AMATS: Seward Highway to Glenn Highway Connection
Planning & Environmental Linkage Study
State Project No.: CFHWY00550
Federal Project No.: 0001653

A Basic Description of the Environmental Setting Report

March 2022

This planning document may be adopted in a subsequent environmental review process in accordance with 23 USC 168 Integration of Planning and Environmental Review.

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 November 3, 2017, and executed by FHWA and DOT&PF.

Prepared for:

Alaska Department of Transportation and Public Facilities

Prepared by:

HDR, Inc.
2525 C Street, Suite 500
Anchorage, AK 99503
907-644-2000 Phone | 907-644-2022 Fax

Table of Contents

1. Introduction 1
1.1 Project Description 1
2. Environmental Resources 3
2.1 Land Use 3
2.2 Social Impacts/Environmental Justice 13
2.3 Relocation 24
2.4 Economics 25
2.5 Joint Development 29
2.6 Transportation 32
2.7 Air Quality 53
2.8 Noise 57
2.9 Water Quality 59
2.10 Wetlands 62
2.11 Water Bodies and Wildlife 65
2.12 Floodplains 69
2.13 Cultural Resources and Historic Properties 73
2.14 Hazardous Waste 74
2.15 Visual 78
2.16 Energy 84
2.17 Recreation and Section 4(f)/6(f) 84
2.18 Subsurface Conditions/Geology 87
3. References 93

Figures

Figure 1. Study Area 2
Figure 2. Anchorage 2040 Land Use Plan Map 5
Figure 3. Zoning 12
Figure 4. Percent Minority by Census Block Group in the Study Area 16
Figure 5. Median Household Income by Block Group in the Study Area 17
Figure 6 Special Land Uses in the Study Area 18
Figure 7: Existing Pedestrian Network 35
Figure 8: Existing Bicycle Network 36
Figure 9: Recommended Pedestrian Network 38

Figure 10: Prioritized Pedestrian Corridors 39
Figure 11: Prioritized Bicycle Network 40
Figure 12: Transit Routes 42
Figure 13: Merrill Field 44
Figure 14: Proposed Regional Truck Route Network 48
Figure 15 High Injury Network 49
Figure 16. Fatal and Major Injury Crashes, 2008–2017 50
Figure 17. Fatal and Major Injury Segment Crash Rate, 2008–2017 52
Figure 16. Wetlands in the Study Area 64
Figure 17. Floodplains in the Study Area 71
Figure 18: Hazardous Materials in the Study Area 75
Figure 19. Recreation Resources in the Study Area 86

Tables

Table 1. Population 14
Table 2. Race/Ethnicity Characteristics 15
Table 3. School Overview 19
Table 4. Language Spoken at Home, 2021–2022 19
Table 5. Potential Opportunities for Joint Development, Roadways 30
Table 6: Recommended Short- and Long-term Roadway Projects in the Study Area 32
Table 7: Recommended Short- and Long-term Non-motorized Projects in the Study Area 33
Table 8: Prioritized Pedestrian Projects in Study Area 37
Table 9: Priority Bicycle Projects in Study Area 37
Table 10. National Ambient Air Quality Standards 53
Table 11. Criteria Pollutant Sources and Health Effects 54
Table 12. Noise Abatement Criteria 58
Table 13. NRHP Eligible or Listed Properties in the Study Area 73
Table 14. Superfund Sites in the Study Area 76
Table 15. Brownfield Properties in the Study Area 76

Appendices

Appendix A: Major Utilities Map
Appendix B: Social Groups Maps
Appendix C: Crash Map and Technical Memorandum
Appendix D: Wetlands Map
Appendix E: Cultural Resources Map and Technical Memorandum
Appendix F: Hazardous Waste Sites Map and Technical Memorandum
Appendix G: Section 4(f) and Section 6(f) Resource Map and Technical Memorandum

Acronyms

°F	degrees Fahrenheit
2040 LUP	*Anchorage 2040 Land Use Plan: A Supplement to Anchorage 2020 – Anchorage Bowl Comprehensive Plan*
AAAQS	Alaska Ambient Air Quality Standards
AAC	Alaska Administrative Code
AAQP	Anchorage Air Quality Program
ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish and Game
ADNR	Alaska Department of Natural Resources
AEC	Alaska Earthquake Center
AFD	Anchorage Fire Department
AHRS	Alaska Heritage Resources Survey
AMATS	Anchorage Metropolitan Area Transportation Solutions
AMP	*Merrill Field Airport Master Plan*
Anchorage 2020	*Anchorage 2020: Anchorage Bowl Comprehensive Plan*
APD	Anchorage Police Department
APDES	Alaska Pollutant Discharge Elimination System
APU	Alaska Pacific University
ARRC	Alaska Railroad Corporation
ASD	Anchorage School District
ASP	Anchorage Safety Patrol
AWWU	Anchorage Water and Wastewater Utility
BMP	best management practice
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CGP	Construction General Permit
CIBW	Cook Inlet beluga whale
CO	carbon monoxide

CWA	Clean Water Act
dBA	A-weighted decibel
DoD	Department of Defense
DOT&PF	Alaska Department of Transportation and Public Facilities
Downtown Plan	*Anchorage Downtown Comprehensive Plan*
EFH	Essential Fish Habitat
EO	Executive Order
EPA	Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
GHG	greenhouse gas
HAP	hazardous air pollutant
HPMS	Highway Performance Monitoring System
JBER	Joint Base Elmendorf-Richardson
LMP	Limited Maintenance Plan
LUST	leaking underground storage tank
LWCF	Land and Water Conservation Fund
MOA	Municipality of Anchorage
MS4	municipal separate storm sewer system
MSB	Matanuska-Susitna Borough
MTP	Metropolitan Transportation Plan
MVMT	million vehicle miles traveled
NAAQS	National Ambient Air Quality Standards
NAC	Noise Abatement Criteria
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NMFS	National Marine Fisheries
NOAA	National Oceanic and Atmospheric Administration
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List

NRHP	National Register of Historic Places
PAMC	Providence Alaska Medical Center
PAMP	Port of Alaska Modernization Program
PEL	Planning and Environmental Linkages
$PM_{2.5}$	particles with diameters 2.5 micrometers and smaller
PM_{10}	particles with diameters 10 micrometers and smaller
POA	Port of Alaska
PTD	Public Transportation Department
SWMP	storm water management program
TMDL	Total Maximum Daily Load
TSAIA	Ted Stevens Anchorage International Airport
UAA	University of Alaska Anchorage
UMED	University Medical
Uniform Act	Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970
USACE	U.S. Army Corps of Engineers
USC	United States Code
USDOT	U.S. Department of Transportation
USFWS	U.S. Fish and Wildlife
UST	underground storage tank
VOC	volatile organic compound

1. Introduction

The purpose of this report, consistent with 23 United States Code (USC) 168 and 23 Code of Federal Regulations (CFR) 450.212 and 450.318, is to document a basic description of the environmental setting of the study area, which may be adopted or incorporated by reference by a relevant agency during a later environmental review process.

Any federal-aid-funded planning effort must show it has adhered to the requirements in Title 23 Part 450 Planning Assistance and Standards (https://www.govinfo.gov/app/details/CFR-2004-title23-vol1/CFR-2004- title23-vol1-part450), with particular emphasis on consideration of the federally required Planning Factors. The Planning Factors that are most appropriate for Planning and Environmental Linkages (PEL) processes include those informing purpose and need (safety, security, accessibility and mobility, connectivity, resiliency and reliability, enhancing travel and tourism) and those important to the assessment of socioeconomic and environmental impacts (protecting and enhancing the environment, promoting energy conservation, local planned growth, economic development and vitality). The purpose and need statement as well as an assessment of socioeconomic and environmental impacts will be conducted during a later phase of this PEL study.

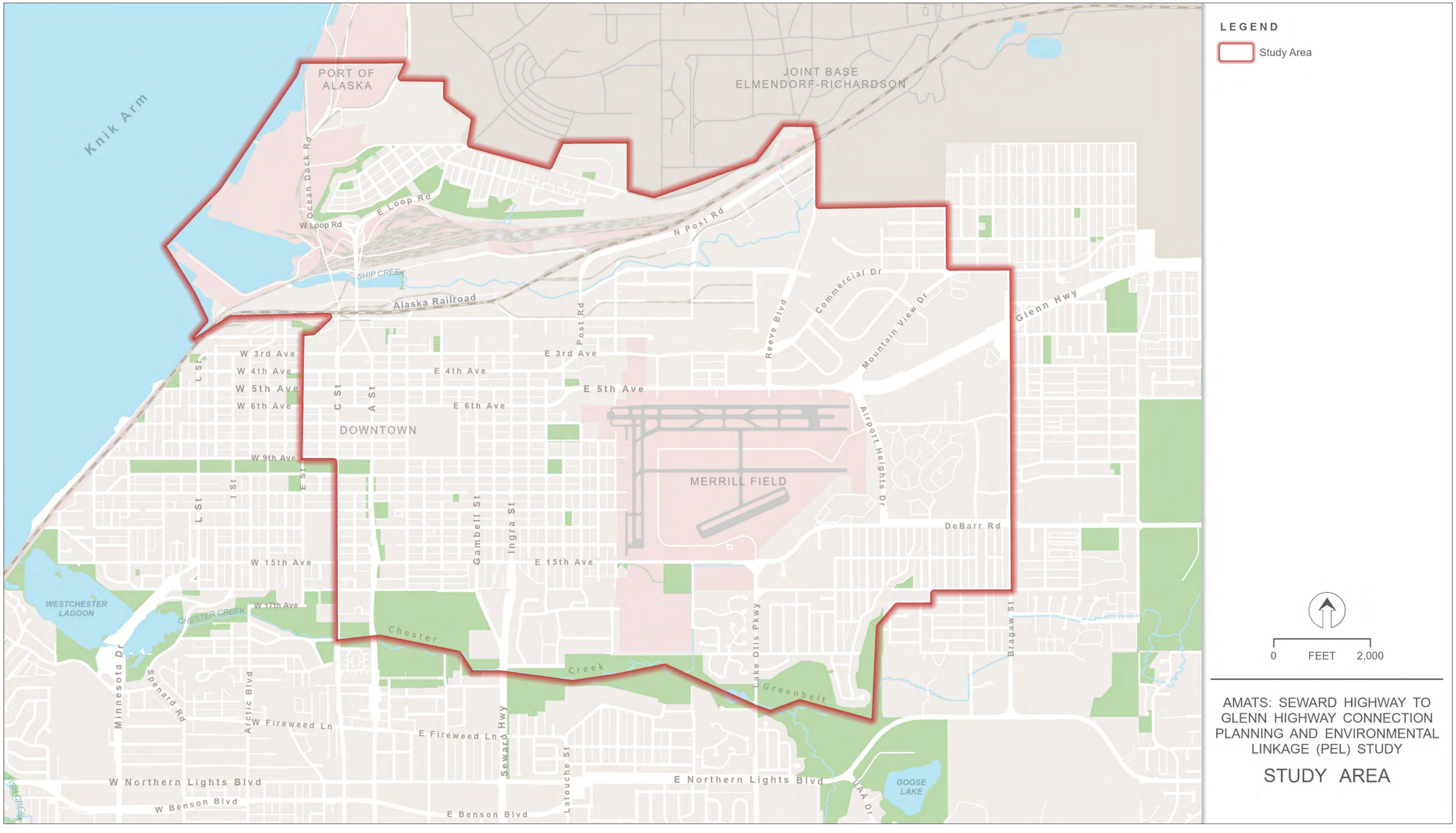
The environmental review, consultation, and other actions required by applicable federal environmental laws for this study are being, or have been, carried out by the Alaska Department of Transportation & Public Facilities (DOT&PF) pursuant to 23 USC 327 and a Memorandum of Understanding dated November 3, 2017, and executed by the Federal Highway Administration (FHWA) and DOT&PF.

1.1 Project Description

The Seward-Glenn Mobility PEL study will identify and evaluate options to improve transportation mobility, safety, access, and connectivity between the Seward Highway, near 20th Avenue, and the Glenn Highway, east of Airport Heights. The study will also identify ways to improve access to and from the Port of Alaska (POA) to the highway network.

This environmental setting report, developed as part of the PEL process, is meant to provide an overview of the existing environmental conditions in the study area. The study area is shown in Figure 1.

Figure 1. Study Area



2. Environmental Resources

This section summarizes existing conditions of each environmental resource in the study area. Farmlands, Wild and Scenic rivers, and coastal barriers are not described in this report because these resources do not occur in the study area. As of July 2011, Alaska no longer participates in the Coastal Zone Management Act program; consequently, no consistency determination will be performed.

2.1 Land Use

2.1.1 Regulatory Setting

FHWA's Technical Advisory T6640.8A, *Guidance on Preparing and Processing Environmental and Section 4(f) Documents*, requires an analysis of current development trends and state and/or local government plans and policies on land use and growth in the area impacted by a proposed project.

Alaska state law requires unified home rule municipalities such as the Municipality of Anchorage (MOA) to provide planning, platting, and land use regulation. A "unified home rule municipality is a borough in which all cities within its boundaries have been dissolved and which has adopted a home rule charter under a special procedure in [Alaska Statutes] Title 29" (ADCED 2003).

The MOA is responsible for developing general or comprehensive plans for land development within its jurisdiction. These plans provide the framework for future land use. The public has the opportunity to participate in the land use planning process by reviewing and commenting on draft plans before they are adopted by the Anchorage Assembly. All plans discussed in this section have been developed in accordance with this general approach and therefore represent the type of future land use the MOA desires.

2.1.2 Existing Conditions

The MOA is approximately 1,251,200 acres, with the Anchorage Bowl being the most urbanized portion of the MOA. The MOA is generally bounded by Chugach State Park, Turnagain and Knik Arms of Cook Inlet, Joint Base Elmendorf-Richardson (JBER), and the Matanuska-Susitna Borough (MSB).

The MOA categorizes land into different uses, including residential, commercial, industrial, institutional, parks and open space, transportation, right-of-way, vacant, and other. Existing land uses in the study area is a mix of residential, commercial, industrial, institutional, parks and open space, transportation, right-of-way, and vacant.

Unique or special land uses in the study area include:

Merrill Field – This airport is classified as a transportation use and is one of the busiest general aviation airports in the United States. Merrill Field offers a mix of commercial aviation activities; aviation-related businesses operating on Merrill Field include flightseeing companies, air taxi companies, flight schools, and maintenance companies.

Rail Industrial Area – This area is located near the confluence of Ship Creek and the Knik Arm of Cook Inlet, extending westward approximately 2.5 miles along both banks of Ship Creek. There is an existing Alaska Railroad Corporation (ARRC) rail yard that includes a track system, repair buildings, a fueling area, a steaming rack, warehouses, and offices. Activities at the rail yard have included fueling, painting, steam cleaning, freight loading, and maintenance work on locomotives and rail cars. Properties outside the rail yard, leased to tenants, have been used for many purposes, including power plants, trucking and transit operations, fuel storage, and auto salvage.

Chester Creek Sports Complex – This complex is classified as a park and open space use and is one of the largest recreation sites in Anchorage. It includes the Sullivan Arena, Ben Boeke Ice Arenas, Mulcahy Stadium, Anchorage Football Stadium, Kosinski Fields, outdoor hockey rinks, pickleball courts, and portions of the Chester Creek Greenbelt and Charles Smith Memorial Park.

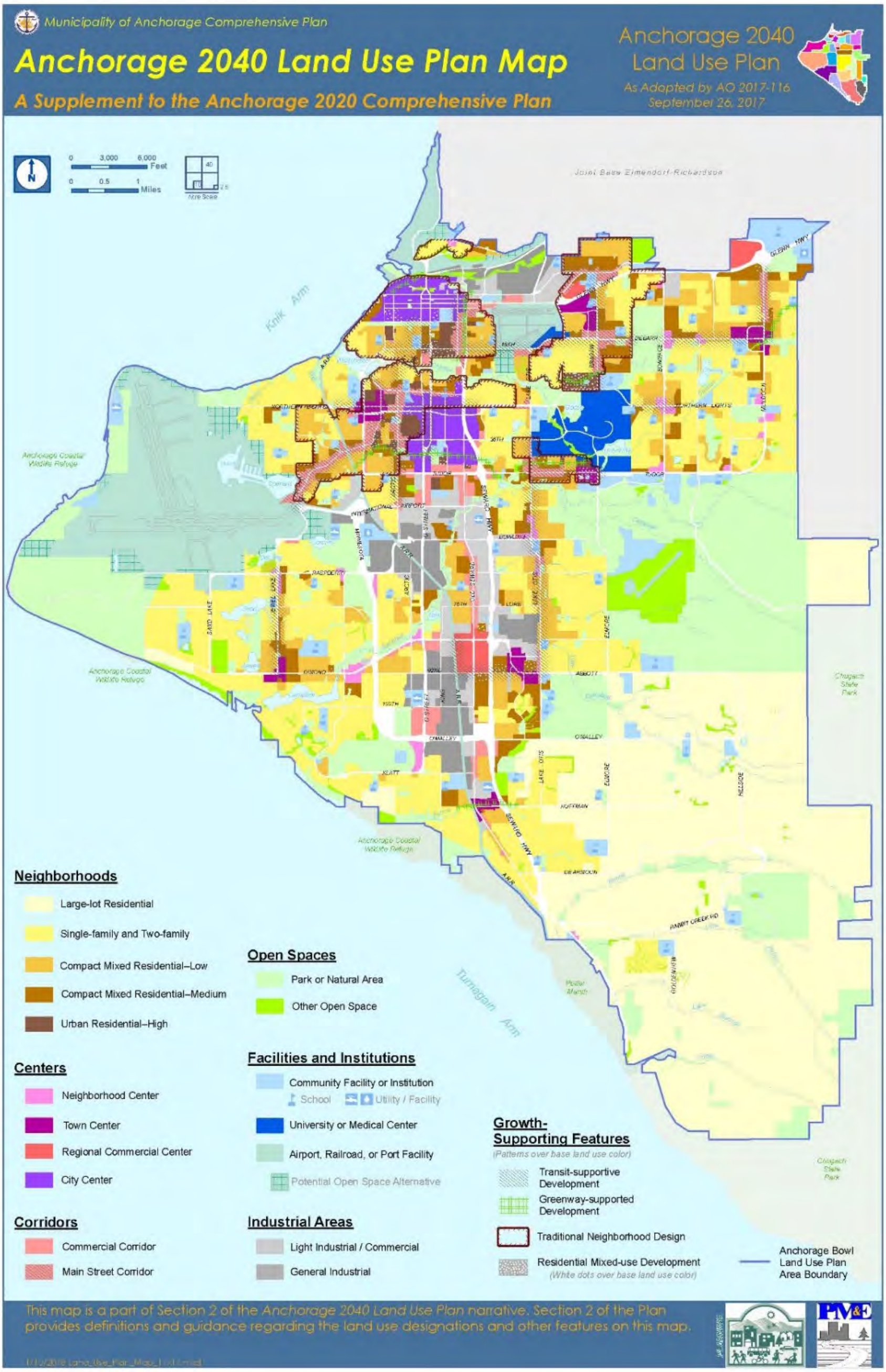
Local Land Use Plans

This section identifies and summarizes the adopted land use plans that provide development guidance over the land uses in the study area.

Anchorage 2040 Land Use Plan

The *Anchorage 2040 Land Use Plan: A Supplement to Anchorage 2020 – Anchorage Bowl Comprehensive Plan* (2040 LUP) recommends future land development patterns and shows where land uses may occur in the Anchorage Bowl to accommodate anticipated growth (see Figure 2) (MOA 2017). The 2040 LUP designates the study area as a variety of land uses. The dominant ones include Airport, Railroad, or Port Facility; Light Industrial/Commercial; General Industrial; Main Street Commercial; City Center; Urban Residential-High; and Compact Mixed Residential-Medium. The 2040 LUP also includes a Greenway-supported Development overlay, which should occur on the Gambell Mixed-Use corridor between 3rd and 15th Avenues. The Downtown, Fairview, and Mountain View areas along with part of Government Hill have also been identified as Traditional Neighborhood Design areas, which means new development or redevelopment of these areas should maintain their existing urban characteristics. Parts of Fairview and Downtown have also been identified as Residential Mixed-Use Development areas, meaning that these areas should promote medium- to high-density residential development combined with commercial mixed-use retail, office lodging, other services, and coordinated public infrastructure. Action 6-6 of the 2040 LUP is to complete the Seward-to-Glenn Highway connection alignment study as identified in the *Metropolitan Transportation Plan* (MTP), recognizing the important connection between the potential road locations and the desired land use patterns (MOA 2017).

Figure 2. Anchorage 2040 Land Use Plan Map



Source: MOA 2017

Anchorage 2020

The *Anchorage 2020: Anchorage Bowl Comprehensive Plan* (Anchorage 2020) was adopted by the Anchorage Assembly in February 2001 and amended in September 2002 to serve as a guideline for future development in the Anchorage Bowl (MOA 2002). The following Anchorage 2020 policies areas are in the study area:

- **Downtown and Midtown Major Employment Centers.** This major employment center is the most intensely developed portion of the Anchorage Bowl and serves as a focal point for the highest densities of office employment (more than 50 employees per acre), with supporting retail and commercial uses.
- **Downtown and Midtown Redevelopment/Mixed-use Areas.** A redevelopment/mixed-use area is to be developed at medium and high densities to allow people to live closer to work. Redevelopment/mixed-use areas are to be located near major employment centers.
- **Ship Creek Industrial Reserve.** This industrial reserve contains large vacant areas zoned for industrial use and is strategically located near important transportation facilities such as the Ted Stevens Anchorage International Airport (TSAIA), POA, ARRC rail yard, and highway system. Access to an efficient transportation network is important for the movement of goods around the city and state.
- **Mountain View, Fairview, and Government Hill Neighborhood Commercial Centers.** A neighborhood commercial center is similar to a town center but on a smaller scale.
- **Northway Mall Town Center.** Town centers are to be the focal points for sub-areas within the Anchorage Bowl. Town centers should have a mix of retail shopping and services, public facilities, and medium- to high-density residential areas.
- **15th Avenue/DeBarr Road Transit-Supportive Development Corridor.** A transit-supportive development corridor represents “optimal locations for more intensive commercial and residential land use patterns that will support and encourage higher levels of transit service.”

Merrill Field AMP

The *Merrill Field Airport Master Plan Update and Noise Study* (AMP), adopted by the MOA in 2016, guides future development at Merrill Field to ensure the airport remains a viable air transportation facility (Merrill Field 2016). The objective of the AMP is to provide a long-range perspective to guide development at the airport. The AMP also places priority on supplying aviation services to the surrounding area since it is considered a convenient general aviation facility. The plan identifies the need to acquire property to accommodate training facilities and airport expansion; it also examines needs to improve the airfield, air traffic control facilities, general aviation facilities, and air taxi facilities. For more information on Merrill Field, please see Section 2.6, Transportation.

Metropolitan Transportation Plan

The *2040 Metropolitan Transportation Plan: Anchorage Bowl and Chugiak-Eagle River* MTP identifies transportation projects that are needed in the Anchorage Bowl and Chugiak/Eagle River by the year 2040 (AMATS 2020). The MTP is currently being updated to identify improvements needed by the year 2050.

Anchorage Bicycle Plan

The purpose of the *Anchorage Bicycle Plan* is to identify needed bicycle infrastructure and provide a plan for increasing the use of bicycles for transportation (AMATS 2010). Additional components of the overall plan include programs to promote enforcement, safety, education, and bicycle support facilities, such as bicycle parking and signage. To learn more about planned bicycle improvements in the study area, please see Section 2.6, Transportation.

Pedestrian Plan

The *Anchorage Pedestrian Plan* focuses on pedestrian facilities adjacent to streets and roadways as well as on walkways that connect adjacent subdivisions and schools (AMATS 2007). Improvements considered in the plan emphasize making facilities easier and safer to walk (AMATS 2007). To learn more about planned pedestrian improvements in the study area, please see Section 2.6.

Non-Motorized Plan

The Anchorage *Non-Motorized Plan* explores the opportunities to improve multi-modal recreation and transportation facilities (AMATS 2021). The final plan has not been adopted as of January 2022. For more information about planned pedestrian and bicycle improvements, please see Section 2.6, Transportation.

Anchorage Downtown Comprehensive Plan

The *Anchorage Downtown Comprehensive Plan* (Downtown Plan; MOA 2007a) is a subarea plan that builds on Anchorage 2020 (MOA 2002) and refines the vision for Downtown Anchorage.

Four downtown policy areas are wholly within the study area (MOA 2007a):

- **Ship Creek:** This area should have medium-density residential development combined with commercial- and railroad-related uses.
- **Downtown Mixed-Use Residential: Pioneer Slope:** This area should have a diverse mix of low- and medium-density uses, including open space, commercial, residential, and industrial uses.
- **Downtown Mixed-Use: East Avenues:** This area should have commercial and mixed-use development, and should “cater to populations interested in a live/work environment” (MOA 2007a:48).
- **Downtown Mixed-Use Residential: Barrow Street:** This area should be primarily medium-density residential with some small home office and corner retail development.

Portions of the Downtown Core and Park Strip North policy areas are also within the study area. The Downtown Core is intended to be high-density, mixed-use development, while the Park Strip North area is intended to be a mixed-use district comprised mostly of medium-density housing.

The Downtown Plan also includes recommended changes to the transportation network, including converting 5th Avenue to two-way traffic, converting 3rd Avenue to one-way traffic (westbound), and providing on-street bicycle connections. For more information on proposed transportation improvements, please see Section 2.6, Transportation.

This plan is currently undertaking a targeted review to make it consistent with current economic and demographic conditions. It is also being updated to consider recent land use decisions and other plans and studies completed since the plan was adopted in 2007.

Anchorage Bowl Park, Natural Resource, and Recreation Facility Plan

The *Anchorage Bowl Park, Natural Resource, and Recreation Facility Plan* provides guidelines on determining basic needs for parks, leisure activities, trails, and natural use areas for the Anchorage Bowl (MOA 2006a). These guidelines also ensure that a fair and equitable balance of such facilities are provided to neighborhoods in the Anchorage Bowl. The plan includes an overview of the parks, facilities, and services available in the Anchorage Bowl along with the policies, goals, objectives, and framework for plan implementation. To learn more about the recreation resources in the study area, please see Section 2.17, Recreation and Section 4(f)/6(f).

Anchorage Areawide Trails Plan

The *Anchorage Areawide Trails Plan* is used to guide development of a trail system throughout the MOA (MOA 1997). It identifies the foundation, policies, and recommendations for trail improvements. It also identifies areawide trail issues. The plan also considers trail financing and identifies a list of the top 50 trail improvements to be considered. To learn more about trails in the study area, please see Section 2.17, Recreation and Section 4(f)/6(f).

Mountain View Targeted Neighborhood Plan

The purpose of the *Mountain View Targeted Neighborhood Plan* is to define the guiding vision for community-driven investment in the safety, health, and happiness of those who live and work in Mountain View (MOA 2016). The plan documents goals and action items that will help realize the plan's vision. The vision for Mountain View focuses on the following six categories:

- Community and Resident Leadership and Engagement
- Community Safety
- Business Development and a Vibrant Business District
- Transportation and Green Spaces
- Real Estate Development and Housing
- Building Successful Family Resources

The plan identifies Mountain View's top five priorities as:

- Improve Davis Park
- Add to Mountain View's existing pedestrian amenities
- Add new bus routes servicing Mountain View
- Pave all the alleys
- Encourage redevelopment of blighted and vacant properties

This plan was adopted by the Anchorage Assembly in 2016.

Fairview Neighborhood Plan

The *Fairview Neighborhood Plan* is intended to serve as a tool to aid in the orderly growth and development of the Fairview neighborhood (MOA 2014a). It establishes development goals for the community, and outlines implementation strategies and actions to assist the community in achieving its overarching vision and its nine goals. The plan identifies multiple community values, which include (MOA 2014a):

- We value a neighborhood where our streets are safe and friendly towards pedestrians. We value a community where people watch out for one another.
- We value a more livable, pedestrian-scaled urban environment where people celebrate the winter and summer seasons equally. We value neighborhood friendly businesses that minimize negative impacts to our residences.
- We value a clean neighborhood free of litter where residents can enjoy attractive landscaping. We value convenient and affordable access to health care services.
- We value a life-long education where all individuals have affordable access to knowledge. We value creating a world-class education system where all children have the chance to be the best they can be.
- We value helping others to become self-sufficient. We value a community where all residents have a chance to earn livable wages with decent benefits.
- We value a traditional neighborhood approach to meeting the shelter needs of our residents. We value the need for a mix of housing choices.
- We value a vibrant Main Street serving the needs of local residents for goods and services. We value businesses that contribute to the revitalization of the Fairview community. We value our location and being part of the Downtown area.
- We value a transportation system that places a priority on non-motorized mobility while maintaining reasonable access for vehicles. We value affordable and convenient access to public transit.
- We value cultural, ethnic, and socioeconomic diversity within our neighborhoods. We value our unique history. We value people and organizations working together to revitalize our neighborhoods. We value "win-win" solutions.
- We value year-round access to recreation including open space and fun activities for all ages.

One of the top five priorities identified for the plan is the resolution of long-standing transportation system impacts. The plan "calls for a resolution of the transportation, land use,

and planning issues related to this corridor to enable the redevelopment of Gambell Street, amenities that would enhance the community and encourage investment, and provide clarity for property owners as to the future of their lands" (MOA 2014a:2). The plan includes the Seward to Glenn Highway Connection project as one of its implementing actions. The plan indicates the project should "Maintain the integrity of Fairview, by following a cut and cover approach, creating a greenway connection between Ship and Chester Creek with a Hyder Street alignment or alternatives that reduce impact on the neighborhood, while providing needed neighborhood street and pedestrian improvements that support mixed-use and other land-use redevelopment and development identified on the approved land-use plan map" (MOA 2014a:58) The plan also calls for the implementation of the *Gambell Street Redevelopment and Implementation Plan*, which recommends reducing Gambell Street to three lanes and adding sidewalk improvements, undergrounding utilities, and additional street amenities.

The Fairview Neighborhood Plan was adopted by the Anchorage Assembly in 2014.

Gambell Street Redevelopment and Implementation Plan

The *Gambell Street Redevelopment and Implementation Plan* was prepared for Gambell Street between 3rd and 20th Avenues (Fairview Business Association 2013). This plan summarizes the project background, documents the public involvement process, describes the existing and future conditions, and presents the plan recommendations. The plan recommends converting Gambell Street from four to three lanes between 3rd and 15th Avenues, which would allow for three 11-foot travel lanes, sidewalks on both sides of the road, and an area for snow storage.

Government Hill Neighborhood Plan

The *Government Hill Neighborhood Plan*, which the Anchorage Assembly adopted in 2013, is a policy document to promote the orderly growth, improvement, and future development of the Government Hill neighborhood (MOA 2013). This plan is meant to support historic preservation, assist in identifying MOA-required mitigation elements for the proposed Knik Arm Crossing and large infrastructure projects, identify outreach and educational tools, and identify funding and partnerships to assist in future historic preservation projects and neighborhood improvement programs (MOA 2013).

The plan identifies the following key elements of the vision for Government Hill:

- A vibrant, livable, and sustainable place
- A central focal point of mixed uses
- Stable residential areas
- Seamless and connected places
- A green neighborhood
- A diverse neighborhood
- Easy access
- A climate for investment

Ship Creek Framework Plan

The *Ship Creek Framework Plan*, which the Anchorage Assembly adopted in 2014, documents a long-term vision for the future of the Ship Creek area, including Downtown and the Cook Inlet waterfront (MOA 2014b). The plan recommends the Ship Creek area be developed as an accessible and public waterfront for Downtown. The plan identifies a unifying development concept, identifies a phasing scheme to implement the vision, recommends implementation priorities, and summarizes development possibilities in the area. The plan identifies Ship Creek as being well positioned for mixed-use development.

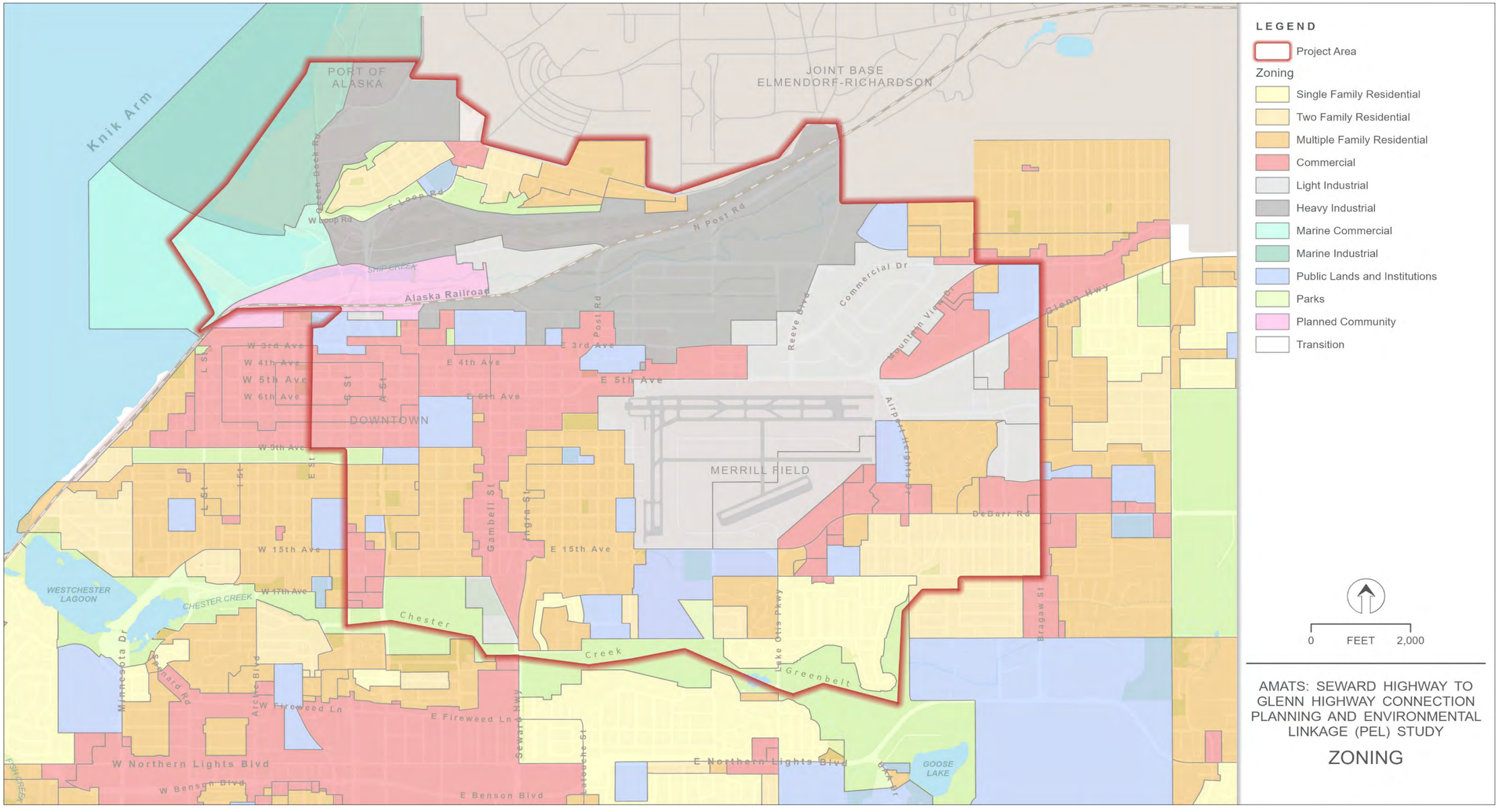
Zoning

Zoning is a type of land use regulation that divides a community into districts and imposes development requirements within each area (zone). Zoning typically regulates allowable land uses, building and site requirements, and the allowable density of each use. The zoning designation indicates how the MOA intends for the land to be used; it does not necessarily reflect how it is currently being used.

Zoning in Anchorage is established in Title 21 of the Anchorage Municipal Code. In general, the parcels in the Ship Creek area and Merrill Field have industrial zoning designations; the property adjacent to the Glenn Highway, Ingra Street, and Gambell Street are commercially zoned; and the remaining land is largely residential. The specific zoning districts found in the study area are shown in Figure 3 and include:

- Local and Neighborhood Business (B-1A)
- Central Business, Core (B-2A)
- Central Business Intermediate (B-2B)
- Central Business, Periphery (B-2C)
- General Business (B-3)
- Residential Development (D-2)
- Light Industrial (I-1)
- Heavy Industrial (I-2)
- Marine Commercial (MC)
- Marine Industrial (MI)
- Planning Community Development (PCD)
- Public Lands and Institutions (PLI)
- Single-Family Residential (R-1)
- Single-Family Residential (larger lot) (R-1A)
- Two-Family Residential (larger lot) (R-2A)
- Two-Family Residential (R-2D)
- Mixed Residential (R-2M)
- Mixed Residential (R-3)
- Multifamily Residential (R-4)
- Residential Office (RO)
- Transition (TR)

Figure 3. Zoning



Source: MOA n.d.

Utilities

Within the study area, electricity is provided by Chugach Electric Association. The Anchorage Water and Wastewater Utility (AWWU) provides drinking water and wastewater services. GCI provides telecommunications, internet, and cable television services. Alaska Communications provides internet and voice communications services. Enstar Natural Gas provides natural gas services. Some of these utilities have critical infrastructure within the study area, some of which are co-located with roadway facilities. Refer to Appendix A, *Utilities Map*, for additional detail on utilities within the study area.

2.2 Social Impacts/Environmental Justice

2.2.1 Regulatory Setting

Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, signed by the President on February 11, 1994, directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. FHWA Technical Advisory T 6640.8A, *Guidance for Preparing and Processing Environmental and Section 4(f) Documents*, dated October 24, 1987, along with FHWA's *Community Impact Assessment: A Quick Reference for Transportation*, were used to guide the information presented in this section. According to the FHWA, an analysis of the social environment needs to discuss:

- Changes in the neighborhoods or community cohesion for various social groups as a result of the proposed action;
- Changes in travel patterns and accessibility (e.g., vehicular, commuter, bicycle, pedestrian);
- Impacts on school districts, recreation areas, churches, businesses, and police and fire protection services (including both direct impacts to these entities and indirect impacts of displacing households and businesses);
- Impacts of alternatives on highway and traffic safety as well as overall public safety; and
- Social groups especially benefited or harmed by the proposed project, particularly disproportionate impacts to elderly, handicapped, transit-dependent, and minority and ethnic groups.

Key compliance issues relate to ensuring an inclusive and meaningful participation process for potentially affected minority populations and low-income populations. The study of impacts to environmental justice populations from a transportation project is legally mandated and supported by federal regulations, statutes, policies, technical advisories, and EOs, including:

- FHWA Order 6640.23
- FHWA Technical Advisory 6640.8A (1987), *Guidance for Preparing and Processing Environmental and Section 4(f) Documents*

- EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*
- Title VI of the Civil Rights Act of 1964
- Environmental Protection Agency (EPA), *Guidance for Consideration of Environmental Justice in Clean Air Act Section 309 Reviews*
- National Environmental Policy Act (NEPA) of 1969
- Clean Air Act (CAA) of 1990, Section 309
- Guidelines published by the Council on Environmental Quality (CEQ) (40 CFR 1500)
- U.S. Department of Transportation (USDOT) Order on Environmental Justice (5680-1), 1997
- USDOT Order 5610.2
- Final USDOT Environmental Justice Order, 2021

2.2.2 Existing Conditions

Population

The MOA's population has slightly declined between 2010 and 2019, while the MSB has grown by more than 20 percent during that period (ADOL&WD 2020). The population of the study area declined by approximately 7 percent between 2010 and 2019 (Table 1). Approximately 6.2 percent of the MOA's population lives in the study area.

Table 1. Population

Area	2010 Population	2019 Population	Change (%)
Study Area	19,379	18,017	-7.0
MOA	291,826	292,487	0.2
MSB	88,995	106,782	20.0

Source: ADOL&WD 2020; U.S. Census 2021

Race/Ethnicity

The study area has a higher percentage of minority residents (56.6 percent) than the entire MOA (41.3 percent; see Table 2). The study area accounts for 6.2 percent of the total MOA population, but approximately 8.2 percent of that is minority population. The study area has a higher percentage of all racial/ethnicity categories, except Hispanic, compared to the entire MOA percentage.

Table 2. Race/Ethnicity Characteristics

Area	White	Black or African American	American Indian or Alaska Native	Asian	Native Hawaiian or Pacific Islander	Other Race	Two or More Races	Hispanic	Total Minority[a]
Study Area	8,459 (47.0%)	1,709 (9.5%)	2,567 (14.2%)	1,771 (9.8%)	1,000 (5.6%)	805 (4.5%)	1,706 (9.5%)	157 (0.9%)	10,189 (56.6%)
MOA	18,3741 (61.3%)	16,324 (5.5%)	23,241 (7.8%)	28,276 (9.4%)	7,187 (2.4%)	6,910 (2.3%)	6,910 (2.3%)	26,927 (9.0%)	123,571 (41.3%)
MSB	87,323 (84.9%	1,299 (1.3%)	6,529 (6.3%)	1,453 (1.4%)	281 (0.3%)	396 (0.4%)	396 (0.4%)	5,198 (5.1%)	21,896 (21.3%)

Source: U.S. Census 2021

[a] Total minority is the sum total of the following populations: Black or African American, American Indian or Alaska Native, Asian, Native Hawaiian or Pacific Islander, Two or More Races, White Hispanic, and Other Hispanic.

The percent minority by census block groups is shown in Figure 4. The block groups surrounding Merrill Field have the highest percentage of minority residents.

Income and Employment Characteristics

The study area has a wide range of median household incomes (see Figure 5). Two block groups have median household incomes of less than $30,000, while two block groups have median household incomes greater than $100,000.

Special Land Uses

FHWA's social impact analysis guidance recommends describing impacts on important community facilities and services such as schools, recreation areas, churches, and police and fire protection services. Community facilities discussed in this section include educational, childcare, religious institutions, and other community facilities (social services, cultural and social, governmental, and other types). Public services include public safety, health care, and recreation. Community facilities and public services may be publicly operated or operated by for-profit or non-profit organizations. Figure 6 shows the special land uses in the study area.

Figure 4. Percent Minority by Census Block Group in the Study Area

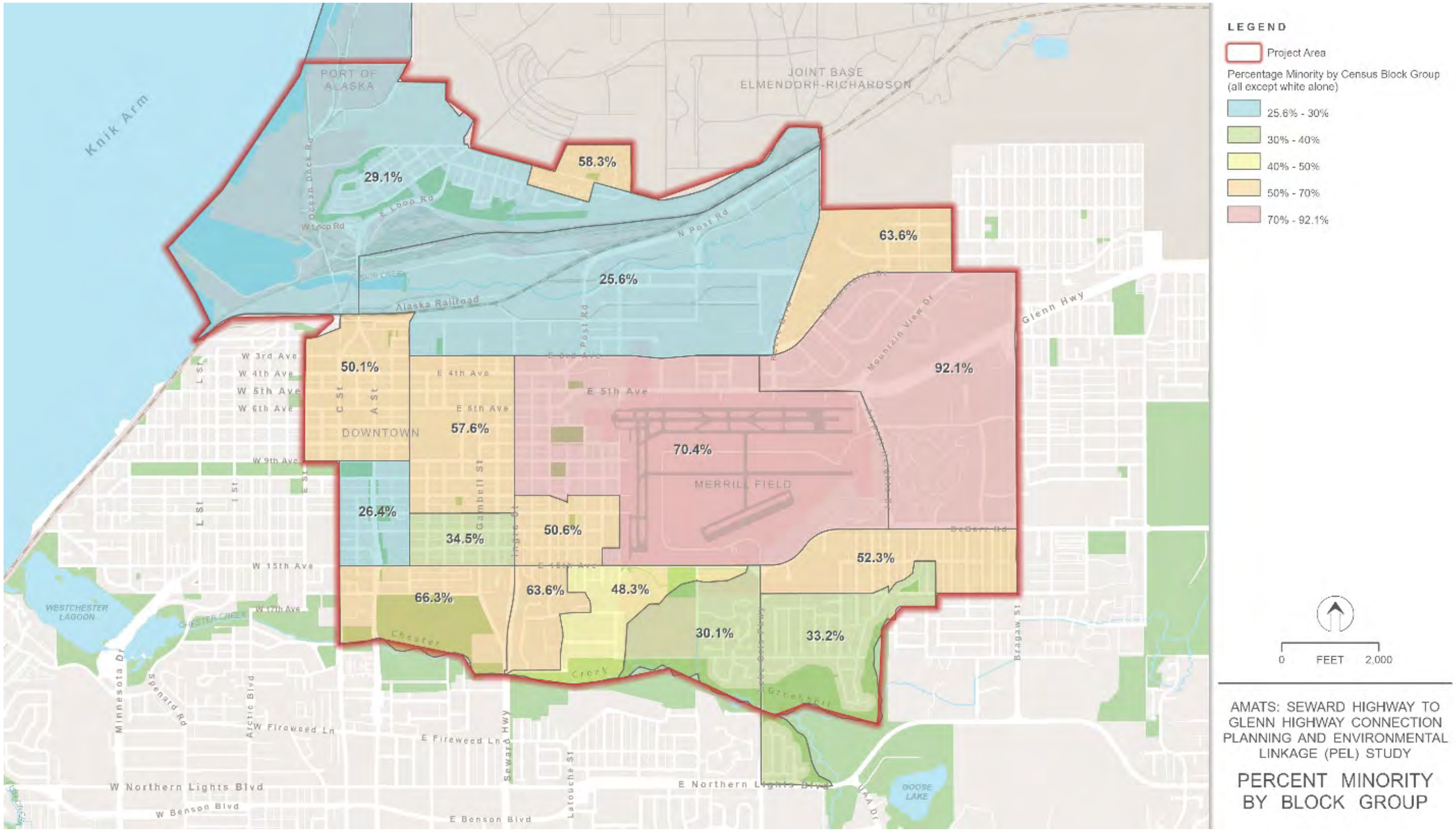


Figure 5. Median Household Income by Block Group in the Study Area

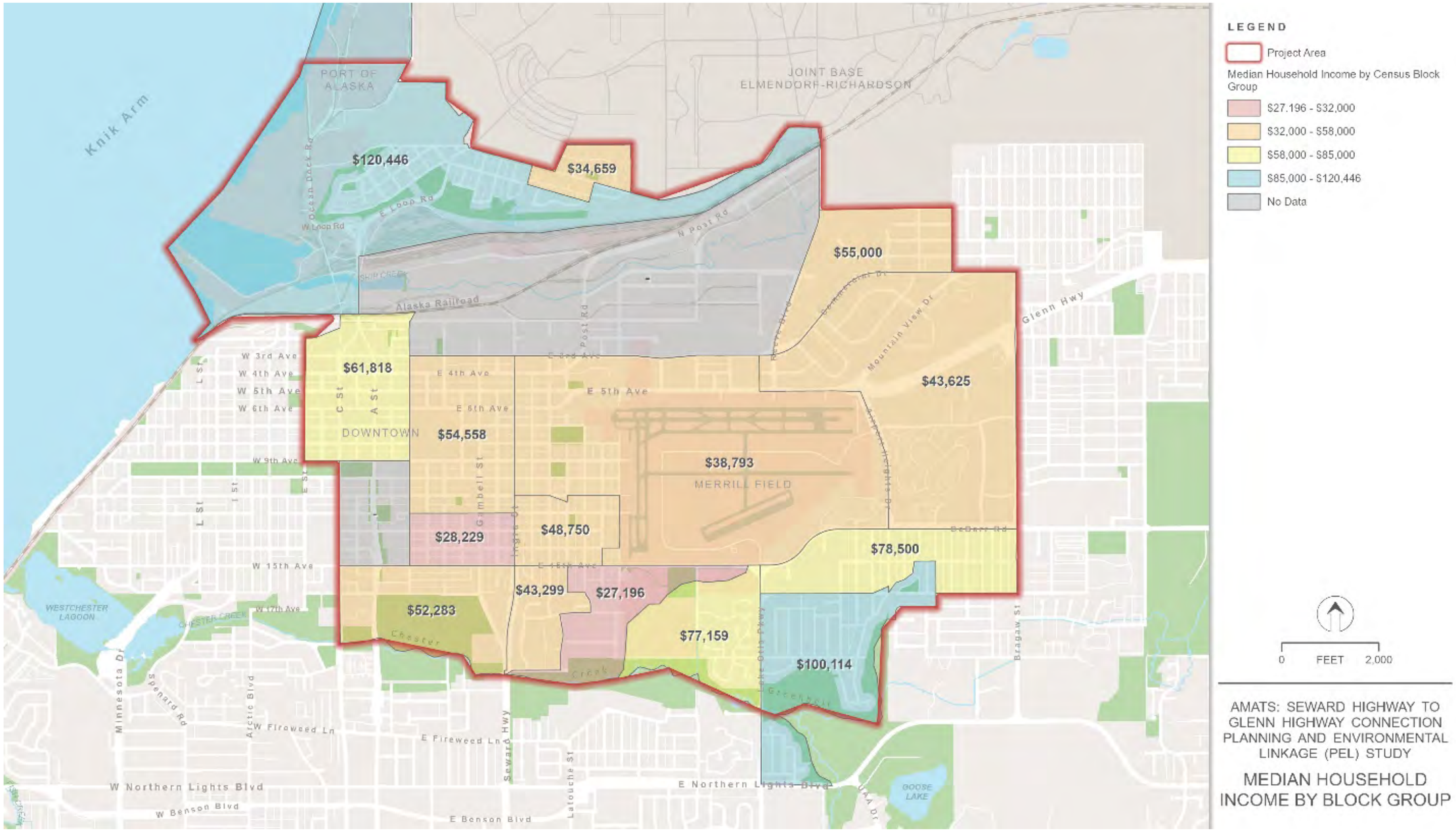
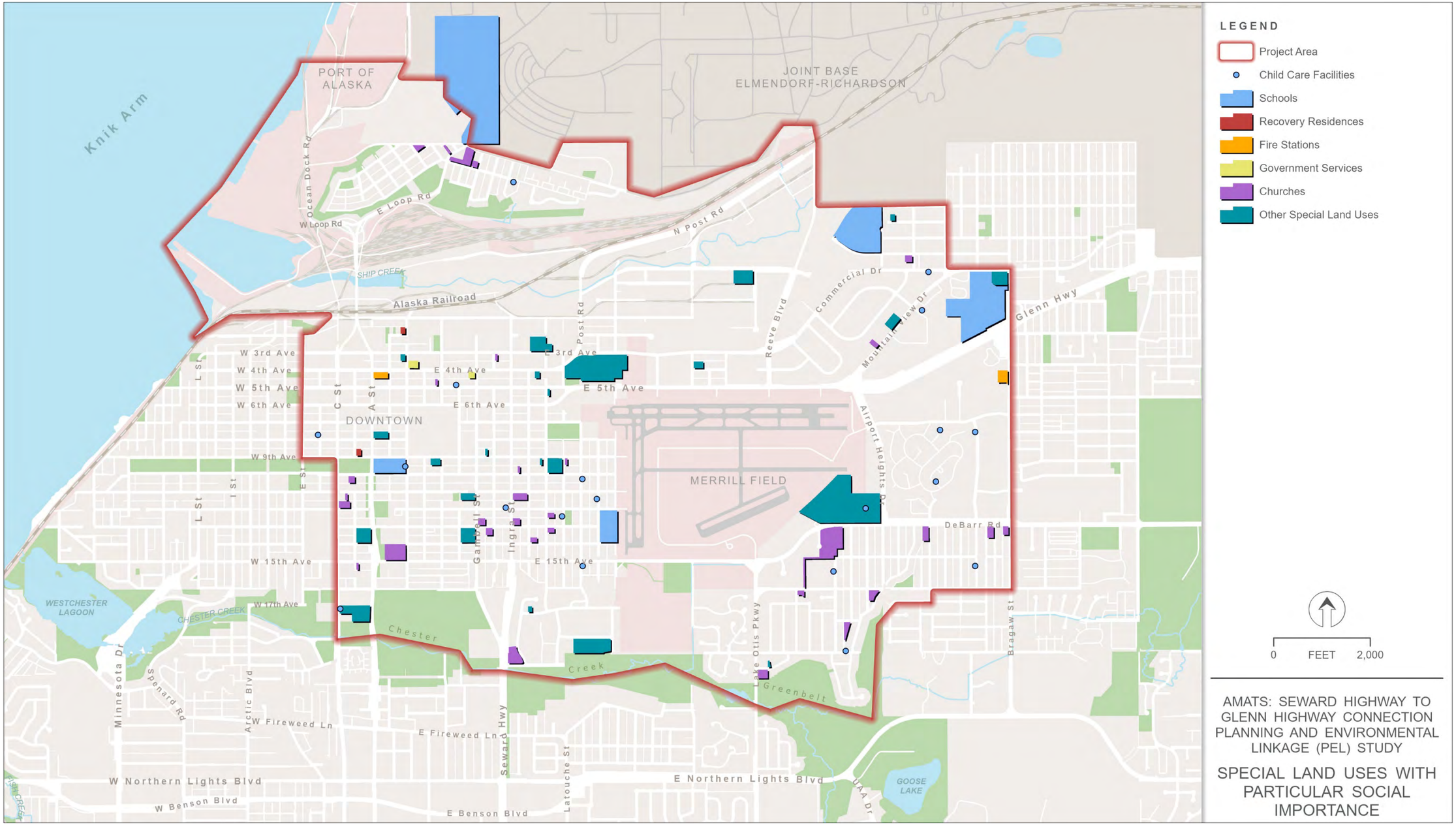


Figure 6 Special Land Uses in the Study Area



Educational Facilities

Educational facilities are those that provide pre-school, primary, secondary, and post-secondary education to study area residents. These facilities include elementary schools, middle schools, high schools, alternative or charter schools, private schools, and universities. The Anchorage School District (ASD) provides public education for grades pre-kindergarten through 12. Currently, ASD enrollment is approximately 46,000 students, and it operates more than 130 schools and programs, including 61 elementary schools, 10 middle schools, 9 high schools, 10 charter schools, and 30 alternative schools/programs. Six ASD schools are located within the study area. These schools are summarized in Table 3.

Table 3. School Overview

Category	Fairview Elementary	Denali Elementary	Government Hill Elementary	William Tyson Elementary	Clark Middle School	AVAIL	Anchorage School District
Grades	PK–6	PK–6	PK–6	PK–6	6–8	6–12	PK–12
Students	365	422	497	357	871	86	46,184
Attendance Rate	93.54%	93.79%	94.64%	93.54%	93.71%	83.46%	94.36%
Economically Disadvantaged	90.14%	55.21%	59.36%	91.32%	86.68%	87.21%	48.10%
Disabled	23.56%	13.98%	16.30%	19.89%	16.88	9.30%	4.20%

Sources: ACS-ED 2021; ADEED 2020, 2021; ASD 2021a, 2021b
Notes: PK = pre-kindergarten

In the ASD, approximately 20 percent of families speak a language other than English at home. In 2020, the top five languages spoken at home after English were Spanish, Hmong, Samoan, Filipino, and Korean. Table 4 shows the number of students who speak these languages at home.

Table 4. Language Spoken at Home, 2021–2022

School	Enrolled Students	Spanish	Hmong	Samoan	Filipino	Korean
Fairview Elementary	359	21	<10	39	<10	0
Denali Elementary	402	13	0	11	<10	<10
Government Hill Elementary	471	158	<10	<10	0	0
William Tyson Elementary	327	11	33	19	<10	0
Clark Middle School	903	73	95	70	<10	0
AVAIL	N/A	N/A	N/A	N/A	N/A	N/A

Source: ASD 2021c
Notes: N/A = not available

One private school, True Vine Christian School, is located within the study area. True Vine Christian School is associated with True Vine Baptist Church. It provides educational services for grades kindergarten through 12 and is estimated to have fewer than ten enrolled students.

Child Care Facilities

Twenty licensed childcare facilities are located within the study area (see Figure 6):

- Adriana's Child Care
- Lydia's Daycare
- Play All Day Care
- Tanaina Child Development Center
- Estrellas Magicas
- Tundra Tykes
- The Salvation Army Anchorage Corps and Community Care Center
- Happy Children
- Unices Daycare
- Camp Fire Alaska, Denali School Age Program
- Ruby's Child Care
- Kids' Corps., Inc., Mountain View Early Head Start Center
- Camp Fire Alaska, Airport Heights School Age Program
- Clare Swan Early Learning Center
- Kids' Corps., Inc., Ridgeline Terrance
- Ayshia's Fun House
- Kids' Corps., Inc., Mountain View Center
- Hillcrest Children's Center
- Antze Pantze Daycare
- RurAL CAP Child Development Center

Religious Facilities/Places of Worship

Thirty-two religious facilities or places of worship are located within the study area (see Figure 6):

- First Native Baptist Church
- Lighthouse Christian Fellowship
- Praise Temple Way of the Cross Church of Christ International
- Trinity Christian Reformed Church
- Most Worshipful Prince Hall Grand Lodge of Alaska
- Pentecostal Holiness Church
- Wat Lao of Anchorage
- Bethel Hispanic Church of God
- Alaska Corp of Seventh Day Adventists
- First Covenant Church
- Anchorage Unitarian Universalist Fellowship
- Shiloh Baptist Church
- EastGate United Pentecostal Church
- Central Lutheran Church
- Calvary Baptist Church
- Voice of Christ Full Gospel
- Antioch Church of God in Christ
- Crossroads Assembly of God
- Anchorage Native Assembly
- United Church of Christ
- Greater Friendship Baptist Church
- Anchorage Church of Christ
- Anchorage Park Methodist Church
- Grandview Baptist Church
- Manai Fou Assembly of God
- Iglesia Cristiana Pentecostés Movimiento Misionero Mundial Alaska
- Hana Korean Methodist Church
- Alaska Conference of the Evangelical Covenant Church
- Street Ministry of America

Other Community Facilities

In addition to the community facilities listed above, other facilities and places of interest are important to study area residents. The following are other facility types considered:

- **Social services:** facilities that provide meals, food bank, counseling, employment, or other social services for low-income and homeless persons who live within the study area.
- **Cultural and social:** facilities that attract residents from the entire MOA as well as visitors, tourists, and others. Malls are included because they provide a social gathering point and are used for community events.
- **Government:** properties that are owned and controlled by local, state, and federal government entities.
- **Other:** facilities and places of interest that have been identified as important to the community but do not fall into one of the above categories.

