjacent to Indian and Bird Creeks. These estuarine wetlands are tidally influenced with predominantly emergent vegetation. Other WOTUS are the most common mapped aquatic resource within the PJD mapping area (1,938.8 acres, 83 percent of total wetlands and waterbodies) and are typically associated with Turnagain Arm. Refer to Appendix I, Table 6 for the mapping summary of all wetland types within the PJD mapping area.

3.2.1.2 Environmental Consequences

No Action Alternative

Under the No Action alternative, no changes to vegetation and wetlands status would occur.

Proposed Action

Vegetation

The Proposed Action construction footprint would disturb approximately 300 acres of vegetation. Table 3-2 provides the amount of vegetation types that would be removed within the Project area.

Table 3-2. Proposed Action impacts by vegetation type within the Project area.

Vegetation Type[a]	Acres
Needleleaf (conifer) forest	3.1
Broadleaf forest	89.2
Mixed forest	92.9
Dwarf tree scrub	0.8
Tall scrub	18.5
Low scrub	18.5
Dwarf scrub	0.2
Graminoid herbaceous	66.6
Forb herbaceous	11.0
Aquatic (nonemergent) herbaceous	< 0.1
Total[b]	**300.8**

[a] Vegetation types based on Viereck (1992) Level III categories.
[b] Totals may not equal the sum of their values due to rounding.

Adverse impacts on vegetation from the Proposed Action are anticipated to be minor and short term where vegetation has the potential to repopulate. Vegetation types would likely change along the expanded highway ROW, with grasses and shrubs replacing forest to provide better line of sight for drivers and reduce wildlife attractants near the roadway. In places where vegetation cannot regrow, such as where the footprint converts vegetated areas to pavement, the Proposed Action would have a permanent impact on vegetation.

Wetlands and Other Waters of the United States (WOTUS)

The Proposed Action would result in temporary and permanent impacts on wetlands and other WOTUS as well as their associated functions and values. The Proposed Action would result in the permanent conversion of 23.5 acres of wetlands and 97.4 acres of other WOTUS to uplands from the placement of fill over the 605 acres of ground disturbance. Approximately 80 percent of

the Proposed Action would occur within uplands. Table 3-3 provides the acreage of wetland and waterbody types that would be filled by the Proposed Action.

Table 3-3. Proposed Action impacts on wetlands and other WOTUS by type.

Type	Area of Impact (acres)	Area of Impact (% of Project Footprint)
Palustrine emergent wetlands	5.9	1
Estuarine emergent wetlands	8.4	1.4
Palustrine shrub-scrub wetlands	5.9	1
Palustrine forested wetlands	2.2	< 1
Estuarine shrub-scrub wetlands	1.1	< 1
Estuarine waters	92.2	15
Rivers and streams	0.5	< 1
Fresh waterbodies	4.7	1
Total wetlands and other WOTUS	**120.8**	**20**

[a] Totals may not equal the sum of their values due to rounding.

Approximately 92 acres of fill would be placed within the highest value wetlands—estuarine waters of Turnagain Arm. These estuarine waters are of high value because they are Cook Inlet beluga whale concentration areas. Overall, the Proposed Action would affect a small portion of the Cook Inlet beluga whale concentration areas in Turnagain Arm. The Proposed Action's impacts on Cook Inlet beluga whales are further discussed in Section 3.2.6.2.

Construction Impacts

Construction of the Proposed Action would result in both temporary and permanent impacts on wetlands as well as their associated wetland functions and values. Construction activities associated with the Proposed Action have the potential to increase sediment loading into wetlands and waters. Stormwater runoff during construction and operation could also increase the amount of sediment entering wetlands and waters adjacent to the roadway. Increases in sediment loading could impact their biological functions as well as their wildlife and habitat (Richardson 2005).

Construction-related activities provide an opportunity for invasive plants to expand or colonize new areas due to soil disturbance and replanting efforts, including prohibited and restricted noxious weeds (AKPMC 2023). Construction vehicles have the potential to disperse invasive plants throughout and beyond the Project corridor.

3.2.1.3 Avoidance, Minimization, and Mitigation Measures

Due to the constricted nature of the Project area between the Chugach Mountains and Turnagain Arm, as well as the proximity of Potter Marsh and other impounded wetlands to the Project corridor, complete avoidance of impacts on wetlands is not practicable.

DOT&PF is committed to minimizing unavoidable impacts on wetlands and other WOTUS. Where avoidance is not practicable, the following general design commitments and mitigation measures are proposed:

- DOT&PF has committed to compensatory mitigation for the unavoidable impacts of up to 120.5 acres of wetlands. DOT&PF will pay an accredited wetland mitigation bank or, if unavailable, an in-lieu fee provider, which in turn uses the funds to preserve, protect, or enhance wetlands within the larger watershed. This is an established practice that follows the U.S. Army Corps of Engineers' (USACE's) permitting process and regulations. Based on

other recent Southcentral Alaska project transactions that involved wetlands fill, it is estimated that DOT&PF would pay approximately $20 to $25 million dollars in mitigation fees. The specific fees will be established during final design and permitting.

- The Project has been designed to avoid wetlands and WOTUS to the greatest extent possible by limiting spaces where the ARRC embankment will be moved into Turnagain Arm; minimizing road width where possible; placing structures outside the HTL where feasible; and maintaining drainage patterns when possible, all while achieving Project safety goals.
- Vegetation clearing and construction within wetlands will be minimized to the greatest extent practicable.
- The contractor will be required to have an approved SWPPP that identifies BMPs required during construction to prevent erosion and runoff from entering aquatic habitats, minimizes disturbance areas, and stabilizes disturbed areas as soon as practicable. These will be implemented on or at the perimeters of disturbed soil surfaces (prior to disturbance) to minimize transport of sediment to WOTUS.
- Soil stabilization methods and seeding will be implemented wherever the Proposed Action results in ground disturbance with a seed mixture recommended by the Alaska Department of Natural Resources (ADNR). Seed containing prohibited noxious weeds will not be incorporated.
- All sediment control measures (e.g., silt curtains, certified weed-free straw wattles, other structures) will be installed properly and maintained in a functioning manner for the duration of the Project. Initiation of final stabilization measures on disturbed areas will occur within 14 calendar days of completing construction within the respective area. Ground disturbances within these areas will be addressed by measures such as raking slopes, seeding, fertilizing, and mulching as well as the BMPs mentioned above.
- Only clean fill material will be used for the roadway embankment.
- No untreated water from construction will be discharged into any receiving waters or wetlands.
- Staging areas will be located within uplands or previously disturbed areas to the extent practicable.
- The contractor will place fill material and riprap below Ordinary High Water (OHW) during periods of low flow.
- The contractor is required to have an approved Spill Prevention, Control, and Countermeasure (SPCC) Plan prepared for this Project. Standard spill-prevention measures will be implemented during construction. Spill clean-up equipment (e.g., oil-absorbent pads) will be available onsite during construction.
- All in-water work within streams will be isolated from flowing water. Work within standing water or emergent wetlands will be isolated using appropriate BMPs (e.g., silt curtains, cofferdams).
- Where a 25-foot vegetative buffer is not available for wetland protection, appropriate BMPs will be used.
- Existing drainage patterns will be maintained or enhanced wherever possible, including replacement of damaged or failing culverts with pipes of equal or larger size. Culvert replacement will help improve water quality by reducing scour and erosion, reduce flooding, and provide improved habitat connectivity, resulting in some amount of ecological uplift for existing streams and wetlands adjacent to the roadway.

3.2.2 Fish, Essential Fish Habitat, and Other Aquatic Species

ADF&G has documented fish species presence along Turnagain Arm and within some tributaries included in the *Catalog of Waters Important for the Spawning, Rearing or Migration of Anadromous Fishes* (Giefer and Evers 2025).

3.2.2.1 Affected Environment

Estuarine and marine waters of Turnagain Arm, including those within the Project area, are Essential Fish Habitat (EFH) for juvenile and marine immature adult or maturing adult life stages for all five Pacific salmon species (Chinook, chum, coho, sockeye, and pink salmon; NPFMC 2020, 2021). According to ADF&G's AWC (Giefer and Evers 2025), 13 AWC-nominated waterbodies are within the Project area (Table 3-4). Waterbodies that support Pacific salmon are also considered EFH.

Table 3-4. Anadromous waterbodies within the Project area.

Waterbody Name	AWC Code	Anadromous Fish Species Present
Rabbit Creek	247-60-10320	Chum, coho, Chinook, pink, and sockeye salmon; Dolly Varden
Little Survival Creek	247-60-10320-2012	Coho, Chinook salmon
Potter Creek	247-60-10310	Coho, pink salmon
Potter Creek South Fork	247-60-10310-2004	Coho salmon
McHugh Creek	247-60-10300	Coho salmon
McHugh Pond	247-60-10300-0010	Coho salmon
Unnamed Stream	247-60-10292	Coho salmon
Indian Creek	247-60-10290	Coho, Chinook, and pink salmon
Bird Creek	247-60-10280	Chum, coho, Chinook, and pink salmon
Birdhouse Creek	247-60-10278	Coho salmon
Unnamed Lake	247-60-10272-0010	Coho salmon
Unnamed Creek at MP 99.5	247-60-10276	Coho salmon, Dolly Varden
Potter Creek Middle Fork	247-60-10310-2004-3001	Coho salmon

Source: Giefer and Evers 2025

The Project area crosses a total of 68 streams. Of these streams within the Project area, 13 are AWC streams (Giefer and Evers 2025). According to the Alaska Freshwater Fish Inventory, Dolly Varden are known to be present within three streams that are not nominated as an AWC waterbody (ADF&G n.d.). Within the Project area, 36 streams do not have publicly available fish data, and species presence is unknown. These streams have steep cliffs and high stream gradients, are not likely not suitable for fish habitat, and are inaccessible to fish passage.

ADF&G rates culverts on their suitability for fish passage by assessing certain critical values: gradient, outfall height, and constriction ratio. Assessment of these values results in either a green or red rating. A green rating indicates all critical values are met, and a red rating indicates one or more critical values are unacceptable. Two culverts within AWC waterbodies within the Proposed Action area have a red rating: Rabbit and Potter Creeks (ADF&G 2024a).

Fish species composition within the Project area varies by season. Juvenile salmonids were the most abundant fish, as a group, found within Turnagain Arm nearshore areas during sampling in

June and July (Pentec 2006). Young salmonids are known to use the shoreline, where present, as forage and shelter before dispersing to the open ocean. Shoreline areas within the Project area are listed by the National Marine Fisheries Service (NMFS) as EFH for all species of Pacific salmon (NPFMC 2021). Life history and general distribution for Chinook, coho, chum, and pink salmon is provided in Appendix K *Essential Fish Habitat Report*.

Essential Fish Habitat

The estuarine and marine waters in Turnagain Arm support fish species managed under federal fishery management plans and are considered EFH for some of these species. The Magnuson-Stevens Fishery Conservation and Management Act (MSA) defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity."

Turnagain Arm is designated EFH for the five Pacific salmon species. Additionally, Turnagain Arm has designated EFH for dover sole, flathead sole, northern rock sole, Pacific cod, and southern rock sole larvae as well as Alaska plaice and rex sole as larvae and egg, and yellowfin sole as eggs; all of which may occur during summer (NOAA 2022).

The Proposed Action area would not be suitable nursery habitat for flathead, dover, yellowfin, and rock sole (Norcross 1995). Given the lack of suitable juvenile nursery habitat surrounding the Project area, fishery management plan-managed flatfish eggs and larvae are not anticipated to be present. See Appendix K, Section 3.1 for more details regarding EFH species within the Project area. Appendix K also provides figures displaying the freshwater and marine habitat.

Migrating eulachon are typically found within Upper Cook Inlet between April and June. Twentymile River (AWC 247-60-10230), located approximately 15 miles east of the Project area, supports eulachon as well as Pacific salmon. Eulachon are abundant during the spring run in the Twentymile River, where a personal use and small commercial fishery for the species occurs. EFH designations do not exist for species in the forage fish complex (e.g., Pacific herring, eulachon) because available data are insufficient to identify EFH for those species (Eagleton 2016; NPFMC 2020).

Other Aquatic Species

Due to large amounts of suspended sediment and high turbidity throughout Turnagain Arm, phytoplankton production is minor as a result of insufficient light availability (Pentec 2006). In general, benthic and demersal invertebrate communities in Turnagain Arm are low in diversity and abundance when compared to other nearshore habitats in Southcentral Alaska (e.g., Lees et al. 1980; Houghton et al. 1997), but very similar to areas with similar physical conditions such as Knik Arm (Pentec 2005a, 2005b). In Turnagain Arm, 14 invertebrate species, including crustaceans, amphipods, isopods, copepods, polychaetes, and bivalves occur (Pentec 2006). It is well documented in Cook Inlet that species such as sculpin, cod, and juvenile salmon prey heavily on mysid and crangonid shrimp as well as on polychaetes and amphipods of the lower trophic levels (Pentec 2005b).

3.2.2.2 Environmental Consequences

No Action Alternative

The No Action alternative would not impact fish, EFH, or other aquatic species.

Proposed Action

The Proposed Action would replace and extend highway bridges and culverts throughout the highway corridor. All culverts within fish bearing streams would be designed to meet ADF&G

standards for fish passage. A preliminary hydrologic analysis indicates that 9 large (greater than 48-inch) diameter culverts are needed (MBI 2024b), and culvert replacements or extensions would occur at 10 culverts within waterbodies identified as cataloged anadromous streams. These numbers may change as further Project design is completed. Culvert replacements would occur at Rabbit, Potter, and Birdhouse Creeks. The culverts at Rabbit Creek (north Potter Marsh) would be designed to maintain current water levels within Potter Marsh. The culvert replacement at Potter and Birdhouse Creeks would require stream reconstruction.

To support the new highway alignment and maintain fish passage, culvert extensions would occur at McHugh Creek and Unnamed Creek (247-60-10292). Bridge replacements would be constructed at Indian and Bird Creeks, which are also identified as cataloged anadromous streams. Bridges constructed over streams could experience problems with aggradation, degradation, bank erosion, and lateral channel shifts during their useful life (FHWA 2012). The Proposed Action would potentially increase the amount of runoff entering waterways from impermeable surfaces (i.e., paved road), which can carry harmful substances that affect fish health.

The Proposed Action would place fill in approximately 105 acres of marine EFH to construct the highway and railroad realignment. Fill would permanently remove the EFH available for juvenile salmon and flatfish rearing as well as have the potential to alter the productivity of these nearshore environments. When the new fill is placed, however, it is expected that juvenile salmon and flatfish would repopulate that new fill area with similar abundance as before construction.

DOT&PF consulted with National Oceanic and Atmospheric Administration Fisheries (NMFS) regarding impacts to EFH within the Project area to satisfy Section 305(b) of the MSA and the Fish and Wildlife Coordination Act. As part of this process, DOT&PF provided notice of the Proposed Action to NMFS, as well as prepared an EFH assessment (Appendix K) that included an analysis of the Proposed Action impacts on EFH. NMFS agreed with EFH impact findings and recommended mitigation measures, which are included in Section 3.2.2.3.

For further details on culvert replacements and extensions, bridge replacement, blasting, and marine EFH, see the EFH assessment (Appendix K).

Construction Impacts

Construction of bridges and culverts that occurs below the waterline would cause localized, temporary impacts on turbidity and suspended sediments, and has the potential to affect the water quality of the streams during construction. An increase in turbidity would cause a temporary decrease in fish habitat quality. Increased sediment loads pose a direct threat to salmonid embryos through deposition in interstitial spaces, thereby reducing oxygen-rich flows and pathways for waste removal, and potentially burying emerging fry (Bash et al. 2001).

Blasting activities may occur near Little Survival, Potter, and McHugh Creeks. Blasting would not occur within 250 feet of any AWC waterbodies, and would occur at low tide, limiting blasting proximity to marine waters. Due to the distance of blasting away from EFH, fly rock and blasting debris are not anticipated to affect EFH.

Disturbing the seafloor may affect the benthic organisms, which could affect food supply adjacent to where work below the waterline is being conducted.

