



City of Homer

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Memorandum 22-105

MEMORANDUM PL 22-08

TO: MAYOR CASTNER AND THE HOMER CITY COUNCIL
FROM: RICK ABOUD, AICP, CITY PLANNER
DATE: May 26, 2022
SUBJECT: CITY OF HOMER 2022 LOCAL HAZARD MITIGATION PLAN

I am pleased to present the updated City of Homer 2022 Local Hazard Mitigation Plan for your approval. Hazard mitigation planning reduces loss of life and property by minimizing the impact of disasters. The plan is required for the City to be eligible for federal funding of mitigation projects. Over past few months, we have worked with a consultant to assess risks posed by natural disasters and develop strategies to protect life and property in Homer from future hazard events.

Our efforts to update our plan started with an intent to apply for funding shared by FEMA (75%) and the State of Alaska (25%), in late 2019. After several delays including dealing with the response to COVID, the State assigned a contractor to work with the City at the beginning of this year. We formed a stakeholder group that included Council Member Erickson and started the process of evaluating our local hazard risk to our critical infrastructure. After completing a draft, the plan was reviewed by the Planning Commission and made available for public comment. The plan was then sent to the State and FEMA Region 10 and gained approval.

Once adopted by resolution of the City Council, the plan will be eligible to support requests for federal funds for approved projects.

Attachments:

Resolution
Final Plan
Staff report 22-22 and minutes
HMP Planning Flyer
Mitigation planning process

City of Homer

Local Hazard Mitigation Plan



CITY OF HOMER
2022 LOCAL HAZARD MITIGATION PLAN

TABLE OF CONTENTS

1.0	INTRODUCTION	1-1
1.1	CITY OF HOMER OVERVIEW	1-1
1.2	HAZARD MITIGATION PLANNING.....	1-1
1.3	2022 LOCAL HAZARD MITIGATION PLAN SYNOPSIS	1-1
2.0	PLANNING PROCESS.....	2-1
2.1	OVERVIEW OF THE 2022 LHMP PLANNING PROCESS	2-1
2.2	OPPORTUNITIES FOR STAKEHOLDERS	2-4
2.3	PUBLIC INVOLVEMENT.....	2-4
2.4	REVIEW AND INCORPORATION OF EXISTING PLANS AND REPORTS	2-4
2.5	CONTINUED PUBLIC PARTICIPATION.....	2-5
2.6	PLAN UPDATE METHOD AND SCHEDULE.....	2-6
3.0	HAZARD IDENTIFICATION AND RISK ASSESSMENT	3-1
3.1	CLIMATE CHANGE	3-2
3.2	EARTHQUAKE.....	3-4
3.3	EROSION	3-6
3.4	FLOOD	3-8
3.5	LANDSLIDE.....	3-9
3.6	SEVERE WEATHER.....	3-11
3.7	TSUNAMI.....	3-13
3.8	VOLCANO.....	3-15
3.9	WILDFIRE.....	3-17
4.0	RISK ASSESSMENT	4-1
4.1	HAZARD IMPACT	4-1
4.2	OVERALL SUMMARY OF VULNERABILITY	4-4
4.3	NATIONAL FLOOD INSURANCE PROGRAM INSURED STRUCTURES	4-7
5.0	MITIGATION STRATEGY	5-1
5.1	AUTHORITIES, POLICIES, PROGRAMS, AND RESOURCES	5-1
5.2	NATIONAL FLOOD INSURANCE PROGRAM PARTICIPATION.....	5-7
5.3	MITIGATION GOALS.....	5-7
5.4	RECOMMENDED MITIGATION ACTIONS.....	5-7
5.5	PRIORITIZED ACTION PLAN	5-12
5.6	PLAN INTEGRATION	5-15
6.0	PLAN REVIEW, EVALUATION, AND IMPLEMENTATION.....	6-1
6.1	CHANGES IN DEVELOPMENT.....	6-1
6.2	PROGRESS IN LOCAL MITIGATION EFFORTS	6-1
6.3	CHANGES IN PRIORITIES.....	6-7
7.0	PLAN ADOPTION.....	7-1
7.1	FORMAL ADOPTION	7-1
8.0	APPENDICES	8-1

LIST OF APPENDICES

- Appendix A—Figures
 Appendix B—FEMA Documentation
 Appendix C—Planning Process

LIST OF TABLES

Table 2-1: LHMP Timeline.....	2-1
Table 2-2: Planning Team.....	2-3
Table 2-3: Existing Plans and Reports.....	2-4
Table 2-4: Annual Review Tracker	2-7
Table 3-1: Climate Change	3-2
Table 3-2: Mean Annual Temperature and Precipitation Predictions.....	3-3
Table 3-3: Earthquake	3-4
Table 3-4: Erosion.....	3-6
Table 3-5: Flood.....	3-8
Table 3-6: Landslide.....	3-9
Table 3-7: Severe Weather.....	3-11
Table 3-8: Tsunami	3-13
Table 3-9: Volcano.....	3-15
Table 3-10: Wildfire.....	3-17
Table 4-1: Total Land Area, Population Center and Critical Facilities.....	4-1
Table 4-2: Total Acres of Land in a Hazard Area	4-2
Table 4-3: Total Number of Acres of Population Center in a Hazard Area	4-2
Table 4-4: Total Number of Critical Facilities in a Hazard Area	4-3
Table 4-5: Overall Summary of Vulnerability	4-4
Table 4-6: Value of Facilities Most Affected by Earthquake.....	4-7
Table 5-1: Human and Technical Resources for Hazard Mitigation.....	5-2
Table 5-2: Financial Resources for Hazard Mitigation.....	5-3
Table 5-3: Planning and Policy Resources for Hazard Mitigation	5-5
Table 5-4: Ability to Expand Resources.....	5-6
Table 5-5: Mitigation Goals.....	5-7
Table 5-6: Recommended Mitigation Actions	5-8
Table 5-7: Prioritized Action Plan.....	5-13
Table 5-8: Integration of the 2022 LHMP	5-15
Table 6-1: Progress in Local Mitigation Efforts.....	6-1

LIST OF FIGURES

- Figure 1: Overview Map
- Figure 2: Earthquake Hazard Areas
- Figure 3: Flood Hazard Areas
- Figure 4: Land Failure Hazard Areas
- Figure 5: Bluff Point Landslide Area
- Figure 6: Tsunami Hazard Areas
- Figure 7: Maximum Estimated Tsunami Inundation, Downtown Homer
- Figure 8: Volcanic Ash Hazard Areas
- Figure 9: Wildfire Hazard Areas
- Figure 10: Critical Facilities

LIST OF ACRONYMS AND ABBREVIATIONS

ADGGS	Alaska Division of Geological and Geophysical Surveys
ADNR	Alaska Department of Natural Resources
ADOT&PF	Alaska Department of Transportation and Public Facilities
BRIC	Building Resilient Infrastructure and Communities
CFR	Code of Federal Regulations
DMA 2000	Disaster Mitigation Act of 2000
ENSTAR	ENSTAR Natural Gas Company
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
g	gravity
GIS	Geographic Information System
HCC	Homer City Code
HMA	Hazard Mitigation Assistance
HMGP	Hazard Mitigation Grant Program
HUD	U.S. Department of Housing and Urban Development
LHMP	Local Hazard Mitigation Plan
LIDAR	light detection and ranging
NFIP	National Flood Insurance Program
PGA	peak ground acceleration
SFHA	Special Flood Hazard Area
SNAP	Scenarios Network for Alaska + Arctic Planning
STAPLEE	social, technical, administrative, political, legal, environmental, and economic
U.S.	United States
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey

1.0 INTRODUCTION

1.1 CITY OF HOMER OVERVIEW

The City of Homer is a first-class city in the Kenai Peninsula Borough (Figure 1). The city is on the northern shore of Kachemak Bay, on the southwestern edge of the Kenai Peninsula. The Homer Spit is a distinguishing feature of the city, which extends 4.5 miles from the shoreline into the bay. Homer is 227 road miles south of Anchorage, at the southern terminus of the Sterling Highway. Homer comprises 24.2 square miles, with 13.9 square miles of land and 10.3 square miles of water.

Homer was incorporated in 1964. The city is governed by a city council composed of a mayor and council members. According to the 2020 United States (U.S.) Census, the population of Homer is 5,522, up from 5,003 in 2010.

1.2 HAZARD MITIGATION PLANNING

As defined in Title 44 of the Code of Federal Regulations (CFR), Subpart M, Section 206.401, hazard mitigation is “any action taken to reduce or eliminate the long-term risk to human life and property from natural hazards.” As such, hazard mitigation is any work to minimize the impacts of any type of hazard event before it occurs. Hazard mitigation aims to reduce losses from future disasters. It is a process that identifies and profiles hazards, analyzes the people and facilities at risk, and develops mitigation actions to reduce or eliminate hazard risk. The implementation of the mitigation actions—which include short- and long-term strategies that may involve planning, policy changes, programs, projects, and other activities—is the end result of this process.

Over the past two decades, local hazard mitigation planning has been driven by a federal law, known as the Disaster Mitigation Act of 2000 (DMA 2000). On October 30, 2000, Congress passed the DMA 2000 (Public Law 106-390), which amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 (Title 42 of the United States Code Section 5121 et seq.) by repealing the act’s previous mitigation planning section (409) and replacing it with a new mitigation planning section (322). This new section emphasized the need for state, tribal, and local entities to closely coordinate mitigation planning and implementation efforts. This new section also provided the legal basis for the Federal Emergency Management Agency’s (FEMA’s) mitigation plan requirements for the Hazard Mitigation Assistance (HMA) grant programs.

1.3 2022 LOCAL HAZARD MITIGATION PLAN SYNOPSIS

To meet the requirements of the DMA 2000, the City of Homer is updating its 2010 plan, which was included as an annex to the 2014 Kenai Peninsula Borough All-Hazard Mitigation Plan. In 2018, the City unofficially prepared an updated plan. Although the 2018 City of Homer All-Hazard Mitigation Plan was not fully enacted by FEMA, the 2018 plan serves as a reference document for this plan.

The goal of this planning process is to assess risks posed by hazards and to develop prioritized action plans to reduce risks in Homer. The 2022 Local Hazard Mitigation Plan (LHMP) is organized to follow FEMA’s Local Mitigation Plan Review Tool (Appendix B), which demonstrates how hazard mitigation plans meet the DMA 2000 regulations. As such, specific planning elements of this review tool are in their appropriate plan sections.

The LHMP structure has been updated to include the following sections:

- **Section 1 Introduction**, which introduces the City of Homer and provides information on hazard mitigation planning.

- **Section 2 Planning Process**, which provides an overview of the planning process, starting with a timeline. It identifies planning team members and describes their involvement with the planning process. This section also details stakeholder outreach, public involvement, and continued public involvement. It provides an overview of the existing plans and reports, details how those documents were incorporated into the 2022 LHMP, and provides a plan update method and schedule. Supporting planning process documentation is provided in Appendix C.
- **Section 3 Hazard Identification**, which provides a description of each of the nine hazards addressed in this plan. Hazard figures are provided in Appendix A.
- **Section 4 Risk Assessment**, which provides hazard impact tables or descriptions for land area, population centers, and critical facilities. An overall summary of vulnerability for each hazard is also provided.
- **Section 5 Mitigation Strategy**, which provides a description of the City of Homer’s mitigation goals, potential mitigation actions and projects, and prioritization process. A capability assessment, prioritized action plan, and the process to integrate the 2022 LHMP into other planning mechanisms is also addressed.
- **Section 6 Plan Review**, which provides an overview of development changes that have occurred since the 2010 plan, the progress in local mitigation efforts, and changes in priorities for mitigation actions.
- **Section 7 Plan Adoption**, which provides information about the formal adoption.
- **Section 8 Appendices**, which provides Appendix A (Figures), Appendix B (FEMA Documentation), and Appendix C (Planning Process).

2.0 PLANNING PROCESS

This section addresses Element A of the Local Mitigation Plan Regulation Checklist.

Regulation Checklist – 44 CFR 201.6 Local Mitigation Plans
Element A: Planning Process
A1. Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement §201.6(c)(1))
A2. Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? (Requirement §201.6(b)(2))
A3. Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))
A4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.6(b)(3))
A5. Is there discussion of how the community(ies) will continue public participation in the plan maintenance process? (Requirement §201.6(c)(4)(iii))
A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle)? (Requirement §201.6(c)(4)(i))

2.1 OVERVIEW OF THE 2022 LHMP PLANNING PROCESS

The development of the 2022 LHMP was collaborative effort between the City of Homer, AECOM Technical Services, Inc., and a planning team. The planning process officially started in November 2021 and ended in April 2022. A timeline of the major planning tasks and milestones by month, including the times the planning team met, is provided in Table 2-1. A list of the planning team members and how they contributed to the development of the plan is provided in Table 2-2.

Table 2-1: LHMP Timeline

Date	Tasks	People Involved
November 2021	LHMP planning team meeting 1 (project overview) Initial information collected: hazards to be profiled, critical facility information	LHMP project manager, consultant, planning team
December 2021	Initial public outreach, via Facebook and newsletter	LHMP project manager
December 2021 and January 2022	Hazard profiles drafted	LHMP project manager, consultant
January 2022	Initial stakeholder outreach, via email	LHMP project manager
January 2022	Critical facilities map reviewed and approved	LHMP project manager, consultant
January 2022	Hazard figures created, hazard impact assessments drafted Draft mitigation actions developed	Consultant
February 2022	Planning team meeting 2 (draft mitigation actions reviewed)	LHMP project manager, consultant, planning team

Table 2-1: LHMP Timeline

Date	Tasks	People Involved
February 2022	Prioritization action plan developed Integration of LHMP into other planning documents determined	LHMP project manager, consultant, planning team
February and March 2022	Internal Draft LHMP	LHMP project manager, consultant, planning team
March 2022	Public Draft LHMP Follow-up public outreach and stakeholder involvement	LHMP project manager, consultant, public
April 2022	Final Draft LHMP	LHMP project manager, consultant, Alaska Division of Homeland Security and Emergency Management, FEMA Region X
[month, year]	Adoption of Final LHMP	LHMP project manager, City of Homer

Table 2-2: Planning Team

Name	Department/Agency and Title	Contribution
Rick Abboud, AICP	City Planner, City of Homer, LHMP project manager	Served as the LHMP project manager. Led planning team meetings; reviewed and commented on hazard figures, risk assessment tables, mitigation strategies, and the Internal Draft LHMP.
Robert Dumouchel	City Manager, City of Homer	Participated in planning team meetings and/or reviewed planning team documents; reviewed and commented on hazard figures, mitigation strategies, and the Internal Draft LHMP.
Jenny Carroll	Special Projects & Communications Coordinator, City of Homer	Reviewed planning team documents; reviewed and commented on hazard figures, mitigation strategies, and the Internal Draft LHMP.
Janna Davis	Safety Coordinator, Homer Electric Association, Inc.	Participated in planning team meetings and/or reviewed planning team documents; reviewed and commented on hazard figures, mitigation strategies, and the Internal Draft LHMP.
Shelly Erickson	City Council Member, City of Homer	Participated in planning team meetings and/or reviewed planning team documents; reviewed and commented on hazard figures, mitigation strategies, and the Internal Draft LHMP.
Janette Keiser	Public Works Director, City of Homer	Participated in planning team meetings and/or reviewed planning team documents; reviewed and commented on hazard figures, mitigation strategies, and the Internal Draft LHMP.
Mark Kirko	Fire Chief, City of Homer	Participated in planning team meetings and/or reviewed planning team documents; reviewed and commented on hazard figures, mitigation strategies, and the Internal Draft LHMP.
Scott Mullen	Support Services Director, South Peninsula Hospital	Participated in planning team meetings and/or reviewed planning team documents; reviewed and commented on hazard figures, mitigation strategies, and the Internal Draft LHMP.

2.2 OPPORTUNITIES FOR STAKEHOLDERS

On January 5, 2022, the LHMP project manager reached out to stakeholders via email (Appendix C) about the 2022 LHMP and invited them to participate in the planning process. Stakeholders included the Alaska Department of Homeland Security and Emergency Management (Hazard Mitigation Planner), Kachemak City (Mayor and Special Projects Manager), Alaska Department of Natural Resources (ADNR) Divisions of Forestry (Superintendent, Kenai Area Office) and Parks and Recreation (Forest Planner), Kenai Peninsula Borough (Borough Mayor), Friends of Kachemak Bay State Park (general), University of Alaska Anchorage Kachemak Bay National Estuarine Research Reserve (Manager), Kachemak Heritage Land Trust (general), Cook Inlet Regional, Inc. (general), Homer Airport (Manager), Kenai Peninsula School District (Director of Planning and Operations), Alaska Department of Transportation and Public Facilities (ADOT&PF) (Kenai Area Manager), and ENSTAR Natural Gas Company (ENSTAR) (Safety Manager). The Kachemak Bay National Estuarine Research Reserve offered assistance and resources about LHMP planning. The ADNR responded that they had concerns about potential tsunami threat from a glacier-caused landslide across Kachemak Bay. The ADNR is also a landowner along the Homer Spit, which is experiencing damage from erosion. The planning team spoke to them about their concerns and agreed to keep the ADNR informed of the LHMP process. The ADOT&PF also expressed concern about erosion along the Homer Spit and noted that they would like to participate in the planning process. In addition, ENSTAR expressed interest in participating in planning meetings.

The LHMP project manager reached out to the stakeholders again via email on March 24, 2022, inviting them to review and provide comments about the Public Draft LHMP (Appendix C). No comments were received.

2.3 PUBLIC INVOLVEMENT

On December 4, 2021, the City of Homer used their monthly emailed newsletter to announce to their public that they were beginning the LHMP update process and provided contact information for interested persons. No comments were received from the public. Also, on April 1, 2022, the City of Homer posted the draft plan on the city website with a function to make comments online. They used their monthly emailed newsletter to announce the Public Draft LHMP and comment period. No public comments were received. Copies of Homer's newsletters and a screenshot of the website posting are provided in Appendix C. All newsletters can also be found on the city's website.

2.4 REVIEW AND INCORPORATION OF EXISTING PLANS AND REPORTS

A list of the major relevant plans and reports reviewed and incorporated into the 2022 LHMP is provided in Table 2-3.

Table 2-3: Existing Plans and Reports

Plans and Reports	Information to be Incorporated into the 2022 LHMP
Alaska State Hazard Mitigation Plan (2018)	Information on statewide trends and the nature for all hazards are incorporated into the hazard profile and risk assessment sections.
Kenai Peninsula Borough All-Hazard Mitigation Plan (2014)	Information on borough-wide trends and the nature for all hazards are incorporated into the hazard profile and risk assessment sections.
City of Homer All-Hazard Mitigation Plan Update (unofficial) (2018)	Information on community trends and the nature for all hazards are incorporated into the hazard profile and risk assessment sections.

Table 2-3: Existing Plans and Reports

Plans and Reports	Information to be Incorporated into the 2022 LHMP
City of Homer and Kachemak City Community Wildfire Protection Plan (Kenai Peninsula Borough 2006)	This plan is in the process of being updated by the borough, but information is incorporated on wildfire history and recommendations brought into the mitigation strategy.
Homer Comprehensive Plan (City of Homer 2018)	Reviewed to ensure consistency. Document provided community background information, discussed community concerns around natural hazards.
Kenai Peninsula Borough Comprehensive Plan (2005)	Reviewed to ensure consistency. Document provided community background information, discussed community concerns around natural hazards.
City of Homer Emergency Operations Plan (2013)	Reviewed to ensure consistency. Document provided community background information, discussed community concerns around natural hazards.
2005 Homer Area Transportation Plan (City of Homer 2005)	Reviewed to ensure consistency. Document provided community background information, discussed community concerns around natural hazards.
Alaska Baseline Erosion Assessment: Study Findings and Technical Report (U.S. Army Corps of Engineers [USACE] 2009)	Background erosion information is incorporated into the hazard identification.
Kenai Peninsula Borough Risk Report: Kenai Peninsula Borough and the Incorporated Cities of Homer, Kachemak, Kenai, Seldovia, Seward, and Soldotna (FEMA 2017)	Background flood and earthquake information is incorporated into the hazard identification.
Coastal Change Analysis (Kachemak Bay Research Reserve 2016)	Historical information on coastal erosion is incorporated into the hazard profiles.
Landslide Hazard Evaluations for Multi-Hazard Risk Mapping in Homer, Alaska (Alaska Division of Geological and Geophysical Surveys [ADGGS] 2020 unpublished)	Information on current and historical landslide hazards in Homer are incorporated into the risk analysis and hazard profiles.
Updated tsunami inundation maps for Homer and Seldovia (ADGGS, 2018)	Tsunami hazard information into the hazard profile section and figure provided in Appendix A.
City of Homer Public Works Campus Tsunami Hazard Report: Risks, Mitigation Strategies, and Recommendations (Public Works Campus Task Force 2021)	Incorporated mitigation recommendations into the mitigation strategy.
Flood Risk Report: Lower Kenai Peninsula (City of Homer 2013)	Incorporated mitigation recommendations into the mitigation strategy.
Coastal Erosion Assessment of Sterling Highway Termini on Homer Spit (Memo from HDR to ADOT&PF 2019)	Information on coastal erosion is incorporated into the hazard profiles.

2.5 CONTINUED PUBLIC PARTICIPATION

A copy of the 2022 LHMP will remain available at the City of Homer Planning and Land Management website and the State of Alaska Division of Community and Regional Affairs online community planning

library. The LHMP project manager will use Homer’s monthly emailed newsletter and the city website to notify the public of, and seek input on, any changes or updates to the 2022 LHMP, including prioritized action plan and the 2027 LHMP kickoff. The public can reach out to the Homer Planning Department with comments or questions at Planning@ci.homer.ak.us, which can be found on the city’s website.

2.6 PLAN UPDATE METHOD AND SCHEDULE

The 2022 LHMP will be monitored, evaluated, and updated by a subset of the planning team, specifically the LHMP project manager in the Homer City Planning Department. Should the LHMP project manager no longer be involved with the LHMP, the project manager and/or the City Planner at the Homer Planning Department will select a new LHMP project manager to oversee the annual reviews and plan update.

The LHMP project manager will get input from specific planning team members as needed. They will complete the Annual Review Tracker every January and after any major disaster to ensure that the 2022 LHMP is relevant and effective in achieving the plan’s goals. Annual review will be tracked in a table in this document (Table 2-4). FEMA-funded mitigation projects will continue to be tracked and reviewed using FEMA Mitigation Progress Report forms; progress summaries will be included in the Annual Review Tracker (Table 2-4) at the beginning of each year.

Four years after the 2022 LHMP’s adoption:

- The Homer City Planning Department City Planner or designee will complete the Annual Review Tracker.
- The Homer City Planning Department City Planner or designee will reconvene the planning team and update membership, if necessary.
- The Homer City Planning Department City Planner or designee will review Table 2-4, which provides annual summaries of the disasters that have occurred; new permanent information that becomes available; implementation measures; and public outreach and response to determine the hazards to be included in the next LHMP.
- The Homer City Planning Department City Planner or designee will develop a new work plan.
- The Homer City Planning Department City Planner or designee—with support from the planning team—will begin the plan update process, which is expected to take up to 6 months.

Table 2-4: Annual Review Tracker

Year	Disasters that Occurred	Mitigation Actions Implemented	New Relevant Studies/Reports to Include in 2027 LHMP	Public Outreach Conducted	Changes Made to 2022 LHMP
2023					
2024					
2025					
2026					

3.0 HAZARD IDENTIFICATION AND RISK ASSESSMENT

This section addresses Element B of the Local Mitigation Plan Regulation Checklist.

Regulation Checklist – 44 CFR 201.6 Local Mitigation Plans
Element B: Hazard Identification and Risk Assessment
B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction(s)? (Requirement § 201.6(c)(2)(ii))
B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement § 201.6(c)(2)(i))

Hazard identification consists of describing the nature of the hazard, location, disaster history, extent/severity, and probability of future events. Hazard identification profiles have been developed for each of the nine hazards addressed in Section 3.1 through Section 3.9: climate change, earthquake, erosion, flood, landslide, severe weather, tsunami, volcano, wildfire. The hazards profiled for this LHMP are provided in alphabetical order; this order does not signify level of risk or hazard classification.

3.1 CLIMATE CHANGE

Table 3-1: Climate Change

Profile	Description
Nature	<p>Climate is defined as the average statistics of weather, which includes temperature, precipitation, and seasonal patterns in a particular region. Climate change refers to the long-term and irrevocable shift in these weather-related patterns. The Fourth National Climate Assessment Report (2018) states that Earth’s climate is now changing at a faster rate than at any time in the history of modern civilization, primarily due to human activities. The disruption in the climate is already impacting the way people live, the food they grow, their health, the wildlife, the availability of water, and much more.</p> <p>The impacts of global climate change are being felt today in the form of sea level rise and storm surge in coastal areas; increased riverine flooding and stormwater inundation; more frequent and prolonged higher temperatures (leading to heat events, wildfires, and permafrost thaw); and more severe and frequent extreme weather events.</p> <p>Changing climate conditions are more pronounced in the polar regions. Alaska is often identified as being on the frontline of climate change because it is warming faster than any other state and faces multiple issues associated with a changing climate. These climate change impacts include:</p> <ul style="list-style-type: none"> • Retreat of sea ice, which will disrupt marine ecosystems and other animals (such as polar bears and walruses), impact local communities where sea ice is important for subsistence or tourism, and contribute to increased storm surge, coastal flooding, and erosion. • Increase of ocean temperature impacting marine ecosystems and Alaska’s fisheries. • Flooding and erosion of coastal and river areas related to changes in sea ice and increase in storm intensity. • Increase in ocean acidification, which will impact marine organisms and thereby disrupting the marine food web. • Increase in the size and frequency of wildfires and droughts. • Thawing permafrost, melting glaciers, and associated effects on the state’s infrastructure and hydrology. • Increase of health threats, such as injuries, smoke inhalation, damage to vital infrastructure, decrease of food and water security, and new infectious diseases. • Introduction of harmful or invasive species, with changing weather patterns and warming creating a change in the migration patterns. <p>The City of Homer is vulnerable to an increase in ocean temperature; flooding and erosion of coastal areas; increase in ocean acidification; increase in the size and frequency of wildfires; increase of health threats, and introduction of invasive species.</p>
Location	<p>The entire area of the City of Homer is susceptible to climate change. Potential sea level rise, along with increased intensity of storm surge and coastal erosion, is threatening the Homer Spit.</p>
History	<p>According to the 2018 National Climate Assessment, the rate at which Alaska’s temperature has been warming is twice as fast as the global average since the middle of the twentieth century. Statewide annual average temperatures from 1925 to the late 1970s were variable with no clear pattern of change. However, over the past 45 years (late 1970s to present), statewide annual average temperatures began to increase with an average rate of 0.7 degrees Fahrenheit (°F) per decade. The temperature increase was especially strong in the Arctic due to the polar amplification of global warming. In Homer, the Alaska Climate Research Center has observed a change of annual average temperature from 34.9°F in 1950 to 38.9°F in 2020 (11% increase). During that period, the Alaska Climate Research Center also observed an increase of annual precipitation from 15.47 inches to 23.68 inches (29% increase).</p> <p>While historical precipitation and temperature changes in Alaska have been well documented over the past several decades, historical information on sea level rise is less known due to lack of tide gauges with extended records. Researchers believe that prior to 1990, sea level rise on a global</p>

Table 3-1: Climate Change

Profile	Description
	scale was only 0.04 inches per year; however, for the 1993 to 2012 reporting period, sea level rise has been 0.12 inches per year.
Extent / Severity	<p>The University of Alaska Fairbanks Scenarios Network for Alaska + Arctic Planning (SNAP) models climate data for mid-range global emissions. SNAP temperature models show that Homer will experience a temperature increase of 5.3°F by the end of the century. Likewise, precipitation models show that for the same reporting period Homer will see an average rainfall increase of 2.8 inches (Table 3-2).</p> <p>Sea level rise is not modeled for the City of Homer, but any rise in sea level or storm surge intensity would threaten all land and water on the Homer Spit.</p>
Recurrence Probability	<p>Climate change is a significant and lasting change in the statistical distribution of weather patterns over periods of time ranging from decades to millions of years. It may be a change in average weather conditions or in the distribution of weather around the average conditions (i.e., more or fewer extreme weather events).</p> <p>According to the National Aeronautics and Space Administration, “the current warming trend is of particular significance because most of it is extremely likely (i.e., greater than 95% probability) to be the result of human activity since the mid-twentieth century and proceeding at a rate that is unprecedented over decades to millennia.” The National Aeronautics and Space Administration also states that “scientists have high confidence that global temperatures will continue to rise for decades to come, largely due to greenhouse gases produced by human activities.</p>

Table 3-2: Mean Annual Temperature and Precipitation Predictions

	2010-2019	2050-2059	2090-2099
Mean Annual Temperature	39.7°F	42.8°F	45.0°F
Mean Annual Precipitation	28.7 inches	29.6 inches	31.5 inches

3.2 EARTHQUAKE

Table 3-3: Earthquake

Profile	Description
Nature	<p>An earthquake is a sudden motion or trembling caused by a release of strain accumulated in or along the edge of Earth’s tectonic plates. The effects of an earthquake can be felt far beyond the site of its occurrence. Earthquakes usually occur without warning and can cause massive damage and extensive casualties in a few seconds. Common effects of earthquakes are ground motion and shaking; surface fault ruptures; and ground failure. Ground motion is the vibration or shaking of the ground during an earthquake. When a fault ruptures, seismic waves radiate causing the ground to vibrate. The severity of the vibration increases with the amount of energy released and decreases with distance from the causative fault or epicenter. Soft soils can amplify ground motions. In addition to ground motion, several secondary hazards can occur from earthquakes, such as the following:</p> <ul style="list-style-type: none"> • Surface Faulting: Surface faulting is the differential movement of two sides of a fault at Earth’s surface. Displacement along faults—in terms of both length and width—varies but can be significant (e.g., up to 20 feet), as can the length of the surface rupture (e.g., up to 200 miles). Surface faulting can cause severe damage to linear structures including railways, highways, pipelines, tunnels, and dams. • Liquefaction: Liquefaction occurs when seismic waves pass through saturated granular soil, distorting its granular structure and causing some of the empty spaces between granules to collapse. Pore water pressure may also increase sufficiently to cause the soil to behave like a fluid for a brief period and cause deformations. Liquefaction causes lateral spreads (i.e., horizontal movements that are typically 10 to 15 feet, but can be up to 100 feet), flow failures (i.e., massive flows of soil that are typically hundreds of feet, but can be up to 12 miles), and loss of bearing strength (i.e., soil deformations causing structures to settle or tip). Liquefaction can cause severe damage to property. • Landslides/Debris Flows: Landslides/debris flows occur as a result of horizontal seismic inertia forces induced in the slopes by the ground shaking. The most common earthquake-induced landslides include shallow disrupted landslides such as rock falls, rockslides, and soil slides. Debris flows are created when surface soil on steep slopes becomes completely saturated with water. Once the soil liquefies, it loses the ability to hold together and can flow downhill at very high speeds, taking vegetation and/or structures with it. Slide risks increase after an earthquake during a wet winter. <p>The two most common measures of earthquake intensity used in the United States are the Modified Mercalli Intensity scale, which measures felt intensity; and peak ground acceleration (PGA), which measures instrumental intensity by quantifying how hard the earth shakes in a given location. Magnitude is measured by the amplitude of the earthquake waves recorded on a seismograph using a logarithmic scale.</p>
Location	<p>Homer is in a region of high seismicity. It is above a boundary between segments of the earthquake-generating Alaska-Aleutian subduction zone—the Kodiak Island segment to the southwest and the Prince William Sound segment to the northeast. While the 1964 Great Alaska Earthquake ruptured both segments, findings from around the region suggest that the two segments may rupture independently.</p> <p>The nearest studied fault line to Homer is the Falls Creek-Ninilchik anticline, which is a quaternary fault (i.e., one event per 1,600,000 years) approximately 30 miles away. Several other fault lines lie around Homer and on the Kenai Peninsula but are not studied and no details are known.</p>