Other community facilities include:

- Anchorage Senior Center
- Bean's Café
- Bishop's Attic
- Brother Francis Shelter
- Office of Children's Services
- Public Assistance Division
- Chanlyut
- RurAL CAP, Karluk Manor
- RurAL CAP, Sitka Place
- Kid's Kitchen (inside Fairview Recreation Center)
- Children's Lunch Box
- Cordova Center
- Parkview Center
- McKinnell House
- Salvation Army, McKinnell House
- Salvation Army, Eagle Crest
- TLC Assisted Living Home
- Nustart Assisted Living Home
- Shiloh Community Housing
- AWAIC
- Carrs, Gambell
- Downtown Soup Kitchen

Two of the facilities listed above, Bean's Café and Brother Francis Shelter, provide critical services to the low-income and homeless populations of Anchorage. Bean's Café provides meals, daytime shelter, and information and referral assistance for health and human service programs. Brother Francis Shelter provides temporary, emergency shelter for men and women. The shelter also provides evening meals, showers, laundry facilities, and information and referral assistance for social services programs. In fiscal year 2019–2020, Brother Francis Shelter sheltered 2,365 people and served them 62,125 meals (Catholic Social Services 2020).

Additional information is presented in Appendix B, *Social Groups Maps*.

Public Services

Public Safety

This section describes organizations that provide emergency and health care services in the study area. A central 911 dispatch system serves the entire MOA and coordinates police, fire, and emergency medical response within the study area.

Anchorage Fire Department. Fire coverage in the study area is provided by the Anchorage Fire Department (AFD), which has two fire stations (Stations 1 and 3) located in the study area for fire and medical emergencies. The AFD has a target response time of 4 minutes for having a fire truck arrive at a structure fire or having a basic life support unit arrive at a code red medical emergency (AFD 2009).

Anchorage Safety Patrol. The study area is within the coverage area of the Anchorage Safety Patrol (ASP). ASP staff take people who are incapacitated by alcohol or drugs in public places into protective custody and transports them to the Anchorage Safety Center, located next to the Anchorage Correctional Complex (MOA n.d.).

Anchorage Police Department. Law enforcement in the study area is provided by the Anchorage Police Department (APD). Officers are based out of the headquarters building on 4th Avenue. The Anchorage Correctional Complex is located within the study area. It has a maximum capacity of 856 people (Alaska Department of Corrections 2021), and operates as a booking center and pre-trial facility.

Health Care Services

Study area residents have access to a wide range of health care services, some of which are located within the study area. Alaska Regional Hospital is a 250-bed facility offering a broad spectrum of medical services as well as numerous outreach services. It is the only non-military hospital in Alaska with a landing strip, allowing the air ambulance (LifeFlight) service to transfer patients directly from the plane to the emergency room. The North Star Behavioral Health System, which provides in-patient behavioral health services for children between ages 4 and 17, operates three locations within the study area. Additionally, numerous medical clinics, doctors' offices, and related services are located within the study area.

Recreational Resources

More than 25 established parks are located within the study area. Other recreational resources in the study area include park shelters, playgrounds, soccer fields, tennis courts, hockey rinks, and trails. These are discussed in more detail in Section 2.17, Recreation and Section 4(f)/6(f).

Public Health

According to the FHWA, examining the degree to which a proposed action affects public health is a key consideration of the NEPA process (FHWA 1992). The CEQ (CFR 1508.8) defines effects to include "ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or **health**, whether direct, indirect, or cumulative" (emphasis added). As such, effects on

health are considered in this study. This section provides a summary of affected environment topics most directly related to public health from a social perspective. Where more detailed information is available, the reader is referred to those locations.

Safety is vital to human health, and includes two components: transportation-related and crime/overall violence. Transportation-related safety generally refers to vehicle-to-vehicle interactions and vehicle-to-pedestrian/cyclist interactions. Many intersections in the study area have crash rates that exceed the MOA average. Several intersections have also experienced multiple pedestrian/bicycle crashes. For more information on transportation-related safety, please see Section 2.6, Transportation.

Clean air is vital to human health. Poor air quality can negatively affect people, plants, animals, and human-made structures. The major airborne pollutants of interest for transportation projects are carbon monoxide (CO), particles with diameters 2.5 and 10 micrometers and smaller ($PM_{2.5}$ AND PM_{10}, respectively), ozone, and ozone precursors (volatile organic compounds [VOCs] and nitrogen oxides [NO_X]). Anchorage currently meets national standards for these substances. For more information, see Section 2.7, Air Quality.

Water quality is important for human health and the health of the surrounding natural environment. The greatest public health concerns are drinking water and water people encounter through recreational or personal activities such as fishing, boating, or swimming. Both watersheds in the study area (Ship Creek and Chester Creek) are considered impaired by fecal coliform. In addition, Ship Creek is considered impaired for petroleum products from the Glenn Highway to its mouth. These are not sources of drinking water in Anchorage. For more information on water quality, see Section 2.9, Water Quality.

Health impacts related to noise include annoyance (which can negatively impact a person's quality of life), hearing loss or degradation, communication interference, sleep disturbance, and reduced ability to perform complicated tasks (FHWA n.d.). In the study area, the highest noise levels can generally be found near roads with higher traffic volumes and near industrial areas. For more information, see Section 2.8, Noise.

The built environment can have an impact on human health by providing opportunity for physical activity. However, high traffic volumes and the lack of sidewalks and trails may cause people to view walking or bicycling as unsafe. Older areas such as Fairview and Mountain View have relatively complete sidewalk networks, while other communities may have sidewalks only on selected roads. There are a small number of on-street bicycle facilities. The Chester Creek multi-use trail is also heavily used by pedestrians and bicyclists. For more information, please see Section 2.6, Transportation.

2.3 Relocation

2.3.1 Regulatory Setting

Government agencies sometimes need to acquire private property for public programs or projects. However, agencies cannot abuse this policy. The Fifth Amendment of the U.S. Constitution states that private property will not "be taken for public use, without just compensation." In addition, Congress enacted the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (the Uniform Act) to provide for fair and equitable treatment of people whose property will be acquired or who will be displaced because of programs or projects financed with federal funds. The rules implementing this law assure property owners that their interests will be protected, and that they will be treated fairly and equitably (DOT&PF 2005).

All federal and state agencies must comply with the policies and provisions set forth in the Uniform Act and its amendments. The acquisition and relocation program associated with a construction project that is a result of this study will need to be conducted in accordance with the Uniform Act, and relocation resources will be available to all residential and business relocates without discrimination. The DOT&PF's *Alaska Right-of-Way Manual* (DOT&PF 2021) provides additional guidance on policies and procedures relating to right-of-way acquisition, appraisal, relocation, and property management.

For any construction project that results from this study that includes right-of-way acquisition, an acquisition and relocation analysis will need to be conducted according to FHWA's guidance on Relocation Impacts under Technical Advisory T6640.8a, *Guidance for Preparing and Processing Environmental and Section 4(f) Documents*. The guidance requires that the analysis address:

- The number and characteristics of households to be displaced
- Available comparable housing
- Any special considerations (e.g., ethnic, minority, elderly, handicapped, other)
- Measures to be taken if replacement housing is not available and a commitment to last resort housing
- The number and characteristics of businesses and farms to be displaced
- Available comparable sites, likelihood of relocation, and potential impacts to businesses or farms caused by relocation
- Discussion of outreach regarding relocation impacts

2.3.2 Existing Conditions

Residential

The study area has a mix of residential types, including single-family, duplex, and multi-family. Within the study area, areas of higher residential density can be found in Fairview, the northeast portion of Airport Heights, Mountain View, and the eastern portion of Government Hill[1]. Several group quarters that provide housing are also located in the study area.

Housing values are a factor to consider in characterizing households and to determine if comparable housing may be available in the event of relocation. Housing values in the study area vary. The lowest-cost housing is located in Mountain View and Fairview. Highest cost housing is located in Rogers Park, Government Hill, and Airport Heights.

Business

In addition to housing, business and farm relocations must be identified and characterized. Commercial and industrial businesses are located within the study area, primarily in Midtown, along 5th and 6th Avenues and Gambell and Ingra Streets, Downtown, and north of 5th Avenue and along Commercial Drive.

2.4 Economics

2.4.1 Regulatory Setting

Federal environmental policy, as embodied in NEPA, requires the assessment and disclosure of foreseeable effects of transportation projects as part of the environmental impact assessment process, including economic effects caused by the project alternatives. FHWA Technical Advisory T 6640.8A, *Guidance for Preparing and Processing Environmental and Section 4(f) Documents* (October 24, 1987), was used to guide the information presented in this section.

2.4.2 Existing Conditions

Overview of Local and Regional Economy

Federal Spending. Federal spending has been a major economic driver in Alaska for many years. Federal dollars have funded a variety of projects in the MOA, including major infrastructure. By creating jobs and income, these projects help drive the local economy. The federal presence is not as strong in the MSB as it is in the MOA, but a substantial number of MSB residents work for the federal government in the MOA in both military and civilian agencies.

Military. JBER has played pivotal roles in the MOA economy for many years (Fried and Windisch-Cole 2006).

[1] A map of community council boundaries can be found at http://www.communitycouncils.org/servlet/content/home.html.

Oil and Gas. The MOA serves as an administrative center for Alaska's petroleum industry, with many of the North Slope workers living in the city and commuting to the oilfields for 2- or 3-week rotations. This sector also supports a large number of oilfield and drilling support firms based in Anchorage, increasing the overall economic importance of the sector.

Visitor Industry. One of the major drivers of the MOA and MSB economies is the visitor industry. Travelers journeying to Alaska often use Anchorage as a gateway to the state. The MOA provides the infrastructure necessary to support the tourism industry statewide in terms of hotels and restaurants. The convention industry is also an important driver in the local economy, bringing visitors to the MOA during the shoulder seasons (spring and fall), extending the tourist season from the peak summer months.

Retail and Service. In response to the growing population, the MOA and, increasingly, the MSB are home to a wide variety of major retailers, from upscale department stores to large discount firms, which provide employment and lower the cost of living for local residents. The expansion of retail and service firms in the MSB means that borough residents are spending more of their income locally and less in the MOA (Fried 2003; Robinson et al. 2010). However, the MOA continues to be the largest retail and wholesale trade center in Alaska.

Employment

Anchorage 2020 designated three employment centers in the Anchorage Bowl: Downtown, Midtown, and the University Medical (UMED) District (MOA 2002). These centers have the highest concentration of office employment in the MOA. Other main employment destinations include JBER and TSAIA.

The top employers in the MOA are government entities (military, federal and state government, and school district). The largest private sector employer in the MOA is Providence Alaska Medical Center (PAMC). The PAMC along with Alaska Native Medical Center, Alaska Psychiatric Institute, and other medical-related facilities and offices are located within the UMED district. The University of Alaska Anchorage (UAA) and Alaska Pacific University (APU) are also located within the UMED District.

Unemployment

As in other areas of Alaska, a large seasonal variation in the unemployment rate occurs in the MOA and MSB because of the seasonal nature of many economic activities, particularly commercial fishing, mining, and tourism. The unemployment rate is typically highest in February and lowest in August (ADOL&WD 2010). As of August 2021, the MOA's unemployment rate was 4.8 percent and the MSB's unemployment rate was 5.5 percent[2] (ADOL&WD 2021).

[2] Rates are not seasonally adjusted rates.

Established Business Districts

Beginning in the late 1960s, many of the retail businesses in the MOA clustered in the eastern and southern portions of the city as neighborhoods spread beyond the historic Downtown core. During the past decade, however, the population has rapidly increased in the northern suburb of Eagle River-Chugiak and in the MSB towns of Houston, Wasilla, and Palmer. As a result of this population shift, the major retail development in the MOA has focused on the Glenn Highway going north (Bergsman 2007). Some recent large-scale business development projects in the MOA have met with only limited success. For example, the Glenn Square Shopping Mall, constructed in Mountain View in 2007, was expected to be the dominant retail shopping center in the northeast Anchorage trade area (P. O'B Montgomery & Company 2010). Currently, much of the retail and office space in the 200,000-square-foot development stands vacant (O'Malley 2009; Kim 2010). The most recent mall along the Glenn Highway (Tikahtnu Commons), located just outside the study area at Muldoon Road and the Glenn Highway, appears to be thriving. It has a large multiplex cinema, Target, Lowe's, and several other shops.

Midtown has taken on an increasingly important economic role in the MOA because of its superior road network leading to all parts of the region and its adjacency to the TSAIA (Development Strategies 2007). Currently, Midtown is the major commercial retail center for the MOA (MOA 2001b). In addition, Midtown is the MOA's largest employment area (24,000 employees) due to its concentration of high-rise office towers that contain multiple businesses (MOA 2001a).

Still considered the central business district of Anchorage, Downtown is the second largest employment center in the MOA (18,000 employees) (MOA 2001a). While Downtown no longer plays a role as a regional shopping center, it is an important regional commercial destination with major department stores, specialty shops, restaurants, and hotels (HDR 1996). Resident-oriented commerce has largely given way to visitor-oriented shops and tourist services as the ground-level commerce. Additionally, some office-based functions—most notably government and legal services—remain anchored to Downtown near the state and federal courthouses (HDR 1996).

Fairview has a high concentration of businesses because the neighborhood includes a large amount of commercially zoned land and high-volume transportation corridors. The transformation into a strip commercial corridor was strengthened when the one-way couplet of Gambell and Ingra Streets was implemented. The corridor contains a mix of commercial and residential buildings, together with a few institutional buildings such as churches. Businesses in the corridor are strongly defined by the high volume of local and through traffic (Boehlke 2005). The dominating commercial land use is auto dealerships and services (Fairview Community Council 2009).

Other neighborhoods in the study area that are otherwise largely residential have pockets of commercial activity. For example, Airport Heights has a high number of retail businesses and food and drinking establishments, due mainly to the intense commercial activity along the heavily trafficked 5th Avenue, 6th Avenue, and Glenn Highway. Businesses along this corridor line both sides of the roads, attracting customers from the heavy volume of passing traffic.

Highway-related businesses tend to be more dependent on drive-by traffic for their success. Businesses such as gas stations, hotels and motels, and shopping centers tend to locate on high-volume roadways, with good access and visibility. Highway-related businesses such as major retail centers (Glenn Square Mall) have been developed along the existing Seward and Glenn Highways. Other major retail areas outside the study area, like Tikahtnu Commons and the Dimond Center are also located along the Seward-Glenn Highway corridor. Businesses such as petroleum sales (gas stations), automobile and other transportation-related goods (car dealerships, recreational vehicles sales, etc.), eating and drinking establishments (especially fast food restaurants), and hotels and motels are located along the existing arterial connection along 5th and 6th Avenues and through Midtown along the Seward Highway.

Freight Transportation in the MOA

Freight movement plays an important role in the local, regional, and statewide economy. A transportation project that increases capacity and/or speed can lower costs and improve service in freight movement, which, in turn, can have a positive effect on firms engaged in the production, distribution, trade, and/or retail sale of physical goods (ICF Consulting and HLB Decision-Economics 2002). This section provides a snapshot of the current movement of freight into, out of, and around the MOA, focusing on those economic characteristics of the MOA that contribute to the city's unique patterns of freight traffic.

The POA is a major asset to the regional economy. Fifty-five percent of the waterborne freight and 90 percent of all refined petroleum products that enter the state arrive through the POA (AMATS 2017). While some of the freight and petroleum stays in the Anchorage area, much is destined for other parts of the state. In 2020, tonnage through the POA was 4,704,374 tons (POA 2021a). Approximately 35 percent of that was composed of vans, flats, and containers (POA 2021a).

While the movement of freight within the MOA is much the same as that in other urban areas across the United States, a number of distinguishing features of Alaska and the Southcentral region set the MOA apart. For example, because Alaska has a very small manufacturing sector, virtually all producer and consumer goods must be imported from outside the state (Goldsmith and Schwoerer 2009).

Another difference is that Anchorage has a much higher concentration of air and barge traffic than other United States regions. The MOA is the major year-round marine, rail, and air hub serving Alaska along the Railbelt. The POA, located at the head of Cook Inlet directly north of Downtown, is primarily a receiving port. Inbound cargo spans the full range of goods, materials, and equipment needed by consumers and businesses in the MOA and most of the rest of Alaska. Most freight is brought to the port via container ship. Ships are off-loaded, and the containers may be hauled by truck tractor to either the destination of consumption, or to a warehouse facility off port premises where they are off-loaded and redistributed in smaller trucks or consolidated for tractor transport (MOA 2001b). A substantial number of trucking, transfer, and consolidating firms are located in the Ship Creek industrial area north of Downtown. In addition, the ARRC operates a trailer-on-flat-car facility at its main yard in the Ship Creek basin,

which is used to load and unload container vans arriving from the port. The freight is then moved by rail, predominantly to Fairbanks and nearby military bases.

The Ship Creek area remains one of the MOA's major warehousing and transportation-related industrial areas, and continues to play a critical role in the shipment and distribution of goods to the MOA and the rest of the state. However, the bulk of outdoor storage facilities and warehousing, as well as manufacturing/processing plants and construction yards, has gravitated from the Downtown-Ship Creek basin area to the rail/highway industrial corridor between the New Seward Highway and Arctic Boulevard, south of International Airport Road. This places most truck traffic to or from the POA onto the New Seward Highway, Gambell-Ingra Streets, and A-C Streets. Some truck traffic also uses the L Street-Minnesota Avenue connection.

Property Taxes in the MOA

In 2021, property taxes were the largest single source of revenue in the MOA (MOA 2021a). Other revenue sources include capital and operating grants, investment earnings, and other taxes. A transportation project can result in decreases or increases in residential, commercial, and industrial real estate values and property taxes through changes in accessibility, safety, traffic noise, visual quality, community cohesion, or business productivity. Changes in real property (i.e., land and the buildings affixed to the land) resulting from the acquisition of right-of-way or induced economic growth can change property tax revenues, which, in turn, can affect a community's fiscal strength and the provision of municipal services (Forkenbrock and Weisbrod 2001). Real property is subject to property tax.

2.5 Joint Development

2.5.1 Regulatory Setting

This report identifies joint development opportunities according to FHWA's guidance under Technical Advisory T6640.8a, *Guidance for Preparing and Processing Environmental and Section 4(f) Documents.* The guidance requires that an analysis address any joint development measures that will enhance an affected community's social, economic, environmental, and visual values as well as identify the benefits to be derived, those who will benefit, and the entities responsible for maintaining the identified measures.

2.5.2 Existing Conditions

Roadways

There are roadway improvement projects within the study area that are planned for development by the MOA and DOT&PF through the AMATS MTP (AMATS 2020; see Section 2.6, Transportation). The MTP provides an opportunity for the Seward-Glenn Mobility PEL study to be coordinated with the projects described in that plan. The most relevant opportunities for joint development are shown in Table 5.

Table 5. Potential Opportunities for Joint Development, Roadways

Project Name	Description	Current Status
3rd/6th Avenue Couplet/ 5th Avenue Two-Way Conversion/E Street Conversion – L Street to Ingra-Gambell/3rd to 4th Avenue	Convert the existing 5th/6th couplet to a 3rd/6th couplet; 3rd Avenue to become one-way westbound traffic; E Street and 5th Avenue to become two-way traffic contingent on the 3rd Avenue conversion **Purpose:** Safety (Vision Zero High Injury Network Corridor), Freight (Proposed Regional Truck Route), Circulation, and Access **Key Land Use Features:** Reinvestment Focus Area	Not funded
East 4th Avenue Signal and Lighting Upgrade – A Street to Ingra Street	Reconstruct the traffic signal and street lighting system along 4th Avenue between A Street and Ingra Street; sidewalk and curb ramps will also be replaced **Purpose:** Preservation of Existing Facility **Key Land Use Features:** Reinvestment Focus Area, Greenway Supported Development Corridor	In Progress: • 2019–2021 Design • 2022 Design/Right-of-Way • 2023 Construction
Seward Highway/ Glenn Highway Connection – 20th Avenue (Chester Creek) to 13th Avenue	Construct freeway connection between Seward Highway/20th Avenue and 13th Avenue with freeway access and egress ramps onto Ingra/Gambell Streets near the northern termini of the project; reconstruct Ingra/Gambell Street and construct separated grade crossings of the freeway to reconnect portions of the east-west street system; construct an interchange at Airport Heights Drive and Glenn Highway Intersection; project would include non-motorized improvements and consider adjacent land use **Purpose:** Safety (Vision Zero High Injury Network Corridor), Congestion, Access, Connectivity, and Freight (Proposed Regional Truck Route) **Historic Preservation:** Medium Impact (potential for subsurface features, buildings, infrastructure, and districts of potential local and national significance) **Key Land Use Features:** Reinvestment Focus Area, Greenway Supported Development Corridor	Not funded

Source: AMATS 2018, 2020

Transit

The MOA Public Transportation Department (PTD) is the agency with jurisdiction over transit in Anchorage, and the Federal Transit Administration is the federal agency with jurisdiction over transit. The 2019–2022 AMATS TIP does not identify any specific projects within the study area; however, the PTD is pursuing general programs (AMATS 2018). Some of these programs, which could be used to fund improvements within the study area, include Transit Centers, Support Facilities, and Bus Stop Improvements/1% Section 5307 Transit Improvements.

Pedestrian and Bicycle Network

A number of pedestrian and bicycle facilities are located within the study area that are planned for development by the MOA and DOT&PF through AMATS (see Section 2.6, Transportation). Of note, the *Anchorage Bicycle Plan* (AMATS 2010) identifies priority bicycle and pedestrian networks. High priority bicycle improvements include:

- Enhanced shared roadways on 13th Avenue between Nelchina and C Streets, and on 16th Avenue between Sunrise Drive and Lake Otis Parkway
- Separated bikeways on 5th Avenue between Karluk and M Streets, and on Post Road between East 3rd Avenue and Viking Drive
- High priority pedestrian corridors on Mountain View Drive between Bragaw Street and Taylor Road, Bragaw Street between East Northern Lights Boulevard and Mountain View Drive, 5th Avenue between Reeve Circle and L Street, and 6th Avenue between East 5th Avenue and L Street.

These bicycle and sidewalk improvements, along with others identified in the *Anchorage Non-Motorized Plan* (AMATS 2021; see Section 2.6.2), present joint development opportunities with the MOA for any construction projects that are implemented as a result of this study.

Rail

The ARRC main passenger depot and rail yard is in the Ship Creek valley between Downtown and the POA. The ARRC has several planned improvements for their facilities, including the Anchorage car shop public address system, depot drive access improvements, Anchorage yard locomotive fueling facilities, and the development of a Ship Creek Intermodal Transportation Center. The road and multimodal improvements being made by the ARRC in the study area represent potential joint development projects between the ARRC, DOT&PF, and MOA.

Utilities

Utilities within the study area include water, wastewater, telecommunications, electrical, and natural gas. Construction efforts for any improvements would be coordinated with plans of the utility providers. Of these utilities, the known improvements made public by the utility companies include undergrounding the Chugach Electric Association, GCI, and Alaska Communications utilities on Gambell Street between 5th and 15th Avenues. AWWU's water and wastewater master plans (AWWU 2012, 2014) also identity potential improvements in the study area. These projects include upgrading the transmission mains between Downtown and Midtown,

constructing a new backbone main in Whitney Road, and relocating a sewer trunk in the ARRC rail yard to Whitney Road (AWWU 2012, 2014).

Municipal Community Planning

The MOA's land use planning indicates several land plans within the study area (see Section 2.1, Land Use). These include plans for a Main Street Corridor along Ingra/Gambell and near Bragaw/DeBarr, a town center at Northway Mall, a transit supportive development corridor along 15th Avenue, and redevelopment/mixed-use areas in parts of Downtown and Fairview. The *Fairview Neighborhood Plan* (MOA 2014a) has indicated a desire for a pedestrian-scaled urban environment. It also envisions planning for a Seward-Glenn Highway Connection project as one of its implementing actions, and states that the project should identify an alternative that reduces neighborhood impacts while providing needed neighborhood streets and pedestrian improvement. The plan states that the project should also support mixed-use and other land use development as well as redevelopment opportunities in the area. Other plans, such as the *Mountain View Neighborhood Plan* (MOA 2016) and the *Government Hill Neighborhood Plan* (MOA 2013) identify business development and preservation of open space as goals. Coordinating Seward-Glenn corridor improvements with these planning efforts to help implement planning in place is a joint development opportunity with the MOA, community councils, and other organizations.

2.6 Transportation

2.6.1 Regulatory Setting

This section was prepared in accordance with FHWA's Technical Advisory T6640.8A, *Guidance on Preparing and Processing Environmental and Section 4(f) Documents*, which requires an analysis of travel patterns and accessibility in an Environmental Impact Statement, and with DOT&PF's *Alaska Environmental Procedures Manual* (DOT&PF 2020).

2.6.2 Existing Conditions

AMATS MTP

The AMATS MTP (AMATS 2020) identifies the transportation projects that are needed in the Anchorage Bowl and Eagle River-Chugiak by 2040.

Table 6 lists planned roadway projects and Table 7 lists planned non-motorized projects within the study area.

Table 6: Recommended Short- and Long-term Roadway Projects in the Study Area

MTP #	Project Name	Time Frame
102	3rd/6th Avenue Couplet/5th Avenue Two Way Conversion/E Street Conversion – L Street to Ingra - Gambell/3rd to 4th Avenue	Short Term
106	C Street/Ocean Dock Rd Ramp and Intersection Improvements – C Street Viaduct to Ocean Dock Road	Short Term

MTP #	Project Name	Time Frame
109	East 4th Avenue Signal and Lighting Upgrade – A Street to Ingra Street	Short Term
129	Seward Highway/Glenn Highway Connection Planning and Environmental Linkages (PEL) Study – 20th Avenue (Chester Creek) to Airport Heights Road	Short Term
214	Seward Highway/Glenn Highway Connection – 20th Avenue (Chester Creek) to 13th Avenue	Long Term

Source: AMATS 2020

Table 7: Recommended Short- and Long-term Non-motorized Projects in the Study Area

MTP #	Project Name	Time Frame
400	3rd Avenue Pathway – E Street to Post Road	Short Term
402	A St Sidewalk/Pathway – 13th Ave to Fireweed Lane	Short Term
414	DeBarr Road Pathway/Sidewalk Widening and Rehabilitation – Orca Blvd to Turpin Street	Short Term
416	Downtown Trail Connection – Coastal Trail to Ship Creek Trail	Short Term
500	Chester Creek Trail Widening – Westchester Lagoon to Goose Lake	Long Term

Source: AMATS 2020

Pedestrian and Bicycle

The existing pedestrian and bicycle network in the study area is a combination of sidewalks, shared use pathways, and bicycle pathways (see Figure 7 and Figure 8). The main shared use trails in the area include the Chester Creek Trail and the Ship Creek Trail.

The Chester Creek Trail is separated from the road system by grade-separated crossings at all streets. The trail is heavily used by bicyclists, pedestrians, in-line skaters, and joggers. In the winter, the trail is also used by cross-country skiers, winter-equipped bicycles, and skijorers. The trail is lighted from the Northern Lights overpass to Westchester Lagoon, and is groomed for cross-country skiing. The Chester Creek Trail is heavily used for commuter bicycle use as well as recreational uses.

Other dedicated bicycle features include the 10th Avenue Bicycle Boulevard (between P and Medfra Streets) and the Peterkin Avenue Bicycle Boulevard. Sidewalks are maintained by the MOA and DOT&PF, while the separated trails are generally the responsibility of the MOA.

Pedestrian and bicycle activity in the study area is believed to be higher than other parts of town. This is partially because numerous households in the study area do not own vehicles as well as Downtown being a destination/employment center. According to the *Anchorage Bicycle Plan*, the most common bicycle trip destinations were Downtown (24 percent), Midtown (32 percent), and the UMED District (18 percent) (AMATS 2010).

According to the *2014 Regional Household Travel Survey* of both the AMATS planning area and the MSB study area, 8.2 percent of weekday trips are made by walking, jogging, or wheelchair

use, while an additional 1.5 percent are made by bicycle (RSG 2014). For commuter trips, 2.4 percent are made by bicycle, while only 1.6 percent are made by walking, jogging, or wheelchair use (RSG 2014).

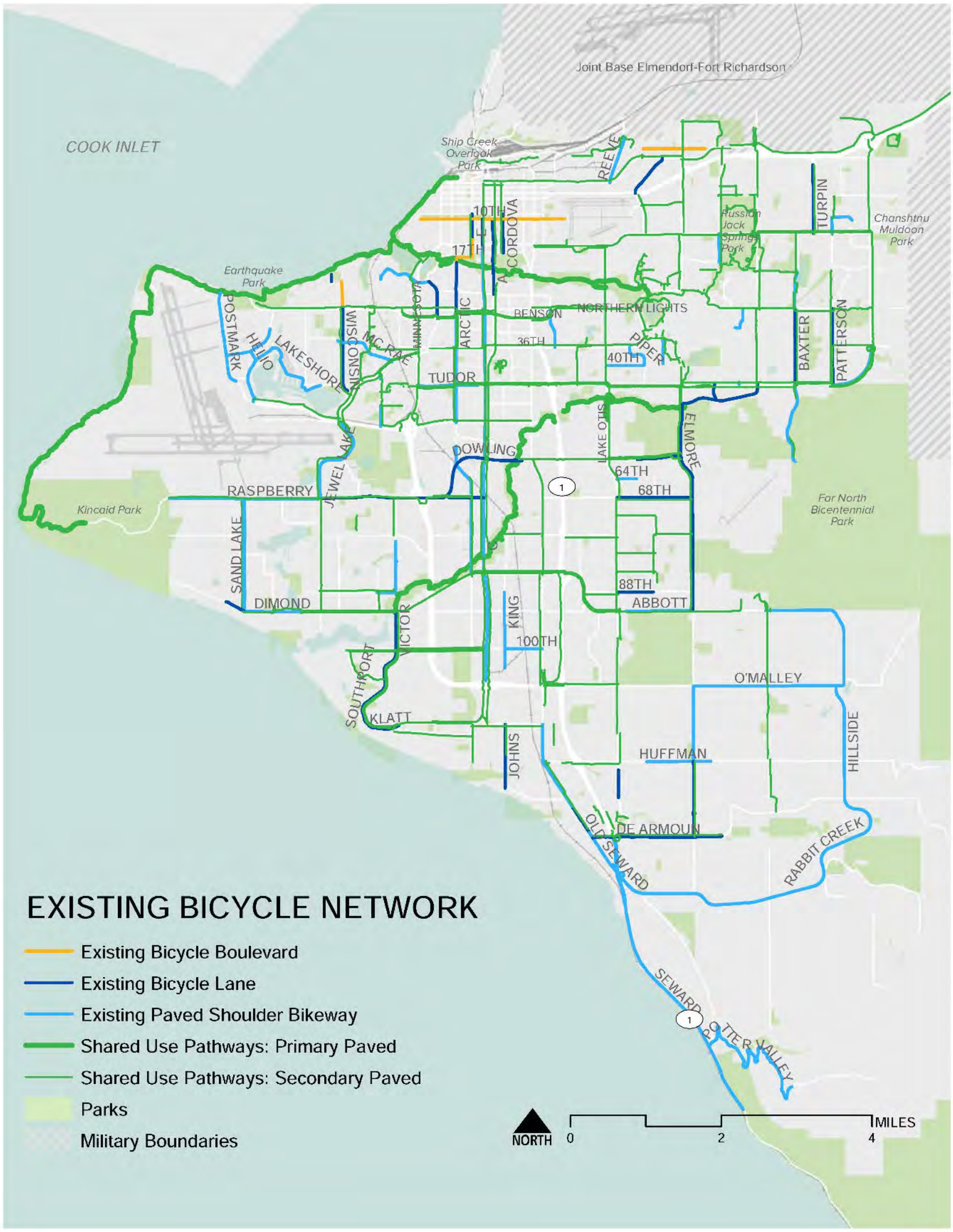
Existing issues in the study area include missing sidewalk segments, sidewalk segments in poor condition, lack of snow removal in winter, high number of driveways with potential for vehicle conflicts, jaywalking/crossing at undesignated locations, and an uncomfortable environment (e.g., directly adjacent to high-speed traffic, safety, lightning, pathway too narrow/not enough separation from road, lack of signage).

Winter maintenance of sidewalks and trails has a large impact on non-motorized transportation in Anchorage, both decreasing use and changing uses. Many trails are used for cross-country skiing and skijoring. Anchorage has seen more winter bicycle use in recent years due to the growing popularity of fat-tire biking during winter.

Figure 7: Existing Pedestrian Network

Source: AMATS 2021

Figure 8: Existing Bicycle Network



Source: AMATS 2021

The *Draft Non-Motorized Plan* prioritizes recommendations based on connectivity, health and equity, gap closure, safety, previous support and public support (AMATS 2021). The recommended pedestrian network from the *Draft Non-Motorized Plan* is displayed on Figure 9. The prioritized pedestrian projects in the study area are listed in Table 8 and displayed on Figure 10. The recommended bicycle projects in the study area are listed in Table 9 and displayed on Figure 11.

Table 8: Prioritized Pedestrian Projects in Study Area

Corridor/Street Name	To	From	Priority
3rd Avenue	Post Road	Ingra Street	Medium
5th Avenue	Reeve Circle	L Street	High
6th Avenue	East 5th Ave	L Street	High
A Street	West 8th Avenue	West 3rd Avenue	Low
C Street	West 9th Avenue	West 3rd Avenue	Low
Ingra Street	East 15th Avenue	East 5th Avenue	Medium
Gambell Street	East 16th Avenue	East 5th Avenue	Low
15th Avenue	Gambell Street	Eagle Street	Low
Bragaw Street	East Northern Lights Boulevard	Mountain View Drive	High
Mountain View Drive	Bragaw Street	Taylor Street	High

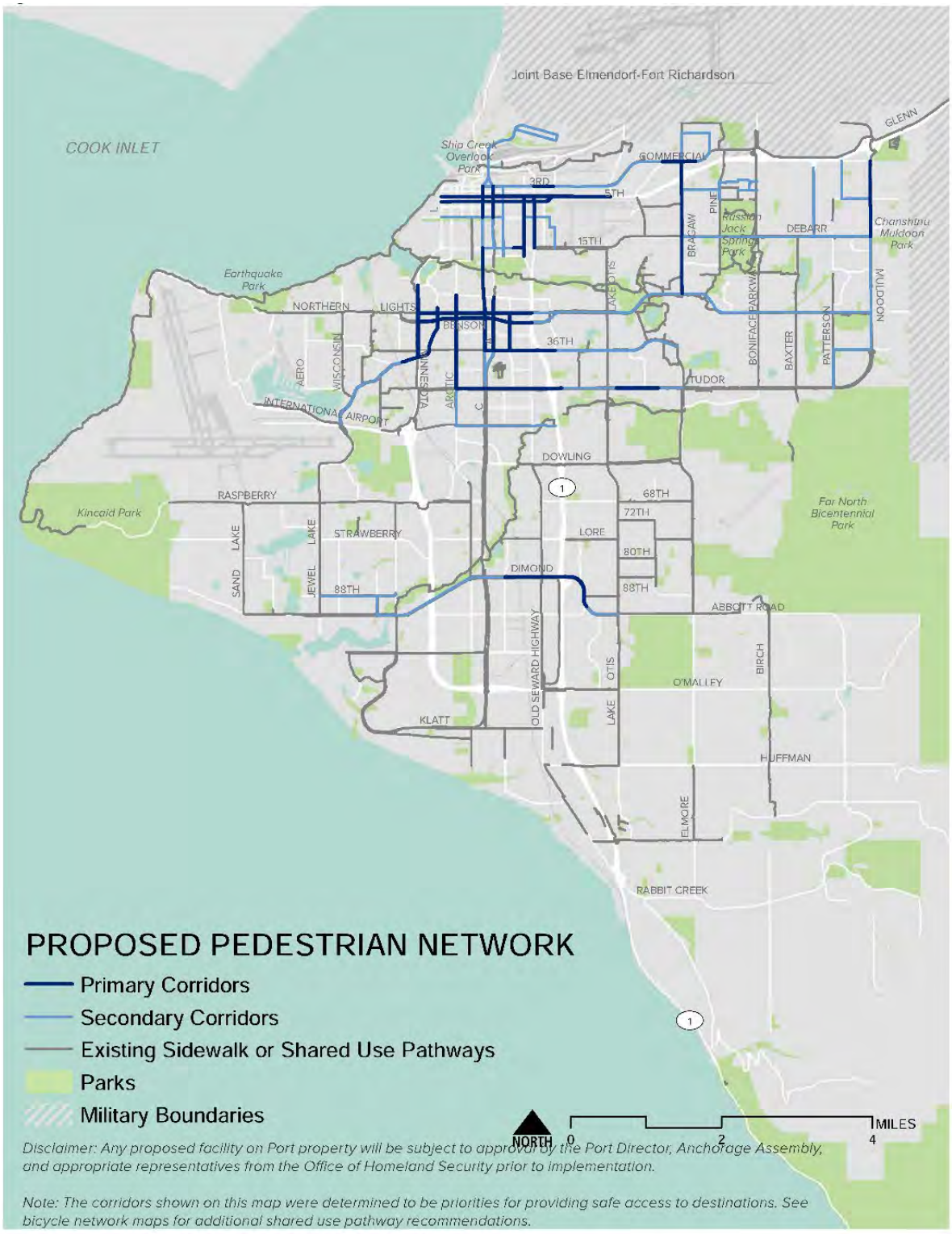
Source: AMATS 2021

Table 9: Priority Bicycle Projects in Study Area

Corridor/ Street Name	To	From	Facility Type	Priority
Post	East 3rd Avenue	Viking Drive	Separated Bikeway	High
1st Avenue	C Street	H Street	Separated Bikeway	Medium
2nd Avenue	North C Street	E Street	Separated Bikeway	Medium
5th Avenue	Karluk Street	M Street	Separated Bikeway	High
6th Avenue	Karluk Street	L Street	Separated Bikeway	Medium
7th Avenue	Cordova Street	L Street	Separated Bikeway	Medium
15th Avenue	Ingra Street	Minnesota Drive	Separated Bikeway	Medium
16th Avenue	Sunrise Drive	Lake Otis Parkway	Enhanced Shared Roadway	High
17th Avenue	Juneau Drive	Karluk Street	Separated Bikeway	Medium
Sunrise Drive	East 16th Avenue	East 20th Avenue	Enhanced Shared Roadway	Medium
Karluk	East 20th Avenue	East 5th Avenue	Separated Bikeway	Medium
Gambell Street	East 15th Avenue	East 3rd Avenue	Separated Bikeway	Medium
Ingra Street	East 6th Avenue	East 3rd Avenue	Separated Bikeway	Medium
E Street	West 15th Avenue	West 2nd Avenue	Separated Bikeway	High
C Street	13th Avenue	12th Avenue	Enhanced Shared Roadway	High
C Street/ Ocean Dock	West Loop Road	West 1st Avenue	Separated Bikeway	Medium
Juneau Drive	East 20th Avenue	East 17th Avenue	Separated Bikeway	Medium
Proposed Trail	East Harvard Avenue	2nd Street	Shared Use Pathway	Medium
Cordova	East 15th Avenue	East 3rd Avenue	Separated Bikeway	Low

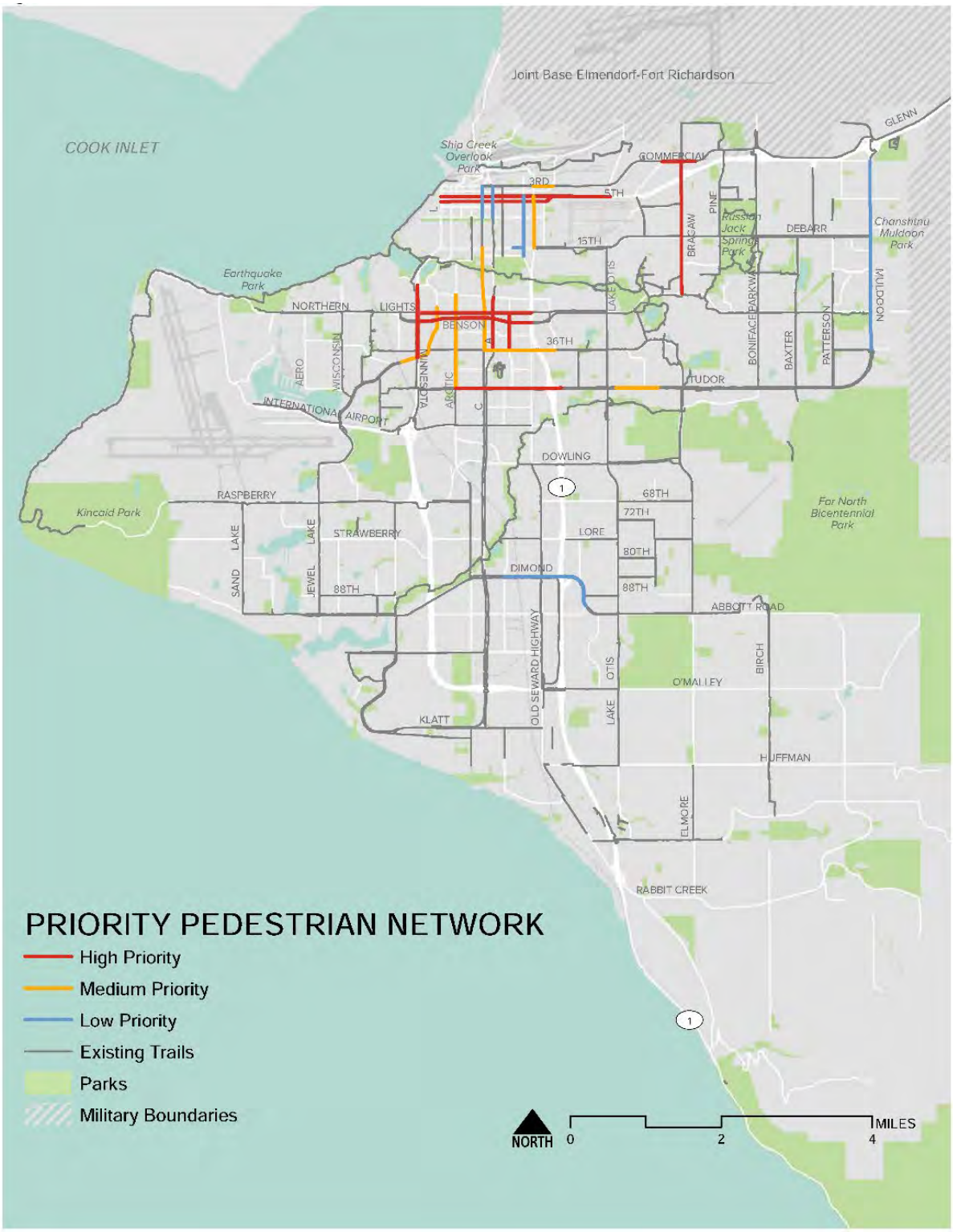
Source: AMATS 2021

Figure 9: Recommended Pedestrian Network



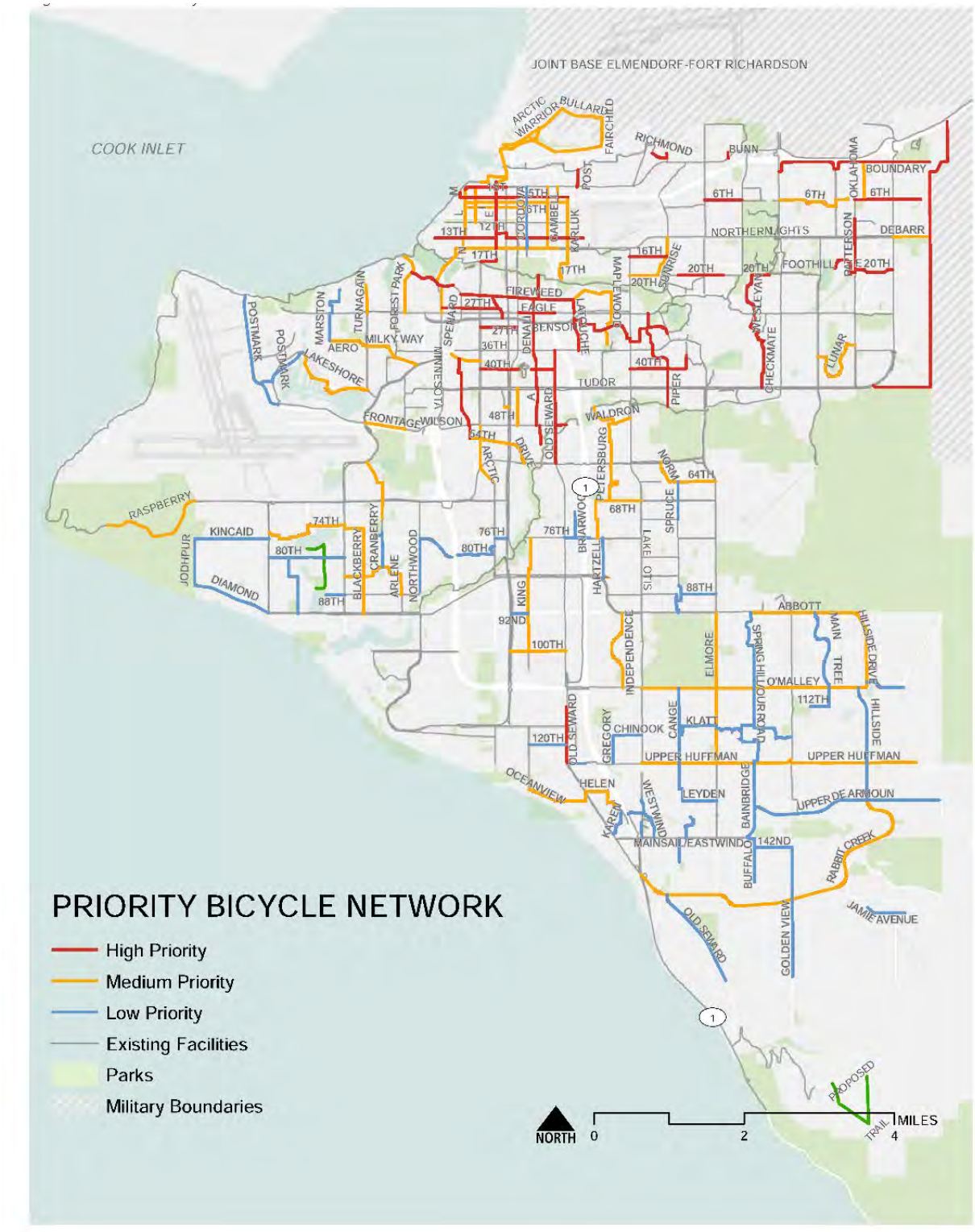
Source: AMATS 2021

Figure 10: Prioritized Pedestrian Corridors



Source: AMATS 2021

Figure 11: Prioritized Bicycle Network



Source: AMATS 2021

Transit

Transit service in Anchorage is provided by the MOA's PTD, which consists of three transportation services:

- **People Mover:** a fixed route bus service
- **AnchorRIDES:** a paratransit service for seniors and people with disabilities
- **RideShare:** a vanpool service connecting passengers with longer commuters with other commuters

Figure 12 shows the transit routes in the city.

The MOA PTD redesigned and implemented a new bus system in October 2017. The new system provides more frequent service in densely populated parts of Anchorage rather than providing basic service to a larger geographic area. This overhaul has resulted in People Mover seeing increases in transit ridership after several years of declining ridership[3] (MOA 2020b).

In 2020, People Mover had 1,710,144 passengers down from 3,410,103 in 2019 (MOA 2020a, 2021b). The COVID-19 pandemic has had a substantial impact on transit ridership as People Mover had to reduce the capacity on its buses as well as pause service for several weeks.

In 2020, People Mover completed the *Transit on the Move Plan* to identify what future improvements are needed to the system (MOA 2020b). The top five priorities identified in the plan for People Mover include:

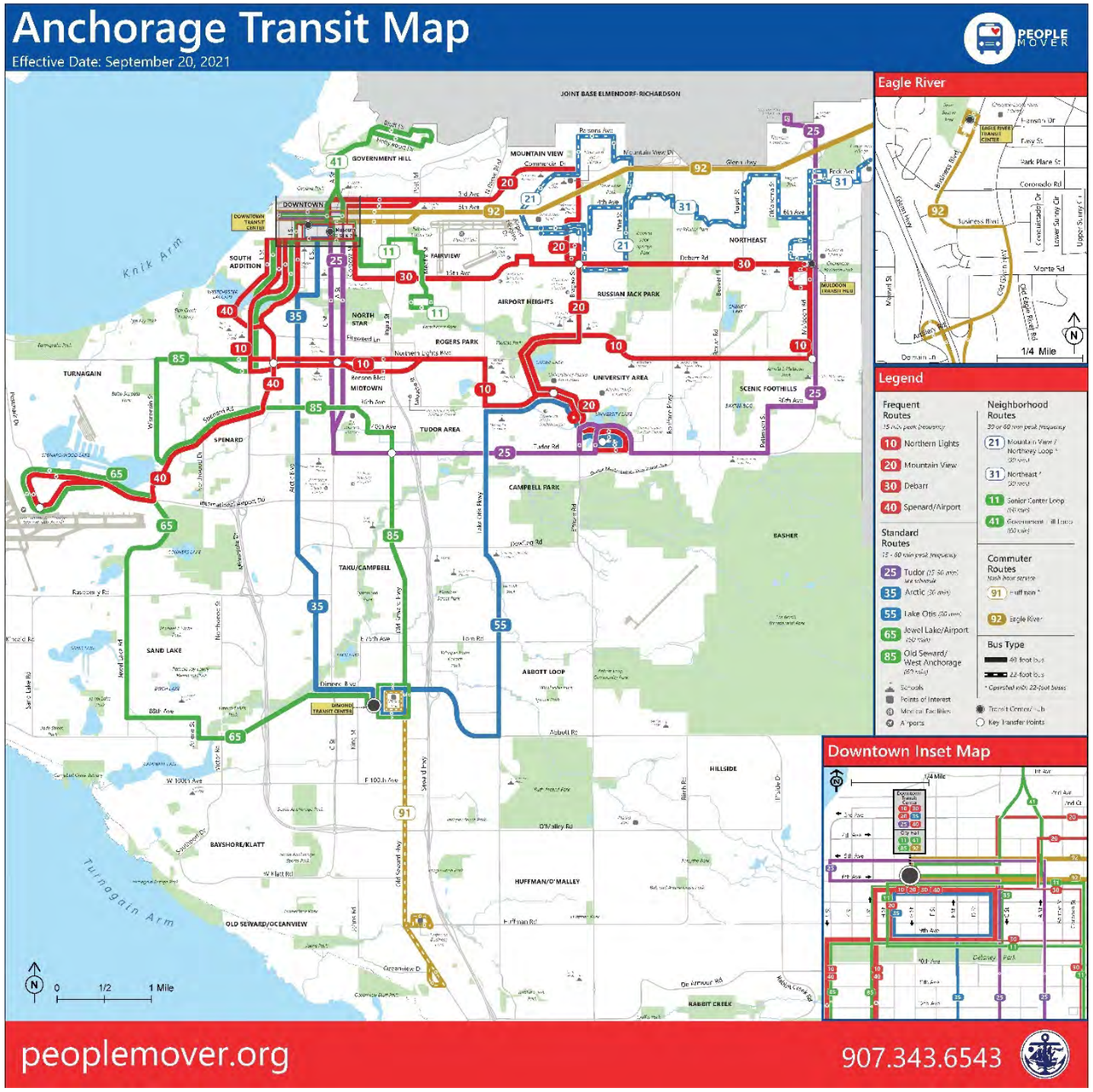
- New route: Old Seward Highway
- Increase Weekend Span of Service
- Implement Transit Security
- New Route: 36th Avenue or Fairview
- New Route: Independence Park/Elmore

People Mover has partnered with several organizations to provide free transit services for qualifying individuals. These organizations include the ASD, UAA, APU, Alaska Career College, Anchorage Charter College, and PAMC.

People Mover is in the process of improving the bus stop at the southwestern corner of C Street and 7th Avenue (MOA 2021c). This bus stop does not meet current accessibility requirements and has minimal amenities. Phase I, completed in August 2020, included the construction of a bus turnout that can accommodate two buses. Phase II, scheduled for 2021, includes the installation of amenities, including a bus shelter, pedestrian-scale lighting, a message board, and street furniture.

[3] This refers to conditions prior to the COVID-19 pandemic.

Figure 12: Transit Routes



Source: MOA n.d.

Rail

The ARRC provides passenger and freight rail services in Anchorage. Construction of the railroad began in 1915 and was completed in 1923. Originally owned by the federal government, it was transferred to state ownership in 1985. Unlike other state agencies, the ARRC acts as an independent entity and receives no operating funds from the state. It is governed by a seven-member board of directors who are appointed by the governor.

The ARRC is a Class II railroad that provides regularly scheduled passenger and freight services between Seward/Whitter and Fairbanks via Anchorage. The ARRC is unique in that it provides both passenger and freight services; most railroads only provide freight or passenger service, not both. The ARRC's main passenger depot and shop facility is located within the study area.

The Anchorage rail yard is ARRC's major classification yard. A classification yard is where freight trains are disassembled and put together. From the Anchorage rail yard, the ARRC services a variety of customers, including the POA and JBER. Anchorage also serves as ARRC's principal intermodal hub.

In 2020, the ARRC hauled 2.8 million tons of freight, which was down from 3.49 million tons in 2019. ARRC hauls natural resources (e.g., coal, gravel, petroleum products) and commodities (e.g., dry goods, pipe, lumber, heavy equipment) (ARRC 2021).

The ARRC transported 32,069 passengers in 2020, compared to 522,101 in 2019 (ARRC 2021)[4]. Between mid-May and mid-September, the ARRC offers daily service between Anchorage and Seward, Anchorage and Whittier, and Anchorage and Denali/Fairbanks. During winter, passenger service operates between Anchorage and Fairbanks, mostly on weekends (ARRC 2021).

According to the ARRC, rail improvements in the study area include the North C Street and Whitney Road crossing upgrade and Anchorage Yard Locomotive Fueling Facility (ARRC 2020).

Aviation

One airport is located within the study area, Merrill Field (Figure 13). The MOA owns Merrill Field and operates it under the provisions of Title 11, Section 11.60 of the Anchorage Municipal Code. An Airport Manager oversees the airport, and the Municipal Airports Aviation Advisory Commission serves as an advisory board to the MOA for airport and aviation-related issues.

[4] COVID-19 pandemic-related travel restrictions, economic slowdown, and tourism reduction were likely contributing factors to ARRC's reduced 2020 freight and passenger ridership.

Figure 13: Merrill Field

Source: Merrill Field 2016

Merrill Field, Anchorage's first airport, was established in 1930 and was the location of the Territory of Alaska's first aviation beacon, which was dedicated in September 1932. Merrill Field was the only airport serving Anchorage until 1951, when an airfield with longer and heavier runways was needed to accommodate larger and faster commercial aircraft. Merrill Field had been ranked as one of the busiest general aviation airports in the nation, with activity peaking in 1984. In 2010, Merrill Field was the 72nd busiest airport in the United States, with 144,892 flight operations (Merrill Field 2021).

Merrill Field is classified as a Primary Commercial Service Airport (10,000 enplanements) and restricts aircraft using the airport to 12,500 pounds or less. Merrill Field serves local and itinerant general aviation[5], air taxis[6], and military aircraft[7] (Aires Consultants Ltd. 2000). Most of the operations at the airport are general aviation operations.

The airfield consists of two asphalt paved runways: Runway 7-25, with parallel taxiways on the northern and southern sides, and Runway 16-34, with one parallel taxiway on the eastern side and a partial parallel taxiway on the western side. There is also one gravel/ski runway, Runway 4/22. Additional taxiways provide access to the runways from aircraft parking areas and provide links between the parallel taxiways and their respective runways. Taxiway Q provides direct access to the Alaska Regional Hospital Emergency Room, enabling medevac flights to taxi to the hospital door. There is a heliport located near Alaska Regional Hospital and other helicopter parking areas throughout the airport (Figure 13).

Development at Merrill Field is guided by an AMP completed in 2016 that was funded by the FAA, State of Alaska, and MOA (Merrill Field 2016). The AMP provides a long-range (20-year) plan to guide development of the airport, and includes recommendations regarding additional airport property, airfield improvements, navigation improvements, projects related to general aviation and air taxis, airport access and parking, airport support projects, and land use on airport property.

A number of elements in the AMP's capital improvement program may influence surface transportation in the Seward-Glenn Connection study area, including:

- Roadway signage
- Rehabilitate Airport Access Road pavement
- Acquire additional City Electric property
- Additional vehicle parking along Merrill Field Road
- Construction of a service road around the west end of Runway 7
- Relocate the MOA Snow Storage area

[5] General aviation is defined as all civil aviation not classified as air carrier, commuter/air taxi, or military. It includes uses such as flying for enjoyment, transportation of personnel or cargo by business firms and individuals in privately owned aircraft, pipeline patrol, aerial advertising, business/corporate aviation, and flight training.
[6] Air taxi operations include the unscheduled operation of "for hire" air taxis.
[7] Most military operations are U.S. Air Force rescue helicopters destined for Alaska Regional Hospital (Aires Consultants Ltd. 2000).

- Relocate the Sitka Street public use area
- Develop Commercial Non-Aviation revenue leases in the areas south of 15th Avenue and east and west of Sitka Street

For a complete listing of needed capital improvements, please see Section 7 of the AMP (Merrill Field 2016).

Marine

The MOA owns the POA, which opened in 1961 (POA 2021b). It is the state's primary in-bound cargo facility, handling approximately 4.3 million tons of cargo and fuel in 2019 (POA 2021b). The POA accounts for approximately 50 percent of all freight shipped into Alaska by all modes (POA 2021b). The POA has three primary functions:

- **Commerce:** It brings freight and fuel into Alaska to benefit residents and businesses.
- **National defense:** It is a "U.S. Commercial Strategic Seaport" that supports Department of Defense (DoD) missions in Alaska, the Pacific, and the Arctic. Its close proximity to JBER allows it to handle most DoD Alaska freight (except munitions and explosives).
- **Earthquake resiliency/disaster response and recovery:** As the only port in Southcentral Alaska not vulnerable to tsunamis, it is critical to supporting disaster response and recovery activities.

The POA serves deep-water vessels year-round. Marson Navigation of Alaska and TOTE Maritime Incorporated each provide twice per week container ship service from Port of Tacoma (POA 2020).