3.2.2.3 Avoidance, Minimization, and Mitigation Measures

- Culvert designs will comply with the 2025 Memorandum of Agreement between ADF&G and DOT&PF for the Design, Permitting, and Construction of Culverts for Fish Passage (ADF&G and DOT&PF 2025).
- Stream channels will be constructed prior to filling existing stream channels. Fish will be removed from proposed fill locations prior to dewatering. A small amount of flow will be diverted in the new channel to wash fines into the substrate prior to diverting all of the stream's flow, limiting potential impacts on fish by maintaining fish passage in each creek throughout construction as well as reducing siltation and turbidity potential.
- Construction and in-water work windows will be timed to minimize adverse impacts on salmon during critical life stages. Work conducted on anadromous streams will be performed between May 15 and July 15.
- No vehicles or equipment will be fueled or serviced within 100 feet of wetlands or fish-bearing streams, except for "low-mobility" equipment used for pile driving, drilled shaft construction, or other bridge construction. An appropriate plan will be developed detailing the fueling process for this equipment, including materials to immediately contain and clean up spilled petroleum products. Fuel will be stored a minimum of 100 feet from any waterbody or wetland.
- Natural vegetation along anadromous streams will be retained to the greatest extent practicable.
- Placement of fill within anadromous streams will be avoided where possible.
- Bridge abutments in anadromous waters will not be placed in manner that would restrict flow and create a velocity barrier to migrating fish at the crossing site.
- Drainages along anadromous streams will be designed to discharge road runoff through riparian areas prior to entering the stream.
- Contaminant-free embankment and surface materials will be used in construction.
- Streambanks where culverts and bridges would be replaced will be recontoured and revegetated with native vegetation to minimize erosion and provide fish habitat.
- Streams that may be unavoidably affected by the Proposed Action will be rerouted to ensure connectivity with freshwater EFH.
- Staging areas will be located within uplands or previously disturbed areas.
- The contractor will place fill material and riprap below OHW during periods of low flow.
- Rock fill in the marine environment will be placed onto mudflats at low tide when the mudflats are exposed. In some cases, rock fill will be placed within or near a low-tide channel. Where rock must be placed in water, it will be done during a low tide if feasible.
- Existing drainage patterns will be maintained or enhanced wherever possible, including replacement of damaged or failing culverts with pipes of equal or larger size.

Refer to Section 3.2.1.3 for measures related to mitigating impacts from erosion, sediment transport, and pollution.

3.2.3 Birds

The Project is located entirely along Turnagain Arm, which forms part of the Pacific Flyway and hosts a wide variety of avian species.

3.2.3.1 Affected Environment

Bird habitat types within the Project area include wetlands, woodlands, riparian areas, cliffs, and tidally influenced shorelines. Potter Marsh and other coastal areas of Anchorage form the Anchorage Coastal Important Bird Area. Approximately 220 bird species have been identified within this area, 160 of which populate the Anchorage coastline annually or as breeders (Audubon Alaska 2017). Birds are the most observed wildlife within the 16 miles of coastline that comprise the ACWR. The Migratory Bird Treaty Act (MBTA) protects migratory birds and their nests. Wetlands in Turnagain Arm are heavily used by migrating waterfowl to stage as they migrate during spring and fall. Potter Marsh has among the highest densities of breeding ducks within the Upper Cook Inlet area (ADF&G 1991). Waterfowl begin nesting as early as mid- to late-April in Southcentral Alaska, while passerines and other birds begin nesting during early May in forest and shrubland habitats (USFWS 2017).

Birds of Conservation Concern (BCC) are bird species that are the highest conservation priority for the U.S. Fish and Wildlife Service (USFWS). Nearly all BCC found within the Project area have been recorded at Potter Marsh, and some have been recorded along the entirety of the Project area (Table 3-5; USFWS 2021).

Table 3-5. Birds of Conservation Concern within the Project area.

Common Name	Scientific Name	Breeding Season	Habitat Types
American golden plover	*Pluvialis dominica*	May 20 to August 15	Grasslands, lagoons, and estuaries
Black oystercatcher	*Haematopus bachmani*	April 15 to October 31	Shorelines
Black turnstone	*Arenaria melanocephala*[a]	May1 to June 30	Wet tundra near estuaries and lagoons
Chestnut-backed chickadee	*Poecile refescens refescens*	March 1 to July 31	Conifer forests along the coastline
Hudsonian godwit	*Limoa haemastica*[a]	May 7 to July 31	Marshes and mudflats
Lesser yellowlegs	*Tringa flavipes*[a]	May 1 to August 15	Marshes
Olive-sided flycatcher	*Contopus cooperi*[a]	May 15 to August 30	Forests
Red knot	*Calidris canutus roselaari*[b]	June 1 to August 30	Tundra slopes and wet areas, including mudflats
Rufous hummingbird	*Selasphorus rufus*	April 15 to July 15	Open woodlands
Short-billed dowitcher	*Limnodromus griseus*[a]	June 1 to August 10	Marshes
Wandering tattler	*Tringa incana*[a]	May 1 to August 30	Rocky coasts and beaches

Source: USFWS 2021
[a] Regularly spotted in the Project area (Audubon Alaska 2017)
[b] Does not breed near Project area

Bald and golden eagles are protected by the Bald and Golden Eagle Protection Act in addition to the MBTA. Eagle nesting season is March 1 through August 31 (USFWS 2007). In May 2023, a raptor nest survey conducted by DOT&PF to document eagle and other raptor nests identified eight bald eagle nests within 0.5 mile of the Seward Highway centerline (Appendix L *Eagle Nest Survey Technical Report)*. No golden eagles were observed.

3.2.3.2 Environmental Consequences

No Action Alternative

Under the No Action alternative, no change to the status of birds would occur. It is anticipated that the No Action alternative would result in no changes to impacts on birds or their habitat.

Proposed Action

The Proposed Action would result in the permanent conversion of bird habitat into transportation facilities. Vegetation would be removed over approximately 300 acres, including up to 18.7 acres of palustrine wetlands across the 20-mile corridor. Additionally, 101.7 acres of intertidal mudflats (see estuarine wetlands and waters impacted in Table 3-3) that serve as seasonal foraging habitat, would be filled for railroad embankment. Habitat conversion from vegetated areas to roadway and supporting facilities from the Proposed Action would result in minor and both short-term and permanent impacts on birds. Since traffic volume forecasts under the Proposed Action are similar to those under the No Action alternative, vehicle noise disturbance in bird habitat would not increase substantially. The impacts are considered minor because, while the refuge is considered important for migratory birds, ample replacement habitat for nesting and foraging activities exists adjacent to the Project area.

Construction Impacts

Noise impacts from construction would result in minor, short-term impacts. Construction activities, including blasting and other noise-producing construction methods, have the potential to disturb birds within the Proposed Action vicinity. Vegetation clearing and blasting would be done in accordance with USFWS's timing recommendations for land disturbance and vegetation clearing to limit impacts on nesting birds when possible. Table 3-6 provides USFWS-recommended land disturbance and vegetation clearing avoidance windows by habitat type as well as when blasting could occur during those avoidance windows.

Table 3-6. USFWS-recommended land clearing avoidance windows and Proposed Action blasting.

Habitat Type	USFWS Recommended Avoidance Window	Blasting Timeframe Overlapping USFWS Avoidance Window
Forest or woodland (i.e., trees present)	April 15 – July 15	June 16 – July 15
Shrub or open (i.e., shrub cover or marsh, pond, tundra, gravel, or other treeless/shrubless ground habitat)	May 1 – July 15	June 16 – July 15
Seabird colonies	May 1 – September 15	June 16 – September 15
Eagles	March 1 – August 31	June 16 – August 31

Source: USFWS 2017

Both noise and moving rock from blasting have the potential to disturb nesting birds. Construction noise, including blasting, is generally lower than what could cause threshold shift in birds at 50 feet or greater. Construction noise still has the potential to result in communication masking. This may affect a birds' ability to recognize biological signals, detect predators and prey, perform mate selection, defend territory, and perform social activities (Caltrans 2016; FHWA 2006). Due to the short-term and transient nature of roadway construction, and given that birds would likely flee construction noise, construction noise impacts from the Proposed Action would be short term and minor. Some disturbed areas would be revegetated, which would re-establish some bird habitat along the corridor.

3.2.3.3 Avoidance, Minimization, and Mitigation Measures

- The Proposed Action was designed to minimize impacts on Potter Marsh east of the Seward Highway, which is high-value bird habitat. Minor, temporary impacts may occur during or associated with the replacement of Rabbit Creek culverts.
- Vegetation clearing will be conducted outside the bird-nesting window as described by USFWS for this region, or a bird nest survey will be completed to confirm no nests are present within the vegetation clearing area (USFWS 2017).
- Construction noise impacts will likely be covered under the Bald Eagle Incidental Take General Permit. If not, DOT&PF will consult with USWFS regarding impacts on bald eagles and whether a Bald Eagle Permit is required.

3.2.4 Terrestrial Mammals

The Project area contains a diverse mixture of habitats that provide food, shelter, and water for a wide range of terrestrial mammal species.

3.2.4.1 Affected Environment

Habitat for terrestrial mammals within the Project area include anadromous streams containing salmon that attract predators such as bears, steep rocky cliffs for Dall sheep and mountain goats, wintering areas for moose, and riparian corridors that provide access between the Chugach Mountains and Turnagain Arm. Other species such as Canada lynx, weasels, marmots, snowshoe hares, shrews, rodents, and squirrels are common within the Project area (ADNR 2016).

Dall sheep and mountain goats are attracted to a mineral lick at Windy Corner. The mineral lick is commonly used during spring, summer, and fall (ADF&G 2024b; Heimer 1974). The Dall sheep population found within the Project area has been on a declining trend over the past three decades, suspected to be due to climate-change-driven habitat loss, and has only recently been observed to be stabilizing (Spivey 2023; Lohuis 2018). Mountain goat populations are stable within the region but susceptible to disturbance from developmental operations and helicopters, even at distances greater than 1 mile (Festa-Bianchet 2012).

Brown bears move seasonally throughout the Project area. They forage on emergent vegetation in subalpine meadows, avalanche chutes, and snow-free patches of low-elevation shrubs and forests during spring. During summer they predate on salmon in anadromous streams. Their diet is supplemented with berries and other vegetation by late summer. Brown bears typically den on south-facing slopes (approximately 32-degree gradient) across different elevations and habitats (Spivey and Stantorf 2022). Black bears den on steeper slopes (35 degrees gradient; Miller 1990). Lands adjacent to Project area provide habitat for both black and brown bear denning. Black bears are documented following the same seasonal trends as brown bear within the area (Stantorf and Spivey 2022).

Moose often browse open-canopied, second-growth willow, birch, and aspen in disturbed areas; riparian habitat; and subalpine willow stands on south-facing slopes within and surrounding Anchorage (Spivey 2020). Moose and vehicle collisions have been documented within the Project area and are most common between MPs 115 and 116 near Potter Marsh. Within this area, moose and vehicle collisions were documented at a rate of 2.6 collisions per mile per year between 2017 and 2021 (HDR 2024b; Appendix G).

3.2.4.2 Environmental Consequences

No Action Alternative

Under the No Action alternative, no changes would occur to the status of terrestrial wildlife. It is anticipated that the No Action alternative would result in no impact on terrestrial wildlife and their habitat.

Proposed Action

The Proposed Action would result in approximately 300 acres of permanent wildlife habitat loss or alteration. Table 3-2 provides habitat loss by vegetation type. Important terrestrial mammal habitats near the Proposed Action, such as identified lambing areas, would not be removed, and a mineral lick area that attracts Dall sheep would be minimally impacted.

The Proposed Action would result in minor additional habitat fragmentation, as the Proposed Action is within an existing highway corridor. Highways can limit movement across roads and isolate individuals or populations over the long term. The proposed wider footprint and proposed fencing would act as a greater barrier to wildlife movement, particularly moose, compared to the existing highway footprint. Highway widening has a limited effect on large mammal proximity to highways but adversely affects large mammal populations due to collisions (Boyle et al. 2020; Van Manen et al. 2012). However, terrestrial mammal movements across this portion of the Seward Highway are fewer than other segments because little terrestrial habitat exists on the Turnagain Arm side of the highway. Effects from habitat fragmentation and collisions with vehicles due to the Proposed Action are most likely to occur at Potter Marsh and the northern extent of Bird Flats where the existing highway bisects large mammal habitat. While traffic volume growth over time would increase traffic noise near wildlife habitats along the Seward Highway, the changes are generally negligible. The Proposed Action is anticipated to have a permanent, minor impact associated with habitat conversion as well as traffic-related disturbance and collisions.

Construction Impacts

Construction activities have the potential to disturb terrestrial mammals that are near highway construction areas due to the presence of large equipment and construction workers as well as blasting operations. Blasting would be used to excavate material throughout the Project area. The noise produced from blasting and other construction methods is anticipated to disrupt wildlife year-round, and the physical presence of construction activities may deter wildlife from the Project area. Bear dens are not anticipated to be within the Proposed Action footprint. If any are present, noise produced from blasting has the potential to disturb denning bears. While very unlikely, projectile material from blasting could physically disturb wildlife, particularly Dall sheep. Construction is anticipated to have a short-term, minor impact on terrestrial wildlife.

3.2.4.3 Avoidance, Minimization, and Mitigation Measures

- The Proposed Action minimizes impacts to the mineral lick at Windy Corner to the greatest extent practicable.
- Denning surveys for bears will occur during spring, when denning and construction periods overlap.
- The area will be visually cleared for large, terrestrial wildlife (including Dall sheep, black and brown bears, wolverines, moose, and any other large mammals) within 0.25 mile prior to blasting operations. Blasting would be paused until animals are greater than 0.25 mile from blasting operations.
- DOT&PF will coordinate with ADF&G and ARRC during development of a fencing plan.

3.2.5 Marine Mammals

3.2.5.1 Affected Environment

Marine mammals most likely to be observed in Turnagain Arm include harbor seals, Steller sea lions, harbor porpoises, orcas (killer whales), Cook Inlet beluga whales, gray whales, and humpback whales (Table 3-7; Appendix M Section 7 Biological Assessment and Consultation). The occurrence of marine mammal species that may occur, or are expected or likely to occur, within or transit near the Project area is based on the following criteria:

- Common: Occurring consistently in moderate to large numbers;
- Uncommon: Occurring in low numbers or on an irregular basis; and
- Rare: Records available for some years but are limited.

Table 3-7. Marine mammals within or near the Project area.

Species	Abundance (Population/Stock or DPS)	MMPA Designation	ESA Listing	Occurrence within Project Area
Harbor seal (*Phoca vitulina*)	28,411 (Cook Inlet/ Shelikof Strait Stock)	None	None	Common
Steller sea lion (*Eumatopias jubatus*)	52,932 (Western DPS)	Depleted and Strategic	Endangered	Uncommon
Harbor porpoise (*Phocoena phocoena*)	31,046 (Gulf of Alaska Stock)	Strategic	None	Uncommon
Killer whale (orca) (*Orcinus orca)*	• 1,920 (Eastern North Pacific Alaska Resident Stock) • 587 (Gulf of Alaska, Aleutian Islands, and Bering Sea Transient Stock)	• None	• None	Rare
Cook Inlet beluga whale (*Delphinapterus leucas*)	331[a] (Cook Inlet Stock and DPS)	Depleted and Strategic	Endangered	Common
Gray whale (*Eschrichtius robustus*)	26,960 (Eastern North Pacific Stock)	None	None	Rare

Species	Abundance (Population/Stock or DPS)	MMPA Designation	ESA Listing	Occurrence within Project Area
Humpback whale (*Megaptera novaeangliae*)	• 11,278 (Hawaii Stock) • N/A (Mexico-North Pacific Stock)	• None • Depleted and Strategic	• None • Threatened	Rare

Source: Carretta et al. 2023; Young et al. 2023
Note: DPS = Distinct Population Segment; ESA = Endangered Species Act; MMPA = Marine Mammal Protection Act; N/A = not applicable
[a] N_{best} = 331 individuals (Goetz et al. 2023); N_{best} is what marine mammal experts consider the best population estimate.

Steller sea lions within the Project area are likely part of the endangered western Distinct Population Segment (DPS). Steller sea lions have been observed in small numbers regularly as part of the Port of Alaska Modernization Program (at what is now the Don Young Port of Alaska [Port]) monitoring in nearby Knik Arm and would be expected to occur in similar numbers in Turnagain Arm (61N 2022a, 2022b). Because the western DPS of Steller sea lions is listed as endangered under the Endangered Species Act (ESA), this species is discussed further in Section 3.2.6.

Harbor porpoises are infrequently sighted in Upper Cook Inlet. Monitoring in Knik Arm as part of the Port of Alaska Modernization Program reported small numbers of harbor porpoises sighted during construction seasons, usually as solitary animals but sometimes in groups of two (61N 2022a, 2022b). Sightings of harbor porpoises as part of the Alaska Beluga Monitoring Program (AKBMP) in Turnagain Arm are uncommon but do occur.

Killer, humpback, and gray whales are rarely observed in Upper Cook Inlet. Killer whale predation was a contributing factor to the Cook Inlet beluga whale ESA listing (73 *Federal Register* [FR] 62919), and they have been seen pursuing beluga whales within Upper Cook Inlet, including Turnagain Arm (Shelden et al. 2003; McGuire et al. 2020). Sightings occur fewer than once per year. Very few observations of humpback or gray whales in Upper Cook Inlet occurred during monitoring efforts in Knik Arm (Port 2017; 61N 2021, 2022a, 2022b). Strandings of these species have occurred in Turnagain Arm (NOAA 2019, 2020); however, these instances were determined to be due to natural causes.