Table 3-3: Earthquake

Profile	Description
History	<p>As stated in the 2018 State of Alaska HMP, Alaska is one of the most seismically active regions in the world and is at risk of societal and economic losses due to damaging earthquakes. On average, Alaska has one “great” (magnitude of 8 or higher) earthquake every 13 years, one magnitude 7 to 8 earthquake every year, and six magnitude 6 to 7 earthquakes every year. In addition, earthquakes that occur on tectonic plate boundary faults near the coast can generate tsunamis that impact coastal communities, including Homer.</p> <p>The effects of the March 27, 1964 Great Alaska Earthquake (which had a magnitude of 9.2) in the Homer area were thoroughly documented after the event. Observations included general damage caused by tectonic subsidence; and earth flows, landslides, fissures, seiches, submarine landslides, and beach changes caused by strong ground shaking during the event. Most of the damage to the community occurred on Homer Spit as a result of 2 to 3 feet of tectonic subsidence.</p> <p>Since 2000, there have been 27 earthquakes with a magnitude of 5.0 or greater that occurred within 150 miles of the City of Homer. Two of those earthquakes had a magnitude of 7.0 or greater. Twenty-five of those 27 earthquakes occurred since the previous 2010 LHMP; the most recent earthquake was in December 2021.</p>
Extent / Severity	<p>The strength of an earthquake’s ground movement can be measured by PGA. PGA measures the rate in change of motion relative to the established rate of acceleration due to gravity ($g = 980$ centimeters per second). PGA is used to predict the risk of damage from future earthquakes by showing earthquake ground motions that have a specified probability (e.g., 10%, 5%, or 2%) of being exceeded in 50 years. The ground motion values are used for reference in construction design for earthquake resistance and can also be used to assess the relative hazard between sites when making economic and safety decisions. The current U.S. Geological Survey (USGS) seismicity model for Alaska was developed in 2007. The PGA values in Homer for a 5% probability of exceedance in 50 years are shown in Figure 2. Based on this model, there are 8,912.52 acres (100%) in the perceived “Severe” shaking zone, with moderate to heavy potential for damage.</p> <p>An earthquake risk assessment was conducted by FEMA in 2017. Two scenarios were analyzed: the first used the January 2016 M7.1 Old Iliamna earthquake event and estimated a loss of improved parcels of \$3,303,266 (0.27%); the second simulated the M9.2 Great Alaska Earthquake and estimated a property loss of \$56,997,792 (4.60%). The estimated value of structure loss is provided in Table 4-6.</p>
Recurrence Probability	<p>As shown in Figure 2, the seismic PGA for Homer has a 5% probability of severe shaking in Homer in the next 50 years. Based on these data, there is a 5% chance of an earthquake occurring in Homer that will exceed 49.18 PGA in 50 years.</p>

3.3 EROSION

Table 3-4: Erosion

Profile	Description
Nature	<p>Erosion is the wearing and transportation of land. Erosion is typically gradual land loss through wind or water scour. In developed regions, erosion undermines buildings and infrastructure. Erosion can be experienced from coastal, riverine, or wind sources. Erosion forces are embodied in waves, currents, and winds; surface and ground water flow; and freeze-thaw cycles may also play a role. Not all of these forces may be present at any particular location. In the U.S., Alaska is unique because of how permafrost thaw interacts with flooding and erosion to exacerbate the impacts of these hazards. Frozen ground can disintegrate under the compounding influences of permafrost thaw, flooding, and erosion in an escalating feedback loop that can result in damage that is much greater than would be expected from the individual processes alone.</p> <p>Coastal erosion is a common term used to describe the retreat of the shoreline along the ocean. It describes the attrition of land resulting in loss of beach, shoreline, or dune material from natural activity or human influences. Erosion rarely causes death or injury; however, it causes property destruction, prohibits development, and impacts community infrastructure. Erosion can occur rapidly as the result of floods, storms, or other events; or slowly as the result of long-term environmental changes such as melting permafrost. Erosion is a natural process, but its effects can be easily exacerbated by human activity.</p> <p>Coastal erosion can occur from rapid short-term daily, seasonal, or annual natural events such as waves, storm surge, wind, coastal storms, and flooding; or from human activities including boat wakes and dredging. The most dramatic erosion often occurs during storms, particularly because the highest energy waves are generated under storm conditions.</p> <p>Coastal erosion occurs over the area from roughly the top of the shore into the nearshore region to about 30-foot water depth. It is measured as the rate of change in the position or horizontal displacement of a shoreline over a period of time. Bluff recession is the most visible aspect of coastal erosion because of the dramatic change it causes to the landscape. As a result, this aspect of coastal erosion usually receives the most attention.</p> <p>Solifluction, the slow movement of water-saturated soils down a slope during freeze-thaw cycles is another contributor to coastal erosion and can cause slumping. Coastal erosion may also be due to multi-year impacts and long-term climatic change such as sea-level rise, lack of sediment supply, subsidence, or long-term human factors (e.g., aquifer depletion or the construction of shore protection structures and dams). Attempts to control erosion using shoreline protective measures such as groins, jetties, seawalls, or revetments can lead to increased erosion.</p>
Location	<p>The City of Homer experiences coastal erosion annually from winter storms and high storm surge, occurring along the entire coastline. Solifluction also contributes to coastal erosion, particularly on coastal discharge slopes. Particular areas of concern are the Homer Spit, the bluffs along sections of the Sterling Highway, and along the residential areas on Kachemak Drive and Ocean Drive Loop.</p>
History	<p>In 2019, ADOT&PF contracted HDR to conduct a site visit to the Homer Spit to observe the condition of the road along the spit. They noted that it is apparent that the spit is undergoing a long period of erosion, evidenced by the piling structures located on the spit, which are exposed an estimated ten feet more than the previous three years. Beach areas near the road terminus once used for camping and other recreation are now gone. Changes in storm patterns the past few years with milder summers and fewer strong southeasterly events may be affecting the sediment movement along the spit allowing greater erosion and less seasonal accretion. In 1992, the USACE constructed 1,000 feet of revetment, and extended it an additional 3,700 feet in 1998. It is suspected that placement of the rock sections by the USACE affected the supply of sediment, which impacted the overall littoral drift on the Spit. This caused beach lowering adjacent to the</p>

Table 3-4: Erosion

Profile	Description
	<p>rock revetment and further south along the spit. The USACE rock revetment appears exposed almost in its entirety, where in the past a greater portion of rock was buried.</p> <p>In 2005, the Kachemak Bay Research Reserve completed a study of erosion rates in Homer. The study provided an estimate of coastal bluff erosion rates based on a series of aerial surveys from 1951 to 2003. The study concluded that the average erosion rate along Homer's shoreline is approximately 0.3 to 1.2 meters per year. The researchers found that before, during, and right after the 1964 earthquake, erosion rates were faster than they had been since 1975 but slowed after that time. There is evidence that the rates have increased again in recent years.</p>
Extent / Severity	As noted above, studies have shown that Homer's coastal bluffs have retreated on average 0.3 to 1.2 meters per year over the last 70 years. The Homer Spit is eroding approximately 10 feet every 3 years in some places, as noted above.
Recurrence Probability	Erosion will continue each year in Homer on the Homer Spit and the bluffs.

3.4 FLOOD

Table 3-5: Flood

Profile	Description
Nature	<p>A flood occurs when the existing channel of a stream, river, canyon, or other watercourse cannot contain excess runoff from rainfall or snowmelt, resulting in overflow onto adjacent lands. In coastal areas, flooding may occur when high winds or tides result in a surge of seawater into areas that are above the normal high tide line. Secondary hazards from floods can include:</p> <ul style="list-style-type: none"> • Erosion or scouring of stream banks, roadway embankments, foundations, footings for bridge piers, and other features • Impact damage to structures, roads, bridges, culverts, and other features from high-velocity flow and debris carried by floodwaters (debris may also accumulate on bridge piers and in culverts, increasing loads on these features or causing overtopping or backwater effects) • Destruction of crops, erosion of topsoil, and deposition of debris and sediment on croplands • Release of sewage and hazardous or toxic materials when wastewater treatment plants are inundated, storage tanks are damaged, and pipelines are severed
Location	<p>As shown in Figure 3, the areas most prone to flooding in the City of Homer are along nearly the entire shoreline, the low-lying areas surrounding and including Beluga Lake, and the entire Homer Spit. The flood map does not include risk from tsunami or sea level rise.</p>
History	<p>The City of Homer experiences flooding from rainfall runoff (late summer and early fall), snowmelt (spring and early summer), groundwater floods, and flash floods. Floods can also occur in fall and winter when temperatures vacillate between freezing and thawing. Precipitation in the form of rain on frozen ground has little to no drainage and causes flooding.</p> <p>Homer has experienced floods on several occasions in the last 20 years. Major events occurred in 2002, 2007, and (most recently) 2013, resulting in numerous bridges being washed out on the Kenai Peninsula and isolating Homer for several weeks while temporary repairs were made. Two of these events were declared disasters and resulted in disruptions to the economy by preventing the flow of goods and materials except by barge or airplane.</p>
Extent / Severity	<p>The magnitude of flooding that is used as the standard for floodplain management in the United States is a flood with a probability of occurrence of 1% in any given year. This flood is also known as the 100-year flood (i.e., base flood). The 100-year flood (1%) and the 500-year flood (0.2%) are considered Special Flood Hazard Areas (SFHAs) and identified on FEMA's Flood Insurance Rate Maps (FIRMs). The City of Homer FIRM (Figure 2) identifies 708.52 acres (7.95%) with a 1% annual chance of flooding. These areas are along the shoreline, around Beluga Lake, and encompass the Homer Spit. There are 113.46 acres (1.27%) with a 0.2% annual chance of flooding, which are on the Homer Spit.</p>
Recurrence Probability	<p>Floods can occur at any time in Homer but are most common in the spring and summer with heavy snowmelt and rainfall runoff, and in the fall and winter during freeze/thaw cycles. Based on previous occurrences of flood events in Homer, severe flooding is most likely to occur every 2 to 7 years.</p>

3.5 LANDSLIDE

Table 3-6: Landslide

Profile	Description
Nature	<p>Landslide is a general term for the dislodging and fall of a mass of soil or rocks along a sloped surface, or for the dislodged mass itself. The term is used for varying phenomena including mudflows, mudslides, debris flows, rock falls, rockslides, debris avalanches, debris slides, and slump-earth flows. Landslides may result from a wide range of combinations of natural rock, soil, or artificial fill. The susceptibility of hillside and mountainous areas to landslides depends on variations in geology, topography, vegetation, and weather. Landslides may also occur because of indiscriminate development of sloping ground or the creation of cut-and-fill slopes in areas of unstable or inadequately stable geologic conditions. Landslides often occur together with other hazards, which can exacerbate conditions as described below:</p> <ul style="list-style-type: none"> • Shaking due to earthquakes can trigger events ranging from rock falls and topples to massive slides • Intense or prolonged precipitation that causes flooding can also saturate slopes and cause failures leading to landslides • Wildfires can remove vegetation from hillsides, significantly increasing runoff and debris flow potential • Landslides into a reservoir can indirectly compromise dam safety; a landslide can even affect the dam itself • Saturation by water is also a primary cause of landslides. Saturation can occur in the form of intense or prolonged rainfall, snowmelt, changes in groundwater levels, and surface water level changes along coastlines, earth dams, and banks of lakes. <p>Another type of landslide occurs in areas cut by perennial streams; as floodwaters erode channel banks, rivers have undercut clay-rich sedimentary rocks along their southern bank, thereby destabilizing the ground and causing the ground above it to slide.</p>
Location	<p>In North America, there is an association between landslides and hilly terrain (particularly with slopes ranging from about 20 to 40 degrees). Areas on the mountainous terrain in the city which includes slopes greater than 20 degrees, are shown in Figure 4. The highest concentration of these slopes is along the bluffs running between Skyline Drive East End Road and on the west end of the city, just south of the Sterling Highway (Bluff Point).</p> <p>The Bluff Point landslide is well documented and shown in Figure 5.</p>
History	<p>The ADGGS has identified over 1,000 slope failure scars using aerial photographs and light detection and ranging (LIDAR) data from the Homer and Kachemak areas. At least one severe landslide occurred in Homer above Kachemak following the Great Alaskan Earthquake.</p> <p>Notable landslide failures in Homer since the 2010 LHMP include:</p> <ul style="list-style-type: none"> • In 2013, heavy rains caused a 16-foot mudslide down Bear Creek Drive (3 miles east on East End Road). Uphill, when heavy rains saturated the narrow Bear Creek Canyon, it “let go,” which sent trees and debris down Bear Creek, jamming a culvert on the uphill side of East End Road. A disaster declaration was made for several rain-soaked areas in the Kenai Peninsula Borough. • In 2015, a landslide occurred along a stretch of Kachemak Drive near the Homer Airport. The slide resulted in the closure of Kachemak Drive approximately 0.5-mile from Homer Spit Road to the top of the hill by the old airport. The slide took out a 100-foot section of the east bound lane of Kachemak Drive, pushing clumps of spruce and alder trees into Mud Bay.

Table 3-6: Landslide

Profile	Description
Extent / Severity	No official landslide dataset exists for the City of Homer. However, in North America, there is an association between landslides and hilly terrain (particularly with slopes ranging from about 20 to 40 degrees). As such, the mountainous terrain in Homer that includes slopes greater than 20 degrees is at greatest risk of slide. Approximately 17% (1,504 acres) of Homer is in this hazard area.
Recurrence Probability	Shallow landslides can occur at any time but are more likely to happen when the ground is nearly saturated. However, deep-seated landslides are generally triggered by deep infiltration of rainfall (which can take weeks or months to occur) and therefore typically follow major storm events. It is assumed that the probability of a future landslide event will be highly tied to winter storm/rain events. Based on historical occurrences, severe winter storm conditions are likely in the City of Homer every 2 to 7 years.

3.6 SEVERE WEATHER

Table 3-7: Severe Weather

Profile	Description
Nature	<p>Severe weather occurs throughout Alaska with extremes includes thunderstorms; lightning; hail; heavy and drifting snow; freezing rain/ice storm; extreme cold; and high winds. Severe weather events can include the following:</p> <ul style="list-style-type: none"> • A winter storm is an event in which the main types of precipitation are snow, sleet, or freezing rain and be accompanied by high winds, cold temperatures, and storm surge. A winter storm can range from a moderate snow over a few hours, to blizzard conditions with blinding wind-driven snow that lasts several days. Some winter storms may be large enough to affect several states, while others may affect only a single community. In more temperate continental climates such as Homer, these storms are not necessarily restricted to the winter season and may also occur in the late autumn and early spring. • Heavy snow and rain occur frequently in coastal areas and snowfall can accumulate 4 inches or more in 12 hours or less. • Freezing rain and ice storms occur when rain or drizzle freezes on surfaces and can cause damage to powerlines, pipelines, and other infrastructure. • Extreme cold varies according to normal regional climate. Alaska’s extreme cold usually involves temperatures between -20 and -50°F. Excessive cold may accompany winter storms, occur after storms, or can occur without storm activity. • High winds in Alaska can equal hurricane force but are under a different classification because they are not cyclonic nor possess other hurricane characteristics. Strong winds occasionally occur over the interior due to strong pressure differences, especially where influenced by mountainous terrain; however, the windiest places in Alaska are generally along the coastlines.
Location	The entire Homer area is vulnerable to the effects of severe weather.
History	<p>Notable severe weather events from 2000 through 2021 include:</p> <ul style="list-style-type: none"> • In the spring of 2003, strong winds across the Kenai Peninsula resulted in widespread power outages, downed trees, and structural damage and fanned the flames of a 150-acre wildfire in Anchor Point. • In November 2011, a series of major windstorms caused widespread power outages threatening life and property. Power was disrupted to 17,300 homes and businesses. Public infrastructure, commercial property, and personal property damages were reported throughout the borough. • In February 2014, a strong low in the southwest Gulf of Alaska produced strong wind in in the Kachemak Bay Area. The strong wind caused widespread damage from Kenai to the Homer area. Heavy snow fell in the Kachemak Bay area, combined with high wind and blizzard conditions. • In December 2019, a southerly jet stream brought several low-pressure systems to Southcentral Alaska. These were accompanied by above freezing temperatures, abundant rainfall, and high winds as the fronts passed through. A primary impact of this event was the flooding of the Anchor Point River. In addition, North Fork Road was impassable, and the Sterling Highway was flooded in several locations between mile 161 and 163, there was flooding across East End Road at Bear Creek Drive, and a mudslide on East End Road at Kachemak Bay Drive. • In January 2020, a low-pressure system developed south of the Aleutian Islands and then moved north along the Alaska Peninsula and up Cook Inlet. A strong high-pressure system that followed brought a large amount of cold air, which created high winds through the Cook Inlet area. Homer reported 8 hours of blizzard conditions and near-whiteout conditions.

Table 3-7: Severe Weather

Profile	Description
Extent / Severity	Winter storms in the Homer area can produce snow of up to 3 feet per storm, high wind speeds of up to 60 miles per hour and with cold temperatures.
Recurrence Probability	Based on historical occurrences, the City of Homer can expect to experience severe weather conditions approximately 5 to 6 days each year.

3.7 TSUNAMI

Table 3-8: Tsunami

Profile	Description
Nature	<p>A tsunami is a series of traveling ocean waves of extremely long length, generated by disturbances associated primarily with earthquakes occurring below or near the ocean floor. Subduction zone earthquakes at plate boundaries often cause tsunamis. However, tsunamis can also be generated by submarine landslides, sub-marine volcanic eruptions, the collapse of volcanic edifices, and—in very rare instances—large meteorite impacts in the ocean.</p> <p>In the deep ocean, a tsunami may have a length from wave crest to wave crest of 100 miles or more, but a wave height of only a few feet or less. Therefore, the wave period can be up to several hours and wavelengths can exceed several hundred miles. Tsunamis are unlike typical wind-generated swells on the ocean, which might have a period of about 10 seconds and a wavelength of up to 300 feet.</p> <p>Tsunamis not only affect beaches that are open to the ocean, but also bay mouths, tidal flats, and the shores of large coastal rivers. Tsunami waves can also diffract around land masses. Because tsunamis are not symmetrical, the waves may be much stronger in one direction than another, depending on the nature of the source and the surrounding geography. However, tsunamis propagate outward from their source; therefore, coasts in the shadow of affected land masses are safer. Secondary hazards can occur from tsunamis, such as:</p> <ul style="list-style-type: none"> • Erosion or scouring of stream banks, roadway embankments, foundations, footings for bridge piers, and other features. • Impact damage to structures, roads, bridges, culverts, and other features from high-velocity flow and from debris carried by floodwaters; debris may also accumulate on bridge piers and in culverts, increasing loads on these features or causing overtopping or backwater effects. • Release of sewage and hazardous or toxic materials when wastewater treatment plants are inundated, storage tanks are damaged, and pipelines are severed. • Flood waters can pose health risks such as contaminated water and food supplies. • Loss of shelter leaves people vulnerable to insect exposure, heat, and other environmental hazards. <p>The majority of deaths associated with tsunamis are related to drownings; however, traumatic injuries are also a primary concern. Injuries such as broken limbs and head injuries are often caused by the physical impact of people being washed into debris such as houses, trees, and other stationary items. As the water recedes, the strong suction of debris being pulled into largely populated areas can cause further injuries and undermine buildings and services.</p>
Location	<p>The tsunami inundation zone for Homer is shown in Figure 6 and Figure 7. Nearly the entire Homer Spit could be inundated, as well as the low-lying areas around Beluga Lake and to the coast, excluding the airport.</p>
History	<p>The 1964 Great Alaska Earthquake triggered several tsunamis, one major tectonic tsunami and approximately 20 local submarine and subaerial landslide tsunamis. The major tsunami hit between 20 and 45 minutes after the earthquake. The locally generated tsunamis struck between 2 and 5 minutes after their generation and caused most of the deaths and damage in Homer.</p>

Table 3-8: Tsunami

Profile	Description
Extent / Severity	<p>The Alaska Earthquake Center and University of Alaska Fairbanks model for tsunami waves and inundation shows a maximum composite tsunami inundation for Homer. Based on this model, there are 1,735 acres (19%) of Homer's land area at risk to tsunami inundation. This inundation level includes eight (24%) critical assets.</p> <p>A series of simulated tectonic scenarios were conducted in a report by the ADGGS. The first scenario (a repeat of the 1964 Great Alaska Earthquake) would not result in any inundation in Homer except for the section of Lake Street that separates the tidal flats from Beluga Lake. Some low-lying parts of Homer Spit would be flooded, but the Homer Spit Road would not be inundated. In the next scenario (a magnitude 9.2 earthquake on the Kenai Peninsula), Lake Street (which separates the tidal flats from Beluga Lake), the areas between the tidal flats, the Sterling Highway, and nearly the entire Homer Spit would be inundated.</p> <p>The third scenario (maximum slip distributed between 9.3 and 21.7 miles deep) would result in the most severe inundation. The entire low-lying area of Homer from the tidal flats to the Kachemak Bay shore as well as some residential areas south of Beluga Land and along the Sterling Highway would be inundated. The Homer Spit would be completely inundated under this scenario.</p> <p>The final scenario (rupture of the Cascadia subduction zone) would not result in any inundation except for the tidal flats area and some low-lying areas of the Homer Spit.</p> <p>The City of Homer created a task force to evaluate risks and provide recommendations for mitigation to the public works campus.</p>
Recurrence Probability	<p>The likelihood of a tsunami is hard to predict; however, previous events have shown that an earthquake-generated tsunami could impact the Homer community in the next 5 years (up to 1 in 5 chance of occurring).</p>

3.8 VOLCANO

Table 3-9: Volcano

Profile	Description
Nature	<p>A volcano is a vent or opening in the earth’s crust from which molten lava (magma), pyroclastic materials, and volcanic gases are expelled onto the surface. The vent may be visible as a small bowl-shaped depression at the summit of a cone or shield-shaped mountain. Through a series of cracks in and beneath the volcano, the vent connects to one or more linked storage areas of molten or partially molten rock. There are four general volcano types:</p> <ul style="list-style-type: none"> • Lava domes are formed when lava erupts and accumulates near the vent. • Cinder cones are shaped and formed by cinders, ash, and other fragmented material accumulations that originate from an eruption. • Shield volcanoes are broad gently sloping volcanic cones with a flat dome shape that usually encompass several tens or hundreds of square miles, built from overlapping and inter-fingering basaltic lava flows. • Composite or stratovolcanoes are typically steep-sided large dimensional symmetrical cones built from alternating lava, volcanic ash, cinder, and block layers; most composite volcanoes have a crater at the summit containing a central vent or a clustered group of vents. <p>There are three types of volcanic eruptions, described below. Some volcanoes may exhibit only one type of eruption during an event, while others may display an entire sequence of all three types in one event.</p> <ul style="list-style-type: none"> • Magmatic eruptions are the most well observed eruptions. Magmatic eruptions produce juvenile clasts (composed fragments) during explosive decompression from gas releases. Magnetic eruption subtypes include Hawaiian, Strombolian, Vulcanian, Peléan, and Plinian. • Phreatomagmatic eruptions are volcanic eruptions resulting from the interaction between magma and water. Grain deposits from phreatomagmatic explosion involving high water to magma ratios are extremely fine-grained and distinctly poorly sorted, while deposits resulting from low water to magma ratios are commonly coarse and relatively well sorted. Phreatomagmatic eruption subtypes include: Surtseyan, Submarine, and Subglacial. • Phreatic eruptions are steam-blast eruptions. These eruptions occur when cold groundwater or surface water comes into contact with hot rock or magma. Phreatic eruptions blast out steam, water, ash, volcanic bombs, and volcanic blocks, but no new magma. <p>Other hazards potentially caused by a volcanic eruption include:</p> <ul style="list-style-type: none"> • Volcanic ashfall • Lava flows • Lahars (debris flows) • Volcanic gas • Pyroclastic surges or flows • Volcanic landslides
Location	<p>As shown in Figure 8, most of the community of Homer (95% of land area) is at risk for moderate tephra ashfall hazard with 0.25 to 1 inch accumulation, and the far western end of Homer (5% of land area) is at risk for high (heavy) tephra ashfall with 1 to 4 inches of accumulation.</p>

Table 3-9: Volcano

Profile	Description
History	<p>The Alaska Volcano Observatory is monitoring 3 volcanos within 100 miles of Homer:</p> <ul style="list-style-type: none"> • Augustine (70 miles southwest) was last active in 2006 when it had explosive eruptions that produced ash plumes that deposited small amounts of ash in Homer. • Iliamna (60 miles northwest) was last active in 1953 when it emitted a large cloud of smoke. • Redoubt (80 miles northwest) was last active in 2009 when it erupted over several months with multiple ash-producing explosions, culminating in an eruption in which the ash cloud reached 50,000 feet and moved swiftly to the southeast, depositing up to 2 millimeters of ashfall in Homer. Eruptions also occurred in 1968 and 1990. <p>None of these volcanos have been active since the 2010 LHMP.</p>
Extent / Severity	<p>As noted above, all of the Homer area is susceptible to moderate to heavy tephra ashfall. According to the Alaska Volcano Observatory, ash accumulation of 0.25 to 1 inch is likely from moderate tephra ashfall while ash accumulations of 1-4 inches is likely from heavy tephra ashfalls.</p>
Recurrence Probability	<p>Given the proximity of three active volcanos and history of past events, the City of Homer could have an ashfall event in the next 10 years (1 in 10 chance of occurring).</p>

3.9 WILDFIRE

Table 3-10: Wildfire

Profile	Description
Nature	<p>A wildfire—sometimes referred to as a wildland fire—is a fire in an area of combustible vegetation occurring in rural areas. Wildfires can be caused by human activities (e.g., unattended burns, campfires, or off-road vehicles without spark-arresting mufflers); or by natural events (e.g., lightning, drought, or infestation). Wildfires can be classified as forest, urban, tundra, interface or intermix fires, and prescribed burns.</p> <p>The following three factors contribute significantly to wildfire behavior and can be used to identify wildfire hazard areas:</p> <ul style="list-style-type: none"> • Topography describes slope increases, which influences wildfire spread rate increases. South-facing slopes are also subject to more solar radiation, making them drier and thereby intensifying wildfire behavior. However, ridge tops may mark the end of wildfire spread because fire spreads more slowly or may even be unable to spread downhill. • Fuel is the type and condition of vegetation that plays a significant role in wildfire spread occurrence. Certain plant types are more susceptible to burning or will burn with greater intensity. Dense or overgrown vegetation increases the amount of combustible material available as fire fuel (referred to as the “fuel load”). The living-to-dead plant matter ratio is also important. Certain climate changes may increase wildfire risk significantly during prolonged drought periods as both living and dead plant matter moisture content decreases. Insect infestations can kill trees and create high fuel loads. Both the horizontal and vertical fuel load continuity is also an important factor. • Weather is the most variable factor affecting wildfire behavior. Temperature, humidity, wind, and lightning can affect ignition opportunities and fire spread rate. Extreme weather (e.g., high temperatures and low humidity) can lead to extreme wildfire activity. Climate change increases fire to vegetation ignition susceptibility due to longer dry seasons. By contrast, cooling and higher humidity often signal reduced wildfire occurrence and easier containment. <p>Indirect wildfire effects can be catastrophic. In addition to stripping the land of vegetation and destroying forest resources, large intense fires can harm the soil, waterways, and the land itself. Soil exposed to intense heat may lose its capability to absorb moisture and support life. Exposed soils erode quickly and exacerbate river and stream siltation thereby increasing flood potential, harming aquatic life, and degrading water quality. Vegetation-stripped lands are more susceptible to increased debris flow hazards.</p>
Location	<p>As shown in Figure 9, most of the Homer area has moderate or high wildland fuel risk, with some areas of very high risk. The Homer Spit, tidal flats, and low-lying areas around Beluga Lake are at moderate risk; the areas of very high risk are primarily along the bluffs.</p> <p>The northern and eastern borders of Homer are in the wildland-urban interface. These areas, which are primarily residential, are at higher risk from fires on the Kenai Peninsula. The areas around the Bridge Creek Reservoir are at a higher risk because of substantial spruce bark beetle killed trees. The City has implemented aggressive management in this area to reduce risk.</p>

Table 3-10: Wildfire

Profile	Description
History	<p>Th Alaska Interagency Coordination Center tracks wildfires throughout the state. Every year there are wildfires across the Kenai Peninsula.</p> <p>Homer, like other areas of the Kenai Peninsula, has been dramatically affected by the spruce bark beetle infestation. The vast majority of wildland fires on the Kenai Peninsula are the result of human activities with open burning being the most prevalent. Although lightning-caused fires do occur, they are infrequent, especially on the south Kenai Peninsula.</p> <p>The 2005 Tracy Avenue Fire and the 2009 East End Road Fire were the most recent large fires near Homer and were especially threatening to property and had potential loss of life. In May of 2014, a human-caused fire started along the Funny River Road in the central Kenai Peninsula. Over its course, this fire grew to almost 200,000 acres of black spruce, mixed hardwoods, and spruce and bark beetle killed spruce, and grass. Although outside Homer city limits, these recent fires demonstrate the potential for rapid fire spread given the weather conditions, topography, and the availability of local and state wildfire fighting crews.</p>
Extent / Severity	<p>Much of Homer is vulnerable to wildfires. As shown on Figure 9, 65% of the land area in Homer is in a high/very high/extreme fuel risk area. Wildfires can destroy habitat, impact watersheds; burn down homes, buildings, and critical facilities; cause loss of life to humans and animals; and restrict access to recreational areas. Wildfires can cause fire-related injuries; and local and regional transport of smoke, ash, and fine particles, which increase respiratory and cardiovascular risks. People without means for evacuation are also vulnerable to wildfires.</p>
Recurrence Probability	<p>Recorded wildland fires within 10 years and 50 miles of Homer have an average recurrence rate of approximately 2.5 to 3 years. It is anticipated that this probability will continue into the future or increase in frequency as climate change and spruce bark beetles create more fuel for potential fires.</p>

4.0 RISK ASSESSMENT

This section addresses Element B of the Local Mitigation Plan Regulation Checklist.

Regulation Checklist – 44 CFR 201.6 Local Mitigation Plans
Element B: Hazard Identification and Risk Assessment
B3. Is there a description of each identified hazard’s impact on the community as well as an overall summary of the community’s vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))
B4. Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods? (Requirement §201.6(c)(2)(ii))

4.1 HAZARD IMPACT

A hazard impact assessment predicts the current or expected impact of a hazard on a community or given area. The analysis provides quantitative data that may be used to identify and prioritize potential mitigation measures by allowing communities to focus attention on areas with the greatest risk of damage.

For this 2022 LHMP, a conservative exposure-level analysis was conducted to assess the risks associated with the identified hazards. Due to a combination of a lack of adequate information and methodology, a semi-quantitative hazard impact assessment has only been prepared for the following hazards: climate change, earthquake, flood, landslide, tsunami, volcano, and wildfire. A qualitative analysis was prepared for the following hazards: erosion and severe weather.

Hazard impact assessments were prepared for the City of Homer’s land area, population center, and critical facilities (Table 4-1). A land area of 13.93 square miles was determined using available Geographic Information System (GIS) data. The population center (i.e., a region that describes a center point of Homer’s population) was determined to comprise 9.23 square miles. The critical facilities (Figure 10) include a list of facilities that provide services and functions essential to Homer, especially during and after a disaster. Common types of critical facilities include fire stations; police stations; hospitals; schools; water and wastewater systems; and utilities. Critical facilities may also include places that can be used for sheltering or staging purposes, such as community centers, schools and libraries. Critical facilities may also include large public gathering spots and places of worship. For the 2022 LHMP, 33 critical facilities (public and privately owned) were collected in Homer. Critical facility names and coordinates were then geocoded to a location and the resulting geographic features were used for hazard impact assessment. Facility-specific information was given to the City of Homer and will be kept on file.

The overall results of the hazard assessments are provided below. This analysis is a simplified assessment of the potential effects of the hazards on land area (Table 4-2), population center (Table 4-3), and critical facilities (Table 4-4) at risk, without consideration of the probability or level of damage. In addition, elevation data were not available; therefore, additional analysis will need to be conducted to develop a more accurate understanding of hazard vulnerabilities.

Table 4-1: Total Land Area, Population Center and Critical Facilities

Category	Number
Land Area	8,912.52 acres
Population Center	5,899.74 acres
Critical Facilities	33

Table 4-2: Total Acres of Land in a Hazard Area

Hazard Area	Acres	Percent of Total Acres
Climate Change	8,912.52	100
Earthquake		
Weak/Light	0	0
Moderate/Strong	0	0
Very Strong/Severe/Violent	8,912.52	100
Erosion	No mapping data are available for erosion. Based on existing reports and the community planning team, approximately 10% of total land area is susceptible erosion.	
Flood		
1% Annual Chance	708.52	7.95
0.2% Annual Chance	113.46	1.27
Landslide	1,503.91	16.87
Severe Weather	8,912.52	100
Tsunami	1,735.33	19.47
Volcano		
Low	0	0
Low-Moderate/Moderate	8,490.64	95.27
High	421.89	4.73
Wildfire		
Moderate	2,939.61	32.98
High/Very High	5,820.79	65.31
Extreme	15.30	0.17

Table 4-3: Total Number of Acres of Population Center in a Hazard Area

Hazard Area	Acres	Percent of Total Acres
Climate Change	5,899.74	100
Earthquake		
Weak/Light	0	0
Moderate/Strong	0	0
Very Strong/Severe/Violent	5,899.74	100
Erosion	No mapping data are available for erosion. Based on existing reports and the community planning team, approximately 5% of the total population center is susceptible erosion.	