The POA includes three general cargo terminals, two petroleum terminals, a dry- and break-bulk handling, and a dry barge landing. It can also accommodate cruise ships. It is also connected to the ARRC via 2 miles of rail spur. It has pipeline connections to the TSAIA, JBER, and Nikiski.

Port of Alaska Modernization Program

The Port of Alaska Modernization Program (PAMP) is a reconstruction plan to address the deteriorating condition of POA's marine facilities and enable safe, reliable, and cost-effective POA operations. The existing facilities are experiencing corrosion and obsolescence. Based on a 2016 survey, engineers estimated that some marine facilities, including entire terminals, would require shut-down beginning in approximately 10 years and are also vulnerable to future seismic events.

The first phase of the PAMP, construction of a new Petroleum and Cement Terminal, was completed in 2021. Future phases include the north extension stabilization work, two new general cargo terminals, DoD strategic port enhancements, and seismic/resiliency enhancements.

Freight

Freight movement and mobility is critical as almost all of the goods purchased by Anchorage residents and the entire region are transported here by some combination of ship, barge, plane, train, and truck.

The *Anchorage Freight Mobility Study* identifies several freight movement problem areas within the study area, including circulation and access concerns near the 5th/6th Avenues-Ingra/Gambell Streets intersections as well as connections to the POA (AMATS 2017).

Freight projects in the study area in the *Anchorage Freight Mobility Study* (AMATS 2017) include:

- Anchorage Port Modernization Project
- Improved access from the POA
- Signal timing modifications
- Trailer on Flat Car Yard
- 3rd Avenue Improvements
- Ingra/Gambell Streets Improvements
- Ocean Dock Road Access and Crossing from POA to Terminal Road
- Ocean Dock Road and Terminal Road Intersection
- C Street/Ocean Dock Road Access Ramp
- 3rd Avenue, 6th Avenue Couplet/E Street Conversion Reconnaissance Study
- Ocean Dock Road Alignment near POA Entrance
- Ingra-Gambell Couplet Extension – 3rd Avenue to Whitney Road
- Seward Highway to Glenn Highway Connection – Phase III

The *Anchorage Freight Mobility Study* (AMATS 2017) identified a proposed regional truck route network (see Figure 14) to concentrate heavy-duty truck movements on selected roadways and corridors. While trucks use all system roadways, heavy-duty truck movements could be focused on key regional freight routes to protect communities, increase safety, reduce neighborhood impacts, and alleviate bottlenecks. However, as of December 2021, the Anchorage Assembly has not adopted this network.

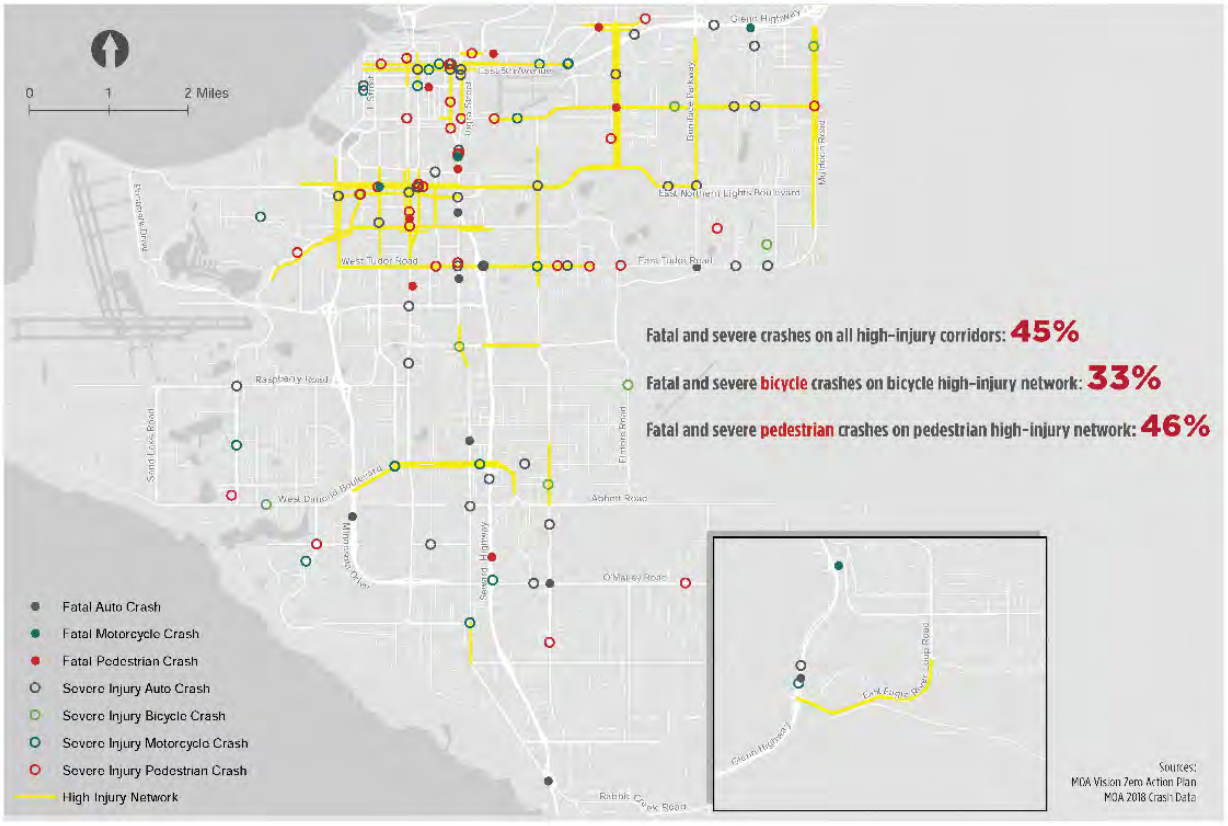
Figure 14: Proposed Regional Truck Route Network

Source: AMATS 2017
Note: The Highway Performance Monitoring System (HPMS) is a federally maintained software product used for submitting Alaska's highway data to the FHWA. The HPMS is the primary source of transportation data that FHWA uses to determine Alaska's share of annual federal transportation funds.

Safety

Vision Zero is “a strategy to eliminate all traffic fatalities and severe injuries while increasing safe, healthy, and equitable mobility for all” (MOA 2018). Vision Zero analyzed vehicle, bicycle, and pedestrian crashes that occurred within Anchorage to better understand where the crashes occur, what type of crashes occur, and various human factors related to crashes (MOA 2018). The *2018 Vision Zero Action Plan* (MOA 2018) identified a high injury network that shows where severe and fatal injury crashes are most concentrated within Anchorage (see Figure 15).

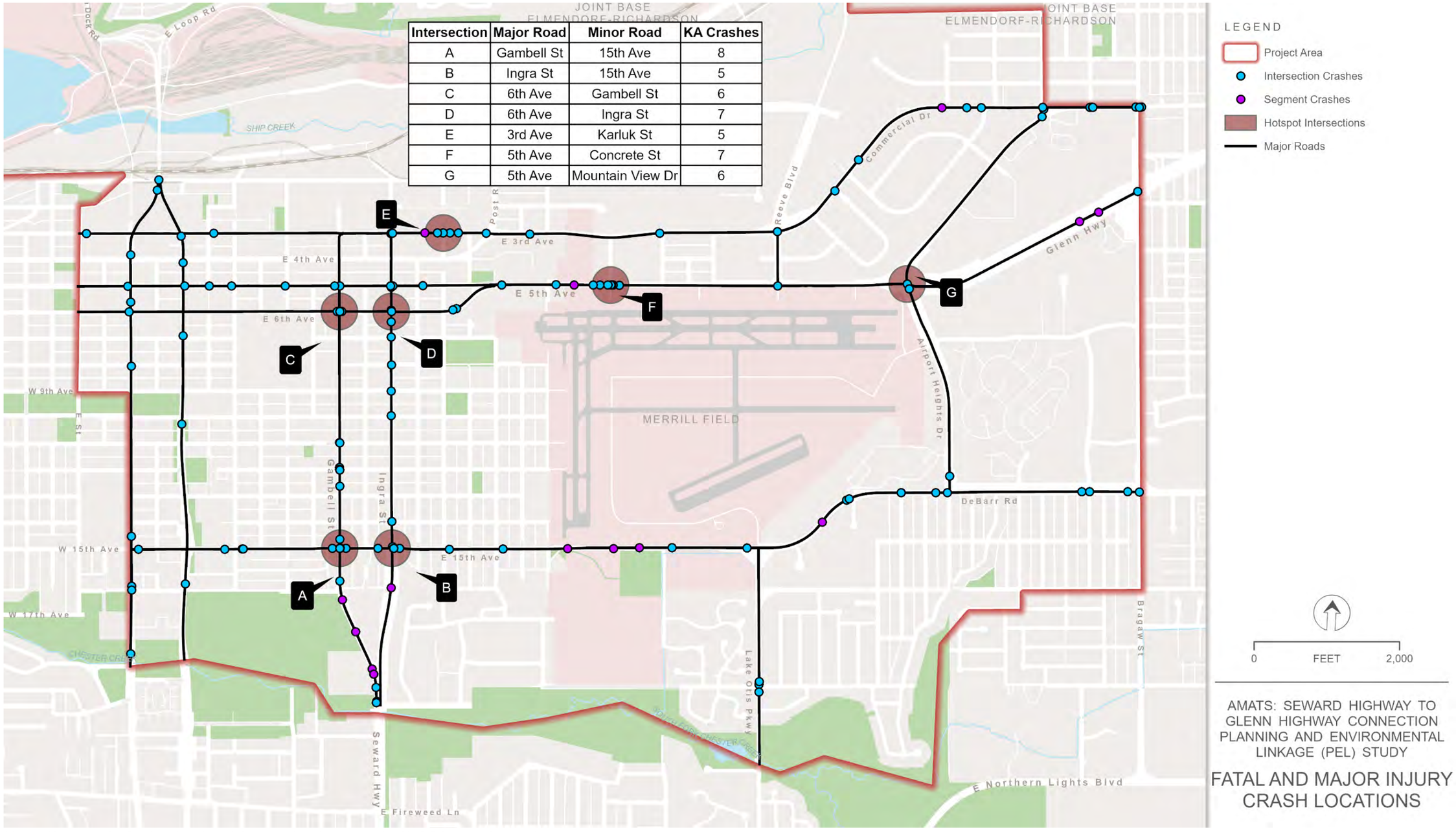
Figure 15 High Injury Network



Source: AMATS 2021 (adapted from the 2018 Anchorage Vision Zero Action Plan)

In the study area, 19 fatal and 136 major injury crashes occurred between 2008 and 2017. Of these 155 fatal and major injury crashes, 141 (91.0 percent) occurred at intersections, as show on Figure 16. Based on this information, seven hotspot intersections were identified. A hotspot intersection was identified as an intersection with five or more fatal and major injury crashes occurring within the 10-year study period. The intersection with the highest number of fatal and major injury crashes (eight) is 15th Avenue with Gambell Street. This was followed by 6th Avenue and Ingra Street, and 5th Avenue and Concrete Street, which each had seven crashes.

Figure 16. Fatal and Major Injury Crashes, 2008–2017



Intersection	Major Road	Minor Road	KA Crashes
A	Gambell St	15th Ave	8
B	Ingra St	15th Ave	5
C	6th Ave	Gambell St	6
D	6th Ave	Ingra St	7
E	3rd Ave	Karluk St	5
F	5th Ave	Concrete St	7
G	5th Ave	Mountain View Dr	6

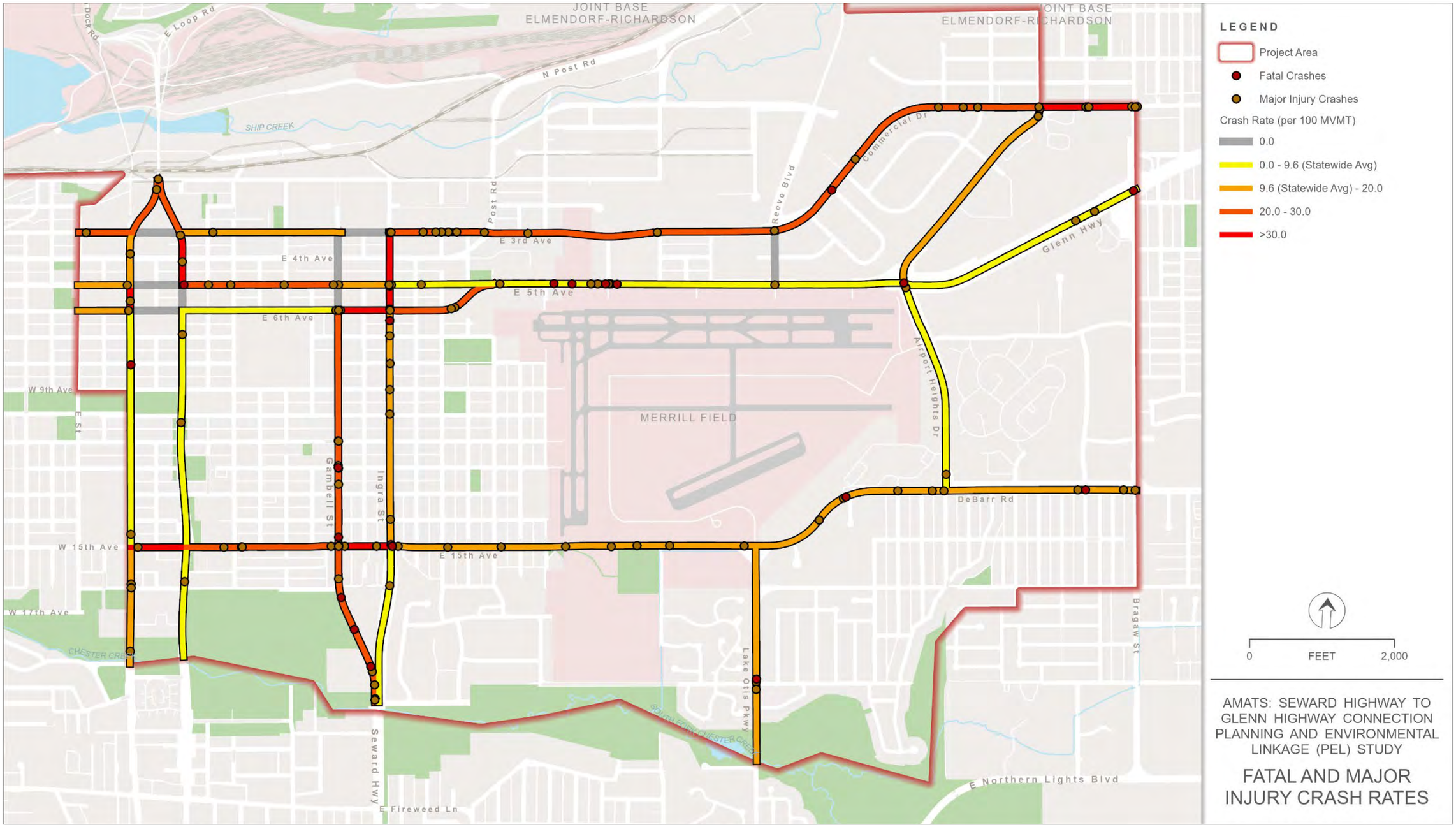
Note: KA stands for fatal and serious injury crashes based on the KABCO scale for crash severity.

Segment fatal and major injury crash rates in the study area are shown on Figure 17. The segment with the highest crash rate (145.7 fatal and major injury crashes per million vehicle miles traveled [MVMT]) is Ingra Street between 5th and 6th Avenues. The intersections at the start and end of this segment (Ingra Street/5th Avenue and Ingra Street/6th Avenue) have some of the highest numbers of crashes in the study area. The crash rate on this segment is more than double the next highest segment (6th Avenue between Gambell and Ingra Streets).

While two intersections on the Glenn Highway/5th Avenue have a high crash frequency, the crash rates along this corridor do not exceed the statewide average. This is due to the high traffic volumes along this corridor.

Additional information is available in Appendix C, *Crash Map and Technical Memorandum*.

Figure 17. Fatal and Major Injury Segment Crash Rate, 2008–2017



2.7 Air Quality

2.7.1 Regulatory Setting

Air quality refers to the cleanliness of the atmosphere. Clean air is vital to human health and is 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 CAA, the EPA has established the National Ambient Air Quality Standards (NAAQS) for six air pollutants: CO, ozone, sulfur dioxide, nitrogen dioxide, airborne lead, and PM_{10} and $PM_{2.5}$. The standards set maximum allowable atmospheric concentration of these criteria pollutants. Primary standards provide public health protection, including for sensitive populations such as children, asthmatics, and the elderly. Secondary standards provide public welfare protection, including protection against decreased visibility and damage to animals, vegetation, and buildings. The Alaska Department of Environmental Conservation (ADEC) has also adopted and established Alaska Ambient Air Quality Standards (AAAQS; 18 Alaska Administrative Code [AAC] 50.010). Table 10 provides the NAAQS for criteria pollutants.

Table 10. National Ambient Air Quality Standards

Criteria Pollutant	Primary/ Secondary	Averaging Time	Level	Violation Determination
Carbon Monoxide	Primary	8-hour	9 ppm	Not to be exceeded more than once per year
	Primary	1-hour	35 ppm	Not to be exceeded more than once per year
Lead	Primary and Secondary	Rolling 3-month Average	0.15 $\mu g/m^3$	Not to be exceeded
Ozone	Primary and Secondary	8-hour	0.070 ppm	Annual 4th highest daily maximum 8-hour average concentration, averaged over 3 years
Nitrogen Dioxide	Primary	1-hour	0.100 ppm	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	Primary and Secondary	1-year	0.053 ppm	Annual mean
Sulfur Dioxide	Primary	1-hour	0.075 ppm	Not to be exceeded more than once per year
	Primary and Secondary	3-hour	0.5 ppm	99th percentile of 1-hour the daily maximum concentrations, averaged over 3 years
PM_{10}	Primary and Secondary	24-hour	150 $\mu g/m^3$	Not to be exceeded more than once per year on average over 3 years

Criteria Pollutant	Primary/ Secondary	Averaging Time	Level	Violation Determination
$PM_{2.5}$	Primary	1 year	12.0 $\mu g/m^3$	Annual mean, averaged over 3 years
	Secondary	1 year	15.0 $\mu g/m^3$	Annual mean, averaged over 3 years
	Primary and Secondary	24-hour	35 $\mu g/m^3$	98th percentile of 24-hour concentrations, averaged over 3 years

Source: EPA 2021a (40 CFR 50)
Notes: ppm = parts per million; µg/m³ = micrograms per cubic meter; AAAQS are not identical to NAAQS; AAC identifies different (although similar) levels by codifying under different measurement units or applying additional levels, and includes a standard for ammonia

Two additional pollutants of concern, NO_x and VOCs, are also regulated because they contribute to the formation of ozone in the atmosphere; however, no NAAQS or AAAQS have been established for these pollutants. The EPA has also established emissions and equipment standards for 187 listed hazardous air pollutants (HAPs) for several industrial categories. Additionally, greenhouse gases (GHGs) became regulated pollutants on January 2, 2011, because of their contribution to global climate change effects. Table 11 provides criteria pollutant sources and their health effects.

Table 11. Criteria Pollutant Sources and Health Effects

Criteria Pollutant	Pollutant Sources and Health Effects
Carbon Monoxide (CO)	**Source:** Burning of natural gas, coal, oil, etc.
	Health Effects: Reduces ability of blood to bring oxygen to body cells and tissues; cells and tissues need oxygen to work; may be particularly hazardous to people who have heart or circulatory (blood vessel) problems, and people who have damaged lungs or breathing passages
Lead	**Source:** Lead gasoline additives, non-ferrous smelters, paint, lead solder, and battery plants
	Health Effects: Seizures, high blood pressure, mental retardation, central nervous system failures, and behavioral disorders; children and infants are especially susceptible to low doses
Ozone (O_3)	**Source:** Chemical reaction of pollutants, VOCs[a], and NO_X
	Health Effects: Breathing problems, reduced lung function, asthma, eye irritation, stuffy nose, reduced resistance to colds and other infections, may speed up aging of lung tissue
	Environmental Effects: Can damage plants and trees; smog can cause reduced ambient visibility
	Property Damage: Damages rubber, fabrics, etc.
Nitrogen Dioxide (NO_2)	**Source:** Burning of gasoline, natural gas, coal, oil, etc.
	Health Effects: Lung damage, illnesses of breathing passages and lungs (respiratory system)
	Environmental Effects: NO_2 is an ingredient of acid rain (acid aerosols), which can damage trees and lakes; acid aerosols can reduce ambient visibility
	Property Damage: Acid aerosols can eat away stone used on buildings, statues, monuments, etc.

Criteria Pollutant	Pollutant Sources and Health Effects
Sulfur Dioxide (SO_2)	**Source:** Burning of coal and oil, especially high-sulfur coal from the Eastern United States; industrial processes (paper, metals); diesel fuel
	Health Effects: Breathing problems; may cause permanent damage to lungs
	Environmental Effects: SO_2 is an ingredient in acid rain (acid aerosols), which can damage trees and lakes; acid aerosols can also reduce ambient visibility
	Property Damage: Acid aerosols can eat away stone used in buildings, statues, monuments, etc.
PM_{10} and $PM_{2.5}$	**Source:** Burning of wood, diesel, and other fuels; industrial plants; volcanic emissions; wind-borne glacial silts; unpaved roads; sand/salt from winter maintenance operations
	Health Effects: Nose and throat irritation, lung damage, bronchitis
	Environmental Effects: Particulates are the main source of haze that reduces ambient visibility
	Property Damage: Ashes, soot, smoke, and dust can dirty and discolor structures and other property, including clothes and furniture

Source: CDOT 2008

[a] VOCs are released from burning fuel (e.g., gasoline, oil, wood coal, natural gas), solvents, paint, glues, and other products used at work or home. Cars are a main source of VOCs. VOCs include chemicals such as benzene, toluene, methyl chloride, and methyl chloroform.

2.7.2 Existing Conditions

Protected by the Chugach Mountains and the Alaska Range, and warmed by Pacific Ocean currents, Anchorage has a temperate maritime climate. Temperatures range from a normal[8] daily minimum temperature of 11.1 degrees Fahrenheit (°F) in January and a normal daily maximum temperature of 65.4°F in July (WRCC 2020). The normal annual snowfall is approximately 75 inches, with annual rainfall of approximately 16 inches (WRCC 2020). The prevailing wind direction is from the south, following the valley terrain, during the summer months and from the north during the winter months (WRCC 2020). The area experiences winter inversion conditions that can lead to higher concentrations of CO and $PM_{2.5}$ and PM_{10} as emissions accumulate from vehicles.

Anchorage enjoys low levels of most types of air pollution. Sulfur dioxide, nitrogen dioxide, lead, and ozone have been monitored and are not a significant concern. The MOA is compliant with the NAAQS for ground level ozone, sulfur dioxide, nitrogen dioxide, airborne lead, and $PM_{2.5}$. Due to historical exceedances of the CO NAAQS in Anchorage 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 2021a). The plans utilize transportation system control measures to reduce CO and PM_{10} from automotive and roadway sources in the Anchorage and Eagle River maintenance areas. The Anchorage CO and Eagle River PM_{10} maintenance plans are effective for 10 years from their approval by EPA on May 2, 2014, and July 22, 2020, respectively. The Anchorage and State of Alaska air quality planners expect the MOA to remain compliant with national air

[8] Climate Normals are specific 30-year averages (1981–2010; typically recalculated every 10 years) for climate variables like temperature and precipitation. They provide a baseline to compare a location's current weather to the average weather that location would expect to see.

quality standards through 2040 even with projected growth in travel on the transportation system.

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).

Carbon Monoxide

During the past two decades, Anchorage has experienced dramatic reductions in ambient concentrations of CO. In the early 1980s, Anchorage violated the 8-hour CO standard as many as 50 times per year. Since then, concentrations have dropped more than 70 percent. Anchorage has had no violations of the CO NAAQS since 1996. Motor vehicles are the main source of CO pollution in Anchorage. Cars and trucks account for almost 80 percent of the CO emitted in the Anchorage Bowl. Continual advancements in technology to control air pollution on newer vehicles are largely responsible for this improvement. In January 2012, the EPA approved a revised CO control plan for Anchorage that showed the vehicle inspection and maintenance program was no longer necessary to meet the federal CO standard. Effective May 2, 2014, Anchorage was reclassified as a Limited Maintenance Plan (LMP) area for CO.

The highest CO concentrations in Anchorage occur in mid to late winter when strong temperature inversions trap air pollutants in a stagnant layer of cold dense air close to ground level. Vehicle CO emissions are greatest shortly after a cold start when catalytic control systems operate inefficiently. The MOA promotes the use of engine block heaters to reduce these cold-start emissions, and promotes bicycle commuting and transit programs to decrease the use of single occupancy vehicles.

Much of the study area is within the currently designated maintenance area for CO. Any construction project that may result from this study would be required to analyze air quality impacts to assure that the project is consisted with the Alaska *State Implementation Plan* for air quality and with federal rules governing regional air quality conformity. A hot-spot analysis to demonstrate that intersection changes would not create areas of high CO concentrations may also be required.

Particulate Matter

The MOA is compliant with the federal standard for particulate matter, although high PM_{10} concentrations typically occur during spring break-up, when melting snow and ice expose a winter's worth of accumulated traction material on roadways. This sediment is stirred up by traffic, especially on high-speed, high-volume streets, potentially creating extremely dusty conditions. To control road dust emissions, the Anchorage Air Quality Program (AAQP) continually monitors dust levels. If air quality deteriorates, municipal and state street maintenance crews apply magnesium chloride brine to stabilize road sediment until it can be effectively removed by road sweepers, followed by a post-sweep flush to remove residual silt.

The magnesium chloride brine keeps sediments in place until daily low temperatures are safely above freezing to allow application of water to road surfaces.

In the late 1980s, dust from unpaved roads in the Eagle River area led to frequent violations of the standard. By 1991, most of these roads had been paved or surfaced with recycled asphalt and violations ceased. In March 2013, Eagle River's PM_{10} LMP was officially approved by the EPA. Eagle River is now considered a Limited Maintenance Area for PM_{10}.

Natural events like ashfall from volcanic eruptions and windstorms can have a significant impact on Anchorage PM_{10} concentrations, and wind-blown glacial dust from the Matanuska-Susitna Valley can periodically impact Anchorage levels. The EPA excludes violations resulting from volcanic eruptions or transport of glacial river dust if the exceedances can be classified as an Exceptional Event (i.e., not caused by human actions).

Fine particulate matter ($PM_{2.5}$) pollution has become an air quality issue throughout Alaska. Smoke from fireplaces, wood stoves, and outdoor wood boilers can cause local impacts to air quality. The fine particulates can have significant health ramifications, harming lungs, blood vessels, and the heart. While Anchorage remains in compliance with the $PM_{2.5}$ standard, it can have elevated levels when smoke from nearby wildfires shift into the Anchorage area.

Benzene and Other Toxic Air Pollutants

Motor vehicle emissions are the major source of benzene and other toxic air pollutants, including VOCs and polycyclic aromatic hydrocarbons. The EPA has not established an ambient air quality standard for pollutants like benzene (a known carcinogen), which is associated with increased cancer and other health risks. A 2008–2009 MOA study indicated that ambient benzene concentrations in Anchorage were among the highest in the United States (AMATS 2020). The benzene content of Anchorage gasoline—nearly 4 percent by volume at that time—was 3 to 10 times higher than the benzene content of gasoline sold in most other cities. In 2012, the EPA promulgated rules limiting refineries to a maximum average benzene content and establishing cold temperature motor vehicle emissions standards for new vehicles. The AAQP conducted a follow-up study in 2013 that indicated gasoline sold locally was meeting the reduced benzene standard, and ambient benzene levels had declined substantially; the amount of benzene in fuel was reduced by approximately 70 percent, and ambient benzene concentrations dropped from an average of 5.05 to 1.53 parts per billion (AMATS 2020).

2.8 Noise

2.8.1 Regulatory Environment

DOT&PF's Noise Policy (DOT&PF 2018) states that potential noise impacts must be evaluated for all Type I federal aid and state-funded highway construction, as defined by 23 CFR 772 (Procedures for Abatement of Highway Traffic Noise and Construction Noise). Type I projects are those that involve constructing new highways, reconstructing existing highways by significantly changing either the horizontal or vertical alignment, or increasing the number of travel through lanes.

The FHWA assigns different types of land uses to different activity categories based on the type of activities occurring in each respective land use (e.g., residences, schools, churches, commercial land, undeveloped land). Noise Abatement Criteria (NAC) are assigned to each activity category. These NAC represent the maximum traffic noise levels that allow uninterrupted use within each activity category. Table 12 lists the seven land use categories and the NAC associated with each. The DOT&PF is responsible for implementing the FHWA regulations. The DOT&PF's Noise Policy (DOT&PF 2018) 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).

Table 12. Noise Abatement Criteria

Activity Category	Land Use Activity Description	Location	NAC L_{eq}
A	Lands on which serenity and quiet are of extraordinary significance and serve an important public need, and where preserving those qualities is essential if the area is to continue to serve its intended purpose	Exterior	57
B	Residential, including undeveloped lands permitted for such land use	Exterior	67
C	Active sports areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings	Exterior	67
D	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios	Interior	52
E	Hotels; motels; offices; restaurants/bars; and other developed lands, properties, or activities not included in activity categories A through D or F	Exterior	72
F	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, ship yards, utilities (e.g., water resources, water treatment, electrical), and warehousing	--	--
G	Undeveloped lands that are not permitted	--	--

Notes: L_{eq} = equivalent continuous noise level

2.8.2 Existing Conditions

As highway construction approaches existing or planned development, traffic and construction noise can become a concern. Noise is defined as unwanted or excessive sound, which can occur when it interferes with normal activities such as sleep, work, speech, or recreation. Vehicle noise is a combination of the noise produced by the engine, exhaust, and tires. Noise levels from highway traffic are affected by traffic volume, traffic speed, and the number of (louder) trucks in the traffic flow. Traffic noise impacts can occur when traffic volumes increase

and approach residential neighborhoods and other areas that are sensitive to the often-continuous sounds of vehicles and traffic.

The study area encompasses areas with high residential population densities. As a result, traffic noise impacts could occur at properties adjacent to alternative corridors. Detailed analysis of project-related noise impacts would be conducted in support of any future construction project's environmental document. Those projects would be assessed to identify the land use categories and specific noise-sensitive receptors, and modelled to determine future noise levels for each alternative. Should impacts be identified, noise abatement measures such as noise walls would be evaluated for reasonableness and feasibility.

2.9 Water Quality

2.9.1 Regulatory Environment

Water quality in Alaska is regulated by the EPA through the federal Clean Water Act (CWA) and by the regulations of the ADEC Division of Water and Division of Environmental Health. The EPA delegated the authority for the National Pollutant Discharge Elimination System (NPDES) program in Alaska to ADEC under the Alaska Pollutant Discharge Elimination System (APDES). This program requires pollutant discharges to surface waters be authorized by permit. The MOA's Watershed Management Services is a local division that works to protect and improve the quality of Anchorage streams and waterways to comply with federal and state regulations.

The DOT&PF and MOA are co-permittees on the current APDES municipal separate storm sewer system (MS4) permit (AKS052558) that regulates storm water discharge from these systems into the waters of the United States. The MS4 permit establishes conditions, prohibitions, and management practices for discharges of storm water from the MS4s owned or operated by the MOA and DOT&PF. The permit requires the continued implementation of a jurisdiction-wide municipal storm water management program (SWMP), and outlines the actions and activities to be used by both permittees to control pollutants in urban storm water discharges to the maximum extent practicable. Monitoring of certain storm water discharges is required to determine the effectiveness of best management practices (BMPs) and to estimate pollutant loading to impaired receiving waters (ADEC 2020a).

Another permit that regulates storm water discharges to water bodies is the APDES Construction General Permit (CGP). The CGP regulates storm water and non-storm water discharge from construction sites that are larger than 1 acre, and requires implementation of BMPs to minimize the amount of pollution introduced into water bodies (ADEC 2021c). All construction projects 1 acre or larger in Alaska fall under the requirements of this permit.

The EPA's Impaired Waters 303(d) list is a list of water bodies within the State of Alaska that do not meet the water quality standards for their designated uses. The list is required under the CWA; once a water body is listed, an analysis of the parameters that are impairing the water body from the intended beneficial use, called a Total Maximum Daily Load (TMDL), must be prepared. The ADEC Division of Water is in charge of identifying and establishing TMDLs within the state.

2.9.2 Existing Conditions

Water and water quality are vital parts of the natural ecosystem, and support household, industrial, recreational, and economic uses. As local areas develop and grow, the result can be degradation to the water resources. Transportation construction projects typically modify or add to impervious surfaces, resulting in stormwater that can carry debris, sediment, and chemicals into water sources and further diminish their quality. Highway maintenance activities also have the potential to affect nearby bodies of water.

This section describes the existing conditions of water resources, represented by surface waters and their associated watersheds. The main water bodies within the study area are Ship Creek and Chester Creek. The study area map includes the POA and includes some marine waters of Knik Arm; however, it is unlikely that an alternative analyzed in this study would impact marine waters; therefore, they are not included in this discussion.

Ship Creek

Ship Creek traverses through the upper third of the study area. Its watershed is a 123-square-mile watershed that has boundaries stretching from the Chugach Mountains to the Knik Arm of Cook Inlet. The watershed includes sections of Chugach State Park and JBER. Ship Creek originates in the Chugach Mountains. The main stream then flows northwest as it reaches the MOA, where it then turns west and flows to where it discharges into Knik Arm. The elevation in the watershed ranges from 5,000 feet in the Chugach Mountains to sea level at the mouth of the creek where it flows into Knik Arm. The channel of Ship Creek is approximately 29 miles long. In the eastern mountainous region of the drainage, the gradient is steep and has a fall of 931 feet per mile. In the western portion of the drainage, the fall averages 73 feet per mile, but near the mouth it is extremely low (ADEC 2004).

Ship Creek was placed on the Section 303(d) list in 1990 for non-attainment of the petroleum hydrocarbons, oils, and grease criteria. Petroleum products floating on the groundwater were believed to be moving toward Ship Creek and threatening the waterbody. Through monitoring, it was shown that the contaminants do not pose a threat to the creek, and it was re-listed to Category 2 in 2012.[9] However, Ship Creek was listed as impaired in 1992 for fecal coliform bacteria. A TMDL was created and approved by the EPA for Ship Creek in 2004, and Ship Creek was re-listed as a Category 4a water body from the Glenn Highway to its mouth.

[9] The Clean Water Act Section 305(b) requires that the quality of all waterbodies be characterized, and Section 303(d) requires that states list any waterbodies that do not meet water quality standards (known as polluted or impaired waters). Categories 1 and 2 in Alaska are “Waters for which there is enough information to determine that water quality standards are attained for all or some of their designated uses.” Category 3 is “Waters for which there is not enough information to determine their status.” Category 4 is “Waters that are impaired but have one of several different types of waterbody recovery plans.” Category 5 is “Waters that are impaired and do not yet have waterbody recovery plans. Also known as 303(d) list impaired waters.”

Chester Creek

Chester Creek and its associated green belt comprise the southern boundary of the study area. Chester Creek bisects the Anchorage Bowl, with approximately one-third of the city north of the creek and two-thirds south. The local indigenous people residing in this area are the Dena'ina, and it was popular for fishing before Anchorage was built in 1914. At that time, the watershed consisted of forest, peat bogs, glacial residue, and wetlands. In the 100 years since the City of Anchorage was founded, the growing population and development transformed the Chester Creek watershed into the most developed watershed in the MOA, with the highest human population (approximately 37 percent) of Anchorage's urban watersheds (Anchorage Waterways Council 2014).

The Chester Creek watershed extends 21 miles from the Chugach Mountains to the creek's mouth on Knik Arm at Westchester Lagoon. Its four subwatersheds and seven drainages consist of almost 38 river miles. The watershed consists of approximately 19,540 acres (30.5 square miles), with an estimated 12,600 acres contained within the MOA boundaries and the remaining portion within JBER and Chugach State Park. The headwaters are located in the Chugach Mountains, and the main stem flows northwest until it enters the MOA, where it turns west and drains into University Lake, then flows west and drains into Westchester Lagoon, and then into Cook Inlet. Elevations in the drainage range from 1,357 feet in the Chugach Mountains to sea level at Cook Inlet. The gradient of the drainage area is the same as the Ship Creek watershed (ADEC 2005).

Chester Creek was placed on the 303(d)/Category 5 list of Impaired Water Bodies in the State of Alaska in 1990 for non-attainment of the fecal coliform bacteria standard (ADEC 2008). In 1993, a water quality assessment identified several parameters of concern, but identified only fecal coliform as a limiting parameter. A TMDL was completed and approved by the EPA in 2005, and Chester Creek was relisted as a Category 4a impaired water body. The TMDL requires a monthly wasteload allocation for the MS4 since it is the only permitted source of fecal coliform and implementation of BMPs (ADEC 2005). The most recent water quality assessment in 2020 identifies 10.1 miles of Chester Creek as remaining impaired for all uses (e.g., drinking water, aquatic life, recreation) for fecal coliform bacteria. Chester Creek has been added to the Category 3 (i.e., waters for which there is not enough information to determine their status) list for dissolved oxygen and pH, resulting from non-construction related highway/road/bridge runoff (ADEC 2020b).

Groundwater

Groundwater flows toward Cook Inlet from recharge areas in the Chugach Mountains and upland areas of the coastal plain deposits. Much of the flow discharges directly into Cook Inlet. Along the way, groundwater is recharged by infiltration of streamflow in the upper reaches of major watersheds and to a lesser degree throughout Anchorage by infiltration of precipitation. Under natural conditions, the average discharge approximates the average recharge. By the mid-twentieth century, pumping from high-capacity wells in Anchorage lowered water levels more than 50 feet in the lower part of the Ship Creek basin, resulting in reduced Ship Creek streamflow. However, the shift to using Eklutna Lake to supply the city public water system has

reduced extraction and allowed some groundwater levels to recover to pre-development levels. See Section 2.18.2, Subsurface Conditions/Geology, Existing Conditions, for more information about groundwater in Anchorage.

Regionally, the quality of Anchorage-area groundwater is generally good (Glass 2001). Concentrations of arsenic, radon, manganese, iron, and dissolved solids can occur and are typically related to the geologic materials that make up aquifers and the chemical conditions within the aquifers (Glass 2001). Water quality can be influenced by chemical hazards, such as hydrocarbons entering the groundwater, or by environmental hazards such as earthquakes altering groundwater flow characteristics. In isolated areas within the study area, oil and fuel spills and waste-disposal sites have released benzene, xylenes, arsenic, chromium, fluorescein, and sulfate into the groundwater. Leachate from septic systems, a landfill, and other disposal sites have introduced coliform bacteria and higher concentrations of iron, manganese, dissolved organic carbon, and chloride in local groundwater (Moran and Galloway 2006).

Drinking Water

Most residential housing and businesses within the study area are connected to the public water system, which is sourced primarily by waters originating at Eklutna Lake. One community water system is sourced from groundwater and protected by drinking water protection area within the study area, located adjacent to the Northway Mall and serving the Penland Park mobile home park. More information about subsurface conditions is provided in Section 2.18, Subsurface Conditions/Geology.

2.10 Wetlands

2.10.1 Regulatory Environment

The U.S. Army Corps of Engineers' (USACE) responsibility to regulate discharges of dredged and/or fill material in wetlands includes wetlands in the MOA. There are two types of permits the USACE issues under Section 404 within the MOA: Individual and Nationwide. Prior to April 30, 2021, there had been a third process where the MOA had been authorized by the USACE to issue general permits for wetland fill projects in C-designated wetlands. The regional general permit was not reauthorized, and all development located within the MOA must now go through the USACE for authorization.

Individual permits are issued following a full public interest review and must comply with both the public interest and CWA 404(b)(11) guidelines. The USACE may only permit the least environmentally damaging practicable alternative. Nationwide permits authorize specific activities that are typically minor in scope and must result in no more than minimal adverse impacts. Any construction project that impacts designated wetlands would need to obtain the applicable permit.

2.10.2 Existing Conditions

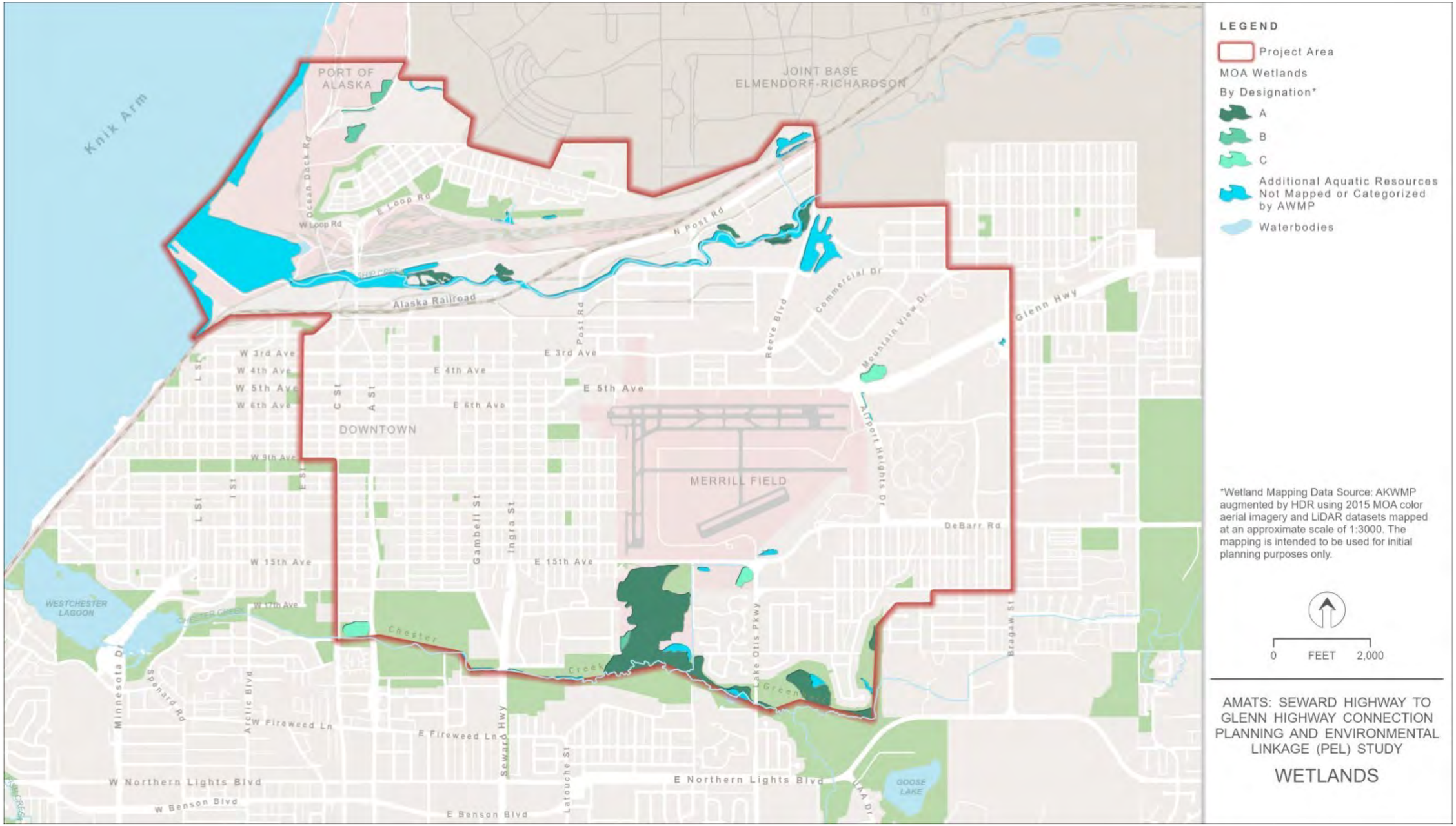
The MOA has an *Anchorage Wetlands Management Plan* (MOA 2014c), which maps and classifies the functions and values of wetland areas within the study area. The *Anchorage Wetlands Management Plan* (MOA 2014c) designates wetlands as "A," "B," or "C," which are described as follows:

- "A" Wetlands have the highest wetland resource values, and are considered most valuable in an undisturbed state. They are generally not to be developed, cleared, or otherwise altered, although wetland fills could occur for actions that enhance or restore a site's functions and values.
- "B" Wetlands are typically a mixture of higher and lower values and functions. The intent of the "B" designation is to conserve and maintain a site's key functions by limiting and minimizing fill and development to less critical zones while retaining higher value ones.
- "C" Wetlands are the lowest value wetlands within the MOA. While some may have moderate values, they generally have reduced or minimal functions and/or ecological values. These are suitable for development, and are generally managed to support community expansion and infilling.

Wetlands occur in discrete locations within the study area, most notably along the Ship Creek and Chester Creek waterways. Any construction project actions that fill within these boundaries would require a permit. Projects would be subject to setbacks from wetland areas and streams (ranging from 65 to 100 feet), as described in the *Anchorage Wetlands Management Plan* and enforced through municipal code.

Additional information is presented in Appendix D, *Wetlands Map.*

Figure 18. Wetlands in the Study Area



2.11 Water Bodies and Wildlife

2.11.1 Regulatory Environment

A number of federal, state, and local agencies have regulatory and permitting authority over aspects of the ecosystem environment, including the U.S. Fish and Wildlife (USFWS) regarding birds, fish, wildlife, and endangered species; National Marine Fisheries (NMFS) and Alaska Department of Fish and Game (ADF&G) for fish and fish habitat, and USACE for wetlands and waterbodies.

2.11.2 Existing Conditions

Waterbodies

As discussed in Section 2.9.2, Water Quality, Existing Conditions, major streams in the study area are Chester and Ship Creeks. These creeks flow westward and discharge into Knik Arm. The Seward Highway currently crosses Chester Creek. Smaller streams include the North Fork Chester Creek and an unnamed fork of Chester Creek at Orca Street.

Chester Creek. The Chester Creek watershed extends from the Chugach Mountains west to Knik Arm, and drains an area of approximately 27 square miles. Terrestrial habitats, stream channels, and adjacent riparian areas in the uppermost portion of the watershed (east of Muldoon Road) are in a natural, relatively undisturbed condition. This portion of the watershed, upstream of the study area, provides high-quality fish and wildlife habitat. More than half the watershed (including the entire study area) is located in urban Anchorage and has been negatively influenced by development. Much of the study area lies within the urban Chester Creek watershed. Specifically, the study area encompasses portions of lower Chester Creek, lower Middle Fork, lower South Fork, and the entire North Fork channel. The majority of flow contribution into the study area originates from storm water drains, springs, and drainage from wetlands (HDR 1993).

Ship Creek. Ship Creek flows for nearly 30 miles from its headwaters at Ship Lake in Chugach State Park and drains approximately 123 square miles. Most of the watershed transects state park and military land. Upstream from the study area, Ship Creek flows naturally for more than 20 miles through its relatively undisturbed upper drainage before its flow is interrupted by a dam on JBER. Lower Ship Creek flows through urban Anchorage's industrial areas and empties into Cook Inlet near the POA. Habitat in the lower drainage has been adversely affected by human development. The study area encompasses approximately 2 miles of lower Ship Creek.

Mammals

A total of 52 species of mammals are found in the Anchorage area (entire MOA, ranging from Knik River to Portage and including Chugach State Park; ADF&G 1999). Portions of the study area are regularly used by moose and occasionally by brown and black bear, coyote, fox, and other mammals. Feral rabbits are the only non-native terrestrial mammal found in the Anchorage area (ADF&G 1999). Many mammals that typically occur in the Anchorage Bowl use

the Chester Creek greenbelt corridor (USACE 2004). Because of resource agency interest, moose, black bear, and brown bear are the primary focus of this terrestrial mammal discussion.

Terrestrial mammal habitat in the study area is limited largely to the Chester and Ship Creek greenbelts, and small patches of forested parks and undeveloped land. The terrestrial environment in the Anchorage area has been significantly altered by development activities. Much of the native vegetation has been cleared, paved, and/or replaced by non-native plants. Terrestrial habitats within the study area consist of upland forest, shrub communities, and herbaceous meadows and marshes; these habitats are important to terrestrial mammal species residing in the Anchorage Bowl. Urban vegetation in the study area also provides habitat for moose (MOA 2007b).

Moose. Moose are year-round residents of the Anchorage Bowl, ranging from sea level to an elevation of 3,500 feet. Currently, the Anchorage Bowl supports approximately 200 to 300 moose during summer and 700 to 1,000 moose during winter, when moose from JBER, Chugach State Park, and Far North Bicentennial Park move into more developed areas (Sinnott 2004, 2010). The Anchorage Bowl is considered important general moose habitat (MOA 2007; Sinnott 2004, 2010). Moose in Anchorage concentrate their activities in greenbelts; parks; riparian, forested areas; and low-density subdivisions (Sinnott 2004, 2010).

The Chester Creek greenbelt is a major link between the UMED District and Far North Bicentennial Park on the eastern side to moose habitat on the western side, along the coast (including Westchester Lagoon, Earthquake Park, and natural areas and wetlands surrounding TSAIA). The Chester Creek greenbelt and associated parks and undeveloped areas provide food, water, and cover as well as a movement corridor with relatively few road crossings (Sinnott 2004, 2010).

Ship Creek is another important corridor that links large tracts of moose habitat on JBER in the Ship Creek drainage with the Ship Creek greenbelt corridor and into the northern part of the study area, where moose tend to disperse through the industrial area into Mountain View, Airport Heights, and Downtown (Sinnott 2004, 2010).

The APD collision database reported an average of 106 moose killed each year in vehicle collisions in the study area between 2005 and 2009 (APD 2009). Many moose that are hit by vehicles are not reported, or the moose walks away, severely injured, and is euthanized or dies days or weeks later. Those that are not euthanized may not be found until the following spring. Therefore, the actual number of moose-vehicle collisions in the study area may be higher (Sinnott 2004, 2010)

Bears (Black and Brown). The Anchorage Bowl supports 40 to 50 black bears (MOA 2007b). Important black bear habitat is located across the sub-alpine and upper wooded fringes of the Chugach Front Range and at lower elevations in forested habitat on the coastal plains, primarily along greenbelts and in larger parks (MOA 2007b). Black bears spend at least part of the summer in or adjacent to residential areas in the Anchorage Bowl (ADF&G 1999). The Chester Creek greenbelt provides a travel corridor for black bears moving from Chugach State Park to

the coast. ADF&G radio collaring data have documented black bears occasionally traveling through the study area.

There are typically five to ten resident brown bears in the Anchorage Bowl. Habitat use is concentrated along the Chugach Front Range foothills, and along the upper riparian corridors of the major salmon streams. The Chester Creek greenbelt is currently not high value brown bear habitat and is only used occasionally (Farley 2010).

Furbearers and Small Mammals. A variety of furbearers are likely present in the study area, including coyote, snowshoe hare, red fox, and least weasel. Other small mammals in the study area may include beaver, porcupine, red squirrel, northern flying squirrel, little brown bat, mice, voles, and shrews (ADF&G 1999).

Birds

Approximately 250 bird species have been recorded in the Anchorage area, of which 155 species occur annually (122 breeders and 33 regular migrants; Myers n.d.). The study area provides important nesting, brood rearing, molting, winter, and migration habitat for many bird species. In Alaska, all native birds except grouse and ptarmigan are protected by the Migratory Bird Treaty Act and EO 13186.

Amphibians

The only amphibian that occurs in the Anchorage area is the wood frog. Wood frogs breed anywhere that has standing water for at least part of summer, including ponds, bogs, marshes, temporary pools, tire tracks, or roadside ditches (ADF&G 2008). Wood frogs may occur in greenbelts, ponds, and marshes in the study area (ADF&G 2009).

Aquatics (Fish and Macroinvertebrates)

Chester Creek. Surrounding urban development has caused bank damage; influenced the creek's substrate, instream cover, channel morphology, stream processes, and riparian functions; decreased habitat variability; and therefore has directly impacted aquatic and terrestrial communities in Chester Creek. For example, elevated sediment loads resulting from changes to Chester Creek's flow regime have reduced the availability of suitable spawning substrates. These factors have degraded habitat and water quality for fish and invertebrates and contributed to reduced Chester Creek salmon stocks (USACE 2004). Development has also led to the placement of instream structures (e.g., culverts or pipes at road crossings, dams). If designed improperly, in-stream structures can physically block or limit fish movement as a result of changing flow regimes. In-stream structures that restrict fish movement were identified as the primary reason for the decline of Chester Creek's anadromous fish populations (USACE 2004). One of the nine restrictive culverts in Chester Creek is located downstream of the study area, and five are located within the study area (O'Doherty 2009).

Although the quality of aquatic habitat has been negatively impacted by development, urban Chester Creek provides important habitat for anadromous and resident fish. A small portion of the study area is considered optimal for fish (9 percent) and invertebrates (25 percent). It should be noted that only 20 percent of Chester Creek's channel in the study area is relatively

unmodified. It is important to note that the only habitat rated as optimal for fish in urban Chester Creek is located within the study area.

Chester Creek provides important habitat for anadromous pink salmon and coho salmon; anadromous and resident Dolly Varden char; and resident rainbow trout, slimy sculpin, and three-spine stickleback. Rainbow trout and Dolly Varden were recently identified as the most abundant species in lower and South Fork Chester Creek.

Pink salmon spawn in lower Chester Creek and typically do not migrate into the study area (Bosch 2009). While rainbow trout typically spawn lower in the drainage, they occur throughout the drainage (Bosch 2009). Coho salmon and Dolly Varden char spawn and rear throughout the entire length of Chester Creek; juveniles also use the North Fork Chester Creek year-round. The Middle Fork Chester Creek is spring-fed and receives a nearly constant flow during winter months, and therefore has the potential to provide important overwintering habitat. However, the presence of multiple fish passage barriers (culverts, piped sections) currently precludes use of the Middle Fork by anadromous fish.

Historically, Chester Creek supported relatively large returns of coho salmon and anadromous Dolly Varden char, and provided viable spawning habitat throughout its tributaries (USACE 2004). Local knowledge indicates that Chinook salmon historically spawned in Chester Creek and that pink salmon spawned farther upstream in the drainage. Populations of anadromous fish species initially declined as a result of a dam constructed near the mouth in 1971, and continued to decline in response to other migration barriers as well as degraded habitat and water quality.

Invertebrate samples collected from Chester Creek upstream of urban influence were composed of a fairly even distribution of the five major invertebrate groups, which typically indicates healthy biotic conditions (Glass and Ourso 2006). Invertebrate samples collected just downstream of the study area were overwhelmingly dominated by the non-insect group (primarily worms; Glass and Ourso 2006), which typically indicates decreased stream health. Section 2.9, Water Quality, discusses additional water quality information for Chester Creek.

Ship Creek. The study area encompasses approximately 2 miles of lower Ship Creek. Habitat quality in lower Ship Creek has been negatively affected by adjacent urban and industrial developments, including instream structures that interrupt its natural flow and limit fish migration. Despite these impacts, Ship Creek does provide areas rated as optimal for fish and invertebrates.

Ship Creek provides roughly 10 miles of habitat for anadromous coho, Chinook, chum, and pink salmon throughout its lower drainage, including within the study area (Giefer and Blossom 2021), as well as resident Dolly Varden char and rainbow trout. The ADF&G Ship Creek hatchery operations enhance the Chinook and coho salmon run, and to a lesser degree the pink and chum salmon runs (KABATA 2007).

Essential Fish Habitat

The study area includes waters considered Essential Fish Habitat (EFH) for all five species of Pacific salmon. Specifically, Ship Creek is designated EFH for Chinook, coho, pink, and chum salmon. Chester Creek is designated EFH for coho, pink, and sockeye salmon. The nearby marine waters of Cook Inlet are also designated as EFH for all five species of Pacific salmon and marine species (NOAA n.d.). Any construction project that may impact stream habitat would require an EFH assessment to be completed as part of that project's environmental review process. The EFH assessment will present information about that project, the affected fish habitat, an analysis of impacts to the habitat, documentation of the agency consultation process, and an agency determination on the effect of that project on EFH.

Threatened and Endangered Species

No federally listed threatened and endangered plant species occur in the study area. Currently, the USFWS and National Oceanic and Atmospheric Administration (NOAA) Fisheries indicate no threatened or endangered species listed under the Endangered Species Act occur in the study area.

However, the Cook Inlet beluga whale (CIBW), which was listed as an endangered species on October 22, 2008, by NOAA has designated critical habitat along the coastal waters adjacent to the study area (the immediate area of the POA is in the critical habitat exclusion area). While the study area map encircles adjacent marine waters, any resulting construction project would likely not impact marine waters and therefore would not impact CIBW.

The State of Alaska no longer maintains a list of species of special concern.

2.12 Floodplains

2.12.1 Regulatory Environment

Federal Emergency Management. In response to escalating taxpayer costs for flood disaster relief, Congress established the National Flood Insurance Program (NFIP). This program is a voluntary mitigation program administered by the Federal Emergency Management Agency (FEMA). Under this program, the federal government makes flood insurance available in those communities that practice sound floodplain management. In the 1980s, FEMA performed location hydrologic and hydraulic studies to identify and map special flood hazard areas within communities. The FEMA studies resulted in the development of flood insurance rate maps that show the floodplain for each river, lake, or other surface water resource that was studied. FEMA has mapped flood zones for portions of Ship and Chester Creeks within the study area.

As part of its participation in the NFIP program, the MOA is required to manage its floodplains to meet or exceed FEMA standards. The MOA requires a Flood Hazard Permit for all new construction within a floodplain. Structures must be anchored against movement by floodwaters, constructed with flood resistant materials, and elevated so that living space and mechanical systems are at least 1 foot above the 100-year flood elevation. Grading and fill activities must also obtain a permit.

Executive Order 11988. In 1977, the President enacted EO 11988, which directs federal agencies to reduce flood losses and losses to floodplain functions, avoid actions within or adversely affecting floodplains if possible, mitigate losses if avoidance is not practicable, and establish a process for evaluating flood hazards. Flood hazards are assessed using the 100-year base flood standard of the NFIP. Federal agencies are responsible for implementing EO 11988 through their own regulations, and for complying with NFIP regulations.