Cook Inlet beluga whales are regularly observed in Turnagain Arm during spring and fall, primarily when eulachon are returning to spawn during April and May, and when salmon are returning to spawn during fall. The Cook Inlet DPS of beluga whales is listed as endangered under the ESA and is discussed further in Section 3.2.6.

3.2.5.2 Environmental Consequences

No Action Alternative

The No Action alternative would not impact marine mammals.

Proposed Action

Long-term, minor impacts would be associated with habitat loss from the placement of up to 105 acres of fill into the marine waters of Turnagain Arm. These impacts are considered minor because the new riprap fill placement would be effectively the same as what currently exists along the existing ARRC embankment, and ample remaining foraging habitat for marine mammals exists in Turnagain Arm. After fill placement, the prey species for marine mammals

are expected to repopulate the fill areas in similar abundance as current conditions; therefore, the adverse impacts on marine mammal foraging would be short-term and minor from the temporary loss of prey species during fill placement.

Construction Impacts

Impacts from Proposed Action construction on marine mammals would be primarily short term and minor, and could include acoustic and non-acoustic stressors associated with construction. Up to 105 acres of fill would be placed into the marine waters of Turnagain Arm, and blasting could occur once per day, year-round over the duration of the Proposed Action construction.

Potential non-acoustic stressors could be due to the physical presence of equipment and personnel during construction; however, no known pinniped haul-out sites are near the Project area, and visual and other non-acoustic stressors would be limited. Any potential impacts on marine mammals are expected to be acoustic in nature, which includes uplands blasting, in-water fill placement, and other noise-producing activities associated with construction that have the potential to disturb marine mammals within the waters surrounding the Project area. Both blasting and in-water fill placement have the potential to produce underwater sound that could rise to the level of harassment under the Marine Mammal Protection Act (MMPA); however, mitigation measures such as those described in Section 3.2.5.3 and Appendix M would reduce the likelihood of marine mammals being present close enough to the Project area to be potentially disturbed.

3.2.5.3 Avoidance, Minimization, and Mitigation Measures

The following includes select mitigation measures for illustrative purposes. The full list of commitments and mitigation measures is documented in the formal consultation correspondence with NMFS regarding the Proposed Action's impacts on Stellar sea lions, Cook Inlet beluga whales, and Cook Inlet beluga whale critical habitat (see Appendix M):

- In-water fill placement will not occur from April 1 through July 15.
- Only one blast event will take place each day.
- Fill placement and onshore blasting will only occur during daylight hours, and when all marine waters within 0.9 mile of the blasting site are visible to the Protected Species Observer (PSO).
- Blasting will not occur within or below the intertidal zone.
- All fill activities will occur from shore, with seaward expansion from atop previous fill. Barges and other vessels will not be used for fill activities, and dredging will not be required.
- In-water work will be conducted at the lowest points of the tidal cycle when feasible.
- If piles need to be removed or installed for railroad or highway bridge replacement, pile installation and removal will occur around low tide when the creeks have no tidal influence.
- PSOs will be on site to identify Cook Inlet beluga whales and other marine mammals, and will continuously monitor the applicable shutdown zones before blasting and in-water fill placement begins to prevent takes of any marine mammals.
- PSOs will advise DOT&PF and contractors to stop blasting or in-water fill placement immediately if one or more beluga whales or other marine mammals enter, or are about to enter, the applicable shutdown zone.

3.2.6 Threatened and Endangered Species

3.2.6.1 Affected Environment

The Cook Inlet beluga whale is the most abundant marine mammal species in Upper Cook Inlet, and sightings of beluga whales are common in Turnagain Arm. NMFS listed the Cook Inlet beluga whale as an endangered species in 2008. Upper Cook Inlet, including all of Turnagain Arm below HTL, was identified as Cook Inlet beluga whale critical habitat in 2011; this critical habitat is adjacent to the proposed Project.

Steller sea lions are not commonly observed in Upper Cook Inlet; sightings have increased in nearby Knik Arm (61N 2020, 2021, 2022a, 2022b, 2022c). Based on informal communications with NMFS, Steller sea lions have been observed in Turnagain Arm during recent years as part of the AKBMP, with sightings occurring up inlet as far as Twentymile River (Seymour 2024). NFMS listed Steller sea lions as an endangered species in 1997 (62 FR 24345). Western DPS Steller sea lion critical habitat is defined as all land and air within 3,000 feet of a designated major haulout or rookery, and all marine waters within 20 nautical miles of a designated major haulout (58 FR 45269). The closest haulout to the Project area is near Nanwalek, Alaska, approximately 150 miles away, near the entrance to Cook Inlet and the Gulf of Alaska. No designated critical habitat for the Western DPS of Steller sea lions occurs near the Project area.

NMFS proposed listing the sunflower sea star as threatened on March 16, 2023 (88 FR 16212). This species is not known to occur within the Project area. Sunflower sea stars are not further discussed or analyzed in this EA.

A biological assessment (BA) was prepared to determine the potential effects of the Proposed Action on Cook Inlet beluga whales and Steller sea lions (Appendix M). The BA indicated the Project area is within and adjacent to Critical Habitat 1, described as an area of seasonal use from April to November.

DOT&PF initiated formal consultation with NMFS with the submittal of the BA in accordance with 50 CFR 402.13(c). DOT&PF additionally engaged NMFS in early informal coordination through the Stakeholder Working Group (SWG) to allow the agency to provide technical assistance during Project development (see Sections 6.2 and 6.4).

3.2.6.2 Environmental Consequences

No Action Alternative

The No Action alternative would not impact Cook Inlet beluga whales and Steller sea lions.

Proposed Action

Proposed Project activities, including uplands blasting, in-water fill placement, and other noise producing activities have the potential to disturb Cook Inlet beluga whales and Steller sea lions in the waters surrounding the Project area. Up to 105 acres of fill would be placed into the marine water of Turnagain Arm within Cook Inlet beluga whale critical habitat. No designated critical habitat for Steller sea lions occurs near the Project area.

The BA (Appendix M) found that, with appropriate mitigation measures (full list in Appendix M; a subset is summarized in Section 3.2.5.3), the Proposed Action is not likely to adversely affect Cook Inlet beluga whales and their critical habitats, and is not likely to adversely affect Steller sea lions. NMFS concurred with the BA's conclusions that the Proposed Action

would likely not adversely affect federally endangered species and provided mitigation measures (see Section 3.2.5.3). Results of NMFS consultation can be found in Appendix M.

Construction Impacts

Blasting could occur once per day, year-round over the duration of the proposed Project. Both blasting and in-water fill placement have the potential to produce underwater sound that could rise to the level of harassment under the MMPA and ESA. However, mitigation measures and seasonal closures described in Section 3.2.5.3 would reduce the likelihood of ESA-listed marine mammals being present close enough to the Project area to be disturbed.

3.2.6.3 Avoidance, Minimization, and Mitigation Measures

The avoidance, minimization, and mitigation measures included in Appendix M and summarized in Section 3.2.5.3 also apply to threatened and endangered species.

3.3 Human Environment

3.3.1 Visual and Aesthetic Resources

Due to its unique natural qualities and scenic landscapes, the Seward Highway is designated as a U.S. Department of Agriculture, Forest Service National Forest Scenic Byway, FHWA All-American Road, and DOT&PF Alaska Scenic Byway.

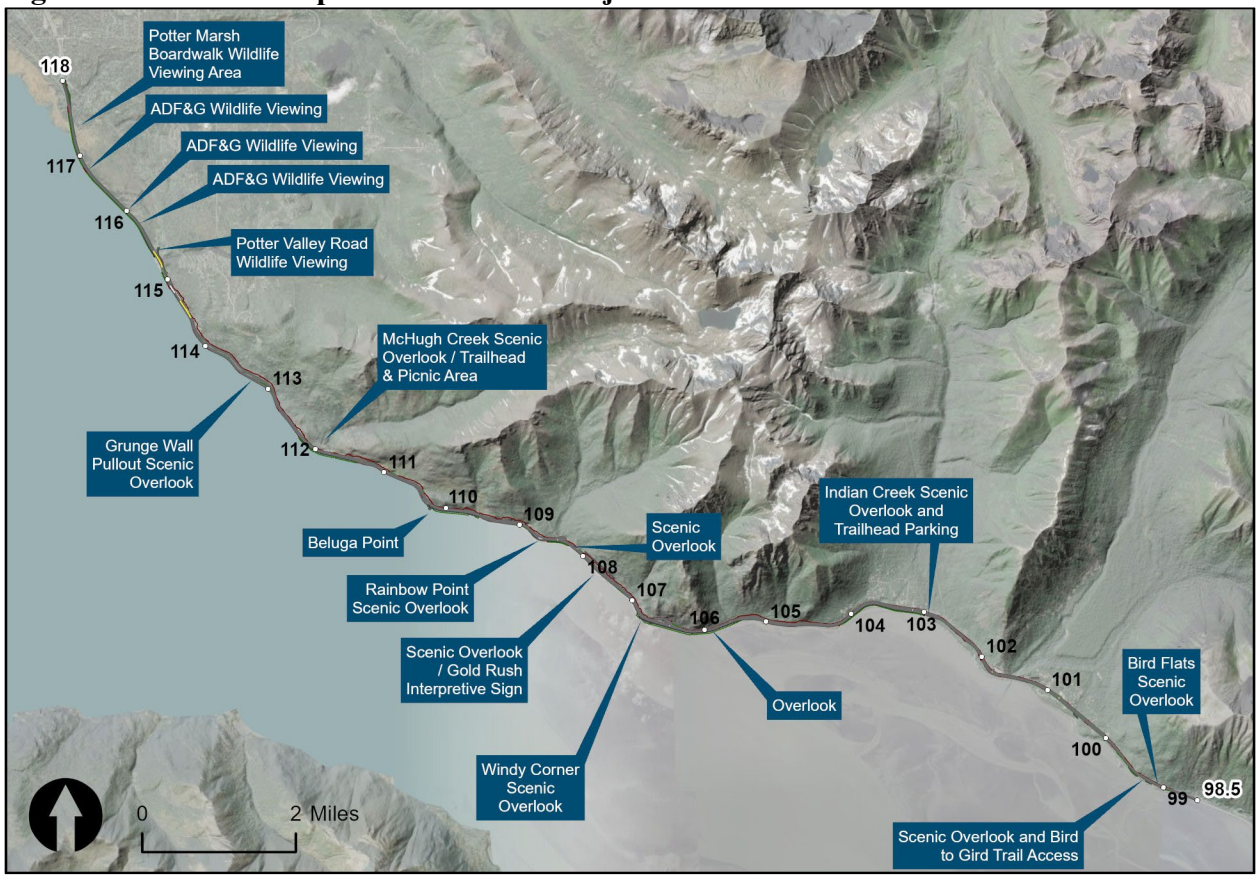
Refer to Appendix N *Visual Impact Assessment* for a detailed description of the affected area as well as impacts for visual and aesthetic resources, including methodology for the assessment.

3.3.1.1 Affected Environment

The Project corridor is characterized by its scenic qualities, and the Seward Highway has received state and federal designations due to these qualities. Travelers frequently stop at pullouts to view the natural features and wildlife as well as access recreation areas. Figure 3-2 shows the scenic viewpoints that currently exist within the Project area.

Primary viewers are those who are traveling on the Seward Highway by automobile. Other viewers include local residents; passengers and employees on ARRC trains that travel though the Project area; viewers traveling in RVs; drivers of commercial vehicles; and recreationalists using the local trails, parks, and Turnagain Arm waters.

Figure 3-2. Scenic viewpoints within the Project area.



3.3.1.2 Environmental Consequences

No Action Alternative

The No Action alternative would result in continued use of the existing highway in its current location and configuration. For all affected viewers, the ability to enjoy and view wildlife and scenery along the existing roadway could be compromised due to projected slight increases in traffic volume and the corresponding reduction in traffic Levels of Service (see Appendix G). However, the overall landscape would be maintained similar to the existing condition. As a result, no substantial change to the visual environment is expected under the No Action alternative.

Proposed Action

The Proposed Action would result in minor to moderate adverse visual impacts for corridor users along the entire length of the project. The impacts vary depending on the use and distance the user is from the Proposed Action. Details of this impact can also be found in Appendix N.

Expanding the highway from two to four lanes would increase the width of the highway corridor and the amount of pavement visible. Additionally, a 22- to 30-foot catchment area would be located within areas where the road shoulder is located next to a rock face. The Proposed Action would change the elevation of highway lanes within some sections and may require the use of retaining walls. Use of retaining walls would decrease encroachment into the Turnagain Arm mudflats and CSP, reducing the overall impact on the visual environment. In the foreground, the Proposed Action would create new, steep, rock-cut faces to accommodate the new northbound

lanes. The unweathered, human-made surfaces near the highway would be highly visible but would assume a more natural appearance over time as the surfaces weather. Foreground views from elevations above the existing highway, such as from trails or mountain peaks on the CSP mountain side, would change as a result of larger cuts and wider paved area. Background views of Turnagain Arm and the surrounding mountains would not change.

In the foreground, people would continue to see a non-motorized trail (the Indian to Girdwood Bike Path), although the trail length would increase by 14 miles. The trail would allow non-motorized users to experience the visual aspects of the corridor along new pathway segments. People using the trail would see higher rock-cut faces and ARRC tracks farther into Turnagain Arm. Background views would not change. Views may be intermittently obscured by fencing installed between the highway and the railroad; this would have a minor to moderate adverse impact on visual quality. The impacts would vary depending on the user's proximity to the fence.

Local travelers (including those who live within or frequently travel through the Project area) are more likely to be impacted by the Proposed Action because they would see the Project area more frequently, including during construction. Residents of Rainbow, Bird, and Indian are anticipated to be the most sensitive to changes in the Project area's appearance.

Visitors to the area are less likely to be impacted because they would be less familiar with the area prior to the Proposed Action being constructed. People recreating in Turnagain Arm or the Kenai Mountains are likely to see the rock cuts, but impacts would be mitigated due to the distance. Train riders would experience a change in visual quality because the newly constructed, wider highway would be visible by riders on the mountain side of the train. Riders on the water side would likely experience little change in visual quality.

The ARRC embankment would also be wider in rail sections that are realigned. The ARRC requires a fence separating the railroad tracks from the highway be installed to reduce trespassing. The exact location and design of the fencing would be determined during the design process and in discussions between DOT&PF and ARRC. The fence may be similar to the existing fencing (see Appendix N, Figure 4.1) and would partially obstruct the view of Turnagain Arm in some locations. It would be below highway grade in other locations, so users on the roadway and pathway may not have views of Turnagain Arm obstructed in those locations. Overall, installation of the fence would result in a loss of quality of the visual environment.

Within certain sections of the Proposed Action, where the lanes are separated and elevated, people recreating in Turnagain Arm are more likely to notice the Seward Highway because the northbound lanes would be at a higher elevation than the existing highway. However, this is not likely to substantially change their enjoyment of the area because the visible improvements would be similar to existing conditions. The rock cuts, in which steep, forested slopes would be removed and replaced with bare rock, are likely to result in a minor decrease in visitors' enjoyment of the scenery until the cuts have sufficiently weathered.

These changes are likely to be less obvious during winter because the study area typically has snow cover that obscures the underlying features. The Proposed Action would not result in a change to the Seward Highway's designation as an Alaska Scenic Byway, a National Forest Scenic Byway, or All-American Road because the highway would retain all the characteristics that qualified it for the designation.

Construction Impacts

Construction activity for the Proposed Action would be visible throughout the Project area and would temporarily reduce visual quality because the following features would be visible to viewers within the area: staging areas and material stockpiles; construction equipment and vehicles; construction of new bridges, ARRC track, road, and trails; short-term local detours; increased dust; and light and glare from construction equipment.

Construction of the Proposed Action would occur in phases, so parts of each landscape unit would experience a change in visual quality while others would not. This means that views would only be impacted for a portion of the total construction period.

Viewers would have less ability to appreciate the scenery or engage in wildlife viewing because some pullouts would be temporarily closed to accommodate construction.

3.3.1.3 Avoidance, Minimization, and Mitigation Measures

Impacts on the visual environment will be managed throughout the design process. As part of the standard design:

- Bare soils will be seeded for quick greening of the landscape.
- Vegetation and topography will be used to screen rock cuts where possible. Removal of existing vegetation will be minimized where possible.
- Consultation will be undertaken with land managers during design to develop a vegetation plan for the Proposed Action.
- DOT&PF will consult with land managers and ARRC to develop a fencing plan to minimize visual impacts. Considerations may include avoiding fencing areas with sufficient separation distance or grade, varying or limiting fencing heights, placing the fencing in ditches, and/or using materials or colors to limit visual intrusion. Staging areas and other construction areas will be revegetated once decommissioned. Native vegetation will be used. Staging areas will be located within areas where no vegetation exists and will be screened to reduce their visibility by travelers in the corridor where possible.
- A Context Sensitive Design model will be used to preserve the scenic and aesthetic value of the area. This will include using consistent design types, textures, colors, and materials throughout the Project area.
- The need for additional lighting will be evaluated as design progresses, and lighting will be installed where standards identify a requirement.