Table 4-3: Total Number of Acres of Population Center in a Hazard Area

Hazard Area	Acres	Percent of Total Acres
Flood		
1% Annual Chance	21.80	3.7
0.2% Annual Chance	0	0
Landslide	1,030.41	17.47
Severe Weather	5,899.74	100
Tsunami	5,657.83	95.90
Volcano		
Low	0	0
Low-Moderate/Moderate	5,878.24	99.64
High	21.50	0.36
Wildfire		
Moderate	1,384.28	23.46
High/Very High	4,503.32	76.33
Extreme	9.46	0.16

Table 4-4: Total Number of Critical Facilities in a Hazard Area

Hazard Area	Number	Percent of Total Facilities
Climate Change	33	100
Sea Level Rise	5	15
Earthquake		
Weak/Light	0	0
Moderate/Strong	0	0
Very Strong/Severe/Violent	33	100
Erosion	7	24
Flood		
1% Annual Chance	3	10
0.2% Annual Chance	1	3
Landslide	1 This facility is not in an area of greater than 20% slope, but is in the path of a potential landslide.	3
Severe Weather	33	100
Tsunami	8	24

Table 4-4: Total Number of Critical Facilities in a Hazard Area

Hazard Area	Number	Percent of Total Facilities
Volcano		
Low	0	0
Low-Moderate/Moderate	31	94
High	2	6
Wildfire		
Moderate	22	67
High/Very High	9	27
Extreme	0	0

4.2 OVERALL SUMMARY OF VULNERABILITY

A list of the key issues, or overall summary of vulnerability, for each hazard profiled in the 2022 LHMP is provided in Table 4-5.

Table 4-5: Overall Summary of Vulnerability

Hazard	Vulnerability
Climate Change	<p>All of Homer is vulnerable to climate change. Over the next century, weather patterns that are considered extreme today are expected to become normal. The City of Homer's overall vulnerabilities to climate change include sea level rise, coastal erosion, increased average annual maximum temperature, increased average annual precipitation, severe moisture deficit/drought, and wildfires.</p> <ul style="list-style-type: none"> • Sea level rise: 15% of the critical facilities and infrastructure in the city are in the low-lying areas on the Homer Spit and will be at risk of inundation. Flooding due to sea level rise will cause destructive erosion; flooding; and soil contamination with salt; loss of habitat for fish, birds, and plants; disruption and/or delay of transportation; and damages to homes and businesses on a more regular basis. • Temperature and precipitation: SNAP temperature models show that all of Homer will experience a temperature increase of 5.3°F by the end of the century, while precipitation models show that for the same reporting period, Homer will see an average rainfall increase of 2.8 inches. In the summer, an increase in temperature will cause an increase in fire risk. • Mega storms that are linked to climate change can cause severe flooding. Along the coast, deadly and destructive storm surges may push farther inland than they once did, which means more frequent nuisance flooding.
Earthquake	<p>All of the City of Homer is vulnerable to ground shaking from an earthquake and the entire city is in severe perceived ground shaking hazard areas. Nearly 100% of Homer's residents live and 100% of critical facilities and infrastructure are in the severe shaking potential areas. The estimated value of structure loss is provided in Table 4-6.</p> <p>Those that live in severe shaking potential areas can expect earthquake events to produce moderate to heavy damage. According to the USGS, this could mean slight damage in specially designed structures, considerable damage in ordinary substantial</p>

Table 4-5: Overall Summary of Vulnerability

Hazard	Vulnerability
	buildings with partial building collapse, and considerate damage in poorly built or badly designed structures. Those that live in violent shaking potential areas can expect earthquake events to produce the potential for heavy damage. According to the USGS, this could mean that well designed framed structures could be thrown out of plumb and substantial buildings could experience partial building collapse.
Erosion	<p>Coastal erosion along the Homer Spit is a major concern for the City and for property owners. Only approximately 10% of the land area is susceptible to erosion, and those areas are primarily on the Homer Spit. The land base is narrow and significant mitigation will be required to stop or slow the coastal erosion occurring there. If no action is taken, all structures along the spit will be susceptible to damage, including 7 critical facilities, many local businesses, and state and federal land.</p> <p>Coastal erosion is also occurring on the Homer bluffs through storm wave action and solifluction. A 4,830-foot revetment was constructed on the coast near the base of the Homer Spit in 1998, and a seawall was constructed in 2002 in an attempt to protect residential structures from continuing coastal erosion. The seawall requires continuous maintenance because it is frequently impacted by storm surge. In addition, protective measures such as seawalls or revetments can lead to increased erosion when shoreline structures eliminate the natural wave run-up and sand deposition and increase reflected wave action. The increased wave action can scour in front of and behind structures and prevent the settlement of suspended sediment.</p> <p>The primary impact from erosion is the loss of developable land and anything on it. The impact to infrastructure is expensive, ongoing, and includes the Sterling Highway Kachemak Drive, Ocean Loop Drive, and Homer Spit Road.</p>
Flood	<p>The City of Homer is most vulnerable to flooding caused by snowmelt and heavy rainfall. Approximately 9.2% of Homer’s land mass (1.28 square miles) and 4 critical facilities (the City of Homer Port and Harbor Office, the Homer Harbor, the Petro Marine Tank Farm, and Pioneer Dock) are in the SFHA, which is concentrated on the Homer Spit, along the shoreline, and low-lying areas around Beluga Lake.</p> <p>Floods can block roadways and cause erosion, mudflows, debris flows, and water damage to structures and result in land loss, injury, and even death. People that are most vulnerable to flooding are generally those that live in the SFHA.</p> <p>There are 26 structures insured by the National Flood Insurance Program (NFIP) and none of those properties are considered Repetitive Loss properties (i.e., any insurable building for which two or more claims of more than \$1,000 were paid by the NFIP in any rolling 10-year period, since 1978).</p>
Landslide	<p>No official landslide dataset exists for the City of Homer. However, in North America, there is an association between landslides and hilly terrain (particularly with slopes ranging from about 20 to 40 degrees). As such, the mountainous terrain in Homer that includes slopes greater than 20 degrees is at greatest risk of slide. Approximately 17% (1,504 acres) of Homer is in this hazard area, including 1 critical facility, the Southern Peninsula Hospital.</p> <p>In particular, the ADGGS found that the area covered by the Bluff Point landslide deposit and the area immediately adjacent to the headscarp have an elevated risk of deep-seated landslide hazard. Similarly, the deep-seated landslide at the end of China Poot Road also represents a significant landslide hazard. Development in and on the landslide deposit, as well as development in the mouths of catchments on either side of the China Poot Road landslide should be considered high-risk areas. Debris flow from landslides along the bluffs, particularly below Woodard Canyon,</p>

Table 4-5: Overall Summary of Vulnerability

Hazard	Vulnerability
	<p>has the potential to impact facilities and residential buildings, including the South Peninsula Hospital.</p> <p>Landslides can cause damage to and impact critical infrastructure, including water, sewer, and roadways. They may also cause injury or death to those trapped; break utility lines; block/damage roadways; damage foundations, chimneys, or surrounding land; and lead to flash flooding and further landslides.</p>
Severe Weather	<p>All of the City of Homer is vulnerable to severe weather. The Homer area is most vulnerable to high winds during the winter season. Winds may sweep up loose snow and produce blinding blizzards and dangerous wind chills.</p> <p>A major storm can last for several days and be accompanied by high winds, freezing rain or sleet, heavy snowfall, and cold temperatures. A storm may knock down trees and powerlines, cause roofs to collapse, and lead to dangerous driving conditions causing drivers to be stranded. Homer has an extensive history of storm damage, especially in the coastal areas along the Homer Spit and adjacent properties.</p> <p>Along the Homer Spit, high winds and coastal storm surge can damage other installments that mitigate erosion, such as revetments and gabion baskets.</p> <p>The Seward Highway between Anchorage and Homer is periodically closed every year due to an avalanche event or for avalanche control, which can further isolate the community.</p>
Tsunami	<p>The Alaska Earthquake Center and University of Alaska Fairbanks model for tsunami waves and inundation shows a maximum composite tsunami inundation for Homer. Based on this model, there are 1,735 acres (19%) of Homer’s land area at risk to tsunami inundation. This inundation level includes eight (24%) critical assets.</p> <p>The most at-risk locations in Homer are the Homer Spit, coastal areas, and low-lying areas around (and including) Beluga Lake. Tsunami run-up will likely cause flooding and infrastructure along the Homer Spit could be damaged.</p>
Volcano	<p>Ashfall becomes a public health hazard when humans inhale fine ash. Ash will also interfere with the operation of mechanical equipment including aircraft. In Alaska, this is a major problem because many of the primary flight paths are near historically active volcanoes. Because ash can conduct electricity, accumulation may also interfere with the distribution of electricity from the shorting transformers and other electrical components.</p> <p>Based on modeling, most of the City of Homer is in a moderate ashfall hazard area. Even a small ashfall event could cause significant damage to the built environment (e.g., clogged filters and damaged parts of vehicles and machinery, clogged filters of air-ventilation systems, roof collapse, cellular and radio communication interruption) and the natural environment (e.g., habitat damage, water pollution, weather pattern shifts). In addition, an ashfall event could cause respiratory problems, eye problems, and skin irritation for humans.</p>
Wildfire	<p>Much of Homer is vulnerable to wildfires. As shown on Figure 9, 65% of the land area of Homer is in a high/very high/extreme fuel risk area.</p> <p>During the summer, the entire community is vulnerable to wildland fire because most structures are constructed of wood and other flammable materials. Standing timber and other natural fuels interface with the community. History has demonstrated that fire bands can be carried by local winds up to 0.5 mile, jumping human-made fire lines and spreading fire across large areas. Most areas of Homer</p>

Table 4-5: Overall Summary of Vulnerability

Hazard	Vulnerability
	<p>are immediately adjacent to wildland areas and could be threatened by uncontrolled fire.</p> <p>Without mitigation or preparation efforts, the impacts of a wildland interface fire in Homer could grow into an emergency or disaster. In addition to impacting people, wildland fires may severely impact livestock and pets. Such situations may require emergency life support, evacuation, and alternative shelter. Indirect impacts of wildland fires can be catastrophic. In addition to stripping the land of vegetation and destroying forest resources, large intense fires can harm the soil, waterways, and the land itself. Soil exposed to intense heat may lose its capability to absorb moisture and support life. Exposed soils erode quickly and enhance siltation of rivers and streams, which increases flood and landslide potential, harms aquatic life, and degrades water quality.</p>

Table 4-6: Value of Facilities Most Affected by Earthquake

Category	Total Value (Building and Contents)	Estimated Loss from M9.2 Earthquake	M9.2 Earthquake loss Ratio
Boat Dock	\$16,366,000	\$1,525,582	20.10%
City Office	\$239,000	\$12,850	5.38%
Airport	\$15,416,800	\$905,695	5.87%
School	\$55,914,600	\$3,163,500	11.41%
Emergency Shelter	\$4,140,400	\$229,649	10.95%
State Office	\$2,271,800	\$2,038,298	5.74%
Police Station	\$2,064,500 ¹	\$112,256	5.44%
Fire Station	\$2,064,500	\$112,256	5.44%

Notes:

¹The information in this table is as reported in *Kenai Peninsula Borough Risk Report: Kenai Peninsula Borough and the Incorporated Cities of Homer, Kachemak, Kenai, Seldovia, Seward, and Soldotna, 2017*. This facility has since been bonded for \$5,000,000

4.3 NATIONAL FLOOD INSURANCE PROGRAM INSURED STRUCTURES

The NFIP, managed by FEMA, provides flood insurance to property owners, and businesses. There are 26 NFIP-insured structures in the City of Homer. Of these, none are considered Repetitive Loss properties.

5.0 MITIGATION STRATEGY

This section addresses Element C of the Local Mitigation Plan Regulation Checklist.

Regulation Checklist – 44 CFR 201.6 Local Mitigation Plans
Element C: Mitigation Strategy
<p>C1. Does the Plan document each jurisdiction’s existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement § 201.6(c)(3))</p> <p>C2. Does the Plan address each jurisdiction’s participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement § 201.6(c)(3)(i))</p> <p>C3. Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement §201.6(c)(3)(i))</p> <p>C4. Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement §201.6(c)(3)(ii))</p> <p>C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction? (Requirement §201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))</p> <p>C6. Does the Plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement §201.6(c)(4)(ii))</p>

5.1 AUTHORITIES, POLICIES, PROGRAMS, AND RESOURCES

The City of Homer’s existing authorities, policies, programs, and resources available for hazard mitigation are provided in Table 5-1 (human and technical resources), Table 5-2 (financial resources), and Table 5-3 (planning and policy resources). The ways in which the City of Homer is looking to expand and improve on its hazard mitigation authorities, policies, programs, and resources are provided in Table 5-4.

Table 5-1: Human and Technical Resources for Hazard Mitigation

Staff/Personnel	Department/Agency	Principal Activities Related to Hazard Mitigation
Planner(s) and technical staff with knowledge of land development, land management practices, human-caused hazards, and natural hazards	City of Homer Planning Department	Anticipates and acts on the need for new plans, policies, and code changes. Applies the approved plans, policies, code provisions, and other regulations to proposed land uses.
Fire Chief	City of Homer Volunteer Fire Department	Provides fire protection services in the City of Homer.
Head of Public Works	City of Homer Public Works Department	Maintains the city's roads, drainage, water distribution, wastewater collection, buildings and facilities, and motor vehicles. Works with developers in conjunction with the planning department on proposed subdivisions, land use variances, right-of-way vacations, zoning changes, and building site plans.
Police Chief	City of Homer Police Department	Provides law enforcement services in the City of Homer.
Harbormaster	City of Homer City Department of Port and Harbor	Manages and maintains port and harbor facilities.
Emergency Manager	City of Homer City Manager's Office	Maintains and updates Homer's Emergency Operations Plan. In addition, coordinates local response and relief activities in the Emergency Operations Center; works closely with local, state, and federal partners to support planning and training and to provide information and coordinate assistance.
Engineers, construction project managers, and supporting technical staff	City of Homer Public Works Department	Provides direct or contract civil, structural, and mechanical engineering services, including contract, project, and construction management.
Engineer(s), project manager(s), technical staff, equipment operators, and maintenance and construction staff	City of Homer Public Works Department	Maintains and operates of a wide range of local equipment and facilities and assists members of the public. This includes providing sufficient clean fresh water, reliable sewer services, street maintenance, storm drainage systems, street cleaning, streetlights, and traffic signals.
Floodplain Administrator	City of Homer Planning Department	Enforces its floodplain requirements through the Flood Development Permit program.
Procurement Services Manager	City of Homer Finance Department	Provides a full range of municipal financial services and administers several licensing measures.

Table 5-1: Human and Technical Resources for Hazard Mitigation

Staff/Personnel	Department/Agency	Principal Activities Related to Hazard Mitigation
Public Information Officer	City of Homer City Manager’s Office	Coordinates and facilitates a public information program regarding activities of Homer and its various departments; actively promotes the services and successes of operating departments and the benefits to residents; proactively establishes and maintains productive relationships between Homer and any media; and performs related duties as required.

Table 5-2: Financial Resources for Hazard Mitigation

Type	Source	Purpose	Amount
General Fund	City of Homer Finance Department	Program operations and specific projects.	Variable
Enterprise Funds	City of Homer City Department of Port and Harbor	An enterprise fund is a self-supporting government fund that sells goods and services to the public for a fee. An enterprise fund uses the same accounting framework followed by entities in the private sector. Homer uses an enterprise fund for the port and harbor facilities.	Variable
General Obligation Bonds	City of Homer Police Department	General obligation bonds are appropriately used for the construction and/or acquisition of improvements to real property broadly available to residents and visitors. Such facilities include—but are not limited to—libraries, hospitals, parks, public safety facilities, and cultural and educational facilities. The city uses a general obligation bond for the police station.	Variable
Renewable Energy Fund	Alaska Energy Authority	Provides funding for the development of qualifying and competitively selected renewable energy projects in Alaska. The program is designed to produce cost-effective renewable energy for both heat and power. For Fiscal Year 2019, \$11 million has been allocated by the governor to fund the Renewable Energy Fund. This program runs through 2023.	Project-specific
HMA: Hazard Mitigation Grant Program (HMGP)	FEMA	Supports pre- and post-disaster mitigation plans and projects. Available to communities in Alaska after a presidentially declared disaster has occurred in Alaska.	Project-specific
HMA: Building Resilient Infrastructure and Communities (BRIC)	FEMA	Focuses on reducing the nation’s risk by funding public infrastructure projects that increase a community’s resilience before a disaster affects an area.	Project-specific

Table 5-2: Financial Resources for Hazard Mitigation

Type	Source	Purpose	Amount
HMA: Flood Mitigation Assistance	FEMA	Funds projects that reduce or eliminate the risk of repetitive flood damage to buildings insured by the NFIP.	Project-specific
Homeland Security Preparedness Technical Assistance Program	FEMA/Department of Homeland Security	Build and sustain preparedness technical assistance activities in support of the four homeland security mission areas (i.e., prevention, protection, response, recovery) and homeland security program management.	Project-specific
Assistance to Firefighters Grant Program	FEMA/U.S. Fire Administration	Provides equipment, protective gear, emergency vehicles, training, and other resources needed to protect the public and emergency personnel from fire and related hazards. Available to fire departments and nonaffiliated emergency medical services providers.	Project-specific
Community Action for a Renewed Environment	U.S. Environmental Protection Agency	Through financial and technical assistance, this program offers an innovative way for a community to organize and take action to reduce toxic pollution (e.g., stormwater) in its local environment. Through this program, a community creates a partnership that implements solutions to reduce releases of toxic pollutants and minimize exposure to them.	Project-specific
Community Block Grant Program Entitlement Communities Grants	U.S. Department of Housing and Urban Development (HUD)	Acquisition of real property; relocation and demolition; rehabilitation of residential and nonresidential structures; construction of public facilities and improvements, such as water and sewer facilities, streets, neighborhood centers; and the conversion of school buildings for eligible purposes.	Project-specific
Community-Based Restoration Program	National Oceanic and Atmospheric Administration	Provides funding and technical assistance to communities for restoration projects that ensure fish have access to high-quality habitat. The goal of these projects is to recover and sustain fisheries.	Project-specific
National Coastal Resilience Fund	National Fish and Wildlife Foundation	Provides assistance to restore, increase and strengthen natural infrastructure to protect coastal communities while also enhancing habitats for fish and wildlife. It invests in projects that restore or expand natural features such as coastal marshes and wetlands, oyster and coral reefs, forests, coastal rivers and floodplains, and barrier islands that minimize the impacts of storms and other naturally occurring events on communities.	Project-specific

Table 5-3: Planning and Policy Resources for Hazard Mitigation

Name	Description	Hazards Addressed	Emergency Management
Homer City Ordinances Title 21.44 Slopes	The City of Homer has adopted local ordinances to define Steep Slope and to require engineering approval for any development of steep slopes in Homer (Homer City Code [HCC] 21.44.050).	Landslide	Mitigation
Homer City Ordinances, Title 12 Building and Construction, Title 13 Standard Construction Practices, and Title 22 Subdivisions	Hazard-resistant building codes are a cost-effective way to safeguard communities against natural disasters.	Climate Change, Earthquake, Erosion, Flood, Landslide, Severe Weather, Wildfire	Mitigation
City of Homer Emergency Operations Plan	The plan describes the City of Homer’s organizational structures, roles, and responsibilities; protocols for providing emergency response and short-term recovery; the purpose, situation, and assumptions; concept of operations, organization, assignment of responsibilities, and plan development and maintenance; authorities; and references.	Coastal Storm Surge/Erosion, Earthquake, Wildland Fire, Flood, Landslide, Tsunami, Volcano, Severe Weather	Response, Recovery
City of Homer Capital Improvement Plan 2019-2024	Identifies capital projects and equipment purchases, provides a planning schedule and identifies options for financing the plan. The plan/program is usually short-range, approximately 6 years.	Landslide, Coastal Storm Surge/Erosion, Flood	Mitigation, Preparedness
Homer Comprehensive Plan	Describes hazard areas and lists goals and policies to reduce the potential risk of death, injuries, and economic damage resulting from natural and human-caused hazards.	Erosion, Flood Landslide	Mitigation, Preparedness, Response
Public Outreach	The City of Homer uses a Facebook page and an email distribution list to provide outreach to the community on relevant events, activities, and planning processes happening in the city.	All	All Phases
NFIP	Makes affordable flood insurance available to homeowners, business owners, and renters in participating communities. In exchange, those communities must adopt and enforce minimum floodplain management regulations to reduce the risk of damage from future floods.	Flood	Mitigation

Table 5-4: Ability to Expand Resources

Capability	Type/Description	Expansion
Human and Technical	Mitigation Specialist	Appoint or assign someone with Homer's government to oversee hazard mitigation grant opportunities, including notifying Homer's departments/agencies of upcoming grant cycles, and spearheading Notice of Intent applications, grant applications, and grant management requirements.
Financial	HMA funding	Apply for BRIC and HMGP funding as it becomes available. The focus should be on projects that mitigate critical infrastructure, provide protection for disadvantaged areas, and address climate change.
Planning and Policy	Climate Action Plan	Integrate climate sustainability plans into Homer's Comprehensive Plan (including measures to reduce greenhouse emissions) through a series of local transportation, land use, building energy, water, waste, and green infrastructure programs and policies.
Planning and Policy	Zoning and Permitting Code Updates	Develop City Code that reflects current and future work on city-wide drainage and wetlands to mitigate erosion.

5.2 NATIONAL FLOOD INSURANCE PROGRAM PARTICIPATION

The NFIP aims to reduce the impact of flooding on residential and nonresidential buildings by providing insurance to property owners and encouraging communities to adopt and enforce floodplain management regulations. Participation in the NFIP is based on an agreement between local communities and the federal government.

The City of Homer joined the NFIP on May 19, 1981, the same day the city was mapped to a FIRM. The current FIRM date for Homer is October 20, 2016. As a participant of the NFIP, the Homer City Planning Department enforces a floodplain management ordinance and participates in FEMA's Community Assisted Visits, which occur on a 3- to 5-year cycle. FEMA's last Community Assisted Visit to Homer occurred in 2011.

5.3 MITIGATION GOALS

Mitigation goals are defined as general guidelines that explain what an agency wants to achieve in terms of hazard and loss prevention. Goal statements are typically long-range policy-oriented statements representing a community-wide vision. FEMA's 2022 Building Resilient Infrastructure and Communities priorities are the basis for the three goals (Table 5-5) for the 2022 LHMP.

Table 5-5: Mitigation Goals

Goal #	Description
1	Enhance climate protection and adaptation efforts
2	Create a healthy and safe community
3	Protect critical facilities and infrastructure against hazards

5.4 RECOMMENDED MITIGATION ACTIONS

Mitigation actions help achieve the goals of the LHMP. The recommended mitigation actions provided in Table 5-6 include: education and awareness; structure and infrastructure projects; preparedness and response; and local plans and regulations. This list addresses every hazard profiled in this plan and is based on the plan's risk assessment as well as lessons learned from recent disasters. It was developed using FEMA success stories and best management practices; FEMA job aids; local and regional plans and reports; and input from planning team members.

Table 5-6: Recommended Mitigation Actions

No.	Project Name	Hazard Mitigated	Project Description	Type of Development
1	Critical Facility Auxiliary Power (Phase I)	All	Determine which critical facilities require auxiliary power in order to remain functional during de-energization or public safety power shutoff and/or general loss of power and install auxiliary power systems. Auxiliary power systems may include back-up generators, local Solar Photovoltaic plus storage, and microgrids.	Existing
2	Generators (Phase II)	All	Purchase and install generators with main power distribution disconnect switches for identified and prioritized critical facilities susceptible to short-term power disruption. (e.g., first responder, medical facilities, schools, correctional facilities, and water and sewage treatment plants).	New and existing
3	Emergency Radio Communication System Upgrade	All	Continue the city's systematic upgrade of its Emergency Radio Communication System.	Existing
4	Upslope Tidal Marshes	Climate Change	Create tidal marshes with resilience to climate change by providing space for the tidal marshes to spread vertically upslope when sea level rises.	New and existing
5	Downslope Tidal Marshes	Climate Change	Create tidal marshes with resilience to climate change by providing space for tidal marshes to spread vertically downslope to aid upland drainage to the sea	New and existing
6	Seismic Retrofits	Earthquake	Seismically retrofit existing critical facilities to make them more resistant to damage from earthquakes.	Existing
7	Earthquake-Resistant Pipes Replacement	Earthquake, Landslide	Replace aging critical pipes in areas of extreme or violent shaking hazard and landslide hazard areas to improve seismic reliability and safeguard critical water distribution lines against the potential destructive impacts of large-scale earthquakes and accompanying landslides.	Existing
8	Storm Drainage Improvements	Flood	Continue to make capacity/structural improvements to storm drains, channels, and pump stations, as well as green infrastructure systems (such as marshes) to enable them to perform to their capacity in handling water flows.	Existing

Table 5-6: Recommended Mitigation Actions

No.	Project Name	Hazard Mitigated	Project Description	Type of Development
9	Bank and Shoreline Protection	Flood, Erosion	Develop mitigation initiatives such as: revetments, articulated matting, concrete, asphalt, vegetation, or other armoring or protective materials to provide small scale site-specific shoreline bank protection.	New and existing
10	Shoreline Protection on the Homer Spit	Flood, Erosion	Develop plan to implement mitigation recommendations cited in Coastal Erosion Assessment of Sterling Highway Termini on Homer Spit such as: large-scale gravel placement as beach re-nourishment and site-specific shoreline bank protection (revetments) along the Homer Spit.	New and existing
11	Groundwater Protection	Flood, Erosion	Develop mitigation initiatives to provide site-specific protection for near-surface groundwater.	New and existing
12	Property Buyout on the Homer Spit	Flood, Erosion	Buyout property in areas that are prone to flooding or at risk from erosion, particularly on the Homer Spit, as an alternative to “defend in place” mitigation actions.	Existing
13	Property Buyout of Wetlands	Flood, Erosion	Buyout property in areas that have high green infrastructure value, such as wetlands and riparian areas, to provide natural mitigation against flooding and erosion.	Existing
14	Flood Protection Ordinance/Overlay Zone	Flood	Adopt a comprehensive flood protection ordinance/overlay zone for areas that are in the SFHA or subject to flooding. Properties in this overlay are often subject to additional standards concerning development/land uses, building elevation, stream buffers, outdoor storage, building materials, and permitting procedures.	New and existing
15	Sterling Highway Drainage Improvements	Erosion, Flood, Landslide	Continue implementing elements of the Green Infrastructure Stormwater Management Plan for drainage improvements at Sterling Highway Milepost 172 and other erosion-prone areas such as Kachemak Drive, Main Street South and East End Road.	Existing
16	Hillside Protection	Landslide	Stabilize landslide-prone areas through stability improvement measures, including interceptor drains, in situ soil piles, drained earth buttresses, and subdrains.	New and existing
17	Landslide Zone	Landslide	Regulate development through zoning and permitting in landslide-prone areas.	New

Table 5-6: Recommended Mitigation Actions

No.	Project Name	Hazard Mitigated	Project Description	Type of Development
18	Tree Clearing	Severe weather	Develop and implement tree clearing programs for the city and residents to keep trees from threatening lives, property, and public infrastructure from severe weather events.	New and existing
19	Powerline Disconnects	Severe weather	Increase power line wire size and incorporate quick disconnects (breakaway devices) to reduce ice load and windstorm powerline failure during severe wind or winter ice storm events.	New and existing
20	Underground Powerlines	Severe weather	Continue to require new development to implement underground powerlines and relocate aboveground power lines to below ground where possible.	New and existing
21	StormReady Program	Severe weather	Complete certification for the StormReady program. The program encourages communities to take a proactive approach to improving local hazardous weather operations by providing emergency managers with clear-cut guidelines on how to improve their hazardous weather operations.	New and existing
22	TsunamiReady Program	Tsunami	Maintain certification for the TsunamiReady program. The main goal of the program is to improve public safety before, during, and after tsunami emergencies. It aims to do this by establishing guidelines for a standard level of capability to mitigate, prepare for and respond to tsunamis, and work with communities to help them meet the guidelines and ultimately become recognized as “TsunamiReady” by the National Weather Service.	New and existing
23	Public Works Campus Task Force Recommendations	Tsunami	Implement the recommendations provided by the Public Works Campus Task Force to mitigate impacts of tsunami damage, including developing a long-term plan to move the Public Works Campus.	Existing
24	Tsunami Vertical Evacuation Structure	Tsunami	Construct a tsunami vertical evacuation tower on the Homer Spit to provide temporary refuge above tsunami waves.	New
25	Tsunami Preparedness, Warning, and Evacuation System	Tsunami	Develop a tools and materials to educate the public about tsunami preparedness and methods to make evacuation procedures clear and efficient in the event of a tsunami.	New and existing

Table 5-6: Recommended Mitigation Actions

No.	Project Name	Hazard Mitigated	Project Description	Type of Development
26	Tsunami Warning System	Tsunami	Conduct assessment of tsunami warning system and implement recommendations to add technological performance and redundancy to the siren system.	New and existing
27	Air Filtration Identification	Volcano	Identify vulnerabilities in critical facilities—particularly air filtration and water systems—to deal with ashfall events.	Existing
28	Air Quality Clean Building	Volcano, Wildfire	Identify a building or room to be a designated “clean building” or “clean room” for use during periods of poor air quality created from wildfires, volcanic ash, or other poor air quality event. Acquire air filters and masks for distribution.	Existing
29	Property Buyout near Bridge Creek Reservoir	Wildfire	Buyout property in areas that are prone wildfire, particularly on the near the Bridge Creek Reservoir to protect the drinking watershed.	Existing
30	Wildland-Urban Interface Ordinance/Overlay Zone	Wildfire	Adopt a Wildland-Urban Interface ordinance/overlay zone. Properties in this overlay area are often subject to additional standards concerning structure density and location, building materials and construction, vegetation management, emergency vehicle access, water supply, and fire protection.	New and existing
31	Critical Facility Fireproofing	Wildfire	Consider ways to protect radio sites from wildfire, including rebuilding using fire-resistant materials.	Existing
32	Wildfire Risk Coordination	Wildfire	Continue coordinating with and providing support to the Kenai Peninsula Borough and the Alaska Department of Natural Resources during their wildfire assessments and plan implementations.	New and existing
33	Homer Volunteer Fire Department Fleet Replacement	Wildfire	Improve the Homer Volunteer Fire Department Wildland-Urban-Interface response capabilities by replacing out-of-compliance and substandard Brush-1 initial fire attack vehicle.	New
34	Water Supply	Wildfire	Water sources for both residential protections and firefighting capacity should be developed. This includes increased pumping capability at treatment plant, and two additional 10,000-gallon tanks buried along Skyline Drive.	New and existing
34	Water Lines and Hydrants	Wildfire	Provide additional water lines and fire hydrants to the residential neighborhoods along Skyline Drive.	New and existing

5.5 PRIORITIZED ACTION PLAN

A prioritized action plan is an itemized list of recommended mitigation actions that a community/agency hopes to put into practice to reduce its risks and vulnerabilities.

For the 2022 LHMP, the planning team created a two-tier prioritization process based on the following:

- High priority mitigation actions are those that address hazards of immediate concern and are also cost-effective (positive cost-benefit ratio) and may have an identified funding source.
- Medium priority mitigation actions are those that address hazards that are not of immediate concern and/or those that are of immediate concern but are not cost effective or do not have an identified funding source.

The City of Homer determined the hazards and threats of immediate concern based on the 2022 LHMP's hazard profiles, risk assessment, and capability assessment as follows: climate change, earthquake, erosion, flood, landslide, severe weather, tsunami, and wildfire.

The results of the prioritization process are provided in Table 5-7. For each mitigation action listed, potential funding sources, responsible departments or agencies, and implementation timelines have been identified.

Table 5-7: Prioritized Action Plan

No.	Project Name	Priority	Potential Funding Source	Responsibility	Timing
1	Critical Facility Auxiliary Power (Phase I)	High	FEMA BRIC/HMGP	City of Homer Public Works Department	0 to 5 years
2	Generators (Phase II)	High	FEMA BRIC/HMGP	City of Homer Public Works Department	0 to 5 years
3	Emergency Radio Communication System Upgrade	High	City of Homer	City of Homer Public Works Department	0 to 5 years
7	Earthquake-resistant pipes replacement	High	FEMA BRIC/HMGP	City of Homer Public Works Department	0 to 5 years
8	Storm Drainage Improvements	High	FEMA BRIC/HMGP	City of Homer Public Works Department	0 to 5 years
10	Shoreline Protection on the Homer Spit	High	FEMA BRIC/HMGP	City of Homer Planning Department	0 to 5 years
11	Groundwater Protection	High	City of Homer	City of Homer Planning Department	0 to 5 years
12	Property Buyout on the Homer Spit	Medium	HUD Community Block Grant Program	City of Homer City Manager's Office	0 to 5 years
15	Sterling Highway Drainage Improvements	High	FEMA BRIC/HMGP	City of Homer Public Works Department	0 to 5 years
16	Hillside Protection	High	FEMA BRIC/HMGP	City of Homer Planning Department	0 to 5 years
17	Landslide Zone	High	City of Homer	City of Homer Planning Department	0 to 5 years
18	Tree Clearing	Medium	City of Homer, FEMA BRIC/HMGP	City of Homer City Management's Office	0 to 5 years
20	Underground Power Lines	High	City of Homer	City of Homer Public Works Department	0 to 5 years
21	StormReady Program	Medium	City of Homer	City of Homer Planning Department	0 to 5 years
22	TsunamiReady Program	High	City of Homer	City of Homer Planning Department	0 to 5 years

Table 5-7: Prioritized Action Plan

No.	Project Name	Priority	Potential Funding Source	Responsibility	Timing
23	Public Works Campus Task Force Recommendations	High	City of Homer, FEMA BRIC/HMGP	City of Homer City Manager's Office	0 to 5 years
24	Tsunami Vertical Evacuation Structure	Medium	City of Homer, FEMA BRIC	City of Homer City Manager's Office	2 to 5 years
25	Tsunami Preparedness, Warning, and Evacuation System	High	City of Homer	City of Homer City Manager's Office	0 to 5 years
26	Tsunami Warning System	High	Kenai Peninsula Borough/Division of Homeland Security	Kenai Peninsula Borough in coordination with City of Homer	0 to 5 years
28	Property Buyout near Bridge Creek Reservoir	High	City of Homer, HUD Community Block Grant Program	City of Homer City Manager's Office	0 to 5 years
30	Wildland-Urban Interface Ordinance/Overlay Zone	High	City of Homer	City of Homer Planning Department	0 to 5 years
31	Critical Facility Fireproofing	High	FEMA BRIC/HMGP	City of Homer Public Works Department	0 to 5 years
33	Homer Volunteer Fire Department Fleet Replacement	High	City of Homer, Assistance to Firefighters Grants Program	City of Homer Volunteer Fire Department	0 to 5 years

5.6 PLAN INTEGRATION

Information about how the 2022 LHMP will be integrated into Homer’s relevant plans and programs moving forward is provided in Table 5-8.