Federal Highway Regulations. Based on EO 11988, the FHWA adopted regulations governing the development of projects that could have impacts on floodplains (23 CFR 650A). According to Section 115, *Design Standards*, the design of encroachments must be consistent with standards established by FEMA, state, and local governmental agencies for the administration of the NFIP where a regulatory floodway has been designated. The regulation also requires that the FHWA will not approve a significant encroachment unless it finds that the proposed significant encroachment is the only practicable alternative.

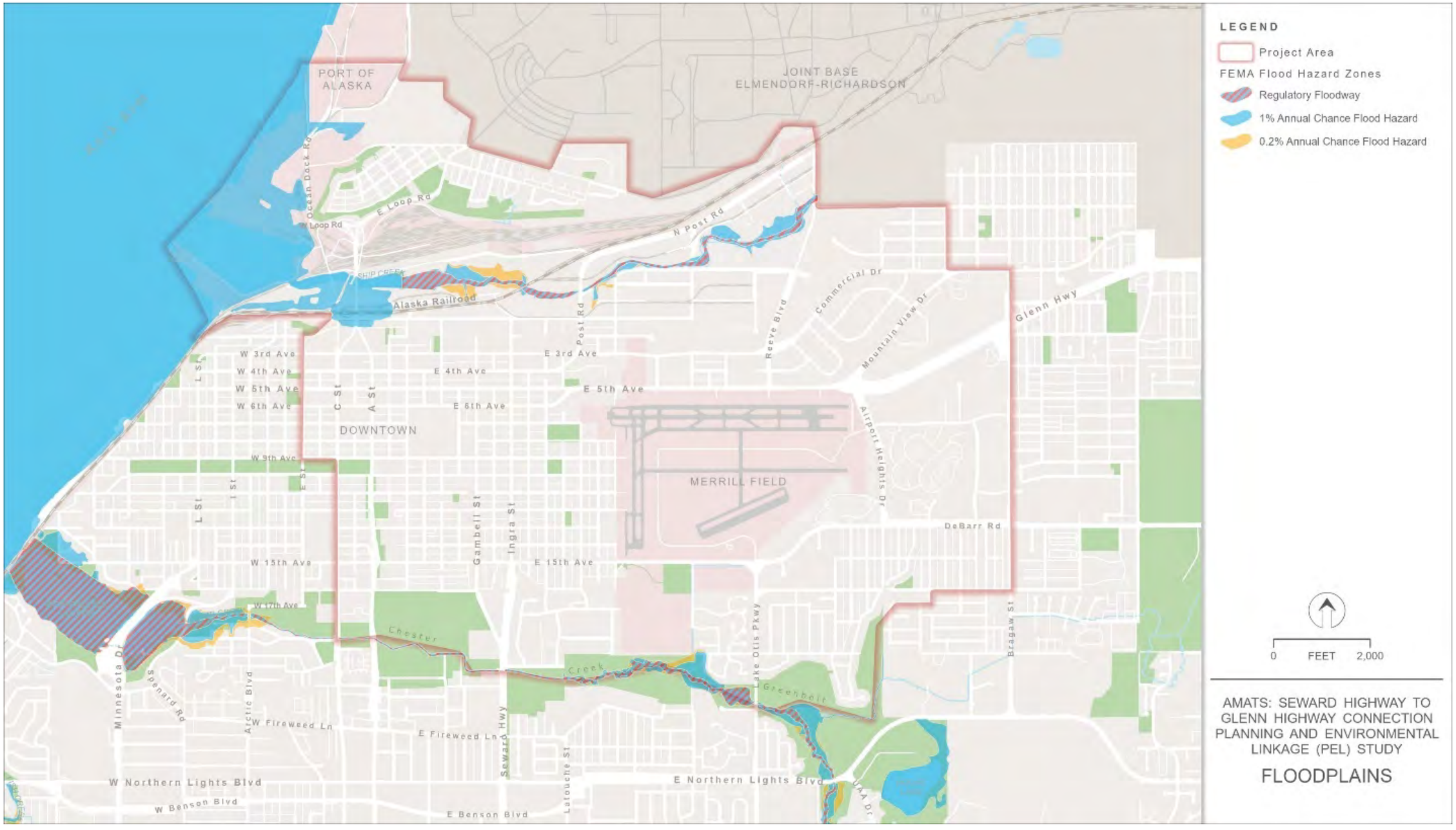
2.12.2 Existing Conditions

Floodplains are land areas of low-lying ground adjacent to a waterbody that are subject to inundation by floodwaters during times of heavy rain, snowmelt, or heavy tides (for coastal areas). They can act as reservoirs that temporarily store waters, slowing down their speed, and reduce the impact of erosion downstream. They typically are important habitats for fish, birds, and wildlife. Managing development or encroachments to the floodplains reduces the impacts of flooding on the built environment, sustains healthy ecosystems, and supports local economic and recreation opportunities. This section describes the floodplain environment within the study area.

The MOA has close to 10,000 acres of floodplain and more than 3,500 individual parcels that are partially or entirely located within the floodplain (MOA n.d.). These include large river systems outside the Anchorage Bowl such as Eagle River, Glacier Creek, Twentymile River, Portage Creek, and Placer River, but also includes large and small stream systems within the Anchorage Bowl, small lakes subject to flooding, and coastal areas that may experience flooding associated with extreme high tides. Rainfall runoff and snowmelt from the Chugach Mountains contribute substantially to flooding risk, and ongoing development within the MOA continues to displace natural areas that have historically functioned as flood storage.

Location hydrologic and hydraulic studies within the study area identify flood hazard areas and regulated floodways in both the Ship Creek and Chester Creek watersheds, as shown in Figure 17. Alternatives that require construction within these zones would require a flood hazard permit from the MOA, and would comply with EO 11988 and FHWA regulations.

Figure 19. Floodplains in the Study Area



Chester Creek

The affected area includes the Chester Creek floodplains between C Street on the west and Lake Otis Parkway on the east (see Figure 17).

Chester Creek is channelized between C Street and approximately Karluk Street (extended). In this stretch, the creek flows linearly under the A and C Street bridges until it bends sharply as it flows below a pedestrian bridge located at approximately Cordova Street. This linear stretch of the creek contains the floodway, 100-year floodplain, and 500-year floodplain in a narrow channel. East of approximately Karluk Street (extended), Chester Creek becomes more sinuous, flowing in a natural, unaltered channel. This sinuous section of Chester Creek has much broader 100- and 500-year flood zones that spread out considerably beyond the floodway.

Inundation of the floodplain is generally associated with spring snowmelt, winter thaw events, or large rainstorms. The engineering of the culverts and channelization of the creek maintain the creek within the mapped floodplain zones, and no severe flooding problems have been identified with the existing creek in the study area.

Development in the mapped floodplains is generally limited to park and open-space land uses, the Chester Creek trail, and a number of private residences. Because of the continuous greenbelt park and bicycle trail through the study area, the Chester Creek floodplain supports recreational and open-space values. While all segments of the creek support fish and wildlife values, the sinuous, natural creek channel and its adjacent floodplain from approximately Karluk Street to Lake Otis Parkway support high value fish and wildlife habitat and are contiguous with a large wetland complex that supports beneficial floodplain values associated with fish, wildlife, plants, open space, natural moderation of floods, water quality maintenance, and groundwater recharge.

Ship Creek

Within the study area, Ship Creek is mapped as base floodplain Zone A (flood hazard area, no base flood elevation determined) up to the first dam. Above the first Ship Creek dam, the flood hazard designation changes to Zone AE (regulated floodway; base flood elevation of 20 feet) and consists of riverine flooding from flow in Ship Creek (FEMA 2009). The floodway is mapped along the Ship Creek channel until the limit of the detailed study at North Reeve Boulevard (base flood elevation of 74 feet). The floodway is surrounded on both sides by Zone X, which are areas determined to be outside the 500-year (0.2 percent chance annual flood) floodplain.

Inundation of the Ship Creek floodplain is generally associated with spring snowmelt or large precipitation events. Flooding adjacent to Ship Creek could have a long duration because the drainage basin is large and primarily within the Chugach Mountains. Precipitation events in the mountains can last for some time and take a long period to drain from the basin, causing lengthy floodplain inundation.

A Flood Hazard Permit from MOA's Department of Project Management and Engineering would be required for any construction within a floodplain.

2.13 Cultural Resources and Historic Properties

2.13.1 Regulatory Environment

If a proposed project requires federal permitting, uses federal funds, or occurs on federal lands, it will qualify as a federal undertaking subject to compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations found in 36 CFR 800. Section 106 requires project proponents to consider the effects of their undertakings on historic properties (36 CFR 800.1[a]). Historic properties are 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]).

2.13.2 Existing Conditions

Based on a review of the Alaska Heritage Resources Survey (AHRS) database, 936 cultural resources are located in the study area. Of these cultural resources, ten have been formally listed on the NRHP and one has been nominated to the NRHP (see Table 13). Two of these NRHP-eligible properties are historic districts: the Government Hill Federal Housing Historic District and the Block 13 FHA Army Housing Historic District. One NRHP-listed property is the Anchorage Cemetery, located between 6th and 9th Avenues and Fairbanks and Cordova Streets in Downtown. In addition, 125 historic properties in the study area have been determined eligible for the NRHP but not formally listed. Of these properties, 116 are buildings, 5 are historic districts, 3 are sites, and 1 is a structure. Further information is contained in Appendix E, *Cultural Resources Map and Technical Memorandum*.

Table 13. NRHP Eligible or Listed Properties in the Study Area

AHRS Number	Property Name	Nature of Property	NRHP Status
ANC-00048	Civil Works Residential Dwelling, 786 Delaney Street	Building	Listed in NRHP
ANC-00130	Wendler Building	Building	Listed in NRHP
ANC-00244	Pioneer School House	Building	Listed in NRHP
ANC-00306	Wireless Station	Building	Listed in NRHP
ANC-00359	Loussac-Sogn Building	Building	Listed in NRHP
ANC-00766	Anchorage Cemetery	Site	Listed in NRHP
ANC-01205	Civil Works Residential Dwelling (800 Delaney Street)	Building	Listed in NRHP
ANC-01422	McKinley Tower Apartments	Building	Listed in NRHP
ANC-02108	Government Hill Federal Housing Historic District	District	Nomination sent to Keeper of NRHP
ANC-02639	Greater Friendship Baptist Church	Site	Listed in NRHP
ANC-04056	Block 13 FHA Army Housing Historic District	District	Listed in NRHP

2.14 Hazardous Waste

2.14.1 Regulatory Setting

Investigation and cleanup of hazardous waste and contaminated sites are regulated by the EPA and ADEC. Activities involving disturbance of soil and water at contaminated sites are regulated under the AAC, including 18 AAC 60 (landfills), 18 AAC 78 (underground storage tank [UST] sites), and 18 AAC 75 (UST, leaking underground storage tank [LUST], and contaminated sites); under the CFR, including 40 CFR 260–280; and under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) at 42 USC 103.

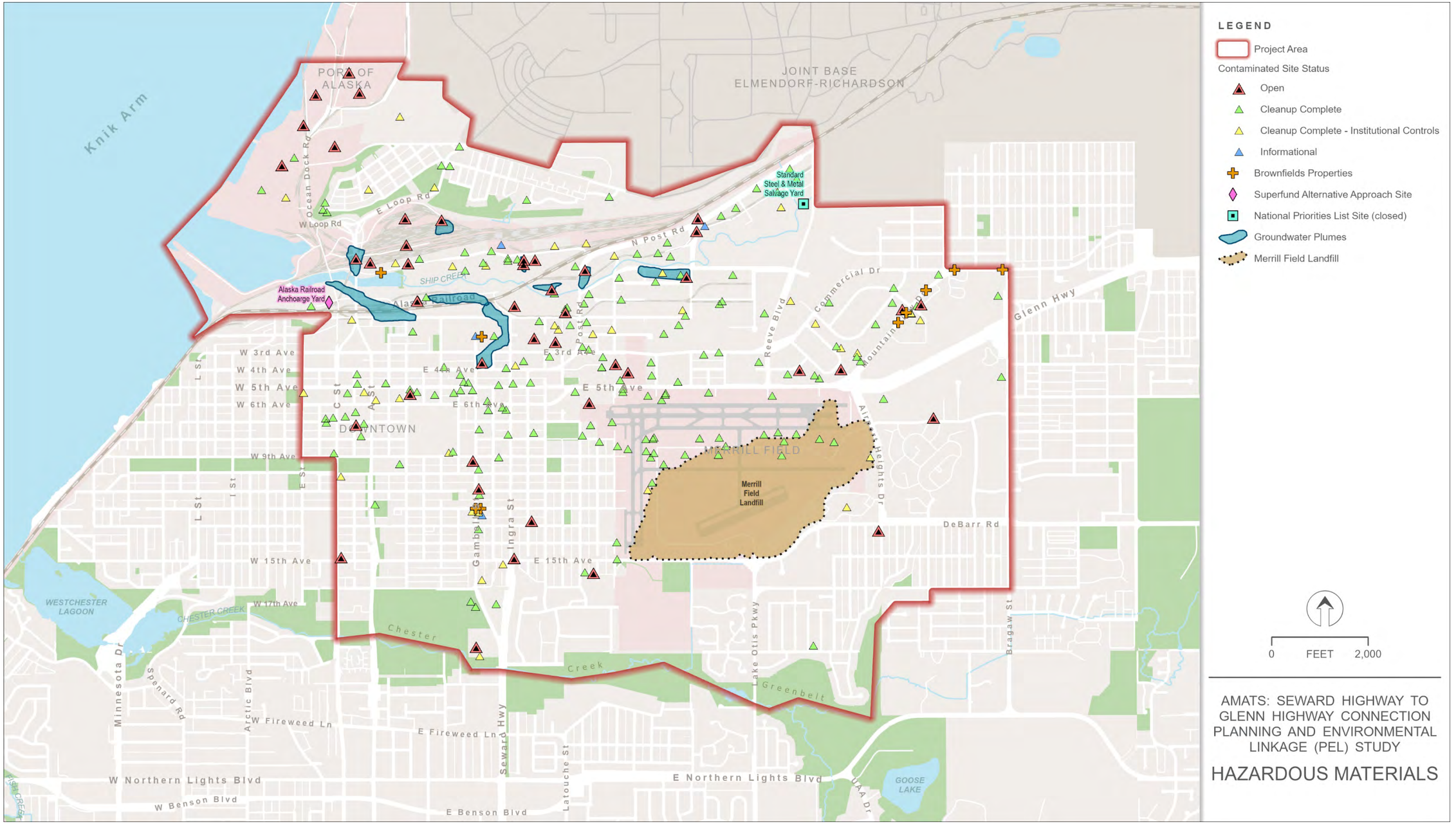
Many contaminated sites exist nationally due to hazardous materials being improperly managed and disposed of. In 1920, Congress established CERCLA. This act is informally called the Superfund. It allows EPA to clean up contaminated sites, and forces the parties responsible for the contamination to either perform cleanups or reimburse the government for EPA-led cleanup work.

2.14.2 Existing Conditions

Active Contaminated Sites/LUST Sites

A review of the ADEC Contaminated Sites Database (ADEC 2021b) in July and August 2021 indicates 39 open contaminated sites occur within the study area (see Figure 18). Additional information is available in Appendix F, *Hazardous Waste Sites Map and Technical Memorandum*.

Figure 20: Hazardous Materials in the Study Area



Groundwater Plumes

A groundwater plume refers to areas of groundwater that contain pollution. According to the ADEC Contaminated Sites Database (ADEC 2021b), eight groundwater plumes occur within the study area (see Figure 18). Additional information is available in Appendix F, *Hazardous Waste Sites Map and Technical Memorandum*.

Superfund Sites

According to the EPA National Priorities List (NPL) and Superfund Alternative Approach Sites, two sites in the study area are currently on, deleted from, or proposed to the Superfund's NPL (EPA 2021b) or are being addressed under the Superfund Alternative Approach (EPA 2021c; see Table 14). A summary of the Alaska Railroad Anchorage Yard, an active Superfund Alternative Approach site, is below.

Table 14. Superfund Sites in the Study Area

Name	Owner	Zip Code	Status
Alaska Railroad Anchorage Yard	ARRC	99501	Not listed on the NLP, but is considered to be a NPL-caliber site and is being addressed through the Superfund Alternative Approach
Standard Steel & Metals Salvage Yard (USACE)	ARRC	99501	Taken off the NPL in 2002

Source: EPA 2021d, 2021e

Brownfield Sites

A brownfield site is a former industrial or commercial site whose future use is affected by real or perceived environmental contamination. The EPA's Brownfields Program provides grants and technical assistance to communities, states, tribes, and others to assess, clean up, and sustainably reuse contaminated properties.

According to the EPA Cleanups in My Community Database (EPA 2021f), 24 brownfield properties have been identified in Anchorage. Of those properties, nine are located within the study area. These sites are summarized in Table 15.

Table 15. Brownfield Properties in the Study Area

Name	Owner	Contaminants Found	Media Affected
Knik Arm Power Plant	ARRC	N/A	N/A
Wilhour and Warner Trust Properties	Anchorage Community Land Trust	N/A	N/A
Former Alaska Native Service Hospital	MOA	VOCs	Groundwater
3224 Mountain View Drive	MOA	PAHs, PCBs, petroleum products, VOCs	Groundwater, soil
Johns Motel and RV Park	John A. Leonard	N/A	N/A

Name	Owner	Contaminants Found	Media Affected
3130, 3142, and 3150 Mountain View Drive	Thomas Carey	Asbestos, lead, PAHs, PCBs, petroleum products, VOCs	Soil, surface water, unknown
Surf Laundry	Ami Pyune	Asbestos, lead, mercury, PCBs, VOCs, other contaminants, other metals	Building materials, groundwater, soil
Former Fairview Electrical Substation	Municipal Light & Power	Arsenic, cadmium, chromium, lead, mercury, PCBs, SVOCs, VOCs, petroleum products, other metals	Soil
Fairview Gambell Corridor & Beans Café, Anchorage	Unknown	Chromium, copper, nickel, PCBs, petroleum products, other contaminants, other metals	Groundwater, soil

Source: EPA 2021
Note: N/A = not available; PAHs = polycyclic aromatic hydrocarbons; PCB = polychlorinated biphenyl; SVOCs = semi-volatile organic compounds

Merrill Field Landfill

The Merrill Field Landfill is a closed, unlined landfill located south of East 5th Avenue and north of East 15th Avenue (DeBarr Road), between Orca Street and Airport Heights Drive. The landfill covers approximately 200 acres, and is filled with soil and refuse to an average depth of 30 feet (Brunett 1990).

The Merrill Field Landfill began operation in the late 1930s as an unsupervised garbage dump. It was originally filled by pushing refuse off a bluff near the eastern end of the current runway. Most of the refuse was burned (if combustible) and bulldozed into the former creek bed. After the City of Anchorage took over management of the landfill in 1957, the refuse was typically covered with soil at regular intervals. Frozen stockpiles of soil in winter often prevented the covering of waste with soil, and snow was used as a substitute (Hart Crowser 1988). Operations continued at the Merrill Field Landfill until 1987, when it was capped and closed. It is estimated that approximately 2 feet of cover material was added to the landfill when it was capped. This thickness has likely changed over time as settlement of the debris created uneven surface topography. Repairs to the surface likely included adding fill or regrading the existing material to level the site. The current thickness of the cap is therefore likely variable.

It is estimated that the Merrill Field Landfill contains more than 3 million tons of refuse and 1.7 million tons of cover soil, nearly half of which was deposited between 1982 and 1987 (Nelson 1982). Approximately 70 percent of the landfill contents were deposited after 1977 (Hart Crowser 1988). The active development areas within the landfill were initially located near the eastern end of Merrill Field Drive and, over time, generally moved toward the southwest.

In the early 1970s, the north fork of Chester Creek was diverted through a corrugated pipe that is now buried beneath the landfill, which terminated on the southern side of East 15th Avenue

immediately west of Sitka Street. This pipe was later decommissioned and replaced by the current pipe, generally located along the southeastern perimeter of the landfill mass.

Merrill Field Airport and several commercial buildings currently occupy the site. The landfill is bounded to the north and east by commercial properties, and to the west and south by residences, Sitka Street Park, and associated Merrill Field open space. A comprehensive water quality monitoring program began at the site in 1988 (SLR Alaska 2008).

Landfill Leachate

Leachate is the product of water percolating through refuse contained by a landfill. After coming in contact with landfill materials, the contaminated water can potentially impact surface and groundwater, as well as accelerate corrosion of certain construction materials. Because the Merrill Field Landfill was not constructed using a geotextile liner and leachate collection system, leachate is in direct contact with a shallow, unconfined aquifer and flows either northwest or southwest.

Methane Gas

One of several byproducts of landfill decomposition is methane gas. Explosions caused by indoor methane accumulation are the primary concern for landfill methane production. Long-term exposure to methane can accelerate corrosion of some materials.

Although the Merrill Field Landfill was closed and capped more than three decades ago, methane production at the Merrill Field Landfill remains relatively high. A methane extraction system was installed in 1991–1992 to intercept methane gas migration into structures along Merrill Field Drive. The MOA monitors gas probes installed around the perimeter of the landfill mass on a quarterly basis. The highest concentrations of methane are typically measured near the northwestern edge of the landfill; however, high readings have been measured along its southeastern edge. Methane gas is also monitored at several buildings located near the Merrill Field Landfill. Because the Merrill Field Landfill was capped with gravel, methane is passively emitted into the air, reducing the amount of methane that would otherwise accumulate and migrate to areas adjacent to the landfill.

Additional information is presented in Appendix F, *Hazardous Waste Sites Map and Technical Memorandum*.

2.15 Visual

2.15.1 Regulatory Environment

Visual assessments can tie into socioeconomic impacts associated with recreation, neighborhood cohesion, and land use. Visual assessments also contribute to the impact assessments on protected resources such as cultural or historic resources, parklands, and wildlife refuges. The FHWA published guidance on how to conduct visual impact assessments of highway projects for decision making under NEPA (FHWA 2015). A visual study includes views both *from* and *of* a project. Analysis would also include an evaluation of measures to avoid, minimize, or mitigate adverse visual impacts. For any construction project that is

implemented from this study, the level of visual impact assessment would be determined by assessing environmental compatibility (i.e., would the project result in a noticeable change) and viewer sensitivity (i.e., how sensitive are viewer groups to the potential visual changes). The assessment may range from a qualitative evaluation to a more detailed inventory of visual characteristics and potential changes.

2.15.2 Existing Conditions

People experience their environment primarily through visual cues, so visual perception is an important topic when analyzing environmental quality. Highways can be highly visible facilities that affect the visual character of surrounding landscapes, positively or negatively. Highway project construction may remove vegetation screening, recontour surrounding lands, or introduce visual contrasts or motions that were not previously present. Public concern over adverse visual impacts can be a major source of project opposition.

Anchorage is located in Southcentral Alaska, bounded by Knik Arm to the north, Turnagain Arm to the south, Cook Inlet to the west, and the Chugach Mountains to the east. From within the study area, the Chugach Mountains are visible from many areas, although usually somewhat obstructed. A few views are afforded of Cook Inlet, Mount Susitna, and the Alaska Range in the background. Turnagain Arm is not visible from the study area.

The major viewer groups are roadway users and roadway viewers. Roadway users include drivers, passengers, bicyclists, and pedestrians. Roadway users have views of the roadway and views from the roadway of the surrounding landscape. Roadway viewers include pedestrians, residents, recreational users, businesses, visitors, and others. Roadway viewers have views of the roadway in a landscape setting.

The following description summarizes the key landscape units in the study area, characterized as neighborhood, creek/greenbelt, commercial, Downtown, industrial, airport, and hospital (HDR 2010).

Neighborhood Landscape Units

Neighborhoods within the study area include Fairview, Government Hill, Mountain View, and Airport Heights. The visual character of these areas is defined by single-family, duplex, and multi-family dwellings, located on small parcels on a structured street grid. Development in these neighborhoods typically ranges from 1940s wood-framed dwellings to 1980s construction, and includes elementary and middle schools. Development usually includes lawns, some deciduous and evergreen trees and shrubs, and few sidewalks. These urban neighborhoods are bounded by arterial streets. Buildings, trees, or fences generally block most views of the Chugach Mountains to the east and of the arterial adjacent roads.

Individual neighborhoods have some distinctive features worth noting:

- **Fairview:** Divided by Ingra and Gambell Streets, which serve a high volume of vehicles, and by a commercial area along these streets; no visual buffers are located between these transportation facilities and the neighborhood. The original grid system has been

blocked off strategically for traffic calming throughout the neighborhood, which shortens views. A landscaped trail provides somewhat of a buffer between 15th Avenue and the neighborhood. Some entrances to the neighborhood are heralded by distinctive signs and landscaping. Fairview includes several public parks, Fairview Elementary School, and the Fairview Recreation Center.

- **Government Hill:** Located on a bluff above the Ship Creek valley. Government Hill is the oldest neighborhood in Anchorage. Views of the industrial area to the south and the Chugach Mountains to the east are largely screened by buildings and vegetation in the western portion of Government Hill. In the eastern portion of Government Hill along the bluff, views to the south take in the industrial area, the bluff to the south, and Downtown; long-distance views are of the Chugach Mountains.
- **Airport Heights:** Located south of Merrill Field Airport and Alaska Regional Hospital, and composed primarily of single-family homes on a gridded street network. It includes the Eastridge condominium development and the Penland Park trailer park. Views of the industrial area to the south and the Chugach Mountains to the east are largely screened by buildings and vegetation. Views of 15th Avenue and Lake Otis Parkway are largely screened by vegetation. Views of Merrill Field Airport open space are screened by vegetation and topography.
- **Mountain View/Russian Jack:** Divided by the Glenn Highway, and partially contained within the study area. Views from the neighborhoods are of Glenn Highway traffic and the neighborhood. North of the highway, the neighborhood is at a slightly higher elevation and appears to be a little more open where the freeway may be observed, and there are a few glimpses of the Chugach Mountains.

Viewers in the neighborhood landscape units consist primarily of residents, but also encompass travelers on the roads, recreationalists, and others. Viewers in the neighborhood landscape unit may be sensitive to view quality and changes to the visual environment because they have time to observe the views, and because they are likely to expect an attractive, familiar neighborhood environment.

Creek/Greenbelt Landscape Unit

The creek/greenbelt landscape unit is located along the Chester Creek valley, between Rogers Park/North Star and Fairview/Airport Heights. The visual character of this landscape unit is defined by an urban creek, surrounded by a vegetation buffer and associated park and recreation facilities. The Chester Creek valley is approximately 50 feet below the surrounding area. Few buildings occur within the landscape unit, although the unit is crossed by A Street, the Seward Highway, and Lake Otis Parkway, and accompanied by a paved multi-use trail. For most road crossings, the creek and trail are located in culverts under the roadway, obscuring most views of the road above. The vegetation is a mix of mature deciduous and evergreen trees. Adjacent wetlands have spotty vegetation of stunted black spruce trees, shrubs, and sphagnum.

Along Chester Creek, this landscape unit includes adjacent parks and wetlands. The creek meanders naturally in places. The Chester Creek Sports Complex is located on the western portion of the landscape unit in the study area and includes Mulcahy and Kosinski Fields,

Sullivan Arena, Ben Boeke Ice Arena, Anchorage Football Stadium and Track, and several outdoor hockey rinks. At the eastern end of the study area is Hillstrand Pond, which is fed by Chester Creek and maintains its natural setting, without development.

Vegetation in this landscape unit tends to block views from and of the surrounding neighborhoods and roadways. From within this landscape unit, views are characterized by the creek, trail, and vegetation; some glimpses of the Chugach Mountains to the east are afforded, although vegetation blocks most long-distance views.

Viewers in this landscape unit are recreationalists (trail users, park users, recreation facility users), travelers on the roadways that cross the unit, residents living adjacent to the unit, and visitors. Residents who can see the unit from their homes may be sensitive to changes in visual quality or views. Recreationalists, residents, and visitors are likely to be sensitive to views and visual quality because they expect to see a vegetated greenbelt, creek, and pleasant landscapes, and have time to enjoy the visual environment.

Commercial Landscape Unit

The commercial landscape unit is located throughout the study area, concentrated along larger volume roadways such as the Glenn Highway, Commercial Drive, 5th and 6th Avenues, Gambell and Ingra Streets, and the Seward Highway. Commercial businesses include retail, medical, professional services office buildings, and food and beverage providers. Several large car dealerships are located in the unit, with large vehicle-display lots. Examples of larger businesses located in the unit include Glenn Square Mall, Kendall Auto car dealerships, First National Bank of Alaska, and Carrs grocery store. Development ranges from mostly one- or two-story buildings to several high-rise buildings of more than ten stories. The majority of commercial buildings have large, paved parking lots. Power lines and large light posts line the roadways. Sidewalks abut the curb. Vegetation is dispersed and limited.

Views in this landscape unit are limited to the human-made features in the foreground. Views of the Chugach Mountains are mostly obscured by buildings and vegetation.

Viewers in this landscape unit are roadway travelers on the larger volume roadways and local streets, including commuters, shoppers, and residents living near the unit. Residents who can see the unit from their homes may be sensitive to changes in visual quality or views. Commuters and non-recreational travelers tend to have fleeting views and focus on traffic rather than the surrounding scenery.

Downtown Landscape Unit

The Downtown landscape unit is bounded by 3rd Avenue to the north, 9th Avenue to the south, Knik Arm to the west, and Gambell Street to the east, and contains the Downtown urban core of Anchorage. The landscape unit is characterized by dense development, with high-rise buildings and commercial businesses. Downtown features a complete sidewalk network (with wide sidewalks from the curbs to the doors of the buildings), fewer surface parking lots, and distinctive light poles with hanging flower baskets during summer months. The tallest buildings include the Robert B. Atwood Building, Hilton Hotel, Captain Cook Hotel, ConocoPhillips

Building, Sheraton Hotel, and Marriott Hotel. Many of these are landmark buildings and visible from other areas of town. The Downtown unit features busy surface streets with traffic lights and usually one lane of on-street parking. A few pedestrian overpasses connect larger buildings a story or two above the street level. The Downtown unit includes the Anchorage Memorial Park Cemetery, which has a different character of open lawns and few buildings. Several other small, landscaped, urban parks are found within this landscape unit.

At the street level, views in this landscape unit are limited to the human-made features in the foreground. At higher levels of multi-story buildings, views open up in all directions, providing an excellent overview of Anchorage and the environs.

Viewers in this landscape unit are residents, employees, shoppers, visitors, pedestrians, recreationalists, and roadway travelers. These viewers may have sensitivities to alterations in the visual environment because they may expect to see an attractive, familiar urban landscape.

Industrial Landscape Unit

The Industrial landscape unit lies north of 3rd Avenue in the Ship Creek valley, and is bounded by a bluff to the north and south. The visual character of this landscape unit is defined by industrial development and transportation infrastructure, including rail tracks, local streets trafficked by large trucks, and an elevated roadway bridge. This unit includes the Alaska Railroad Industrial area, including rail depot, headquarters, a historic freight shed, and operations center; the POA; Anchorage Jail and Cook Inlet Pretrial facility; the elevated bridge that connects the A-C Street couplet with East Loop Road in Government Hill; and Ship Creek. Building exteriors include metal siding and masonry in most areas. Along a small, commercially developed section of East Ship Creek Avenue, the landscape is mixed, with landscaped sidewalks, distinctive light posts, and hanging flower baskets in summer months. Most buildings are one story with a paved parking lot. The rail yards, freight yards, and storage yards have chain link fences with razor wire. Power lines are visible on poles along larger roads.

Ship Creek is an urban creek landscape accompanied by a paved multi-use trail with distinctive lighting and structures. Scrub vegetation provides some screening of the creek from the industrial setting, but in most places the creek is visible from the industrial developments and vice versa. The banks along Ship Creek are bare, gray gravel, rock, and mud. There is only one small park associated with Ship Creek—the Ship Creek Overlook Park, which provides access to the trail and creek. Ship Creek is a popular urban fishery, and in summer months it is normal to see the banks lined with anglers.

Views in this landscape unit are limited to the immediate surroundings as topography, buildings, and vegetation obscure views of Downtown to the south (except for the tops of high-rise structures) and Government Hill to the north. Some views of Knik Arm and the Alaska Range to the west are available from upper levels of buildings, along some roadways, and at the western end of Ship Creek. The Chugach Mountains are visible to the east from upper levels of buildings, along some roadways, and along portions of Ship Creek.

Viewers in this landscape unit include industrial business owners and patrons, railroad employees and passengers, freight truck drivers, visitors, recreational path users, and anglers.

People in the area for recreation or tourist travel may be sensitive to changes in visual quality because they have time to observe the views. However, the overall character of this landscape unit is predominantly industrial in character. Most viewers, including industrial and freight users, would not be as sensitive to changes in visual character or quality because they are focused on traffic and not on surrounding scenery, and expect to see an industrial setting in this location.

Airport Landscape Unit

The Airport landscape unit is located between 15th and 5th Avenues on the southern and northern sides, respectively; adjacent to the Alaska Regional Hospital on the eastern side; and the airport-owned open space south of 15th Avenue. The visual character of this landscape unit is defined by Merrill Field Airport and its associated support and commercial facilities, tied down small airplanes, and paved airstrips. Merrill Field Airport sits on the old Anchorage Landfill, which is situated on a flat surface level with Downtown, but is elevated above areas to the north, east, and south, with few to no trees or shrubs. Buildings are primarily one- to two-story, metal- or concrete-sided, with paved parking lots, and are located along the outer edges of this landscape unit. At the southern end of this landscape unit, a veterans' memorial provides expansive views to the south and east. At the northern end of this landscape unit, a large air traffic control tower dominates the horizon.

Due to few vertical obstructions, views are open and expansive. There are open views of the Chugach Mountains to the east; some obstructed views of Mount Susitna to the west; and on clear days, views of the Alaska Range to the north. To the south and west, the tops of high-rise buildings in Downtown and Midtown Anchorage are visible. At the southeastern end of this landscape unit, the Alaska Regional Hospital complex is prominently visible.

The airport-owned open space includes Runway Protection Zone 34 (see Section 2.6.2, Transportation, Existing Conditions, Aviation, for location), and is filled with spotty vegetation of stunted black spruce trees, shrubs, sphagnum, and wetlands. Vegetation in this landscape unit tends to block views from the surrounding neighborhoods and roadways.

Viewers in this landscape unit are primarily aviation-use related, including pilots, airport employees, patrons of the support businesses, students at the UAA Aviation Technology Center, and visitors. Most viewers, including airport users, would not be as sensitive to changes in visual character or quality because they are focused on airport uses and not on surrounding scenery, and expect to see an airport and supporting services in this location.

Hospital Landscape Unit

The Hospital landscape unit is located east of Merrill Field Airport, south of 15th Avenue, and bounded by Airport Heights Drive on the east. It includes Alaska Regional Hospital and its associated medical office buildings. These buildings share a similar architectural façade composed of beige concrete and flush, glazed windows, and range from two to six stories. The unit includes paved surface parking and some landscaping with trees and shrubs within the parking lots.

From the ground, Merrill Field Airport is not visible from within this landscape unit, and views in all directions are obstructed by buildings. From higher levels within the hospital complex, views to the west are of Merrill Field Airport and beyond, depending on the hospital floor level. Views to the north include Merrill Field Airport, the Anchorage Fire Training Center (characterized by empty structures and vehicles for fire training practice), and the commercial areas beyond. Views to the east are of the Chugach Mountains. Views to the south are of the Airport Heights neighborhood. In all directions, traffic and roadways are visible.

Viewers in this landscape unit include employees, patients, visitors, and roadway travelers. A few of these viewers, such as hospital patients and employees, may be sensitive to changes in visual quality because they would have time to observe the environment and may expect to see a tranquil setting.

2.16 Energy

2.16.1 Regulatory Setting

Transportation energy efficiency is regulated largely through requirements on vehicle manufacturers rather than transportation infrastructure. There are no established standards to identify impacts. Instead, the intent is to consider energy usage in the development and evaluation of alternatives.

2.16.2 Existing Conditions

Vehicles are a major source of GHG emissions in Anchorage (MOA 2019). In 2017, for the first time in 40 years, the largest source of GHG emissions in the United States was not electricity production but transportation—cars, trucks, planes, trains, and shipping. Transportation emissions currently account for 47 percent of all the GHG emissions produced in Anchorage, and highway motor fuel accounts for 53 percent of end-use energy consumption. Prolonged vehicle warm-ups and idle times, particularly in winter, are also a substantial source of air pollution. The *Anchorage Climate Action Plan* (MOA 2019) concludes that improving bicycle and pedestrian infrastructure and public transportation not only reduces emissions and pollution but can also save people money and expand transportation options.

2.17 Recreation and Section 4(f)/6(f)

2.17.1 Regulatory Setting

Section 4(f) originated in the Department of Transportation Act, a federal environmental protection statute specific to USDOT-funded projects. It generally prohibits the use of land from significant publicly owned parks, recreation areas, wildlife and waterfowl refuges, or historic sites for transportation projects. Section 4(f) protections for parks and recreation areas apply when the property is 1) publicly owned, 2) generally open to the public, and 3) significant as determined by the officials with jurisdiction over the property. The study area contains parks, recreation areas, and historic sites but not wildlife or waterfowl refuges. This section addresses park and recreation areas together because they are treated the same under Section 4(f)

regulations. Historic sites are discussed in Section 2.13, Cultural Resources and Historic Properties.

The DOT&PF has assumed FHWA responsibility for Section 4(f) approvals under 23 USC 327, the NEPA Assignment Program. The DOT&PF may not approve the use of a Section 4(f) property unless it has determined that there is no feasible and prudent avoidance alternative to the use of land from the property and the action includes all possible planning to minimize harm to the property resulting from such use, or that the use of the property, including any measures to minimize harm, will have a *de minimis* impact on the property (see 23 CFR 774.3).

Section 6(f) of the Land and Water Conservation Fund (LWCF) Act (16 USC 4601 et seq.) applies to public properties that have received federal LWCF funds to acquire, develop, or improve public outdoor recreation facilities. Section 6(f)(3) of the LWCF Act requires that no property acquired or developed with LWCF assistance be converted to a use other than public outdoor recreation unless the National Park Service approves replacement property of reasonably equivalent use and location, and of at least equal fair market value.

2.17.2 Existing Conditions

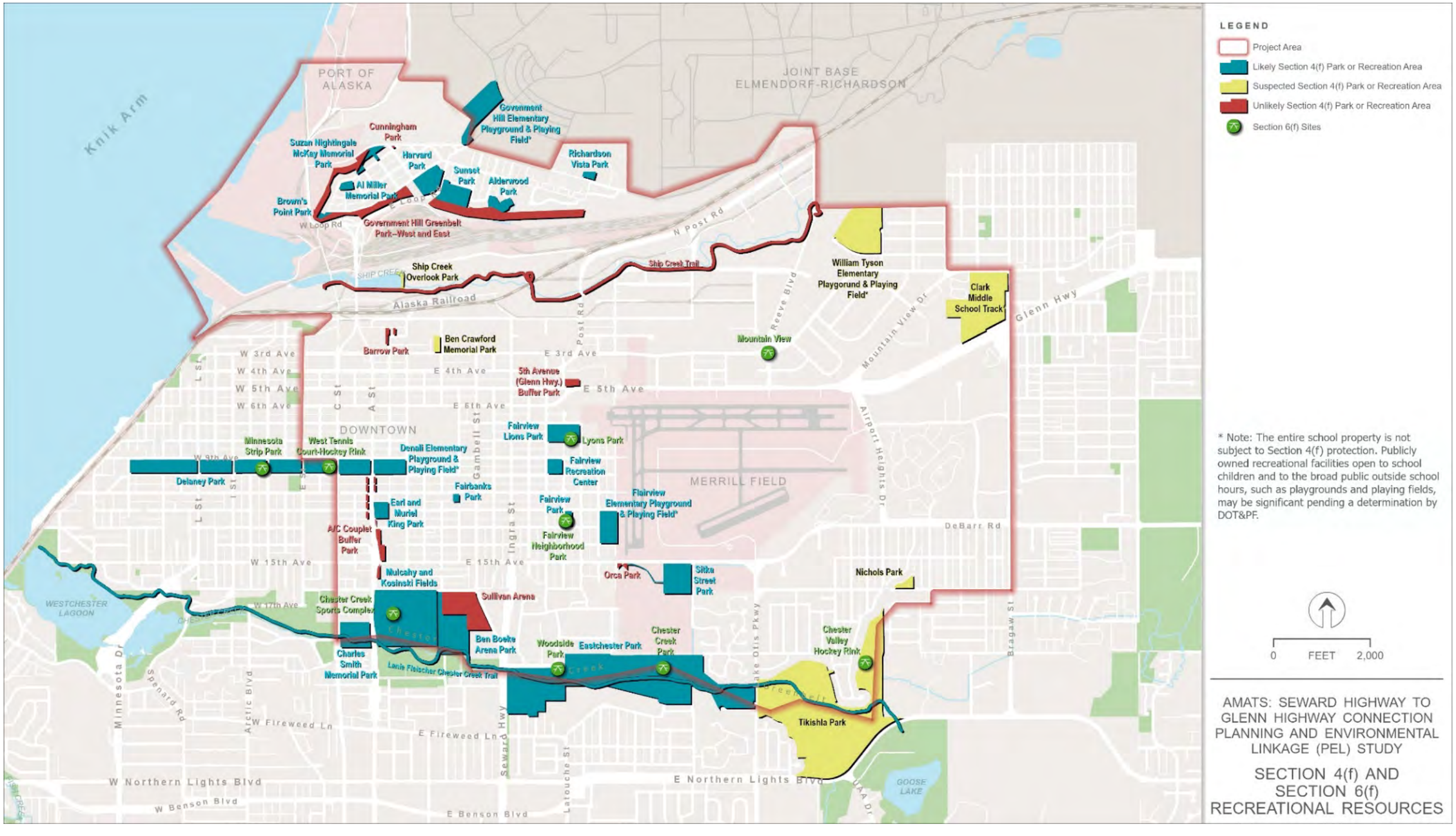
Recreation Resources

Parks, recreation areas, and historic sites within the study area were identified through research of maps, adopted plans, and a windshield survey. The potential applicability of Section 4(f) to parks and recreation areas was identified based, in part, on Section 4(f) applicability determinations prepared to support two previous projects: Highway to Highway and Knik Arm Crossing. No wildlife or waterfowl refuges are located within the study area. Historic sites subject to Section 4(f) are addressed in Section 2.13, Cultural Resources and Historic Properties.

Each potential Section 4(f) park or recreation area was classified as likely, suspected, or unlikely to be considered a Section 4(f) resource. Additional information is presented in Appendix G, *Section 4(f) and Section 6(f) Resource Map and Technical Memorandum*.

Within the study area, there are 36 recreation resources (see Figure 19).

Figure 21. Recreation Resources in the Study Area



2.18 Subsurface Conditions/Geology

2.18.1 Regulatory Setting

The State of Alaska regulates the use and extraction of soil and groundwater through the Alaska Department of Natural Resources (ADNR). The provisions for general land use are contained in 11 AAC 96 and apply to any state-owned land along the existing and proposed corridors. The use of large amounts of water (more than 30,000 gallons per day) is regulated by water management regulations contained in 11 AAC 93. Temporary groundwater use for large construction dewatering projects is governed by 18 AAC 72.

2.18.2 Existing Conditions

This section describes the subsurface conditions pertaining to geology, soils, earthquake hazards, and groundwater in the study area. Geology and soil conditions include general soil type and material and information on the formation of soil deposits, the likely presence or absence of permafrost, and potential slope stability concerns. Seismic conditions include a discussion of ground shaking, slope failure, liquifaction, and induced settlement. Groundwater within the study area is also addressed, as well as briefly under Section 2.9, Water Quality. Subsurface contamination is discussed in Section 2.14, Hazardous Waste.

Geology and Soils

This section provides a discussion of the geological and soil conditions likely to be encountered within the study area. Most of the upper Cook Inlet area is overlying rock formations of varying densities, which consist of shale and sandstones with coal beds. These rock formations are exposed closest to the study area along Eagle River, west of the Border Ranges fault, and more extensively in the Matanuska Valley and on the Kenai Peninsula (Magoon et al. 1976; Winkler 1992). The proposed alignments in the study area will encounter a broad range of soils, including glacial deposits, alluvial (i.e., material deposited by rivers and streams), and colluvial (i.e., unsorted deposits near the base of slopes that have been transported by gravity alone). Boring logs in the study area indicate the sediments are typically greater than 500 feet deep. Major soil units within the study area are described below.

Glacial Deposits

The existing topography of the study area and surrounding vicinity is the result of numerous glacial periods. the upper Cook Inlet area near Anchorage has endured at least five glacial events in the last 2 to 3 million years (Karlstrom 1964). The most recent events include the Knik Glaciation and the Naptowne Glaciation, both of which occurred within the past 75,000 years.

During the Knik Glaciation (30,000 to 75,000 years ago), thick sediment, known as the Knik Ground Moraine, was deposited as glaciers retreated. Within the study area vicinity, these deposits extend from Eagle River valley to Point MacKenzie and Point Woronzof, and lie mostly below sea level. The deposits generally consist of poorly sorted till sediment deposited directly by glacial ice (Karlstrom 1964; MSB 1995).

The Naptowne Glaciation (11,000 to 30,000 years ago) left most of the glacial deposits currently found in the Anchorage area. At its maximum, the Naptowne Glaciation extended across the Anchorage Bowl area from the north and terminated at Point Woronzof and Point Campbell (Reger and Pinney 1997). The Bootlegger Cove Formation was formed during this time, in ice-free areas of the Susitna River valley, lower Knik Arm, and Upper Cook Inlet (Reger and Pinney 1995). Bootlegger Cove sediments consist generally of materials such as clays and silts, with lesser amounts of sand and scattered pebbles and cobbles (Schmoll et al. 1984; Updike and Carpenter 1986). Around the same time, material was being shed out of the uplifting Chugach Mountains through alluvial processes (Hamilton 1994), causing wedges of sand and gravel to interfinger with and underlie the clay in many areas of the Anchorage Bowl.

Overlying the Bootlegger Cove Clay Formation are sand and gravel glacial deposits, including the Elmendorf Moraine and the Naptowne Outwash. Approximately 14,000 years ago, the Elmendorf Moraine was formed at the end of the Knik-Matanuska glacier and is now a prominent topographic feature on both sides of Knik Arm. The Elmendorf Moraine consists of a wide variety of sediments with a wide variety of grain sizes north of Ship Creek. The Naptowne Outwash is a flat sprawling apron of sediment deposited by glacial meltwater that overlies much of the Bootlegger Cove Formation on both the eastern and western sides of Knik Arm, south of the Elmendorf Moraine. This material was deposited by large, braided streams that contained sand and gravel and flowed from the Knik-Matanuska glacier. These sediments were subject to constant reworking by glacial runoff, and consist of a variety of sorted sediment that has been deposited in front (south) of the Elmendorf Moraine. Locally, this outwash has been named the Mountain View Fan, and underlies parts of Government Hill, Mountain View, and Downtown.

Recent Alluvial and Colluvial Deposits

Small streams once crossed low-lying areas of Anchorage. These streams created alluvial fans along the mountain front, leaving alluvial deposits that consist predominantly of sand and gravel with some silt (Dobrovolny and Schmoll 1974). They can be found along active and abandoned stream channels and terraces. In the study area, alluvial deposits have been identified along Ship and Chester Creeks. Alluvial deposits along slower-moving streams may also include thick organic layers and peat. Colluvial deposits are unsorted soils that are generally located near the base of bluffs, deposited there by gravity. The alluvial and colluvial deposits in the study area generally occur along the Chester and Ship Creek drainages.

Landslide Deposits

Numerous landslide deposits occur along the Ship Creek bluff (Updike and Carpenter 1986). Older slides may be characterized by hummocky surfaces, heavy vegetation, and continuous soil cover. More recent slides exhibit ridge-and-trough topography, ponded surface water, recent vegetation, and discontinuous soils; they generally occur directly downslope from identifiable scarps (i.e., cliffs formed by faulting or erosion) and overlie older slide material. Several prominent slides occurred during the 1964 earthquake in the study area as a result of failures in clays of the Bootlegger Cove Formation. Landslide deposits caused by earthquakes can be found on the Ship Creek bluffs and, to a lesser degree, the Chester Creek bluffs. These

landslide deposits are generally associated with poor foundation soil and high to very high earthquake-induced ground failure hazards.

Artificial Fill Deposits

Artificial fill deposits can be found within the Anchorage Bowl, generally associated with developments that required a change in grade. Artificial fill deposits vary in size and composition, but generally consist of granular soils, often loose to dense mixtures of sand, gravel, and silt. The largest artificial fill area that could be affected by projects in the study area is the Merrill Field Landfill. The Merrill Field Landfill contains more than 3 million tons of refuse and 1.7 million tons of cover soil, nearly half of which was deposited there between 1982 and 1987 (Nelson 1982). The landfill covers approximately 200 acres, and is filled with soil and refuse to an average depth of 30 feet below the ground surface (Brunett 1990). Additional information regarding the Merrill Field Landfill can be found in Section 2.14.2, Hazardous Waste, Existing Conditions.

Hazards

Permafrost

Permafrost is ground that remains at or below 32°F for 2 or more years, and can consist of ice and/or soil. Permafrost can form a strong and stable foundation material if it remains frozen, but if it is allowed to thaw, the soil will lose its strength and fail. Permafrost can thaw due to human disturbance or climate change.

Anchorage lies near the southern extent of areas containing permafrost in Alaska, and permafrost in the vicinity is discontinuous and sporadic. The Anchorage area is generally free of permafrost (HDR 2004). Several areas in Anchorage that were known to contain permafrost during earlier development, such as the Dimond Mall vicinity, are now apparently thawed. Numerous structures and several buried utilities constructed in the 1980s in East Anchorage, however, were damaged by settlement associated with melting of ice-rich permafrost. Extensive ground ice was also encountered in 2005 in Birchwood, where the ARRC was evaluating conditions for possible curve straightening on their main line track. Permafrost was reported in the Fairview/Merrill Field Area in 2007. Within the study area, the Sitka Street Park area, which is currently undeveloped and lies south of Merrill Field, contains black-spruce bogs that are characteristic of permafrost conditions.

Earthquake Hazards

The Alaska Earthquake Center (AEC) seismic network detects an earthquake every 15 minutes, on average. The AEC reported more than 220,000 earthquakes in Alaska over the last 5 years, with an all-time high of more than 54,000 earthquakes in 2018 (AEC n.d.). The area experiences approximately 24,000 earthquakes per year, which account for 52 percent of all earthquakes in the United States (AEC n.d.). The Upper Cook Inlet region is one of the most seismically active areas of Alaska due to the motion between the Pacific and the North American Plates. Larger earthquakes, such as the 2018 Anchorage earthquake and the 1964 Alaska earthquake, are associated with the Pacific Plate subducting under the North American Plate. The 1964 earthquake was the largest ever recorded in North America,

registering 9.2 on the Richter scale. Anchorage, being located near this tectonic plate boundary, can experience frequent and intense earthquakes, which may cause damage from ground shaking, slope failure, liquefaction, surface fault rupture, and tsunamis.

In the Anchorage vicinity, two shallow crustal faults present known earthquake hazards. The Castle Mountain-Lake Clark-Bruin Bay Fault system is a northeast-trending fault that lies on the western side of the Knik Arm, roughly parallel to Cook Inlet. In the Susitna lowland, near-surface sediments have been displaced 23 feet horizontally and 7.5 feet vertically by earthquakes from this fault. The Border Ranges Fault runs approximately 620 miles northeastward from Kodiak Island, across the Kenai Peninsula, and along the front of the Chugach Mountains.

Slope Failure

Slope failure was one of the primary causes of damage during the 1964 earthquake. The southern slopes near Ship Creek experienced slope failure and slid northward up to 15 feet toward Ship Creek. Deep block-type landslides occurred in Downtown Anchorage and the Turnagain Heights area during the 1964 earthquake, and had displacements of a few feet to hundreds of feet. According to the *Anchorage Area Soils Studies* (Shannon & Wilson, Inc. 1964), the landslides were caused by loss of strength and failure of the sensitive soils in the Bootlegger Cove Clay Formation. Similar soils may be present in the study area. These areas have high to very high ground failure susceptibility.

Shallow slides and slumps also occurred during the 1964 earthquake along coastal and stream bluffs. Such areas can be found in the Chester Creek drainage, which is mapped as moderate to high ground failure susceptibility. This area experienced minor slumping and cracking during the 1964 earthquake. No significant sliding occurred in the area, but existing slopes may be marginally stable under dynamic conditions and may experience failures during earthquakes.

In addition to the potential landslides caused by earthquakes, there may be slope areas in the study area that are unstable under static conditions. This instability may result from the construction of infrastructure or the addition of fill near the top of a slope, the removal of soils from the base of the slope, or high moisture content within the soil. Areas of concern for slope stability include the bluffs along 3rd Avenue and the slopes associated with the Chester Creek drainage. Such conditions can also exacerbate the potential for sliding during an earthquake. The MOA has produced a map of the seismic ground failure susceptibility zones in the Anchorage Bowl (MOA 2006b).

Liquefaction and Densification

An earthquake can increase the water pressure in certain saturated soils, causing the soil to lose its strength and behave in a fluid-like manner. Liquefaction can cause landslides, movement of bridge supports and structures, and failure of retaining walls. The intensity and duration of an earthquake determines whether liquefaction will occur. Liquefaction is typically limited to soils above the 50-foot depth, with a relatively shallow groundwater table and low relative density.

Liquefaction is suspected to be a concern in loose to medium dense, saturated soils that are associated with alluvium and colluvium deposits. Clay can be particularly susceptible to liquefaction. Soft or sensitive clays from glacial deposits have been identified within the study area near Mountain View, and soft clays have also been found in the Merrill Field area.

Densification of dry and moist sandy materials has been observed after several earthquakes, particularly in hillside fill material (Pradel 1998). Densification of liquefiable soils below the water table may also occur when subjected to earthquakes, resulting in potential ground settlement. The areas of concern for earthquake-induced settlement are anticipated to be similar to the areas of concern for liquefaction.

Groundwater

Anchorage is underlain by an unconfined aquifer[10], a confining clay and silt layer, and a confined aquifer[11] over consolidated sedimentary rocks. Groundwater is predominantly recharged along the Chugach Mountains to the east, and flows westward toward Cook Inlet within the unconfined and confined aquifers.

The confined aquifer is located approximately 100 and 300 feet below the ground surface, with the shallower depths closer to the recharge area along the mountains. Water table depth for the unconfined aquifer is predominantly influenced by surface drainage and topography. The depth of the water table varies from shallow (4 to 10 feet below the ground surface) near streams or creeks to more than 80 feet in elevated areas. The groundwater table generally experiences seasonal fluctuations of 3 to 5 feet.

More extensive groundwater monitoring has been conducted at the Merrill Field Landfill as part of the long-term groundwater program. The unconfined aquifer is monitored around the perimeter of the landfill to detect movement of leachate from the refuse. A majority of the groundwater beneath the refuse appears to flow toward the southwest; however, a hydrogeologic divide running approximately beneath the east-west runway routes the northern landfill groundwater toward the northwest.

Existing Water Rights

The ADNR water rights database (ADNR 2021) identifies multiple surface and subsurface water rights issued in the study area. The ADF&G has four subsurface rights, one surface water right, and an in-stream water reservation for operations of the William Jack Hernandez Sport Fish Hatchery along Ship Creek. Others have been issued to AWWU, Pacific Western Lines, Sullivan Arena, and Penland Park (residential complex) as well as individuals and businesses. Well

[10] An unconfined aquifer is an aquifer whose upper water surface is a water table free to fluctuate under atmospheric pressure (USGS 2013).
[11] A confined aquifer is an aquifer that is completely filled with water under pressure and overlain by material that restricts the movement of water. When the aquifer is penetrated by a well, the water will rise above the top of the aquifer. It is also known as an artesian well (USGS 2013).

permits issued in the study area vicinity identify depths that generally appear to be tapped into the confined aquifer.

Wellhead Protection

A public community, drinking water well exists within the study area that has a wellhead protection area around it. These are surface and subsurface areas surrounding a well that supplies a public water system, through which contaminants are reasonably likely to move toward and reach the well (EPA 2002). A “Zone A Well Protection Area” is the area in which contaminants may reach the well within several months. A “Zone B Well Protection Area” is the area in which contaminants may reach the well within 2 years.

3. References

ACS-ED (American Community Survey Education Tabulation). 2021. ACS-ED Maps. Available at https://nces.ed.gov/programs/maped/ACSMaps/

ADCED (Alaska Department of Community and Economic Development). 2003. *Alaska Planning Commission Handbook*. Available online at: http://www.alaskaplanning.org/documents/Planning_Whole_Book.pdf

ADEC (Alaska Department of Environmental Conservation). n.d. Spill Prevention and Response: Glossary. Available at https://dec.alaska.gov/spar/glossary.htm

———. 2004. Total Maximum Daily Load (TMDL) for Fecal Coliform in the Waters of Ship Creek in Anchorage, Alaska. Anchorage, Alaska.

———. 2008. Alaska's Final 2008 Integrated Water Quality Monitoring and Assessment Report. Division of Water, Alaska Department of Environmental Conservation. Anchorage, Alaska.

———. 2005. Total Maximum Daily Load for Fecal Coliform in Chester Creek, University Lake, and Westchester Lagoon, Anchorage, Alaska. Alaska Department of Environmental Conservation. Anchorage, Alaska.

———.2020a. ADEC APDES Anchorage Municipal Separate Storm Sewer System Individual Permit, AKS052558, June 23, 2020. Available at https://dec.alaska.gov/Applications/Water/WaterPermitSearch/Detail.aspx?id=20122&v=1

———.2020b. 2020 Integrated Report Fact Sheet. Accessed at https://dec.alaska.gov/water/water-quality/integrated-report

———.2021a. *State Implementation Plan*. Available at https://dec.alaska.gov/air/anpms/sip/

———. 2021b. Contaminated Sites Database. Available at https://dec.alaska.gov/spar/csp/

———. 2021c. Construction General Permit. Available at https://dec.alaska.gov/water/wastewater/stormwater/construction.aspx

ADEED (Alaska Department of Education & Early Development). 2020. Alaska Department of Education & Early Development Child Nutrition Program National School Lunch Programs Free and Reduced Price Meals Report For Program Year: 2020. Available at https://education.alaska.gov/tls/CNP/NSLP/docs/ADA%202019-2020%20Free%20and%20Reduced%20Price%20Meals%20Report.xlsx

———. 2021. The Compass: A Guide to Alaska's Public Schools. Available at https://education.alaska.gov/compass/

ADF&G (Alaska Department of Fish and Game). 1999. Living with Wildlife in Anchorage: A Cooperative Planning Effort, Section 4: Wildlife in Anchorage, 1999. Available at https://www.adfg.alaska.gov/index.cfm?adfg=anchoragewildlifeplanning.anchorage5

———. 2008. Wildlife Notebook Series: Frogs and Toads. Text by Kevin Broderson, updated by Dave Tessler, 2008. Available at http://www.adfg.state.ak.us/pubs/notebook/amphibia/amphib.php

———. 2009. Nongame Program. Personal communication and email correspondence between David Tessler and Marian Snively (ADF&G) and Erin Cunningham (HDR). Record on file with HDR.