3.3.2 Noise

3.3.2.1 Affected Environment

Noise within the Project area is dominated by transportation-related sources such as automobiles, trucks, and trains. While these noise sources are present year-round, noise within the Project area generally increases during summer with additional tourist travel (e.g., vehicle, rail). Other minor noise sources include construction activities within the corridor (e.g., road and utility maintenance and improvement projects), residential activities within the Indian and Bird vicinity (e.g., people talking, lawn mowers, dogs), and outdoor recreation activities (e.g., people talking or exclaiming) at the numerous scenic pullouts, trailheads, and recreational facilities along the highway.

DOT&PF evaluated the highway traffic noise in compliance with FHWA's *Procedures for Abatement of Highway Traffic Noise and Construction Noise* (23 CFR 772) and DOT&PF's

Noise Policy (DOT&PF 2023b), which describes the implementation of FHWA's noise regulations in Alaska. For the purposes of determining traffic noise impacts, FHWA assigns activity categories (e.g., residences, schools, churches, commercial land, undeveloped land) to areas along the Project corridor (see Appendix O *Noise Assessment/Evaluation*, Table 3-3). The corridor is modeled for existing and future traffic noise levels and compared to the noise abatement criteria (NAC) assigned to each activity category to represent the maximum traffic noise levels that allow uninterrupted use within each activity category. Key inputs to the noise model include traffic volumes, traffic speed, proximity of noise sources to noise sensitive receivers, and the number of (louder) trucks in the traffic flow. Where impacts are identified, noise abatement measures such as barriers are considered for feasibility, constructability, and reasonableness.

DOT&PF's Noise Policy (DOT&PF 2023b) identifies an impact if:

1. Traffic noise levels approach (within 1 A-weighted decibel [dBA]) or exceed the FHWA NAC for specific land use types, or
2. The predicted traffic noise levels substantially increase over existing levels (15 dBA).

Within the Project area, most land uses are residential (Activity Category B) and recreation areas (Activity Category C). Some commercial properties (Activity Category E [e.g., motel, restaurants]) are also present. DOT&PF used 103 receptor locations to model the existing noise levels within the Project corridor. These represent 40 residential properties, 53 recreation and public facility areas, 8 commercial properties, and 2 industrial/maintenance areas.

Modeled existing, no build (No Action alternative), and build (Proposed Action) noise levels at noise prediction sites within the Project study area are identified in Appendix O, Table 5-1. Existing noise levels within the Project area range from 48 to 74 dBA.[3]

The model identifies 2 residential and 16 recreation and public facility properties currently experiencing traffic noise impacts as defined by FHWA activity categories. These primarily occur at wildlife and scenic pullouts that abut the highway (see Appendix O, Section 6.1 and Table 6-1).

3.3.2.2 Environmental Consequences

No Action Alternative

Under the No Action alternative, noise levels would increase as traffic volumes increase over time, increasing an average of 1.2 dBA (ranging from 0.7 to 1.3 dBA). Future (2052) No Action alternative noise levels within the Project area would range from approximately 50 to 76 dBA. Under the No Action alternative, 3 residential properties and 18 recreation properties would approach or exceed their NAC. Eighteen of these 21 properties already experience noise levels that approach or exceed the NAC under existing conditions (see Appendix O, Table 6-2).

[3] Several residential receivers east of Potter Marsh were included in the model to determine changes of traffic noise from the Project. As these are distant from the Project area (modeled conditions estimated approximately 40- to 41-dBA contribution from Seward Highway traffic), these were excluded from discussion of existing noise levels within the Project area. Additionally, two industrial/maintenance facilities (the CSP maintenance facility and DOT&PF Weigh Station at MP 114) were included in the model, but are not discussed further as there are no noise abatement criteria for Activity F lands.

While noise impacts were identified at some receptors under existing conditions and the No Action alternative (2052), no noise abatement is proposed. DOT&PF does not have a retrofit noise barrier program.

Proposed Action

While the increases to traffic volumes are the same for both the No Action and Proposed Action alternatives, noise level changes are more varied under the Proposed Action. Within certain areas, changes in vertical grades between the highway and receptors can either increase or mask (decrease) noise levels. Adding travel lanes would widen the area across which the noise is generated, spreading the noise sources, which can either shift noise closer or farther from receptors. Noise-level changes range from a decrease of 6.8 dBA (Rainbow Point Scenic Overlook, where the highway alignment shifts into the mountainside) to an increase of 11.3 dBA (residential property south of Potter Marsh, although overall level remains below NAC).

Under the Proposed Action, 6 residential properties and 13 recreational/public facilities would experience noise levels at or above the NAC during the year 2052. Thirteen of the 19 properties already experience noise levels at or above NAC. See Appendix O, Table 6-3 for the summary table of impacted properties.

Residents on the eastern side of Potter Marsh have specifically expressed concerns over noise associated with the Proposed Action. However, at that distance, noise contributions from the Seward Highway, while audible, do not register much higher in the model over background noises. Traffic and train sounds are audible, but the Proposed Action would not increase noise levels that would exceed noise impact levels.

Construction Impacts

Construction-related increases in noise and vibration levels would result from the operation of construction equipment and increased traffic to and from the Project site. Blasting events would be disruptive for a very short duration. For logistics and the protection of threatened and endangered species, blasting events would be limited to daylight hours and a single event each day (see Section 3.2.6). Most construction activities would occur during daytime hours. If work does occur during nighttime hours, the public would be notified in advance.

3.3.2.3 Avoidance, Minimization, and Mitigation Measures

Noise abatement measures were considered for each of the 6 residential properties and 13 recreational/public facilities that would experience noise levels at or above the NAC in the year 2052 consistent with DOT&PF guidelines. None of the barriers modeled could meet the reasonable and feasible criteria per DOT&PF's Noise Policy to warrant construction. Impacted receptors are too spread out to make noise abatement measures feasible (Appendix O, Sections 7 and 8).

3.3.3 Land Ownership, Management, and Use

3.3.3.1 Affected Environment

Numerous entities have authority over the affected land and water within the Project area, each developing detailed plans and objectives for land use management. These plans, as well as additional details on land ownership, management, and use, are presented in Appendix P *Human Environment Technical Report*.

Land Ownership/Management

Approximately 78 percent of the land within 0.5 mile of the Seward Highway within the Project area is owned/managed by the State of Alaska, not including the transportation ROWs (8 percent). Table 3-8 provides details on land ownership.

ARRC has a 200-foot-wide ROW centered on the railroad track centerline, while DOT&PF has a 300-foot-wide ROW centered on the centerline of the Seward Highway. In 2001, a permit was extended until 2036 through a Memorandum of Agreement between DOT&PF, ADNR, and ARRC that makes DOT&PF the lead agency responsible for realignment/relocation work for the Seward Highway (DOT&PF et al. 2001).

ADNR Division of Parks and Outdoor Recreation (DPOR) is authorized to manage CSP, as defined in Alaska Statute (AS) 41.21.122, as well as MOA Bird Creek Regional Park by agreement. The ACWR is managed by ADF&G and ADNR, per AS 16.20.031. The Municipal Heritage Land Bank manages uncommitted municipal land on behalf of the MOA, including 91- and 155-acre Special Study Areas in Indian and Bird, respectively.

Table 3-8. Land ownership and impacts within 0.5 mile of the Seward Highway.

Ownership	Acreage	Percent of Project Area (%)	Acres to be Acquired for Proposed Action ROW[a]	Full/Partial Parcel[b] Acquisition
ARRC ROW	**476**	**4**	**—**	**—**
DOT&PF ROW	**440**	**4**	**—**	**—**
State of Alaska	**9,918**	**78**	**218**	**0/10**
Anchorage Coastal Wildlife Refuge	1,363	11	17	0/2
Chugach State Park	4,466	35	132	0/3
Chugach State Park – Turnagain Arm Water	4,050	32	68	0/2
Vacant	39	0	1	0/3
MOA	**1,640**	**13**	**1**	**0/5**
MOA Parcel	1,283	2	1	0/2
MOA Park	356	3	0	0/3
Turnagain Arm Water – Non-CSP	**209**	**2**	**0**	**0/0**
Total	**12,683**	**100**	**219**	**0/15**

Sources: MOA 2019, 2021; ADNR 2019; ADF&G n.d.; DOT&PF/ARRC CAD data
[a] Includes DOT&PF and ARRC ROWs
[b] Full parcel includes any instance in which more than 50 percent of a parcel is acquired.

Existing Land Use

Table 3-9 shows existing land use within the Project area. Approximately 86 percent is either park/recreation/open space (includes coastal waters) or vacant.

Table 3-9. Existing land use and impacts within 0.5 mile of the Seward Highway.

Existing Land Use	Total Acres within Study Area	Percent Land Use within Study Area (%)	Converted to Transportation Use (acres)	Full/Partial Parcel Acquisition
Residential	587	5	0.15	0/1
Commercial	33	0	0	0/0
Mixed-Use Commercial-Residential	6	0	0	0/0
Industrial	3	0	0	0/0
Park/Recreation/ Open Space	10,388	82	218	0/9
Vacant	526	4	0.8	0/5
Transportation	989	8	—	—
Other	151	1	0	0/0
Total	**12,683**	**100**	**219**	**0/15**

Sources: MOA 2019, 2021; ADNR 2019; ADF&G n.d.; DOT&PF/ARRC CAD data

Future Land Use

According to the *Turnagain Arm Comprehensive Plan* (MOA 2009), land uses in Turnagain Arm communities are expected to remain similar to current conditions, but the plan encourages a mix of commercial and residential development along the Seward Highway frontage in Indian and Bird, specifically to support tourism services. The Rabbit Creek neighborhood in the Anchorage Bowl is expected to remain limited and low-intensity residential space, according to the *Anchorage 2040 Land Use Plan* (MOA 2017) and *Hillside District Plan* (MOA 2010). Areas designated as Recreation Development Zones in the *Chugach State Park Management Plan* (ADNR 2016) directly adjacent to the highway are expected to be developed for improved park access and facilities in coordination with highway improvements. The *Seward Highway Corridor Partnership Plan* (DOT&PF 1998), *Chugach State Park Management Plan* (ADNR 2016), and *Turnagain Arm Comprehensive Plan* (MOA 2009) each stress the importance of maintaining the scenic nature of the Seward Highway to support quality of life for residents and continue to attract tourists.

3.3.3.2 Environmental Consequences

No Action Alternative

Under the No Action alternative, land use, management, and ownership would remain unchanged. The residential land throughout the Project area would continue to develop as planned. Development of highway frontage land for commercial and mixed-use development may be unsuitable without safety improvements to the highway corridor, including improving safe egress and ingress from the lots to the highway.

Proposed Action

Land Ownership

Under the Proposed Action, DOT&PF would acquire ROW throughout the Project area, including CSP lands within areas of mountainside rock cuts. The Proposed Action would also require adjusting the ARRC alignment and tracks to accommodate the widened highway and straightened curves within certain areas, also straightening the ARRC track curves within the

realigned areas. Memoranda of Agreement designating maintenance responsibilities for facilities adjacent to the corridor would be prepared, as necessary. Where the proposed DOT&PF ROW overlaps with ARRC ROW, DOT&PF would continue to maintain its own facilities. Table 3-8 summarizes how the Proposed Action would impact existing land ownership within the Project area.

Land Use

The Proposed Action's impact on area residential land use would amount to approximately 0.2 acre between MPs 118 and 117.75 from the proposed separated, multi-use pathway, which would impact only the vacant portions of the residential properties. The Proposed Action would likely not affect the intended limited and low-intensity residential land use planned for the Rabbit Creek neighborhood because the area already coexists with the highway, and the alignment would only shift slightly from its existing location. The Proposed Action would likely not affect the intent to retain primarily low-density residential development in Indian, Rainbow, or Bird due to the limited development opportunities within these communities. Commercial, industrial, and mixed-use land uses outside the existing DOT&PF ROW or easements would not be affected, and the Proposed Action would not require any business or residential relocations. Table 3-9 summarizes the Proposed Action's impacts on existing land use within the Project area.

Construction Impacts

While construction impacts are expected to be temporary and localized in nature as the Proposed Action is built in multiple phases, the 15- to 20-year construction duration and lack of alternative route along the majority of the Project area may create short-term disruptions to accessing lands for intended uses. Examples of impacts include traffic delays or detours interrupting access to commercial use (e.g., businesses) or recreational use (e.g., trails) properties. DOT&PF would provide access to properties throughout the construction duration. The Proposed Action would also require DOT&PF to gain short-term access to certain areas owned by other entities adjacent to the highway to perform Project construction.

3.3.3.3 Avoidance, Minimization, and Mitigation Measures

- Impacts on private property will be minimized to the extent possible.
- Landowner access to and use of the Seward Highway will be maintained throughout construction, other than during events such as blasting, to promote continued use of the land as it was intended.
- DOT&PF will conform to the Uniform Relocation Assistance and Real Property Acquisition Act of 1970, as amended, wherever property acquisition is required. This process ensures that any impacts on property owners are minimized and affected property owners are justly compensated.

3.3.4 Socioeconomics and Communities

3.3.4.1 Affected Environment

The Project area includes a portion of southeastern Anchorage (Rabbit Creek neighborhood) as well as the Turnagain Arm communities of Bird, Indian, and Rainbow within the MOA. Four census tracts intersect the Project area.

The Project area is less diverse than the MOA, which is 59.2 percent white, while the Project area ranges from 64.8 percent white in Tract 27.13 (lowest) to 89.9 percent white in Tract 29

(highest; USCB 2022). The lowest average household income of the four census tracts that intersect the Project area is $135,504, which is higher than both the average for MOA and the state. Matanuska-Susitna Borough, Eagle River, and Anchorage Bowl residents rely on the Seward Highway as the sole form of roadway transportation to the Turnagain Arm area and Kenai Peninsula. Turnagain Arm communities within the study area include Indian, Rainbow, and Bird, which rely on the Seward Highway as the singular means of transportation to access Anchorage and Girdwood for those facilities that do not exist in the communities, such as grocery stores, healthcare services, and schools. Land in Indian, Rainbow, and Bird is primarily low-density residential, and the community character can be defined as small-town with a rural lifestyle (MOA 2009).

See Appendix P for further information, including detailed demographic characteristics.

3.3.4.2 Environmental Consequences

No Action Alternative

Under the No Action alternative, no impacts on property or existing access points would occur, and communities would maintain the rural character they prioritize. However, without improvements that manage the continued heavy highway usage from local residents and tourists, safety and traffic congestion would remain an issue. Persistent traffic congestion during summer peak season would continue to put stress on access to community facilities, businesses, and recreational opportunities in Anchorage and Girdwood as well as on the Kenai Peninsula. Residential development would likely progress unaffected. However, the lack of improved, safe access to the highway frontage lots in Indian and Bird could delay the highway frontage mixed-use development as described in the adopted *Turnagain Arm Comprehensive Plan* (MOA 2009).

Proposed Action

No residents or businesses would be relocated under the Proposed Action. It is expected that low-density neighborhoods and a rural residential character would persist within the Rabbit Creek area, which already coexists with the Seward Highway, and where the alignment would only shift slightly. In Indian and Bird, it is not anticipated that the small-town, rural lifestyle would be altered, as minimal opportunities for development exist within these communities.

The Proposed Action would eliminate direct access between Indian and Bird lots and the Seward Highway, and instead provide access through frontage roads. While direct highway access would be removed, the Proposed Action would more safely accommodate mixed uses along the highway corridor by greatly reducing the number of turning conflicts that occur at Indian and Bird, providing safer egress and ingress to communities and local businesses. Project scoping comments included requests for turn lanes for residential streets, which would be incorporated into frontage road design. The Proposed Action would avoid impacts on commercial, industrial, and mixed-use properties outside the DOT&PF ROW or easements. Residential properties would be minimally impacted, with 0.2 acre (approximately 8,712 square feet) of private property acquired. Indian's Community Ballfield as well as the Indian Creek Scenic Overlook and Trailhead located at approximately MP 103 would be relocated; see Section 3.3.11 for further discussion.

Construction Impacts

Throughout the phased construction of the Proposed Action, it can be expected that traffic flow and access to community facilities would be occasionally interrupted or delayed, requiring both Anchorage and Turnagain Arm residents to adjust to new traffic flows and access points.

Construction may have an adverse impact on community character and quality of life, especially for those who are accustomed to a more tranquil, remote style of daily life. Impacts would include increased levels of congestion on roads being considered for use as detour routes as well as interruptions to general access along the main highway corridor. Adverse impacts from construction, such as noise or traffic flow/access disruptions, would be temporary in duration and localized; however, with a 15- to 20-year construction duration and lack of an alternate route for most of the Project area, community residents relying on the Seward Highway would regularly experience these disruptions. These construction disruptions would not happen along the entire length of the Proposed Action simultaneously because the Proposed Action would be constructed in phases that span only a portion of the Project area, which would help maintain road connectivity.