Table 5-8: Integration of the 2022 LHMP

LHMP Section	Existing Plan/Policy/Program	Process/Timeframe
Section 3—Hazard Identification	Homer Comprehensive Plan	Update of the Homer Comprehensive Plan to address hazards in the LHMP that are not currently included in it. Consider creating a hazard profiles section in the Comprehensive Plan. The land use planning process can help identify investments in nature-based solutions to natural hazards, including preserving parks and greenways.
Section 3—Hazard Identification	2005 Homer Area Transportation Plan	Update the Homer Area Transportation Plan to address hazards in the LHMP that are not currently included in it. Include planning for the management of floodplains and erosion.
Section 4—Risk Assessment	City of Homer Emergency Operations Plan	Incorporate risk assessment findings into the City of Homer Emergency Operations Plan to help identify and ensure critical resources to maintain operations internally and externally.
Section 5—Mitigation Strategy	City of Homer Capital Improvement Plan 2019-2024	Incorporate the mitigation actions provided in Table 5-7 into the City of Homer Capital Improvement Plan by further studying and evaluating the underlying problems or if studies exist that outline potential solutions. Begin the design stage to develop a plan for each identified project, the actions to be taken, engineering and construction required, schedule, and estimated costs.

6.0 PLAN REVIEW, EVALUATION, AND IMPLEMENTATION

This section addresses Element D of the Local Mitigation Plan Regulation Checklist.

Regulation Checklist – 44 CFR 201.6 Local Mitigation Plans
Element D: Plan Review, Evaluation and Implementation
D1. Was the plan revised to reflect changes in development? (Requirement § 201.6(d)(3))
D2. Was the plan revised to reflect progress in local mitigation efforts? (Requirement § 201.6(d)(3))
D3. Was the plan revised to reflect changes in priorities? (Requirement § 201.6(d)(3))

6.1 CHANGES IN DEVELOPMENT

The 2022 LHMP was updated to reflect the following changes that affect development:

- Five additional critical facilities were added from the previous 2010 LHMP. Two are large docks on the Homer Spit. The ADOT&PF facility and two electrical substations were added. Linear features, such as roads, sewer lines, and telephone lines were excluded from this plan. In addition, the Port and Harbor office has been relocated since the 2010 LHMP.
- New residential development has occurred at a steady rate since the 2010 LHMP. New residential neighborhoods along West Hill Road and East Hill Road could be in areas of higher risk for landslides or wildfires, and as a result increase the plan areas vulnerability to those hazards. The City of Homer has actively curtailed development around the reservoir where there is substantial risk of wildfire.

6.2 PROGRESS IN LOCAL MITIGATION EFFORTS

The City of Homer reviewed its 2010 LHMP's mitigation strategy and documented progress made toward each local mitigation effort, provided in Table 6-1. Mitigation actions that had not been implemented were considered for the 2022 LHMP (Table 5-6).

Table 6-1: Progress in Local Mitigation Efforts

Action #	Action	Status
A.1.1.1	Distribute, display, and educate about hazards, flood insurance, and the benefits of various protective measures in public outreach programs. Outreach maybe information in a newsletter, on utility bills, in newspapers, public workshops, kiosk at the fire/police hall, and the library.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
A.1.1.2	Provide the public library with documents about hazards, flood insurance, and the benefits of various protective measures.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
A.1.1.3	Provide information about hazards on the City's website and include links to relevant pages that have local conditions, protective measures, permit requirements and maps.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.

Table 6-1: Progress in Local Mitigation Efforts

Action #	Action	Status
B.1.1.1	Continue to participate in the National Weather Service/West Coast and Alaska Tsunami Warning Center TsunamiReady Program.	Ongoing, mitigation action included in the 2022 LHMP.
B.1.1.2	Maintain regular tsunami warning siren drills so that citizens can learn to recognize and expect.	Ongoing, mitigation action modified and included in the 2022 LHMP.
B.2.1.1	Continue to monitor the tsunami evacuation signs on the Homer Spit to Kachemak Drive, East to the junction with East End Road. This route directs people away from the Beluga Slough crossing, which is in the projected tsunami inundation zone.	Ongoing, mitigation action modified and included in the 2022 LHMP.
B.3.1.1	Reduce susceptibility to damage and disruption by incorporating the Tsunami Hazard and FIRMs into the City's planning and zoning process.	Ongoing, mitigation action modified and included in the 2022 LHMP.
B.3.1.2	New development in tsunami hazard areas to meet the same standards required in the coastal high hazard areas.	Ongoing, mitigation action modified and included in the 2022 LHMP.
B.3.1.2	Require the anchoring of fuel tanks, manufactured home, accessory structures, and recreational vehicles to be anchored to resist flotation, collapse, and lateral movement due to the effects of wind and water loads.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas..
C.1.1.1	Encourage homeowners and property owners to remove dead or diseased trees to create "defensible space."	Ongoing, mitigation action modified and included in the 2022 LHMP.
C.1.1.2	Encourage home and business owners to complete a Fire Wise assessment of their home and/or business.	Ongoing, mitigation action modified and included in the 2022 LHMP.
C.1.1.3	Educate homeowners on wildfire resistive construction techniques and strategies to limit their exposure to wildfire.	Ongoing, mitigation action modified and included in the 2022 LHMP.
C.1.1.4	Provide interested residents with Fire Wise informational packets and brochures.	Ongoing, mitigation action modified and included in the 2022 LHMP.
C.2.1.1	Issue burn permits to Homer residents who wish to dispose of organic materials. Direct nonresidents to the Division of Forestry Website to obtain an open burning permit during the statutory fire season.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
C.3.1.1	Encourage use of composting, chipping, or grinding as an alternative to burning of woody debris.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
C.4.1.1	Maintain open lines of communication between the Division of Forestry, National Weather Service, and the Homer Volunteer Fire Department to determine when fire conditions warrant suspension of burn permits or open burning in general.	Ongoing, mitigation action modified and included in the 2022 LHMP.

Table 6-1: Progress in Local Mitigation Efforts

Action #	Action	Status
C.4.1.2	When conditions warrant suspension of burn permits or open burning in Homer, disseminate that information in the form of press-releases to the local radio and print media.	Ongoing, mitigation action modified and included in the 2022 LHMP.
C.4.1.3	When open burning is prohibited or burn permits are suspended, ensure that the Homer Police Department Dispatch center is notified so that they can advise people who call in to activate their individual permit that a temporary suspension has been placed on open burning.	Ongoing, mitigation action modified and included in the 2022 LHMP.
C.4.1.4	Complete a daily assessment of fire danger during closures or suspensions by 10:00 a.m. each day to determine the need to continue the closure or resend the closure.	Ongoing, mitigation action modified and included in the 2022 LHMP.
C.5.1.1	Develop list of known shelters (from Emergency Plan), safe zones, and critical infrastructure.	Ongoing, mitigation action modified and included in the 2022 LHMP.
C.5.1.2	Review wildfire fuel load and develop mapping of area in need of fuels management activities.	Ongoing, mitigation action modified and included in the 2022 LHMP.
C.5.1.3	Develop and implement fuel reduction plan.	Ongoing, mitigation action modified and included in the 2022 LHMP.
C.5.2.1	Attend local planning meetings when conducted.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
C.5.2.2	Review drafts of the Community Wildfire Protection Plan when available and provide feedback to the Alaska Division of Forestry as appropriate.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
D.1.1.1	Identify buildings and facilities that must be able to remain operable during and following a hazard event.	Ongoing, mitigation action included in the 2022 LHMP.
D.1.1.2	Contract a structural engineering firm to assess the identified buildings and facilities to determine their structural integrity and strategy to improve their earthquake resistance.	Ongoing, mitigation action modified and included in the 2022 LHMP.
D.1.2.1	Identify priorities and budget to retrofit existing infrastructure to existing earthquake resistive construction standards.	Ongoing, mitigation action included in the 2022 LHMP.
D.1.2.2	Develop a Request for Proposals to submit for design and construction of the retrofitting requirements.	Ongoing, mitigation action included in the 2022 LHMP.
D.2.1.1	Reference the International Residential Code (current edition) for seismic and wind load requirements.	Ongoing, mitigation action modified and included in the 2022 LHMP.
D.3.1.1	Compile list of available nonstructural mitigation resources available to the public.	Ongoing, mitigation action included in the 2022 LHMP.
E.1.1.1	Annually review the requirements of the NFIP to conform to enrollment objectives and criteria.	Ongoing, mitigation action included in the 2022 LHMP.

Table 6-1: Progress in Local Mitigation Efforts

Action #	Action	Status
E.2.1.1	Encourage FEMA to restudy and remap the city with an emphasis on the Homer Spit, Beluga Slough, and Beluga Lake.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
E.2.2.1	Acquire funds to develop a watershed and drainage management plan that identifies important natural water storage, low features critical to flood function, and predicts future flood hazards.	Ongoing, mitigation action modified and included in the 2022 LHMP.
E.3.2.1	Develop overlay map of existing infrastructure (drainages, culvert size, storm drains).	Ongoing, mitigation action modified and included in the 2022 LHMP.
E.3.2.2	Identify high risk city structures.	Ongoing, mitigation action modified and included in the 2022 LHMP.
E.3.2.3	Establish an annual inspection of all stormwater management (public and private) and order maintenance as needed.	Ongoing, mitigation action modified and included in the 2022 LHMP.
E.3.2.4	Require maintenance logs on private and public stormwater plans.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
E.4.1.1	Require developers/landowners to provide documentation of compliance with existing Flood Damage Prevention requirements if the project is in a flood hazard area as defined by City Code.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
E.4.2.1	Acquire land in high hazard area to restore or retain flood functions.	Ongoing, mitigation action included in the 2022 LHMP.
E.4.2.2	Identify less hazard prone areas for development. Suitability study and map 2008.	Ongoing, mitigation action modified and included in the 2022 LHMP.
E.4.2.3	Create and maintain buffers and building setbacks from wetlands, creeks, shorelines and drainages.	Ongoing, mitigation action modified and included in the 2022 LHMP.
E.4.2.4	In the flood hazard areas and along the bluff, consider “relocatable structures” on skids or pilings versus permanent foundation structures.	Ongoing, mitigation action modified and included in the 2022 LHMP.
E.4.2.5.	Require the anchoring of fuel tanks, manufactured homes, and accessory structures to resist flotation, collapse, and lateral movement due to the effects of wind and water loads.	Ongoing, mitigation action modified and included in the 2022 LHMP.
E.4.2.6	Preserve open space and/or relocate structures out of high-risk areas.	Ongoing, mitigation action modified and included in the 2022 LHMP.
E.4.2.7	Provide a means to regulate clearing, filling, grading, dredging, and other development that may impact flood, drainage, and erosion damage.	Ongoing, mitigation action modified and included in the 2022 LHMP.
E.4.2.8	Minimize adverse impacts of alterations of ground and surface waters and natural flow patterns.	Ongoing, mitigation action modified and included in the 2022 LHMP.

Table 6-1: Progress in Local Mitigation Efforts

Action #	Action	Status
E.4.2.9	Maintain requirements for stormwater control and mitigation through the enforcement of HCC 21.74 Development Activity Plan and HCC 21.75 Stormwater Plan.	Ongoing, mitigation action modified and included in the 2022 LHMP.
E.4.2.10	Integrate hazard identification, ecosystem protection, protection of community infrastructure and shoreline management into zoning and subdivision ordinances.	Ongoing, mitigation action modified and included in the 2022 LHMP.
F.1.1.1	Do not operate nonessential equipment.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
F.1.1.2	Protect office equipment such as copiers, fax machines, and personal computers.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
F.1.1.3	Allow employees to get home before ashfall occurs.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
F.1.1.4	Limit outdoor activity.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
F.1.1.5	Close doors, windows, and vents.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
F.1.1.6	Do not run exhaust-circulating fans.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
F.1.1.7	Check and change (when needed) oil, oil filter, and air filters.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
F.1.1.8	Wear respirator and eye protection during ash cleanup.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
F.1.1.9	Establish a communication system to alert employees.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.

Table 6-1: Progress in Local Mitigation Efforts

Action #	Action	Status
F.1.1.10	Establish an email alert or a call-in voice recording.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
G.1.1.1	Install security systems where hazard materials are stored and/or transferred.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
G.1.2.1	Install security measure at the city water treatment plant.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
G.1.2.2	Secure all remote pump facilities.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
G.1.3.1	Create redundant/backup capability for landline telephone system.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
G.1.3.2	Develop off-site backup information technology system.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
G.1.3.3	Prepare for utility disruption.	Ongoing, mitigation action modified and included in the 2022 LHMP.
G.1.3.4	Secure vital records and other important document.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
G.1.4.1	Encourage local businesses to have adequate cash on hand for emergencies.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
G.1.4.2	Encourage local businesses to establish a regular off-site computer back-up system.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
G.1.4.3	Encourage local businesses to participate in the State's Continuity of Business program through the Department of Homeland Security and Emergency Management.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.

Table 6-1: Progress in Local Mitigation Efforts

Action #	Action	Status
H.1.1.1:	Safely store biological, chemical, and hazardous materials.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
H.1.1.2:	Continue to require Fire Marshal certification for all commercial buildings.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
H.1.1.3:	Monitor, in cooperation with the Department of Health, Public Health Center, spikes in illnesses that may indicate the spread of a natural or human-made pathogen among the population.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
H.1.1.3:	Continue participation and leadership in the Community Based Emergency Planning Committee established by Public Health.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.

Notes:

Regarding Action Numbers, A=public education actions; B=tsunami actions; C=wildfire actions; D=earthquake actions; E=flood actions; F=ash actions; G=technological hazard actions; H= biological, chemical and hazardous materials actions.

In addition, supporting local plans, studies, and programs were reviewed to determine progress in local mitigation efforts. Relevant ongoing actions are provided in Table 5-6.

6.3 CHANGES IN PRIORITIES

The 2010 LHMP's mitigation strategy was prioritized using the STAPLEE (social, technical, administrative, political, legal, environmental, and economic), which FEMA recommended (FEMA 386-9) as a prioritization method in the early to mid-2000s. While the STAPLEE has been replaced in the 2022 LHMP by a more streamlined prioritization process, the priorities (listed below) have not changed:

- To build a culture and practice of disaster resilience by addressing hazards of immediate concern, a mitigation project must have social support.
- To be implemented in a timely manner, a mitigation project must be economically feasible and have an identified funding source.

7.0 PLAN ADOPTION

This section addresses Element E of the Local Mitigation Plan Regulation Checklist.

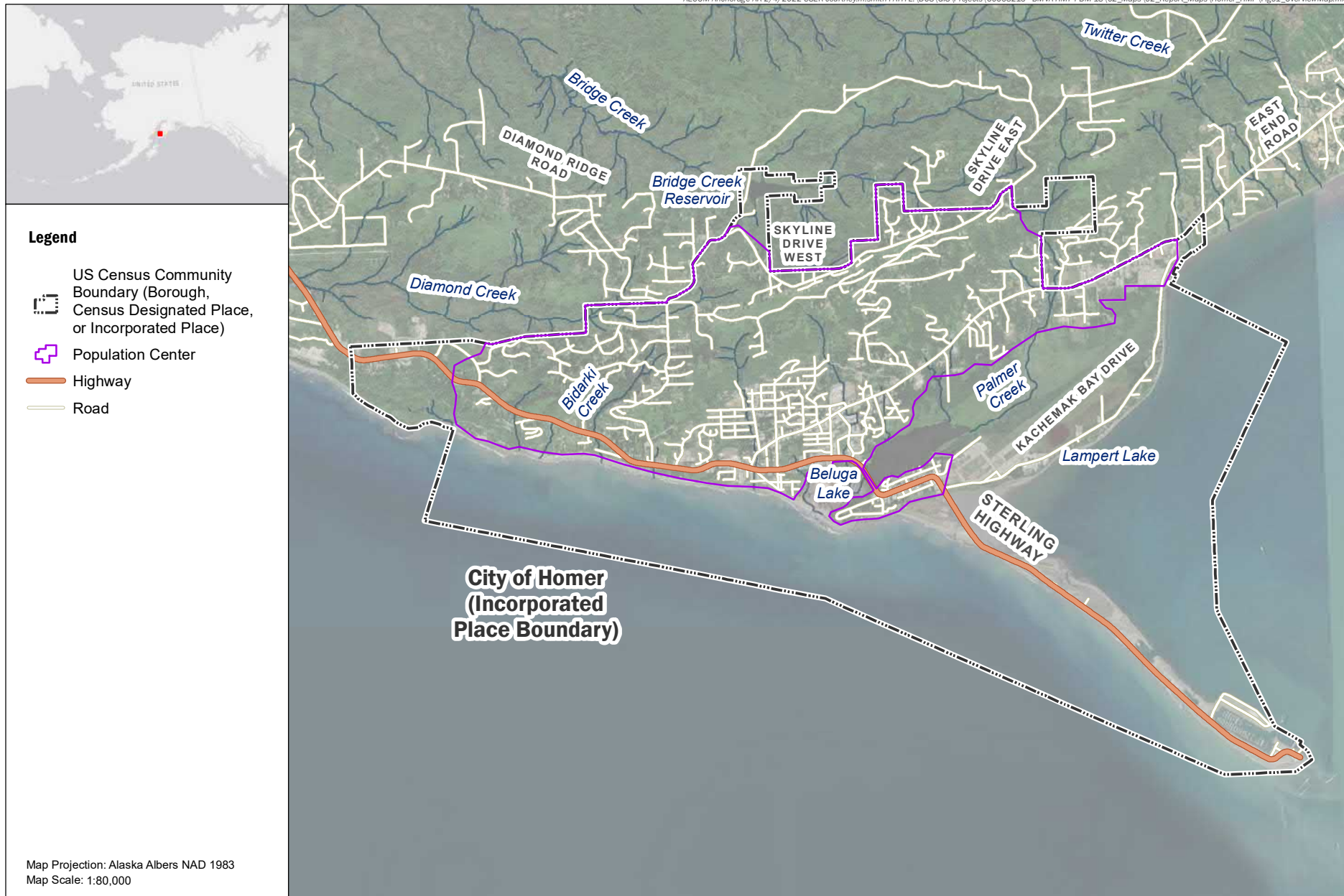
Regulation Checklist – 44 CFR 201.6 Local Mitigation Plans
Element E: Plan Adoption
E1. Does the Plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval? (Requirement §201.6(c)(5))
E2. For multi-jurisdictional plans, has each jurisdiction requesting approval of the plan documented formal plan adoption? (Requirement §201.6(c)(5))

7.1 FORMAL ADOPTION





The 2022 LHMP was formally adopted on [date] by the Homer City Council. A copy of the adoption resolution is on file with the community and the Alaska Division of Homeland Security and Emergency Management.

8.0 APPENDICES

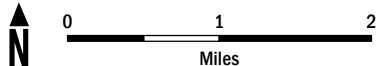
APPENDIX A—FIGURES



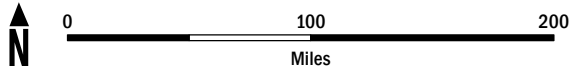
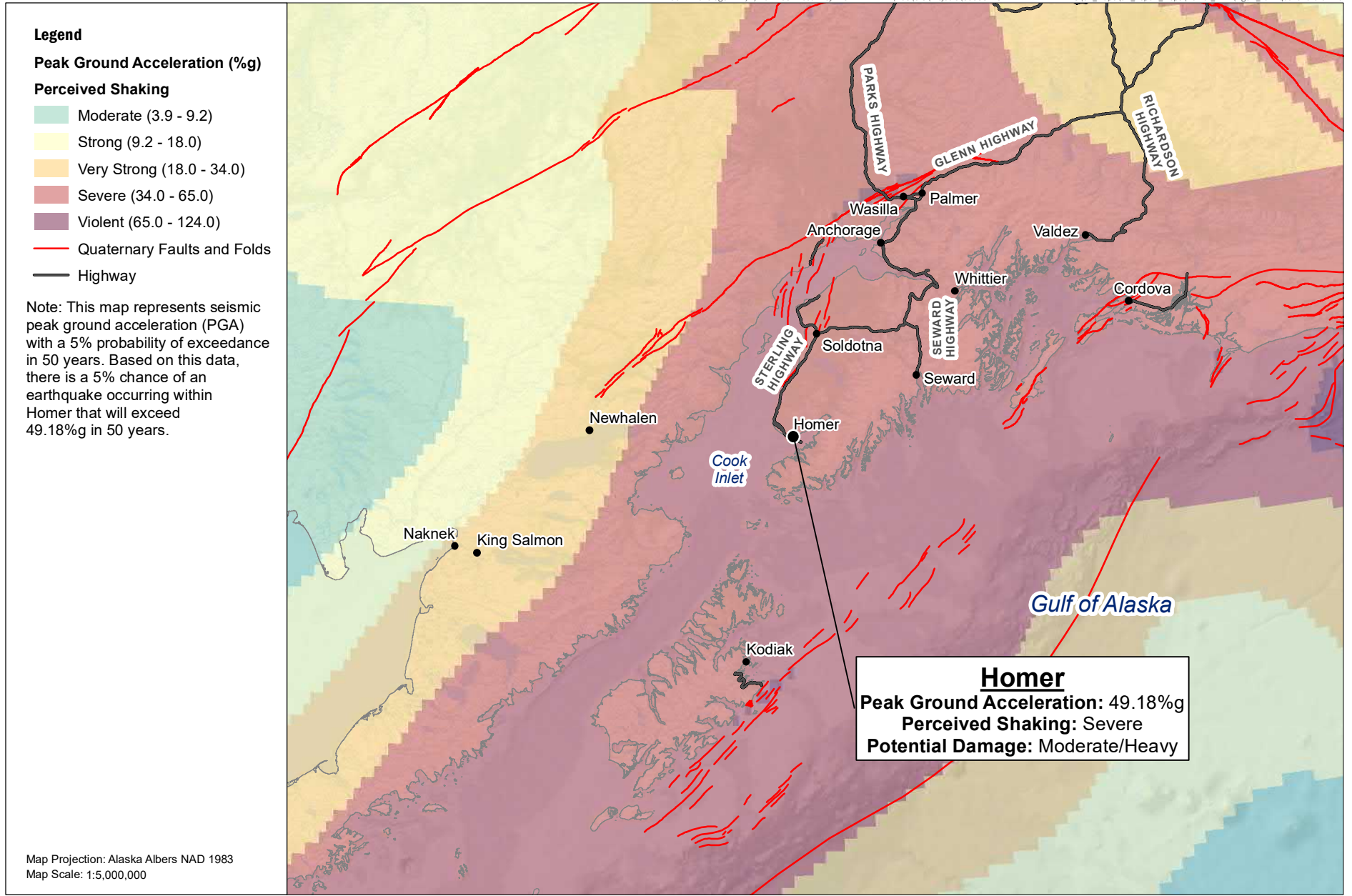
Legend

-  US Census Community Boundary (Borough, Census Designated Place, or Incorporated Place)
-  Population Center
-  Highway
-  Road

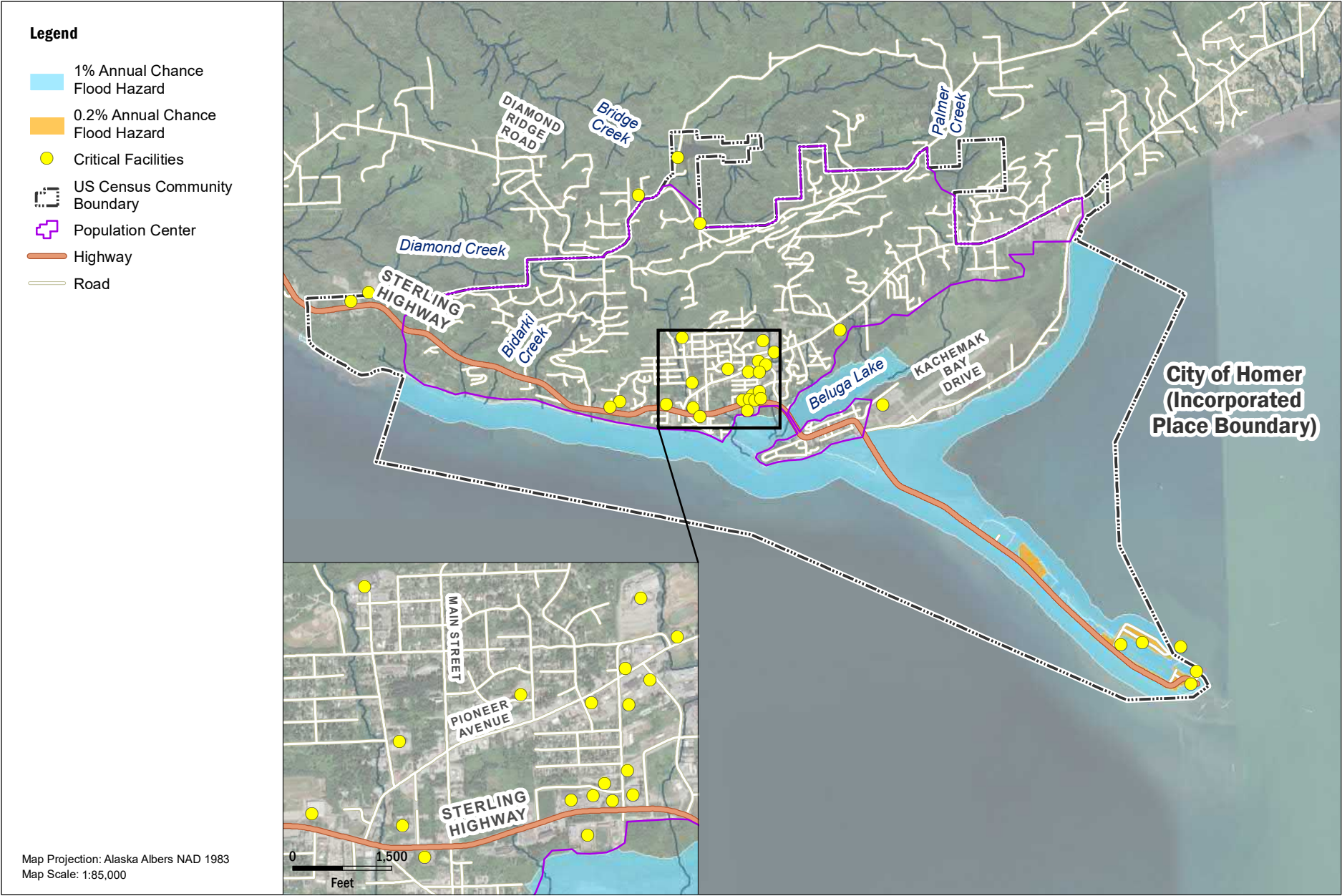
Map Projection: Alaska Albers NAD 1983
 Map Scale: 1:80,000



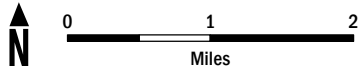
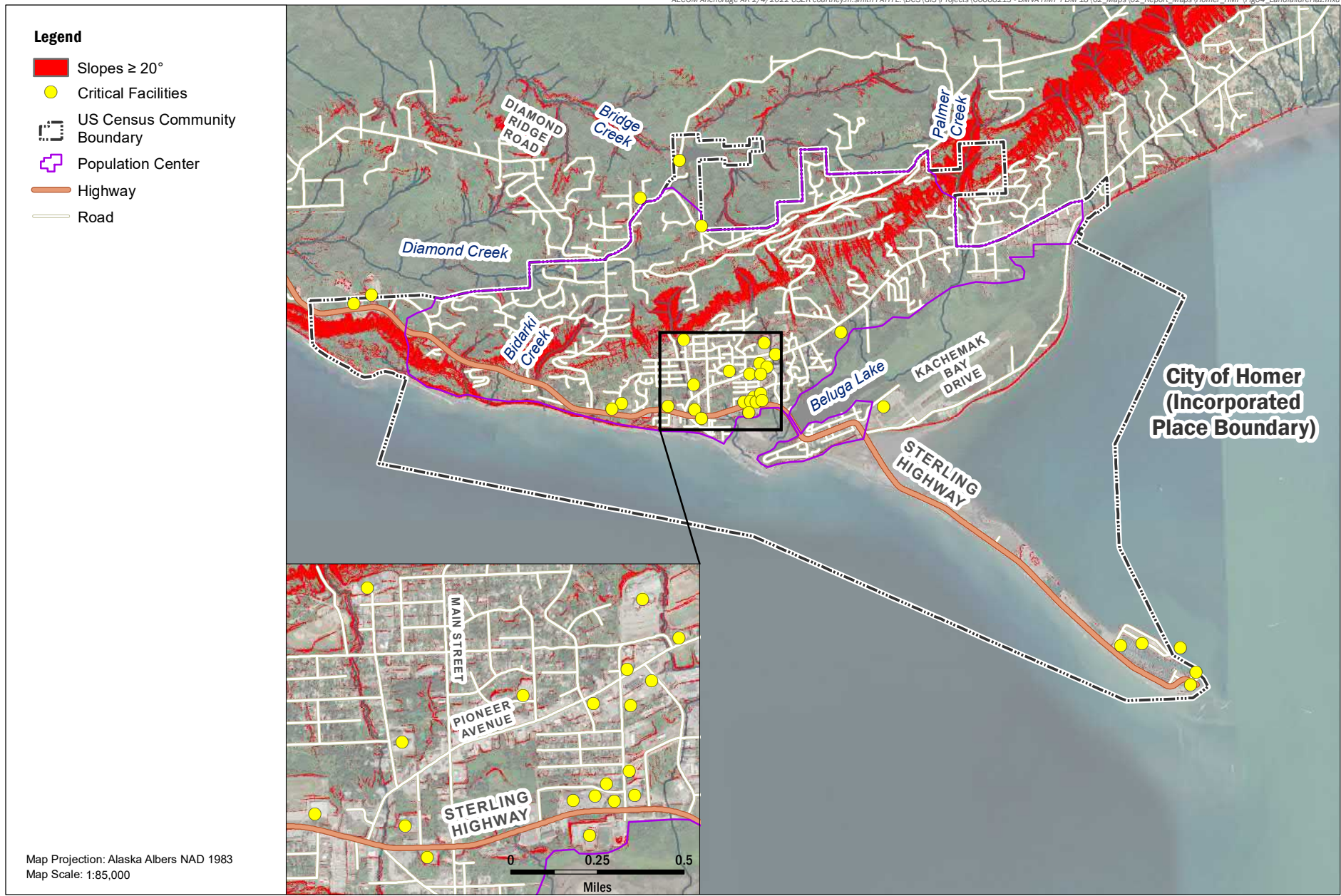
US Census TigerLine (2021)
 Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



DGGS (2013); USGS (2007); US Census TigerLine (2021)
Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
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FEMA (2021); US Census TigerLine (2021)
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar
Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN,
and the GIS User Community



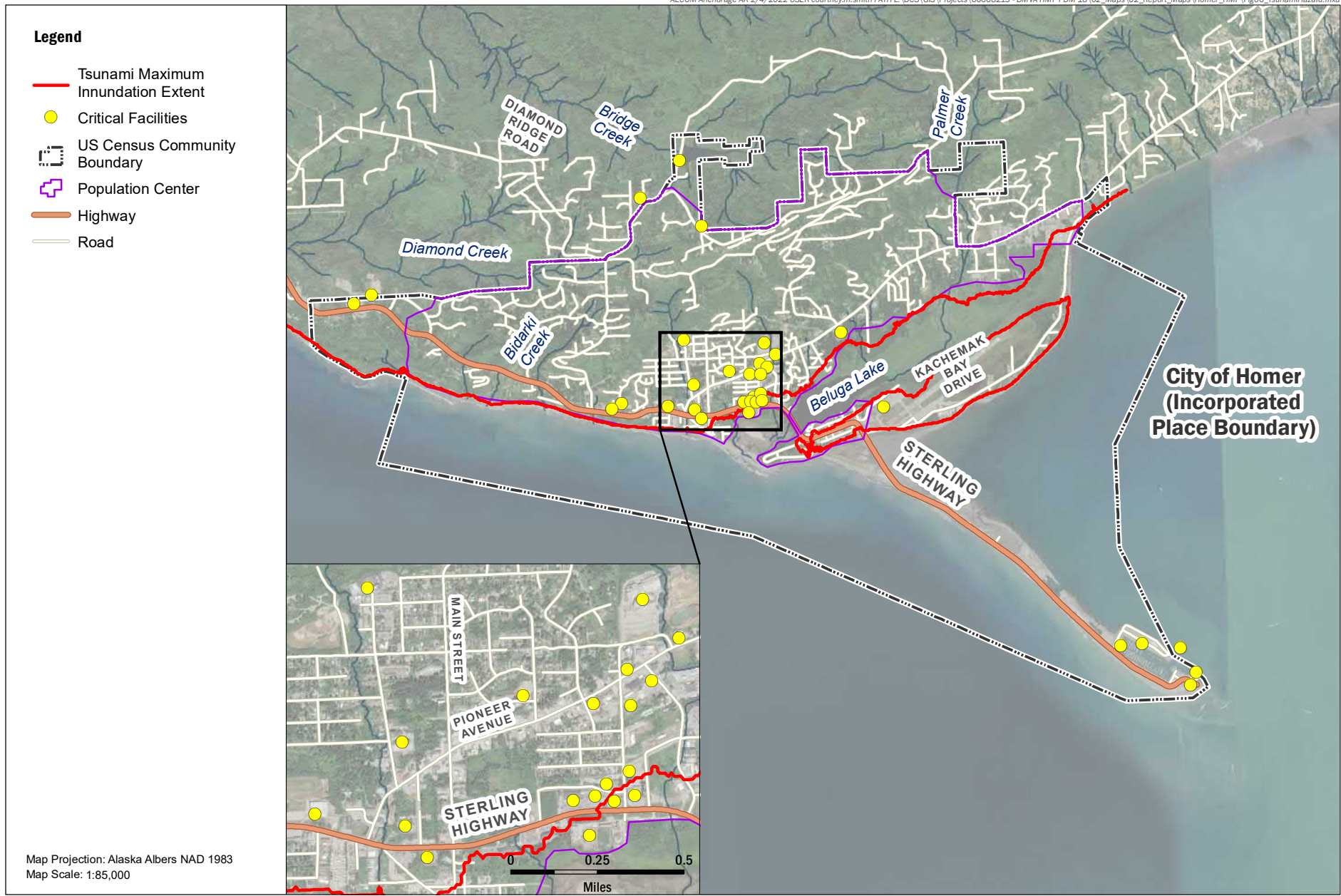
US Census TigerLine (2021)
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar
Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN,
and the GIS User Community

LAND FAILURE HAZARD AREAS

Figure 4



Deep-seated landslide susceptibility near the Bluff Point Landslide. Note that the landslide body (southwest of the yellow headscarp line) is also a landslide deposit and is highly susceptible to repeated failure.