ADNR (Alaska Department of Natural Resources). 2021. Water Rights Map. Available at https://dnr.alaska.gov/mlw/water/data/map/, accessed October 25, 2021.

ADOL&WD (Alaska Department of Labor and Workforce Development). 2010. Unemployment Rate. Research and Analysis Section. Available at http://almis.labor.state.ak.us/?PAGEID=67&SUBID=188, accessed April 28, 2010.

ADOL&WD. 2020. Population of Alaska by Economic Region, Borough and Census Area, 2010 to 2020. Excel spreadsheet. Available at https://live.laborstats.alaska.gov/pop/estimates/data/TotalPopulationBCA.xls

———. 2021. Unemployment Rates, Alaska and U.S., January 2013 to August 2021. Available at https://labor.alaska.gov/news/2021/news21-25_data.pdf

AEC (Alaska Earthquake Center). n.d. Why Earthquakes Happen in Alaska. Available at https://earthquake.alaska.edu/earthquakes/about

AFD (Anchorage Fire Department). 2009. *Strategic Plan 2009–2015*.

Aires Consultants Ltd. 2000. *Final Report, Merrill Field Airport Master Plan*. Prepared for the Municipality of Anchorage.

Alaska Department of Corrections. 2021. Alaska Department of Corrections, Division of Institutions, Senate Corrections Finance Subcommittee, February 18, 2021, PowerPoint. Available at http://www.akleg.gov/basis/get_documents.asp?docid=502

AMATS (Anchorage Metropolitan Area Transportation Solutions). 2007. *Anchorage Pedestrian Plan: making Anchorage a better, safer place to walk*. October 2007. AO2007-96. Available at https://www.muni.org/Departments/OCPD/Planning/AMATS/Documents/PedestrianPlan_Web.pdf

———. 2010. *Anchorage Bicycle Plan: Bicycles as a Mode of Transportation.* An element of the MOA Nonmotorized Transportation Plan. March 2010. AO2010-08. Available at https://www.muni.org/Departments/OCPD/Planning/AMATS/Documents/AdoptedBicyclePlan.pdf

———. 2017. *Anchorage Freight Mobility Study*. June 2017. Available at http://www.muni.org/Departments/OCPD/Planning/AMATS/Documents/2017_Anchorage_Freight_Mobility_Study_with_appendices.pdf

———. 2018. Four-Year Program Summary, AMATS FFY 2019–2022 TIP. Available at https://www.muni.org/departments/ocpd/planning/amats/amats%20tip%20docs/2019_2022/2019_2022%20tip_final_pc_approved_12_20_18.pdf

———. 2020. *2040 Metropolitan Transportation Plan: Anchorage Bowl and Chugiak-Eagle River*. Final, June 2020. Prepared by HDR, RSG, Earthscape, and Cambridge Systematics for AMATS. AMATS, MOA, and DOT&PF. Available at https://www.muni.org/departments/ocpd/planning/amats/mtp/2040/final_fhwa_fta_approved/2040_mtp_final_approved.pdf

———. 2021. *Non-motorized Plan*. Draft. Available at https://www.muni.org/departments/ocpd/planning/amats/documents/nonmotorized/update_2020/20210205_non_motorized_plan_pubic_review_draft_with_appendices.pdf

ASD (Anchorage School District). 2021a. Race and Ethnicity at ASD, Ethnicity Reports, 2019–2020 Data. Available at https://www.asdk12.org/Page/5377

———. 2021b. Alaska's Public Schools: A Report Card to the Public: 2019–2020. Anchorage School District. Available at https://education.alaska.gov/compass/Report/2019-2020/5

———. 2021c. Tableau Public: Anchorage School District. Available at https://public.tableau.com/app/profile/asdk12

APD (Anchorage Police Department). 2009. Personal communication between Lew Reed, Crime Analyst (APD) and Erin Cunningham, Biologist (HDR) regarding vehicle/wildlife collisions in the Phase 1 study area.

ARRC (Alaska Railroad Corporation). 2020. Alaska Railroad Projects. Available at https://www.alaskarailroad.com/corporate/projects

———. 2021. Alaska Railroad: Railroad at a Glance. Available at https://www.alaskarailroad.com/sites/default/files/Communications/2021_FCTSHT_ARRC_Quick_Facts_or.pdf

AWWU (Anchorage Water and Wastewater Utility). 2012. *AWWU Water Master Plan.*

———. 2014. *AWWU Wastewater Master Plan*.

Bergsman, S. 2007. New projects are planned in retail-starved Alaska. *Shopping Centers Today*. Available at http://www.icsc.org/srch/sct/sct1007/alaska.php, accessed May 25, 2010.

Boehlke, D. 2005. *Fairview: A Dynamic Neighborhood in a Changing City*.

Bosch, Dan. 2009. Correspondence between Dan Bosch (ADF&G) and Erin Cunningham (HDR). November 2009. Record on file with HDR.

Brunett, Jillian O. 1990. *Lateral Movement of Contaminated Ground Water from Merrill Field Landfill, Anchorage, Alaska*. U.S. Geological Survey Open-File Report 89-624.

Catholic Social Services. 2020. *Fiscal Year 2020 Annual Report*: *Commitment to our Community*. Available at https://2qppfu1fazsd3yciuy1ekxki-wpengine.netdna-ssl.com/wp-content/uploads/2021/05/DEV_AnnualReport_Eversion2.pdf

Anchorage Waterways Council. 2014. Chester Creek Watershed Plan, 2014. Prepared by the Anchorage Waterways Council for the MOA. http://anchoragestormwater.com/Documents/ChCrkWshdPln062015.pdf

CDOT (Colorado Department of Transportation). 2008. *Draft Environmental Impact Statement Air Quality Technical Report*. November 2008.

Development Strategies, Inc. 2007. Economic Outlook and Land Demand Projections: Midtown Anchorage. Prepared for HDR Alaska, Inc. Anchorage, Alaska

Dobrovolny, E., and H.R. Schmoll. 1974. Slope-Stability Map of Anchorage and Vicinity, Alaska. U.S. Geological Survey Misc. Geo. Inv. Map I-787-E. Scale 1:24,000.

DOT&PF. 2005. Acquiring Real Property for Federal and Federal-Aid Programs and Projects. Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 as Amended. Modified specifically for Alaska. Revised June 2005. Available at https://dot.alaska.gov/stwddes/dcsrow/assets/pdf/ROW_UniformAct1.pdf

———. 2018. *Noise Policy*. Available at https://dot.alaska.gov/stwddes/desenviron/assets/pdf/resources/aknoisepolicy_18.pdf

———. 2020. *Alaska Environmental Procedures Manual.* Available at https://dot.alaska.gov/stwddes/desenviron/resources/enviromanual.shtml

———. 2021. *Alaska Right-of-Way Manual.* October 2021. Available at https://dot.alaska.gov/stwddes/dcsrow/assets/pdf/manual/2021/row_manual.pdf

EPA (Environmental Protection Agency). 2002. Consider the Source: A Pocket Guide to Protecting Your Drinking Water. Office of Ground Water and Drinking Water, EPA. Available at http://www.epa.gov/safewater/sourcewater/pubs/guide_swppocket_2002.pdf

———. 2021a. NAAQS Table. Available at https://www.epa.gov/criteria-air-pollutants/naaqs-table, accessed August 24, 2021.

———. 2021b Superfund: National Priorities List (NPL). Available at https://www.epa.gov/superfund/superfund-national-priorities-list-npl

———. 2021c Superfund Alternative Approach. Available at https://www.epa.gov/enforcement/superfund-alternative-approach

———. 2021d. Superfund Site: Alaska Railroad Alaska Yard – Anchorage, AK. Background. Available at https://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=1000079

———. 2021e. Superfund Site: Standard Steel & Metals Salvage Yard (USDOT) – Anchorage, AK. Cleanup Activities. Available at https://cumulis.epa.gov/supercpad/SiteProfiles/index.cfm?fuseaction=second.Cleanup&id=1000073#bkground

———. 2021f. Cleanups in My Community Database. Available at https://www.epa.gov/cleanups/cleanups-my-community

Fairview Business Association. 2013. *Gambell Street Redevelopment and Implementation Plan*. Prepared by CH2M HILL, Inc. with Kittelson & Associates, Inc. for Fairview Business Association. July 2013. Available at https://kaiproject.com/rails/active_storage/blobs/redirect/eyJfcmFpbHMiOnsibWVzc2FnZSI6IkJBaHBBbVFEIiwiZXhwIjpudWxsLCJwdXIiOiJibG9iX2lkIn19--46914dd2bea0143a01826b7805147a87241e3018/Final_Gambell_Street_Redevelopment_and_Implementation_Plan.pdf

Fairview Community Council. 2009. *A Plan for Fairview's Neighborhoods*. Revised Final Draft.

Farley, S. 2010. Correspondence between Sean Farley (ADF&G) and Sirena Brownlee (HDR). March 2010.

FEMA (Federal Emergency Management Agency). 2009. Flood Insurance Rate Map, Municipality of Anchorage, Alaska. FIRM Map Number 0200050732D, 0200050751D, and 0200050753D, all revised September 25, 2009. Available at http://www.anchoragestormwater.com/Documents/Data/flood-maps/0200050732d.pdf

FHWA (Federal Highway Administration). n.d. *Noise Effects, Standards, Measures, and Predictors*. Available at http://www.fhwa.dot.gov/environment/audible/al7.htm

———. 1992. *NEPA and Transportation Decisionmaking.* Available at http://environment.fhwa.dot.gov/projdev/tdmpdo.asp

———. 2015. Guidelines for the Visual Impact Assessment of Highway Projects. FHWA-HEP-15-029, January 2015. Available at https://www.environment.fhwa.dot.gov/env_topics/other_topics/VIA_Guidelines_for_Highway_Projects.aspx

Forkenbrock, D., and G. Weisbrod. 2001. *Guidebook for Assessing the Social and Economic Effects of Transportation Projects*. Transportation Research Board and National Research Council. Washington, D.C.

Fried, N. 2003. The Matanuska-Susitna Borough. *Alaska Economic Trends* 23 (1):3–14.

Fried, N., and B. Windisch-Cole. 2006. The Military is Big Business in Anchorage. *Alaska Economic Trends* 26 (6):4–14.

Giefer, J., and B. Blossom. 2021. *Catalog of waters important for spawning, rearing, or migration of anadromous fishes – Southcentral Region, effective June 1, 2021*. Alaska Department of Fish and Game, Special Publication No. 21-03, Anchorage. Available at Alaska Fish Resource Monitor interactive mapper at https://adfg.maps.arcgis.com/apps/MapSeries/index.html?appid=a05883caa7ef4f7ba17c99274f2c198f, accessed October 27, 2021.

Glass, Roy L. 2001. *Ground-water quality in the Cook Inlet Basin, Alaska, 1999*. U.S. Geological Survey Water-Resources Investigations Report 01-4208. Available at http://pubs.usgs.gov/wri/wri01-4208/

Glass, Roy L., and Robert T. Ourso. 2006. Water Quality Conditions of Chester Creek, Anchorage, Alaska, 1998–2001. USGS National Water-Quality Assessment Program. Scientific Investigations Report 2006-5229. Available at https://doi.org/10.3133/sir20065229

Goldsmith, S., and T. Schwoerer. 2009. *Anchorage Port Intermodal Expansion Program (PIEP). Benefit Cost Analysis of Proposed TIGER Discretionary Grant Funds*. Prepared for the Port of Anchorage.

Hamilton, T.D. 1994. Late Cenozoic Glaciation of Alaska. In *The Geology of Alaska*. Geological Society of America. Boulder, Colorado.

Hart Crowser. 1988. *Landfill Gas Assessment, Merrill Field Landfill, Anchorage, Alaska*. A-8099.

HDR (HDR Alaska, Inc.). 1993. *Chester Creek 92-16 Conceptual Design Report*. Prepared for the MOA, Department of Public Works.

———. 1996. *Anchorage Bowl Commercial and Industrial Land Use Study*. Prepared for the MOA, Department of Community Planning and Development. Anchorage, Alaska.

———. 2004. *All Hazard Mitigation Plan*. Prepared for the MOA, Project Management and Engineering Department. October 2004. Anchorage, Alaska

———. 2010. *Visual Resource Summer Field Reconnaissance Summary and Landscape Unit Descriptions.* September 2010.

ICF Consulting and HLB Decision-Economics. 2002. *Economic Effects of Transportation: The Freight Story*.

KABATA (Knik Arm Bridge and Toll Authority). 2007. *Final Environmental Impact Statement and Section 4(f) Evaluation*. Available at http://www.knikarmbridge.com/project_docs.html#FEISDecember2007, accessed March 2010.

Karlstrom, T.N.V. 1964. *Quaternary Geology of the Kenai Lowland and Glacial History of the Cook Inlet Region, Alaska*. U.S. Geological Survey Professional Paper 443.

Kim, Christine. 2010. Mountain View shopping center largely vacant. *KTUU.com*. Available at http://www.ktuu.com/Global/story.asp?S=12186576, accessed May 20, 2010.

Magoon, L.B., W.L. Adkison, and R.M. Egbert. 1976. Map Showing Geology, Wildcat Wells, Tertiary Plant Fossil Localities, K-Ar Age Dates, and Petroleum Operations, Cook Inlet Area, Alaska. Prepared for U.S. Geological Survey Misc. Investigation Series Map I-1019. Scale 1:250,000.

Merrill Field. 2016. *Merrill Field Airport Master Plan Update and Noise Study.* Final, December 2016. Prepared by HDR, Inc.; Harris Miller Miller & Hanson Inc. (HMMH); Hattenburg Dilley & Linnell LLC (HDL); and McClintock Land Associates (MLA), Inc. for Merrill Field Airport. Adopted by the Municipal Assembly 2016. Available at https://www.muni.org/Departments/merrill_field/Documents/12.23.16%20Final%20AMP%20Report.pdf

———. 2021. General Information. Available at http://www.muni.org/Departments/merrill_field/Pages/GeneralInformation.aspx

MOA (Municipality of Anchorage). n.d. Anchorage Safety Patrol and Center. Available at http://www.muni.org/Departments/health/PHIP/Pages/AnchorageSafetyPatrol.aspx

———. n.d. Schedules, Route Maps, and Bus Stop Lists. Available at http://www.muni.org/Departments/transit/PeopleMover/Pages/mapsandstops.aspx

———. n.d. Project Management and Engineering, Flood Hazard Permits. Available at https://www.muni.org/Departments/project_management/Pages/FloodHazard.aspx

———. n.d. MOA MapIt! Available at https://muniorg.maps.arcgis.com/apps/webappviewer/index.html?id=f0bef139a7584820ad9d60c9eeea8a5f

———. 1997. *Anchorage Area-wide Trails Plan*. Available at http://www.muni.org/Departments/OCPD/Planning/Publications/Pages/TrailsPlan-1997.aspx

———. 2001a. *Anchorage 2020: Anchorage Bowl Comprehensive Plan*. Planning Department. Anchorage, Alaska.

———. 2001b. *Freight Mobility Study for the Anchorage Metropolitan Area*. Traffic Department. Anchorage, Alaska.

———. 2002. *Anchorage 2020: Anchorage Bowl Comprehensive Plan*. Adopted by Municipal Assembly February 20, 2001; amended September 10, 2002. Available at http://www.muni.org/Departments/OCPD/Planning/Publications/Pages/Anchorage2020.aspx

———. 2006a. *Anchorage Bowl Park, Natural Resource and Recreation Facility Plan.* Available at http://www.muni.org/Departments/Planning/Publications/ParkPlan_2006/Parks_MP_2006.pdf

———. 2006b. Anchorage Bowl Seismic map. Available at https://www.muni.org/Departments/OCPD/Planning/Planning%20Maps/Anch_Bowl_Seismic_8x11.pdf

———. 2007a. *Anchorage Downtown Comprehensive Plan.* Available at http://www.muni.org/Departments/Planning/Publications/Pages/CBD_CompPlan_Final07.aspx

———. 2007b. *Anchorage Coastal Management Plan*. Available at https://www.muni.org/departments/ocpd/planning/publications/anc%20coastal%20management%20plan/full_doc.pdf, accessed September 14, 2021.

———. 2013. *Government Hill Neighborhood Plan*. Adopted February 12, 2013; Assembly Ordinance No. 2013-11. Available at http://www.muni.org/Departments/OCPD/Planning/Publications/Pages/GovernmentHillNeighborhoodPlan-2013.aspx

———. 2014a. *Fairview Neighborhood Plan*. Adopted September 9, 2014; Assembly Ordinance No. 2014-108. Available at http://www.muni.org/Departments/OCPD/Planning/Publications/Pages/FairviewNeighborhoodPlan2014.aspx

———. 2014b. *Ship Creek Framework Plan*. Adopted July 22, 2014; Assembly Ordinance No. 2014-79. Available at http://www.muni.org/Departments/OCPD/Planning/Publications/Pages/ShipCreekFrameworkPlan.aspx

———. 2014c. *Anchorage Wetlands Management Plan.* July 2014. Available at https://www.muni.org/Departments/OCPD/Planning/Physical/EnvPlanning/Documents/Anchorage%20Wetlands%20Management%20Plan-2014.pdf

———. 2016. *Mountain View Targeted Neighborhood Plan*. Adopted September 13, 2016; Assembly Ordinance No. 2016-101. Available at http://www.muni.org/Departments/OCPD/Planning/Publications/Pages/MountainViewTargetedNeighborhoodPlan.aspx

———. 2017. *Anchorage 2040 Land Use Plan: A Supplement to Anchorage 2020 – Anchorage Bowl Comprehensive Plan.* Available online at: http://www.muni.org/Departments/OCPD/Planning/Publications/Pages/Anchorage2040LandUsePlan.aspx

———. 2018. What is Vision Zero? Available at https://visionzeronetwork.org/about/what-is-vision-zero/

———. 2019. *Anchorage Climate Action Plan*. Available at https://www.muni.org/Departments/Mayor/AWARE/ResilientAnchorage/Documents/2019%20Anchorage%20Climate%20Action%20Plan_ADOPTED.pdf

———. 2020a. Public Transportation 2019 System Report, January 1, 2019 – December 31, 2019. Available at https://www.muni.org/departments/transit/peoplemover/documents/system%20report%20cards/2019%20report%20card(final).pdf

———. 2020b. *Transit on the Move: 2020 Transit Plan*. Available at https://www.muni.org/departments/transit/peoplemover/documents/transit%20on%20the%20move/20200311_transit_on_the_move_final_plan.pdf

———. 2021a. 2022 Preliminary Data – 120 Day Memo. Available at https://www.muni.org/Departments/budget/operatingBudget/2022%20GGOB/2022%20120%20Day%20Memo%20Signed%20by%20Mayor%20and%20Stamped%20by%20Clerk.pdf

———. 2021b. Public Transportation 2020 System Report, January–December 2020. Available at https://www.muni.org/departments/transit/peoplemover/documents/system%20report%20cards/04072021%202020%20report%20card%20(final%20for%20web).pdf

———. 2021c. C Street Station. Available at http://www.muni.org/Departments/transit/PeopleMover/Pages/CStreetStationProject.aspx

Moran, Edward H., and Devin L. Galloway. 2006. *Ground Water in the Anchorage, Area, Alaska: Meeting the Challenges of Ground-Water Sustainability*. USGS Fact Sheet 2006-3148. Available at https://pubs.usgs.gov/fs/2006/3148/

MSB (Matanuska-Susitna Borough). 1995. *Point MacKenzie Area Which Merits Special Attention (AMSA) Plan*. Effective date May 23, 1993, printed November 1995.

Myers, Eric. n.d. Anchorage Birding Map. Audubon Alaska. Anchorage, Alaska.

Nelson, G.L. 1982. *Vertical Movement of Ground Water Under the Merrill Field Landfill*. U.S. Geological Survey. Open-File Report 82-1016.

NOAA (National Oceanic and Atmospheric Administration). n.d. Cook Inlet Beluga Whales. Available at https://www.fisheries.noaa.gov/species/beluga-whale

O'Doherty, Gillian. 2009. Correspondence between Gillian O'Doherty (ADF&G) and Erin Cunningham (HDR). August through October 2009. Record on file with HDR.

O'Malley, J. 2009. Mountain View's heart is a Red Apple. *Anchorage Daily News*. June 30. Anchorage, Alaska.

POA (Port of Alaska). 2020. Port of Alaska in Anchorage. Available at https://www.portofalaska.com/wp-content/uploads/PortOfAlaska_fact_sheet_Sept2020.pdf

———. 2021a. Port of Alaska Tonnage Report: 2011–2020. Available at https://www.portofalaska.com/business/ten-year-tonnage-summary/

———. 2021b. About Port of Alaska. Available at https://www.portofalaska.com/about-us/

P. O'B Montgomery & Company. 2010. Glenn Square. Available at http://www.pobmontgomery.com/images/GlennSq.pdf, accessed May 25, 2010.

Pradel, D. 1998. Procedure to Evaluate Earthquake-Induced Settlements in Dry Sandy Soils. *Journal of Geotechnical and Geoenvironmental Engineering*. 124(4):364–368.

Reger, R.D., and D.S. Pinney. 1995. Late Wisconsin glaciation of the Cook Inlet region with emphasis on Kenai Lowland and implications for early peopling. Pp. 13–36 In *Adventures Through Time: Readings in the Anthropology of Cook Inlet*. Davis, N.Y., and W.E. Davis, Editors. Cook Inlet Historical Society. Anchorage, Alaska.

———. 1997. Last Major Glaciation of Kenai Lowland. Pp. 54–67 in *1997 Guide to the Geology of the Kenai Peninsula, Alaska.* Karl, S.M., N.R. Vaughn, and T.J. Ryherd, Editors. Alaska Geologic Society. Anchorage, Alaska.

Robinson, D., N. Fried, A. Shanks, and J. Wilkinson. 2010. Employment Forecast for 2010. *Alaska Economic Trends* 30(1):4–20.

RSG. 2014. *Regional Household Travel Survey*. Prepared by RSG with ETC Institute and R&M Consulting for AMATS. December 23, 2014. Available at https://www.muni.org/Departments/OCPD/Planning/AMATS/Documents/2015%20Docs/Regional%20Household%20Travel%20Survey/RHTS_FINAL_122314.pdf

Schmoll, H., L. Yehle, C. Gardner, and J. Odum. 1984. *Guide to Surficial Geology and Glacial Stratigraphy in the Upper Cook Inlet Basin*. Prepared for Alaska Geological Society, Anchorage.

Shannon & Wilson, Inc. 1964. *Anchorage Area Soils Studies*. Geotechnical Report. Anchorage.

Sinnott, R. 2004. Chester Creek Aquatic Habitat Ecosystem Restoration Draft Report and Environmental Assessment Anchorage Alaska. U.S. Army Engineer District, Alaska.

———. 2010. Correspondence between Rick Sinnott (ADF&G) and Sirena Brownlee (HDR Alaska, Inc.). March 2010. Record on file with HDR.

SLR Alaska. 2008. *Municipality of Anchorage Solid Waste Services Landfill Water Quality Monitoring Program 2007 Annual Interpretive Report*.

Updike, G. Randall, and Bruce A. Carpenter. 1986. *Engineering Geology of the Government Hill Area, Anchorage, Alaska*. Prepared for U.S. Geological Survey Bulletin 1588.

U.S. Census. 2021. American Community Survey, 5-year Data. Available at https://www.census.gov/data/developers/data-sets/acs-5year.html

USACE (U.S. Army Corps of Engineers). 2004. *Chester Creek Aquatic Habitat Ecosystem Restoration Draft Report and Environmental Assessment*. U.S. Army Engineer District, Alaska. Anchorage Alaska.

USGS (United States Geological Survey). 2013. Water Basics Glossary. Available at https://water.usgs.gov/water-basics_glossary.html

Winkler, G.R. 1992. Geologic Map and Summary Geochronology of the Anchorage 1 x 3 Quadrangle, Southern Alaska. U.S. Geological Survey Misc. Investigation Series Map I-2283. Scale 1:250,000.

WRCC (Western Regional Climate Center). 2020. Local Climatological Data Annual Summary with Comparative Data: Anchorage, Alaska (PANC). Available at https://wrcc.dri.edu/Climate/west_lcd.php, accessed August 23, 2021.

Appendix A:
Utilities Map

AMATS: Seward Highway to Glenn Highway Connection
Planning & Environmental Linkage Study
State Project No.: CFHWY00550
Federal Project No.: 0001653

Major Utilities Maps

March 2022

This planning document may be adopted in a subsequent environmental review process in accordance with 23 USC 168 Integration of Planning and Environmental Review.

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 USC 327 and a Memorandum of Understanding dated November 3, 2017, and executed by FHWA and DOT&PF.

Prepared for:

Alaska Department of Transportation and Public Facilities

Prepared by:

HDR
2525 C Street, Suite 500
Anchorage, AK 99503

Contents

1. Scope of Work 1
2. Introduction 1
3. Methodology and Results 1

Figures

Figure 1. Water and Sewer Infrastructure 3
Figure 2. Communications Infrastructure 4
Figure 3. Electrical Infrastructure 5
Figure 4. Natural Gas Infrastructure 6

1. Scope of Work

B10.11 Major Utilities Map. The Contractor shall identify utility facilities and components that will be difficult and/or expensive to relocate. Examples include: large high pressure natural gas mains, sewer interceptors, electrical substations, telecom switching stations, electrical transmission lines, etc. Local utility distribution systems should typically not be included on the map. The Contractor shall meet with each of the affected utilities to obtain system as-builts and identify critical facilities within the study area. If mapping is available digitally in a useable format and scale it will be included on the utilities map. If paper/mylar copies are the only records available, major facilities would be sketched in to reflect the general location (e.g., which side of the street) to be able to identify potential conflicts. Survey-level digitizing of paper as-builts or new location surveys could be added by amendment if desired by the Contracting Agency.

2. Introduction

The purpose of this transmittal is to document the process used to identify the major water, sewer, communications, gas, and electrical utilities infrastructure within the project area.

3. Methodology and Results

Utility companies were contacted and asked to provide information on the location of major infrastructure within the project area. Companies contacted included: Anchorage Water and Wastewater (AWWU), ENSTAR Natural Gas, ACS Alaska, GCI, and Chugach Electric Association (CEA).

Water and sewer major infrastructure displayed in the study area map are based on the Strahler function categories defined in the AWWU *2010 Water Main Asset Management Plan* and the *2010 Sewer Main Asset Management Plan*. Strahler stream ordering is a method of assigning numbers based on the number of tributaries, number increase when flows of the same order intersect. AWWU ArcGIS data is available on their website and was used to develop the study area map; see Figure 1.

GCI provided individual grid maps for the study area, which were combined into a single drawing in AutoCAD; this was brought into Geographic Information Systems and georeferenced into the project coordinate system using parcel corners; see Figure 2. The AutoCAD layer “FIBER” was used to identify the linework that represents GCI Fiber cable and RefName “RP_Tower” was used to identify cell towers that are displayed in the map. ACS was contacted, a follow up meeting was held, and they confirmed they do not have major infrastructure in the project study area.

CEA provided electric transmissions lines and major infrastructure in the study area as an ESRI (Environmental Systems Research Institute) file geodatabase; see Figure 3. Points were converted from polygons to points for display. The major infrastructure shown in the map represent substations, distribution stations, and switch yards.

ENSTAR gas transmission mains, distribution mains, and other major infrastructure were provided by ENSTAR as an ESRI file geodatabase; see Figure 4.

This mapping is intended to be used for conceptual planning and design purposes only.

Figure 1. Water and Sewer Infrastructure

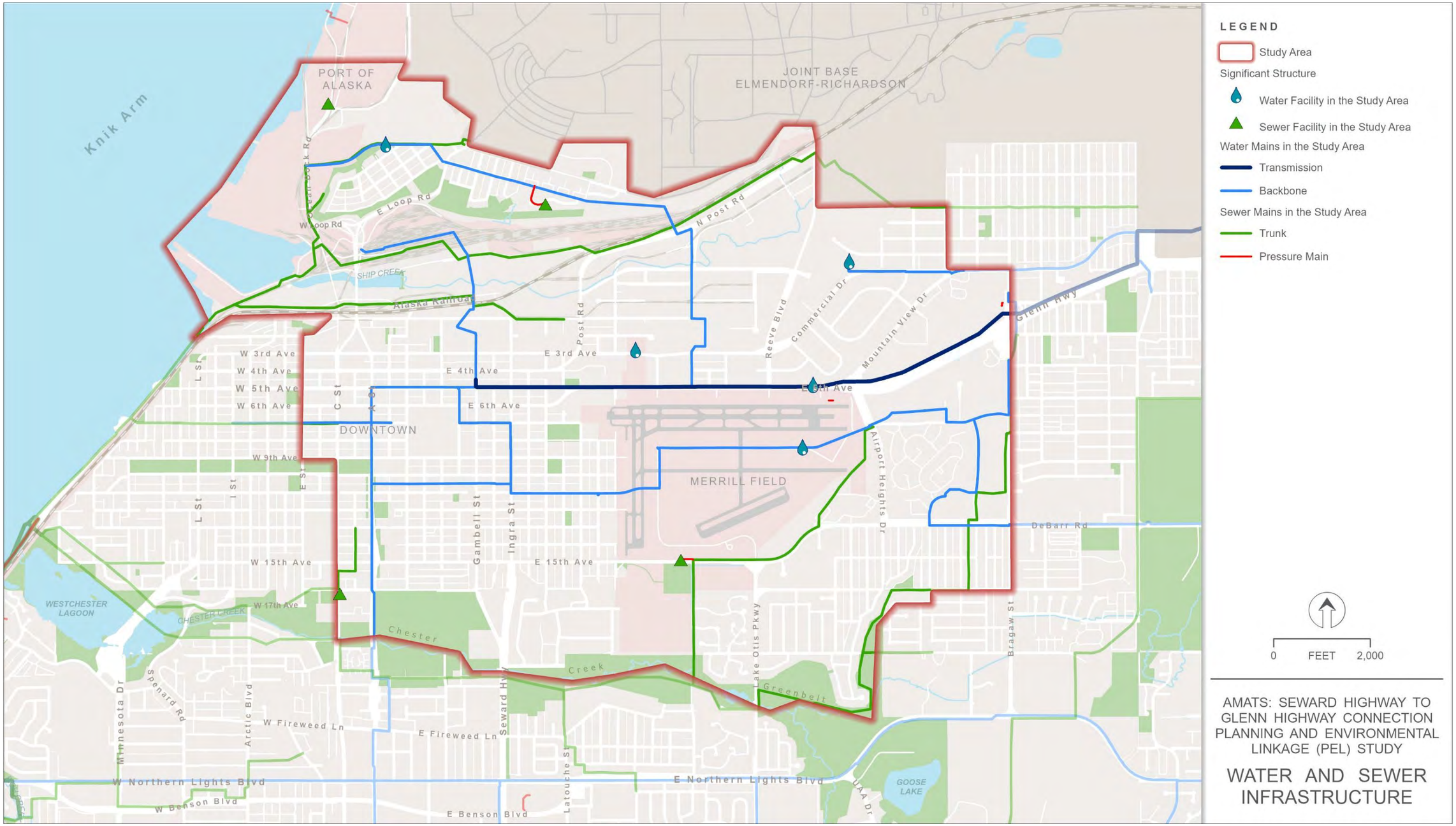


Figure 2. Communications Infrastructure

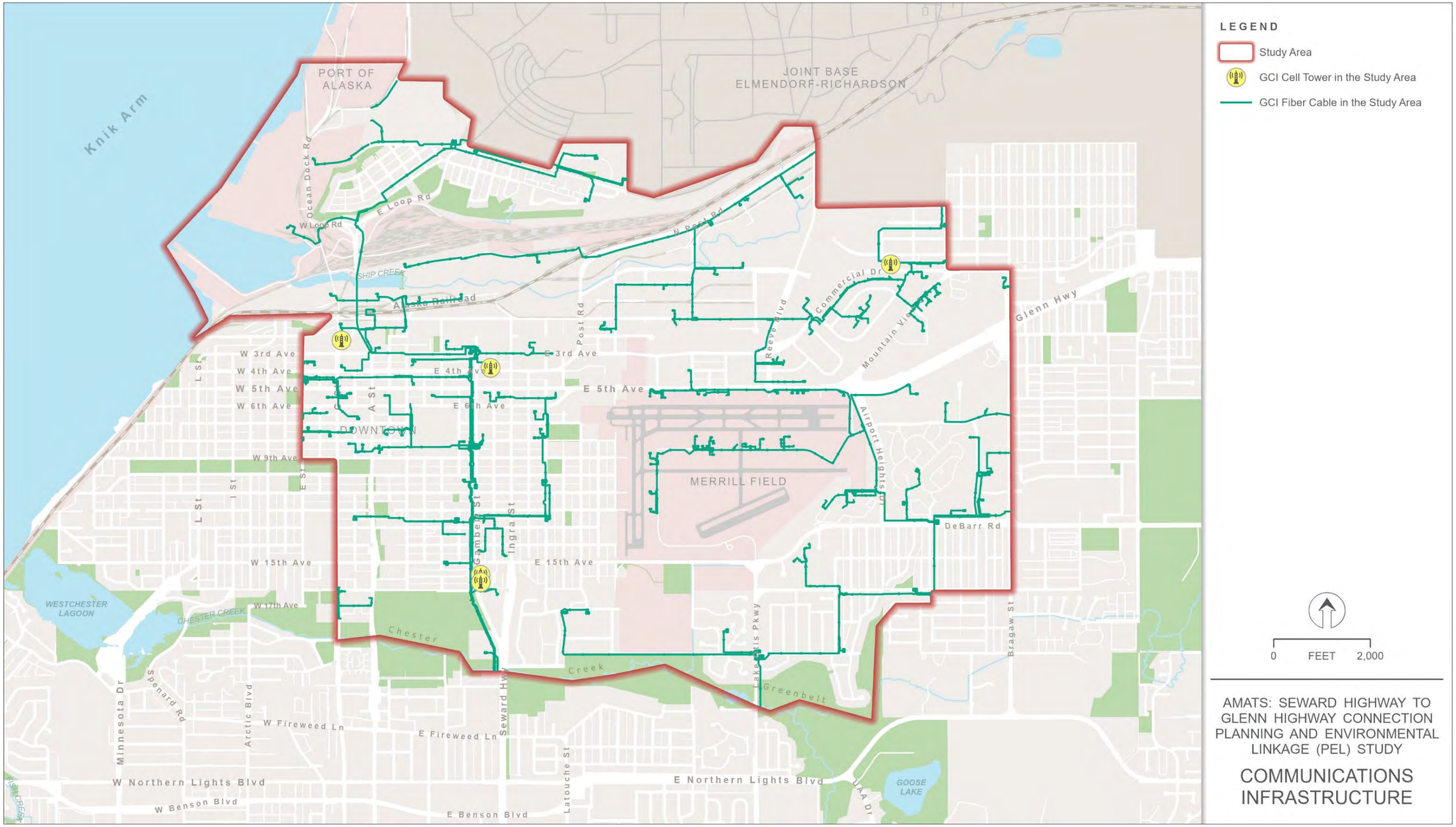


Figure 3. Electrical Infrastructure

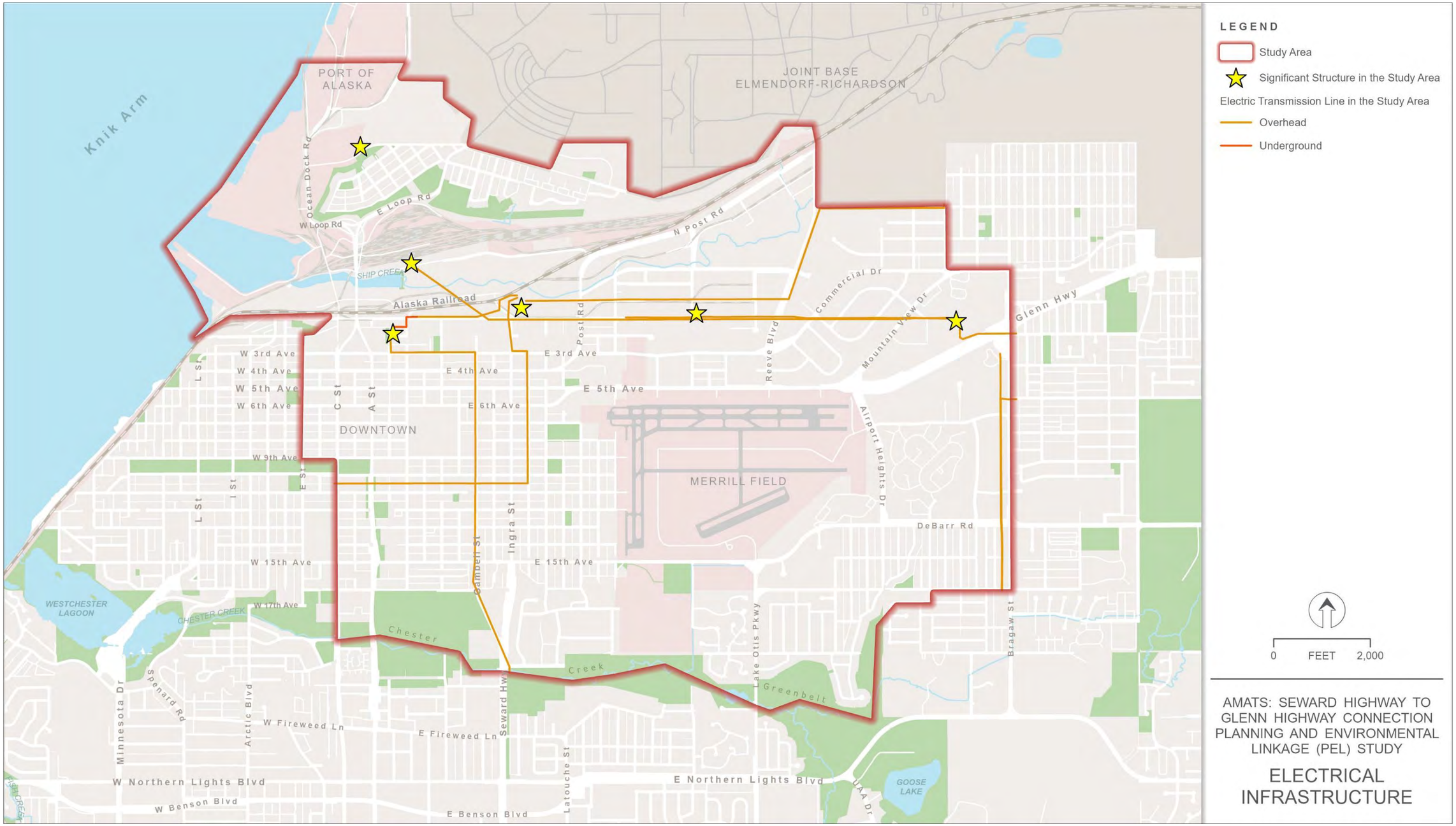
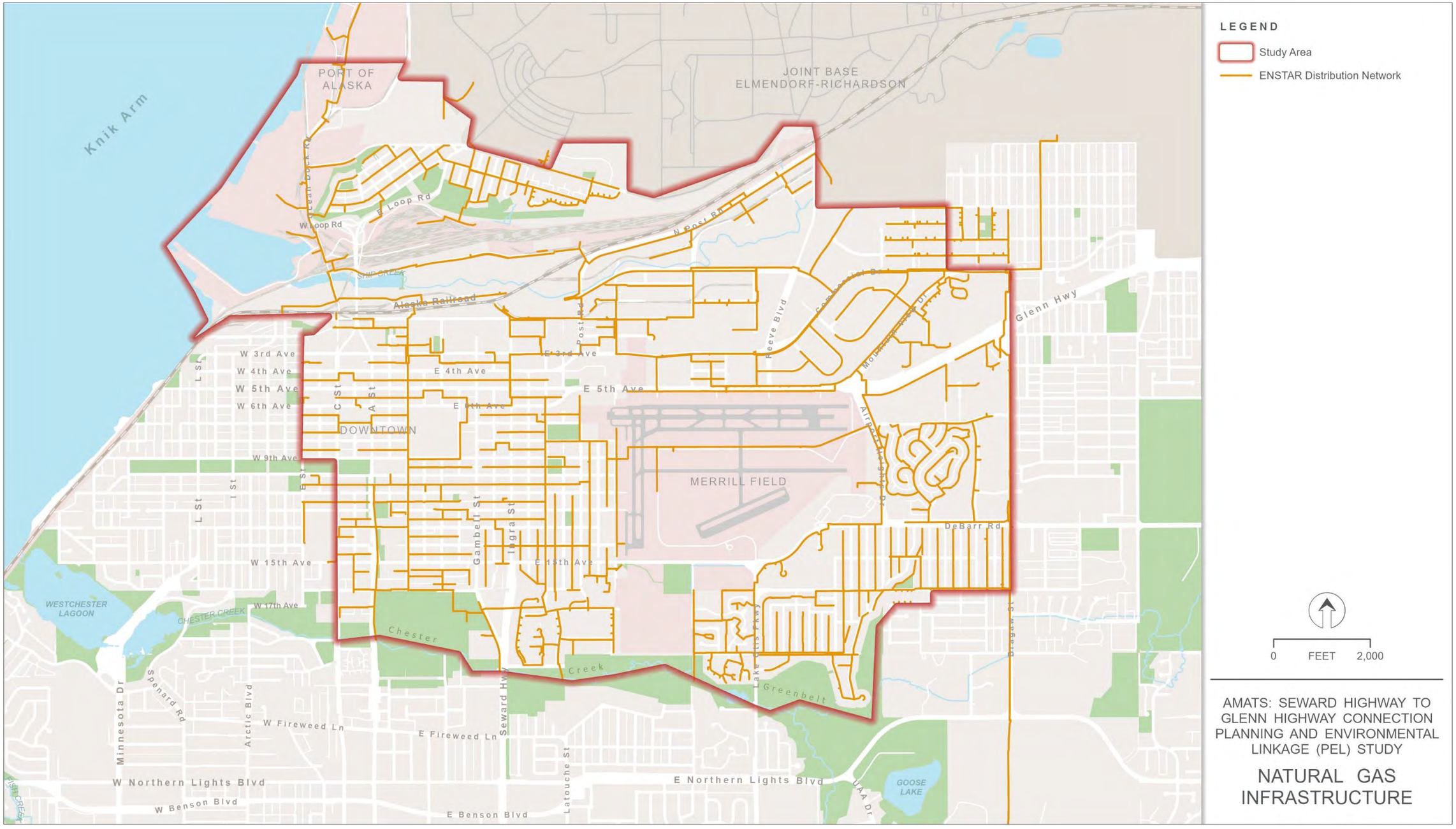


Figure 4. Natural Gas Infrastructure



Appendix B:
Social Groups Maps

AMATS: Seward Highway to Glenn Highway Connection
Planning & Environmental Linkage Study
State Project No.: CFHWY00550
Federal Project No.: 0001653

Social Groups Maps

March 2022

This planning document may be adopted in a subsequent environmental review process in accordance with 23 USC 168 Integration of Planning and Environmental Review.

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 USC 327 and a Memorandum of Understanding dated November 3, 2017, and executed by FHWA and DOT&PF.

Prepared for:

Alaska Department of Transportation and Public Facilities

Prepared by:

HDR
2525 C Street, Suite 500
Anchorage, AK 99503

Contents

1. Scope of Work 1
2. Introduction 1
3. Methodology and Results 1

Figures

Figure 1. Median Household Income by Block Group 2
Figure 2. Minority Status by Block Group 3
Figure 3. Special Land Uses with a Particular Social Importance 4

1. Scope of Work

B10.12 Social Groups Maps. The Contractor shall prepare one or more maps showing the social groups that could be specially benefitted or harmed by a proposed project. The map(s) should identify locations where low income, elderly, disabled, non-drivers, transit dependent, minority or ethnic populations are overrepresented. Three (3) maps shall be produced: (1) income by block group, (2) minority status by Block Group, and (3) special land uses with a particular social importance (e.g., nursing homes, group homes, homeless shelters, community centers, etc.). Visual inspections, census data, interviews with community leaders and interviews with any affected housing authorities shall be used to obtain the necessary data.

2. Introduction

The purpose of this memorandum is to transmit the three scoped maps showing median household income by block group, minority status by block group, and special land uses with a particular social importance.

3. Methodology and Results

Median household income (see Figure 1) and minority status by block group (see Figure 2) were based on 2015-2019 American Community Survey (ACS) 5-Year estimates. According to the 2015-2019 ACS, the median household income for the Municipality of Anchorage (MOA) was $84,928. Based on Figure 1, all block groups (that report a median household income) except two have median household incomes that are lower than the MOA median level. One of the block groups that has a higher median household income is in Government Hill while the other is in Rogers Park.

Minority is considered to be all populations except White alone (Not Hispanic or Latino), including Black or African American, American Indian or Alaska Native, Asian, Native Hawaiian or Pacific Islander, Two or More races, and White Hispanic. According to the 2015-2019 ACS, 57.9 percent of MOA residents in the MOA are White alone (not Hispanic or Latino) meaning 42.1 percent are considered minority. Within the project area, 11 of the block groups have a higher percentage of minority residents than the MOA average (see Figure 2).

The special land uses with a particular social importance (see Figure 3) were identified by a combination of online research and field research. The special land uses identified include schools, churches, libraries, grocery stores, halfway houses/group homes, transitional housing, community centers, government agencies that support environmental justice populations, and non-profit organizations that support environmental justice populations.

Figure 1. Median Household Income by Block Group

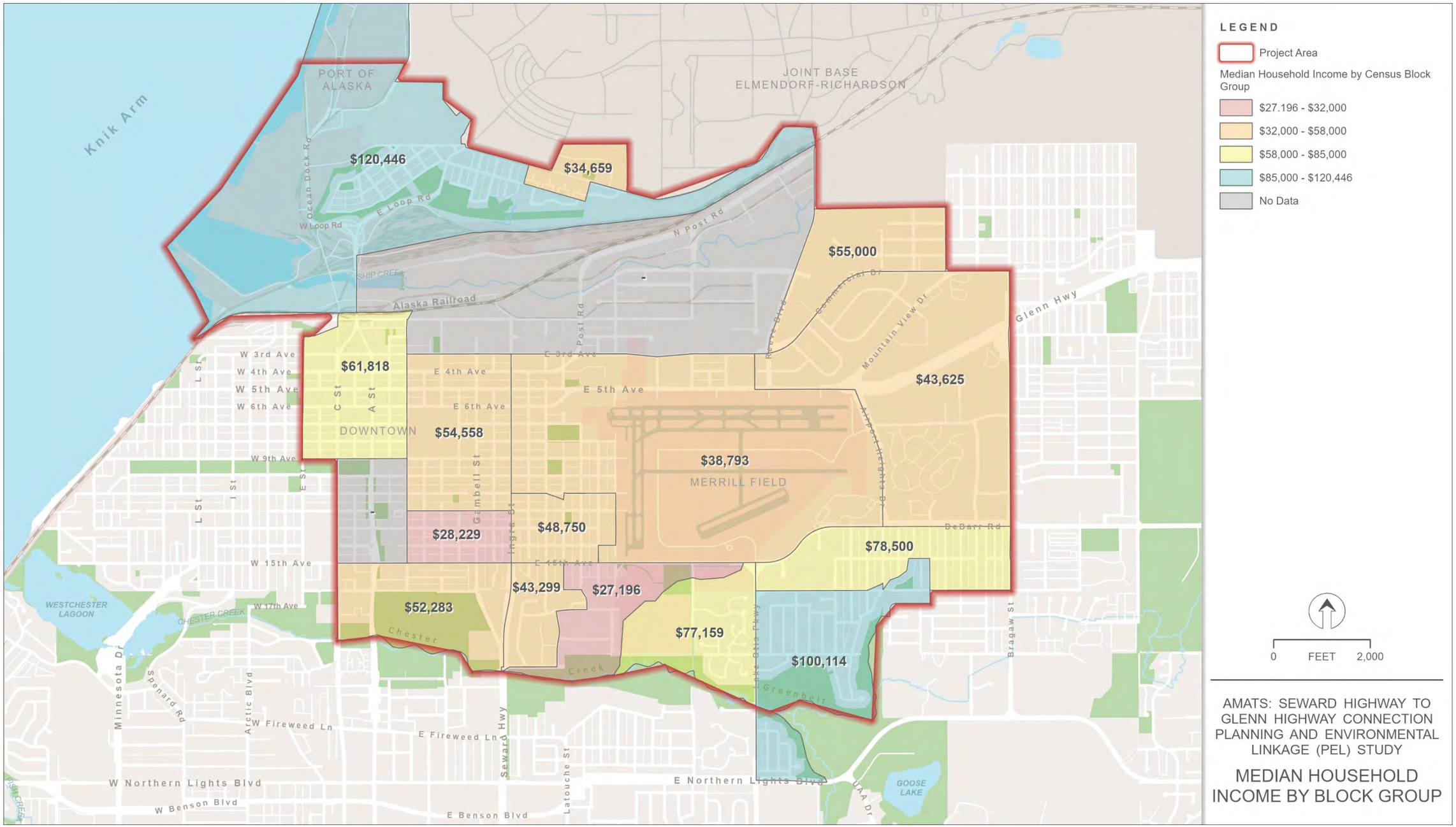


Figure 2. Minority Status by Block Group

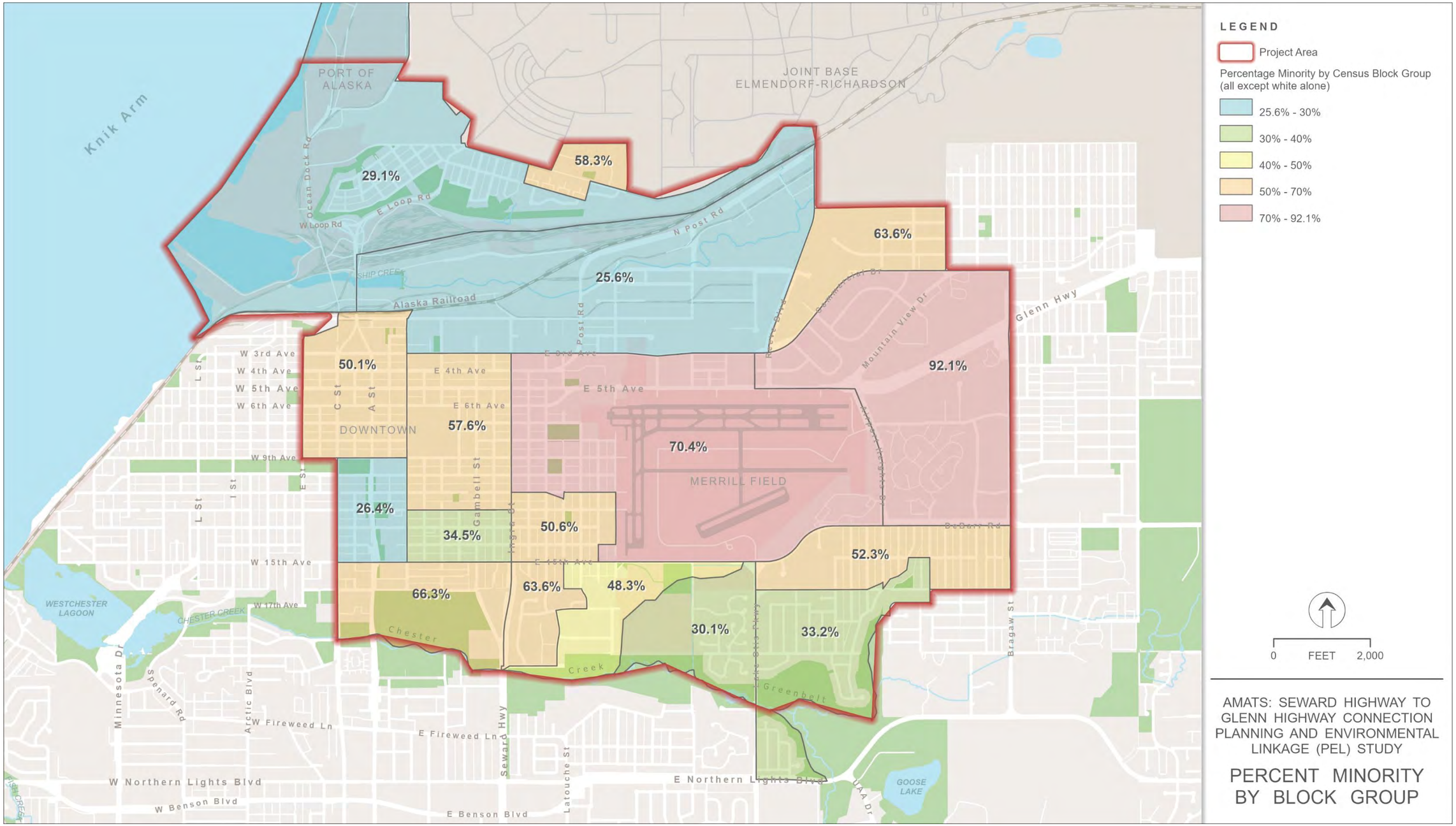
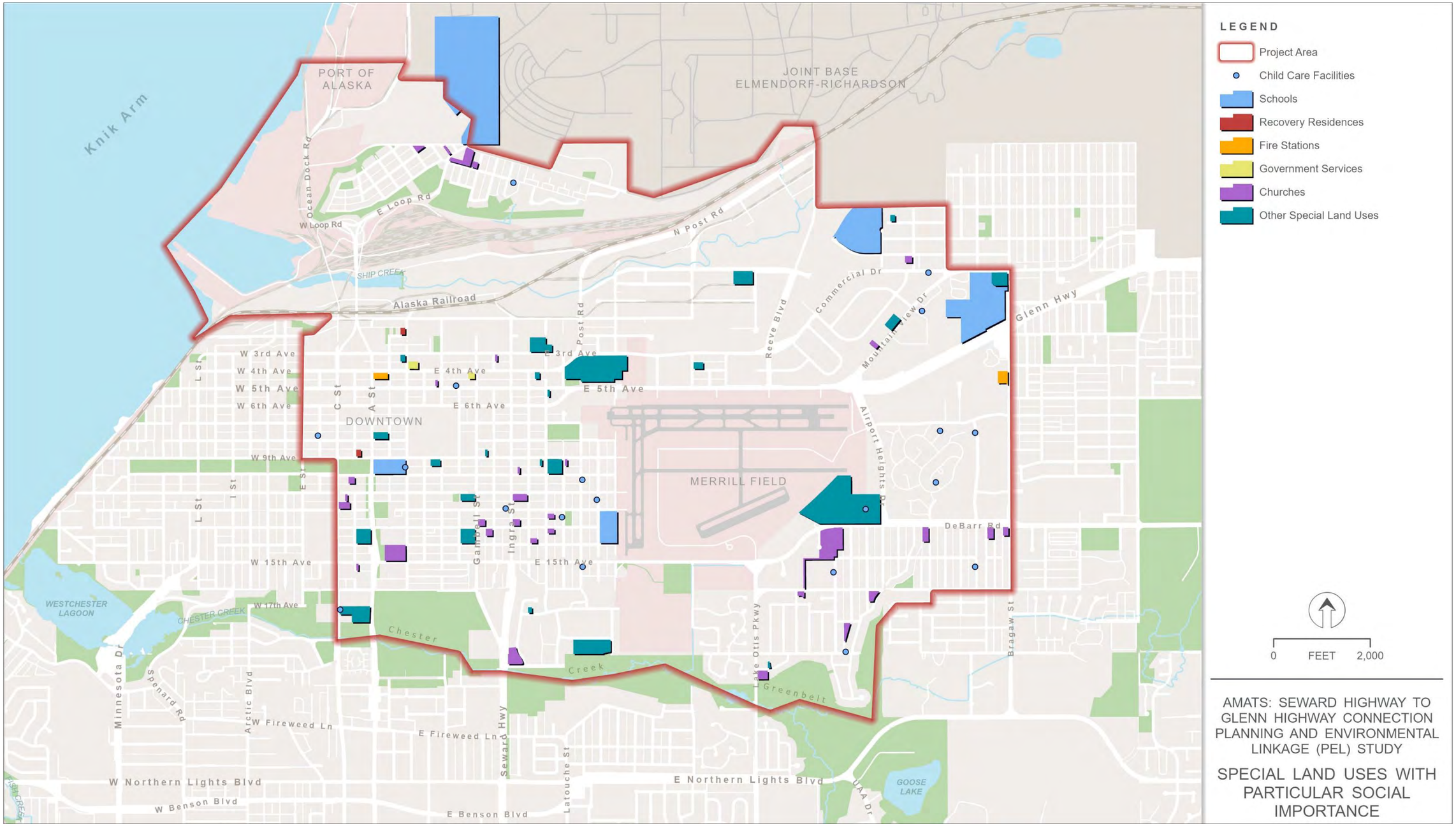


Figure 3. Special Land Uses with a Particular Social Importance



Appendix C:
Crash Map and Technical Memorandum

AMATS: Seward Highway to Glenn Highway Connection
Planning & Environmental Linkage Study
State Project No.: CFHWY00550
Federal Project No.: 0001653

Crash Map and Technical Memorandum

March 2022

This planning document may be adopted in a subsequent environmental review process in accordance with 23 USC 168 Integration of Planning and Environmental Review.

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 USC 327 and a Memorandum of Understanding dated November 3, 2017, and executed by FHWA and DOT&PF.