3.3.4.3 Avoidance, Minimization, and Mitigation Measures

- Blasting activity will be limited to once per day—likely with non-blasting days between efforts—over the entire construction period, limiting the duration of full road closures.
- A traffic control plan will be developed for each phase of Project construction to address work-zone scheduling, access to businesses and residences, detour routes, and necessary signage.
- DOT&PF will attempt to develop maintenance agreements, as appropriate, to clarify the M&O responsibility (e.g., snow plowing) for the frontage roads, trailheads, and other roadside features. These agreements likely involve coordination with the MOA, CSP, local agencies, and/or communities.
- Prior to and throughout construction, information describing the construction schedule, street closures, detours, business access, parking impacts, and hours of construction will be made available to the public. Announcements may be provided through websites, print or radio communications, and posted signs along the roadway. Throughout Proposed Action construction, the public will be informed of changing access points to prepare for future conditions.

3.3.5 Archaeological and Historical Resources

The Project is subject to review under Section 106 of the National Historic Preservation Act (NHPA; 36 CFR 800). Section 106 requires federal agencies to consider the effects of undertakings[4] on historic properties, which include any prehistoric or historic district, site, building, structure, object, or traditional cultural property included in or eligible for inclusion in the National Register of Historic Places (NRHP; 36 CFR 800.16(l)(1)). Federal regulations encourage agencies to coordinate NEPA and Section 106 review processes when possible (36 CFR 800.8).

The Project is also required to adhere to other environmental and cultural resources regulatory requirements, including, but not limited to, the Archaeological Resources Protection Act; American Indian Religious Freedom Act; Native American Graves Protection and Repatriation Act; Section 4(f) of the USDOT Act; the American Antiquities Act of 1906; and EOs 11593 (*Protection and Enhancement of the Cultural Environment*), 13007 (*Indian Sacred Sites*), and

[4] Under Section 106, an undertaking refers to any project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a federal agency, including those carried out by or on behalf of a federal agency; those carried out with federal financial assistance; and those requiring a federal permit, license or approval (36 CFR 800.16(y)).

13175 (*Consultation and Coordination with Indian Tribal Governments*). Refer to Appendix Q Section 106 Consultation/Findings for additional information.

3.3.5.1 Affected Environment

To identify cultural resources that may be impacted by the Proposed Action, analyses were confined to a preliminary Area of Potential Effect (APE). In accordance with Section 106, the APE refers to the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist (36 CFR 800.16(d)).

For the Proposed Action, the APE consists of a 300-foot buffer surrounding the proposed Project footprint, which encompasses all areas of potential ground disturbance.

Survey Coverage

The Project's APE has seen extensive cultural resource pedestrian surveys since the mid to late 1970s, the majority of which have occurred on behalf of prior Seward Highway improvement projects. During each of these surveys, archaeologists conducted systematic surveys of the APE. As a result, most of the current APE has been sufficiently surveyed for cultural resources.

Alaska Heritage Resources Survey

Review of the Alaska Heritage Resources Survey (AHRS) database and the ADNR Revised Statute 2477 Trail (RST) database indicated that 49 AHRS sites and 1 RST are within the APE as of June 2025 (ADNR 2024; OHA 2025; Table 3-10). Of these sites, 3 are listed in the NRHP, 8 are eligible for listing in the NRHP, 26 are not eligible for listing in the NRHP, 10 have had no Determination of Eligibility (DOE), and 2 have "other" status (OHA 2025). Archaeological and historical sites reported within this area include cabins; trails; lithic sites; a can dump; and infrastructure such as the Seward Highway, a telecommunications tower, a pipeline, a power transmission line, and ARRC-associated sites and districts. Table 3-10 lists the AHRS sites identified within the APE and summarizes DOEs for the NRHP. Archaeological site locations and other culturally sensitive data are treated as confidential, and such information is exempt from disclosure under federal and state Freedom of Information laws (16 U.S.C. 470hh; AS 9.25.120). Therefore, site locations are not included in this EA.

Table 3-10. AHRS sites within the APE.

AHRS Site Number	Site Name	NRHP Eligibility (Criteria)	DOE Year(s)	Site Condition[a]
ANC-00050	Mrs. Johnson's Roadhouse	Not eligible	2002	Destroyed
ANC-00054	Beluga Point	Listed (D)	1978	Partially destroyed by Seward Highway and ARRC construction
ANC-00055	ANC-00055	Not evaluated	—	Destroyed
ANC-00075	Potter Section House	Listed (A)	1985	Intact
ANC-00078	ANC-00078	Eligible (D)	2003	Intact
ANC-00105	Outhouse Above Beluga Point	Not evaluated	—	Destroyed
ANC-00109	McHugh Creek Cabin	Not evaluated	—	Destroyed

AHRS Site Number	Site Name	NRHP Eligibility (Criteria)	DOE Year(s)	Site Condition[a]
ANC-00110	Sheep Creek Cabins	Not eligible	2025	Destroyed
ANC-00124	McHugh Wasteflake Site	Not eligible	2003	Destroyed
ANC-00279	Potter Connecting Trail	Not eligible	2025	Destroyed
ANC-00816	Isle Site	Not evaluated	—	Assumed intact
ANC-01962	Moen Homestead Trail	Not eligible	2018	Intact
ANC-04057	Turnagain District of the Alaska Railroad	Eligible (A)	2015	Intact
ANC-04069	Seward Highway	Not evaluated	—	Intact
ANC-04349	McHugh Creek Road Weather Information System Tower	Eligible (A)	2017	Destroyed
SEW-00029	Alaska Railroad	Eligible (A)	2015	Intact
SEW-00101	Indian Roadhouse Site	Not evaluated	—	Destroyed
SEW-00103	The Bird House	Not eligible (A)[b]	1980	Destroyed
SEW-00126	Indian Railroad Section	Not evaluated	—	Destroyed
SEW-00131	SEW-00131 (Lithic Scatter)	Not eligible	2003	Destroyed
SEW-00132	Indian Sawmill Site	Not evaluated	—	Destroyed
SEW-00143	Indian Valley Trail	Eligible (A)	1999, 2005	Intact
SEW-00257	Girdwood-Ship Creek Connecting Trail	Not eligible	2025	Destroyed
SEW-00412	Indian Valley Mine	Listed (A)	1989	Intact
SEW-00566	Potter Connecting Trail	Not eligible	2025	Destroyed
SEW-00996	Historic Tent Foundations and Can Scatter	Eligible (D)	2003	Destroyed
SEW-01044	Whittier-Anchorage Pipeline System	Not eligible	2003	Destroyed
SEW-01075	Power Transmission Line	Not eligible	2005, 2012	Intact
SEW-01219	Prospect Pits	Not evaluated	—	Destroyed
SEW-01275	Anchorage-Whittier Pipeline	Not eligible	2003	Destroyed
SEW-01321	Very Large Can Dump	Not eligible	2019	Intact
SEW-01379	Diamond Jim's Sign	Eligible (A)	2009	Intact
SEW-01500	Bird Creek Knoll Site	Not evaluated	—	Destroyed
SEW-01557[c]	Seward Highway	Not eligible: exempt under 2005 Interstate Exemption	—	Intact

AHRS Site Number	Site Name	NRHP Eligibility (Criteria)	DOE Year(s)	Site Condition[a]
SEW-01559	Concrete Block Cluster	Not eligible	2015	Destroyed
SEW-01560	Mobile Home Remains	Not eligible	2015	Intact
SEW-01561	Cluster of Car Parts	Not eligible	2015	Destroyed
SEW-01562	Indian Ditch	Not eligible	2015	Intact
SEW-01563	320 Karalyssa Drive, The Indian House	Not eligible	2015	Intact
SEW-01564	2797 Seward Highway, Turnagain House	Not eligible	2015	Intact
SEW-01565	135 Old Johns Road	Not eligible	2015	Destroyed
SEW-01567	29025 Seward Highway	Pending consultation between SHPO and DOT&PF as of 2015	—	Intact
SEW-01568	29135 Seward Highway, Valley Bible Chalet	Not eligible	2015	Intact
SEW-01569	29383 Seward Highway, Essential One Gas Station	Not eligible	2015	Intact
SEW-01570	29433 Seward Highway	Not eligible	2015	Intact
SEW-01571	29521 Seward Highway, Cabin on the Bird Garage Parcel	Not eligible	2015	Intact
SEW-01572	210 Auriga Lane	Not eligible	2015	Intact
SEW-01613	Turnagain District of the Alaska Railroad	Eligible (A)	2015	Intact
SEW-01626	Railroad Bridge MP 86.6, Bird Creek	Assumed eligible	2020	Marked for removal

Sources: ADNR 2024; OHA 2025
Notes: SHPO = State Historic Preservation Officer
[a] Site condition as of December 2024
[b] The Bird House was determined not eligible for listing in the NRHP by the Alaska Historical Commission.
[c] The Interstate portion of the Seward Highway (MP 37–124) is exempt from Section 106 review under the 2005 *Exemption Regarding Historic Preservation Review Process for Effects to the Interstate Highway System* (70 FR 11928).

DOT&PF performed a cultural resources survey to identify potential historic properties within this Project's preliminary APE in 2023. The crew reported 21 out of 56 previously reported sites within the preliminary APE. DOT&PF documented no new sites (Hosken et al. 2024). The crew focused their survey on areas that had not been subject to prior cultural resource investigations. The survey included transects spaced up to 16.4 feet apart and inspection of subsurface exposures where possible. The crew also documented previously recorded AHRS sites for current site status and location data.

Per a request from the State Historic Preservation Officer (SHPO) during summer 2025, DOT&PF performed a supplemental cultural resources survey in August 2025. The survey focused on completing a re-evaluation for the Sheep Creek Cabins site (ANC-00110) and conducting research on the history of the Potter Weigh Station proposed for replacement. Additionally, DOT&PF completed pedestrian inventory and subsurface testing within an area near Stuckagain Heights selected by DOT&PF as a recreational replacement parcel under Section 6(f) of the Land and Water Conservation Fund (LWCF).

3.3.5.2 Environmental Consequences

No Action Alternative

The No Action alternative would have no potential to affect cultural resources because no construction activities would occur.

Proposed Action

The Proposed Action would avoid the historic properties and unevaluated sites located within the APE. DOT&PF has determined the Project would not adversely affect historic properties.

During early October 2025, DOT&PF sent a letter to SHPO that included the results of the supplemental cultural resources survey and a re-evaluation of ANC-00110. On October 16, 2025, SHPO responded with their concurrence for the remaining DOE for ANC-00110, and provided concurrence on October 23, 2025, with DOT&PF's finding of "no historic properties adversely affected" for the Project pursuant to 36 CFR 800.5(b). Appendix Q provides a detailed record of Section 106 consultations. As of October 2025, no requests for government-to-government consultation have been received from any Tribes. See Appendix V for details on Tribal coordination.

3.3.5.3 Avoidance, Minimization, and Mitigation Measures

The Proposed Action was designed to avoid impacts to NHRP-eligible and listed cultural resources as much as practicable. Specifically, design modifications were incorporated to avoid impacts on the Potter Section House (ANC-00075), Beluga Point (ANC-00054), Indian Valley Mine (SEW-00412), Diamond Jim's Sign (SEW-01379), and various archeological sites eligible for NRHP listing under Criterion D.

3.3.6 Subsistence and Traditional Use

The federal government regulates subsistence practices on federal public lands and federally reserved waters in Alaska, prioritizing rural Alaskan subsistence uses (16 U.S.C. 3112). It is the state's responsibility to regulate subsistence practices on all Alaska lands and waters, including municipal/borough and private lands. The Alaska Board of Fisheries and Alaska Board of Game manage subsistence fisheries and hunts; all Alaska residents, regardless of rural status, may practice subsistence if the lands have been approved for such uses (AS 16.05.251 and 16.05.255; ADF&G 2018).

3.3.6.1 Affected Environment

The Alaska Joint Board of Fisheries and Game has determined that the areas around Anchorage, the Matanuska-Susitna Valley, the Kenai Peninsula, Fairbanks, Juneau, Ketchikan, and Valdez are non-subsistence areas. This includes the Seward Highway and proposed Project area. The Joint Board defines non-subsistence areas based on social and economic structure, economic stability, employment, cash income, costs of goods and services, and seasonality of the economy;

the area residents' participation in harvests, harvest levels, and extent of sharing; the variety of species used; values associated with the harvests; and harvest areas (ADF&G n.d.).

For additional details on subsistence and traditional use, see Appendix P.

3.3.6.2 Environmental Consequences

Subsistence impacts are based on resource abundance, resource availability, user access, and sociocultural impacts.

No Action Alternative

Under the No Action alternative, this highway segment would not undergo improvements, so highway conditions (i.e., traffic, safety) as well as resource availability and access would remain unchanged. Additionally, the Project area would continue to be non-subsistence. Therefore, the impacts on subsistence resources, access, and availability would remain unchanged, and the No Action alternative would have negligible impacts on subsistence. Subsistence users who are transiting the Project area would continue to experience traffic and safety issues within this highway segment, which would potentially increase as traffic levels increase.

Proposed Action

The Proposed Action occurs within a non-subsistence area. The Proposed Action may have a long-term, minor, beneficial impact on subsistence users traveling through the Project area to access subsistence use areas after construction is complete because they will have more safe and efficient travel along this highway segment to harvest areas. Additionally, the Proposed Action would facilitate safer access between communities and the highway, further supporting harvest activities.

Construction Impacts

The Proposed Action may have temporary, minor impacts on subsistence users (as well as personal use, educational, sport, and ceremonial and traditional users) traveling through the Project area to access subsistence use areas during construction due to minor delays during construction period from lane and road closures and traffic delays. Personal use, sport, and educational fishing could be impacted during construction.

3.3.6.3 Avoidance, Minimization, and Mitigation Measures

DOT&PF will ensure traffic control plans are in place during construction to facilitate subsistence users continued access to subsistence resources beyond the Project area as well as personal use, educational, sport, and ceremonial and traditional user continued access to resources within and beyond the Project area.

3.3.7 Economics and Tourism

3.3.7.1 Affected Environment

The Seward Highway supports economic activities and is traveled by local residents, tourists, and commercial drivers. The highway is the sole transportation link that connects the Anchorage Bowl, Turnagain Arm, and Kenai Peninsula Borough, as well as provides access to Ted Stevens Anchorage International Airport (TSAIA), the Port, and major cruise ship terminals in Whittier and Seward.

Most residents within the Project area rely on personal vehicle transport for commuting to work, and the majority of businesses, community facilities, and major transportation facilities are

located within Anchorage and Girdwood. Appendix P provides an overview of existing income, employment, and commuting data for the Project area.

Tourists travel the Seward Highway via motorized vehicles or RVs, buses, or the railroad. A total of 65 percent of the 2.65 million tourists who traveled to Alaska during summer 2023 were cruise ship passengers (McKinley 2024). In 2024, 46 cruise ships docked in Whittier between May and September; and 104 cruise ships docked in Seward between May and October (CLIA 2024).

Heavy freight truck traffic on the Seward Highway represents 8.3 percent of total vehicle traffic within the Project area (HDR 2024b). According to DOT&PF (2022), the highway serves an important role in delivering goods from major freight ports, such as Anchorage and Seward. See Section 3.3.10 for further discussion of freight transportation via the road and railway.

Businesses within the study area serve locals and tourists traveling the Seward Highway; a list is provided in Appendix P. Additionally, certain land within Indian and Bird has been designated as mixed-use to support tourism-related services such as shops or temporary housing for seasonal employees (MOA 2009).

3.3.7.2 Environmental Consequences

No Action Alternative

Under the No Action alternative, the highway would remain in its current state. Unexpected, hours-long delays and summer traffic congestion as a result of highway closures due to accidents would likely continue to occur. These delays negatively affect reliable access to area businesses and cruise ship terminals as well as freight transport efficiency. Additionally, mixed-use development of highway frontage lots within Indian and Bird may be less suitable without highway safety and access improvements.

Proposed Action

The Proposed Action would improve mobility for tourists and residents traveling between Anchorage, Rainbow, Indian, Bird, Girdwood, Whittier, and the Kenai Peninsula. The Proposed Action would also introduce safety and transportation efficiency benefits for commercial freight trucks. The highway would be designed to accommodate larger amounts of traffic more effectively, improving traffic flow and allowing for more efficient transport of freight and people. The Proposed Action would shift approximately 7 miles of railroad alignment and tracks to accommodate the highway adjustments; trains would continue to operate as normal following completion of the Project.

The Proposed Action would also introduce more passing opportunities as well as separate local and through traffic, which were requested safety improvements for commercial truckers (ATA 2024). The Proposed Action would improve driving conditions for charter buses and tourists unfamiliar with the area by incorporating parking areas with added turnaround space, turn lane pockets, and new signage. The development of frontage roads would create more controlled, streamlined, and safer turning movements into Bird and Indian that would support the development of mixed-use frontage properties.