DGGS (2019); US Census TigerLine (2021)
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar
Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN,
and the GIS User Community



This map has been compiled using the best information available and is believed to be accurate. However, its preparation required many assumptions. Actual conditions during a tsunami may vary from those assumed so the accuracy cannot be guaranteed. Areas inundated will depend on direction of the earthquake, any earthquake-induced landslides, on-land construction, tide level, local ground subsidence, and may differ from the areas shown on the map. Information on this map is intended to permit state and local agencies to plan emergency evacuation and tsunami response actions. The map is not appropriate for site-specific use or for land-use regulation. Interpretation of the tsunami inundation map(s) by qualified experts is strongly recommended.

The State of Alaska makes no expressed or implied warranties (including warranties for merchantability and fitness with respect to the character, condition, or capabilities of the electronic data or products) or their appropriateness for any user's purposes. In no event will the State of Alaska be liable for any incidental, indirect, special, consequential, or other damages suffered by the user or any other person or entity whether from the use of the electronic services or products or any failure thereof or otherwise. In no event will the State of Alaska's liability to the Applicant or anyone else exceed the fee paid for the electronic service or product.

Publications produced by the Division of Geological & Geophysical Surveys (DGGGS) are available for download from the DGGGS website (<http://dgggs.alaska.gov>). Publications on paper or digital media can be purchased or purchased in the Fairbanks office.

STATE OF ALASKA
 DEPARTMENT OF NATURAL RESOURCES
 DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS
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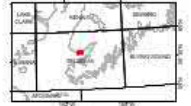
Alaska Earthquake Center
 Geophysical Institute
 University of Alaska-Fairbanks
 PO Box 757025, Fairbanks, Alaska 99775-7025
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 website: <http://www.alaska.edu/alaskaquakecenter>

MAXIMUM ESTIMATED TSUNAMI INUNDATION, DOWNTOWN HOMER, ALASKA

E.N. Suleimani¹, D.J. Nicolisky², and J.B. Salisbury³

2018

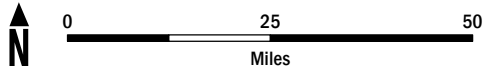
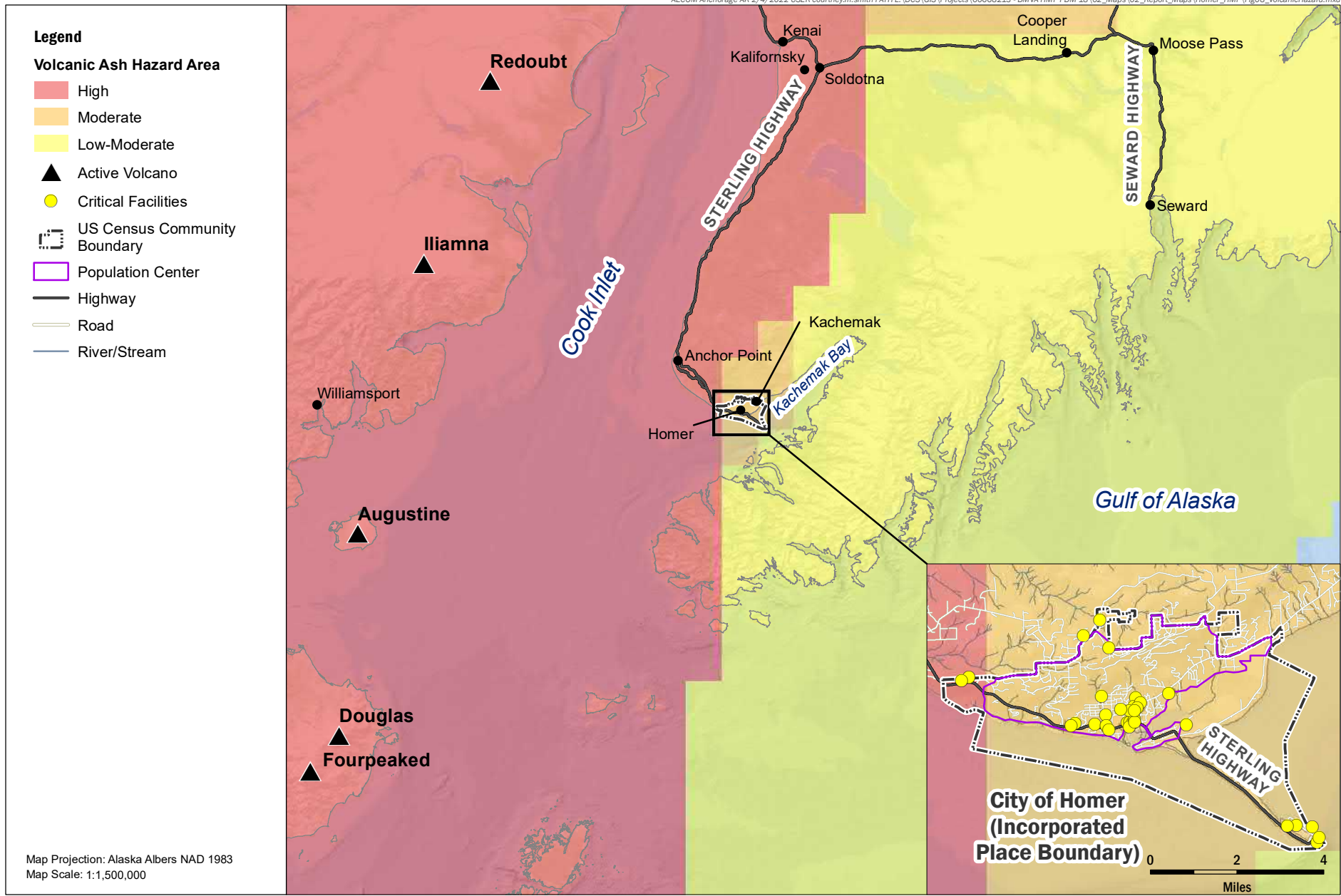
SCALE 1:12500



Affiliations:
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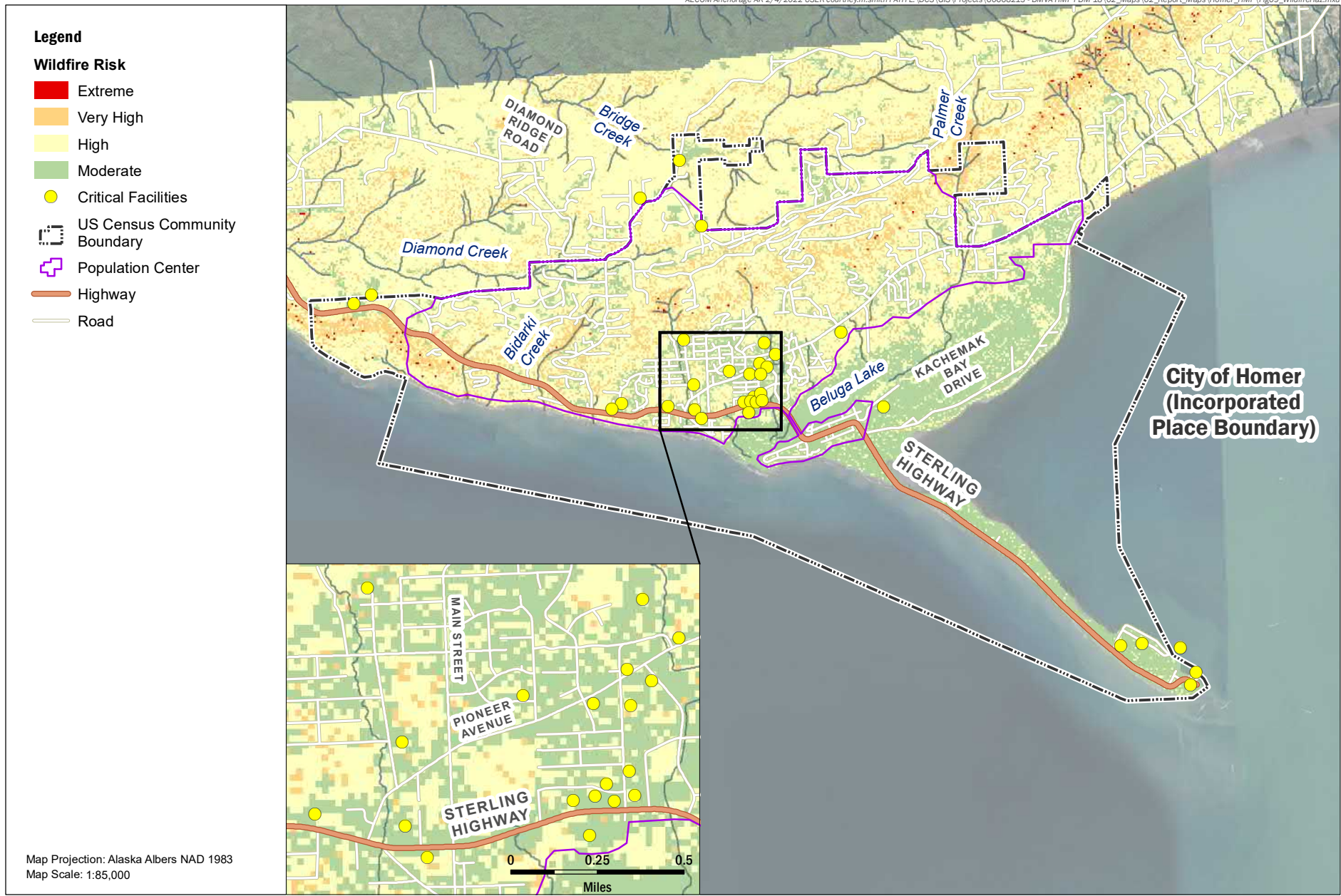
Base map from: Coastwatch Bear Data Layer
Projection: Alaska State Plane Zone 4 (feet)
Datum: North American Datum of 1983
Cartography by: L. Gardner (2018)
Peer review by: P. Goffinger (2018)
Peer review by: D. Stevens (2018)



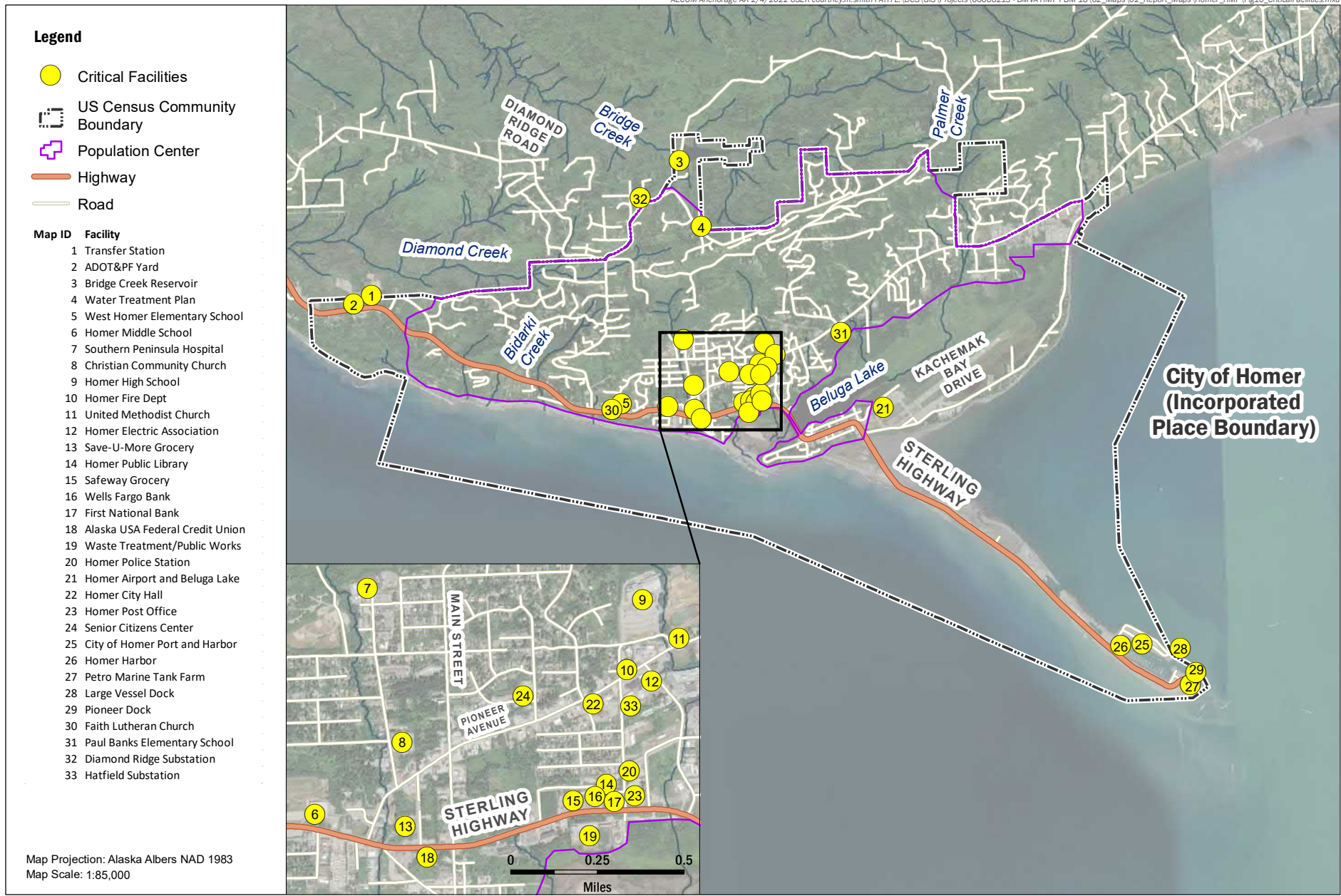
American Geological Institute (2003); State of Alaska (2018); US Census TigerLine (2021)
Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
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VOLCANIC ASH HAZARD AREAS

Figure 8



US Census TigerLine (2021)
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar
Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN,
and the GIS User Community



Legend

- Critical Facilities
- US Census Community Boundary
- Population Center
- Highway
- Road

Map ID	Facility
1	Transfer Station
2	ADOT&PF Yard
3	Bridge Creek Reservoir
4	Water Treatment Plan
5	West Homer Elementary School
6	Homer Middle School
7	Southern Peninsula Hospital
8	Christian Community Church
9	Homer High School
10	Homer Fire Dept
11	United Methodist Church
12	Homer Electric Association
13	Save-U-More Grocery
14	Homer Public Library
15	Safeway Grocery
16	Wells Fargo Bank
17	First National Bank
18	Alaska USA Federal Credit Union
19	Waste Treatment/Public Works
20	Homer Police Station
21	Homer Airport and Beluga Lake
22	Homer City Hall
23	Homer Post Office
24	Senior Citizens Center
25	City of Homer Port and Harbor
26	Homer Harbor
27	Petro Marine Tank Farm
28	Large Vessel Dock
29	Pioneer Dock
30	Faith Lutheran Church
31	Paul Banks Elementary School
32	Diamond Ridge Substation
33	Hatfield Substation

Map Projection: Alaska Albers NAD 1983
Map Scale: 1:85,000

**City of Homer
(Incorporated
Place Boundary)**

US Census TigerLine (2021)

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar
Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN,
and the GIS User Community

APPENDIX B—FEMA DOCUMENTATION

LOCAL MITIGATION PLAN REVIEW TOOL

The *Local Mitigation Plan Review Tool* demonstrates how the Local Mitigation Plan meets the regulation in 44 CFR §201.6 and offers States and FEMA Mitigation Planners an opportunity to provide feedback to the community.

- The Regulation Checklist provides a summary of FEMA’s evaluation of whether the Plan has addressed all requirements.
- The Plan Assessment identifies the plan’s strengths as well as documents areas for future improvement.
- The Multi-jurisdiction Summary Sheet is an optional worksheet that can be used to document how each jurisdiction met the requirements of the each Element of the Plan (Planning Process; Hazard Identification and Risk Assessment; Mitigation Strategy; Plan Review, Evaluation, and Implementation; and Plan Adoption).

The FEMA Mitigation Planner must reference this *Local Mitigation Plan Review Guide* when completing the *Local Mitigation Plan Review Tool*.

Jurisdiction: City of Homer	Title of Plan: 2022 City of Homer Local Hazard Mitigation Plan	Date of Plan: April, 2022
Local Point of Contact: Rick Abboud	Address:	
Title: City Planner		
Agency:		
Phone Number: 907-235-3106	E-Mail: RAbboud@ci.homer.ak.us	

State Reviewer: Erin M. Leaders	Title: EMS II/Planner	Date: 3/23/2022
--	------------------------------	------------------------

FEMA Reviewer	Josh Vidmar, John McCandless
Title	CERC Planner, Hazard Mitigation Planner
Date:	5/6/2023
Date Received in FEMA Region 10	4/20/2022
Plan Not Approved	5/10/2022
Plan Approvable Pending Adoption	5/18/2022
Plan Approved	

**SECTION 1:
REGULATION CHECKLIST**

INSTRUCTIONS: The Regulation Checklist must be completed by FEMA. The purpose of the Checklist is to identify the location of relevant or applicable content in the Plan by Element/sub-element and to determine if each requirement has been ‘Met’ or ‘Not Met.’ The ‘Required Revisions’ summary at the bottom of each Element must be completed by FEMA to provide a clear explanation of the revisions that are required for plan approval. Required revisions must be explained for each plan sub-element that is ‘Not Met.’ Sub-elements should be referenced in each summary by using the appropriate numbers (A1, B3, etc.), where applicable. Requirements for each Element and sub-element are described in detail in this *Plan Review Guide* in Section 4, Regulation Checklist.

1. REGULATION CHECKLIST		Location in Plan (section and/or page number)	Met	Not Met
ELEMENT A. PLANNING PROCESS				
A1. Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement §201.6(c)(1))	Sec 2.1/pp. 2-1 – 2-3 (PDF 9-19)	Met		
A2. Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? (Requirement §201.6(b)(2))	Sec 2.2/pp. 2-4 (PDF 12), PDF p. 77 (Appendix C)	Met		
A3. Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))	Sec 2.1/pp. 2-1 (PDF p. 8), Sec 2.3/pp. 2-4 (PDF 12)	Met		
A4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.6(b)(3))	Sec 2.4/pp. 2-4 – 2-5 (PDF 12-13)	Met		
A5. Is there discussion of how the community(ies) will continue public participation in the plan maintenance process? (Requirement §201.6(c)(4)(iii))	Sec 2.5/pp. 2-5 – 2-6 (PDF 13-14)	Met		
A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a five-year cycle)? (Requirement §201.6(c)(4)(i))	Sec 2.6/pp. 2-6 – 2-7 (PDF 14-15)	Met		
ELEMENT A: REQUIRED REVISION				

ELEMENT B. HAZARD IDENTIFICATION AND RISK ASSESSMENT

<p>B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction(s)? (Requirement §201.6(c)(2)(i))</p>	<p><u>Climate Change Sec 3.1</u> Type (Nature): pp. 3-2 (PDF 17) Location: pp. 3-2 (PDF 17) Extent: pp. 3-3 (PDF 18)</p> <p><u>Earthquake Sec 3.2kk</u> Type (Nature): pp. 3-4 (PDF 19) Location: pp. 3-4 (PDF 19) Extent: pp. 3-5 (PDF 20)</p> <p><u>Erosion Sec 3.3</u> Type (Nature): pp. 3-6 (PDF 21) Location: pp. 3-6 (PDF 21) Extent: pp. 3-7 (PDF 22)</p> <p><u>Flood Sec 3.4</u> Type (Nature): pp. 3-8 (PDF 23) Location: pp. 3-8 (PDF 23) Extent: pp. 3-8 (PDF 23)</p> <p><u>Landslide Sec 3.5</u> Type (Nature): pp. 3-9 (PDF 24) Location: pp. 3-9 (PDF 24) Extent: pp. 3-10 (PDF 25)</p> <p><u>Severe Weather Sec 3.6</u> Type (Nature): pp. 3-11 (PDF 26) Location: pp. 3-11 (PDF 26) Extent: pp. 3-12 (PDF 27)</p> <p><u>Tsunami Sec 3.7</u> Type (Nature): pp. 3-13 (PDF 28) Location: pp. 3-13 (PDF 28) Extent: pp. 3-14 (PDF 29)</p> <p><u>Volcano Sec 3.8</u> Type (Nature): pp. 3-15 (PDF 30) Location: pp. 3-15 (PDF 30) Extent: pp. 3-16 (PDF 31)</p> <p><u>Wildfire Sec 3.9</u> Type (Nature): pp. 3-17 (PDF 32) Location: pp. 3-17 (PDF 32) Extent: pp. 3-18 (PDF 33)</p>	<p>Met</p>	
<p>B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))</p>	<p><u>Climate Change Sec 3.1</u> History: pp. 3-2 (PDF 17)</p> <p><u>Earthquake Sec 3.2</u> History: pp. 3-5 (PDF 20)</p> <p><u>Erosion Sec 3.3</u> History: pp. 3-6 (PDF 21)</p> <p><u>Flood Sec 3.4</u> History: pp. 3-8 (PDF 23)</p> <p><u>Landslide Sec 3.5</u> History: pp. 3-9 (PDF 24)</p> <p><u>Severe Weather Sec 3.6</u> History: pp. 3-11 (PDF 26)</p> <p><u>Tsunami Sec 3.7</u> History: pp. 3-13 (PDF 28)</p> <p><u>Volcano Sec 3.8</u> History: pp. 3-16 (PDF 31)</p> <p><u>Wildfire Sec 3.9</u></p>	<p>Met</p>	

	History: pp. 3-18 (PDF 33)		
B3. Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))	Impact: Sec 4.1/pp. 4-1 – 4-4 (PDF p. 34-37) Summary: Sec 4.2/pp. 4-4 – 4-7 (PDF p. 37-40)	Met	
B4. Does the Plan address (National Flood Insurance Program (NFIP) insured structures within the jurisdiction that have been repetitively damaged by floods? (Requirement §201.6(c)(2)(ii))	Sec 4.3/pp. 4-7 (PDF p. 40)	Met	
ELEMENT B: REQUIRED REVISIONS			
B2-c. The history of earthquakes states that there have been 27 events since 2000. However, it does not specify when they took place, or if any took place since the previous plan was adopted. Similarly, the history of flooding ends at 2013; landslides end at 2015. Either add recent events to the risk assessment tables, or state that there have been no other recent events since the previous plan was developed.			
FEMA Revisions Review: They have clarified history in the Earthquake, Flood, Landslide, Volcano, and Wildfire profiles.			
ELEMENT C. MITIGATION STRATEGY			
C1. Does the plan document each jurisdiction's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement §201.6(c)(3))	Sec 5.1/pp. 5-1 – 5-6 (PDF 41-46)	Met	
C2. Does the Plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement §201.6(c)(3)(ii))	Sec 5.2/pp. 5.7 (PDF 47)	Met	
C3. Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement §201.6(c)(3)(i))	Sec 5.3/pp. 5-7 (PDF 47)	Met	
C4. Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement §201.6(c)(3)(ii))	Sec 5.4/pp. 5-7 – 5-11 (PDF 47-51)	Met	
C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction? (Requirement §201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))	Sec 5.5/pp. 5-12 – 5-14 (PDF 52-54), Sec. 6.3/pp. 6-7 (PDF p. 62)	Met	
C6. Does the Plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement §201.6(c)(4)(ii))	Sec 5.6/pp. 5-15 (PDF 55)	Met	
ELEMENT C: REQUIRED REVISIONS			
ELEMENT D. PLAN REVIEW, EVALUATION, AND IMPLEMENTATION (applicable to plan updates only)			
D1. Was the plan revised to reflect changes in development? (Requirement §201.6(d)(3))	Sec 6.1/pp. 6-1 (PDF 56)	Met	

D2. Was the plan revised to reflect progress in local mitigation efforts? (Requirement §201.6(d)(3))	Sec 6.2/pp. 6-1 – 6-7 (PDF 56-62)	Met	
D3. Was the plan revised to reflect changes in priorities? (Requirement §201.6(d)(3))	Sec 5.5/pp. 5-12 (PDF p. 52-54), Sec 6.3/pp. 6-7 (PDF 62)	Met	
<u>ELEMENT D: REQUIRED REVISIONS</u>			
ELEMENT E. PLAN ADOPTION			
E1. Does the Plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval? (Requirement §201.6(c)(5))	Sec 7.1/pp. 7-1 (PDF 63)		Pending
E2. For multi-jurisdictional plans, has each jurisdiction requesting approval of the plan documented formal plan adoption? (Requirement §201.6(c)(5))	N/A		
<u>ELEMENT E: REQUIRED REVISIONS</u>			
OPTIONAL: HIGH HAZARD POTENTIAL DAM (HHPD) RISKS			
HHPD1. Did Element A4 (planning process) describe the incorporation of existing plans, studies, reports, and technical information for high hazard potential dams?	N/A		
HHPD2. Did Element B3 (risk assessment) address HHPDs?	N/A		
HHPD3. Did Element C3 (mitigation goals) include mitigation goals to reduce long-term vulnerabilities from high hazard potential dams that pose an unacceptable risk to the public?	N/A		
HHPD4. Did Element C4-C5 (mitigation actions) address HHPDs prioritize mitigation actions to reduce vulnerabilities from high hazard potential dams that pose an unacceptable risk to the public?	N/A		
<u>REQUIRED REVISIONS</u>			
ELEMENT F. ADDITIONAL STATE REQUIREMENTS (OPTIONAL FOR STATE REVIEWERS ONLY; NOT TO BE COMPLETED BY FEMA)			
F1.			
F2.			
<u>ELEMENT F: REQUIRED REVISIONS</u>			

SECTION 2: PLAN ASSESSMENT

INSTRUCTIONS: The purpose of the Plan Assessment is to offer the local community more comprehensive feedback to the community on the quality and utility of the plan in a narrative format. The audience for the Plan Assessment is not only the plan developer/local community planner, but also elected officials, local departments and agencies, and others involved in implementing the Local Mitigation Plan. The Plan Assessment must be completed by FEMA. The Assessment is an opportunity for FEMA to provide feedback and information to the community on: 1) suggested improvements to the Plan; 2) specific sections in the Plan where the community has gone above and beyond minimum requirements; 3) recommendations for plan implementation; and 4) ongoing partnership(s) and information on other FEMA programs, specifically RiskMAP and Hazard Mitigation Assistance programs. The Plan Assessment is divided into two sections:

1. Plan Strengths and Opportunities for Improvement
2. Resources for Implementing Your Approved Plan

Plan Strengths and Opportunities for Improvement is organized according to the plan Elements listed in the Regulation Checklist. Each Element includes a series of italicized bulleted items that are suggested topics for consideration while evaluating plans, but it is not intended to be a comprehensive list. FEMA Mitigation Planners are not required to answer each bullet item and should use them as a guide to paraphrase their own written assessment (2-3 sentences) of each Element.

The Plan Assessment must not reiterate the required revisions from the Regulation Checklist or be regulatory in nature and should be open-ended and to provide the community with suggestions for improvements or recommended revisions. The recommended revisions are suggestions for improvement and are not required to be made for the Plan to meet Federal regulatory requirements. The italicized text should be deleted once FEMA has added comments regarding strengths of the plan and potential improvements for future plan revisions. It is recommended that the Plan Assessment be a short synopsis of the overall strengths and weaknesses of the Plan (no longer than two pages), rather than a complete recap section by section.

Resources for Implementing Your Approved Plan provides a place for FEMA to offer information, data sources and general suggestions on the plan implementation and maintenance process. Information on other possible sources of assistance including, but not limited to, existing publications, grant funding or training opportunities, can be provided. States may add state and local resources, if available.

A. Plan Strengths and Opportunities for Improvement

This section provides a discussion of the strengths of the plan document and identifies areas where these could be improved beyond minimum requirements.

Element A: Planning Process

Strengths

- Table 2-2 includes how each member of the planning team participated. It also includes what contribution they each made to the process.
- Section 2.2 notes each organization that was invited to contribute to the plan. This includes their titles where applicable.
- Table 2-3 includes all resources that were used to develop the plan. It also includes how they were incorporated.
- Table 2-4 provides a place for planners to track changes to the document each year.
- The appendix includes emails and screenshots that were used to invite stakeholders and the public to the process.

Opportunities for Improvement

- Use other meetings, such as town halls or public events where residents already participate, to talk about the plan. This can help spread awareness about the planning process.

Element B: Hazard Identification and Risk Assessment

Strengths

- The Vulnerability Assessment does an excellent job of specifying the exact areas in the community that are most susceptible to these hazards.
- Each hazard table clearly labels each section. This makes information easy to find throughout the Risk Assessment.

Opportunities for Improvement

- Consolidate some of the information in the Risk Assessment. Right now, the hazard history, extent, location and description are separate from the Vulnerability Assessment. Having this information in one section can help readers know what the issues are and how to address them.

Element C: Mitigation Strategy

Strengths

- The capability assessment does a good job of explaining how each resource can help implement mitigation projects.
- Table 5-4 specifically calls out how to expand each type of resource to further address mitigation needs.
- The project description in Table 5-6 gives a good background on each of the identified mitigation actions.

Opportunities for Improvement

- All prioritized actions have a timing of 0-5 years. Some should be identified as happening sooner. That would create an order for eachone to take place.
- There are two actions labeled as “34” in Table 5-6.

Element D: Plan Update, Evaluation, and Implementation (*Plan Updates Only*)

Strengths

- Table 6-1 gives a good overview of each of the actions from the previous plan. For those that are not included in the prioritized list of actions for this update, there is a clear explanation why.
- Page 6-7 concisely explains that there have been no major changes in priorities. They are the same from the previous plan.

Opportunities for Improvement

- Include any success stories that result from the plan. This can include mitigation projects that were implemented or meetings that were held. These stories can show that mitigation is a worthwhile process.