Prepared for:

Alaska Department of Transportation and Public Facilities

Prepared by:

HDR
2525 C Street, Suite 500
Anchorage, AK 99503

Contents

1. Introduction 1
2. Fatal and Major Injury Crashes 1
3. Fatal and Major Injury Crash Rate 3
4. Comparison of Fatal and Major Injury Crash Rate to Statewide Rate 5

Tables

Table 1. Segment Crash Rates 5

Figures

Figure 1. Fatal and Major Injury Crashes, 2008–2017 2
Figure 2. Fatal and Major Injury Segment Crash Rate, 2008–2017 4

1. Introduction

This memorandum presents information regarding the frequency and rate of fatal and major injury crashes in the study area between 2008 and 2017 (the previous 10 years of available crash data). This memorandum includes:

- Section 2 presents a crash map showing the fatal and major injury crashes in the project area between 2008 and 2017. This section also summarizes the methodology used to convert the crash information provided by the Alaska Department of Transportation and Public Facilities (DOT&PF) to a Geographic Information System format.
- Section 3 presents the fatal and major injury segment crash rates for the project area between 2008 and 2017. This section also summarizes the methodology used to calculate the crash rates.
- Section 4 compares the fatal and major injury crash rate of each segment to the statewide average.

2. Fatal and Major Injury Crashes

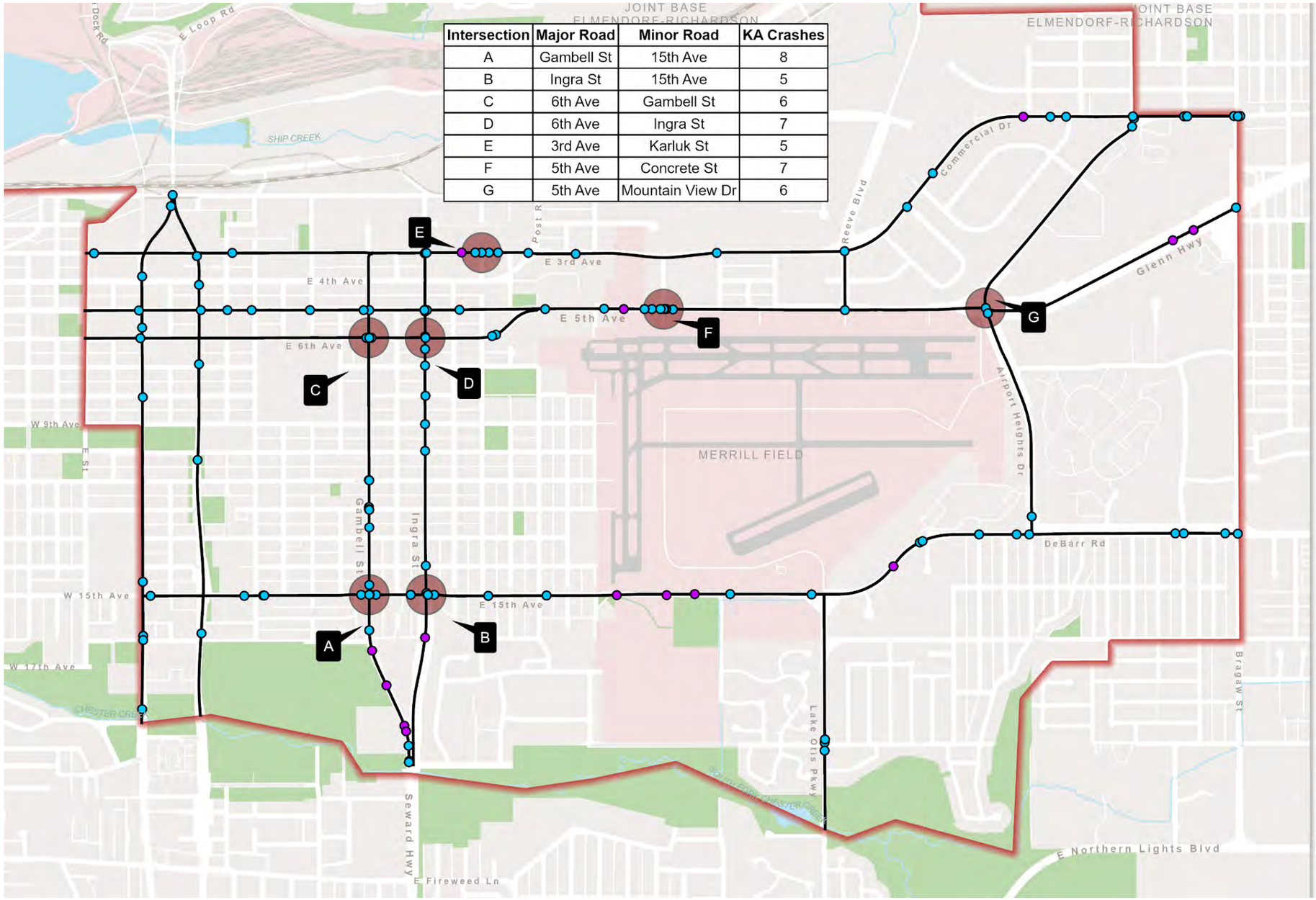
Figure 1 shows the location of the 155 fatal and major injury crashes on the arterial roads selected for analysis[1] in the project area between 2008 and 2017 (the previous 10 years of available crash data). The crash location information was provided by DOT&PF on July 20, 2021, in an Excel spreadsheet. Crashes from 2013 to 2017 were located using the associated latitude and longitude data fields. Crashes from 2008 to 2012 did not have latitude and longitude data, and were instead located using the milepost data field. Any crashes containing cross street data that did not agree with locations determined by these methods were located based on the given cross street and intersection data.

In the study area, 19 fatal and 136 major injury crashes occurred between 2008 and 2017. Of these 155 fatal and major injury crashes, 141 (91.0 percent) occurred primarily at intersections. Based on this information, seven hotspot intersections were identified. A hotspot intersection was identified as an intersection with five or more fatal and major injury crashes occurring within the 10-year study period.

The intersection with the highest number of fatal and major injury crashes (eight) is 15th Avenue and Gambell Street. This was followed by 6th Avenue and Ingra Street, and 5th Avenue and Concrete Street, which each had seven crashes.

[1] The Seward and Glenn Highways (including 5th and 6th Avenues and Gambell and Ingra Streets) and parallel/connecting arterial roads within the study area were identified for analysis.

Figure 1. Fatal and Major Injury Crashes, 2008–2017



Intersection	Major Road	Minor Road	KA Crashes
A	Gambell St	15th Ave	8
B	Ingra St	15th Ave	5
C	6th Ave	Gambell St	6
D	6th Ave	Ingra St	7
E	3rd Ave	Karluk St	5
F	5th Ave	Concrete St	7
G	5th Ave	Mountain View Dr	6

LEGEND

- Project Area
- Intersection Crashes
- Segment Crashes
- Hotspot Intersections
- Major Roads

0 FEET 2,000

AMATS: SEWARD HIGHWAY TO GLENN HIGHWAY CONNECTION PLANNING AND ENVIRONMENTAL LINKAGE (PEL) STUDY

FATAL AND MAJOR INJURY CRASH LOCATIONS

Note: KA stands for fatal and serious injury crashes based on the KABCO scale for crash severity.

3. Fatal and Major Injury Crash Rate

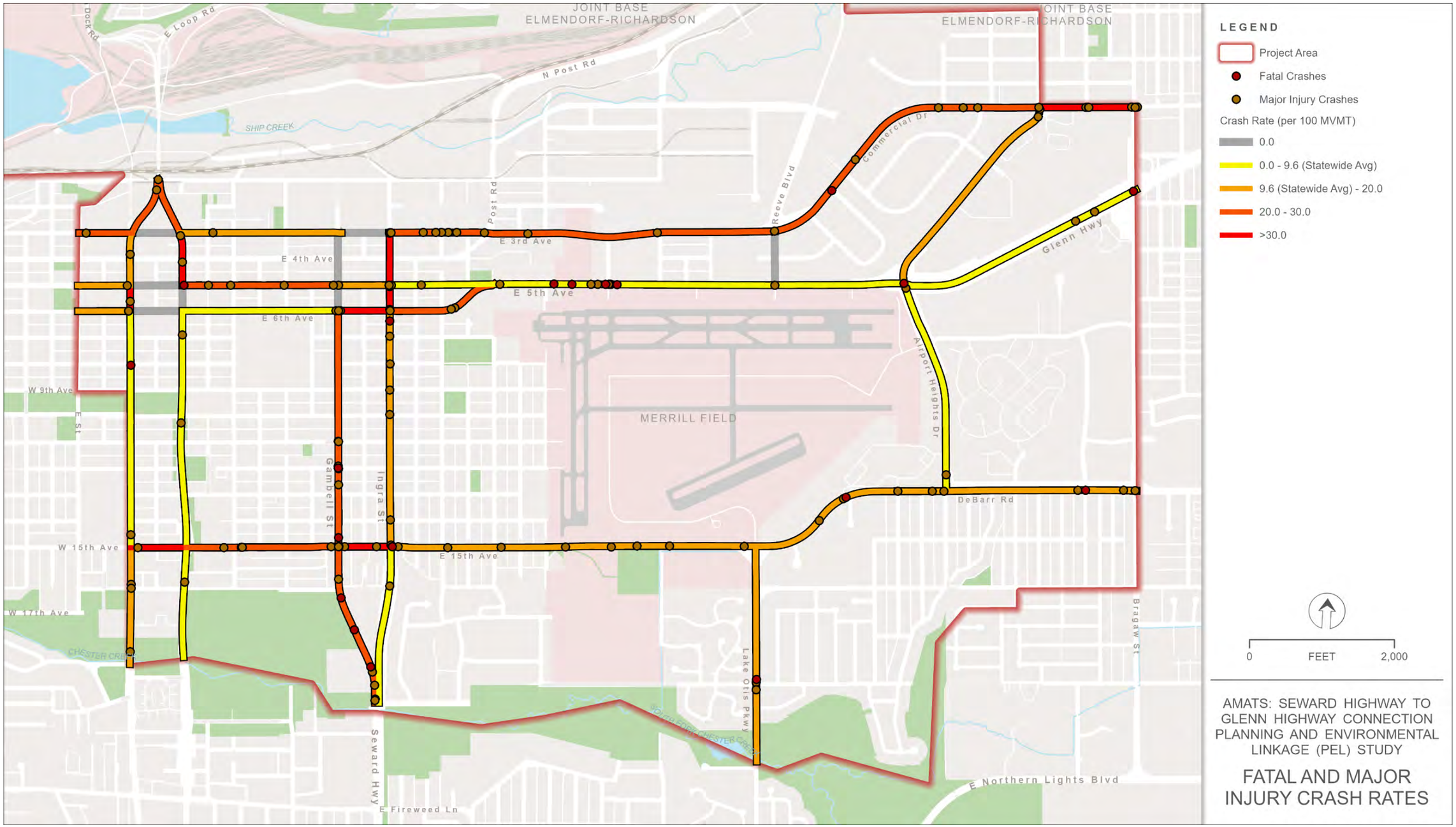
Segment fatal and major injury crash rates were calculated using road segment lengths obtained from the State of Alaska Open Data Geoportal and historical traffic volumes from the DOT&PF Traffic Analysis and Data Application website. Major roads within the project area were divided into segments based on intersections with other major roads. The 10-year annual average daily traffic was calculated for each segment, then used to calculate an annual average fatal and major injury crash rate across the 10-year period. The resulting fatal and major injury segment crash rates are shown in Figure 2.

The segment with the highest crash rate (145.7 fatal and major injury crashes per million vehicle miles traveled [MVMT]) is Ingra Street between 5th and 6th Avenues. The intersections at the start and end of this segment (Ingra Street/5th Avenue and Ingra Street/6th Avenue) have some of the highest numbers of crashes in the study area. The crash rate on this segment is more than double the next highest segment (6th Avenue between Gambell and Ingra Streets).

While two intersections on the Glenn Highway/5th Avenue have a high crash frequency, the crash rates along this corridor do not exceed the statewide average. This is due to the high traffic volumes along this corridor.

Eight segments had a crash rate of 0 during the 10-year study period.

Figure 2. Fatal and Major Injury Segment Crash Rate, 2008–2017



4. Comparison of Fatal and Major Injury Crash Rate to Statewide Rate

The fatal and major injury segment crash rate was compared to the statewide rate provided by DOT&PF to determine if the crash rate of any segment in the project area was higher than the statewide rate. The results are shown in Table 1.

Thirty of the 48 segments (62.5 percent) analyzed have a fatal and serious injury crash rate that is above the statewide rate (9.6 per MVMT). In general, the crash rate on Glenn Highway/5th Avenue (east of Medfra Street), and along A and C Streets, are below the statewide average, while the other study corridors exceed the statewide rate.

Table 1. Segment Crash Rates

Segment	Crash Rate (per 100 MVMT)
3rd Avenue (from E Street to C Street)	28.7
3rd Avenue (from C Street to A Street)	0.0
3rd Avenue (from A Street to Gambell Street)	12.3
3rd Avenue (from Gambell Street to Ingra Street)	0.0
3rd Avenue (from Ingra Street to Reeve Boulevard)	28.0
Commercial Drive (from Reeve Boulevard to Mountain View Drive)	20.3
5th Avenue (from E Street to C Street)	13.9
5th Avenue (from C Street to A Street)	0.0
5th Avenue (from A Street to Gambell Street)	20.4
5th Avenue (from Gambell Street to Ingra Street)	13.8
5th Avenue (from Ingra Street to 6th Avenue)	8.3
5th Avenue (from 6th Avenue to Reeve Boulevard)	8.6
5th Avenue (from Reeve Boulevard to Airport Heights Drive)	3.7
Glenn Highway (from Airport Heights Drive to Bragaw Street)	5.2
6th Avenue (from E Street to C Street)	16.5
6th Avenue (from C Street to A Street)	0.0
6th Avenue (from A Street to Gambell Street)	4.0
6th Avenue (from Gambell Street to Ingra Street)	67.8
6th Avenue (from Ingra Street to 5th Avenue)	20.1
15th Avenue (from C Street to A Street)	51.4
15th Avenue (from A Street to Gambell Street)	27.1
15th Avenue (from Gambell Street to Ingra Street)	47.6
15th Avenue (from Ingra Street to Lake Otis Parkway)	14.9
DeBarr Road (from Lake Otis Parkway to Airport Heights Drive)	10.7
DeBarr Road (from Airport Heights Drive to Bragaw Street)	10.2
C Street (from A-C Couplet to 3rd Avenue)	24.8

Segment	Crash Rate (per 100 MVMT)
C Street (from 3rd Avenue to 5th Avenue)	18.9
C Street (from 5th Avenue to 6th Avenue)	55.1
C Street (from 6th Avenue to 15th Avenue)	6.4
C Street (from 15th Avenue to Chester Creek)	14.9
A Street (from A-C Couplet to 3rd Avenue)	28.3
A Street (from 3rd Avenue to 5th Avenue)	51.4
A Street (from 5th Avenue to 6th Avenue)	0.0
A Street (from 6th Avenue to 15th Avenue)	7.6
A Street (from 15th Avenue to Chester Creek)	6.2
Gambell Street (from 3rd Avenue to 5th Avenue)	0.0
Gambell Street (from 5th Avenue to 6th Avenue)	0.0
Gambell Street (from 6th Avenue to 15th Avenue)	20.3
Gambell Street (from 15th Avenue to Chester Creek)	25.0
Ingra Street (from 3rd Avenue to 5th Avenue)	59.9
Ingra Street (from 5th Avenue to 6th Avenue)	145.7
Ingra Street (from 6th Avenue to 15th Avenue)	15.8
Ingra Street (from 15th Avenue to Chester Creek)	2.4
Reeve Boulevard (from 3rd Avenue to 5th Avenue)	0.0
Mountain View Drive (from 5th Avenue to Commercial Drive)	13.6
Mountain View Drive (from Taylor Street to Bragaw Street)	61.1
Airport Heights Drive (from 5th Avenue to DeBarr Road)	7.7
Lake Otis Parkway (from 15th Avenue to Chester Creek)	14.7

Notes: The statewide rate is 9.6 MVMT. Cells highlighted in blue are above the statewide rate.
MVMT = million vehicle miles traveled

Appendix D:
Wetlands Map

AMATS: Seward Highway to Glenn Highway Connection
Planning & Environmental Linkage Study
State Project No.: CFHWY00550
Federal Project No.: 0001653

Wetlands Map

March 2022

This planning document may be adopted in a subsequent environmental review process in accordance with 23 USC 168 Integration of Planning and Environmental Review.

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 USC 327 and a Memorandum of Understanding dated November 3, 2017, and executed by FHWA and DOT&PF.

Prepared for:

Alaska Department of Transportation and Public Facilities

Prepared by:

HDR
2525 C Street, Suite 500
Anchorage, AK 99503

Contents

1. Scope of Work 1
2. Introduction 1
3. Methodology and Results 1

Figures

Figure 1. Wetlands 3

1. Scope of Work

B10.9 Wetlands Map. The Contractor shall create a map identifying all wetlands located within the PLA. The wetlands map shall be created from existing MOA mapping and expert judgement from aerial photos. The contractor is not expected to complete field delineations, a jurisdictional determination, or a functional assessment.

2. Introduction

The purpose of this transmittal is to document the process used to develop the map of wetlands within the project area (Figure 1).

3. Methodology and Results

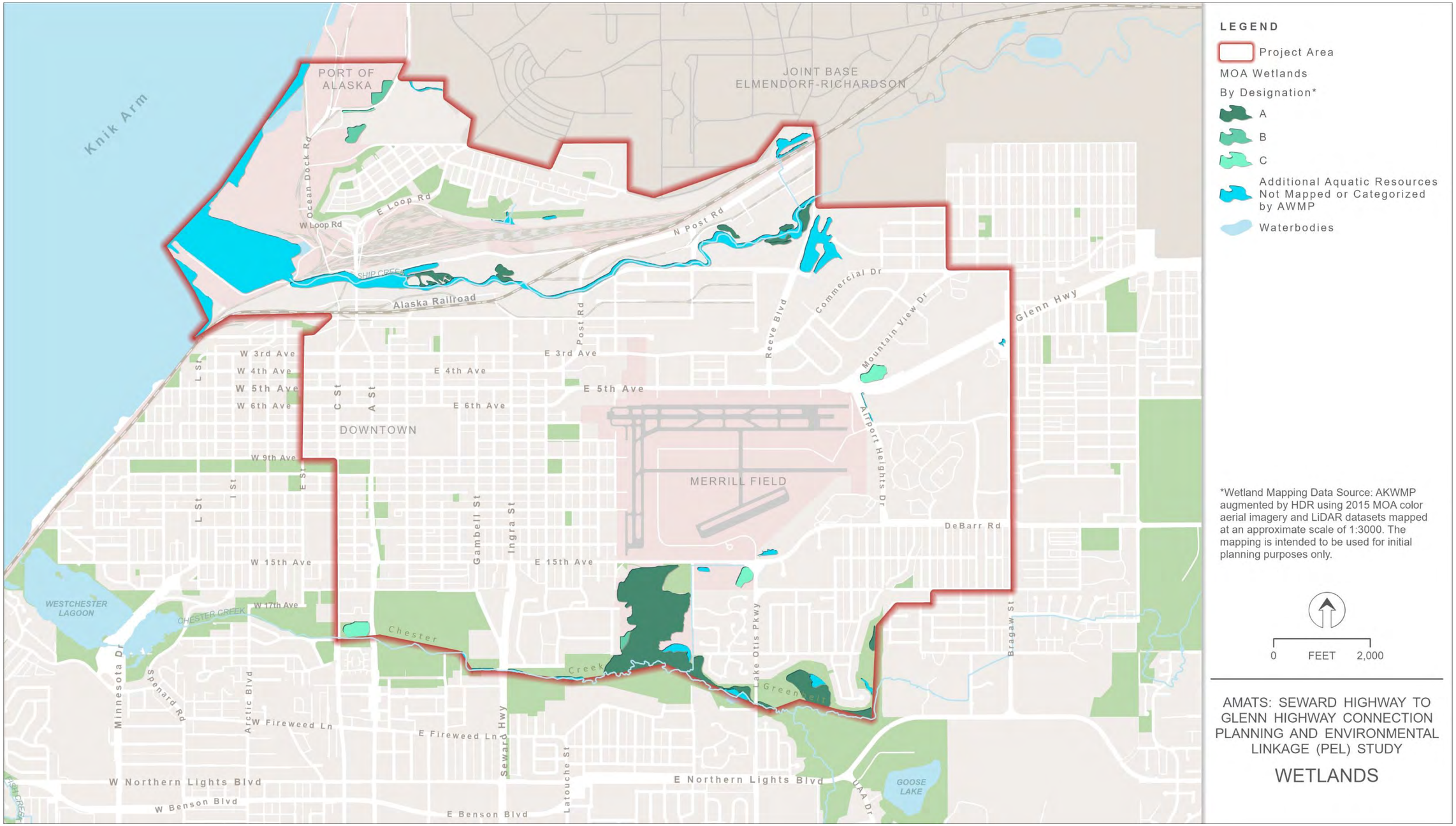
Wetlands were identified based on MOA GIS data and a review of aerial photography of project area by a Professional Wetland Scientist. The wetlands data uses the classification system from the 2014 *Anchorage Wetlands Management Plan* (AWMP) which designates wetlands as class "A", "B", or "C". The AWMP defines these as:

> Class "A" – "A" wetlands have the highest wetland resource values. They perform at least two, but typically more, significant wetland functions. They are considered most valuable in an undisturbed state, as most uses or activities, especially those requiring fill, negatively impact known wetland functions. They are not to be altered or otherwise disturbed in any manner, except as outlined in the AWMP and its enforceable policies.
>
> Class B – Within each "B" site, there is typically a mixture of higher and lower values and functions and some portion of these wetlands have a fairly high degree of biological or hydrological functions and site development limitations. They possess some significant resources, but could possibly be marginally developed. The intent of the "B" designation is to conserve and maintain a site's key functions and values by limiting and minimizing fills and development to less critical zones while retaining higher value areas. Development could be permitted in the less valuable zones of a "B" site, provided avoidance and minimization and Best Management Practices are applied to limit disturbance and impacts to the higher value non-fill portions.
>
> Class C – "C" wetlands are the lowest value wetlands within the MOA. Some "C" sites may have moderate values for one or more wetland function, but they generally have reduced or minimal functions and/or ecological values. Such sites are suitable for development and are to be generally managed to support community expansion and infilling. The development of "C" wetlands in is considered to have a minimal cumulative impact on overall functions and values of Anchorage wetlands.

For additional information about each class, please see Chapter 4 of the AWMP.

HDR augmented the mapping by using 2015 MOA color aerial imagery and LiDAR topographic datasets at an approximate scale of 1:3,000. Aquatic resources (waterbodies or wetlands) not mapped or classified by the AWMP that are potentially subject to U.S. Army Corps of Engineers jurisdiction were mapped by HDR but not classified, since the AWMP classification system does not apply to waterbodies and additional field assessment would be required to classify wetlands. The mapping is intended to be used for conceptual planning and design purposes only.

Figure 1. Wetlands



Appendix E:
Cultural Resources Map and Technical Memorandum

AMATS: Seward Highway to Glenn Highway Connection
Planning & Environmental Linkage Study
State Project No.: CFHWY00550
Federal Project No.: 0001653

Cultural Resources Map and Technical Memorandum

March 2022

This planning document may be adopted in a subsequent environmental review process in accordance with 23 USC 168 Integration of Planning and Environmental Review.

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 USC 327 and a Memorandum of Understanding dated November 3, 2017, and executed by FHWA and DOT&PF.

Prepared for:

Alaska Department of Transportation and Public Facilities

Prepared by:

HDR
2525 C Street, Suite 500
Anchorage, AK 99503

Contents

1. Scope 1
2. Introduction 1
3. Regulatory Setting 2
   3.1 National Register of Historic Places Eligibility 2
4. Historic Contexts for Anchorage 2
   4.1 Exploring Alaska 3
   4.2 U.S. Territory 3
   4.3 Alaska Railroad and the Founding of Anchorage 3
   4.4 Iditarod Trail 4
   4.5 Anchorage Townsite and Incorporation 4
   4.6 Aviation 5
   4.7 World War II 5
   4.8 Highways and Airports 6
   4.9 Alaska Statehood 6
   4.10 The 1964 Earthquake 7
   4.11 Oil Industry 7
   4.12 Municipality of Anchorage 8
5. Methodology 8
   5.1 Windshield Survey 8
6. Results 9
   6.1 Historic Districts 17
   6.2 Windshield Survey 18
7. Recommendations 18
8. References 19

Tables

Table 1. AHRS Historic Properties in the Project Area Listed on or Nominated to the NRHP 9
Table 2. Historic Properties in the Project Area Determined Eligible for the NRHP 10
Table 3. Historic Districts within the Project Area 18

Appendices

Appendix A: Map of AHRS Sites and Historic Districts within the Project Area

Appendix B: Field Photographs of Selected Cultural Resources within the Project Area

1. Scope

The Contractor shall identify and create a map showing the cultural resources within the PLA and a companion Technical Memorandum that identifies the cultural resource and its owner. The purpose of this map and memo is to provide information on cultural resources so important cultural resources can be avoided during the development of preliminary alternatives. Information for the map shall come from the Alaska Heritage Resources Survey (AHRS) data repository. Regarding the built environment, the Contractor shall also show on the Cultural Resources Map any buildings that are currently determined eligible for inclusion on the National Register of Historic Places (NRHP) and any currently identified Historic Districts. A brief windshield survey shall be conducted to help identify potentially important historic buildings. The memo shall include a brief historic context with a general description of the historic setting and context. The Contractor is not expected to complete a formal inventory and assessment, determinations of eligibility, determinations of affect, nor formal consultation. All work shall be accomplished under the direction of the Cultural Resource Specialist.

2. Introduction

This memorandum provides information on historic properties that occur within the project area and could potentially be affected by alternatives proposed by the Seward Highway to Glenn Highway Connection Planning and Environmental Linkages (PEL) study. Historic properties are defined as “any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior” (36 Code of Federal Regulations [CFR] 800.16). These can include private homes, civic and government buildings, structures such as bridges, airfields, and railroads; historic districts, and archaeological sites.

Included with this memorandum is a map showing the location of those cultural resources that have been documented within the project area on the AHRS database, which is included as an appendix. The AHRS database includes information for all cultural resources. the term cultural resources includes archaeological sites, buildings, structures, objects or locations, etc.), from prehistoric to modern, and is not dependent on eligibility to the NRHP, like historic properties are. The map, and this memorandum, show four different categories of cultural resources:

1. All documented cultural resources located within the project area
2. Historic properties determined eligible for the NRHP
3. Historic properties nominated and/or formally listed on the NRHP
4. Historic districts located within the project area

Only historic properties and/or historic districts that may be adversely affected by road development will be subject to review under the terms of Section 106 of the National Historic Preservation Act (NHPA) of 1966, which is described below.

3. Regulatory Setting

If a proposed project requires federal permitting, uses federal funds, or occurs on federal lands, it will qualify as a federal undertaking subject to compliance with Section 106 of the NHPA of 1966, as amended, and its implementing regulations found in 36 CFR 800. Section 106 requires project proponents to consider the effects of their undertakings on historic properties (36 CFR 800.1(a)). Historic properties are any prehistoric or historic district, site, building, structure, object, or traditional cultural property included in or eligible for inclusion in the NRHP (36 CFR 800.16(l)[1]).

3.1 National Register of Historic Places Eligibility

The NRHP is the U.S. government's official list of districts, sites, buildings, structures, and objects deemed worthy of preservation for their historical significance. The NRHP is administered by the National Park Service (NPS); properties may be nominated to the list for their significance in local, state, or national history.

Cultural resources being evaluated under Section 106 of the NHPA are often subject to a determination of eligibility process for the NRHP as a mitigation measure required by the State Historic Preservation Office (SHPO). This determination is made by gathering historical evidence and applying a series of criteria and considerations laid out by the NRHP (NPS 1997) to examine the resource's significance and integrity. If the SHPO concurs with the determination (eligible or not eligible for the NRHP), the determination stands. Properties that have been determined eligible for the NRHP (with SHPO concurrence) may be nominated for listing on the NRHP, though a Determination of Eligibility (DOE) is not required to nominate a property. Conversely, just because a property has been determined eligible does not mean that it will automatically be accepted onto the NRHP.

4. Historic Contexts for Anchorage

Historic contexts identify themes and patterns in history that were important for the development of a historic site or community. There may be more than one context applicable to a given property or community, and a historic context is not meant to be an exhaustive history. Rather, it identifies the key factors that shaped the property or community in question and make it possible for cultural resources associated with these significant factors to be identified.

The Alaska Office of History and Archaeology's (OHA) website says this about historic contexts:

> A historic context provides the basis for evaluating significance and integrity. It groups information about historic properties that have common theme, place, or time. Historic contexts are intended to provide a framework for identifying and evaluating resources by focusing on and explaining what aspects of geography, history and culture significantly shaped the physical development of a community or region's land use patterns and built environment over time, what important property types are associated with those development patterns, why they are

> important, and what characteristics they need to have to be considered an important representation of their type and context (OHA n.d.)

The historic contexts provided below are adapted *from Anchorage's Four Original Neighborhoods: 2015 Interpretive Plan* (Municipality of Anchorage 2013:9–17). Citations have been updated where appropriate.

4.1 Exploring Alaska

Cook Inlet was named for Captain James Cook, a British explorer who is credited with making the first European claim in the Anchorage area. Cook sailed into the inlet in May 1778 on an expedition in search of the fabled Northwest Passage and claimed the area for England (Lundberg n.d.). Prior to Cook's expedition, however, other parts of Alaska were visited by Russian explorers sailing east out of Kamchatka. Mikhail Gvodzev first sighted the Alaskan mainland in 1732, and Vitus Bering, a Danish explorer commissioned by Russia's Czar Peter the Great, was the first to send boats ashore in 1741 (Alaska Humanities Forum 2017a). Although many early outposts were established along the Kenai Peninsula and Gulf of Alaska, Russian fur traders had little presence in upper Cook Inlet (Tower 2003:15). This early exploration period is celebrated in the Four Original Neighborhoods interpretive plan (Municipality of Anchorage 2013:72). The Captain Cook Monument at Resolution Park was installed to commemorate the 200th anniversary of Cook's expedition to Anchorage. The monument is located in downtown Anchorage, at the intersection of 3rd Avenue and L Street near Cook Inlet.

4.2 U.S. Territory

In 1867, the U.S. government purchased the entire Alaska territory from Russia in a deal brokered by Secretary of State William H. Seward. From 1867 until 1884, the territory was known as the Department of Alaska and was controlled under a series of federal departments (Cole 2008:1).

The first civil government was formed in Alaska in 1884, when the area was known as the District of Alaska (Cole 2008:59; NPS n.d.:9–15). Mining and prospecting were major drivers of Alaska's economy at this time. Most prospectors were not successful in the gold fields, but many of these new arrivals decided to remain in Alaska and established permanent communities (Cole 2008:59). In response to increasing pressure for local control over Alaskan affairs, the U.S. Congress established the Alaska Territory as an organized incorporated territory in 1912. Alaska was admitted to the Union as the 49th state in 1959 (Cole 2008:59; NPS n.d.:9–15).

4.3 Alaska Railroad and the Founding of Anchorage

Anchorage had its start as a railroad boomtown, and its early development followed many of the same patterns that accompanied the railroads across the American West. A new federal agency—the Alaska Engineering Commission (AEC)—was created to plan the route and supervise its construction from Seward to Fairbanks (NPS n.d.:28–29; Strohmeyer 2001:9). Ship Creek, located at the northern edge of present-day downtown Anchorage, became the field headquarters of the AEC in 1914. The Ship Creek delta was a desirable location for a camp

because it was conveniently located on the inlet, and rail yards and shops could easily be built on the mudflats. On April 9, 1915, President Woodrow Wilson announced the approval of the AEC's recommended route through Ship Creek and ordered construction of the railroad to commence (Tower 2003:26–27; Carberry and Lane 1986:2).

As early as 1914, speculation that Ship Creek might be the base for the new government railroad was enough to attract hundreds of men hopeful for employment. Squatters arrived in droves, and by the time of the president's announcement, a temporary settlement had already developed on the north side of the Creek. "Tent City," as the squatters' settlement was often called, primarily comprised canvas tents, although entrepreneurs built more solid-wood buildings to house their businesses (Tower 2003:26–27; Carberry and Lane 1986:2–3).

Many of the squatters were European immigrants who had flocked to the West Coast of the US but could not find work there. The AEC did eventually hire some of these men as laborers, but in general, Alaska Railroad jobs were not as readily available as the squatters had hoped (Carberry and Lane 1986:3; Strohmeyer 2001:9–10).

From 1915 to the end of World War II, the AEC and the Alaska Railroad constructed housing on Government Hill for railroad managers, engineers, and skilled workers. The AEC built 13 cottages in 1915 on the bluff overlooking Knik Arm at the western end of Government Hill, along what are now West Harvard Avenue and Delaney Street. These were among the first frame houses constructed in Anchorage and were initially occupied by railroad workers (SRB&A 2006:8–9).

4.4 Iditarod Trail

Before the Alaska Railroad was opened and running regularly to Seward in 1918, Anchorage relied entirely on the Ship Creek-Indian Pass segment of the Iditarod Trail for overland travel by foot or dogsled to Seward between 1915 and 1917 (Carberry and Lane 1986:146–149). Dogsled freight teams and "gold trains" were a common sight on the main streets of downtown Anchorage and at Ship Creek (Bittner et al. n.d.:12), where the trail to Indian Pass terminated on the north side of Ship Creek in the vicinity of the present-day A-C Street bridge. Dog teams were of such necessity that the Anchorage Hotel had a livery kennel built for dog teams passing through Anchorage (Bittner et al. n.d.:12).

4.5 Anchorage Townsite and Incorporation

The land for the Anchorage Townsite had already been set aside by the General Land Office during a cadastral survey of the region in 1914, but it was not until May 1915 that the townsite was platted (Carberry and Lane 1986:4-5). (The Dena'ina Athabascan people who already lived in the area were not consulted on the matter.) The original townsite plat established a street grid and approximately 1,400 lots on the plateau immediately south of Ship Creek (Carberry and Lane 1986:4). The east-west streets were numbered, and the north-south streets were named with letters of the alphabet.

The South Addition was the first expansion of the original townsite, laid out in August 1915 to address a shortage of homestead sites. The East Addition soon followed in late September 1915. The Third Addition was added in the summer of 1916 (Carberry and Lane 1986:139–140). The expansion of the street grid included larger lots than the original townsite. The AEC created 5- and 8.3-acre parcels in the South Addition and Third Addition because they wanted to encourage agricultural development around Anchorage. Thus, in 1917, a Presidential Executive Order was issued prohibiting the subdivision of tracts containing two or more acres into smaller lots (Carberry and Lane 1986:132).

Anchorage was incorporated as a city in 1920 (Carberry and Lane 1986:9). The original Anchorage city limits extended south to 11th Avenue and east to East G Street (now Gambell Street). The farther reaches were largely agricultural in character, scattered with homesteads, dairy farms, and fur farms until the late 1930s (Carberry and Lane 1986:132–133).

4.6 Aviation

The first airplane flight in Alaska was a demonstration flight in Fairbanks in 1913 (Kraus 2020:3). It was not until after World War I that significant aviation development occurred in the state. However, by the late 1920s, airplanes had revolutionized transportation in Alaska (Alaska Humanities Forum 2017b; Kraus 2020:3–11). The territory's vast size and rough terrain necessitated the use of airplanes, and remote communities relied—and continue to rely—on bush pilots to fly small planes filled with supplies (NPS 1999:34).

By 1923, Anchorage citizens had realized the potential of aviation and banded together to create a landing strip out of the firebreak between 9th and 10th avenues (today's Delaney Park Strip). The Park Strip served as a landing strip for bush pilots throughout the 1920s. However, by 1929, it could no longer support Anchorage's aviation needs and a new airfield was developed. Merrill Field was officially dedicated in 1930 (Carberry and Lane 1986:193–195).

For several years after Merrill Field was completed, muddy conditions in spring occasionally forced pilots to use the more solid "old aviation field" at the Park Strip, which by then also functioned as a golf course. The City Council ordered Alaskan Airways to "discontinue the use of the Golf Course as landing field" in 1931, officially ending the Park Strip's aviation era (Carberry and Lane 1986:195).

4.7 World War II

In the late 1930s, the U.S. military began to prepare for the possibility of involvement in another world war. After several failed attempts in the mid-1930s to gain Congressional support for an Alaska air base, President Franklin D. Roosevelt finally ordered the withdrawal of 43,490 acres of land on the outskirts of Anchorage for Elmendorf Field and Fort Richardson in April 1939 (NPS 1999:21–24). This location was chosen for its favorable topography and weather conditions, access to the Alaska Railroad, and proximity to Cook Inlet. Construction of a permanent military airfield and Army base began on the reserved lands in June 1940.

Wartime military construction turned Anchorage into a boomtown (Naske and Slotnick 1979:126). Thousands of civilian workers were employed to construct the new fort. In April 1940, just before construction of Fort Richardson began, Anchorage had a population of only 4,000, and by the summer of 1941, the town had grown to over 9,000. The war created a housing shortage in Anchorage, causing the neighborhoods surrounding Downtown to be built out.

The federal agencies and business corporations that moved their headquarters to Anchorage during and after World War II did their part to address the inadequate supply of housing for their employees. Some residential tracts and complexes were constructed by the Army Corps of Engineers and the Civil Aeronautics Administration (CAA) for use by their employees in the four original neighborhoods. The Army Housing Association, a cooperative created by service members and their families, built 32 Minimal Traditional style homes on Block 13 of the Third Addition in the summer of 1940 (Reamer 2021).

4.8 Highways and Airports

As part of the war effort during World War II, the military worked to improve communication and transportation infrastructure, and began constructing roads to connect Fort Richardson to the rest of Alaska. The Alaska (Alcan) Highway (1942), Whittier Tunnel, and the Glenn Highway (1941-1942) were important projects in this effort. This military transportation infrastructure was opened to civilians in the postwar era, providing unprecedented air, rail, and road access to Anchorage (ADNR 2006:2; DOT&PF 1994; Twitchell 1992).

This continued with the construction of Anchorage International Airport in 1951, which solidified Anchorage's position as the "Air Crossroads of the World" and attracted other airlines and thousands of passengers to the city (Tower 2003:105). The airport was renamed "Ted Stevens Anchorage International Airport" in 2000, in honor of U.S. Senator Ted Stevens (DOT&PF n.d.). Similarly, construction of the Seward Highway and repaving of the Glenn Highway in the early 1950s provided important vehicular access to Anchorage's historic core and the entire Anchorage Bowl (Tower 2003:105).

4.9 Alaska Statehood

Alaskans had been considering statehood since the late 19th century. However, early attempts at seeking statehood failed because Alaska lacked the population and financial independence to effectively support itself. By 1945, Alaska's population had increased dramatically and it had become an integral part of the U.S. defense network, so the demand for statehood became more forceful. The discovery of oil on the Kenai Peninsula in 1957 further fueled the debate, and was the key to changing the national perception of Alaska. Congress passed the Alaska Statehood Bill on June 30, 1958. Alaska officially became the 49th state in the Union when President Dwight Eisenhower signed the bill into law on January 3, 1959 (NPS n.d.:90–91).

4.10 The 1964 Earthquake

Among the most significant events in Anchorage's history is the 1964 Good Friday Earthquake, which occurred at 5:36 p.m. on March 27 of that year. Originally recorded at about 8.6 on the Richter scale and later upgraded to 9.2, the quake is to date the most powerful seismic event recorded in North America (NRC 1973:ix).

The earthquake had a profound effect on the physical environment in Downtown, Government Hill, South Addition, and Turnagain[1] because these neighborhoods were especially hard hit by the disaster. The 1964 earthquake coincided with the popularity of urban renewal efforts across the country, and Anchorage took advantage of this opportunity to try to redevelop the city, including new public park spaces in areas that experienced the most destruction by the quake. Evidence of this post-quake redevelopment is especially clear in Downtown and Government Hill (Tower 2003:155).

4.11 Oil Industry

The largest oil field in North America was discovered in Prudhoe Bay on the Arctic Slope in 1968. A 1969 oil lease sale brought billions of dollars to the state. Oil companies needed to construct a pipeline to carry North Slope oil to market in order to capitalize on the Prudhoe Bay oil lease sale (Tower 2003:155). Construction began on the Trans-Alaska Pipeline System in 1974. The pipeline was completed in 1977 at a cost of more than $8 billion. The oil discovery and pipeline construction fueled an economic windfall when oil and construction companies set up headquarters in Anchorage (Naske and Slotnick 1979:233–266).

The tremendous outpourings of the oil fields led to the formation of the Alaska Permanent Fund, which mandated that a portion of the royalties earned by the oil companies be distributed equally among Alaskan residents. The fund was voted as a constitutional amendment by Alaska's citizens in 1976, and the first Permanent Fund legislation was enacted in 1980 (APFC 2021).

The discovery of oil at Prudhoe Bay also increased the urgency of settling the outstanding land claims of the Alaska Native Peoples, leading to the passage of the Alaska Native Claims Settlement Act (ANCSA) in 1971. ANCSA established system of regional and village corporations to hold the land titles and assets transferred to the tribes by the federal government (ADNR n.d.; ANCSA Regional Association n.d.).

As the oil industry expanded, so did environmental conservation efforts. Many conservation groups were formed during the 1970s and 1980s. The Alaska National Interest Lands Conservation Act (ANILCA) was signed into law in 1980, which set aside over 100 million acres of public lands (Williss 1985).

[1] Turnagain is a residential neighborhood in west Anchorage, located between Cook Inlet to the north and west, Lake Hood and Fish Creek to the South, and Minnesota Drive to the east.

4.12 Municipality of Anchorage

The Municipality of Anchorage was formed in 1975 by a consolidation of the city and borough. Also included in this unification were Eagle River, Eklutna, Girdwood, Glen Alps, and several other communities. The unified area became officially known as the Municipality of Anchorage. The population of Anchorage had increased from 48,801 in 1970 to 174,431 by 1980 (Cook Inlet Historical Society n.d.).

The decade of the 1980s was a time of growth, thanks to a flood of North Slope oil revenue into the state treasury. Capital improvement projects and an aggressive beautification program, combined with far-sighted community planning, greatly increased infrastructure and amenities for residents. This effort was known as "Project 80s," and included major improvements such as a new library, a civic center, a sports arena, and a performing arts center (Orr 2007). The Project 80s building program rivaled the military construction of the 1940s.

5. Methodology

A literature search was performed on historical preservation planning documents associated with recent development projects in Anchorage to find historic contexts already defined for the project area. Once the contexts were located, the AHRS database was consulted in July 2021 to find all historic properties located within the boundaries of the project area. It is important to note, however, that while the AHRS is a data repository of information on over 45,000 cultural resources sites within Alaska, it only shows cultural resources that have been documented and recorded. Sites not reported to the keeper of the AHRS would not show up in a data search.

AHRS data for cultural resources was reviewed in Microsoft Excel to establish which properties have been determined eligible for the NRHP, which ones have been nominated to and/or formally listed on the NRHP, and which ones have been determined not eligible. Based on this data set, HDR prepared a mapbook of the project area using ArcGIS Pro 2.6.0 with all historic properties coded by color for Determination of Eligibility (DOE)/NRHP status.

5.1 Windshield Survey

Before conducting a windshield survey of properties within the project area, HDR first searched through the 936 AHRS records in order to identify which properties should be visited and photographed to aid in project development. The properties identified for photographs not only had to have clear and obvious associations with the historic contexts described in Sections 4.1 through 4.12, selected properties also had to meet the following criteria:

- The property has not had a DOE performed, nor is it listed on or nominated to the NRHP
- The property is intact (i.e., it has not been torn down)
- The property has not been moved to another location
- The property does not appear to have multiple additions/alterations that would compromise its integrity

- The property could conceivably meet one of the four NRHP criteria for eligibility (35 CFR 60.4):
    - Being associated with events that have made a significant contribution to the broad patterns of our history; or
    - Being associated with the lives of significant persons in or past; or
    - Embodying the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
    - Have yielded or may be likely to yield information important in history or prehistory.

Based on this criteria, HDR identified 26 properties that needed to be visited as part of a windshield survey. Photographs of each property were taken on July 19, 2021, and can be found in Appendix B.

It is important to note that these selections were made entirely from available data on the AHRS; such selections are limited by what information is present on the AHRS for each given site. There may be other important historic properties located within the project area, but the extensive study needed to determine this for 936 properties is beyond the scope of this project.

6. Results

The AHRS database lists 936 cultural resources located within the project area. Of these, 10 have been formally listed on the NRHP, and one has been nominated to the NRHP. These properties are summarized in Table 1. Two are historic districts: the Government Hill Federal Housing Historic District and the Block 13 FHA Army Housing Historic District. One property is the cemetery located between 6th and 9th Avenues and Fairbanks and Cordova Streets in Downtown Anchorage. All the remaining properties listed on or nominated to the NRHP are buildings or sites of former buildings. These properties are shown on the map in Appendix A.

Table 1. AHRS Historic Properties in the Project Area Listed on or Nominated to the NRHP

AHRS Number	Property Name	Nature of Property	NRHP Status
ANC-00244	Pioneer School House	Building	Listed – NRHP
ANC-00048	Civil Works Residential Dwelling, 786 Delaney Street	Building	Listed – NRHP
ANC-01422	McKinley Tower Apartments	Building	Listed – NRHP
ANC-02108	Government Hill Federal Housing Historic District	District	Nomination sent to Keeper of the NRHP
ANC-00359	Loussac-Sogn Building	Building	Listed – NRHP
ANC-00130	Wendler Building	Building	Listed – NRHP
ANC-00306	Wireless Station	Building	Listed – NRHP
ANC-01205	Civil Works Residential Dwelling, 800 Delaney Street	Building	Listed – NRHP

AHRS Number	Property Name	Nature of Property	NRHP Status
ANC-00766	Anchorage Cemetery	Site	Listed – NRHP
ANC-04056	Block 13 FHA Army Housing Historic District	District	Listed – NRHP
ANC-02639	Greater Friendship Baptist Church	Site	Listed – NRHP

A total of 125 historic properties in the project area have been determined eligible for the NRHP but not formally listed. Of these, 116 are buildings, 5 are historic districts, 3 are sites, and 1 is a structure. These are presented in Table 2.

Table 2. Historic Properties in the Project Area Determined Eligible for the NRHP

AHRS Number	Property Name	Nature of Property	DOE Status
ANC-00130	Wendler Building	Building	Determined eligible by Keeper of the NRHP
ANC-00910	Anchorage Medical Center of the Alaska Native Service	Building	Determined eligible through SHPO
ANC-00911	Quarters Building, Alaska Native Health Services	Building	Determined eligible through SHPO
ANC-00824	Building 020, Flight Service Station	Building	Determined eligible through SHPO
ANC-00824	Building 020, Flight Service Station	Building	Determined eligible through SHPO
ANC-02062	1083 Hollywood Drive	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01227	Alaska Railroad Freight Shed	Building	Determined eligible through SHPO
ANC-02063	1101 Hollywood Drive	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-02064	1105 Hollywood Drive	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-02065	1109 Hollywood Drive	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-02066	1201 Hollywood Drive	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-02067	1205 Hollywood Drive	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-02045	717 and 727 Elm Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)

AHRS Number	Property Name	Nature of Property	DOE Status
ANC-02046	777 and 787 Elm Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-02047	831 Elm Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01843	100 1/2 West Cook Avenue	Building	Determined eligible through SHPO
ANC-01860	308 1/2 East Manor Avenue	Building	Determined eligible through SHPO
ANC-01869	301 East Harvard Avenue	Building	Determined eligible through SHPO
ANC-01932	Anchorage Square and Round Dance Club Building	Building	Determined eligible through SHPO
ANC-01933	Alaska Railroad Water Tower	Structure	Determined eligible through SHPO
ANC-01363	3408 Peterkin Avenue	Building	Determined eligible through SHPO
ANC-01972	1101 East 11th Avenue	Building	Pending consultation between agency and SHPO (SHPO disagrees with the agency's determination)
ANC-02010	Eighth Avenue and D Street Historic District	District	Determined eligible through SHPO
ANC-00403	Belgard House	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-00383	McNalley House	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01422	McKinley Tower Apartments	Building	Determined eligible through SHPO
ANC-02020	1851 Aleutian Street	Building	Determined eligible through SHPO
ANC-01897	842 Birch Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-00306	Wireless Station	Building	Determined eligible through SHPO
ANC-02108	Government Hill Federal Housing Historic District	District	Determined eligible through SHPO
ANC-00048	Civil Works Residential Dwelling, 786 Delaney Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01205	Civil Works Residential Dwelling (800 Delaney Street)	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-00725	AEC Cottage #11	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)

AHRS Number	Property Name	Nature of Property	DOE Status
ANC-01386	924 and 926 Brown Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01387	944 and 946 Brown Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01803	Thompson Grocery	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01804	AEC Cottage 12	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01805	AEC Cottage 13	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01808	901 and 903 Delaney Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01809	320 and 322 West Manor Avenue	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01810	319 and 320 West Manor Avenue	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01811	307 and 309 West Manor Avenue	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01812	245 and 247 West Manor Avenue	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01814	233 West Manor Avenue	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01815	220 and 222 West Manor Avenue	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01818	330 West Manor Avenue	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01819	819 Delaney Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01820	928 Delaney Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01836	815 Colwell Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)

AHRS Number	Property Name	Nature of Property	DOE Status
ANC-01837	818 Brown Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-02109	Brown's Point Park	Site	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-02110	Al Miller Memorial Park	Site	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-02111	Government Hill Quonset Hut Historic District	District	Determined eligible through SHPO
ANC-01846	208 1/2 East Cook Avenue	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01847	224 1/2 East Cook Avenue	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01848	240 1/2 East Cook Avenue	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-02128	Government Hill Urban Renewal Historic District	District	Determined eligible through SHPO
ANC-01878	710 Ash Place	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01880	730 Ash Place	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01883	731 Ash Place	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01881	742 Ash Place	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01888	675 Birch Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01887	685 Birch Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-02025	701 Birch Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-02103	601-603 Vine Avenue	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)

AHRS Number	Property Name	Nature of Property	DOE Status
ANC-01884	621 Vine Avenue	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01882	721 Ash Place	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-02026	713 Birch Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-02027	723 Birch Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-02028	735 Birch Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01901	811 Birch Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01895	820 Birch Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01900	821 Birch Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01896	830 Birch Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01893	700 Cedar Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-02030	701 Cedar Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-02032	712 Cedar Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-02033	721 Cedar Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01907	741 Cedar Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01905	801 Cedar Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-02036	810 Cedar Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)

AHRS Number	Property Name	Nature of Property	DOE Status
ANC-01904	821 Cedar Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-02037	831 Cedar Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01903	841 Cedar Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-02041	700 Dogwood Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01908	701 Dogwood Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-02042	740 Dogwood Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01918	801 Dogwood Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-02044	810 Dogwood Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01911	820 Dogwood Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01916	821 Dogwood Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01912	830 Dogwood Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01915	831 Dogwood Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01914	841 Dogwood Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01913	842 Dogwood Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-02129	Alderwood Park	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01921	810 Elm Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)

AHRS Number	Property Name	Nature of Property	DOE Status
ANC-01899	831 Birch Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01898	841 Birch Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01923	830 Elm Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01924	842 Elm Street	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-02055	620 and 622 Hollywood Drive	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-02056	700 and 702 Hollywood Drive	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01894	720 Hollywood Drive	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-02057	721 and 723 Hollywood Drive	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-01910	820 Hollywood Drive	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-02126	Government Hill Panoramic View Historic District	District	Determined eligible through SHPO
ANC-02058	1001 Hollywood Drive	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-02059	1011 Hollywood Drive	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-02060	1071 Hollywood Drive	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-02061	1077 Hollywood Drive	Building	Determined to be eligible as a contributing element to an eligible district (if a district is later found to be ineligible that invalidates this claim)
ANC-02106	1841 Kuskokwim Street	Building	Determined eligible through SHPO
ANC-01530	Reeve Airmotive Hangar	Building	Determined eligible through SHPO
ANC-03067	2421 Oak Drive	Building	Determined eligible through SHPO
ANC-01939	1514 Wintergreen Street	Building	Determined eligible through SHPO
ANC-01942	1000 East 10th Avenue	Building	Determined eligible through SHPO

AHRS Number	Property Name	Nature of Property	DOE Status
ANC-02704	124 East 10th Avenue	Building	Pending consultation between agency and SHPO (SHPO disagrees with the agency's determination)
ANC-02705	142 East 10th Avenue	Building	Pending consultation between agency and SHPO (SHPO disagrees with the agency's determination)
ANC-02717	209 East 11th Avenue	Building	Pending consultation between agency and SHPO (SHPO disagrees with the agency's determination)
ANC-03661	217 East 11th Avenue	Building	Pending consultation between agency and SHPO (SHPO disagrees with the agency's determination)
ANC-03657	211 West 11th Avenue	Building	Pending consultation between agency and SHPO (SHPO disagrees with the agency's determination)
ANC-02760	235 West 11th Avenue	Building	Pending consultation between agency and SHPO (SHPO disagrees with the agency's determination)
ANC-03697	135 East 13th Avenue	Building	Pending consultation between agency and SHPO (SHPO disagrees with the agency's determination)
ANC-03670	1200 B Street	Building	Pending consultation between agency and SHPO (SHPO disagrees with the agency's determination)
ANC-01935	Chugach Electric Association Power Plant	Site	Determined eligible through SHPO

A total of 103 properties in the project area have been through the DOE process and found not eligible for the NRHP, either individually or as non-contributing elements of an eligible historic district. The remaining 707 historic properties in the project area have not been through the DOE process. Their status with respect to the NRHP remains unassessed.

6.1 Historic Districts

A historic district is an identifiable entity that is comprised of a "significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development" (NPS 1997:5). The AHRS database shows six historic districts located within the project area that have been either determined eligible or listed or nominated to the NRHP. These districts are shown on Table 3 and on the map in Appendix A.

Table 3. Historic Districts within the Project Area

AHRS Number	District Name	DOE Status	NRHP Status
ANC-02010	Eighth Avenue and D Street Historic District	Determined eligible through SHPO	Not currently listed
ANC-02108	Government Hill Federal Housing Historic District	Determined eligible through SHPO	Nomination sent to Keeper of the NRHP
ANC-02111	Government Hill Quonset Hut Historic District	Determined eligible through SHPO	Not currently listed
ANC-02126	Government Hill Panoramic View Historic District	Determined eligible through SHPO	Not currently listed
ANC-02128	Government Hill Urban Renewal Historic District	Determined eligible through SHPO	Not currently listed
ANC-04056	Block 13 FHA Army Housing Historic District	Listed – NRHP	Listed – NRHP

Note: Historic districts determined not eligible for the NRHP are not shown on this table.

6.2 Windshield Survey

Twenty-six properties were selected for the windshield survey, ranging from industrial buildings from the 1910s and 1920s to historic restaurants from the 1950s, to a handful of residential properties from various decades (see Section 5.1 Windshield Survey for methodology on how properties were selected for photographic documentation).

HDR field personnel documented that 1 of the 26 properties (ANC-01858) is no longer extant, while another (ANC-01953) has been extensively modified. The remaining 24 properties may need consideration appropriate to historic preservation if they are located the project's Area of Potential Effect (APE)[2].

Photographs of these 26 properties are presented in Appendix B.

7. Recommendations

Without a defined APE for the Seward and Glenn Highway connection, recommendations for the treatment of historic properties can only be made in the most general terms. If the Seward-Glenn Highway connection project uses federal funds, requires a federal permit, or crosses federal lands, all historic properties located therein will be subject to review under Section 106 of the NHPA before project activities can proceed. If the Section 106 review shows that historic properties will be adversely affected, such properties may require mitigation as determined by consultation among the Alaska SHPO, stakeholding agencies, Native Tribes, historic preservation groups, and other potential consulting parties involved in the project.

[2] Under 36 CFR 800.16(d), the APE is defined as "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."

Any cultural resources located within the project area that have not been evaluated for their significance for listing on the NRHP constitute data gaps. This includes properties not selected for the windshield survey; such properties may be eligible for listing on the NRHP, but there is insufficient data on the AHRS to make this determination at present. These data gaps can be addressed by performing archival research, field documentation, and completing determinations of eligibility, but these steps would be premature without a defined APE.

Data gaps may also exist in areas within the project area that have not been surveyed for cultural resources. The AHRS database only includes properties that have been documented and reported; the reason some areas on the figure in Appendix A do not show AHRS sites may be because no one has formally looked for sites within those areas and not because there are no cultural resources within those areas.

Additional data gaps may be identified through the course of Section 106 consultation with SHPO, state and federal agencies, Tribes, historic preservation groups, and other potential consulting parties.

8. References

ADNR (Alaska Department of Natural Resources)

n.d. State ANILCA Coordination: What is ANILCA? http://dnr.alaska.gov/commis/opmp/anilca/more.htm

2006 *Glenn Highway National Scenic Byway Interpretive Plan*. Prepared by Alaska Department of Natural Resources, Division of Parks and Outdoor Recreation, Office of Interpretation and Education.

Alaska Humanities Forum

2017a The First Russian Contact in Alaska. Alaska History and Cultural Studies. www.akhistorycourse.org/articles/article_artID_129 (accessed September 19, 2011).

2017b Air Transportation. Alaska History and Cultural Studies. www.akhistorycourse.org/americas-territory/alaskas-heritage/chapter-4-12-air-transportation (accessed September 22, 2011).

ANCSA Regional Association

n.d. About the Alaska Native Claims Settlement Act. https://ancsaregional.com/about-ancsa/

APFC (Alaska Permanent Fund Corporation)

2021 *History of the Alaska Permanent Fund.* https://apfc.org/who-we-are/history-of-the-alaska-permanent-fund/

Bittner, Judy, Annette Heckart, Kevin Keeler, Robert King, and Carrie Cecil

n.d. *Iditarod National Historic Trail: Visitors Guide*. Alaska Geographic Association, Anchorage.

Carberry, Michael and Donna Lane
1986 *Patterns of the Past: An Inventory of Anchorage's Historic Resources*, 2nd edition. Municipality of Anchorage.

Cole, Dermot
2008 *Historic Photos of Alaska*. Turner Publishing, Nashville, Tennessee.

Cook Inlet Historical Society
n.d. Anchorage Timeline. Legends & Legacies, Anchorage, 1910–1940. www.alaskahistory.org/anchorage-timeline/

DOT&PF (Alaska Department of Transportation and Public Facilities)
n.d. *Ted Stevens Anchorage International Airport History*. https://dot.alaska.gov/anc/about/history.shtml
1994 *The Portage-Whittier Transportation Corridor: A Discussion of Historical Significance*. Prepared by HDR Engineering Inc. for Alaska Department of Transportation and Public Facilities.