The Proposed Action is expected to reduce the incidences of full road closures (both directions) as a result of vehicle accidents. Having a four-lane, divided facility offers the opportunity to maintain partial traffic flows during emergency response and incident documentation processes.

Construction Impacts

Access to businesses, including tourist and recreation destinations, would be altered and occasionally interrupted by construction due to changes in traffic flows and construction detours. Disruptions in traffic and ease of access between businesses and the highway would potentially include flaggers, pilot cars, detour routes, and hauling of construction materials. Delays would likely be short term and localized because the Proposed Action would be built in multiple construction phases; however, with a 15- to 20-year Project construction duration and lack of an alternate route for most of the Project area, construction zones would be unavoidable. This would be a short-term, minor, adverse impact that could cause drivers to avoid traveling through the area or avoid stopping at businesses along the highway corridor in Bird and Indian. Additionally, the lack of an alternative route may cause downstream congestion elsewhere on the highway during construction delays.

Construction would cause short-term, minor, adverse impacts on visual resources, recreational access, efficient travel, and tourists' experiences traveling by highway and railroad; however, tourist traffic associated with cruise ships would likely continue to operate as normal to accommodate cruise ship operations in Whittier, Seward, and Anchorage. Short-term, minor, adverse impacts on the trucking industry from construction would include loss of efficiency from traffic congestion and interruptions over the construction period.

Railroad transport of freight would be occasionally interrupted during construction, such as during blasting activity. While rail realignment would be required, the proposed rail sections have been designed so new rail can be constructed while trains are running to minimize service interruptions.

With appropriate mitigation measures such as a traffic control plan, these construction impacts would be minimized. No businesses/destinations would be made completely inaccessible throughout construction because drivers would instead be detoured to access the business.

3.3.7.3 Avoidance, Minimization, and Mitigation Measures

- To ensure optimal work-zone scheduling to avoid peak driving hours, preserve access to business and destinations, and develop appropriate detour routes and necessary signage, a traffic control plan will be developed for each phase of construction. A traffic control plan is essential to minimizing traffic pattern disruptions and avoiding access issues.
- In addition to road signage during construction, information on the construction schedule and destination access will be made available in other forms of communication, such as online. The public and commercial operators will be provided notice of planned highway closures and expected delays during construction.
- During and following construction, roadway signage will be developed to give drivers advanced notice of access for businesses or destinations, especially those accessible only through frontage road intersections. The signage will interfere with the viewshed as little as possible so as not to detract from the scenic character of the highway, as stated in the *Chugach State Park Management Plan* (ADNR 2016) and *Seward Highway Corridor Partnership Plan* (DOT&PF 1998).

3.3.8 Hazardous Materials and Waste

This section uses the term "hazardous materials" to describe known contaminated sites and other Recognized Environmental Conditions (RECs) within the Project area.

3.3.8.1 Affected Environment

DOT&PF conducted a search of state and federal regulatory databases to identify hazardous material sites near the Project corridor from MPs 118 to 98.5 (Shannon & Wilson 2024; Appendix R Environmental Database Review and Site Reconnaissance Progress Letter).

The search found several active sites, including two Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) sites, one active spill, one closed landfill, two registered underground storage tanks that are currently in use, one active leaking underground storage tank (LUST), and eight contaminated sites. One Resource Conservation and Recovery Act treatment, storage, and disposal facility is not subject to corrective action. Several sites have been cleaned up according to the appropriate agency regulations. Additional undocumented hazardous materials, such as heating oil tanks, contaminants, herbicides, metals, and/or undocumented releases from various materials, may be present. A complete description of known (active and closed) hazardous materials sites within the Project area and a figure identifying sites can be found in Appendix R.

3.3.8.2 Environmental Consequences

No Action Alternative

The No Action alternative would result in no disturbance to any known or unknown hazardous material sites throughout the Project area. Use of the road under the No Action alternative would continue to include the transport of chemicals, solid wastes, fuel products, oils, and lubricants. Therefore, potential exists for the release of hazardous materials as the result of vehicle crashes, including container truck accidents, similar to current conditions.

Proposed Action

The Proposed Action would not require DOT&PF to acquire property with known contamination. Construction of the Proposed Action may encounter both known and unknown contaminated and hazardous sites within the Project corridor vicinity. Known locations of hazardous contamination near or along the corridor include: CERCLIS sites at the Indian ACS (located near MP 101.5) and the Rabbit Creek Radio Relay Site (noted as being located 10 miles southeast of the city); an active spill at Bird House Garage near MP 100.5; and an active LUST site at the Essential 1 gas station near MP 101 (Shannon & Wilson 2024; see Appendix R, Figures 2 through 4). The Proposed Action could encounter contaminants related to septic systems and private water wells or heating oil at residential and commercial properties, herbicides and diesel along the ARRC tracks, or contamination associated with metals near the Rabbit Creek Shooting Range. Construction of the Proposed Action could encounter other undocumented releases within the Project area.

Construction Impacts

Hazardous sites or contaminated materials could be discovered during Proposed Action construction, such as contaminated groundwater and soil. Upon discovery, ADEC would be contacted, and procedures would follow an ADEC-approved Corrective Action Plan. Any hazardous materials (e.g., asphalt, lubricant, fuel) that are not contained properly could cause adverse environmental impacts during use, transport, or storage of materials at the Project site; however, with proper mitigation measures implemented, the risks from such releases would be managed. Additionally, terrestrial mammals, marine mammals, fish, and birds could encounter solid waste or hazardous materials associated with construction, including food waste, fuels, and lubricants.

3.3.8.3 Avoidance, Minimization, and Mitigation Measures

- Prior to construction or property acquisition, a Phase I Environmental Site Assessment will be conducted in accordance with the ASTM International Standard E1527-13. The Environmental Site Assessment identifies potential hazardous material sites and indicates if a Phase II investigation is necessary. Geotechnical investigations will be conducted, including soil sampling. All necessary ADEC permits will be secured prior to beginning work.
- Prior to any construction near known contaminated sites or hazardous materials, DOT&PF and the construction contractor will coordinate with ADEC to develop a Corrective Action Plan. The contractor will also develop a site-specific Hazardous Material Control Plan (HCMP), SPCC Plan, and SWPPP. Should the contractor unexpectedly encounter contaminated or hazardous materials on properties with RECs, the contractor will suspend work within that area, notify ADEC, and develop an ADEC-approved Corrective Action Plan for an appropriate response. Additionally, if hazardous materials are encountered, the construction contractor will practice proper hazardous material storage and handling actions and follow DOT&PF emergency response procedures, including immediately stopping work, securing the site to prevent unauthorized access, and following the HCMP; relevant regulatory authorities will be immediately notified. Phone numbers for the National Response Center and emergency services will be available at work sites.
- Construction contractors will be required to meet all federal, state, and local regulatory requirements regarding the discovery and use of hazardous materials. These regulatory requirements include worker right-to-know and safety training for the use of hazardous materials as well as the recognition and reporting of hazardous materials discovery. Any hazardous materials used during construction will follow local, state, and federal regulations for storage and handling to avoid impacts on the surrounding area and reduce interactions with fish and wildlife.

3.3.9 Public Services and Utilities

3.3.9.1 Affected Environment

Public Services

Public services within the Project area are limited or dependent upon their location along the Seward Highway. No schools, libraries, or medical facilities are located within the Project area. Residents living in Turnagain Arm communities must commute to Anchorage or Girdwood for these types of services. The Anchorage School District offers bus services to schools in South Anchorage for students residing in Turnagain Arm communities, including high school students from Girdwood.

Police protection and law enforcement along the Seward Highway corridor within the Project area is provided by the Anchorage Police Department and the Alaska State Troopers. Fire protection services north of approximately MP 115.5 are typically provided by the Anchorage Fire Department, with the Girdwood Volunteer Fire Department providing services south of MP 115.5. The State of Alaska Division of Forestry and Bureau of Land Management also help protect residents and property within the MOA during the wildland fire season (MOA 2023). Additional fire protection services may be provided through mutual aid agreements with the TSAIA Police and Fire Department, Joint Base Elmendorf-Richardson, and Chugiak Volunteer Fire and Rescue Department.

When accidents occur, the Seward Highway can be closed for many hours, with public-safety and road crews having limited or no opportunity to divert traffic. The two-lane facility limits emergency response access throughout the Project area. This makes accessing accident sites within the corridor nearly impossible due to lane closures or backups, which slows the response times of emergency services. Additionally, Turnagain Arm tidal changes make boat access difficult for reaching incidents involving Turnagain Arm waters. No medical facilities are along the Project study area. Table 3-11 shows the nearest medical facilities from MP 118.

Table 3-11. Nearest medical facilities from Seward Highway MP 118.

Medical Facility	Distance from MP 118 (miles)
St. Elias Specialty Hospital	6.4
Alaska Native Medical Center	6.8
Alaska Psychiatric Institute	6.9
Providence Alaska Medical Center	7.1

DOT&PF conducts road maintenance such as street sweeping and snow plowing on the Seward Highway, which is a priority level 1 road for winter maintenance. Priority level 1 roads are those that may take up to 12 hours to clear after a winter storm (DOT&PF 2024b). DOT&PF also conducts winter maintenance on other roads located withing the Project area, although these roads have a lower priority level than the Seward Highway. Private roads and side streets outside DOT&PF's ROW are maintained by others.

Utilities

Water for residents and businesses within the Project area is sourced from private wells. Most properties use individual septic systems for sewage, while some, mainly commercial and two-family residential developments, are served by state-authorized septic systems (MOA 2009). The Project area's public stormwater system discharges into creeks and ultimately to Turnagain Arm as authorized under the MS4 permit. Waste disposal is managed through local transfer stations and landfills, which have sufficient capacity. ENSTAR Natural Gas Company provides natural gas service within the Project area. ENSTAR facilities within the Project area include service lines, distribution mains, and a high-pressure distribution pipeline. Chugach Electric provides electrical services through a main transmission line, which crosses Turnagain Arm and serves power generation sources in Anchorage, Homer, and the Kenai Peninsula (MOA 2009). No major upgrades are planned for the utilities. Telephone, internet, and cable services are available from providers including GCI, Alaska Communications, and AT&T, while satellite internet is provided by Starlink and Viasat.

3.3.9.2 Environmental Consequences

No Action Alternative

Under the No Action alternative, the Seward Highway would not be improved; therefore, no impacts on current public services or utilities within the study area would occur. The corridor would continue to have limited access to public services, and local resources would remain the same as current conditions due to the lack of improvements. When accidents occur, the Seward Highway could continue to be closed for many hours, with public-safety and road crews having limited or no opportunity to divert traffic.

Proposed Action

The Proposed Action is not anticipated to have any direct impacts on public services within the Project area, but access to public services would improve. Emergency response services would benefit from the Proposed Action because their response time may decrease due to improved mobility through the corridor, which includes the addition of a ramp to launch rescue boats into Turnagain Arm. Utilities would require relocating as necessary to accommodate road widening and railroad track realignment. Affected utilities within the corridor include underground fiber-optic cables, natural gas lines, and overhead power transmission lines.

Construction Impacts

Construction activities, lane closures, and traffic control measures would cause intermittent delays to police, fire, and emergency medical response times as well as school bus schedules. The relocation of utility lines and cables during construction may cause temporary, short-term service interruptions for residents living within the communities of Rainbow, Indian, and Bird.

3.3.9.3 Avoidance, Minimization, and Mitigation Measures

DOT&PF will continue coordination and planning efforts with public services and utility providers to ensure community access to these services is uninterrupted or necessary interruptions are limited during construction.

3.3.10 Transportation

3.3.10.1 Affected Environment

The Project area consists of the Seward Highway between MPs 98.5 and 118, and portions of a small network of other streets that each intersect the highway along the corridor.

Traffic

The Seward Highway is a National Forest Scenic Byway, Alaska Scenic Byway, and All-American Road that accommodates approximately 3 million annual vehicle trips. It supports commercial, recreational, and residential traffic year-round. In 2022, average annual daily traffic within the Project corridor ranged between 7,730 (south of Bird) and 9,550 (MP 117.5 at Potter Marsh) vehicles per day.

However, the monthly average daily traffic (ADT) varies substantially, ranging from a 2022 monthly ADT around 5,500 in November at Potter Marsh to over 16,200 in July. During the summer months, the highway serves a substantially higher ADT due to tourism and recreational use. These seasonal peaks reach traffic volumes that are as high (by ADT) as any two-lane road in Alaska and are as busy as Anchorage's busier multilane arterials on a volume per lane basis.

For a more detailed traffic analysis within the Project area, see the Project's *Traffic and Safety Analysis Report* (HDR 2024b; Appendix G).

Public Transit, Motorcoaches, and Tour Bus Services

Public transit services are not offered within or along the Project area. Private operators offer transportation and cruise transfer services between Anchorage and the Kenai Peninsula via motorcoaches and tour buses (Alaska Tour & Travel n.d.). Over the course of a year, the majority of these travelers are cruise ship passengers traveling between TSAIA and the cruise ship terminals in Seward and Whittier. These services are typically provided during summer, between May and September. However, private group tours and multiple private van operators

provide year-round daily tours and shuttles between Anchorage and Girdwood/Portage as well as points south.

Alaska Railroad Corporation

ARRC operates up to 10 passenger trains daily from May to September that travel from Anchorage through the Project area to Whittier and Seward. ARRC also operates freight trains that run to the ports of Whittier and Seward throughout the year, transporting bulk resource products such as gravel and coal, petroleum, military shipments, and containers with general cargo. The tracks run alongside the Seward Highway within the Project area, and are situated between the highway and Turnagain Arm. They are positioned within a 200-foot ROW adjacent to, or overlapping, the 300-foot-wide DOT&PF ROW.

Freight

The MOA relies heavily on freight for its daily economic activities. Freight movement affects traffic patterns and is, in turn, influenced by the operational efficiency of the road network. The Seward Highway serves as the only road system connecting the Port to communities south of Anchorage, making it indispensable for transporting consumer goods to the Kenai Peninsula Borough. The *Alaska Moves 2050: Statewide Freight Plan* highlights that the Seward Highway on a whole "registers some of the highest truck volumes in the state, serving over 2,000 trucks a day in Anchorage and over 200 trucks a day near Seward. It is also a designated safety corridor from Potter Marsh to Girdwood" (DOT&PF 2022:52).

Access Points

The Project area contains 83 access points along the highway, including intersecting roads, residential and commercial driveways, pullouts, and trailheads. These access points are located on both sides of the highway, and provide access to residential areas, businesses, and recreational opportunities along the corridor.

Non-Motorized Transportation

Non-motorized transportation for non-recreational purposes within the Project area is limited by the lack of a continuous Americans with Disabilities Act (ADA)-accessible, multi-use pathway along the entire corridor. The corridor includes numerous rugged, unpaved hiking trails in CSP. The only existing multi-use trail within the Project is the popular Indian to Girdwood Bike Path (commonly referred to as the "Bird to Gird" Trail), which is used year-round by people walking, biking, jogging, or cross-country skiing. Between the northern Project terminus and the community of Indian, non-motorized highway users must use the highway shoulder to travel. See Section 3.3.11 for additional information on trails.

3.3.10.2 Environmental Consequences

No Action Alternative

Under the No Action alternative, existing safety concerns would remain unaddressed. As traffic continues to grow over time, safety concerns would worsen. Roadway closures would continue to occur during crashes and events, continuing to degrade regional travel as the population grows.

Proposed Action

The Proposed Action would have long-term benefits to transportation along the Project corridor, including enhanced safety and improved access for both motorized and non-motorized

transportation users. It would allow the Seward Highway to meet increased demands, especially during peak summer months when traffic volumes could reach more than 22,000 vehicles per day, and help reduce congestion, improve traffic flow, and shorten travel times. Flattening curves, widening shoulders, and adding turn lanes would reduce crash rates and severity along the highway. Separating north- and southbound traffic would reduce collision risks from oncoming or turning vehicles.

The Proposed Action would allow safer and more reliable access for motorcoaches and tour buses, permitting these larger vehicles to operate more safely, and reduce the risk of accidents due to slow-moving vehicles.

The Proposed Action would relocate 7 miles of ARRC track, including one bridge and several culverts, to accommodate the widened highway and straightened highway curves. The railroad realignment would also accommodate future railroad upgrades (e.g., adding a second track) via a widened embankment.

The Proposed Action would also benefit freight transportation by enhancing the road's ability to handle higher volumes of commercial freight traffic. Wider shoulders and lanes would also enable safer passage of freight vehicles, especially during winter, when lanes become narrower due to snow build up.

The Proposed Action would modify access within the Project area through changes in parking and pullout availability, and would consolidate direct access points to the Seward Highway through the construction of frontage roads in Indian and Bird. This would improve safety and connectivity for all roadway users. However, the consolidation of highway access into a frontage roadway within some locations may increase the potential for congestion at intersections during emergency events, such as community evacuations or emergency services/first responder access.