B. Resources for Implementing Your Approved Plan

Ideas may be offered on moving the mitigation plan forward and continuing the relationship with key mitigation stakeholders such as the following:

- *What FEMA assistance (funding) programs are available (for example, Hazard Mitigation Assistance) to the jurisdiction(s) to assist with implementing the mitigation actions?*
- *What other Federal programs (NFIP, Community Rating System, Risk MAP, etc.) may provide assistance for mitigation activities?*
- *What publications, technical guidance or other resources are available to the jurisdiction(s) relevant to the identified mitigation actions?*
- *Are there upcoming trainings/workshops (Benefit-Cost Analysis, Hazard Mitigation Assistance, etc.) to assist the jurisdiction(s)?*
- *What mitigation actions can be funded by other Federal agencies (for example, United States Forest Service, National Oceanic and Atmospheric Administration, Environmental Protection Agency Smart Growth, Housing and Urban Development Sustainable Communities, etc.) and/or state and local agencies?*

**SECTION 3:
MULTI-JURISDICTION SUMMARY SHEET (OPTIONAL)**

INSTRUCTIONS: For multi-jurisdictional plans, a Multi-jurisdiction Summary Spreadsheet may be completed by listing each participating jurisdiction, which required Elements for each jurisdiction were ‘Met’ or ‘Not Met,’ and when the adoption resolutions were received. This Summary Sheet does not imply that a mini-plan be developed for each jurisdiction; it should be used as an optional worksheet to ensure that each jurisdiction participating in the Plan has been documented and has met the requirements for those Elements (A through E).

	Multit-Jurisdiction Summary Sheet						Requirements:					(Met /Not Met)
Line Number	Jurisdiction Name	Jurisdiction Type (city/borough/ township/village , etc.)	Plan Point of Contact	Mailing Address	Email	Phone	A. Planning Process	B. Hazard Identification and Risk Assessment	C. Mitigation Strategy	D. Plan Review, Evaluation and Implementation	E. Plan Adoption	F. State Requirements
1	Homer	City	Rick Abboud, AICP		RAbboud@ci.homer.ak.us	907-235-3106	Met	Met	Met	Met		
2												
3												
4												
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16												
17												
18												
19												
20												

APPENDIX C—PLANNING PROCESS

Evans, Jessica

From: Rick Abboud <RAbboud@ci.homer.ak.us>
Sent: Wednesday, January 5, 2022 11:20 AM
To: Evans, Jessica
Cc: erin.leaders@alaska.gov; kachemak@xyz.net; cassidi@kpedd.org; ashley.list@alaska.gov; dnr.pkskenai@alaska.gov; cpierce@kpb.us; info@friendsofkachemakbay.org; cmwalker@alaska.edu; info@KachemakLandTrust.org; info@ciri.com; kevin.jones@alaska.gov; kevin.combell@enstarnaturalgas.com; ryan.pierce@enstarnaturalgas.com; KLyons@kpbsd.k12.ak.us; bahlberg@kpb.us; joselyn.biloon@alaska.gov
Subject: [EXTERNAL] City of Homer Local Mitigation Plan Update

Greetings,

The City of Homer is kicking off the 2022 Local Hazard Mitigation Plan (LHMP) update process. LHMPs are pre-disaster plans that are focused on reducing the impacts of disasters before they occur. In addition, governments that prepare LHMPs are eligible for certain types of FEMA funding.

The 2022 LHMP update process will take place over the next several months. Hazards addressed in the plan will include: climate change, earthquake, erosion, flood, landslide, severe weather, tsunamis, volcano, and wildfire.

To learn more about hazard mitigation planning, please visit: <https://www.fema.gov/hazard-mitigation-planning>. If you would like to participate in our plan update process, please contact me.

We will send out a follow-up email when our Public Draft is available for review and comment. Thank you.

Sincerely,

RICK ABBOUD, AICP

City Planner
491 E Pioneer Ave
Homer, AK 99603
(o) 907-235-3106
(f) 907-235-3118

VOL. I - ISSUE IV | DECEMBER 2021

CITY OF HOMER

Monthly Newsletter from the office of the City Manager



Greetings from City Hall

Festive Lights Add Glow to the Holidays

The beautiful white lights that line the edges of many of the buildings around town add a festive glow to our dark winter days and nights. City Hall is adorned too. We invite you to come see our nautical themed Christmas tree in the lobby.

Be sure to take advantage of the many holiday and year end festivities happening in the Homer area. We encourage you to shop and dine locally.



The Giving Season - Share the Spirit

Giving back to the community and helping those in need is a mission the City has all year long. During the holidays, several City departments - City Hall, the Fire Hall, Police Department, Public Works and the Port and Harbor - will fill Christmas wish lists and food boxes, which Share the Spirit will distribute to families in need.

The Food Pantry ordered 780 turkeys to give away for Thanksgiving and Christmas through the Salvation Army and Lions Club at Homer High School.

If you're looking for ways to give back to the community, Homer is loaded with opportunities. Whether you give the gift of food, clothing or your precious time, there is always someone will appreciate it more than you know.

Happy Holidays

FROM THE CITY OF HOMER

WHAT'S NEW?

- Library News
- Community Corner
- Public Safety Notes
- Parks & Community Recreation
- Police Department
- Public Works Department
- Fire Department
- Port & Harbor
- Meet the Staff
- City of Homer Roster
- Stay Connected with City Council
- Municipal Art Collection

We hope you'll discover something new today as we share information and ways you can tap into what's going on at City Hall and in the Homer community.

Check us out on Facebook



City Hall - @cityofhomerak
Parks & Recreation - @homerparksandrec
Homer Public Library - @homerpubliclibrary
Homer Police - @homerpolice
Fire Department - @HomerVolFireDept.

Share this link with your friends, so they can get the newsletter too - <https://www.cityofhomer-ak.gov/citymanager/monthly-email-newsletter>

"where the land ends and the sea begins"

Bring Back the Light

A moment of celebration, community, solidarity and reflection

On the darkest night of the year, at 5:00 p.m. on Sunday, December 19, 2021, you are invited to step outside with others and light a candle or turn on lights, flashlights, headlamps or a lantern. You can participate from your porch or join family, friends and neighbors for a lighted walk through your community. Don't know of anything happening locally? Organize your own event with friends and neighbors!

The pandemic has been long and difficult, but we have much to be grateful for - especially each other! Alaskans have shown considerable strength and resiliency, and continue to adapt and care for each other. Let's join together to shine a positive light as the return of longer days arrive and:

- Celebrate the return of the light in the sky.
- Express gratitude for family, friends, neighbors, frontline workers, teachers, business owners and more.
- Remember those who have lost their lives and loved ones, or have experienced hardship.

There's no one way to do this, so step outside and shine a light!

Take photos or videos and share them if you like on social media using the hashtag

#WithYouAlaska



Hazard Mitigation Plan

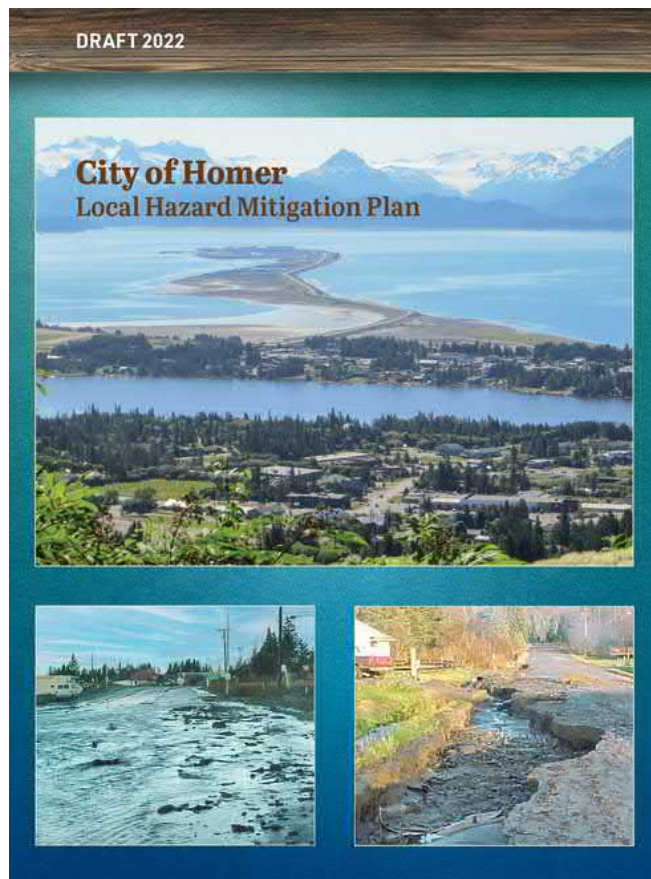
Our community is launching an effort known as the 2022 City of Homer Hazard Mitigation Plan. Over the next few months, we will work with a consultant to assess risks posed by natural disasters and develop strategies to protect life and property in Homer from future hazard events.

Hazards addressed in our plan include the following: earthquake, climate change, flood, erosion, landslide, tsunami, wildland fire, and volcano. Once our plan is completed and approved by FEMA, our community will be eligible to apply for and receive certain types of non-emergency disaster assistance, including funding for mitigation projects identified in our plan.

To learn more about hazard mitigation planning, please visit:

<https://www.fema.gov/emergency-managers/risk-management/hazard-mitigation-planning>.

As our draft plan comes together, updates will be posted on the Planning page of the City of Homer Website or you may contact Homer City Planning at 907-235-3106 or email planning@ci.homer.ak.us.



Evans, Jessica

From: Rick Abboud <RAbboud@ci.homer.ak.us>
Sent: Tuesday, March 29, 2022 1:05 PM
To: Evans, Jessica
Subject: [EXTERNAL] FW: 2022 Homer Draft Local Hazard Mitigation Plan
Attachments: Homer_LHMP_DRAFT_20220323.pdf

Jessica,

Here you go.

Rick

From: Rick Abboud
Sent: Thursday, March 24, 2022 4:46 PM
To: 'erin.leaders@alaska.gov' <erin.leaders@alaska.gov>; 'kachemak@xyz.net' <kachemak@xyz.net>; 'cassidi@kpedd.org' <cassidi@kpedd.org>; 'ashley.list@alaska.gov' <ashley.list@alaska.gov>; 'dnr.pkskenai@alaska.gov' <dnr.pkskenai@alaska.gov>; 'cpierce@kpb.us' <cpierce@kpb.us>; 'info@friendsofkachemakbay.org' <info@friendsofkachemakbay.org>; 'cmwalker9@alaska.edu' <cmwalker9@alaska.edu>; 'info@KachemakLandTrust.org' <info@KachemakLandTrust.org>; 'info@ciri.com' <info@ciri.com>; 'kevin.jones@alaska.gov' <kevin.jones@alaska.gov>; 'KLyon@kpbsd.k12.ak.us' <KLyon@kpbsd.k12.ak.us>; 'bahlberg@kpb.us' <bahlberg@kpb.us>; 'joselyn.biloon@alaska.gov' <joselyn.biloon@alaska.gov>; 'Alicia.Martinez@enstarnaturalgas.com' <Alicia.Martinez@enstarnaturalgas.com>
Subject: 2022 Homer Draft Local Hazard Mitigation Plan

Greetings,

As you may remember from our last email on January 5, the City of Homer is updating our Local Hazard Mitigation Plan (LHMP). LHMPs are pre-disaster plans that are focused on reducing the impacts of disasters before they occur. In addition, governments that prepare LHMPs are eligible for certain types of FEMA funding.

We have completed a public draft of the 2022 City of Homer LHMP update. Over past few months, we have worked with a consultant to assess risks posed by natural disasters and develop strategies to protect life and property in Homer from future hazard events. Hazards addressed in the plan include climate change, earthquake, erosion, flood, landslide, severe weather, tsunami, volcano, and wildfire.

To learn more about hazard mitigation planning, please visit: <https://www.fema.gov/hazard-mitigation-planning>.

A copy of our draft plan is attached and available to review until April 15. If you have comments please get in touch with me or Jessica Evans at jessica.evans@aecom.com.

Thank you for your continued interest and participation.

RICK ABBOD, AICP

City Planner
491 E Pioneer Ave
Homer, AK 99603
(o) 907-235-3106
(f) 907-235-3118

HOMER ALASKA

2022 City of Homer Local Hazard Mitigation Plan

Our community has completed a public draft of the 2022 City of Homer Local Hazard Mitigation Plan. Over the past few months, we have worked with a consultant to assess risks posed by natural disasters and develop strategies to protect life and property in Homer from future hazard events.

Hazards addressed in our plan include the following: climate change, earthquake, erosion, flood, landslide, severe weather, tsunامي, volcano, and wildfire.

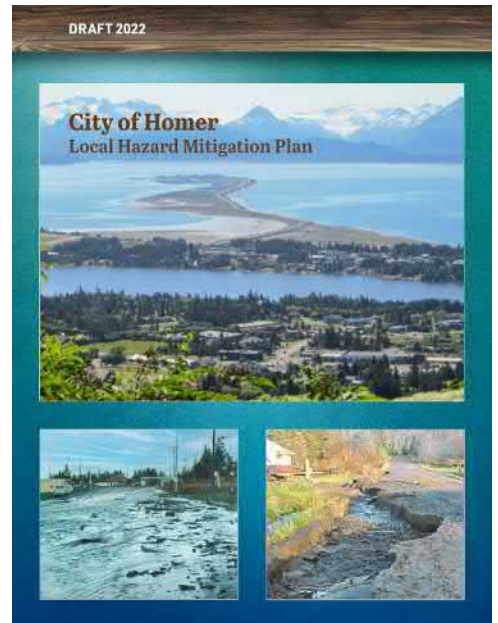
Once our plan is finalized and approved by FEMA, our community will be eligible to apply for and receive certain types of nonemergency disaster assistance, including funding for mitigation projects identified in our plan.

To learn more about hazard mitigation planning, please visit: <https://www.fema.gov/emergency-managers/risk-management/hazard-mitigatio...>

[Click here to see our plan](#)

We are taking public comments until April 15, at which point the plan will be submitted to the State for review, followed by FEMA review.

To submit comments, you can type them into the comments box below, email the Planning Office at planning@ci.homer.ak.us, or drop them off at City Hall. Have questions? contact Rick Abboud at RAbboud@ci.homer.ak.us or Jessica Evans at jessica.evans@aecom.com.



Supporting Documents

 2022 City of Homer Local Hazard Mitigation Plan (9 MB)

Comments?

Submit



Planning

+ Floodplains

City Code

+ [Planning Commission](#)

+ [Documents](#)

+ [Signs](#)

+ [Permits](#)

+ [Maps](#)

+ [How Do I](#)

+ [Helpful Links](#)

[Compilation of historical HERC floor plans, remodel plans and cost estimates](#)

Contact Information

Mailing address:

Homer City Hall

491 East Pioneer Ave

Homer AK 99603

Phone:

907-235-3106

Email:

Planning@ci.homer.ak.us

Fax:

907-235-3118

Office Hours: Monday through Friday 8am to 5pm

[View Full Contact Details](#)

Planning Public Hearings

There are no upcoming public notices posted at this time.



City of Homer (907) 235-8121
491 E. Pioneer Avenue Homer, AK 99603

VOL. I - ISSUE VIII APRIL 2022

CITY OF HOMER

Monthly Newsletter from the office of the City Manager



Hastings Frank, Talons Hooked

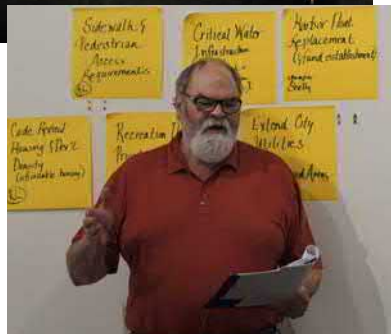
GREETINGS FROM CITY HALL

City Council is Visioning for the Future



City Manager Rob Dumouchel in breakout session.

The Pratt Museum was the stage for the 2022 Council Visioning Session on March 16 and 17. Susie Amundson of Wise at Work facilitated Homer City Councilmembers and the City of Homer leadership team to create a strategic plan and set goals for a vision of the future of Homer.



Mayor Ken Castner sharing his visions.

During the two day retreat, the group presented their individual priorities, both City-initiated and Council-initiated, followed by a question and answer period. Afterward, Amundson facilitated an in-depth conversation to help the group weave their priorities into a set of common goals by identifying potential patterns and partnerships. Break-out sessions helped the group hone common interests and dive deeper into strategies for 2022 and beyond.

These goals will guide both City Council and City Staff as they plan for the future by tracking and monitoring progress on priorities, and they help steer budgetary goals and funding priorities.

Our special thanks to the Pratt Museum & Park for their first class hospitality and support.

WHAT'S NEW?

- Library News
- Community Corner
- Fire Department
- Parks & Community Recreation
- Public Safety Notes
- Public Works
- Police Department
- Port & Harbor
- Meet the Staff
- City of Homer Roster
- Municipal Art Collection
- Stay Connected with City Council
- Join Our Team

We hope you'll discover something new today as we share the latest information and ways you can tap into what's going on at City Hall and in the Homer community.

Check us out on Facebook

- City Hall - @cityofhomerak
- Parks & Recreation - @homerparksandrec
- Homer Public Library - @homerpubliclibrary
- Homer Police - @homerpolice
- Fire Department - @HomerVolFireDept



Share this link with your friends, so they can get the newsletter too - <https://www.cityofhomer-ak.gov/citymanager/monthly-email-newsletter>

"where the land ends and the sea begins"

Port & Harbor

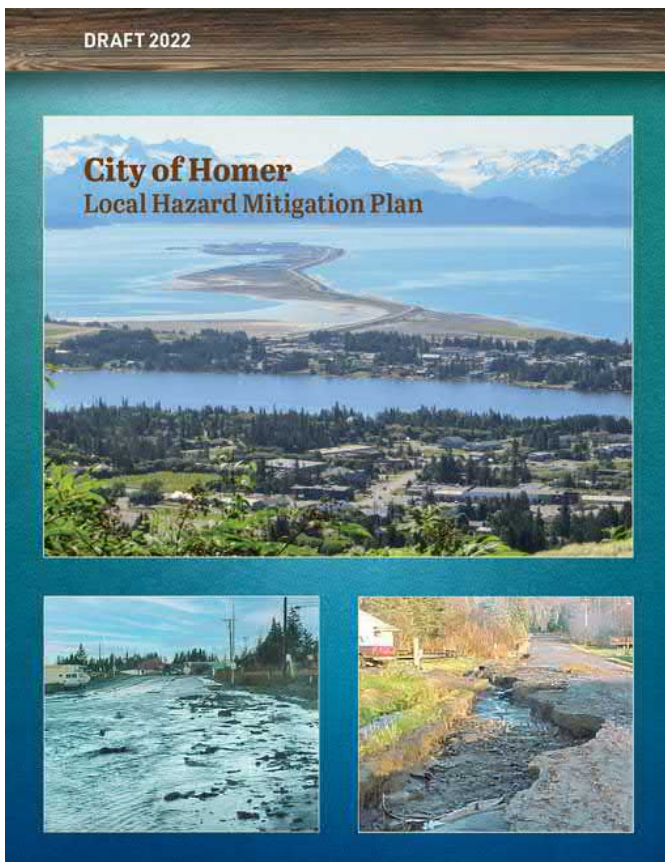
Harbor's Ice Plant is Open for the Season

The Ice Plant staff have been hustling to get the winter shutdown maintenance list knocked out in time for the March 6th opening of the Black Cod/Halibut commercial fisheries. On February 28th the ice compressors started for the season and fishing boats have “iced up” and headed out for the opening. The Ice Plant will remain open through November, selling ice to fishermen and providing cold storage for bait. There’s a lot of speculation about the price of fuel, price of fish and run time, but in the end fishermen fish and the rest will play out as we go. We’re happy to have the temperature warm up a bit, which will help keep our fishermen safer out on the ocean.

Maintenance is key to keeping the Ice Plant & Fish Dock Cranes operating around the clock. Crane 4 is back from a total rebuild. The crane was sandblasted, painted inside and out, its AC Motor was cleaned and balanced, and new valving put in place. Stainless steel hardware will prevent any hydraulic fluid leaks to protect the Harbor from contamination. It was installed at the end of March and is part of a continuous maintenance plan to rebuild and maintain the Fish Dock’s eight public-use cranes. We also took delivery a new-to-us scissor lift that help harbor maintenance staff access Ice Plant equipment like augers, cranes, and help them maintain security cameras.



Jededia Gautier aboard the Man Lift



2022 City of Homer Local Hazard Mitigation Plan

Our community has completed a public draft of the 2022 City of Homer Local Hazard Mitigation Plan. Over past few months, we have worked with a consultant to assess risks posed by natural disasters and develop strategies to protect life and property in Homer from future hazard events.

Hazards addressed in the plan include climate change, earthquake, erosion, flood, landslide, severe weather, tsunami, volcano, and wildfire.

Once the plan is finalized and approved by FEMA, the community will be eligible to apply for and receive certain types of nonemergency disaster assistance, including funding for mitigation projects identified in our plan.

To learn more about hazard mitigation planning, please visit: <https://www.fema.gov/emergency-managers/risk-management/hazard-mitigation-planning>

The 2022 Draft Local Hazard Mitigation Plan is available for review until April 15th. You may view the plan and submit comment at: <https://www.cityofhomer-ak.gov/planning/2022-city-homer-local-hazard-mitigation-plan>

City of Homer Roster

Rob Dumouchel, City Manager
Melissa Jacobsen, MMC, City Clerk
Andrea Browning, Personnel Director
Rick Abboud, City Planner
Mark Robl, Chief of Police
Mark Kirko, Fire Chief
Bryan Hawkins, Port Director/Harbormaster
Elizabeth Walton, Finance Director
Jan Keiser, Public Works Director
Dave Berry, Library and IT Director
Nick Poolos, Info. Technology Manager
Mike Illg, Community Recreation Manager

Mayor - Ken Castner (2022)

City Council

Donna Aderhold (2024)
Jason Davis (2022)
Shelley Erickson (2024)
Storm P. Hansen-Cavasos (2022)
Rachel Lord (2023)
Caroline Venuti (2023)

Commissions & Boards

Planning Commission
Economic Development Advisory Commission
Library Advisory Board
Parks, Art, Recreation and Culture Advisory Commission
Port and Harbor Advisory Commission

Standing Committees

ADA Compliance Committee

MUNICIPAL ART COLLECTION

Learn more about the municipal art collection at:

<https://www.cityofhomer-ak.gov/prac/city-homer-municipal-art-collection>



Next time you're strolling down Pioneer Avenue, be sure to stop and take a look at the artwork on the public restroom near the corner of Pioneer and Bartlett Street. Melissa Reichman's art adorns the exterior of the building with two pieces, "Roaming the Land," above and "Beings of the Bay," below, which depict mammals and sea creatures found in our area. Both pieces are constructed of fortified cement over carved foam and are approximately 48 x 26 inches in size. They were purchased by the City in 2014 as part of the 1% for the Arts program.



STAY CONNECTED WITH CITY COUNCIL

Go to: cityofhomer-ak.gov/cityclerk/stay-connected-city-council. Here you will find instructions on how to listen, provide testimony and participate in the meetings via Zoom.

Upcoming Meetings

APRIL

6th 5:30pm	Planning Commission Worksession
6:30pm	Planning Commission Regular Meeting
11th 5:00pm	City Council Committee of the Whole
6:00pm	City Council Regular Meeting
12th 5:00pm	Economic Development Advisory Commission Worksession
6:00pm	Economic Development Advisory Commission Regular Meeting
14th 4:00pm	ADA Compliance Committee
19th 4:30pm	Library Advisory Board Worksession
5:30pm	Library Advisory Board Regular Meeting
20th 5:30pm	Planning Commission Worksession
6:30pm	Planning Commission Regular Meeting
21st 4:30pm	Parks, Art, Recreation & Culture Advisory Commission Worksession
5:30pm	Parks, Art, Recreation & Culture Advisory Commission Regular Meeting
25th 5:00pm	City Council Committee of the Whole
6:00pm	City Council Regular Meeting
27th 5:00pm	Port & Harbor Advisory Commission Regular Meeting



JOIN OUR TEAM

The City of Homer has current Job Openings.
Sign up for Job Alerts or Apply Online at
cityofhomerak.applicantpro.com/jobs

CURRENT JOB LISTINGS

- Heavy Equipment Operator I or II
- Police Officer
- Temporary/Seasonal Parks Technician
- Temporary/Seasonal Library Aide
- Temporary/Seasonal Harbor Assistant I
- Temporary/Seasonal Parking Enforcement Aide

City of Homer

491 E. Pioneer Avenue, Homer, Alaska 99603
907-235-8121

www.cityofhomer-ak.gov



City of Homer

www.cityofhomer-ak.gov

Planning

491 East Pioneer Avenue
Homer, Alaska 99603

Planning@ci.homer.ak.us

(p) 907-235-3106

(f) 907-235-3118

Staff Report PL 22-22

TO: HOMER PLANNING COMMISSION
FROM: RICK ABOUD, AICP, CITY PLANNER
DATE: MARCH 16, 2022
SUBJECT: 2022 LOCAL HAZARD MITIGATION PLAN

Introduction

After waiting till the worst of COVID has passed, we are working to update our Local Hazard Mitigation Plan.

Analysis

The Local Hazard Mitigation Plan is a plan required by FEMA to gain edibility for funding of projects eligible for FEMA mitigation funding. The plans are to be updated every five years.

Perhaps the FEMA website explains it best:

Hazard mitigation planning reduces loss of life and property by minimizing the impact of disasters. It begins with state, tribal and local governments identifying natural disaster risks and vulnerabilities that are common in their area. After identifying these risks, they develop long-term strategies for protecting people and property from similar events. Mitigation plans are key to breaking the cycle of disaster damage and reconstruction. <https://www.fema.gov/emergency-managers/risk-management/hazard-mitigation-planning> accessed 3.9.20

We have gathered stakeholders and identified critical facilities and gauged the risk they are at from our local natural hazards. Additionally, we have prioritized mitigation projects, many of which we are actively working on or have previously identified. The plan also reviews previous mitigation actions listed in the last version and gives status reports. Current thoughts on the plan are to focus on items were we have a need and path to outside funding and not so much on routine operational items that can be addressed internally.

Staff Recommendation

Review the plan and make comments and I will address and/or pass along to the contactor.

Attachments

Draft Mitigation Plan
Appendix A

CITY OF HOMER
2022 LOCAL HAZARD MITIGATION PLAN

TABLE OF CONTENTS

1.0	INTRODUCTION	1-1
1.1	CITY OF HOMER OVERVIEW	1-1
1.2	HAZARD MITIGATION PLANNING.....	1-1
1.3	2022 LOCAL HAZARD MITIGATION PLAN SYNOPSIS.....	1-1
2.0	PLANNING PROCESS	2-1
2.1	OVERVIEW OF THE 2022 LHMP PLANNING PROCESS	2-1
2.2	OPPORTUNITIES FOR STAKEHOLDERS	2-1
2.3	PUBLIC INVOLVEMENT	2-1
2.4	REVIEW AND INCORPORATION OF EXISTING PLANS AND REPORTS.....	2-1
2.5	CONTINUED PUBLIC PARTICIPATION.....	2-2
2.6	PLAN UPDATE METHOD AND SCHEDULE	2-2
3.0	HAZARD IDENTIFICATION AND RISK ASSESSMENT	3-1
3.1	CLIMATE CHANGE	3-2
3.2	EARTHQUAKE	3-4
3.3	EROSION	3-6
3.4	FLOOD	3-7
3.5	LANDSLIDE	3-8
3.6	SEVERE WEATHER.....	3-10
3.7	TSUNAMI	3-12
3.8	VOLCANO	3-14
3.9	WILDFIRE	3-16
4.0	RISK ASSESSMENT.....	4-1
4.1	HAZARD IMPACT.....	4-1
4.2	OVERALL SUMMARY OF VULNERABILITY.....	4-4
4.3	NFIP INSURED STRUCTURES	4-7
5.0	MITIGATION STRATEGY	5-1
5.1	AUTHORITIES, POLICIES, PROGRAMS, AND RESOURCES.....	5-1
5.2	NATIONAL FLOOD INSURANCE PROGRAM PARTICIPATION	5-7
5.3	MITIGATION GOALS.....	5-7
5.4	RECOMMENDED MITIGATION ACTIONS	5-7
5.5	PRIORITIZED ACTION PLAN	5-12
5.6	PLAN INTEGRATION	5-15
6.0	PLAN REVIEW, EVALUATION, AND IMPLEMENTATION	6-1
6.1	CHANGES IN DEVELOPMENT	6-1
6.2	PROGRESS IN LOCAL MITIGATION EFFORTS	6-1
6.3	CHANGES IN PRIORITIES	6-7
7.0	PLAN ADOPTION	7-1
7.1	FORMAL ADOPTION	7-1
8.0	APPENDICES	8-1

APPENDICES

- Appendix A—Figures
- Appendix B—FEMA Documentation
- Appendix C—Planning Process

LIST OF TABLES

Table 2-1: LHMP Timeline	2-1
Table 2-2: Planning Team	2-1
Table 2-3: Existing Plans and Reports.....	2-1
Table 2-4: Annual Review Tracker	2-4
Table 3-1: Climate Change.....	3-2
Table 3-2: Mean Annual Temperature and Precipitation Predictions.....	3-3
Table 3-3: Earthquake	3-4
Table 3-4: Value of Facilities Most Affected by Earthquake	4-7
Table 3-5: Erosion	3-6
Table 3-6: Flood	3-7
Table 3-7: Landslide.....	3-8
Table 3-8: Severe Weather	3-10
Table 3-9: Tsunami.....	3-12
Table 3-10: Volcano	3-14
Table 3-11: Wildfire.....	3-16
Table 4-1: Total Land Area, Population Center and Critical Facilities	4-1
Table 4-2: Total Acres of Land in a Hazard Area	4-2
Table 4-3: Total Number of Acres of Population Center in a Hazard Area.....	4-2
Table 4-4: Total Number of Critical Facilities in a Hazard Area	4-3
Table 4-5: Overall Summary of Vulnerability.....	4-4
Table 5-1: Human and Technical Resources for Hazard Mitigation	5-2
Table 5-2: Financial Resources for Hazard Mitigation.....	5-3
Table 5-3: Planning and Policy Resources for Hazard Mitigation	5-5
Table 5-4: Ability to Expand Resources.....	5-6
Table 5-5: Mitigation Goals.....	5-7
Table 5-6: Recommended Mitigation Actions.....	5-8
Table 5-7: Prioritized Action Plan	5-13
Table 5-8: Integration of the 2022 LHMP	5-15
Table 6-1: Progress in Local Mitigation Efforts.....	6-1

LIST OF FIGURES

- Figure 1: Overview Map
- Figure 2: Earthquake Hazard Areas
- Figure 3: Flood Hazard Areas
- Figure 4: Land Failure Hazard Areas
- Figure 5: Bluff Point Landslide Area
- Figure 6: Tsunami Hazard Areas
- Figure 7: Maximum Estimated Tsunami Inundation, Downtown Homer
- Figure 8: Volcanic Ash Hazard Areas
- Figure 9: Wildfire Hazard Areas
- Figure 10: Critical Facilities

LIST OF ACRONYMS AND ABBREVIATIONS

ADGGS	Alaska Division of Geological and Geophysical Surveys
ADNR	Alaska Department of Natural Resources
ADOT&PF	Alaska Department of Transportation and Public Facilities
BRIC	Building Resilient Infrastructure and Communities
CFR	Code of Federal Regulations
DMA 2000	Disaster Mitigation Act of 2000
ENSTAR	ENSTAR Natural Gas Company
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
g	gravity
GIS	Geographic Information System
HCC	Homer City Code
HMA	Hazard Mitigation Assistance
HMGP	Hazard Mitigation Grant Program
HUD	U.S. Department of Housing and Urban Development
LHMP	Local Hazard Mitigation Plan
LIDAR	light detection and ranging
NFIP	National Flood Insurance Program
PGA	peak ground acceleration
SFHA	Special Flood Hazard Area
SNAP	Scenarios Network for Alaska + Arctic Planning
STAPLEE	social, technical, administrative, political, legal, environmental, and economic
U.S.	United States
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey

1.0 INTRODUCTION

1.1 CITY OF HOMER OVERVIEW

The City of Homer is a first-class city in the Kenai Peninsula Borough (Figure 1). The city is on the northern shore of Kachemak Bay, on the southwestern edge of the Kenai Peninsula. The Homer Spit is a distinguishing feature of the city, which extends 4.5 miles from the shoreline into the bay. Homer is 227 road miles south of Anchorage, at the southern terminus of the Sterling Highway. Homer comprises 24.2 square miles, with 13.9 square miles of land and 10.3 square miles of water.

Homer was incorporated in 1964. The city is governed by a city council composed of a mayor and council members. According to the 2020 United States (U.S.) Census, the population of Homer is 5,522, up from 5,003 in 2010.