Kraus, Theresa L.
2020 *Civil Aviation Policy in Alaska, 1913–2018.* U.S. Department of Transportation, Federal Aviation Administration, Washington, D.C.

Lundberg, Murray
n.d. Captain James Cook in Alaska. *ExploreNorth.* http://explorenorth.com/library/yafeatures/bl-Cook1.htm (accessed September 20, 2011).

Municipality of Anchorage
2013 *Anchorage Original Neighborhoods Historic Preservation Plan*. Prepared for the Municipality of Anchorage by Page & Turnbull, San Francisco.

Naske, Claus M. and Herman E. Slotnick
1979 *Alaska: A History of the 49th State.* William B. Eerdmans Publishing Company, Grand Rapids, Michigan.

NRC (National Research Council)
1973 *The Great Alaska Earthquake of 1964: Oceanography and Coastal Engineering*. National Academy of Sciences, Committee on the Alaska Earthquake, Washington, D.C.

NPS (U.S. Department of the Interior, National Park Service)
n.d. The Alaska Journey: The United States Department of the Interior in Alaska. National Park Service, Anchorage.
1997 How to Apply the National Register Criteria for Evaluation. National Register Bulletin 15. U.S. Department of the Interior, National Park Service, National Register, History and Education. http://www.cr.nps.gov/nr/publications/bulletins/nrb15/

1999 Elmendorf Air Force Base, Volume 1: Historic Context of World War II Buildings and Structures. National Park Service, Washington, D.C.

OHA (Alaska Office of History and Archaeology)
n.d. *Historic Contexts.* Alaska Department of Natural Resources, Division of Parks and Outdoor Recreation, Office of History and Archaeology. http://dnr.alaska.gov/parks/oha/publications/publications.htm

Orr, Vanessa
2007 From Project 80s to the Present: Resurgence of Construction in Anchorage Recalls Earlier Time. *Alaska Business Monthly,* September 2007.

Reamer, David
2021 Histories of Anchorage: How a Severe Mid-Century Housing Crisis Left its Mark on Anchorage Neighborhoods. *Anchorage Daily News* March 28, 2021.

SRB&A (Stephen R. Braund & Associates)
2006 *Knik Arm Crossing Project Recommendations for Historic District(s): Government Hill, Anchorage, Alaska*. Volume I: Literature Review and Recommendations. Prepared for HDR Alaska by Stephen R. Braund & Associates, Anchorage, Alaska.

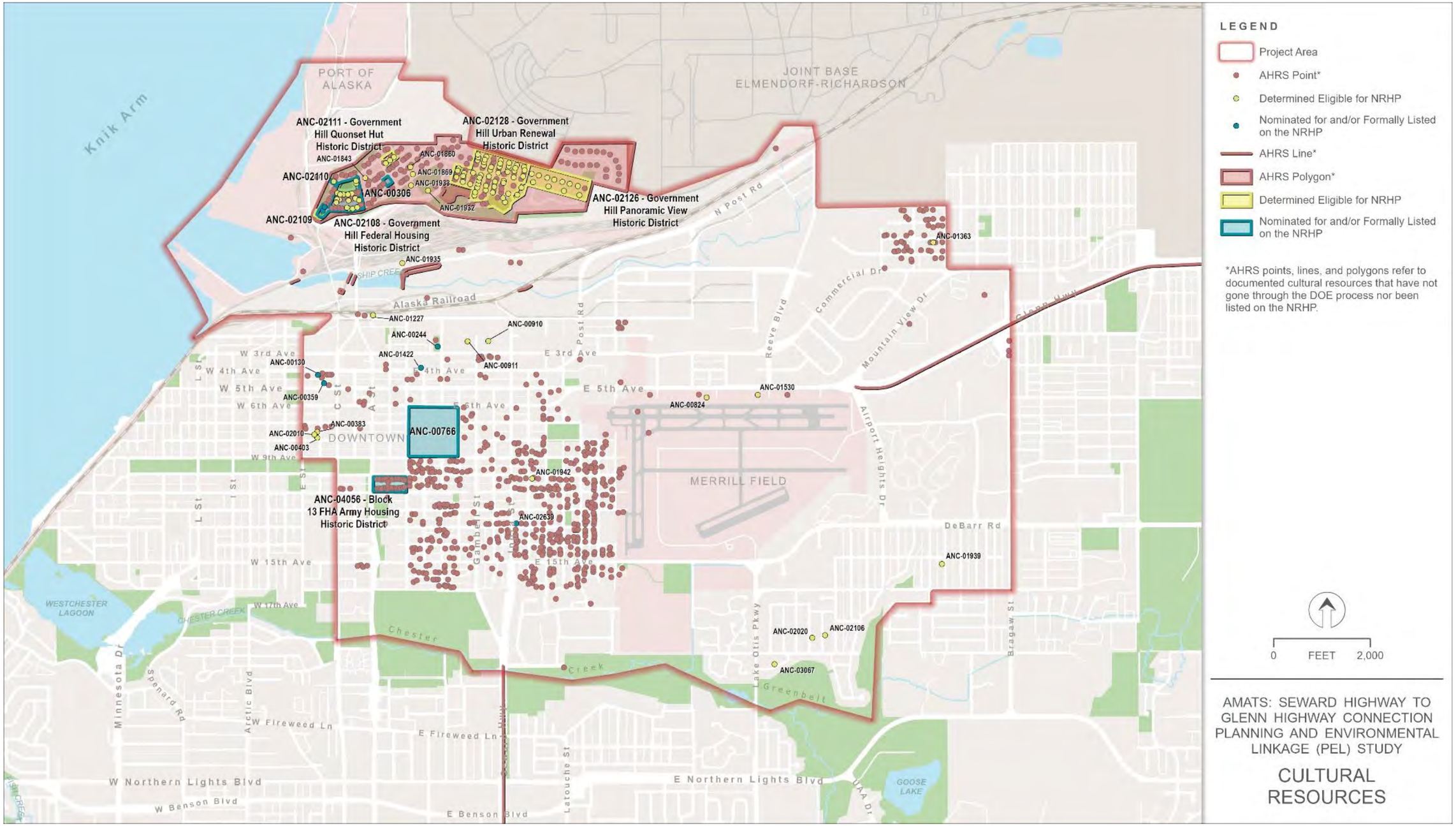
Strohmeyer, John
2001 *Historic Anchorage: An Illustrated History.* Historical Publishing Network, San Antonio, Texas.

Tower, Elizabeth
2003 *Anchorage: From Its Humble Origins as a Railroad Construction Camp*. Epicenter Press, Kenmore, Washington.

Twitchell, Heath
1992 *Northwest Epic: The Building of the Alaska Highway*. St. Martin's Press.

Williss, G. Frank
2001 *Do Things Right the First Time: An Administrative History of the National Park Service and the Alaska National Interest Lands Conservation Act of 1980*. Chapter Four. U.S. Department of the Interior, National Park Service. https://www.nps.gov/parkhistory/online_books/williss/adhi.htm

Appendix A:
Map of AHRS Sites and Historic Districts within the Project Area


PORT OF ALASKA
JOINT BASE ELMENDORF-RICHARDSON
Knik Arm
ANC-02111 - Government Hill Quonset Hut Historic District
ANC-02128 - Government Hill Urban Renewal Historic District
ANC-02126 - Government Hill Panoramic View Historic District
ANC-02108 - Government Hill Federal Housing Historic District
ANC-01843
ANC-01860
ANC-01869
ANC-01933
ANC-01932
ANC-02410
ANC-00306
ANC-02109
ANC-01935
SHIP CREEK
Alaska Railroad
ANC-01227
ANC-00244
ANC-00910
ANC-01422
ANC-00911
ANC-00130
ANC-00359
W 3rd Ave
W 4th Ave
W 5th Ave
W 6th Ave
E 3rd Ave
E 4th Ave
E 5th Ave
E 6th Ave
L St
I St
C St
A St
Post Rd
Reeve Blvd
Commercial Dr
Mountain View Dr
N Post Rd
ANC-01530
ANC-00824
ANC-01363
ANC-00383
ANC-02010
ANC-00403
ANC-00766
DOWNTOWN
W 9th Ave
E St
ANC-04056 - Block 13 FHA Army Housing Historic District
ANC-01942
ANC-02639
Ganbar St
MERRILL FIELD
Airport Heights Dr
DeBarr Rd
ANC-01939
W 15th Ave
E 15th Ave
WESTCHESTER LAGOON
CHESTER CREEK
W 17th Ave
Chester Creek
Greenbelt
Lake Otis Pkwy
Bragaw St
ANC-02020
ANC-02106
ANC-03067
Minnesota Dr
Spenard Rd
Arctic Blvd
W Fireweed Ln
E Fireweed Ln
Gambell St
Latouche St
W Northern Lights Blvd
E Northern Lights Blvd
W Benson Blvd
E Benson Blvd
GOOSE LAKE
UAA Dr
LEGEND
Project Area
AHRS Point*
Determined Eligible for NRHP
Nominated for and/or Formally Listed on the NRHP
AHRS Line*
AHRS Polygon*
Determined Eligible for NRHP
Nominated for and/or Formally Listed on the NRHP
*AHRS points, lines, and polygons refer to documented cultural resources that have not gone through the DOE process nor been listed on the NRHP.
0
FEET
2,000
AMATS: SEWARD HIGHWAY TO GLENN HIGHWAY CONNECTION PLANNING AND ENVIRONMENTAL LINKAGE (PEL) STUDY
CULTURAL RESOURCES

Appendix B:
Field Photographs of Selected Cultural Resources within the Project Area

Figure B-1. ANC-01662; view to the northwest

Figure B-2. ANC-01193, Civil Air Patrol Building built at Merrill Field in the 1960s; view to the southeast

Figure B-3. ANC-01185, Air Traffic Control Tower at Merrill Field, built in the 1960s; view to the east

Figure B-4. ANC-02639, Greater Friends Baptist Church, built circa 1955; view to the northwest

Figure B-5. ANC-02282, the Lucky Wishbone Restaurant, opened in 1959; view to the northwest

Figure B-6. ANC-01304, ARRC Timber Bridge No. 155.1; view to the west

Figure B-7. ANC-00409, Alaska Engineering Commission Cold Storage Plant, built in 1916; view to the northwest

Figure B-8. ANC-00397, Crawford Park Cabin 2, built in 1926; view to the north

Figure B-9. ANC-01227, Alaska Railroad Freight Shed, built in stages during the 1940s; view to the west

Figure B-10. ANC-00820, Civil Aeronautics Administration Carpenter Shop, built in 1945; view to the northeast

Figure B-11. ANC-02775, Alaska Railroad Timber Bridge at MP 114.6, built in 1956; view to the northwest

Figure B-12. ANC-00410, Alaska Engineering Commission Power Plant, built in the early 1920s; view to the northwest

Figure B-13. ANC-01840, residential house from the late 1940s; view to the north

Figure B-14. ANC-01933, Alaska Railroad Water Tower, built in 1948; view to the south

Figure B-15. ANC-01858; view to the north; this building is no longer extant

Figure B-16. ANC-01953, shopping center built in 1959 or 1960; view to the west; this building has been extensively modified

Figure B-17. ANC-04256, Knik Arm Power Plant Dam, built circa 1950; view to the east

Figure B-18. ANC-04253, Knik Arm Power Plant Cooling Pond, built circa 1950; view to the east

Figure B-19. ANC-04254, Knik Arm Power Plant Concrete Structure, built circa 1950; view to the southwest

Figure B-20. ANC-04255, Knik Arm Power Plant Concrete Structure, built circa 1950; view to the south

Figure B-21. ANC-04350, Felix Brown Shop, built in 1915; view to the southeast

Figure B-22. ANC-00348, building constructed in 1915; view to the south

Figure B-23. ANC-00376, Nygaard-Kohonen House, built circa 1920; view to the northwest

Figure B-24. ANC-00313, Kohonen Log Cabin; view to the southeast

Figure B-25. ANC-03472, Cordova Building, built circa 1959; view to the northeast

Figure B-26. ANC-00366, historic residence on 5th Avenue, built circa 1915 to 1930; view to the northwest

Appendix F:
Hazardous Waste Sites Map and Technical Memorandum

AMATS: Seward Highway to Glenn Highway Connection
Planning & Environmental Linkage Study
State Project No.: CFHWY00550
Federal Project No.: 0001653

Hazardous Waste Sites Map and Technical Memorandum

March 2022

This planning document may be adopted in a subsequent environmental review process in accordance with 23 USC 168 Integration of Planning and Environmental Review.

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 USC 327 and a Memorandum of Understanding dated November 3, 2017, and executed by FHWA and DOT&PF.

Prepared for:

Alaska Department of Transportation and Public Facilities

Prepared by:

HDR
2525 C Street, Suite 500
Anchorage, AK 99503

Contents

1. Scope 1
2. Introduction 1
3. Regulatory Setting 1
4. Hazardous Material Sites 1
   4.1 Open Contaminated Sites/LUST Sites 2
   4.2 Groundwater Plumes 8
   4.3 Superfund Sites 8
5. References 14

Figures

Figure 1. Hazardous Materials 7
Figure 2. Thickness of Landfill Debris 11
Figure 3. Landfill Development History 12
Figure 4. Groundwater Elevation 13

Tables

Table 1. Open Contaminated Sites in the Project Area 2
Table 2. Groundwater Plumes in the Project Area 8
Table 3. Superfund Sites in Anchorage 8
Table 4. Brownfield Properties 10

Acronyms

AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
ARRC	Alaska Railroad Corporation
BTEX	benezene, toluene, ethylbenzene, and xylenes
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
DRO	diesel range organics
EPA	U.S. Environmental Protection Agency
GRO	gasoline range organics
LUST	leaking underground storage tank
MOA	Municipality of Anchorage
NPL	National Priorities List
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PLA	Probably Limits of the Alternatives
PEL	Planning and Environmental Linkage
RRO	residual range organics
TCE	trichlorethylene
TPH	total petroleum hydrocarbons
UST	underground storage tank
VC	vinyl chloride
VOC	volatile organic compounds

1. Scope

B10.7 Hazardous Waste Sites Map and Technical Memorandum. The Contractor shall create a map showing all hazardous waste sites regulated by the Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and any non-regulated waste sites located within the Probable Limits of the Alternatives (PLA). The Contractor shall also create a companion Technical Memorandum that identifies the owner of the property and describes the type of waste located at the property. Information is available at the Alaska Department of Environmental Conservation (ADEC) Contaminated Sites website.

2. Introduction

This technical memorandum describes the documented hazardous materials sites that could potentially be affected by the Seward Highway to Glenn Highway Planning and Environmental Linkage (PEL) Study project alternatives. The sites discussed in this memo include sites where known releases of hazardous substances, hazardous waste, or petroleum have occurred to the environment. These sites include leaking underground storage tank (LUST) sites and sites where releases of other chemicals have been documented and are under investigation under State of Alaska or federal jurisdiction. Special attention is given to the Merrill Field Landfill, a closed landfill in the corridor. Public U.S. Environmental Protection Agency (EPA) and ADEC databases were used to identify the locations of known hazardous materials sites.

3. Regulatory Setting

Investigation and cleanup of hazardous waste and contaminated sites are regulated by the EPA and ADEC. Activities involving disturbance of soil and water at contaminated sites are regulated under the Alaska Administrative Code (AAC), including 18 AAC 60 (landfills), 18 AAC 78 (underground storage tank [UST] sites), and 18 AAC 75 (UST, LUST, and contaminated sites); under the Code of Federal Regulations (CFR), including 40 CFR 260–280; and under CERCLA at 42 U.S. Code 103.

Many contaminated sites exist nationally due to hazardous materials being improperly managed and disposed of. In 1920, Congress established CERCLA. This act is informally called the Superfund. It allows EPA to clean up contaminated sites and forces the parties responsible for the contamination to either perform cleanups or reimburse the government for EPA-led cleanup work.

4. Hazardous Material Sites

This portion of the report includes a description of each known hazardous material site located within the Seward Highway to Glenn Highway PEL study area. The research presented below is based on a review of electronic databases in July and August 2021. The owner of each site was

then identified by comparing the site locations with the Municipality of Anchorage (MOA) parcel information using Geographic Information Systems. This was supplemented with identified parcel owners by address in the MOA Property Appraisal database (available online at Assessment Public Inquiry [muni.org]). The MOA parcel data was accessed in August 2021. Please note that the parcel owner may not be the party responsible for the contamination.

4.1 Open Contaminated Sites/LUST Sites

A review of the ADEC Contaminated Sites Database (ADEC 2021) in July and August 2021 indicates that there are 39 open contaminated sites within the project area (see Table 1 and Figure 1). In addition, there are 169 sites that have a status of "Cleanup Complete," 42 sites with a status of "Cleanup Complete – Institutional Controls," and 6 sites with a status of "Informational." ADEC will give a site Cleanup Complete status when efforts to reduce hazardous substance contamination have achieved the most stringent levels established in state regulation, or the possibility of human exposure to any residual contamination is highly unlikely. ADEC will give a site Cleanup Complete – Institutional Controls status when hazardous substances are allowed to remain in the environment at a site (if the contamination does not pose a risk to human health or the environment), but there are conditions or restrictions associated with the site that require compliance by current or future owners or operators (ADEC n.d.). Contaminants of concern were identified based on information available in the ADEC Contaminated Sites Database (ADEC 2021). A summary of each open contaminated site can be found in Table 1.

Table 1. Open Contaminated Sites in the Project Area

Hazard ID	Site Name	LUST	Address	Owner	Contaminant of Concern
1208	Alaska Railroad Corporation (ARRC) Diesel Tank Pumphouse	No	Whitney Road	ARRC	DRO, RRO, trimethylbenzene, chloroform, TCE, vinyl chloride, cadmium, vanadium
1470	ARRC Princess Tours & Westours	No	Whitney Road	ARRC	DRO, RRO, GRO, vinyl chloride, Trichloropropane, arsenic, cadmium, lead, mercury
1473	Tesoro Ocean Dock Terminal – Port of Anchorage	No	1076 Ocean Dock Road	ARRC	BTEX, GRO, DRO, RRO
1477	Municipal Light & Power – Power Plant 1	No	821 East 1st Avenue	Chugach Electric Association Inc.	PCB
172	ARRC Ship Creek Rail Yard Seep	No	Whitney Road & A Streets	ARRC	DRO, RRO, VC

Hazard ID	Site Name	LUST	Address	Owner	Contaminant of Concern
1781	ARRC Fueling Rack	No	North Ship Creek Railyard	ARRC	DRO, RRO, VC, 1,2,3-Trichloropropane, Benao(a)Anthracene, Benso[g,h,i]oyrene, benzo[k]fluoranthene, chrysene, Dibenzo[amh]anthracene, Indeno[1,2,3-c,d]pyrene, arsenic, cadmium, lead, mercury, benzene, 1,2,4-trimethylbenzene, naphthalene, trichloroethylene, and arsenic
23321	Scottys Chevron	Yes	1017 East 13th Avenue	Scott Johnetta	Benzene, GRO, lead
23360	Unocal – #4652 (former) Chevron 306448	Yes	1441 C Street	Union Oil Company of California	TPH-g, TPH-d, benzene, toluene, ethylbenzene, total xylenes, EDC
23518	Chevron 9-6489 – Triple A Service	Yes	1304 Airport Heights Road	Cook Inlet Marketing Group	Benzene, toluene, ethylbenzene, total xylenes, TPH-g, naphthalene
23803	C.R. Lewis (Used Oil UST)	Yes	1300 Post Road	N/A	PCE, TCE
23842	Municipal Light & Power Transformer Shop	Yes	1201 E. 3rd Avenue; 1130 E. 3rd Avenue	Chugach Electric Association Inc.	GRO, DRO, 1,2-4 Trimethylbenzene, 1,2-Dichloroethane, 1,3,5-Trimethylbenezene, benzene, Ethylbenzene, naphthalene, total xylenes
23852	Northern Consolidators	Yes	1907 Post Road	ARRC	GRO, DRO, benzene
23886	Alaska Sales & Service Incorporated	Yes	1300 E. 5th Avenue	Alaska Sales & Service Inc.	DRO, RRO, naphthalene
23887	ARRC Mammoth Alaska	Yes	1048 Whitney Road	ARRC	DRO, RRO, PCE, TCE, vinyl chloride
23993	Texaco #60 Eastchester (former)	Yes	1035 Gambell Street	Allland LLC	DRO, Benzene, 1-methylnaphthalene, naphthalene
23994	Chevron - #2555	Yes	920 Gambell St.	Joubert Sylvester	BTEX, methylene chloride, 1,1-dichloroethylene, dichloropropane, GRO, TCE (soil and/or groundwater)
24059	Texaco #90 901 East 15th	Yes	901 East 15th Avenue	MJ Corporation	DRO, RRO, arsenic

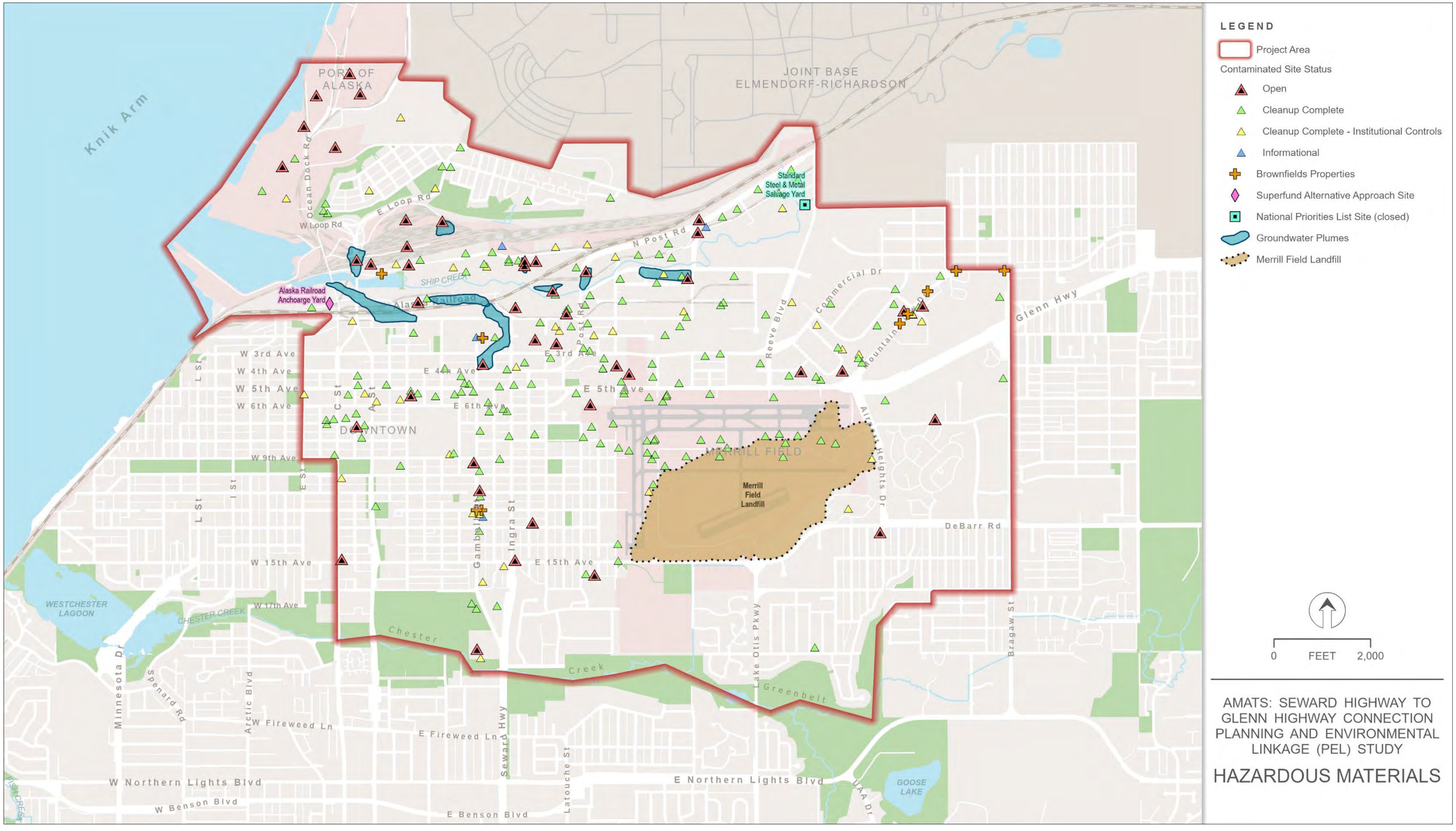
Hazard ID	Site Name	LUST	Address	Owner	Contaminant of Concern
24080	Denali Fuel Company/Nye Frontier Toyota (former)	Yes	1525 East 5th Avenue	MOA	DRO, GRO, BTEX
24255	ARRC Arctic Cooperage	Yes	932 Whitney Road	ARRC	DRO, benzene
24899	MOA – Brother Francis Shelter Property	Yes	1021 East Third Avenue, in 2nd Street easement	MOA	DRO, RRO
25276	MOA Third Addition Block 39 Lot 15	No	NW Corner of Nelchina Street and Chance Court Intersection	MOA	DRO
25404	ARRC Anchorage Terminal Reserve GW Area 1	No	1749, 1849, and 1850 Ship Avenue	ARRC	DRO, RRO, 1,2,4-trimethylbenzene, chloroform, trichloroethylene, vinyl chloride, cadmium, vanadium
25453	Municipal Light & Power Operations 1201 East 1st Avenue	No	1201 and 1121 East 1st Avenue	Chugach Electric Association Inc.	TCE, PCE, PCB
25946	AFSC Off-Airport Fuel Facility – Port of Anchorage	No	1331 Tidewater Road; Port of Anchorage	MOA	GRO, DRO, DRO, 1,2,4 trimethylbenzene, naphthalene, and 1-methylnapthalene, 2-Methylnapthalene, GRO, xylene, ethylbenzene, and benzene
26632	Cal Worthington Ford	No	1950 Gambell Street	Cal Worthington	Petroleum
26839	GSA Anchorage Federal Building UST #1	Yes	222 West 7th Avenue	U.S. Department of the Interior	DRO
26934	Anchorage Chrysler Dodge Center	No	2601 East 5th Avenue	UDD Properties LLC	TCE
27311	Carrs Fuel Center #520 USTs 1 & 2	Yes	3411 Penland Parkway	3101 PP LLC 54.1123% &	Petroleum

Hazard ID	Site Name	LUST	Address	Owner	Contaminant of Concern
2995	ARRC Knik Arm Power Plant	No	229 Whitney Road	ARRC	DRO, RRO, vinyl chloride, 1,2,3-Trichloropropane, benzo(a)Anthracene, fluorene, Benzo[g,h,i]pyrene, Benzo[k]fluoranthene, Chrysene, Dibenzo[a.h]anthracene, Indeno[1,2,3-c,d]pyrene, arsenic, cadmium, lead, mercury
3168	Kelly-Moore Paint Store & Warehouse	No	250 Post Road	ARRC	TCE, 1,2,4-trichlorobenzene and 1,4-dichlorobenzene
3306	MOA – New City Jail	No	1400–1500 East 3rd Avenue	MOA	TCE, vinyl chloride
4084	Alaska Real Estate Parking Lot	No	717 East 4th Avenue	The Fourth Ave. Gambell	Cis-1,2-dichloroethylene, toluene, 1,3,5-trimethylbenzene, 1,2,4-trimethylbenzene, n-butylbenzene, sec-butylbenzene, p-isopropyltoluene, arsenic, chromium, lead, vinyl chloride, TCE, PCE, and DRO (soil and/or groundwater)
420	Prescott Equipment – Chipperfield	No	467 West Chipperfield Way	Chipperfield Warehouse LLC	PCBs, carbon tetrachloride, TCE
426	ARRC Arctic Cooperage	No	932 East Whitney Road	ARRC	DRO, GRO, RRO, lead, VOCs (1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, benzene, ethylbenzene, naphthalene, isopropylbenzene (Cumene), chloroform, toluene, trichloroethene, vinyl chloride, xylenes (total), cis-1,20-dichlororethene, n-propylbenzene), 1-Methylnaphthalene, 2-Methylnaphthalene, Naphthalene, lead, 4,4'-DDD, 2,3,7,8-TCDD
4591	Snow White Cleaners	No	300 East 5th Avenue	IWW Partnership	DRO, PCE
4627	ARRC Anchorage Terminal Reserve GW Area 6	No	101 East Whitney Road	ARRC	DRO, RRO, 1,2,4-trimethylbenzene, naphthalene, choloroform, TCE, vinyl chloride, cadmium, vanadium

Hazard ID	Site Name	LUST	Address	Owner	Contaminant of Concern
605	Crowley Facility Port of Anchorage	No	459 West Bluff Road	Crowley Government Services	GRO, DRO, RRO, benzene, ethylbenzene, total xylene, 1,2,4-trimethylbenzene, naphthalene, 1,3,5-trimethylbenzene
911	Tesoro #2 Port of Anchorage	No	1601 Tidewater Road	Tesoro Alaska Logistics	BTEX, GRO, DRO
929	Former Arden Creamery	No	3237 Mountain View Drive	Hawkins Investments Inc.	Petroleum products

Note: In some cases, the MOA CAMA data listed multiple parcels at the location of an open contaminated site. Some of the parcels represented a parcel that was leased. Based on the available information, the project team determined the most likely parcel owner. ARRC = Alaska Railroad Corporation; BTEX = benzene, toluene, ethylbenzene, and xylenes; DRO = diesel range organics; GRO = gasoline range organics; PCB = polychlorinated biphenyls; PCE = perchloroethylene; RRO = residual range organics; TCE = trichloroethylene; TPH = total petroleum hydrocarbons; VC = vinyl chloride; VOCs = volatile organic compounds.
Source: ADEC 2021

Figure 1. Hazardous Materials



4.2 Groundwater Plumes

A groundwater plume refers to areas of groundwater that contain pollution. According to the ADEC Contaminated Sites database (ADEC 2021), there are 8 groundwater plumes within the project area (see Table 2 and Figure 1).

Table 2. Groundwater Plumes in the Project Area

Site Name	Owner	Status	Primary Contaminant
Alaska Real Estate Parking Lot	Municipality of Anchorage Heritage Land Bank and other	Open	PCE
ARRC – Anchorage Terminal Reserve GW Area 1	Alaska Railroad Corporation	Open	Trichloroethylene
ARRC – Anchorage Terminal Reserve GW Areas 2/3 & 4	Alaska Railroad Corporation	Open	Vinyl Chloride
ARRC – Anchorage Terminal Reserve GW Area 6	Alaska Railroad Corporation	Open	Trichloroethene
ARRC Diesel Tank Pumphouse	Alaska Railroad Corporation	Open	Diesel Range Organics
ARRC – Arctic Cooperage	Alaska Railroad Corporation	Open	Benzene
Kelly-Moore Paint Store & Warehouse	Alaska Railroad Corporation	Open	Trichlorethylene
C.R. Lewis (Used-oil and Diesel UST)	Alaska Railroad Corporation	Open	Tetrachloroethylene

Note: Ownership is estimated based on the approximate location of plume and site name. Plumes may cross property boundaries and affect other properties.
Source: ADEC 2021

4.3 Superfund Sites

According to the EPA National Priorities List and Superfund Alternative Approach Sites, there are two sites in the project area that are current on, deleted from, or proposed to the Superfund's National Priorities List (NPL; EPA 2021a) or are being addressed under the Superfund Alternative Approach (EPA 2021b; see Table 3). A summary of the Alaska Railroad Anchorage Yard, an active Superfund Alternative Approach site, is below.

Table 3. Superfund Sites in Anchorage

Name	Owner	Zip Code	Status
Alaska Railroad Anchorage Yard	Alaska Railroad Corporation	99501	Not listed on NLP but is considered to be an NPL-caliber site and is being addressed through the Superfund Alternative Approach
Standard Steel & Metals Salvage Yard (USACE)	Alaska Railroad Corporation	99501	Taken off NPL in 2002

Source: EPA 2021c

4.3.1 Alaska Railroad Anchorage Yard

According to the EPA (2021d):

> The Anchorage Terminal Reserve includes an active rail yard and other properties leased to tenants. The 600-acre area is owned by the Alaska Railroad Corporation and is located near Ship Creek in an industrial area of Anchorage. Both the rail yard and the properties outside the rail yard have had many documented environmental problems. A feasibility study is underway to evaluate cleanup options. The site is not listed on the National Priorities List (NPL) but is considered to be an NPL-caliber site and is being addressed through the Superfund Alternative Approach.

4.3.2 Standard Steel and Metals Salvage Yard

According to the EPA (2021e):

> The 6.2-acre Standard Steel and Metals Salvage Yard (USDOT) site is located in an industrial area of Anchorage, Alaska, near the intersection of Railroad Avenue and Yakutat Street. The U.S. Department of Transportation (USDOT) acquired the land in the 1920s. USDOT leased the area to businesses that operated metal recycling and salvaging operations from 1955 until 1993. Recycling and salvage activities handled electrical transformers and batteries resulting in releases of hazardous substances from these activities and inappropriate burial or burning of transformer oil. Cleanup has finished. EPA took the site off the Superfund program's National Priorities List (NPL) in 2002. Operation and maintenance activities and monitoring are ongoing.
>
> The site is adjacent to Ship Creek, a stream used for sport fishing. A recreational trail runs along the southern bank of the creek.
>
> EPA selected the site's long-term remedy in 1996. It included recycling/disposal of solid wastes, solidifying some of the soils; building an on-site Toxic Substances Control Act disposal cell to contain contaminated material; maintaining the landfill; conducting operation and maintenance activities; and putting institutional controls in place.
>
> The site's long-term cleanup removed all remaining scrap debris and regulated material stockpiled at the yard to off-site recycling and disposal centers. Contaminated soil and debris were excavated and buried in a regulated on-site landfill protected with more than three feet of layered cover, water drainage and flood protection systems. The old erosion control wall on the bank of Ship Creek was replaced with a natural erosion protection system. This system uses native vegetation and artificial logs to secure the stream bank and provide habitat for wildlife.
>
> After cleanup, EPA took the site off the NPL in 2002.

4.3.3 RCRA Corrective Action Sites

The RCRA regulates hazardous and non-hazardous wastes. The RCRA Corrective Action Program requires facilities that treat, store, or dispose of hazardous wastes to investigate and clean up contaminated soil, groundwater, and surface water. According to the EPA, there are no RCRA Corrective Action Sites in Anchorage.

4.3.4 Brownfield Sites

A brownfield site is a former industrial or commercial site whose future use is affected by real or perceived environmental contamination. The EPA's Brownfields Program provides grants and technical assistance to communities, states, tribes, and others to assess, clean up, and sustainably reuse contaminated properties.

According to the EPA Cleanups in My Community database (available at https://www.epa.gov/cleanups/cleanups-my-community), 24 brownfield properties have been identified in Anchorage. Of those, 9 are located within the project area. These sites are summarized in Table 4.

Table 4. Brownfield Properties

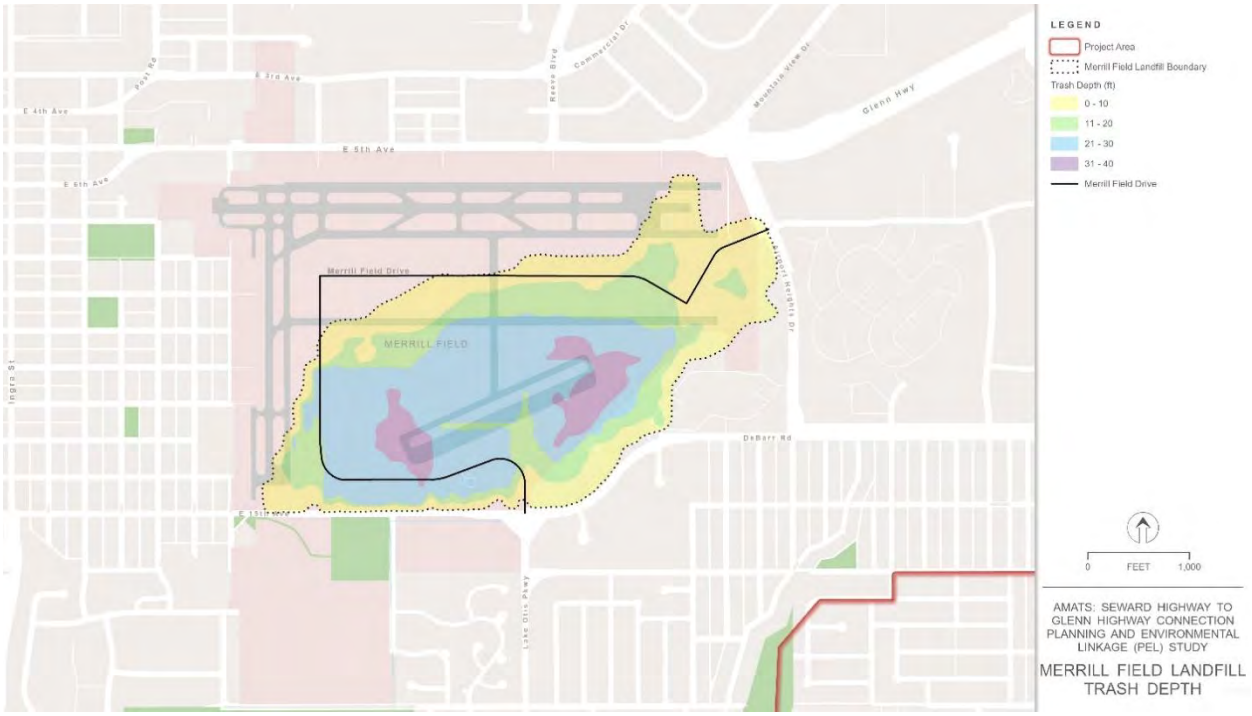
Name	Owner	Contaminants Found	Media Affected
Knik Arm Power Plant	Alaska Railroad Corporation	N/A	N/A
Wilhour and Warner Trust Properties	Anchorage Community Land Trust	N/A	N/A
Former Alaska Native Service Hospital	Municipality of Anchorage	VOCs	Ground water
3224 Mountain View Drive	Municipality of Anchorage	PAHs, PCBs, petroleum products, VOCs	Ground water, soil
Johns Motel and RV Park	John A Leonard	N/A	N/A
3130, 3142, and 3150 Mountain View Drive	Thomas Carey	Asbestos, lead, PAHs, PCBs, petroleum products, VOCs	Soil, surface water, unknown
Surf Laundry	Ami Pyune	Asbestos, lead, mercury, PCBs, VOCs, other contaminants, other metals	Building materials, ground water, soil
Former Fairview Electrical Substation	Municipal Light & Power	Arsenic, cadmium, chromium, lead, mercury, PCBs, SVOCs, VOCs, petroleum products, other metals	Soil
Fairview Gambell Corridor & Beans Café, Anchorage	Unknown	Chromium, copper, nickel, PCBs, petroleum products, other contaminants, other metals	Ground water, soil

Note: PAHs = polycyclic aromatic hydrocarbons; SVOCs = semi-volatile organic compounds
Source: EPA

4.3.5 Merrill Field Landfill

The Merrill Field Landfill is a closed, unlined landfill located south of East 5th Avenue and north of East 15th Avenue (Debarr Road), between Orca Street and Airport Heights Drive in Anchorage. The landfill covers approximately 200 acres and is filled with soil and refuse to an average depth of 30 feet (Brunett 1990), as shown in Figure 2.

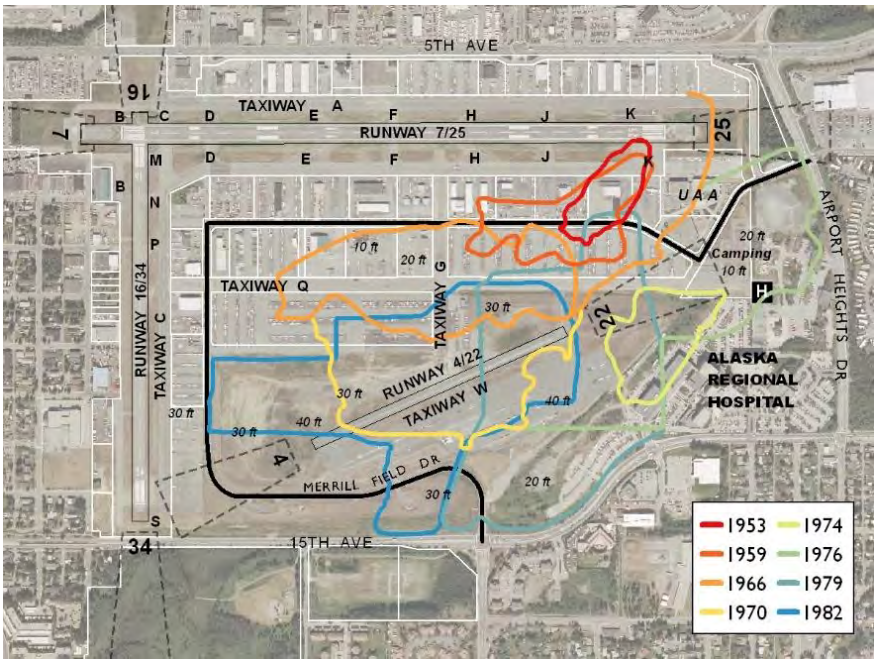
Figure 2. Thickness of Landfill Debris



The Merrill Field Landfill began operation in the late 1930s as an unsupervised garbage dump. It was originally filled by pushing refuse off a bluff near the east end of the current runway. Most of the refuse was burned (if combustible) and bulldozed into the former creek bed. After the City of Anchorage took over management of the landfill in 1957, the refuse was typically covered with soil at regular intervals. Frozen stockpiles of soil in the winter often prevented the covering of waste with soil, and snow was used as a substitute (Hart Crowser 1988). Operations continued at the Merrill Field Landfill until 1987, when it was capped and closed. It is estimated that approximately 2 feet of cover material were added to the landfill when it was capped. This thickness has likely changed over time as settlement of the debris created uneven surface topography. Repairs to the surface likely included adding fill or regrading the existing material to level the site. The current thickness of the cap is therefore likely variable.

It is estimated that the Merrill Field Landfill contains more than 3 million tons of refuse and 1.7 million tons of cover soil, nearly half of which was deposited between 1982 and 1987. Approximately 70 percent of the landfill contents were deposited after 1977 (Hart Crowser 1988). The active development areas within the landfill were initially located near the east end of Merrill Field Drive and, over time, generally moved toward the southwest. Figure 3 depicts the historical development of the landfill site.

Figure 3. Landfill Development History



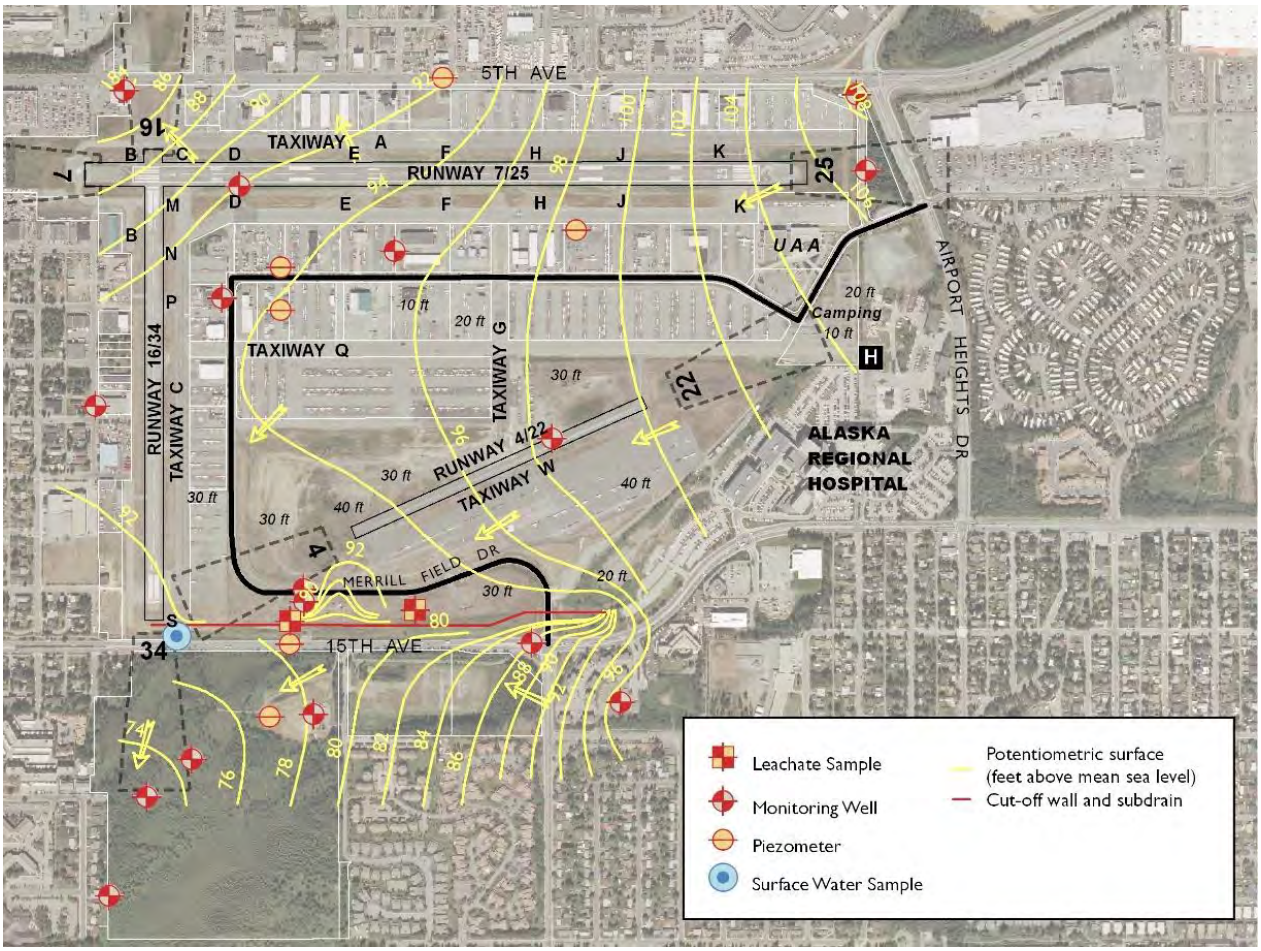
In the early 1970s, the north fork of Chester Creek was diverted through a corrugated pipe that is now buried beneath the landfill, which terminated on the south side of East 15th Avenue immediately west of Sitka Street. This pipe was later decommissioned and replaced by the current pipe, generally located along the southeast perimeter of the landfill mass.

Merrill Field Airport and several commercial buildings currently occupy the site. The landfill is bounded to the north and east by commercial properties, and to the west and south by residences, Sitka Street Park, and associated Merrill Field open space. A comprehensive water quality monitoring program began at the site in 1988.

Landfill Leachate

Leachate is the product of water percolating through refuse contained by a landfill. After coming in contact with landfill materials, the contaminated water can potentially impact surface and groundwater, as well as accelerate corrosion of certain construction materials. Because the Merrill Field Landfill was not constructed using a geotextile liner and leachate collection system, leachate is in direct contact with a shallow, unconfined aquifer and flows either northwest or southwest (see Figure 4).

Figure 4. Groundwater Elevation



The unconfined aquifer is monitored around the perimeter of the landfill to detect horizontal movement of leachate from the refuse. A majority of the groundwater beneath the refuse appears to flow toward the southwest; however, a hydrogeologic divide running approximately beneath the east-west runway routes the northern landfill groundwater toward the northwest. Vertical migration of groundwater is limited by at least two confining layers that separate two confined and one unconfined aquifer (Nelson 1982). It is believed that a cutoff wall and leachate collection system were placed along the north side of east 15th Avenue in 1996. Leachate collected from this system is pumped directly into the municipal sewage system from a lift station and is ultimately treated at the Point Woronzof water treatment plant. Leachate is sampled semi-annually from the lift station, as required by the MOA for its Anchorage Water and Wastewater Utility discharge permit.

Seventeen groundwater monitoring wells and one surface water location are monitored annually, as required by EPA and the ADEC regulations. Groundwater samples are analyzed for VOCs, 14 metals, and nutrient and wastewater parameters (SLR 2008). Parameters that exceed the applicable water quality standard in at least one well in 2007 include chloride, pH, sulfate, total dissolved solids, chromium, iron, manganese, nickel, sodium, and zinc. Leachate-impacted groundwater has been detected northwest of the landfill to an undetermined distance.

Groundwater monitoring data indicate that the leachate collection system affectively prevents leachate from impacting groundwater south of the site. Monitoring well MFL36, located near the western edge of the site, appears to be unaffected by the leachate.

A number of wells and piezometers have been sampled beyond the southwestern portion of the landfill. Although groundwater in the wetlands south of the Merrill Field Landfill has had contaminants detected in the landfill's monitoring wells, concentrations are typically lower than the EPA drinking water standards (Brunett 1990).

Methane Gas

One of several byproducts of landfill decomposition is methane gas. Explosions caused by indoor methane accumulation are the primary concern for landfill methane production. Long-term exposure to methane can accelerate corrosion of some materials.

Although the Merrill Field Landfill was closed and capped more than 3 decades ago, methane production at the Merrill Field Landfill remains relatively high. A methane extraction system was installed in 1991–1992 to intercept methane gas migration into structures along Merrill Field Drive. Gas probes installed around the perimeter of the landfill mass are monitored on a quarterly basis by the MOA. The highest concentrations of methane are typically measured near the northwest edge of the landfill; however, high readings have been measured along its southeast edge. Methane gas is also monitored at several buildings located near the Merrill Field Landfill. Because the Merrill Field Landfill was capped with gravel, methane is passively emitted into the air, thus reducing the amount of methane that would otherwise accumulate and migrate to areas adjacent to the landfill.

5. References

ADEC (Alaska Department of Environmental Conservation). No date. Spill Prevention and Response: Glossary. Available at https://dec.alaska.gov/spar/glossary.htm.

ADEC. 2021. Contaminated Sites Database. Available at https://dec.alaska.gov/spar/csp/.

Brunett, Jillian O. 1990. *Lateral Movement of Contaminated Ground Water From Merrill Field Landfill, Anchorage, Alaska.* U.S. Geological Survey Open-File Report 89-624.

EPA (U.S. Environmental Protection Agency). 2021a. Superfund: National Priorities List (NPL). Available at https://www.epa.gov/superfund/superfund-national-priorities-list-npl.

EPA. 2021b. Superfund Alternative Approach. Available at https://www.epa.gov/enforcement/superfund-alternative-approach.

EPA. 2021c. Search for Superfund Sites where You Live. Available at https://www.epa.gov/superfund/search-superfund-sites-where-you-live.

EPA. 2021d. Superfund Site: Alaska Railroad Alaska Yard – Anchorage, AK. Background. Available at https://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=1000079.

EPA. 2021e. Superfund Site: Standard Steel & Metals Salvage Yard (USDOT) – Anchorage, AK. Cleanup Activities. Available at https://cumulis.epa.gov/supercpad/SiteProfiles/index.cfm?fuseaction=second.Cleanup&id=1000073#bkground.

Hart Crowser. 1988. *Landfill Gas Assessment, Merrill Field Landfill, Anchorage, Alaska.* A-8099.

Nelson, G.L. 1982. *Vertical Movement of Ground Water Under the Merrill Field Landfill*. U.S. Geological Survey. Open-File Report 82-1016.

SLR Alaska. 2008. *Municipality of Anchorage Solid Waste Services Landfill Water Quality Monitoring Program 2007 Annual Interpretive Report*.

Appendix G:
Section 4(f) and Section 6(f) Resource Map and Technical Memorandum

AMATS: Seward Highway to Glenn Highway Connection
Planning & Environmental Linkage Study
State Project No.: CFHWY00550
Federal Project No.: 0001653

Section 4(f) and Section 6(f) Resource Map and Technical Memorandum

March 2022

This planning document may be adopted in a subsequent environmental review process in accordance with 23 USC 168 Integration of Planning and Environmental Review.

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 USC 327 and a Memorandum of Understanding dated November 3, 2017, and executed by FHWA and DOT&PF.

Prepared for:

Alaska Department of Transportation and Public Facilities

Prepared by:

HDR
2525 C Street, Suite 500
Anchorage, AK 99503

Contents

1. Introduction 1
2. Regulatory Setting 1
2.1 Background Information 2
2.1.1 Dedicated Park Land and Other Park and Recreation Land 2
2.1.2 Park Classification in Anchorage 3
3. Methodology 3
4. Section 4(f) Properties 4
4.1 Parks and Recreation Areas 4
4.2 Section 4(f) Historic Sites 13
4.3 Section 6(f) Properties 21

Tables

Table 1. Likely Section 4(f) Parks and Recreation Areas in the Project Area 6
Table 2. Suspected Section 4(f) Parks and Recreation Areas in the Project Area 10
Table 3. Properties in the Project Area Unlikely to be Considered Section 4(f) Resources 11
Table 4. Historic Properties in the Project Area Listed on or Nominated to the NRHP 14
Table 5. Historic Properties in the Project Area Determined Eligible for Listing on the NRHP 14
Table 6. Section 6(f) Resources in the Project Area 21

Figures

Figure 1. Section 4(f) and Section 6(f) Parks and Recreation Areas in the Project Area 5

Appendices

Appendix A: Results of the Section 4(f) Parks and Recreation Areas Windshield Survey in the Project Area

Acronyms

AHRS	Alaska Heritage Resources Survey
CFR	Code of Federal Regulations
DOT&PF	Alaska Department of Transportation and Public Facilities
FHWA	Federal Highway Administration
H2H	Seward Highway to Glenn Highway Connection
KAC	Knik Arm Crossing
LWCF	Land and Water Conservation Fund
MOA	Municipality of Anchorage
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
PEL	Planning and Environmental Linkages
SHPO	State Historic Preservation Officer
USC	United States Code

1. Introduction

This technical memorandum provides information on likely and suspected Section 4(f) and 6(f) resources that occur within the project area and that could potentially be affected by alternatives to be analyzed by the Seward Highway to Glenn Highway Connection Planning and Environmental Linkages (PEL) Study. This report identifies the owner of the mapped properties and describes the circumstances that make the property a likely or suspected Section 4(f) or 6(f) resource. Appendix A presents the results of a windshield survey of park and recreational resources.

2. Regulatory Setting

Section 4(f) originated in the Department of Transportation Act, a federal environmental protection statute[1] specific to U.S. Department of Transportation-funded projects. It generally prohibits the use of land from significant publicly owned parks, recreation areas, wildlife and waterfowl refuges, or historic sites for transportation projects. Section 4(f) protections for parks and recreation areas apply when the property is 1) publicly owned, 2) generally open to the public, and 3) significant as determined by the officials with jurisdiction over the property. The project area contains parks, recreation areas, and historic sites but not wildlife or waterfowl refuges. The remainder of this document addresses park and recreation areas together because they are treated the same under Section 4(f) regulations. While this document addresses historic sites briefly, they are covered in more detail in a separate report, *Cultural Resources Map and Technical Memorandum*.

The Alaska Department of Transportation and Public Facilities (DOT&PF) has assumed Federal Highway Administration (FHWA) responsibility for Section 4(f) approvals under 23 United States Code (USC) 327, the National Environmental Policy Act (NEPA) Assignment Program. The DOT&PF may not approve the use of a Section 4(f) property unless it has determined that there is no feasible and prudent avoidance alternative to the use of land from the property and the action includes all possible planning to minimize harm to the property resulting from such use, or that the use of the property, including any measures to minimize harm, will have a *de minimis* impact on the property (see 23 Code of Federal Regulations [CFR] 774.3).

Section 6(f) of the Land and Water Conservation Fund (LWCF) Act (16 USC 4601 *et seq*.) applies to public properties that have received federal Conservation Fund monies to acquire, develop, or improve public outdoor recreation facilities. Section 6(f)(3) of the LWCF Act requires that no property acquired or developed with LWCF assistance be converted to a use other than public outdoor recreation unless the National Park Service approves replacement property of reasonably equivalent use and location, and of at least equal fair market value.

[1] Section 4(f) refers to the original section within the U.S. Department of Transportation Act of 1966, now codified in 49 USC 303 and 23 USC 138. FHWA Section 4(f) implementing regulations are found at 23 CFR 774.

2.1 Background Information

2.1.1 Dedicated Park Land and Other Park and Recreation Land

Some park and recreation land in the Municipality of Anchorage (MOA) is "dedicated park land," which means the land was dedicated by the Anchorage Municipal Assembly via Assembly Ordinance (and prior to 1979, also by Resolution). These actions are "permanent or long-term," requiring a public vote to reverse. The Anchorage Municipal Charter in Section 10.02, Actions Requiring an Ordinance, states that, among other actions requiring an ordinance, the Assembly will use ordinances to:

> … (8) Convey or lease, or authorize the conveyance or lease, of any interest in lands of the municipality. An ordinance conveying an interest in real property dedicated to public park or recreational purposes is valid only upon approval by a majority of those voting on the question at a regular or special election.

This is further explained:

> The term 'dedicated' is intended to indicate formal designation of the land in question for permanent or long-term park or recreational purposes.[2]

Anchorage Municipal Code § 25.10.080B states:

> The assembly, by ordinance, may dedicate specifically described property for permanent or long-term park or recreational purposes under the meaning of Charter Section 10.02(8).[3]

Park-type property that is not "dedicated" as municipal park land includes school properties. Publicly owned school sites may be eligible for Section 4(f) protection under certain circumstances. In Anchorage, the Anchorage School District makes its school playgrounds and playing fields available to the general public outside of school hours. The MOA Parks and Recreation Department and Anchorage School District have a memorandum of agreement regarding such use. The Parks and Recreation Department considers school playgrounds and playing fields as significant recreation resources. As such, the portion of school properties dedicated to playgrounds and playing fields, including access and parking, typically have been considered protected under Section 4(f). Therefore, school properties are included in this memorandum. While the full property is mapped and identified in this initial effort, in an actual Section 4(f) applicability determination it is likely the recreation portion would be determined and mapped as a subset of any full school property.

Recreation facilities (e.g., trails) that are not part of dedicated park lands may also qualify for Section 4(f) protection. An example is the Lanie Fleischer Chester Creek Trail, which occurs mostly on dedicated park land but ventures out of park land in multiple areas to cross

[2] As stated in Commission Commentary on Anchorage Municipal Charter: An Aid to Legislative History, to Assist in the Interpretation of the Charter Document, August 20, 1975.
[3] MOA, Alaska, Anchorage Municipal Code § 25.10.080B.

transportation rights-of-way. In these areas, the trail is likely to be protected under Section 4(f) even though it occurs on transportation facility property.