The Proposed Action includes a separated multi-use pathway that would provide a safe and continuous non-motorized route from Rabbit Creek Road to Girdwood. The multi-use pathway would also improve non-motorized access to recreational areas along the corridor, providing a safer alternative for recreational users. Existing segments of the Indian to Girdwood Bike Path may require relocation, and portions of the pathway may require being temporarily closed, limiting access for non-motorized users. Designated parking areas at major recreation areas would consolidate access and enhance safety by reducing random pullouts and roadside stops.

Construction Impacts

During construction, lane closures and reduced speed limits would likely cause delays, congestion, and temporary impacts on traffic flow. Although efforts would be made to maintain traffic flow, construction phasing would cause periodic disruptions. Restrictions on shoulder parking would also limit access to recreation facilities until designated areas are fully constructed. Freight and commercial traffic may face delays due to lane closures and temporary traffic control measures. While construction materials would be sourced from within the Project area by the rock cuts associated with the Proposed Action, some materials may need to be transported, potentially increasing traffic volumes and noise from construction-related trucks. No material sites would be developed within the Project area; materials would be generated during construction of the Proposed Action. Railroad tracks would only be closed during blasting and other major construction events. Construction materials may be hauled to and/or from construction sites using the railroad. This may require ARRC to modify its passenger and/or freight rail schedule.

3.3.10.3 Avoidance, Minimization, and Mitigation Measures

- Coordination will occur between DOT&PF, ARRC, MOA, and ADNR to plan for construction phasing and temporary traffic control.
- An emergency response plan and construction schedules will be developed in coordination with local authorities to reduce traffic delays as well as provide alternate routes for emergency and freight vehicles during construction phases when lane closures are unavoidable.

3.3.11 Parks and Recreation

3.3.11.1 Affected Environment

The Seward Highway corridor provides access to a variety of recreational activities, including hiking, fishing, rock climbing, wildlife and scenic viewing, and camping. Developed facilities within the Project corridor support these opportunities, such as scenic parking spots, informational signs and kiosks, campgrounds, trailheads, trails, and pullouts.

Many of the park and recreation properties within the Project area are protected under Section 4(f) of the USDOT Act, which prohibits the use of certain parks, recreation areas, wildlife refuges, or historic sites for transportation projects. For additional details on properties protected by Section 4(f), see Section 3.3.12 and Appendix S Section 4(f) Evaluation.

A number of resources along the Seward Highway are not protected under Section 4(f) but are still highly valued by the community (see Table 3-12). These resources include rock climbing areas as well as pullouts that provide scenic viewing opportunities and access to rock climbing.

Table 3-12. Non-Section 4(f) properties within the Project area.

Map ID[a]	Name	MP[b]	Type
8	Pullout (southbound)	115.8 (W)	Pullout
14	Pullout	114.6 (M)	Pullout
18	Grunge Wall Pullout	113.2 (W)	Pullout, Scenic Viewing, Slow Vehicle Turnout
19	Pullout	113.1 (M)	Pullout
20	Pullout	112.9 (M)	Pullout
23	Pullout	112.4 (M)	Pullout
24	Good Vibes Wall	112.2 (M)	Rock Climbing
26	Pullout	112.0 (W)	Pullout
27	Fundamentalist's Cut	112.0 (M)	Rock Climbing
29	Pullout	111.6 (M)	Pullout
30	Weeping Wall	111.6 (M)	Rock Climbing
31	Resolution Bluff/Der Rinecrag/Twinkle Toes	111.3 (M)	Rock Climbing
32	Pullout	111.2 (M)	Pullout
33	Pullout	110.8 (M)	Pullout
34	Pullout	110.4	Pullout
35	Bermuda Triangle	110.4 (M)	Rock Climbing
40	Pullout	109.8 (W)	Pullout
42	Pullout	109.1 (W)	Pullout
43	Turnout	108.9 (M)	Turnout

Map ID[a]	Name	MP[b]	Type
44	Rainbow Point Scenic Overlook	108.7 (W)	Turnout
45	Rainbow Valley Road Parking	108.5 (M)	Parking
47	Scenic Overlook	108.3 (W)	Pullout
48	Pullout	108.1 (M)	Turnout
50	Scenic Overlook	107.6 (W)	Pullout
51	Party World	107.2 (M)	Rock Climbing
52	Pullout	107 (M)	Pullout
53	Pullout	106.9 (M)	Pullout
55	Windy Corner Scenic Overlook	106.8 (W)	Pullout

Source: HDR 2024c
Notes: ID = Identification Number
[a] Map ID numbers correspond with the numbering used in Appendix S, Mapbook.
[b] (M) signifies the facility is on the mountain side of the Seward Highway; (W) signifies that the facility is on the water (Turnagain Arm) side of the Seward Highway.

The Project area is considered an important access corridor for a number of recreational activities and resources, ranging from ice climbing and hiking to simply driving down a scenic corridor to enjoy the view. The following describes these recreational activities and resources.

Anchorage Coastal Wildlife Refuge

The ACWR provides many recreational opportunities, including wildlife viewing and photography; walking and hiking; and winter activities such as skiing, winter/fat-tire biking, ice skating, and hiking/snowshoeing. It extends along Anchorage's coastline for 16 miles, from Point Woronzof to Potter Creek. The ACWR is best known for the portion located within the Project area called Potter Marsh.

Potter Marsh is a 564-acre section located at the southern end of the ACWR, just east of the Seward Highway. The primary recreation feature, which is accessible at MP 117.6, is a boardwalk system elevated above the wetlands that includes educational signs and a 0.5-mile boardwalk that winds through the marsh. Several other pullouts and viewing areas are along the Seward Highway to access the ACWR between MPs 115.3 and 117.6.

Chugach State Park

CSP features several access points, trailheads, campgrounds, and facilities stretching from its northeastern boundary at Knik River Road to the southern edge along Turnagain Arm. CSP is largely undeveloped, which makes it particularly attractive to wilderness advocates and others who enjoy self-sufficient recreation (ADNR 2016:30). The park features approximately 280 miles of developed trails, four campgrounds, and eight public use cabins. Popular activities within the park include camping, picnicking, berry picking, photography, wildlife viewing, backpacking, hiking, biking (both summer and winter), nature study, sightseeing, rock and ice climbing, hang gliding, boating, off-road vehicle riding, fishing, hunting, cross-country skiing, and snowmachining (ADNR 2016:29).

Beluga Point

Beluga Point, located at approximately MP 110.3, is a pullout and scenic viewing area along the Seward Highway. The site provides visitors with wildlife viewing opportunities, particularly beluga whales, and expansive views of Turnagain Arm and surrounding mountains. ADNR manages Beluga Point as a component of CSP. A paved pullout with two driveway approaches

and capacity for approximately 35 passenger vehicles is located between the roadway and railroad. The pullout contains a designated viewing area with interpretive signage, post-mounted binoculars, benches, and rock landscaping.

Indian to Girdwood Bike Path

The Indian to Girdwood Bike Path (often called the "Bird to Gird" Trail, as it was known prior to its extension north to Indian) is a designated National Recreation Trail that parallels the Seward Highway and ARRC tracks along Turnagain Arm, within CSP. This non-motorized, separated, paved trail runs between the Alyeska Highway in Girdwood (MP 90) and Indian Road (MP 104), with access points at the Indian Creek Trailhead, Bird Creek Campground and Trailhead, Bird Point, and multiple pullouts along the highway. It also is listed in the *Chugach State Park Management Plan* as a park facility (ADNR 2016). Approximately 2 miles of trail are within the overlapping DOT&PF/ARRC ROW within the Project area. The entire trail is wheelchair accessible, and it includes numerous rest stops with picnic tables and benches, educational features, and viewing telescopes. Interpretive signs for geologic features, wildlife, and avalanche mitigation line the trail. It is a shared-use trail, used by bikers, pedestrians, cross-country skiers, and others.

Bird/Bird Creek/Bird Ridge

During summer, anglers are drawn to the Bird Creek area due to the large number of salmon that run through the creek. The parking lots on the northern side of the road provide access to the Bird Ridge Trail and sport fishing. The Bird Ridge Trail, a steep 2-mile hike with approximately 3,000 feet of elevation gain, offers scenic views and starts just north of the creek. South of the creek is the Bird Creek Campground, a popular spot for overnight stays. It features 28 campsites, space for RVs, 2 cabins, wheelchair-accessible trails and restrooms, public water, picnic areas, and access to the Indian to Girdwood Bike Path.

A multi-use pathway runs along the northern side of the highway, connecting the Bird Ridge trailhead, Bird Creek access points, and the overflow parking/campground. North of the Bird Creek Campground, across the Seward Highway, lies a 2,200-acre wooded area owned by the MOA and managed as part of CSP. This area features an extensive network of old roads and trails, now used for off-road vehicle trails during summer and snowmachine trails during winter.

3.3.11.2 Environmental Consequences

No Action Alternative

Under the No Action alternative, access to recreational facilities within the Project area would remain unchanged. Recreational users would continue using the existing parking areas and pullouts to access trails, campgrounds, rock climbing, scenic viewing, and fishing areas. Additionally, under the No Action alternative, the proposed multi-use pathway would not be constructed. Non-motorized users would continue to use the existing disconnected pathways, which would continue to limit safe and convenient options for cyclists and pedestrians traveling between Anchorage and Girdwood.

Proposed Action

The Proposed Action would modify access to recreational facilities within the Project area, mostly through changes in parking and pullout availability, turnarounds, and the addition of a paved multi-use pathway. Some rock-climbing areas would be eliminated by construction of the new highway alignment.

Existing pullouts at approximately MPs 116.75, 116, and 115.75 along the ACWR/Potter Marsh would no longer be accessible by vehicles. Users would be directed to the consolidated north and south parking areas, where users would use the new paved pathway to access these locations.

Within CSP (MP 115 to the southern end of the Project corridor at MP 98.5), vehicle parking to access scenic viewing, trails, and rock climbing would be located at:

- Potter Section House/CSP Headquarters, MP 115.2
- Potter Creek Trailhead
- McHugh Creek Day Use Area, MP 111.8
- Beluga Point, MP 110.25
- Rainbow Point (water side), MP 108.7
- Rainbow Trailhead and Rainbow Valley Road, MP 108.4
- Windy Corner Scenic Overlook (water side), MP 106.75
- Windy Corner Trailhead, MP 106.5
- Falls Creek Trailhead, MP 105.6
- Indian Peak Trailhead (Indianhouse Mountain Trail), MP 104.5
- Indian Creek Trailhead (proposed), MP 103.1
- Indian Community Ballfield (proposed), approximately MP 102.8
- Bird Ridge Trailhead, MP 102.1
- Bird Creek Parking, MP 101.7
- Bird Creek Overflow Parking, MP 101.25
- Bird Creek Campground/Trailhead, MP 100.8

Other pullouts used for scenic viewing or rock-climbing access, including Grunge Wall and Pivot Point, would be closed to vehicle access or obliterated by construction of roadway improvements. Visitors would have to park at the nearest main recreation facility parking areas listed above and use the separated multi-use pathway to access other park amenities In some cases, visitors would need to drive past their destination to park at a parking area and walk back along the multi-use pathway to reach their destination. This would result in some instances where driving distance is increased under the Proposed Action, because visitors can currently park in unofficial pullouts along the highway closer to their destination.

Parking areas at popular trailheads, such as Potter Creek, Rainbow, Windy Corner, and Bird Ridge, would be relocated or reconstructed to accommodate highway improvements; several popular trailheads would have expanded parking. Both north- and southbound travelers would have longer travel times due to new turnarounds required for accessing some trailheads, such as Falls Creek and Bird Ridge.

The Indian Community Ballfield (Boulder Ballfield) and Indian Creek Trailhead parking area would be reconstructed south of their existing location with right-in, right-out only access.

The construction of the new highway alignment would destroy several rock-climbing routes: Pressure Point, Good Vibes Wall, Fundamentalist's Cut, Weeping Wall, Resolution Bluff, Twinkle-toes, Bermuda Triangle, and Goat's Head Soup. Direct highway access would be eliminated for Crack in the Woods and Hole in the Wall climbing routes.

Key scenic locations such as Beluga Point and Windy Corner would have expanded parking and visitor facilities. An ADA-compliant, grade-separated pathway from the Beluga Point parking area over the railroad tracks would provide safe access for all users to the rocky outcroppings along the popular scenic viewpoint. Windy Corner would provide off-highway parking and

viewing opportunities for Dall sheep within the area, and reduce the presence of vehicles and people near or within the travel lanes. These changes would support safer and more organized access while potentially increasing visitation to these highlights.

A new paved, separated pathway extending 14 miles from Rabbit Creek Road to the Indian to Girdwood Bike Path would improve access for non-motorized users. The pathway would create a continuous non-motorized route from South Anchorage to Girdwood, increasing connectivity between recreational facilities. Final placement of the pathway would be determined during final design.

Although these actions would require some visitors to adjust to new access routes, longer distances from parking to trailheads, and increased travel time, they would improve safety and connectivity to recreation opportunities for all users. ADA-compliant, non-motorized pathways and connections would improve accessibility for all users, including those with disabilities.

Construction Impacts

The relocation of trailheads and intermittent closures during construction would temporarily disrupt recreational use and access. Alternative access to these resources would be provided during construction, when possible. During final design and before construction, DOT&PF would work with CSP to identify alternative access for recreational facilities and communicate that alternate access to the public. Refer to Appendix S for more information regarding the recreational facilities that would be affected by construction of the Proposed Action.

3.3.11.3 Avoidance, Minimization, and Mitigation Measures

Continued coordination among DOT&PF, ADNR, and stakeholders such as local recreational groups will help develop measures to communicate and minimize disruptions to the public's ability to access recreational facilities during construction. This coordination between DOT&PF, ADNR, and stakeholders has occurred during the development of the Proposed Action design and will continue during final design and construction.

3.3.12 Section 4(f) of the U.S. Department of Transportation Act

An Individual Section 4(f) Evaluation was conducted for this Project and is attached as Appendix S. The following summarizes that evaluation; readers should refer to the evaluation in Appendix S for detailed analyses and a full description of how this Project complies with the Section 4(f) statute and regulations.

3.3.12.1 Section 4(f) Applicability

The Project corridor traverses two very large Section 4(f) properties: the ACWR and CSP. In addition to the ACWR and CSP, multiple historic sites listed or eligible for listing in the NRHP (i.e., historic properties) are located within the Project corridor. Another unique characteristic of this Project is that multiple parking areas, trailheads, trails, boardwalks, rock-climbing crags, overlooks, and other park and refuge access points are located in whole or in part within DOT&PF's ROW. DOT&PF documented decisions about Section 4(f) applicability of CSP, ACWR, and multiple sites and features associated with these park and refuge properties in a document titled, *Section 4(f) Property Identification* (see Appendix S).

3.3.12.2 Section 4(f) Use

The Proposed Action would permanently incorporate land from two Section 4(f) protected properties: ACWR and CSP. There are no Section 4(f) uses of historic properties.

ACWR

The Proposed Action would have a direct use of approximately 17.9 acres of the ACWR. This includes the approximately 17 acres of ACWR lands being acquired for transportation ROW as well as impacts to refuge features on state lands. This acreage is a fraction of 1 percent of ACWR's total acreage (32,476 acres) as reported in the ACWR management plan (ADF&G 1991). In general, to separate the travel lanes, the ROW would be reconfigured to accommodate the highway and realign the railroad seaward. Most use is a long sliver of ACWR mudflat tidelands west of the current ARRC track alignment. This use would accommodate the physical expansion of the highway and railroad footprint. Additionally, the Proposed Action would alter multiple refuge features along the western edge of Potter Marsh by closing the three existing wildlife viewing areas along the highway to vehicle parking and constructing a non-motorized pathway that connects these pullouts.

CSP

The Proposed Action would have a direct use of approximately 222 acres of CSP. This represents the approximately 200 acres of CSP lands on both sides of the existing DOT&PF and ARRC ROWs that would be acquired for future transportation ROWs as well as impacts to park features on state land of the DOT&PF or ARRC ROW, and MOA lands managed as part of CSP. This 222-acre area is a fraction of 1 percent of the park's total approximately 495,000 acres, as reported in the park's management plan (ADNR 2016).

3.3.12.3 Section 4(f) Avoidance Alternatives

DOT&PF investigated several potential avoidance alternatives: bypassing CSP to the north and east, bypassing CSP to the south, remaining entirely within the ROW, remaining entirely within the ROW except for tunnels, using alternative transportation modes, and using various non-construction activities. DOT&PF determined that none of these were viable avoidance alternatives. DOT&PF has determined that avoidance of all Section 4(f) properties is not possible; therefore, there is no feasible and prudent avoidance alternative.

3.3.12.4 Measures to Minimize Harm and Mitigation

The following is a summary of the measures to minimize harm and mitigation measures; see Appendix S for detailed descriptions of the measures to minimize harm and mitigation measures that are included in the Proposed Action. They were developed through consultation with the officials with jurisdiction for the respective Section 4(f) properties.