1.2 HAZARD MITIGATION PLANNING

As defined in Title 44 of the Code of Federal Regulations (CFR), Subpart M, Section 206.401, hazard mitigation is “any action taken to reduce or eliminate the long-term risk to human life and property from natural hazards.” As such, hazard mitigation is any work to minimize the impacts of any type of hazard event before it occurs. Hazard mitigation aims to reduce losses from future disasters. It is a process that identifies and profiles hazards, analyzes the people and facilities at risk, and develops mitigation actions to reduce or eliminate hazard risk. The implementation of the mitigation actions—which include short- and long-term strategies that may involve planning, policy changes, programs, projects, and other activities—is the end result of this process.

Over the past two decades, local hazard mitigation planning has been driven by a federal law, known as the Disaster Mitigation Act of 2000 (DMA 2000). On October 30, 2000, Congress passed the DMA 2000 (Public Law 106-390), which amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 (Title 42 of the United States Code Section 5121 et seq.) by repealing the act’s previous mitigation planning section (409) and replacing it with a new mitigation planning section (322). This new section emphasized the need for state, tribal, and local entities to closely coordinate mitigation planning and implementation efforts. This new section also provided the legal basis for the Federal Emergency Management Agency’s (FEMA’s) mitigation plan requirements for the Hazard Mitigation Assistance (HMA) grant programs.

1.3 2022 LOCAL HAZARD MITIGATION PLAN SYNOPSIS

To meet the requirements of the DMA 2000, the City of Homer is updating its 2010 plan, which was included as an annex to the 2014 Kenai Peninsula Borough All-Hazard Mitigation Plan. In 2018, the City unofficially prepared an updated plan. Although the 2018 City of Homer All-Hazard Mitigation Plan was not fully enacted by FEMA, the 2018 plan serves as a reference document for this plan.

The goal of this planning process is to assess risks posed by hazards and to develop prioritized action plans to reduce risks in Homer. The 2022 Local Hazard Mitigation Plan (LHMP) is organized to follow FEMA’s Local Mitigation Plan Review Tool (Appendix B), which demonstrates how hazard mitigation plans meet the DMA 2000 regulations. As such, specific planning elements of this review tool are in their appropriate plan sections.

The LHMP structure has been updated to include the following sections:

- **Section 1 Introduction**, which introduces the City of Homer and provides information on hazard mitigation planning.

- **Section 2 Planning Process**, which provides an overview of the planning process, starting with a timeline. It identifies planning team members and describes their involvement with the planning process. This section also details stakeholder outreach, public involvement, and continued public involvement. It provides an overview of the existing plans and reports, details how those documents were incorporated into the 2022 LHMP, and provides a plan update method and schedule. Supporting planning process documentation is provided in Appendix C.
- **Section 3 Hazard Identification**, which provides a description of each of the nine hazards addressed in this plan. Hazard figures are provided in Appendix A.
- **Section 4 Risk Assessment**, which provides hazard impact tables or descriptions for land area, population centers, and critical facilities. An overall summary of vulnerability for each hazard is also provided.
- **Section 5 Mitigation Strategy**, which provides a description of the City of Homer’s mitigation goals, potential mitigation actions and projects, and prioritization process. A capability assessment, prioritized action plan, and the process to integrate the 2022 LHMP into other planning mechanisms is also addressed.
- **Section 6 Plan Review**, which provides an overview of development changes that have occurred since the 2010 plan, the progress in local mitigation efforts, and changes in priorities for mitigation actions.
- **Section 7 Plan Adoption**, which provides information about the formal adoption.
- **Section 8 Appendices**, which provides Appendix A (Figures), Appendix B (FEMA Documentation), and Appendix C (Planning Process).

2.0 PLANNING PROCESS

This section addresses Element A of the Local Mitigation Plan Regulation Checklist.

Regulation Checklist – 44 CFR 201.6 Local Mitigation Plans
Element A: Planning Process
A1. Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement §201.6(c)(1))
A2. Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? (Requirement §201.6(b)(2))
A3. Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))
A4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.6(b)(3))
A5. Is there discussion of how the community(ies) will continue public participation in the plan maintenance process? (Requirement §201.6(c)(4)(iii))
A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle)? (Requirement §201.6(c)(4)(i))

2.1 OVERVIEW OF THE 2022 LHMP PLANNING PROCESS

The development of the 2022 LHMP was collaborative effort between the City of Homer, AECOM Technical Services, Inc., and a planning team. The planning process officially started in November 2021 and ended in [month, year]. A timeline of the major planning tasks and milestones by month, including the times the planning team met, is provided in Table 2-1. A list of the planning team members and how they contributed to the development of the plan is provided in Table 2-2.

Table 2-1: LHMP Timeline

Date	Tasks	People Involved
November 2, 2021	LHMP planning team meeting 1 (project overview) Initial information collected: hazards to be profiled, critical facility information	LHMP project manager, consultant, planning team
December 4, 2021	Initial public outreach, via Facebook and newsletter	LHMP project manager
December 2021 and January 2022	Hazard profiles drafted	LHMP project manager, consultant
January, 2022	Initial stakeholder outreach, via email	LHMP project manager
January, 2022	Critical facilities map reviewed and approved	LHMP project manager, consultant
January, 2022	Hazard figures created, hazard impact assessments drafted Draft mitigation actions developed	Consultant

Table 2-1: LHMP Timeline

Date	Tasks	People Involved
February, 2022	Planning team meeting 2 (draft mitigation actions reviewed)	LHMP project manager, consultant, planning team
February, 2022	Prioritization action plan developed Integration of LHMP into other planning documents determined	LHMP project manager, consultant, planning team
February and March, 2022	Internal Draft LHMP	LHMP project manager, consultant, planning team
[March, 2022]	Public Draft LHMP Follow-up public outreach and stakeholder involvement	LHMP project manager, consultant, public
[March/April, 2022]	Final Draft LHMP	LHMP project manager, consultant, Alaska Division of Homeland Security and Emergency Management, FEMA Region X
[month, year]	Adoption of Final LHMP	LHMP project manager, City of Homer

Table 2-2: Planning Team

Name	Department/Agency and Title	Contribution
Rick Abboud, AICP	City Planner, City of Homer, LHMP project manager	Served as the LHMP project manager. Led planning team meetings; reviewed and commented on hazard figures, risk assessment tables, mitigation strategies, and the Internal Draft LHMP.
Robert Dumouchel	City Manager, City of Homer	Participated in planning team meetings and/or reviewed planning team documents; reviewed and commented on hazard figures, mitigation strategies, and the Internal Draft LHMP.
Janna Davis	Safety Coordinator, Homer Electric Association, Inc.	Participated in planning team meetings and/or reviewed planning team documents; reviewed and commented on hazard figures, mitigation strategies, and the Internal Draft LHMP.
Shelly Erickson	City Council Member, City of Homer	Participated in planning team meetings and/or reviewed planning team documents; reviewed and commented on hazard figures, mitigation strategies, and the Internal Draft LHMP.
Janette Keiser	Public Works Director, City of Homer	Participated in planning team meetings and/or reviewed planning team documents; reviewed and commented on hazard figures, mitigation strategies, and the Internal Draft LHMP.
Mark Kirko	Fire Chief, City of Homer	Participated in planning team meetings and/or reviewed planning team documents; reviewed and commented on hazard figures, mitigation strategies, and the Internal Draft LHMP.
Scott Mullen	Support Services Director, South Peninsula Hospital	Participated in planning team meetings and/or reviewed planning team documents; reviewed and commented on hazard figures, mitigation strategies, and the Internal Draft LHMP.

2.2 OPPORTUNITIES FOR STAKEHOLDERS

On January 5, 2022, the LHMP project manager reached out to stakeholders via email (Appendix C) about the 2022 LHMP and invited them to participate in the planning process. Stakeholders included the Alaska Department of Homeland Security and Emergency Management, Kachemak City, Alaska Department of Natural Resources (ADNR) Divisions of Forestry and Parks and Recreation, Kenai Peninsula Borough, Friends of Kachemak Bay State Park, University of Alaska Anchorage Kachemak Bay National Estuarine Research Reserve, Kachemak Heritage Land Trust, Cook Inlet Regional, Inc., Homer Airport, Kenai Peninsula School District, Alaska Department of Transportation and Public Facilities (ADOT&PF), and ENSTAR Natural Gas Company (ENSTAR). The Kachemak Bay National Estuarine Research Reserve offered assistance and resources about LHMP planning. The ADNR responded that they had concerns about potential tsunami threat from a glacier-caused landslide across Kachemak Bay. The ADNR is also a landowner along the Homer Spit, which is experiencing damage from erosion. The planning team spoke to them about their concerns and agreed to keep the ADNR informed of the LHMP process. The ADOT&PF also expressed concern about erosion along the Homer Spit and noted that they would like to participate in the planning process. In addition, ENSTAR expressed interest in participating in planning meetings.

The LHMP project manager reached out to the stakeholders again via email on [date], inviting them to review and provide comments about the Public Draft LHMP (Appendix C). [Summary of stakeholder comments].

2.3 PUBLIC INVOLVEMENT

On December 4, 2021, the City of Homer used their monthly newsletter to announce to their public that they were beginning the LHMP update process and provided contact information for interested persons. No comments were received from the public. Also, on [date], the City of Homer used their monthly newsletter to announce the Public Draft LHMP and comment period. Copies of Homer’s newsletters are provided in Appendix C.

2.4 REVIEW AND INCORPORATION OF EXISTING PLANS AND REPORTS

A list of the major relevant plans and reports reviewed and incorporated into the 2022 LHMP is provided in Table 2-3.

Table 2-3: Existing Plans and Reports

Plans and Reports	Information to be Incorporated into the 2022 LHMP
Alaska State Hazard Mitigation Plan (2018)	Information on statewide trends and the nature for all hazards are incorporated into the hazard profile and risk assessment sections.
Kenai Peninsula Borough All-Hazard Mitigation Plan (2014)	Information on borough-wide trends and the nature for all hazards are incorporated into the hazard profile and risk assessment sections.
City of Homer All-Hazard Mitigation Plan Update (unofficial) (2018)	Information on community trends and the nature for all hazards are incorporated into the hazard profile and risk assessment sections.
City of Homer and Kachemak City Community Wildfire Protection Plan (Kenai Peninsula Borough 2006)	This plan is in the process of being updated by the borough, but information is incorporated on wildfire history and recommendations brought into the mitigation strategy.

Table 2-3: Existing Plans and Reports

Plans and Reports	Information to be Incorporated into the 2022 LHMP
Homer Comprehensive Plan (City of Homer 2018)	Reviewed to ensure consistency.
Kenai Peninsula Borough Comprehensive Plan (2005)	Reviewed to ensure consistency.
City of Homer Emergency Operations Plan (2013)	Reviewed to ensure consistency.
Alaska Baseline Erosion Assessment: Study Findings and Technical Report (U.S. Army Corps of Engineers [USACE] 2009)	Background erosion information is incorporated into the hazard identification.
Kenai Peninsula Borough Risk Report: Kenai Peninsula Borough and the Incorporated Cities of Homer, Kachemak, Kenai, Seldovia, Seward, and Soldotna (FEMA 2017)	Background flood and earthquake information is incorporated into the hazard identification.
Coastal Change Analysis (Kachemak Bay Research Reserve 2016)	Historical information on coastal erosion is incorporated into the hazard profiles.
Landslide Hazard Evaluations for Multi-Hazard Risk Mapping in Homer, Alaska (Alaska Division of Geological and Geophysical Surveys [ADGGS] 2020 unpublished)	Information on current and historical landslide hazards in Homer are incorporated into the risk analysis and hazard profiles.
Updated tsunami inundation maps for Homer and Seldovia (ADGGS, 2018)	Tsunami hazard information into the hazard profile section and figure provided in Appendix A.
City of Homer Public Works Campus Tsunami Hazard Report: Risks, Mitigation Strategies, and Recommendations (Public Works Campus Task Force 2021)	Incorporated mitigation recommendations into the mitigation strategy.
Flood Risk Report: Lower Kenai Peninsula (City of Homer 2013)	Incorporated mitigation recommendations into the mitigation strategy.

2.5 CONTINUED PUBLIC PARTICIPATION

A copy of the 2022 LHMP will remain available at the City of Homer Planning and Land Management website and State of Alaska Division of Community and Regional Affairs online community planning library. The LHMP project manager will use Homer’s monthly newsletter to notify the public of, and seek input on, any changes or updates to the 2022 LHMP, including prioritized action plan and the 2027 LHMP kickoff. The public can reach out to the Homer Planning Department with comments or questions at Planning@ci.homer.ak.us.

2.6 PLAN UPDATE METHOD AND SCHEDULE

The 2022 LHMP will be monitored and evaluated by a subset of the planning team, specifically the LHMP project manager. Should the LHMP project manager no longer be involved with the LHMP, the project manager and/or the Homer Planning Department will select a new LHMP project manager to oversee the annual reviews and plan update.

The LHMP project manager will get input from specific planning team members as needed. They will complete the Annual Review Tracker every January and after any major disaster to ensure that the 2022 LHMP is relevant and effective in achieving the plan's goals. Annual review will be tracked in a table in this document (Table 2-4). FEMA-funded mitigation projects will continue to be tracked and reviewed using FEMA Mitigation Progress Report forms; progress summaries will be included in the Annual Review Tracker (Table 2-4) at the beginning of each year.

Four years after the 2022 LHMP's adoption:

- The LHMP project manager will complete the Annual Review Tracker.
- The LHMP project manager will reconvene the planning team and update membership, if necessary.
- The planning team will review Table 2-4, which provides annual summaries of the disasters that have occurred; new permanent information that becomes available; implementation measures; and public outreach and response to determine the hazards to be included in the next LHMP.
- The LHMP project manager will develop a new work plan.
- The LHMP project manager—with support from the planning team—will begin the plan update process, which is expected to take up to 6 months.

Table 2-4: Annual Review Tracker

Year	Disasters that Occurred	Mitigation Actions Implemented	New Relevant Studies/Reports to Include in 2027 LHMP	Public Outreach Conducted	Changes Made to 2022 LHMP
2023					
2024					
2025					
2026					

3.0 HAZARD IDENTIFICATION AND RISK ASSESSMENT

This section addresses Element B of the Local Mitigation Plan Regulation Checklist.

Regulation Checklist – 44 CFR 201.6 Local Mitigation Plans
Element B: Hazard Identification and Risk Assessment
B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction(s)? (Requirement § 201.6(c)(2)(ii))
B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement § 201.6(c)(2)(i))

Hazard identification consists of describing the nature of the hazard, location, disaster history, extent/severity, and probability of future events. Hazard identification profiles have been developed for each of the nine hazards addressed in Section 3.1 through Section 3.9: climate change, earthquake, erosion, flood, landslide, severe weather, tsunami, volcano, wildfire. The hazards profiled for this LHMP are provided in alphabetical order; this order does not signify level of risk or hazard classification.

3.1 CLIMATE CHANGE

Table 3-1: Climate Change

Profile	Description
Nature	<p>Climate is defined as the average statistics of weather, which includes temperature, precipitation, and seasonal patterns in a particular region. Climate change refers to the long-term and irrevocable shift in these weather-related patterns. The Fourth National Climate Assessment Report (2018) states that Earth’s climate is now changing at a faster rate than at any time in the history of modern civilization, primarily due to human activities. The disruption in the climate is already impacting the way people live, the food they grow, their health, the wildlife, the availability of water, and much more.</p> <p>The impacts of global climate change are being felt today in the form of sea level rise and storm surge in coastal areas; increased riverine flooding and stormwater inundation; more frequent and prolonged higher temperatures (leading to heat events, wildfires, and permafrost thaw); and more severe and frequent extreme weather events.</p> <p>Changing climate conditions are more pronounced in the polar regions. Alaska is often identified as being on the frontline of climate change because it is warming faster than any other state and faces multiple issues associated with a changing climate. These climate change impacts include:</p> <ul style="list-style-type: none"> • Retreat of sea ice, which will disrupt marine ecosystems and other animals (such as polar bears and walruses), impact local communities where sea ice is important for subsistence or tourism, and contribute to increased storm surge, coastal flooding, and erosion. • Increase of ocean temperature impacting marine ecosystems and Alaska’s fisheries. • Flooding and erosion of coastal and river areas related to changes in sea ice and increase in storm intensity. • Increase in ocean acidification, which will impact marine organisms and thereby disrupting the marine food web. • Increase in the size and frequency of wildfires and droughts. • Thawing permafrost, melting glaciers, and associated effects on the state’s infrastructure and hydrology. • Increase of health threats, such as injuries, smoke inhalation, damage to vital infrastructure, decrease of food and water security, and new infectious diseases. <p>The City of Homer is vulnerable to an increase in ocean temperature; flooding and erosion of coastal areas; increase in ocean acidification; increase in the size and frequency of wildfires; and increase of health threats.</p>
Location	<p>The entire area of the City of Homer is susceptible to climate change. Potential sea level rise, along with increased intensity of storm surge and coastal erosion, is threatening the Homer Spit.</p>
History	<p>According to the 2018 National Climate Assessment, the rate at which Alaska’s temperature has been warming is twice as fast as the global average since the middle of the twentieth century. Statewide annual average temperatures from 1925 to the late 1970s were variable with no clear pattern of change. However, over the past 45 years (late 1970s to present), statewide annual average temperatures began to increase with an average rate of 0.7 degrees Fahrenheit (°F) per decade. The temperature increase was especially strong in the Arctic due to the polar amplification of global warming. In Homer, the Alaska Climate Research Center has observed a change of annual average temperature from 34.9°F in 1950 to 38.9°F in 2020 (11% increase). During that period, the Alaska Climate Research Center also observed an increase of annual precipitation from 18.31 inches to 23.68 inches (29% increase).</p> <p>While historical precipitation and temperature changes in Alaska have been well documented over the past several decades, historical information on sea level rise is less known due to lack of tide gauges with extended records. Researchers believe that prior to 1990, sea level rise on a global</p>

Table 3-1: Climate Change

Profile	Description
	scale was only 0.04 inches per year; however, for the 1993 to 2012 reporting period, sea level rise has been 0.12 inches per year.
Extent / Severity	<p>The University of Alaska Fairbanks Scenarios Network for Alaska + Arctic Planning (SNAP) models climate data for mid-range global emissions. SNAP temperature models show that Homer will experience a temperature increase of 5.3°F by the end of the century. Likewise, precipitation models show that for the same reporting period Homer will see an average rainfall increase of 2.8 inches (Table 3-2).</p> <p>Sea level rise is not modeled for the City of Homer, but any rise in sea level or storm surge intensity would threaten all land and water on the Homer Spit.</p>
Recurrence Probability	<p>Climate change is a significant and lasting change in the statistical distribution of weather patterns over periods of time ranging from decades to millions of years. It may be a change in average weather conditions or in the distribution of weather around the average conditions (i.e., more or fewer extreme weather events).</p> <p>According to the National Aeronautics and Space Administration, “the current warming trend is of particular significance because most of it is extremely likely (i.e., greater than 95% probability) to be the result of human activity since the mid-twentieth century and proceeding at a rate that is unprecedented over decades to millennia.” The National Aeronautics and Space Administration also states that “scientists have high confidence that global temperatures will continue to rise for decades to come, largely due to greenhouse gases produced by human activities.</p>

Table 3-2: Mean Annual Temperature and Precipitation Predictions

	2010-2019	2050-2059	2090-2099
Mean Annual Temperature	39.7°F	42.8°F	45.0°F
Mean Annual Precipitation	28.7 inches	29.6 inches	31.5 inches

3.2 EARTHQUAKE

Table 3-3: Earthquake

Profile	Description
Nature	<p>An earthquake is a sudden motion or trembling caused by a release of strain accumulated in or along the edge of Earth’s tectonic plates. The effects of an earthquake can be felt far beyond the site of its occurrence. Earthquakes usually occur without warning and can cause massive damage and extensive casualties in a few seconds. Common effects of earthquakes are ground motion and shaking; surface fault ruptures; and ground failure. Ground motion is the vibration or shaking of the ground during an earthquake. When a fault ruptures, seismic waves radiate causing the ground to vibrate. The severity of the vibration increases with the amount of energy released and decreases with distance from the causative fault or epicenter. Soft soils can amplify ground motions. In addition to ground motion, several secondary hazards can occur from earthquakes, such as the following:</p> <ul style="list-style-type: none"> • Surface Faulting: Surface faulting is the differential movement of two sides of a fault at Earth’s surface. Displacement along faults—in terms of both length and width—varies but can be significant (e.g., up to 20 feet), as can the length of the surface rupture (e.g., up to 200 miles). Surface faulting can cause severe damage to linear structures including railways, highways, pipelines, tunnels, and dams. • Liquefaction: Liquefaction occurs when seismic waves pass through saturated granular soil, distorting its granular structure and causing some of the empty spaces between granules to collapse. Pore water pressure may also increase sufficiently to cause the soil to behave like a fluid for a brief period and cause deformations. Liquefaction causes lateral spreads (i.e., horizontal movements that are typically 10 to 15 feet, but can be up to 100 feet), flow failures (i.e., massive flows of soil that are typically hundreds of feet, but can be up to 12 miles), and loss of bearing strength (i.e., soil deformations causing structures to settle or tip). Liquefaction can cause severe damage to property. • Landslides/Debris Flows: Landslides/debris flows occur as a result of horizontal seismic inertia forces induced in the slopes by the ground shaking. The most common earthquake-induced landslides include shallow disrupted landslides such as rock falls, rockslides, and soil slides. Debris flows are created when surface soil on steep slopes becomes completely saturated with water. Once the soil liquefies, it loses the ability to hold together and can flow downhill at very high speeds, taking vegetation and/or structures with it. Slide risks increase after an earthquake during a wet winter. <p>The two most common measures of earthquake intensity used in the United States are the Modified Mercalli Intensity scale, which measures felt intensity; and peak ground acceleration (PGA), which measures instrumental intensity by quantifying how hard the earth shakes in a given location. Magnitude is measured by the amplitude of the earthquake waves recorded on a seismograph using a logarithmic scale.</p>
Location	<p>Homer is in a region of high seismicity. It is above a boundary between segments of the earthquake-generating Alaska-Aleutian subduction zone—the Kodiak Island segment to the southwest and the Prince William Sound segment to the northeast. While the 1964 Great Alaska Earthquake ruptured both segments, findings from around the region suggest that the two segments may rupture independently.</p> <p>The nearest studied fault line to Homer is the Falls Creek-Ninilchik anticline, which is a quaternary fault (i.e., one event per 1,600,000 years) approximately 30 miles away. Several other fault lines lie around Homer and on the Kenai Peninsula but are not studied and no details are known.</p>

Table 3-3: Earthquake

Profile	Description
History	<p>As stated in the 2018 State of Alaska HMP, Alaska is one of the most seismically active regions in the world and is at risk of societal and economic losses due to damaging earthquakes. On average, Alaska has one “great” (magnitude of 8 or higher) earthquake every 13 years, one magnitude 7 to 8 earthquake every year, and six magnitude 6 to 7 earthquakes every year. In addition, earthquakes that occur on tectonic plate boundary faults near the coast can generate tsunamis that impact coastal communities, including Homer.</p> <p>The effects of the March 27, 1964 Great Alaska Earthquake (which had a magnitude of 9.2) in the Homer area were thoroughly documented after the event. Observations included general damage caused by tectonic subsidence; and earth flows, landslides, fissures, seiches, submarine landslides, and beach changes caused by strong ground shaking during the event. Most of the damage to the community occurred on Homer Spit as a result of 2 to 3 feet of tectonic subsidence.</p> <p>Since 2000, there have been 27 earthquakes with a magnitude of 5.0 or greater that occurred within 150 miles of the City of Homer. Two of those earthquakes had a magnitude of 7.0 or greater.</p>
Extent / Severity	<p>The strength of an earthquake’s ground movement can be measured by PGA. PGA measures the rate in change of motion relative to the established rate of acceleration due to gravity ($g = 980$ centimeters per second). PGA is used to predict the risk of damage from future earthquakes by showing earthquake ground motions that have a specified probability (e.g., 10%, 5%, or 2%) of being exceeded in 50 years. The ground motion values are used for reference in construction design for earthquake resistance and can also be used to assess the relative hazard between sites when making economic and safety decisions. The current U.S. Geological Survey (USGS) seismicity model for Alaska was developed in 2007. The PGA values in Homer for a 5% probability of exceedance in 50 years are shown in Figure 2. Based on this model, there are 8,912.52 acres (100%) in the perceived “Severe” shaking zone, with moderate to heavy potential damage.</p> <p>An earthquake risk assessment was conducted by FEMA in 2017. Two scenarios were analyzed: the first used the January 2016 M7.1 Old Iliamna earthquake event and estimated a loss of improved parcels of \$3,303,266 (0.27%); the second simulated the M9.2 Great Alaska Earthquake and estimated a property loss of \$56,997,792 (4.60%). The estimated value of structure loss is provided in Table 4-6.</p>
Recurrence Probability	<p>As shown in Figure 2, the seismic PGA for Homer has a 5% probability of severe shaking in Homer in the next 50 years. Based on these data, there is a 5% chance of an earthquake occurring in Homer that will exceed 49.18 PGA in 50 years.</p>

3.3 EROSION

Table 3-4: Erosion

Profile	Description
Nature	<p>Erosion is the wearing and transportation of land. Erosion is typically gradual land loss through wind or water scour. In developed regions, erosion undermines buildings and infrastructure. Erosion can be experienced from coastal, riverine, or wind sources. Erosion forces are embodied in waves, currents, and winds; surface and ground water flow; and freeze-thaw cycles may also play a role. Not all of these forces may be present at any particular location. In the U.S., Alaska is unique because of how permafrost thaw interacts with flooding and erosion to exacerbate the impacts of these hazards. Frozen ground can disintegrate under the compounding influences of permafrost thaw, flooding, and erosion in an escalating feedback loop that can result in damage that is much greater than would be expected from the individual processes alone.</p> <p>Coastal erosion is a common term used to describe the retreat of the shoreline along the ocean. It describes the attrition of land resulting in loss of beach, shoreline, or dune material from natural activity or human influences. Erosion rarely causes death or injury; however, it causes property destruction, prohibits development, and impacts community infrastructure. Erosion can occur rapidly as the result of floods, storms, or other events; or slowly as the result of long-term environmental changes such as melting permafrost. Erosion is a natural process, but its effects can be easily exacerbated by human activity.</p> <p>Coastal erosion can occur from rapid short-term daily, seasonal, or annual natural events such as waves, storm surge, wind, coastal storms, and flooding; or from human activities including boat wakes and dredging. The most dramatic erosion often occurs during storms, particularly because the highest energy waves are generated under storm conditions.</p> <p>Coastal erosion occurs over the area from roughly the top of the shore into the nearshore region to about 30-foot water depth. It is measured as the rate of change in the position or horizontal displacement of a shoreline over a period of time. Bluff recession is the most visible aspect of coastal erosion because of the dramatic change it causes to the landscape. As a result, this aspect of coastal erosion usually receives the most attention.</p> <p>Coastal erosion may also be due to multi-year impacts and long-term climatic change such as sea-level rise, lack of sediment supply, subsidence, or long-term human factors (e.g., aquifer depletion or the construction of shore protection structures and dams). Attempts to control erosion using shoreline protective measures such as groins, jetties, seawalls, or revetments can lead to increased erosion.</p>
Location	<p>The City of Homer experiences coastal erosion annually from winter storms and high storm surge, occurring along the entire coastline. Particular areas of concern are the Homer Spit, the bluffs along sections of the Sterling Highway, and along the residential areas on Ocean Drive Loop.</p>
History	<p>In 2005, the Kachemak Bay Research Reserve completed a study of erosion rates in Homer. The study provided an estimate of coastal bluff erosion rates based on a series of aerial surveys from 1951 to 2003. The study concluded that the average erosion rate along Homer's shoreline is approximately 0.3 to 1.2 meters per year. The researchers found that before, during, and right after the 1964 earthquake, erosion rates were faster than they had been since 1975 but slowed after that time. There is evidence that the rates have increased again in recent years</p>
Extent / Severity	<p>As noted above, studies have shown that Homer's coastal bluffs have retreated on average 0.3 to 1.2 meters per year over the last 70 years.</p>
Recurrence Probability	<p>Erosion will continue each year in Homer from winter storms and storm surge.</p>

3.4 FLOOD

Table 3-5: Flood

Profile	Description
Nature	<p>A flood occurs when the existing channel of a stream, river, canyon, or other watercourse cannot contain excess runoff from rainfall or snowmelt, resulting in overflow onto adjacent lands. In coastal areas, flooding may occur when high winds or tides result in a surge of seawater into areas that are above the normal high tide line. Secondary hazards from floods can include:</p> <ul style="list-style-type: none"> • Erosion or scouring of stream banks, roadway embankments, foundations, footings for bridge piers, and other features • Impact damage to structures, roads, bridges, culverts, and other features from high-velocity flow and debris carried by floodwaters (debris may also accumulate on bridge piers and in culverts, increasing loads on these features or causing overtopping or backwater effects) • Destruction of crops, erosion of topsoil, and deposition of debris and sediment on croplands • Release of sewage and hazardous or toxic materials when wastewater treatment plants are inundated, storage tanks are damaged, and pipelines are severed
Location	<p>As shown in Figure 3, the areas most prone to flooding in the City of Homer are along nearly the entire shoreline, the low-lying areas surrounding and including Beluga Lake, and the entire Homer Spit. The flood map does not include risk from tsunami or sea level rise.</p>
History	<p>The City of Homer experiences flooding from rainfall runoff (late summer and early fall), snowmelt (spring and early summer), groundwater floods, and flash floods.</p> <p>Homer has experienced floods on several occasions in the last 20 years. Major events occurred in 2002, 2007, and 2013, resulting in numerous bridges being washed out on the Kenai Peninsula and isolating Homer for several weeks while temporary repairs were made. Two of these events were declared disasters and resulted in disruptions to the economy by preventing the flow of goods and materials except by barge or airplane.</p>
Extent / Severity	<p>The magnitude of flooding that is used as the standard for floodplain management in the United States is a flood with a probability of occurrence of 1% in any given year. This flood is also known as the 100-year flood (i.e., base flood). The 100-year flood (1%) and the 500-year flood (0.2%) are considered Special Flood Hazard Areas (SFHAs) and identified on FEMA's Flood Insurance Rate Maps (FIRMs). The City of Homer FIRM (Figure 2) identifies 708.52 acres (7.95%) with a 1% annual chance of flooding. These areas are along the shoreline, around Beluga Lake, and encompass the Homer Spit. There are 113.46 acres (1.27) with a 0.2% annual chance of flooding, which are on the Homer Spit.</p>
Recurrence Probability	<p>Floods can occur at any time in Homer but are most common in the spring and summer with heavy snowmelt and rainfall runoff. Based on previous occurrences of flood events in Homer, severe flooding is most likely to occur every 2 to 7 years.</p>

3.5 LANDSLIDE

Table 3-6: Landslide

Profile	Description
Nature	<p>Landslide is a general term for the dislodging and fall of a mass of soil or rocks along a sloped surface, or for the dislodged mass itself. The term is used for varying phenomena including mudflows, mudslides, debris flows, rock falls, rockslides, debris avalanches, debris slides, and slump-earth flows. Landslides may result from a wide range of combinations of natural rock, soil, or artificial fill. The susceptibility of hillside and mountainous areas to landslides depends on variations in geology, topography, vegetation, and weather. Landslides may also occur because of indiscriminate development of sloping ground or the creation of cut-and-fill slopes in areas of unstable or inadequately stable geologic conditions. Landslides often occur together with other hazards, which can exacerbate conditions as described below:</p> <ul style="list-style-type: none"> • Shaking due to earthquakes can trigger events ranging from rock falls and topples to massive slides • Intense or prolonged precipitation that causes flooding can also saturate slopes and cause failures leading to landslides • Wildfires can remove vegetation from hillsides, significantly increasing runoff and debris flow potential • Landslides into a reservoir can indirectly compromise dam safety; a landslide can even affect the dam itself • Saturation by water is also a primary cause of landslides. Saturation can occur in the form of intense or prolonged rainfall, snowmelt, changes in groundwater levels, and surface water level changes along coastlines, earth dams, and banks of lakes. <p>Another type of landslide occurs in areas cut by perennial streams; as floodwaters erode channel banks, rivers have undercut clay-rich sedimentary rocks along their southern bank, thereby destabilizing the ground and causing the ground above it to slide.</p>
Location	<p>In North America, there is an association between landslides and hilly terrain (particularly with slopes ranging from about 20 to 40 degrees). Areas on the mountainous terrain in the city which includes slopes greater than 20 degrees, are shown in Figure 4. The highest concentration of these slopes is along the bluffs running between Skyline Drive East End Road and on the west end of the city, just south of the Sterling Highway (Bluff Point).</p> <p>The Bluff Point landslide is well documented and shown in Figure 5.</p>
History	<p>The ADGGS has identified over 1,000 slope failure scars using aerial photographs and light detection and ranging (LIDAR) data from the Homer and Kachemak areas. Notable landslide failures in Homer include:</p> <ul style="list-style-type: none"> • At least one severe landslide occurred above Kachemak following the Great Alaskan Earthquake. • In 2013, heavy rains caused a 16-foot mudslide down Bear Creek Drive (3 miles east on East End Road). Uphill, when heavy rains saturated the narrow Bear Creek Canyon, it “let go,” which sent trees and debris down Bear Creek, jamming a culvert on the uphill side of East End Road. A disaster declaration was made for several rain-soaked areas in the Kenai Peninsula Borough. • In 2015, a landslide occurred along a stretch of Kachemak Drive near the Homer Airport. The slide resulted in the closure of Kachemak Drive approximately 0.5-mile from Homer Spit Road to the top of the hill by the old airport. The slide took out a 100-foot section of the east bound lane of Kachemak Drive, pushing clumps of spruce and alder trees into Mud Bay.
Extent / Severity	<p>No official landslide dataset exists for the City of Homer. However, in North America, there is an association between landslides and hilly terrain (particularly with slopes ranging from about 20 to</p>

Table 3-6: Landslide

Profile	Description
	40 degrees). As such, the mountainous terrain in Homer that includes slopes greater than 20 degrees is at greatest risk of slide. Approximately 17% (1,504 acres) of Homer is in this hazard area.
Recurrence Probability	Shallow landslides can occur at any time but are more likely to happen when the ground is nearly saturated. However, deep-seated landslides are generally triggered by deep infiltration of rainfall (which can take weeks or months to occur) and therefore typically follow major storm events. It is assumed that the probability of a future landslide event will be highly tied to winter storm/rain events. Based on historical occurrences, severe winter storm conditions are likely in the City of Homer every 2 to 7 years.