2.1.2 Park Classification in Anchorage

The *Anchorage Bowl Park, Natural Resource, and Recreation Facility Plan*[4] classifies municipal park land in several ways: Neighborhood Use, Community Use, Special Use, Natural Resource, or Trails and Connections. The plan does not distinguish between parks and recreation areas, nor between parks and Natural Resource Areas. A Natural Resource Area generally is undeveloped, and may or may not be dedicated park land. Natural Resource Areas appear to be planned co-equally with lands of other classifications, such as Neighborhood Use Areas, which are more traditional, developed parks with playgrounds and mowed grass, but Natural Resource Areas may have little or no investment in facilities or maintenance.

The plan states that the term Natural Resource Area "is synonymous with natural open space or open space, greenbelt, and habitat area".[5] The plan also defines "public open space" as "land dedicated or reserved for the use by the public, including but not limited to parks, greenbelts, recreation areas, and school sites." The plan indicates that it is Anchorage's Natural Resource Areas that make its park system unique among city park systems in the nation: "Natural resource areas are lands set aside for preservation of significant natural resources, remnant landscapes, open space and visual aesthetics or buffering… The objective with these lands is to enhance the livability and character of the community by preserving as many of its natural amenities as possible…; serve as buffers between incompatible land uses; lend definition to neighborhood areas;…" and several other objectives.

3. Methodology

Parks, recreation areas, and historic sites within the Seward Highway to Glenn Highway Connection PEL Study project area were identified through research of maps, adopted plans, and a windshield survey. The potential applicability of Section 4(f) to parks and recreation areas was identified based, in part, on Section 4(f) applicability determinations prepared to support two previous projects: Highway to Highway (H2H) and Knik Arm Crossing (KAC). No wildlife or waterfowl refuges are located within the PEL Study area. Historic sites subject to Section 4(f) are addressed in Section 4.2.

Each potential Section 4(f) park or recreation area was classified as likely, suspected, or unlikely to be considered a Section 4(f) resource. These classifications were based on several variables, including FHWA's previous determinations of Section 4(f) applicability, ownership, designation, and use. A park or recreation area was identified as a "likely" Section 4(f) resource if FHWA had previously made a formal determination that the property was protected under Section 4(f). This information was supplemented by online research and a site visit to determine whether the resource had changed substantially since the previous determination was made. If

[4] MOA. 2006. *Anchorage Bowl Park, Natural Resource, and Recreation Facility Plan.*
[5] *Ibid.*

a park or recreation area appeared to qualify for Section 4(f) protection (based on online research and a site visit) but was not previously evaluated as part of the KAC or H2H NEPA processes, it was classified as a "suspected" Section 4(f) resource. The remaining parks and recreation areas discussed in this memorandum were identified as "unlikely" to be Section 4(f) resources based on a formal ineligible finding by FHWA for the KAC and H2H projects, supplemented with online research. Section 4.1 presents these findings.

In June and August 2021, a windshield survey (see Appendix A) identified the existing uses of each likely or suspected Section 4(f) park or recreation area to determine whether the use of the property had changed substantially since the prior identification efforts.

Cultural and historic resources that are potential Section 4(f)-eligible properties were identified based on a review of the Alaska Heritage Resources Survey (AHRS) database. Cultural resources include prehistoric to modern age archaeological sites, buildings, structures, objects or locations, etc., and are not dependent on eligibility for or listing on the National Register of Historic Places (NRHP). The term "historic properties" generally is associated with cultural resources that are listed on or have been determined eligible for listing on the NRHP. Historic properties typically are subject to Section 4(f) protection. Section 4.2 presents these findings.

If any projects resulting from this PEL Study move forward into a NEPA process, the DOT&PF will be responsible for determining whether Section 4(f) applies, and if so, which approval option is appropriate.

4. Section 4(f) Properties

4.1 Parks and Recreation Areas

Figure 1 shows likely, suspected, and unlikely Section 4(f) parks and recreation areas as well as properties protected under Section 6(f) in the PEL Study area. Summary descriptions of the "likely" Section 4(f) park and recreation areas follow in Table 1.

Table 2 summarizes the parks and recreation areas within the PEL Study area are "suspected" Section 4(f) resources (see also Figure 1). Additional research regarding use, significance, and management plans as well as coordination with the Official with Jurisdiction within the MOA Parks and Recreation Department would be needed to determine if these areas are Section 4(f) protected properties. These areas would also be subject to a determination of applicability by the DOT&PF.

Table 3 summarizes those properties considered "unlikely" to be afforded protection under Section 4(f).

Figure 1. Section 4(f) and Section 6(f) Parks and Recreation Areas in the Project Area

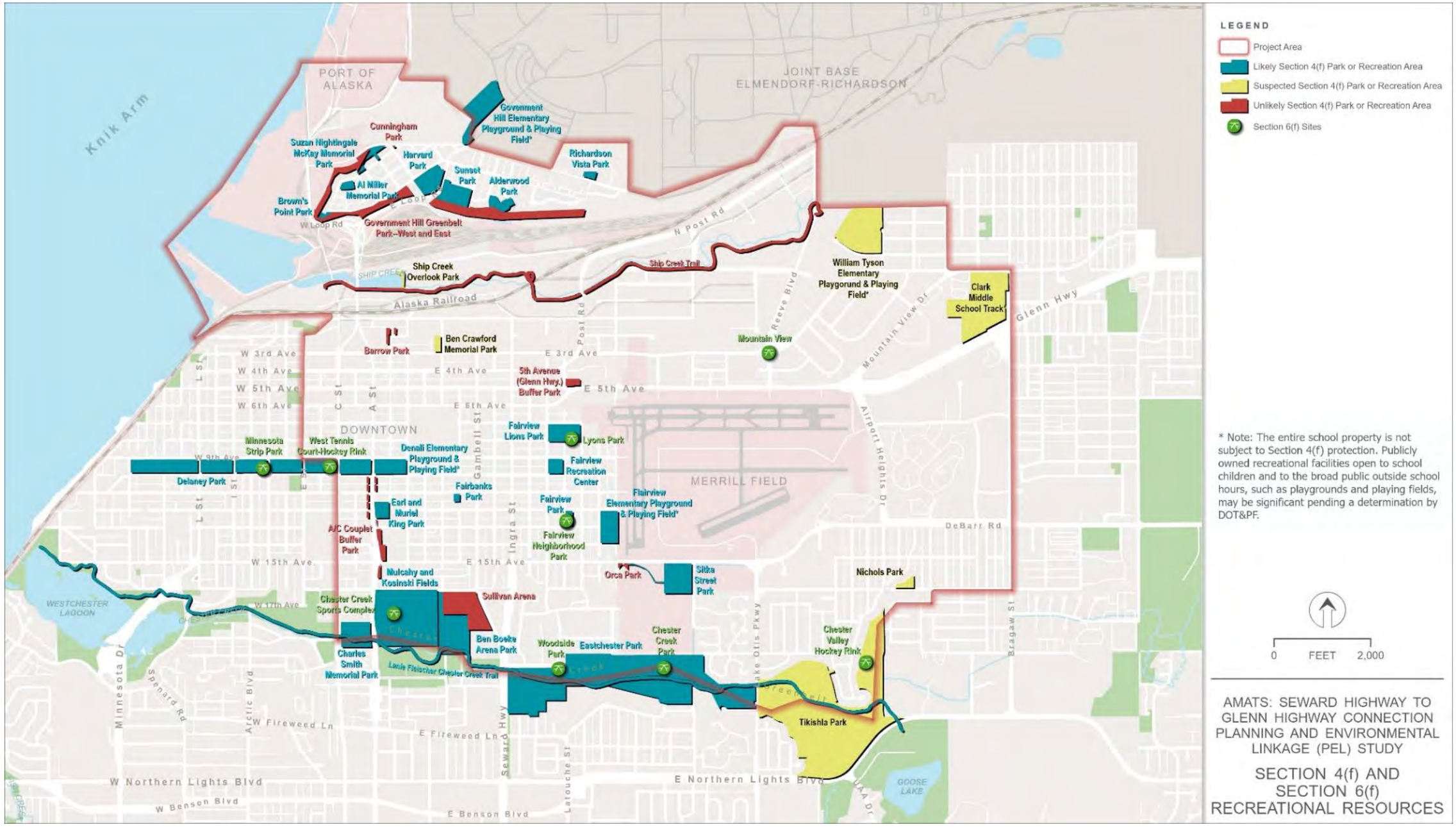


Table 1. Likely Section 4(f) Parks and Recreation Areas in the Project Area

Resource Name	Property Type	Location	Ownership and Management	Size[a]/Use/Function
Al Miller Memorial Park	Park	201 West Cook Avenue	MOA, Parks and Recreation Department	• 0.95 acre • Includes green space and picnic table • Classified as Special Use
Alderwood Park	Park	707 Elm Street	MOA, Parks and Recreation Department	• 3.15 acres • Includes green space, play equipment, picnic tables, and portable toilet • Classified as Neighborhood Use
Ben Boeke/ Dempsey Anderson Arena (Chester Creek Greenbelt)	Park	1600 Gambell Street	MOA; management contracted through MOA, Community Planning and Development Department	• 13.4 acres • Includes Chester Creek Trail and Ben Boeke/Dempsey Anderson Arena (dedicated to year-round ice sports) with two indoor and two outdoor rinks[b] (arena has open times for public skating, skating instruction, and ice rental to groups such as schools and skating associations) • As of June 2021, the outdoor rinks are converted to 12 pickleball courts during summer • Other amenities include a clubhouse building and parking • Adjoins Sullivan Arena and Mulcahy/Kosinski Fields • Classified as Special Use
Browns Point Park	Park	348 West Harvard Avenue	MOA, Parks and Recreation Department	• 0.24 acre • Includes green space, benches, picnic table, and portable toilet • Access to Government Hill Greenbelt • Classified as Neighborhood Use
Charles W. Smith Memorial Park (Chester Creek Greenbelt)	Park	1860 A Street, along 20th Avenue at C Street	MOA, Parks and Recreation Department	• 39.7 acres • includes Chester Creek Trail, basketball courts, playground, playing field, benches, and connection to A Street Trail • Classified as Neighborhood Use

Resource Name	Property Type	Location	Ownership and Management	Size[a]/Use/Function
Delaney Park (Delaney Park Strip)	Park	West of A Street, between 9th and 10th Avenues	MOA, Parks and Recreation Department	• 29 acres • Continuous with Delany Park Strip to the west • Includes softball/baseball fields, bleachers, picnic tables, portable toilets, and pedestrian tunnel to Denali Elementary • Classified as Community Use
Denali Montessori Elementary Playground & Playing Field	Recreation Area	952 Cordova Street	MOA, Anchorage School District	• Approximately 1 acre • Includes playground with play equipment, playing fields, basketball court, and pedestrian tunnel to Delaney Park Strip • Open to public use outside school hours
Earl & Muriel King Park	Park	1201 A Street	MOA, Parks and Recreation Department	• 2.3 acres • Includes a playing field • Classified as Neighborhood Use
Eastchester Park (Chester Creek Greenbelt)	Park	900 East 20th Avenue; along Chester Creek, on East 20th Avenue at Juneau Street	MOA, Parks and Recreation Department	• 85 acres • Includes Chester Creek Trail, playground, picnic area, playing fields, benches, and parking area • Classified as Natural Resource
Fairbanks Park	Park	530 East 11th Avenue	MOA, Parks and Recreation Department	• 0.3 acre • Includes open, grassy space, and play equipment • Classified as Neighborhood Use
Fairview Community Recreation Center	Park	1121 East 10th Avenue	MOA, Parks and Recreation Department	• 2.1 acres • includes community recreation center (gymnasiums, weight room, dance/martial arts studio, arts and crafts studio, saunas, multipurpose rooms, industrial kitchen, nursery, teen center, and computer lab) and parking • Classified as Special Use
Fairview Elementary Playground & Playing Field	Recreation Area	1327 Nelchina Street	MOA, Anchorage School District	• Approximately 1 acre • Includes playground with play equipment, playing fields, and basketball court • Open to public use outside school hours

Resource Name	Property Type	Location	Ownership and Management	Size[a]/Use/Function
Fairview Lions Park (also known as Karluk Park)	Park	1201 East 8th Avenue	MOA, Parks and Recreation Department	• 5.5 acres • Includes play equipment, open field, sledding hill, volleyball, picnic shelter with tables and benches, community garden, and portable toilet • Classified as Neighborhood Use
Fairview Park	Park	1217 LaTouche Street	MOA, Parks and Recreation Department	• 1 acre • Includes play equipment (including custom 'Raven' climber), playing field, volleyball/basketball court, two picnic shelters, tables, and grill • Classified as Neighborhood Use
Government Hill Elementary Playground & Playing Field	Recreation Area	525 East Bluff Drive	MOA, Anchorage School District	• Includes play equipment, basketball courts, play field, and garden area[c] • Open to public use outside school hours
Harvard Park	Park	432 East Harvard Avenue	Alaska Railroad Corporation; managed by MOA, Parks and Recreation Department	• 5.33 acres • Includes a basketball court and two tennis courts • Classified as Neighborhood Use
Lanie Fleischer Chester Creek Trail and Connecting Trails	Recreation Area	East/west along Chester Creek; extends from Margaret Egan Sullivan Park to University Lake Park	MOA, Parks and Recreation Department (crosses DOT&PF right-of-way under roads)	• Extends 6.3 miles, mostly within other dedicated park land but in some areas outside of parks • Multi-use trail serves transportation and recreation functions for bicyclists, walkers, runners, cross-country skiers, in-line skaters, and skateboarders

Resource Name	Property Type	Location	Ownership and Management	Size[a]/Use/Function
Mulcahy and Kosinski Fields (Chester Creek Greenbelt)	Park	1860 A Street	MOA, Parks and Recreation Department	• 34.2 acres • Includes Anchorage Football Stadium (artificial turf football/ soccer field with running track and bleachers), Mulcahy Baseball Stadium (semi-professional ball field with support facilities), Kosinski Fields (four baseball fields), and trail connections to Chester Creek Trail • Adjoins Sullivan Arena and Ben Boeke Ice Arena • Classified as Special Use
Richardson Vista Park	Park	1300 East Bluff Drive	Undetermined; located on private parcel; easement may exist; MOA, Parks and Recreation Department, manages pavilion reservations	• 0.86 acre • Includes green space, play equipment, benches, and picnic shelter • Classified as Neighborhood Use
Sitka Street Park	Park	1580 Sitka Street; south of 15th Avenue, west of Sitka Street	MOA, Merrill Field; managed by MOA, Parks and Recreation Department	• 8 acres • Includes 15th Avenue Trail, playground/play equipment, picnic shelter and tables, interpretive kiosk, lighting, sledding hill, volleyball court, playing field, portable toilet, and parking • Part of Merrill Field property • Classified as Neighborhood Use
Sunset Park	Park	600 Vine Avenue	MOA, Parks and Recreation Department	• 5.58 acres • Includes green space, picnic shelter, picnic areas and tables, and portable toilet • Classified as Neighborhood Use
Suzan Nightingale McKay Park	Park	158 East Bluff Ave	MOA, Parks and Recreation Department	• 1.36 acres • Includes green space, play equipment, benches, and portable toilet • Classified as Neighborhood Use

[a] *Acreage denotes portion of park that is likely subject to Section 4(f) protection*
[b] *Also known as Bonnie Cusack Memorial Outdoor Rinks*
[c] *The recreation area was inaccessible in 2021 due to construction. Public access to the recreation area will resume when construction is complete.*

Table 2. Suspected Section 4(f) Parks and Recreation Areas in the Project Area

Resource Name	Property Type	Location	Ownership and Management	Size[a]/Use/Function
Ben Crawford Memorial Park (Pioneer Schoolhouse)	Park	437 East 3rd Avenue	MOA, Anchorage Woman's Club	• 1 acre • Site of historic schoolhouse (open during special events/reservable) • Relocated historic cabins/structures • Classified as Special Use
Clark Middle School	Recreation Area	150 Bragaw Street	MOA, Anchorage School District	• Includes tennis courts, football/soccer field with a track, and portable toilets • Open to public use outside school hours
Nichols Park	Park	3247 East 16th Avenue	MOA, Parks and Recreation Department	• 1.23 acres • Includes fenced grassy area with benches • Classified as Natural Resource
Ship Creek Overlook Park	Park	150 East Whitney Road	Alaska Railroad Corporation; managed by MOA	• 0.24 acre • Includes wildlife viewing, interpretive signage, and benches • Classified as Special Use
Tikishla Park/ Davenport Field (Chester Creek Greenbelt)	Park	3018 East 20th Avenue	MOA, Parks and Recreation Department	• 105.06 acres • Includes Scotty Gomez hockey rink (with lighting and equipment shed), little league ballfields, and play equipment[b] • Near Lake Otis Boulevard, includes Davenport Fields (baseball) • Contains Chester Creek Trail and paved spur trails • Classified as Natural Resource Area and Special Use Area
William Tyson Elementary School	Recreation Area	2801 Richmond Avenue	MOA, Anchorage School District	• Includes playground, play fields, soccer field, and basketball courts • Open to public use outside school hours

[a] Acreage denotes portion of park that is likely subject to Section 4(f) protection
[b] Part of the recreation area was inaccessible in 2021 due to construction. Public access to the recreation area will resume when construction is complete.

Table 3. Properties in the Project Area Unlikely to be Considered Section 4(f) Resources

Resource Name	Property Type	Location	Ownership and Management	Why Property Unlikely to Receive Section 4(f) Protection
5th Avenue (Glenn Highway) Buffer Park	Green space	1253 East 5th Avenue	MOA	• Likely not significant • Does not play an important role in the MOA recreation program • Has value as an open space and visual buffer • FHWA determined the property was not subject to 4(f) protection for the H2H project
A/C Couplet Buffer Park	Green space	1455 A Street; several parcels bordering A Street between 10th and 13th Avenue;	MOA	• Likely not significant • Serves as a buffer between a busy road and a residential area • FHWA determined the property was not subject to 4(f) protection for the H2H project
Barrow Park	Green space	250 Barrow Street	MOA	• Likely not significant • Considered to be open space; does not have developed recreational facilities or use
Cunningham Park	Green space	321 East Cook Avenue	MOA	• Likely not significant • Consists of a small patch of lawn surrounded by streets; not developed or managed as a significant park • FHWA determined the property was not subject to 4(f) protection for the KAC project
Government Hill Greenbelt Park, West and East	Green space; visual buffer	Hillside north of Ship Creek, bisected by Loop Road	MOA; Alaska Railroad Corporation	• Likely not significant • Considered an undeveloped natural resource area, not a park; • Provides important green open space and visual buffer • FHWA determined the property was not subject to 4(f) protection for the KAC project
Orca Park	Green space; visual buffer	1507 Orca Street	MOA	• Likely not significant • Serves as a visual buffer between 15th Avenue and residences behind it; its small size limits recreational uses • FHWA determined the property was not subject to 4(f) protection for the H2H project

Resource Name	Property Type	Location	Ownership and Management	Why Property Unlikely to Receive Section 4(f) Protection
Ship Creek Trail	Multi-use trail	Adjacent to Ship Creek	MOA; Alaska Railroad Corporation	• Likely primarily used for transportation purposes • A portion of the trail may not be publicly owned; a segment is on property owned by the Alaska Railroad Corporation, which has granted a permit to the MOA for construction and maintenance of the trail; land was transferred to the state railroad for transportation purposes • Per the terms of the permit, FHWA determined that the portion of the trail that would be constructed on this Alaska Railroad Corporation parcel was not subject to 4(f) protection for the KAC project
Sullivan Arena	Event space	1600 Gambell Street	MOA	• This facility provides for multiple uses, primarily for commercial purposes • This facility is generally only open during events; as of August 2021, the site is not being used for recreation purposes, but this change of use is expected to be temporary • FHWA determined the property was not subject to 4(f) protection for the H2H project

4.2 Section 4(f) Historic Sites

To qualify for protection under Section 4(f), a cultural resource must be of national, state, or local significance, and it must be eligible for or listed on the NRHP. Unlike the other Section 4(f) property categories (e.g., parks, recreation areas, and refuges) cultural resources do not require public ownership to qualify for protection under Section 4(f).

The *Cultural Resources Map and Technical Memorandum* provides a more thorough description and mapping of cultural resources in the study area.[6] A summary of the findings from that memorandum includes:

1. There are 935 cultural resource properties listed in the AHRS and located within the project area.
2. A total of 125 historic properties in the project area have been through the Section 106 (of the National Historic Preservation Act [NHPA]) Determination of Eligibility (DOE) process and were found eligible for or listed on the NRHP. Of these, 116 are buildings, 5 are historic districts, 3 are sites, and 1 is a structure. These properties are likely afforded protection under Section 4(f).
3. A total of 103 properties in the project area have been through the Section 106 DOE process and were found not eligible for listing on the NRHP, either individually or as non-contributing elements of an eligible historic district. Therefore, these properties are unlikely to be Section 4(f) properties.
4. The remaining 707 cultural resource properties listed within the AHRS and located within the project area have not been through the DOE process. Their status with respect to the NRHP, and therefore with respect to Section 4(f), remains unassessed.
5. A total of five historic districts are located within the project area that have been determined eligible for or listed/ nominated to the NRHP.

Cultural resources may be individually eligible for NRHP listing in their own right or may contribute to an historic district that is eligible for the NRHP. In the latter case, these contributing resources may be considered to qualify for Section 4(f) protection.

Table 4 presents historic properties in the project area listed on or nominated to the NRHP, and these properties are highly likely to be protected under Section 4(f). Table 5 presents historic properties in the project area that have been formally found eligible for listing in the NRHP but have not been formally nominated and listed; these properties are also likely to be protected under Section 4(f).

Once historic properties are identified through the Section 106 DOE process (this process is outlined in the *Cultural Resources Map and Technical Memorandum*), Section 4(f) applicability can be evaluated; these steps would occur during a subsequent NEPA process for any project that resulted from this PEL Study.

[6] Maps of these cultural resources are included in Appendices A and B of the *Cultural Resources Map and Technical Memorandum*, which is confidential/restricted. Maps are not included in this memorandum because the location of cultural resources is considered restricted information.

Table 4. Historic Properties in the Project Area Listed on or Nominated to the NRHP

AHRS Number	Property Name	Nature of Property	NRHP Status
ANC-00244	Pioneer School House	Building	Listed
ANC-00048	Civil Works Residential Dwelling, 786 Delaney Street	Building	Listed
ANC-01422	McKinley Tower Apartments	Building	Listed
ANC-02108	Government Hill Federal Housing Historic District	District	Nomination sent to Keeper of the NRHP
ANC-00359	Loussac-Sogn Building	Building	Listed
ANC-00130	Wendler Building	Building	Listed
ANC-00306	Wireless Station	Building	Listed
ANC-01205	Civil Works Residential Dwelling (800 Delaney Street)	Building	Listed
ANC-00766	Anchorage Cemetery	Site	Listed
ANC-04056	Block 13 FHA Army Housing Historic District	District	Listed
ANC-02639	Greater Friendship Baptist Church	Site	Listed

Table 5. Historic Properties in the Project Area Determined Eligible for Listing on the NRHP

AHRS Number	Property Name	Nature of Property	DOE Status
ANC-00910	Anchorage Medical Center of the Alaska Native Service	Building	Determined eligible
ANC-00911	Quarters Building, Alaska Native Health Services	Building	Determined eligible
ANC-00824	Building 020, Flight Service Station	Building	Determined eligible
ANC-02062	1083 Hollywood Drive	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01227	Alaska Railroad Freight Shed	Building	Determined eligible
ANC-02063	1101 Hollywood Drive	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-02064	1105 Hollywood Drive	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-02065	1109 Hollywood Drive	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-02066	1201 Hollywood Drive	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)

AHRS Number	Property Name	Nature of Property	DOE Status
ANC-02067	1205 Hollywood Drive	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-02045	717 and 727 Elm Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-02046	777 and 787 Elm Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-02047	831 Elm Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01843	100 1/2 West Cook Avenue	Building	Determined eligible
ANC-01860	308 1/2 East Manor Avenue	Building	Determined eligible
ANC-01869	301 East Harvard Avenue	Building	Determined eligible
ANC-01932	Anchorage Square and Round Dance Club Building	Building	Determined eligible
ANC-01933	Alaska Railroad Water Tower	Structure	Determined eligible
ANC-01363	3408 Peterkin Avenue	Building	Determined eligible
ANC-01972	1101 East 11th Avenue	Building	Pending consultation between agency and State Historic Preservation Officer (SHPO) (SHPO disagrees with the agency's determination)
ANC-02010	Eighth Avenue and D Street Historic District	District	Determined eligible
ANC-00403	Belgard House	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-00383	McNalley House	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-02020	1851 Aleutian Street	Building	Determined eligible
ANC-01897	842 Birch Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01205	Civil Works Residential Dwelling (800 Delaney Street)	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-00725	AEC Cottage #11	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01386	924 and 926 Brown Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)

AHRS Number	Property Name	Nature of Property	DOE Status
ANC-01387	944 and 946 Brown Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01803	Thompson Grocery	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01804	AEC Cottage 12	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01805	AEC Cottage 13	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01808	901 and 903 Delaney Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01809	320 and 322 West Manor Avenue	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01810	319 and 320 West Manor Avenue	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01811	307 and 309 West Manor Avenue	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01812	245 and 247 West Manor Avenue	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01814	233 West Manor Avenue	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01815	220 and 222 West Manor Avenue	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01818	330 West Manor Avenue	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01819	819 Delaney Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01820	928 Delaney Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01836	815 Colwell Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01837	818 Brown Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)

AHRS Number	Property Name	Nature of Property	DOE Status
ANC-02109	Brown's Point Park	Site	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-02110	Al Miller Memorial Park	Site	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-02111	Government Hill Quonset Hut Historic District	District	Determined eligible
ANC-01846	208 1/2 East Cook Avenue	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01847	224 1/2 East Cook Avenue	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01848	240 1/2 East Cook Avenue	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-02128	Government Hill Urban Renewal Historic District	District	Determined eligible
ANC-01878	710 Ash Place	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01880	730 Ash Place	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01883	731 Ash Place	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01881	742 Ash Place	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01888	675 Birch Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01887	685 Birch Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-02025	701 Birch Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-02103	601-603 Vine Avenue	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01884	621 Vine Avenue	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)

AHRS Number	Property Name	Nature of Property	DOE Status
ANC-01882	721 Ash Place	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-02026	713 Birch Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-02027	723 Birch Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-02028	735 Birch Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01901	811 Birch Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01895	820 Birch Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01900	821 Birch Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01896	830 Birch Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01893	700 Cedar Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-02030	701 Cedar Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-02032	712 Cedar Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-02033	721 Cedar Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01907	741 Cedar Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01905	801 Cedar Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-02036	810 Cedar Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01904	821 Cedar Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)

AHRS Number	Property Name	Nature of Property	DOE Status
ANC-02037	831 Cedar Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01903	841 Cedar Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-02041	700 Dogwood Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01908	701 Dogwood Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-02042	740 Dogwood Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01918	801 Dogwood Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-02044	810 Dogwood Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01911	820 Dogwood Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01916	821 Dogwood Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01912	830 Dogwood Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01915	831 Dogwood Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01914	841 Dogwood Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01913	842 Dogwood Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-02129	Alderwood Park	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01921	810 Elm Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01899	831 Birch Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)

AHRS Number	Property Name	Nature of Property	DOE Status
ANC-01898	841 Birch Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01923	830 Elm Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01924	842 Elm Street	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-02055	620 and 622 Hollywood Drive	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-02056	700 and 702 Hollywood Drive	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01894	720 Hollywood Drive	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-02057	721 and 723 Hollywood Drive	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-01910	820 Hollywood Drive	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-02126	Government Hill Panoramic View Historic District	District	Determined eligible
ANC-02058	1001 Hollywood Drive	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-02059	1011 Hollywood Drive	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-02060	1071 Hollywood Drive	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-02061	1077 Hollywood Drive	Building	Determined eligible as a contributing element to an eligible historic district (if the district is later found to be ineligible, this status is invalidated)
ANC-02106	1841 Kuskokwim Street	Building	Determined eligible
ANC-01530	Reeve Airmotive Hangar	Building	Determined eligible
ANC-03067	2421 Oak Drive	Building	Determined eligible
ANC-01939	1514 Wintergreen Street	Building	Determined eligible
ANC-01942	1000 East 10th Avenue	Building	Determined eligible

AHRS Number	Property Name	Nature of Property	DOE Status
ANC-02704	124 East 10th Avenue	Building	Pending consultation between agency and SHPO (SHPO disagrees with the agency's determination)
ANC-02705	142 East 10th Avenue	Building	Pending consultation between agency and SHPO (SHPO disagrees with the agency's determination)
ANC-02717	209 East 11th Avenue	Building	Pending consultation between agency and SHPO (SHPO disagrees with the agency's determination)
ANC-03661	217 East 11th Avenue	Building	Pending consultation between agency and SHPO (SHPO disagrees with the agency's determination)
ANC-03657	211 West 11th Avenue	Building	Pending consultation between agency and SHPO (SHPO disagrees with the agency's determination)
ANC-02760	235 West 11th Avenue	Building	Pending consultation between agency and SHPO (SHPO disagrees with the agency's determination)
ANC-03697	135 East 13th Avenue	Building	Pending consultation between agency and SHPO (SHPO disagrees with the agency's determination)
ANC-03670	1200 B Street	Building	Pending consultation between agency and SHPO (SHPO disagrees with the agency's determination)
ANC-01935	Chugach Electric Association Power Plant	Site	Determined eligible

The identification process under Section 106 of the NHPA is incomplete as not all cultural resources have been evaluated for their eligibility for listing on the NRHP. Additionally, there may be some areas within the project area that have not been surveyed for cultural resources, resulting in a data gap. Additional work would be required to complete the Section 106 process during future environmental and permitting processes (e.g., NEPA).

Once the identification process for Section 106 is complete, effects to historic properties under Section 4(f) can be considered. Effects under Section 4(f) include all significant historic properties "used" for a highway project. Under Section 4(f), the project must avoid using protected areas if feasible and prudent. If 4(f) properties are used, the project proponent must include all possible planning to minimize harm to these properties.

4.3 Section 6(f) Properties

According to the LWCF project database website, 13 projects in the PEL study area have been funded by the LWCF (see Figure 1 and Table 6).

Table 6. Section 6(f) Resources in the Project Area

Name	Program	Project Type	Purpose	Year Funded
Mountain View	State and Local Assistance	Acquisition & Development	No Data	1966
Lyons Park	State and Local Assistance	Development	Playground & Lighting	2019
Fairview Neighborhood Park	State and Local Assistance	Acquisition (Fee)	No Data	1977

Name	Program	Project Type	Purpose	Year Funded
Fairview Neighborhood Park	State and Local Assistance	Acquisition & Development	No Data	1966
Woodside Park	State and Local Assistance	Acquisition (Fee)	No Data	1973
Chester Creek Park	State and Local Assistance	Acquisition (Fee)	Lot 33 Block 7	1974
Chester Creek Park	State and Local Assistance	Development	Sports Area	1967
Chester Creek Park	State and Local Assistance	Acquisition (Fee)	Spenard Acquisition	1982
Chester Creek Park	State and Local Assistance	Acquisition (Fee)	Land Acquisition	1972
Chester Creek Park	State and Local Assistance	Acquisition (Fee)	No Data	1973
Chester Creek Park	State and Local Assistance	Development	No Data	1970
Chester Creek Park	State and Local Assistance	Development	Phase II	1971
Chester Creek Sports Complex	State and Local Assistance	Development	No Data	1971

Source: Past projects – The Land and Water Conservation Fund (tplgis.org), https://lwcf.tplgis.org, accessed June 2021

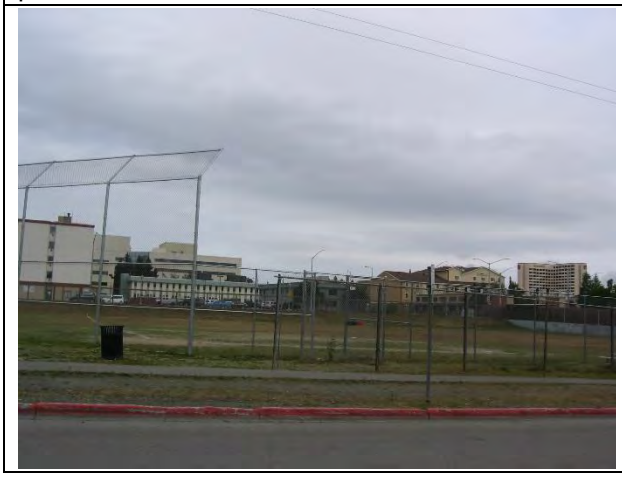
Appendix A: Results of the Section 4(f) Parks and Recreation Areas Windshield Survey in the Project Area

Appendix A: Results of the Section 4(f) Parks and Recreation Areas Windshield Survey in the Project Area

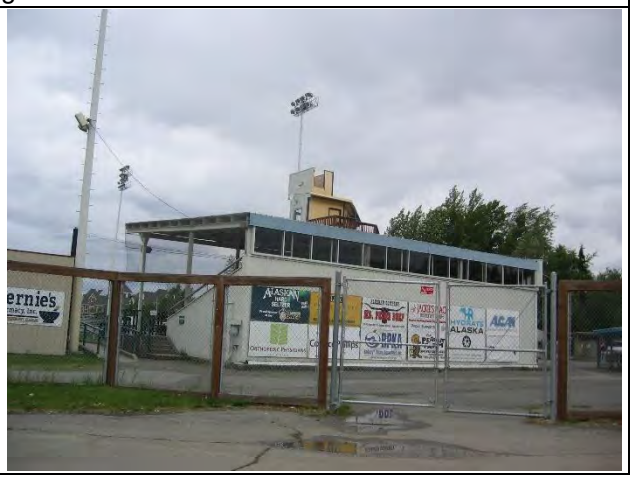
The project team conducted a windshield survey of likely and suspected Section 4(f) resources in June and August 2021. The survey purpose was to document existing use of each resource visited and the amenities it contains. The information gathered during the survey is documented in the following data sheets.

Name: Earl & Muriel King Park	
Location: 1201 A Street; along A Street between 12th and 13th Avenues	
Acreage: 2.3 (portion of park that FHWA has previously determined is subject to Section 4(f) protection)	Classification: Neighborhood Use
Park or Recreation Area: ☒ Yes ☐ No	Public Access: ☒ Yes ☐ No
Parking Area: ☐ Yes ☒ No	Soccer field: ☐ Yes ☒ No
Playground: ☐ Yes ☒ No	Basketball Court: ☐ Yes ☒ No
Softball/baseball fields: ☐ Yes ☒ No	Picnic Area or Shelter: ☐ Yes ☒ No
Ice rink: ☐ Yes ☒ No	Multi-use Trail: ☒ Yes ☐ No
Other: ☒ Yes ☐ No If yes, describe: includes playing field and bus stop	

Name: Delaney Park (Delany Park Strip)	
Location: West of A Street to C Street, between 9th and 10th Avenues; continuous with Delany Park Strip to the west	
Acreage: 29	Classification: Community Use
Park or Recreation Area: ☒ Yes ☐ No	Public Access: ☒ Yes ☐ No
Parking Area: ☒ Yes ☐ No	Soccer field: ☐ Yes ☒ No
Playground: ☐ Yes ☒ No	Basketball Court: ☐ Yes ☒ No
Softball/baseball fields: ☒ Yes ☐ No	Picnic Area or Shelter: ☒ Yes ☐ No
Ice rink: ☐ Yes ☒ No	Multi-use Trail: ☐ Yes ☒ No
Other: ☒ Yes ☐ No If yes, describe: includes pedestrian tunnel to Denali Montessori School, bleachers, picnic tables, portable toilets	



Name: Mulcahy and Kosinski Fields (Chester Creek Greenbelt)	
Location: 1860 A Street	
Acreage: 34.2	Classification: Special Use
Park or Recreation Area: ☒ Yes ☐ No	Public Access: ☒ Yes ☐ No
Parking Area: ☒ Yes ☐ No	Soccer field: ☒ Yes ☐ No
Playground: ☐ Yes ☒ No	Basketball Court: ☐ Yes ☒ No
Softball/baseball fields: ☒ Yes ☐ No	Picnic Area or Shelter: ☐ Yes ☒ No
Ice rink: ☐ Yes ☒ No	Multi-use Trail: ☒ Yes ☐ No
Other: ☒ Yes ☐ No If yes, describe: includes Anchorage Football Stadium (artificial turf football/soccer field with running track and bleachers), Mulcahy Baseball Stadium (semi-professional ball field with support facilities), Kosinski Fields (four baseball fields), and trail connections to the Chester Creek Trail; adjoins Sullivan Arena and Ben Boeke Ice Arena with shared parking.	



Name: Ben Boeke/Dempsey Anderson Arena (Chester Creek Greenbelt)	
Location: 1600 Gambell Street	
Acreage: 13.4	Classification: Special Use
Park or Recreation Area: ☒ Yes ☐ No	Public Access: ☒ Yes ☐ No
Parking Area: ☒ Yes ☐ No	Soccer field: ☐ Yes ☒ No
Playground: ☐ Yes ☒ No	Basketball Court: ☐ Yes ☒ No
Softball/baseball fields: ☐ Yes ☒ No	Picnic Area or Shelter: ☐ Yes ☒ No
Ice rink: ☒ Yes ☐ No	Multi-use Trail: ☒ Yes ☐ No
Other: ☒ Yes ☐ No If yes, describe: Ben Boeke/Dempsey Anderson Arena (dedicated to ice sports year round) with two indoor and two outdoor rinks (the arena is open for public staking, skating instructions, and ice rental to groups and skating associations). As of 2021, the two outdoor rinks are converted to 12 outdoor pickleball courts in summer. Other amenities include a clubhouse building and parking. Adjoins Sullivan Arena and Mulcahy/Kosinski Fields	

Name: Charles W. Smith Memorial Park (Chester Creek Greenbelt)	
Location: 1860 A Street, along 20th Avenue at C Street	
Acreage: 39.7	Classification: Neighborhood Use
Park or Recreation Area: ☒ Yes ☐ No	Public Access: ☒ Yes ☐ No
Parking Area: ☐ Yes ☒ No	Soccer field: ☒ Yes ☐ No
Playground: ☒ Yes ☐ No	Basketball Court: ☒ Yes ☐ No
Softball/baseball fields: ☒ Yes ☐ No	Picnic Area or Shelter: ☒ Yes ☐ No
Ice rink: ☐ Yes ☒ No	Multi-use Trail: ☒ Yes ☐ No
Other: ☒ Yes ☐ No If yes, describe: includes Chester Creek Trail, basketball court, playground, playing field, benches, and connection to A Street Trail	

Name: Eastchester Park (Chester Creek Greenbelt)	
Location: 900 East 20th Avenue; along Chester Creek, on East 20th at Juneau Street	
Acreage: 85	Classification: Natural Resource
Park or Recreation Area: ☒ Yes ☐ No	Public Access: ☒ Yes ☐ No
Parking Area: ☒ Yes ☐ No	Soccer field: ☒ Yes ☐ No
Playground: ☒ Yes ☐ No	Basketball Court: ☒ Yes ☐ No
Softball/baseball fields: ☒ Yes ☐ No	Picnic Area or Shelter: ☒ Yes ☐ No
Ice rink: ☐ Yes ☒ No	Multi-use Trail: ☒ Yes ☐ No
Other: ☒ Yes ☐ No If yes, describe: includes Chester Creek Trail, playground, picnic area, playing fields, benches, and parking area	

Name: Sitka Street Park	
Location: 1580 Sitka Street; south of 15th Avenue, west of Sitka Street	
Acreage: 8	Classification: Neighborhood Use
Park or Recreation Area: ☒ Yes ☐ No	Public Access: ☒ Yes ☐ No
Parking Area: ☒ Yes ☐ No	Soccer field: ☐ Yes ☒ No
Playground: ☒ Yes ☐ No	Basketball Court: ☒ Yes ☐ No
Softball/baseball fields: ☐ Yes ☒ No	Picnic Area or Shelter: ☒ Yes ☐ No
Ice rink: ☐ Yes ☒ No	Multi-use Trail: ☒ Yes ☐ No
Other: ☒ Yes ☐ No If yes, describe: includes 15th Avenue Trail, play equipment, picnic shelter and tables, interpretive kiosk, lighting, sledding hill, volleyball court, playing field, portable toilet, and parking; part of Merrill Field municipal airport property	

Name: Fairbanks Park	
Location: 530 East 11th Avenue	
Acreage: 0.3	Classification: Neighborhood Use
Park or Recreation Area: ☒ Yes ☐ No	Public Access: ☒ Yes ☐ No
Parking Area: ☒ Yes ☐ No	Soccer field: ☐ Yes ☒ No
Playground: ☒ Yes ☐ No	Basketball Court: ☐ Yes ☒ No
Softball/baseball fields: ☐ Yes ☒ No	Picnic Area or Shelter: ☒ Yes ☐ No
Ice rink: ☐ Yes ☒ No	Multi-use Trail: ☐ Yes ☒ No
Other: ☒ Yes ☐ No If yes, describe: includes open grassy space, play equipment, information kiosk, and benches	

Name: Fairview Park	
Location: 1217 LaTouche Street; along LaTouche Street between 12th and 13th Avenues	
Acreage: 1	Classification: Neighborhood Use
Park or Recreation Area: ☒ Yes ☐ No	Public Access: ☒ Yes ☐ No
Parking Area: ☐ Yes ☒ No	Soccer field: ☐ Yes ☒ No
Playground: ☒ Yes ☐ No	Basketball Court: ☒ Yes ☐ No
Softball/baseball fields: ☐ Yes ☒ No	Picnic Area or Shelter: ☒ Yes ☐ No
Ice rink: ☐ Yes ☒ No	Multi-use Trail: ☐ Yes ☒ No
Other: ☒ Yes ☐ No If yes, describe: includes play equipment, playing field, volleyball court, picnic shelter, tables, and grill	

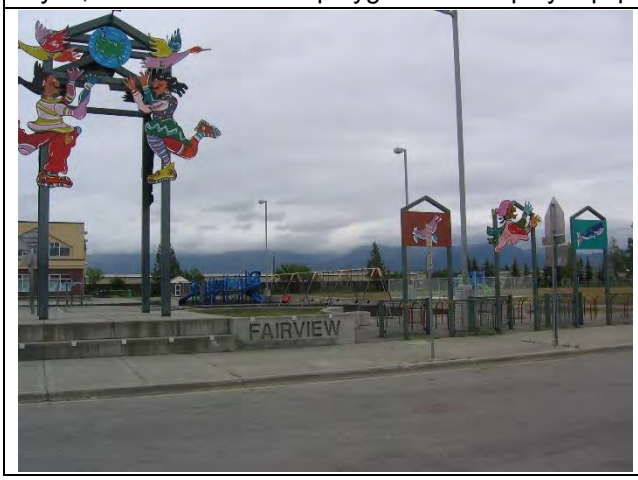
Name: Fairview Lions Park (also known as Karluk Park)	
Location: 1201 East 8th Avenue; along East 8th Avenue between Karluk and Medfra Streets	
Acreage: 5.5	Classification: Neighborhood Use
Park or Recreation Area: ☒ Yes ☐ No	Public Access: ☒ Yes ☐ No
Parking Area: ☒ Yes ☐ No	Soccer field: ☐ Yes ☒ No (has informal soccer field)
Playground: ☐ Yes ☒ No	Basketball Court: ☐ Yes ☒ No
Softball/baseball fields: ☐ Yes ☒ No (has backstop)	Picnic Area or Shelter: ☒ Yes ☐ No
Ice rink: ☐ Yes ☒ No	Multi-use Trail: ☐ Yes ☒ No
Other: ☒ Yes ☐ No If yes, describe: includes playing field, picnic shelter with tables/benches, and community garden	

Name: Fairview Community Recreation Center	
Location: 1121 East 10th Avenue	
Acreage: 2.1	Classification: Special Use
Park or Recreation Area: ☒ Yes ☐ No	Public Access: ☒ Yes ☐ No
Parking Area: ☒ Yes ☐ No	Soccer field: ☐ Yes ☒ No
Playground: ☐ Yes ☒ No	Basketball Court: ☐ Yes ☒ No
Softball/baseball fields: ☐ Yes ☒ No	Picnic Area or Shelter: ☐ Yes ☒ No
Ice rink: ☐ Yes ☒ No	Multi-use Trail: ☐ Yes ☒ No
Other: ☒ Yes ☐ No If yes, describe: includes community recreation center (gymnasiums, weight room, dance/martial arts studio, arts and crafts studio, saunas, multipurpose rooms, industrial kitchen, nursery, teen center, and computer lab), and parking	
	

Name: Lanie Fleischer Chester Creek Trail and Connecting Trails	
Location: East/west along Chester Creek; extends from Margaret Eagan Sullivan Park to University Lake Park	
Acreage: 6.3 miles	Classification:
Park or Recreation Area: ☒ Yes ☐ No	Public Access: ☒ Yes ☐ No
Parking Area: ☐ Yes ☒ No	Soccer field: ☐ Yes ☒ No
Playground: ☐ Yes ☒ No	Basketball Court: ☐ Yes ☒ No
Softball/baseball fields: ☐ Yes ☒ No	Picnic Area or Shelter: ☐ Yes ☒ No
Ice rink: ☐ Yes ☒ No	Multi-use Trail: ☒ Yes ☐ No
Other: ☒ Yes ☐ No If yes, describe: multi-use trail serves transportation and recreation functions for bicyclists, walkers, runners, cross-country skiers, in-line skaters, and skateboarders; occurs largely within other parks	

Name: Denali Montessori Elementary Playground & Playing Field	
Location: 952 Cordova Street	
Acreage: approximately 1 acre	Classification:
Park or Recreation Area: ☒ Yes ☐ No	Public Access: ☒ Yes ☐ No
Parking Area: ☒ Yes ☐ No	Soccer field: ☐ Yes ☒ No
Playground: ☒ Yes ☐ No	Basketball Court: ☒ Yes ☐ No
Softball/baseball fields: ☐ Yes ☒ No	Picnic Area or Shelter: ☐ Yes ☒ No
Ice rink: ☐ Yes ☒ No	Multi-use Trail: ☐ Yes ☒ No
Other: ☒ Yes ☐ No If yes, describe: includes playground with play equipment, playing fields, basketball court, and pedestrian tunnel to Delaney Park Strip	

Name: Fairview Elementary Playground & Playing Field	
Location: 1327 Nelchina Street	
Acreage: >1	Classification:
Park or Recreation Area: ☒ Yes ☐ No	Public Access: ☒ Yes ☐ No
Parking Area: ☒ Yes ☐ No	Soccer field: ☐ Yes ☒ No
Playground: ☒ Yes ☐ No	Basketball Court: ☒ Yes ☐ No
Softball/baseball fields: ☐ Yes ☒ No	Picnic Area or Shelter: ☐ Yes ☒ No
Ice rink: ☐ Yes ☒ No	Multi-use Trail: ☐ Yes ☒ No
Other: ☒ Yes ☐ No If yes, describe: includes playground with play equipment, playing fields, and basketball court	



Name: Harvard Park	
Location: 432 East Harvard Avenue	
Acreage: 5.33	Classification: Neighborhood Use
Park or Recreation Area: ☒ Yes ☐ No	Public Access: ☒ Yes ☐ No
Parking Area: ☒ Yes ☐ No	Soccer field: ☐ Yes ☒ No
Playground: ☐ Yes ☒ No	Basketball Court: ☒ Yes ☐ No
Softball/baseball fields: ☐ Yes ☒ No	Picnic Area or Shelter: ☒ Yes ☐ No
Ice rink: ☒ Yes ☐ No	Multi-use Trail: ☐ Yes ☒ No
Other: ☒ Yes ☐ No If yes, describe: includes a basketball court, two tennis courts, and Anchorage Curling Club	

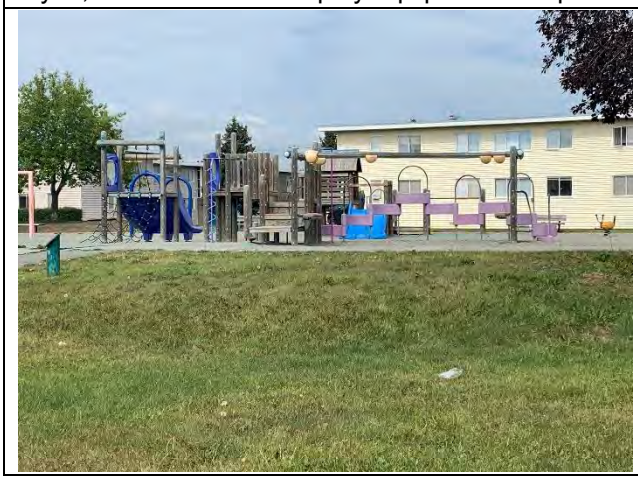
Name: Sunset Park	
Location: 600 Vine Avenue	
Acreage: 5.8	Classification: Neighborhood Use
Park or Recreation Area: ☒ Yes ☐ No	Public Access: ☒ Yes ☐ No
Parking Area: ☒ Yes ☐ No	Soccer field: ☐ Yes ☒ No
Playground: ☒ Yes ☐ No	Basketball Court: ☐ Yes ☒ No
Softball/baseball fields: ☐ Yes ☐ No	Picnic Area or Shelter: ☒ Yes ☐ No
Ice rink: ☐ Yes ☒ No	Multi-use Trail: ☐ Yes ☒ No
Other: ☒ Yes ☐ No If yes, describe: includes green space, picnic shelter, picnic areas and tables, and portable toilet	

Name: Alderwood Park	
Location: 707 Elm Street	
Acreage: 3.15	Classification: Neighborhood Use
Park or Recreation Area: ☒ Yes ☐ No	Public Access: ☒ Yes ☐ No
Parking Area: ☐ Yes ☒ No	Soccer field: ☐ Yes ☒ No
Playground: ☒ Yes ☐ No	Basketball Court: ☐ Yes ☒ No
Softball/baseball fields: ☐ Yes ☒ No	Picnic Area or Shelter: ☒ Yes ☐ No
Ice rink: ☐ Yes ☒ No	Multi-use Trail: ☐ Yes ☒ No
Other: ☐ Yes ☒ No If yes, describe:	
	

Name: Brown's Point Park	
Location: 348 West Harvard Avenue	
Acreage: 0.24	Classification: Neighborhood Use
Park or Recreation Area: ☒ Yes ☐ No	Public Access: ☒ Yes ☐ No
Parking Area: ☐ Yes ☐ No Undetermined (paved area but no signage)	Soccer field: ☐ Yes ☒ No
Playground: ☐ Yes ☒ No	Basketball Court: ☐ Yes ☒ No
Softball/baseball fields: ☐ Yes ☒ No	Picnic Area or Shelter: ☒ Yes ☐ No
Ice rink: ☐ Yes ☒ No	Multi-use Trail: ☒ Yes ☐ No
Other: ☒ Yes ☐ No If yes, describe: short path, benches, access to Government Hill Greenbelt	

Name: Suzan Nightingale McKay Park	
Location: 158 East Bluff Avenue	
Acreage: 1.36	Classification: Neighborhood Use
Park or Recreation Area: ☒ Yes ☐ No	Public Access: ☒ Yes ☐ No
Parking Area: ☒ Yes ☐ No	Soccer field: ☐ Yes ☒ No
Playground: ☒ Yes ☐ No	Basketball Court: ☐ Yes ☒ No
Softball/baseball fields: ☐ Yes ☒ No	Picnic Area or Shelter: ☒ Yes ☐ No
Ice rink: ☐ Yes ☒ No	Multi-use Trail: ☒ Yes ☐ No
Other: ☒ Yes ☐ No If yes, describe: includes play equipment; short, paved paths; and benches	

Name: Al Miller Memorial Park	
Location: 201 West Cook Avenue	
Acreage: 0.95	Classification: Special Use
Park or Recreation Area: ☒ Yes ☐ No	Public Access: ☒ Yes ☐ No
Parking Area: ☐ Yes ☒ No	Soccer field: ☐ Yes ☒ No
Playground: ☐ Yes ☒ No	Basketball Court: ☐ Yes ☒ No
Softball/baseball fields: ☐ Yes ☒ No	Picnic Area or Shelter: ☒ Yes ☐ No
Ice rink: ☐ Yes ☒ No	Multi-use Trail: ☐ Yes ☒ No
Other: ☐ Yes ☒ No If yes, describe:	

Name: Richardson Vista Park	
Location: 1300 East Bluff Drive	
Acreage: 0.86	Classification: Neighborhood Use
Park or Recreation Area: ☒ Yes ☐ No	Public Access: ☒ Yes ☐ No
Parking Area: ☐ Yes ☒ No	Soccer field: ☐ Yes ☒ No
Playground: ☒ Yes ☐ No	Basketball Court: ☐ Yes ☒ No
Softball/baseball fields: ☐ Yes ☒ No	Picnic Area or Shelter: ☒ Yes ☐ No
Ice rink: ☐ Yes ☒ No	Multi-use Trail: ☒ Yes ☐ No
Other: ☒ Yes ☐ No If yes, describe: includes play equipment and picnic shelter	
	

Name: Government Hill Elementary Playground & Playing Field	
Location: 525 East Bluff Drive	
Acreage:	Classification:
Park or Recreation Area: ☒ Yes ☐ No	Public Access: ☒ Yes ☐ No
Parking Area: ☒ Yes ☐ No	Soccer field: ☒ Yes ☐ No
Playground: ☒ Yes ☐ No	Basketball Court: ☒ Yes ☐ No
Softball/baseball fields: ☐ Yes ☒ No	Picnic Area or Shelter: ☐ Yes ☒ No
Ice rink: ☐ Yes ☒ No	Multi-use Trail: ☐ Yes ☐ No
Other: ☒ Yes ☐ No If yes, describe: includes play equipment, basketball courts, play field, garden area [note, recreation area inaccessible due to construction]	

Name: Nichols Park	
Location: 3247 East 16th Avenue	
Acreage: 1.23	Classification: Natural Resource
Park or Recreation Area: ☒ Yes ☐ No	Public Access: ☒ Yes ☐ No
Parking Area: ☐ Yes ☒ No	Soccer field: ☐ Yes ☒ No
Playground: ☐ Yes ☒ No	Basketball Court: ☐ Yes ☒ No
Softball/baseball fields: ☐ Yes ☒ No	Picnic Area or Shelter: ☐ Yes ☒ No
Ice rink: ☐ Yes ☒ No	Multi-use Trail: ☐ Yes ☒ No
Other: ☒ Yes ☐ No If yes, describe: includes fenced grassy area with benches	

Name: Tikishla Park/ Davenport Field (Chester Creek Greenbelt)	
Location: 3018 East 20th Avenue	
Acreage: 105.06	Classification: Natural Resource/Special Use
Park or Recreation Area: ☒ Yes ☐ No	Public Access: ☒ Yes ☐ No
Parking Area: ☒ Yes ☐ No	Soccer field: ☐ Yes ☒ No
Playground: ☒ Yes ☐ No	Basketball Court: ☐ Yes ☒ No
Softball/baseball fields: ☒ Yes ☐ No	Picnic Area or Shelter: ☐ Yes ☒ No
Ice rink: ☒ Yes ☐ No	Multi-use Trail: ☒ Yes ☐ No
Other: ☒ Yes ☐ No If yes, describe: includes Scotty Gomez hockey rink with lighting and equipment shed, little league ballfields, play equipment (note, access was limited due to construction)	

Name: William Tyson Elementary Playground and Playing Fields	
Location: 2801 Richmond Avenue	
Acreage:	Classification:
Park or Recreation Area: ☒ Yes ☐ No	Public Access: ☒ Yes ☐ No
Parking Area: ☒ Yes ☐ No	Soccer field: ☒ Yes ☐ No
Playground: ☒ Yes ☐ No	Basketball Court: ☒ Yes ☐ No
Softball/baseball fields: ☐ Yes ☒ No	Picnic Area or Shelter: ☐ Yes ☒ No
Ice rink: ☐ Yes ☒ No	Multi-use Trail: ☐ Yes ☒ No
Other: ☒ Yes ☐ No If yes, describe: includes playground, play fields, soccer field, basketball courts	

Name: Clark Middle School Playing Fields	
Location: 150 Bragaw Street	
Acreage:	Classification:
Park or Recreation Area: ☒ Yes ☐ No	Public Access: ☒ Yes ☐ No
Parking Area: ☒ Yes ☐ No	Soccer field: ☒ Yes ☐ No
Playground: ☐ Yes ☒ No	Basketball Court: ☒ Yes ☐ No
Softball/baseball fields: ☒ Yes ☐ No	Picnic Area or Shelter: ☐ Yes ☒ No
Ice rink: ☒ Yes ☐ No	Multi-use Trail: ☐ Yes ☒ No
Other: ☒ Yes ☐ No If yes, describe: includes tennis courts, football field with a track, and portable toilets	

Name: Ben Crawford Memorial Park (Pioneer Schoolhouse)	
Location: 437 East 3rd Avenue	
Acreage: 1	Classification: Special Use
Park or Recreation Area: ☒ Yes ☐ No	Public Access: ☒ Yes ☐ No
Parking Area: ☒ Yes ☐ No	Soccer field: ☐ Yes ☒ No
Playground: ☐ Yes ☒ No	Basketball Court: ☐ Yes ☒ No
Softball/baseball fields: ☐ Yes ☒ No	Picnic Area or Shelter: ☐ Yes ☒ No
Ice rink: ☐ Yes ☒ No	Multi-use Trail: ☐ Yes ☒ No
Other: ☒ Yes ☐ No If yes, describe: historical schoolhouse is open during special events (reservable) and relocated historic cabins/structures	

Name: Ship Creek Overlook Park	
Location: 150 E. Whitney Road	
Acreage: 0.24 acres	Classification: Special Use
Park or Recreation Area: ☒ Yes ☐ No	Public Access: ☒ Yes ☐ No
Parking Area: ☒ Yes ☐ No	Soccer field: ☐ Yes ☒ No
Playground: ☐ Yes ☒ No	Basketball Court: ☐ Yes ☒ No
Softball/baseball fields: ☐ Yes ☒ No	Picnic Area or Shelter: ☐ Yes ☒ No
Ice rink: ☐ Yes ☒ No	Multi-use Trail: ☐ Yes ☒ No
Other: ☒ Yes ☐ No If yes, describe: includes wildlife viewing, interpretive signage, and benches