ACWR

The Proposed Action will hold to the existing eastern edge of the Seward Highway in Potter Marsh and expand the highway toward Turnagain Arm to preserve the productive wetland habitat of Potter Marsh. The Proposed Action includes the multi-use pathway through the ACWR area along the edge of Potter Marsh, without further fill in the marsh, for pedestrian access to the marsh edge and to connect three existing wildlife viewing areas along the highway and one view/access point at the southern end of the marsh. The Proposed Action replaces an impacted portion of the existing Ggeh Betnu Trail with the Project's multi-use pathway and connects it with the remaining portion of the Ggeh Betnu Trail for continued ACWR access. The Proposed Action would satisfy the requirements of ADF&G and DOT&PF's 2025 Memorandum of Agreement for fish passage (ADF&G and DOT&PF 2025) for all anadromous fish streams; at Rabbit Creek, it would be designed to maintain water levels in Potter Marsh.

CSP

The Proposed Action includes a 14-mile extension of the Indian to Girdwood Bike Path as a separated, paved, multi-use pathway from Indian to Rabbit Creek Road. It would be separated by 10 feet minimum from the paved highway shoulder (closer along low-volume frontage roads). The Proposed Action includes installation of additional wayfinding signs and advanced notice of park features for drivers. The Proposed Action includes replacing impacted parking at Potter Section House (at that location or nearby) and connects the Potter Creek Trailhead to the Section House complex via trail spur from the multi-use pathway.

The Proposed Action rebuilds the Potter Creek Trailhead facility; rebuilds the Beluga Point Scenic Overlook to expand its capacity and add a pedestrian crossing over the railroad tracks to CSP lands outside the ARRC ROW; rebuilds the Rainbow Trailhead with a vault toilet; rebuilds the Falls Creek Trailhead with added capacity; rebuilds and expands the Windy Corner Trailhead with Dall sheep viewing facilities and toilet; reconstructs the Indianhouse Mountain Trailhead and small parking pullout; rebuilds the Boulder Ballfield in Indian, vault toilets, and parking area for the Indian to Girdwood Bike Path; reconstructs the fishing and observation platforms as well as the paved pathway for creek access on the eastern side of Bird Creek; extends electrical hookups and paves the roads and sites in the Bird Creek Campground; and rebuilds segments of the existing Turnagain Arm Trail at the Potter Trailhead and for approximately 0.5 mile near MP 107.7.

3.3.13 Section 6(f) of the Land and Water Conservation Act

The LWCF is a fund managed by the National Park Service (NPS) and provided as grant money to public recreational facilities to provide improvements to those facilities.

As the LWCF is administered by a separate federal entity, any action to convey grant-encumbered land out of a park is considered a federal action; therefore, it requires its own analysis of effects under NEPA. A separate EA is underway to describe the resources, effects, and proposed mitigation for the LWCF-encumbered conveyance. This document will be attached to this Project EA as Appendix T Section 6(f) Evaluation when complete.

3.3.13.1 Affected Environment

The LWCF-encumbered area related to the proposed Project is CSP land. Throughout its 50-year history, CSP has had LWCF monies allocated to provide specific improvements to the park. These improvements have varied both geographically and in scope, such as trail building or installation of vault toilets. As a result, the boundary of grant encumbrance has been drawn to incorporate the entirety of CSP. All of CSP, above the tidal zone as well as outside the existing Seward Highway and ARRC ROW, is protected by this LWCF encumbrance, and any impacts on these lands must follow the LWCF guidelines and be evaluated for effects.

3.3.13.2 Environmental Consequences

No Action Alternative

Under this alternative, no highway improvements would be constructed. No additional ROW outside of existing would be required for highway maintenance; therefore, no acquisition of ROW from the adjacent park would occur.

Proposed Action

The Proposed Action would require conversion of up to approximately 132 acres of intact, steeply sloped, upland terrain into highway ROW under DOT&PF's stewardship. These lands would be located mainly between MPs 108 (Rainbow) and 114 (DOT&PF Weigh Station), with small additional acquisition slivers to both the north and south. This conversion of recreation and park property also involves Section 4(f) and is addressed in Appendix S.

Construction Impacts

Much of the converted lands would be subject to direct construction activities, such as rock blasting, excavation, and slope stabilization to reconstruct the highway geometry.

3.3.13.3 Avoidance, Minimization, and Mitigation Measures

As required by the Land and Water Conservation Act (LWCA), DOT&PF would mitigate impacts by replacing land of equal value into recreational use for CSP. To offset the 132 acres of impact, DOT&PF proposes to place a recreational encumbrance over the appropriate extent of a 103.1-acre parcel above the Stuckagain Heights neighborhood adjacent to CSP (MOA Parcel 04101111000). Relevant ADNR personnel have indicated that this parcel would also meet or exceed the recreational utility of the lands proposed for transportation use.

3.3.14 Irreversible and Irretrievable Commitment of Resources

NEPA, codified at 42 U.S.C. 4332(2)(C), requires disclosure of "any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented." Irreversible effects include the use of nonrenewable resources, those resources that are only renewable over long periods, or the loss of future options. Irretrievable effects occur when a loss of production, use, or commitment of renewable natural resources occurs.

3.3.14.1 Affected Environment

The affected environment for this analysis is the entire Project area (see Section 1.1.1).

3.3.14.2 Environmental Consequences

No Action Alternative

Under the No Action alternative, the land devoted to the existing highway and rail corridors would remain dedicated to use for transportation, and no change in the existing commitment of resources would occur. This commitment includes the resources necessary to maintain the highway physically, such as snowplowing, street sweeping, asphalt maintenance, and eventual repaving as well as maintaining this section of the Seward Highway as a Safety Corridor and continued investment in additional enforcement presence, community education and outreach, and signage.

Proposed Action

Development of the Proposed Action would commit financial resources, construction materials, and human labor resources. The Proposed Action requires commitment of approximately $1.4 billion (2024 dollars) and 15 to 20 years of construction. Construction of the Proposed Action would also require a conversion from existing land uses to transportation uses and DOT&PF ROW. Park lands and coastal waters would experience the greatest impact, amounting to approximately 217 acres of conversion for transportation use. Much of the impacted land is undeveloped and would be irreversibly modified by either rock blasting, excavation, and/or fill.

The irreversible uses of other resources, such as fill into wetlands or loss of habitat, are discussed in their respective sections.

Energy used to construct the Project, including use of power tools, lighting, and construction machinery; travel to and from the Project area; and transport of construction materials to/from the Project area would require a commitment of irretrievable and irreversible energy resources. Most of the proposed construction equipment and power needs require diesel, oil, and other petroleum fuels. Table 3-13 identifies the resources required by the Proposed Action, including major construction materials and financial resources, the required land use conversion, and alteration of existing lands.

Table 3-13. Resources required under the Proposed Action.

Materials/Actions	Estimated Quantities
Financial Resources	$1.4 billion
Cut/Excavation	18.2 million cubic yards
Fill/Embankment	5.8 million cubic yards
Class III Rip Rap	493,000 cubic yards
Pavement	239,000 tons
Park and Refuge Lands Converted to Transportation Use	217 acres

Construction materials are readily available. Resources required for construction are expected to be generated from blasting and excavation within the Project area; no material sites would be developed within the Project corridor. If additional or different materials are required, they would be imported into the Project area via truck or rail. Specialty materials, such as steel for bridges and guardrails as well as asphalt, would require transport to the Project area. The Proposed Action is expected to result in a surplus of cut materials, which would require hauling excess materials offsite for disposal or temporary storage within the Project area for processing into usable fill material.

4 Cumulative Impacts

4.1 Analysis

This section provides a summary of the cumulative impacts associated with the Project. For an in-depth discussion of cumulative impacts analysis, see Appendix U *Cumulative Impacts Analysis Memorandum*. Key resources selected for analysis include visual and aesthetic resources, parks and recreation, threatened and endangered species, and vegetation and wetlands. The No Action alternative is not discussed (refer to FHWA n.d.). The geographic area of analysis is the Project area, and the analysis timeframe is 1964 to 2052.

The following was reviewed as part of this analysis:

- Current conditions and trends of each of the key resources, as well as the Proposed Action impacts to the resources;
- Past actions related to key resources and their impact to resources; and
- Reasonably foreseeable DOT&PF actions related to key resources and their impact to resources.

Table 4-1 presents a summary of the potential combined impacts on key resources from the past, proposed, and future actions.

Table 4-1. Estimated combined impacts.

Actions	Visual and Aesthetic	Parks and Recreation	Threatened and Endangered Species	Vegetation and Wetlands
Past Actions	Rock cuts, vegetation clearing near roadway	Establishment of CSP and recreation facilities	Fill in marine waters where critical habitat was later established for Cook Inlet beluga whales	Fill of wetlands to create the Seward Highway; creation of Potter Marsh
Proposed Action	Additional rock cuts, elevation of northbound travel lanes in the section, a wider paved surface, and continued vegetation removal near the roadway	Consolidating and improving access for facilities, destruction of some climbing routes, and improved safety; conversion of 200 acres of CSP to transportation ROWs; replacement lands of similar recreation value	Up to 105 acres of fill in critical habitat for Cook Inlet beluga whales in Turnagain Arm	120.9 acres of WOTUS, 23.5 acres of which are wetlands
Future Actions	Minor rock cuts and stabilization work, continued vegetation removal near the roadway	Improvements to trailheads, and addition of trails and other facilities	None	Minor impacts on wetlands
Combined Impacts	Additional rock cuts, elevation of roadway, and wider paved surface	Improvement of park facilities and recreational opportunities; loss of some climbing routes; addition of replacement lands	Minor reduction of Cook Inlet beluga whale critical habitat from the Proposed Action and past actions	Minor additional WOTUS impacts beyond the Proposed Action

4.2 Findings

Findings from the analysis for each key resource are as follows:

- Visual and Aesthetic Resources: The visual impacts of the Proposed Action, taken together with past and reasonably foreseeable future actions, would not substantially change the visual environment because rock cuts, a highway, and a railroad currently exist within the Project area.
- Parks and Recreation: The impacts of the Proposed Action on this resource, taken together with past and reasonably foreseeable future actions, would not substantially change the environment because CSP and surrounding lands along the Project corridor would continue

to offer opportunities for the enjoyment of and recreation within CSP, and improvements from the Proposed Action and other projects would continue to occur.

- Threatened and Endangered Species: The Proposed Action is not likely to adversely affect Cook Inlet beluga whales or Steller sea lions (Appendix M). Construction of the reasonably foreseeable future actions would not involve in-water work in Turnagain Arm, and projects requiring blasting would require consultation with NMFS for mitigation measures.
- Vegetation and Wetlands: In combination with the reasonably foreseeable future actions, the Proposed Action would incrementally contribute to impacts on water quality, wetlands, and drainage patterns.

4.3 Minimization and Mitigation

Measures to avoid, minimize, or mitigate harm resulting from construction and operation of the Proposed Action as well as its contribution to cumulative adverse impacts are provided under each resource in Chapter 3. These measures address both temporary and permanent direct and indirect effects.

5 Permits and Authorizations

Table 5-1 summarizes permits and authorizations that could be required for the Project. Other federal, state, or MOA permits and authorizations may be obtained by the contractor to address conditional land use, tidelands, material extraction, temporary water use, noise, and air quality permits associated with construction activities.

Table 5-1. Project permits and authorizations.

Agency	Permit	Purpose
Federal	—	—
USACE	CWA, Section 404/10 Individual Permit	Authorizes the placement of dredged or fill material into WOTUS
EPA	—	—
USFWS	Bald and Golden Eagle Protection Act	Requires a permit be obtained to "take" bald eagles, including their parts, nests, or eggs; "take" is defined as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb"
NMFS	ESA, Section 7 Consultation	Requires consultation with NMFS to determine if the Preferred Alternative would result in "taking" of a listed species or adversely affecting its habitat
NMFS	MSA, EFH Consultation	Requires the consultation with NMFS to determine if the Preferred Alternative would result in adversely affecting EFH
NPS	Section 6(f), LWCF/LWCA	Requires that areas receiving LWCF assistance are continually maintained in public recreation use, unless the Department of the Interior approves substitution property of reasonably equivalent usefulness and location, and of at least equal fair market value

Agency	Permit	Purpose
State	—	—
ADEC	CWA, Section 401 Certificate of Reasonable Assurance	Authorizes the placement of dredged or fill material into WOTUS from the Proposed Action; complies with applicable CWA Section 401 and 18 AAC 70 Alaska Water Quality Standards
ADEC	CWA Section 402	Authorizes the discharge of stormwater associated with construction activities to WOTUS; permit coverage is required from the "commencement of construction activities" until "final stabilization"; an APDES CGP is required with the development and implementation of a SWPPP
ADEC	Non-Domestic Storm Water Disposal Plan Approval	Authorizes the discharge of stormwater
ADNR-SHPO	Section 106 of the NHPA	Requires federal agencies to complete a consultation process with the SHPO and other consulting parties regarding potential impacts on properties listed or eligible for listing in the NRHP
FHWA, ADNR	Section 4(f) of the USDOT Act	Requires DOT&PF to avoid use of parks, recreation areas, wildlife/waterfowl refuges, and historic sites unless no feasible and prudent alternative exists, or the impacts are found to be de minimis
ARRC	Right of Entry	Authorizes work within the ARRC ROW to ensure safety and minimize impacts on rail operations
Local Authorities	—	—
MOA	Noise Permit	Authorizes a temporary increase in allowable noise levels for construction and extraction of resources using explosives
MOA	Floodplain Permit	Required for all new construction in a floodplain
Chugach Electric/ ENSTAR/AWWU	Utilities Clearance	Required for all construction near utilities

Notes: AWWU = Anchorage Water and Wastewater Utility

6 Comments and Coordination

During Project development and EA preparation, DOT&PF consulted and coordinated with pertinent federal, state, and local agencies; Tribal entities; and the public to obtain information, assist with development of reasonable alternatives, and identify potential issues and mitigation measures. This section summarizes coordination with agencies, Tribes, and the public. See Appendix V Stakeholder Engagement (Public and Agency Coordination) for additional information, including a summary of comments received throughout the public involvement and agency coordination process.

6.1 Stakeholder and Public Scoping

In accordance with NEPA regulatory requirements, the purpose of Project scoping was for DOT&PF to provide early notification of the NEPA process to stakeholders and an opportunity to comment, as well as perform early data gathering and identify areas of concern or potential alternatives. The scoping period ran from January 25 to July 24, 2023. Public scoping began when the Notice of Intent to Begin Engineering and Environmental Studies and Floodplain Encroachment was published, initiating the NEPA process. DOT&PF requested that comments be submitted by February 24, 2023. Copies of notices are available in Appendix V.

The Project team hosted in-person public meetings during March 2023 in Girdwood, Indian, and Anchorage as well as an online open house between March 21 and April 20, 2023. Public scoping comments were requested by April 20, 2023. See Appendix V for a summary of scoping comments received.

The agency scoping period began in March, and scoping letters were sent out on June 14, 2023, to agencies anticipated to have an interest in protecting resources or special expertise in the Project. Scoping letters, agency comments, and DOT&PF responses to the comments can be found in Appendix V.

6.2 Agency Consultation/Coordination

In addition to agency scoping, consultations regarding ESA, Section 106 of the NHPA, Section 4(f) of the USDOT Act (park, refuge and historic resources), Section (6f), and EFH were conducted to meet regulatory requirements. For an overview of Project consultations and coordination efforts, refer to Appendix V. Additionally, details of each process can be found in their respective sections.

6.3 Tribal Coordination

For purposes of Section 106 of the NHPA, DOT&PF, acting on behalf of FHWA under the 23 U.S.C. 327 Memorandum of Understanding, initiated consultation with potential consulting parties on December 22, 2023, to identify historic properties that may be affected by the Project. Consultation was conducted in accordance with the 2017 *First Amended Programmatic Agreement…Regarding Implementation of Section 106 of the National Historic Preservation Act for the Federal-Aid Highway Program in Alaska.* Additional information regarding Section 106 consultation is included in Section 3.3.5 as well as Appendix Q.

As of October 2025, no requests for government-to-government consultation have been received from any Tribes. See Appendix V for details on Tribal coordination.

6.4 Stakeholder Working Group

Organizations invited to participate in the SWG included key state, federal, and local agencies as well as community organizations. The group met monthly from June to December 2023 and roughly every other month in 2024. Details on the organizations that participated, the purpose of meetings, and a summary of comments are described in Appendix V.

6.5 Public Meetings

The Project team held public meetings in early December 2023 in Indian, Girdwood, and Anchorage as well as an online open house between December 5, 2023, and January 4, 2024. These meetings focused on design concepts for the Project. See Appendix V for a summary of

comments and attendance information. Meetings and public hearings are scheduled for public review of the Draft EA.

6.6 Additional Stakeholder Outreach

The Project team performed additional public and stakeholder coordination and outreach efforts following scoping (January 25 to July 24, 2023), including the concepts evaluation public meetings and open house (December 2023 to January 2024). Additional information on this outreach can be found in Appendix V.