3.6 SEVERE WEATHER

Table 3-7: Severe Weather

Profile	Description
Nature	<p>Severe weather occurs throughout Alaska with extremes includes thunderstorms; lightning; hail; heavy and drifting snow; freezing rain/ice storm; extreme cold; and high winds. Severe weather events can include the following:</p> <ul style="list-style-type: none"> • A winter storm is an event in which the main types of precipitation are snow, sleet, or freezing rain and be accompanied by high winds, cold temperatures, and storm surge. A winter storm can range from a moderate snow over a few hours, to blizzard conditions with blinding wind-driven snow that lasts several days. Some winter storms may be large enough to affect several states, while others may affect only a single community. In more temperate continental climates such as Homer, these storms are not necessarily restricted to the winter season and may also occur in the late autumn and early spring. • Heavy snow and rain occur frequently in coastal areas and snowfall can accumulate 4 inches or more in 12 hours or less. • Freezing rain and ice storms occur when rain or drizzle freezes on surfaces and can cause damage to powerlines, pipelines, and other infrastructure. • Extreme cold varies according to normal regional climate. Alaska’s extreme cold usually involves temperatures between -20 and -50°F. Excessive cold may accompany winter storms, occur after storms, or can occur without storm activity. • High winds in Alaska can equal hurricane force but are under a different classification because they are not cyclonic nor possess other hurricane characteristics. Strong winds occasionally occur over the interior due to strong pressure differences, especially where influenced by mountainous terrain; however, the windiest places in Alaska are generally along the coastlines.
Location	The entire Homer area is vulnerable to the effects of severe weather.
History	<p>Notable severe weather events from 2000 through 2021 include:</p> <ul style="list-style-type: none"> • In the spring of 2003, strong winds across the Kenai Peninsula resulted in widespread power outages, downed trees, and structural damage and fanned the flames of a 150-acre wildfire in Anchor Point. • In November 2011, a series of major windstorms caused widespread power outages threatening life and property. Power was disrupted to 17,300 homes and businesses. Public infrastructure, commercial property, and personal property damages were reported throughout the borough. • In February 2014, a strong low in the southwest Gulf of Alaska produced strong wind in in the Kachemak Bay Area. The strong wind caused widespread damage from Kenai to the Homer area. Heavy snow fell in the Kachemak Bay area, combined with high wind and blizzard conditions. • In December 2019, a southerly jet stream brought several low-pressure systems to Southcentral Alaska. These were accompanied by above freezing temperatures, abundant rainfall, and high winds as the fronts passed through. A primary impact of this event was the flooding of the Anchor Point River. In addition, North Fork Road was impassable, and the Sterling Highway was flooded in several locations between mile 161 and 163, there was flooding across East End Road at Bear Creek Drive, and a mudslide on East End Road at Kachemak Bay Drive. • In January 2020, a low-pressure system developed south of the Aleutian Islands and then moved north along the Alaska Peninsula and up Cook Inlet. A strong high-pressure system that followed brought a large amount of cold air, which created high winds through the Cook Inlet area. Homer reported 8 hours of blizzard conditions and near-whiteout conditions.

Table 3-7: Severe Weather

Profile	Description
Extent / Severity	Winter storms in the Home area can produce snow of up to 3 feet per storm, high wind speeds of up to 60 miles per hour and cold with temperatures.
Recurrence Probability	Based on historical occurrences, the City of Homer can expect to experience severe weather conditions approximately 5 to 6 days each year.

3.7 TSUNAMI

Table 3-8: Tsunami

Profile	Description
Nature	<p>A tsunami is a series of traveling ocean waves of extremely long length, generated by disturbances associated primarily with earthquakes occurring below or near the ocean floor. Subduction zone earthquakes at plate boundaries often cause tsunamis. However, tsunamis can also be generated by submarine landslides, sub-marine volcanic eruptions, the collapse of volcanic edifices, and—in very rare instances—large meteorite impacts in the ocean.</p> <p>In the deep ocean, a tsunami may have a length from wave crest to wave crest of 100 miles or more, but a wave height of only a few feet or less. Therefore, the wave period can be up to several hours and wavelengths can exceed several hundred miles. Tsunamis are unlike typical wind-generated swells on the ocean, which might have a period of about 10 seconds and a wavelength of up to 300 feet.</p> <p>Tsunamis not only affect beaches that are open to the ocean, but also bay mouths, tidal flats, and the shores of large coastal rivers. Tsunami waves can also diffract around land masses. Because tsunamis are not symmetrical, the waves may be much stronger in one direction than another, depending on the nature of the source and the surrounding geography. However, tsunamis propagate outward from their source; therefore, coasts in the shadow of affected land masses are safer. Secondary hazards can occur from tsunamis, such as:</p> <ul style="list-style-type: none"> • Erosion or scouring of stream banks, roadway embankments, foundations, footings for bridge piers, and other features. • Impact damage to structures, roads, bridges, culverts, and other features from high-velocity flow and from debris carried by floodwaters; debris may also accumulate on bridge piers and in culverts, increasing loads on these features or causing overtopping or backwater effects. • Release of sewage and hazardous or toxic materials when wastewater treatment plants are inundated, storage tanks are damaged, and pipelines are severed. • Flood waters can pose health risks such as contaminated water and food supplies. • Loss of shelter leaves people vulnerable to insect exposure, heat, and other environmental hazards. <p>The majority of deaths associated with tsunamis are related to drownings; however, traumatic injuries are also a primary concern. Injuries such as broken limbs and head injuries are often caused by the physical impact of people being washed into debris such as houses, trees, and other stationary items. As the water recedes, the strong suction of debris being pulled into largely populated areas can cause further injuries and undermine buildings and services.</p>
Location	<p>The tsunami inundation zone for Homer is shown in Figure 6 and Figure 7. Nearly the entire Homer Spit could be inundated, as well as the low-lying areas around Beluga Lake and to the coast, excluding the airport.</p>
History	<p>The 1964 Great Alaska Earthquake triggered several tsunamis, one major tectonic tsunami and approximately 20 local submarine and subaerial landslide tsunamis. The major tsunami hit between 20 and 45 minutes after the earthquake. The locally generated tsunamis struck between 2 and 5 minutes after their generation and caused most of the deaths and damage in Homer.</p>

Table 3-8: Tsunami

Profile	Description
Extent / Severity	<p>The Alaska Earthquake Center and University of Alaska Fairbanks model for tsunami waves and inundation shows a maximum composite tsunami inundation for Homer. Based on this model, there are 1,735 acres (19%) of Homer’s land area at risk to tsunami inundation. This inundation level includes eight (24%) critical assets.</p> <p>A series of simulated tectonic scenarios were conducted in a report by the ADGGS. The first scenario (a repeat of the 1964 Great Alaska Earthquake) would not result in any inundation in Homer except for the section of Lake Street that separates the tidal flats from Beluga Lake. Some low-lying parts of Homer Spit would be flooded, but the Homer Spit Road would not be inundated. In the next scenario (a magnitude 9.2 earthquake on the Kenai Peninsula), Lake Street (which separates the tidal flats from Beluga Lake), the areas between the tidal flats, the Sterling Highway, and nearly the entire Homer Spit would be inundated.</p> <p>The third scenario (maximum slip distributed between 9.3 and 21.7 miles deep) would result in the most severe inundation. The entire low-lying area of Homer from the tidal flats to the Kachemak Bay shore as well as some residential areas south of Beluga Land and along the Sterling Highway would be inundated. The Homer Spit would be completely inundated under this scenario.</p> <p>The final scenario (rupture of the Cascadia subduction zone) would not result in any inundation except for the tidal flats area and some low-lying areas of the Homer Spit.</p> <p>The City of Homer created a task force to evaluate risks and provide recommendations for mitigation to the public works campus.</p>
Recurrence Probability	<p>The likelihood of a tsunami is hard to predict; however, previous events have shown that it is plausible that an earthquake-generated tsunami could impact the Homer community in the next 10 years.</p>

3.8 VOLCANO

Table 3-9: Volcano

Profile	Description
Nature	<p>A volcano is a vent or opening in the earth’s crust from which molten lava (magma), pyroclastic materials, and volcanic gases are expelled onto the surface. The vent may be visible as a small bowl-shaped depression at the summit of a cone or shield-shaped mountain. Through a series of cracks in and beneath the volcano, the vent connects to one or more linked storage areas of molten or partially molten rock. There are four general volcano types:</p> <ul style="list-style-type: none"> • Lava domes are formed when lava erupts and accumulates near the vent. • Cinder cones are shaped and formed by cinders, ash, and other fragmented material accumulations that originate from an eruption. • Shield volcanoes are broad gently sloping volcanic cones with a flat dome shape that usually encompass several tens or hundreds of square miles, built from overlapping and inter-fingering basaltic lava flows. • Composite or stratovolcanoes are typically steep-sided large dimensional symmetrical cones built from alternating lava, volcanic ash, cinder, and block layers; most composite volcanoes have a crater at the summit containing a central vent or a clustered group of vents. <p>There are three types of volcanic eruptions, described below. Some volcanoes may exhibit only one type of eruption during an event, while others may display an entire sequence of all three types in one event.</p> <ul style="list-style-type: none"> • Magmatic eruptions are the most well observed eruptions. Magmatic eruptions produce juvenile clasts (composed fragments) during explosive decompression from gas releases. Magnetic eruption subtypes include Hawaiian, Strombolian, Vulcanian, Peléan, and Plinian. • Phreatomagmatic eruptions are volcanic eruptions resulting from the interaction between magma and water. Grain deposits from phreatomagmatic explosion involving high water to magma ratios are extremely fine-grained and distinctly poorly sorted, while deposits resulting from low water to magma ratios are commonly coarse and relatively well sorted. Phreatomagmatic eruption subtypes include: Surtseyan, Submarine, and Subglacial. • Phreatic eruptions are steam-blast eruptions. These eruptions occur when cold groundwater or surface water comes into contact with hot rock or magma. Phreatic eruptions blast out steam, water, ash, volcanic bombs, and volcanic blocks, but no new magma. <p>Other hazards potentially caused by a volcanic eruption include:</p> <ul style="list-style-type: none"> • Volcanic ashfall • Lava flows • Lahars (debris flows) • Volcanic gas • Pyroclastic surges or flows • Volcanic landslides
Location	<p>As shown in Figure 8, most of the community of Homer (95% of land area) is at risk for moderate tephra ashfall hazard with 0.25 to 1 inch accumulation, and the far western end of Homer (5% of land area) is at risk for high (heavy) tephra ashfall with 1 to 4 inches of accumulation.</p>

Table 3-9: Volcano

Profile	Description
History	<p>The Alaska Volcano Observatory is monitoring 3 volcanos within 100 miles of Homer:</p> <ul style="list-style-type: none"> • Augustine (70 miles southwest) was last active in 2006 when it had explosive eruptions that produced ash plumes that deposited small amounts of ash in Homer. • Iliamna (60 miles northwest) was last active in 1953 when it emitted a large cloud of smoke. • Redoubt (80 miles northwest) was last active in 2009 when it erupted over several months with multiple ash-producing explosions, culminating in an eruption in which the ash cloud reached 50,000 feet and moved swiftly to the southeast, depositing up to 2 millimeters of ashfall in Homer. Eruptions also occurred in 1968 and 1990.
Extent / Severity	<p>As noted above, all of the Homer area is susceptible to moderate to heavy tephra ashfall. According to the Alaska Volcano Observatory, ash accumulation of 0.25 to 1 inch is likely from moderate tephra ashfall while ash accumulations of 1-4 inches is likely from heavy tephra ashfalls.</p>
Recurrence Probability	<p>Given the proximity of three active volcanos and history of past events, it is probable that the City of Homer will have an ashfall event in the next 50 years.</p>

3.9 WILDFIRE

Table 3-10: Wildfire

Profile	Description
Nature	<p>A wildfire—sometimes referred to as a wildland fire—is a fire in an area of combustible vegetation occurring in rural areas. Wildfires can be caused by human activities (e.g., unattended burns, campfires, or off-road vehicles without spark-arresting mufflers); or by natural events (e.g., lightning, drought, or infestation). Wildfires can be classified as forest, urban, tundra, interface or intermix fires, and prescribed burns.</p> <p>The following three factors contribute significantly to wildfire behavior and can be used to identify wildfire hazard areas:</p> <ul style="list-style-type: none"> • Topography describes slope increases, which influences wildfire spread rate increases. South-facing slopes are also subject to more solar radiation, making them drier and thereby intensifying wildfire behavior. However, ridge tops may mark the end of wildfire spread because fire spreads more slowly or may even be unable to spread downhill. • Fuel is the type and condition of vegetation that plays a significant role in wildfire spread occurrence. Certain plant types are more susceptible to burning or will burn with greater intensity. Dense or overgrown vegetation increases the amount of combustible material available as fire fuel (referred to as the “fuel load”). The living-to-dead plant matter ratio is also important. Certain climate changes may increase wildfire risk significantly during prolonged drought periods as both living and dead plant matter moisture content decreases. Insect infestations can kill trees and create high fuel loads. Both the horizontal and vertical fuel load continuity is also an important factor. • Weather is the most variable factor affecting wildfire behavior. Temperature, humidity, wind, and lightning can affect ignition opportunities and fire spread rate. Extreme weather (e.g., high temperatures and low humidity) can lead to extreme wildfire activity. Climate change increases fire to vegetation ignition susceptibility due to longer dry seasons. By contrast, cooling and higher humidity often signal reduced wildfire occurrence and easier containment. <p>Indirect wildfire effects can be catastrophic. In addition to stripping the land of vegetation and destroying forest resources, large intense fires can harm the soil, waterways, and the land itself. Soil exposed to intense heat may lose its capability to absorb moisture and support life. Exposed soils erode quickly and exacerbate river and stream siltation thereby increasing flood potential, harming aquatic life, and degrading water quality. Vegetation-stripped lands are more susceptible to increased debris flow hazards.</p>
Location	<p>As shown in Figure 9, most of the Homer area has moderate or high wildland fuel risk, with some areas of very high risk. The Homer Spit, tidal flats, and low-lying areas around Beluga Lake are at moderate risk; the areas of very high risk are primarily along the bluffs.</p> <p>The northern and eastern borders of Homer are in the wildland-urban interface. These areas, which are primarily residential, are at higher risk from fires on the Kenai Peninsula. The areas around the Bridge Creek Reservoir are at a higher risk because of substantial spruce bark beetle killed trees. The City has implemented aggressive management in this area to reduce risk.</p>

Table 3-10: Wildfire

Profile	Description
History	<p>The Alaska Interagency Coordination Center tracks wildfires throughout the state. Every year there are wildfires across the Kenai Peninsula.</p> <p>Homer, like other areas of the Kenai Peninsula, has been dramatically affected by the spruce bark beetle infestation. The vast majority of wildland fires on the Kenai Peninsula are the result of human activities with open burning being the most prevalent. Although lightning-caused fires do occur, they are infrequent, especially on the south Kenai Peninsula.</p> <p>The 2005 Tracy Avenue Fire and the 2009 East End Road Fire were especially threatening to property and had potential loss of life. In May of 2014, a human-caused fire started along the Funny River Road in the central Kenai Peninsula. Over its course, this fire grew to almost 200,000 acres of black spruce, mixed hardwoods, and spruce and bark beetle killed spruce, and grass. Although outside Homer city limits, these recent fires demonstrate the potential for rapid fire spread given the weather conditions, topography, and the availability of local and state wildfire fighting crews.</p>
Extent / Severity	<p>Much of Homer is vulnerable to wildfires. As shown on Figure 9, 65% of the land area in Homer is in a high/very high/extreme fuel risk area. Wildfires can destroy habitat, impact watersheds; burn down homes, buildings, and critical facilities; cause loss of life to humans and animals; and restrict access to recreational areas. Wildfires can cause fire-related injuries; and local and regional transport of smoke, ash, and fine particles, which increase respiratory and cardiovascular risks. People without means for evacuation are also vulnerable to wildfires.</p>
Recurrence Probability	<p>Recorded wildland fires within 10 years and 50 miles of Homer have an average recurrence rate of approximately 2.5 to 3 years. It is anticipated that this probability will continue into the future or increase in frequency as climate change and spruce bark beetles create more fuel for potential fires.</p>

4.0 RISK ASSESSMENT

This section addresses Element B of the Local Mitigation Plan Regulation Checklist.

Regulation Checklist – 44 CFR 201.6 Local Mitigation Plans
Element B: Hazard Identification and Risk Assessment
B3. Is there a description of each identified hazard’s impact on the community as well as an overall summary of the community’s vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))
B4. Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods? (Requirement §201.6(c)(2)(ii))

4.1 HAZARD IMPACT

A hazard impact assessment predicts the current or expected impact of a hazard on a community or given area. The analysis provides quantitative data that may be used to identify and prioritize potential mitigation measures by allowing communities to focus attention on areas with the greatest risk of damage.

For this 2022 LHMP, a conservative exposure-level analysis was conducted to assess the risks associated with the identified hazards. Due to a combination of a lack of adequate information and methodology, a semi-quantitative hazard impact assessment has only been prepared for the following hazards: climate change, earthquake, flood, landslide, tsunami, volcano, and wildfire. A qualitative analysis was prepared for the following hazards: erosion and severe weather.

Hazard impact assessments were prepared for the City of Homer’s land area, population center, and critical facilities (Table 4-1). A land area of 13.93 square miles was determined using available Geographic Information System (GIS) data. The population center (i.e., a region that describes a center point of Homer’s population) was determined to comprise 9.23 square miles. The critical facilities (Figure 10) include a list of facilities that provide services and functions essential to Homer, especially during and after a disaster. Common types of critical facilities include fire stations; police stations; hospitals; schools; water and wastewater systems; and utilities. Critical facilities may also include places that can be used for sheltering or staging purposes, such as community centers, schools and libraries. Critical facilities may also include large public gathering spots and places of worship. For the 2022 LHMP, 33 critical facilities (public and privately owned) were collected in Homer. Critical facility names and coordinates were then geocoded to a location and the resulting geographic features were used for hazard impact assessment. Facility-specific information was given to the City of Homer and will be kept on file.

The overall results of the hazard assessments are provided below. This analysis is a simplified assessment of the potential effects of the hazards on land area (Table 4-2), population center (Table 4-3), and critical facilities (Table 4-4) at risk, without consideration of the probability or level of damage. In addition, elevation data were not available; therefore, additional analysis will need to be conducted to develop a more accurate understanding of hazard vulnerabilities.

Table 4-1: Total Land Area, Population Center and Critical Facilities

Category	Number
Land Area	8,912.52 acres
Population Center	5,899.74 acres
Critical Facilities	33

Table 4-2: Total Acres of Land in a Hazard Area

Hazard Area	Acres	Percent of Total Acres
Climate Change	8,912.52	100
Earthquake		
Weak/Light	0	0
Moderate/Strong	0	0
Very Strong/Severe/Violent	8,912.52	100
Erosion	No mapping data are available for erosion. Based on existing reports and the community planning team, approximately 5% of total land area is susceptible erosion.	
Flood		
1% Annual Chance	708.52	7.95
0.2% Annual Chance	113.46	1.27
Landslide	1,503.91	16.87
Severe Weather	8,912.52	100
Tsunami	1,735.33	19.47
Volcano		
Low	0	0
Low-Moderate/Moderate	8,490.64	95.27
High	421.89	4.73
Wildfire		
Moderate	2,939.61	32.98
High/Very High	5,820.79	65.31
Extreme	15.30	0.17

Table 4-3: Total Number of Acres of Population Center in a Hazard Area

Hazard Area	Acres	Percent of Total Acres
Climate Change	5,899.74	100
Earthquake		
Weak/Light	0	0
Moderate/Strong	0	0
Very Strong/Severe/Violent	5,899.74	100
Erosion	No mapping data are available for erosion. Based on existing reports and the community planning team, approximately 1% of the total population center is susceptible erosion.	

Table 4-3: Total Number of Acres of Population Center in a Hazard Area

Hazard Area	Acres	Percent of Total Acres
Flood		
1% Annual Chance	21.80	3.7
0.2% Annual Chance	0	0
Landslide	1,030.41	17.47
Severe Weather	5,899.74	100
Tsunami	5,657.83	95.90
Volcano		
Low	0	0
Low-Moderate/Moderate	5,878.24	99.64
High	21.50	0.36
Wildfire		
Moderate	1,384.28	23.46
High/Very High	4,503.32	76.33
Extreme	9.46	0.16

Table 4-4: Total Number of Critical Facilities in a Hazard Area

Hazard Area	Number	Percent of Total Facilities
Climate Change	33	100
Sea Level Rise	5	15
Earthquake		
Weak/Light	0	0
Moderate/Strong	0	0
Very Strong/Severe/Violent	33	100
Erosion	7	24
Flood		
1% Annual Chance	3	10
0.2% Annual Chance	1	3
Landslide	1 This facility is not in an area of greater than 20% slope, but is in the path of a potential landslide.	3
Severe Weather	33	100
Tsunami	8	24

Table 4-4: Total Number of Critical Facilities in a Hazard Area

Hazard Area	Number	Percent of Total Facilities
Volcano		
Low	0	0
Low-Moderate/Moderate	31	94
High	2	6
Wildfire		
Moderate	22	67
High/Very High	9	27
Extreme	0	0

4.2 OVERALL SUMMARY OF VULNERABILITY

A list of the key issues, or overall summary of vulnerability, for each hazard profiled in the 2022 LHMP is provided in Table 4-5.

Table 4-5: Overall Summary of Vulnerability

Hazard	Vulnerability
Climate Change	<p>All of Homer is vulnerable to climate change. Over the next century, weather patterns that are considered extreme today are expected to become normal. The City of Homer's overall vulnerabilities to climate change include sea level rise, coastal erosion, increased average annual maximum temperature, increased average annual precipitation, severe moisture deficit/drought, and wildfires.</p> <ul style="list-style-type: none"> Sea level rise: 15% of the critical facilities and infrastructure in the city are in the low-lying areas on the Homer Spit and will be at risk of inundation. Flooding due to sea level rise will cause destructive erosion; flooding; and soil contamination with salt; loss of habitat for fish, birds, and plants; disruption and/or delay of transportation; and damages to homes and businesses on a more regular basis. Temperature and precipitation: SNAP temperature models show that all of Homer will experience a temperature increase of 5.3°F by the end of the century, while precipitation models show that for the same reporting period, Homer will see an average rainfall increase of 2.8 inches. In the summer, an increase in temperature will cause an increase in fire risk. Mega storms that are linked to climate change can cause severe flooding. Along the coast, deadly and destructive storm surges may push farther inland than they once did, which means more frequent nuisance flooding.
Earthquake	<p>All of the City of Homer is vulnerable to ground shaking from an earthquake and the entire city is in severe perceived ground shaking hazard areas. Nearly 100% of Homer's residents live and 100% of critical facilities and infrastructure are in the severe shaking potential areas. The estimated value of structure loss is provided in Table 4-6.</p> <p>Those that live in severe shaking potential areas can expect earthquake events to produce moderate to heavy damage. According to the USGS, this could mean slight</p>

Table 4-5: Overall Summary of Vulnerability

Hazard	Vulnerability
	<p>damage in specially designed structures, considerable damage in ordinary substantial buildings with partial building collapse, and considerable damage in poorly built or badly designed structures. Those that live in violent shaking potential areas can expect earthquake events to produce the potential for heavy damage. According to the USGS, this could mean that well designed framed structures could be thrown out of plumb and substantial buildings could experience partial building collapse.</p>
Erosion	<p>Coastal erosion along the Homer Spit is a major concern for the City and for property owners. Only approximately 5% of the land area is susceptible to erosion, and those areas are primarily on the Homer Spit. The land base is narrow and significant mitigation will be required to stop or slow the coastal erosion occurring there. If no action is taken, all structures along the spit will be susceptible to damage, including 7 critical facilities, several local businesses, and state and federal land.</p> <p>A 4,830-foot revetment was constructed on the Homer spit in 1998, and a seawall was constructed in 2002 in an attempt to protect residential structures from continuing coastal erosion. The seawall requires continuous maintenance because it is frequently impacted by storm surge. In addition, protective measures such as seawalls or revetments can lead to increased erosion when shoreline structures eliminate the natural wave run-up and sand deposition and increase reflected wave action. The increased wave action can scour in front of and behind structures and prevent the settlement of suspended sediment.</p> <p>The primary impact from erosion is the loss of developable land and anything on it. The impact to infrastructure is expensive, ongoing, and includes the Sterling Highway and Homer Spit Road.</p>
Flood	<p>The City of Homer is most vulnerable flooding from snowmelt and heavy rainfall. Approximately 9.2% of Homer's land mass (1.28 square miles) and 4 critical facilities (the City of Homer Port and Harbor Office, the Homer Harbor, the Petro Marine Tank Farm, and Pioneer Dock) are in the SFHA, which is concentrated on the Homer Spit, along the shoreline, and low-lying areas around Beluga Lake.</p> <p>Floods can block roadways and cause erosion, mudflows, debris flows, and water damage to structures and result in land loss, injury, and even death. People that are most vulnerable to flooding are generally those that live in the SFHA.</p> <p>There are 26 structures insured by the National Flood Insurance Program (NFIP) and none of those properties are considered Repetitive Loss properties (i.e., any insurable building for which two or more claims of more than \$1,000 were paid by the NFIP in any rolling 10-year period, since 1978).</p>
Landslide	<p>No official landslide dataset exists for the City of Homer. However, in North America, there is an association between landslides and hilly terrain (particularly with slopes ranging from about 20 to 40 degrees). As such, the mountainous terrain in Homer that includes slopes greater than 20 degrees is at greatest risk of slide. Approximately 17% (1,504 acres) of Homer is in this hazard area, including 1 critical facility, the Southern Peninsula Hospital.</p> <p>In particular, the ADGGS found that the area covered by the Bluff Point landslide deposit and the area immediately adjacent to the headscarp have an elevated risk of deep-seated landslide hazard. Similarly, the deep-seated landslide at the end of China Poot Road also represents a significant landslide hazard. Development in and on the landslide deposit, as well as development in the mouths of catchments on either side of the China Poot Road landslide should be considered high-risk areas. Debris flow from landslides along the bluffs, particularly below Woodard Canyon,</p>

Table 4-5: Overall Summary of Vulnerability

Hazard	Vulnerability
	<p>has the potential to impact facilities and residential buildings, including the South Peninsula Hospital.</p> <p>Landslides can cause damage to and impact critical infrastructure, including water, sewer, and roadways. They may also cause injury or death to those trapped; break utility lines; block/damage roadways; damage foundations, chimneys, or surrounding land; and lead to flash flooding and further landslides.</p>
Severe Weather	<p>All of the City of Homer is vulnerable to severe weather. The Homer area is most vulnerable to high winds during the winter season. Winds may sweep up loose snow and produce blinding blizzards and dangerous wind chills.</p> <p>A major storm can last for several days and be accompanied by high winds, freezing rain or sleet, heavy snowfall, and cold temperatures. A storm may knock down trees and powerlines, cause roofs to collapse, and lead to dangerous driving conditions causing drivers to be stranded. Homer has an extensive history of storm damage, especially in the coastal areas along the Homer Spit and adjacent properties.</p> <p>Along the Homer Spit, high winds and coastal storm surge can damage other installments that mitigate erosion, such as revetments and gabion baskets.</p> <p>The Seward Highway between Anchorage and Homer is periodically closed every year due to an avalanche event or for avalanche control, which can further isolate the community.</p>
Tsunami	<p>The Alaska Earthquake Center and University of Alaska Fairbanks model for tsunami waves and inundation shows a maximum composite tsunami inundation for Homer. Based on this model, there are 1,735 acres (19%) of Homer’s land area at risk to tsunami inundation. This inundation level includes eight (24%) critical assets.</p> <p>The most at-risk locations in Homer are the Homer Spit, coastal areas, and low-lying areas around (and including) Beluga Lake. Tsunami run-up will likely cause flooding and infrastructure along the Homer Spit could be damaged.</p>
Volcano	<p>Ashfall becomes a public health hazard when humans inhale fine ash. Ash will also interfere with the operation of mechanical equipment including aircraft. In Alaska, this is a major problem because many of the primary flight paths are near historically active volcanoes. Because ash can conduct electricity, accumulation may also interfere with the distribution of electricity from the shorting transformers and other electrical components.</p> <p>Based on modeling, most of the City of Homer is in a moderate ashfall hazard area. Even a small ashfall event could cause significant damage to the built environment (e.g., clogged filters and damaged parts of vehicles and machinery, clogged filters of air-ventilation systems, roof collapse, cellular and radio communication interruption) and the natural environment (e.g., habitat damage, water pollution, weather pattern shifts). In addition, an ashfall event could cause respiratory problems, eye problems, and skin irritation for humans.</p>
Wildfire	<p>Much of Homer is vulnerable to wildfires. As shown on Figure 9, 65% of the land area of Homer is in a high/very high/extreme fuel risk area.</p> <p>During the summer, the entire community is vulnerable to wildland fire because most structures are constructed of wood and other flammable materials. Standing timber and other natural fuels interface with the community. History has demonstrated that fire bands can be carried by local winds up to 0.5 mile, jumping human-made fire lines and spreading fire across large areas. Most areas of Homer</p>

Table 4-5: Overall Summary of Vulnerability

Hazard	Vulnerability
	<p>are immediately adjacent to wildland areas and could be threatened by uncontrolled fire.</p> <p>Without mitigation or preparation efforts, the impacts of a wildland interface fire in Homer could grow into an emergency or disaster. In addition to impacting people, wildland fires may severely impact livestock and pets. Such situations may require emergency life support, evacuation, and alternative shelter. Indirect impacts of wildland fires can be catastrophic. In addition to stripping the land of vegetation and destroying forest resources, large intense fires can harm the soil, waterways, and the land itself. Soil exposed to intense heat may lose its capability to absorb moisture and support life. Exposed soils erode quickly and enhance siltation of rivers and streams, which increases flood and landslide potential, harms aquatic life, and degrades water quality.</p>

Table 4-6: Value of Facilities Most Affected by Earthquake

Category	Total Value (Building and Contents)	Estimated Loss from M9.2 Earthquake	M9.2 Earthquake loss Ratio
Boat Dock	\$16,366,000	\$1,525,582	20.10%
City Office	\$239,000	\$12,850	5.38%
Airport	\$15,416,800	\$905,695	5.87%
School	\$55,914,600	\$3,163,500	11.41%
Emergency Shelter	\$4,140,400	\$229,649	10.95%
State Office	\$2,271,800	\$2,038,298	5.74%
Police Station	\$2,064,500	\$112,256	5.44%
Fire Station	\$2,064,500	\$112,256	5.44%

4.3 NATIONAL FLOOD INSURANCE PROGRAM INSURED STRUCTURES

The NFIP, managed by FEMA, provides flood insurance to property owners, and businesses. There are 26 NFIP-insured structures in the City of Homer. Of these, none are considered Repetitive Loss properties.

5.0 MITIGATION STRATEGY

This section addresses Element C of the Local Mitigation Plan Regulation Checklist.

Regulation Checklist – 44 CFR 201.6 Local Mitigation Plans
Element C: Mitigation Strategy
<p>C1. Does the Plan document each jurisdiction’s existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement § 201.6(c)(3))</p> <p>C2. Does the Plan address each jurisdiction’s participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement § 201.6(c)(3)(i))</p> <p>C3. Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement §201.6(c)(3)(i))</p> <p>C4. Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement §201.6(c)(3)(ii))</p> <p>C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction? (Requirement §201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))</p> <p>C6. Does the Plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement §201.6(c)(4)(ii))</p>

5.1 AUTHORITIES, POLICIES, PROGRAMS, AND RESOURCES

The City of Homer’s existing authorities, policies, programs, and resources available for hazard mitigation are provided in Table 5-1 (human and technical resources), Table 5-2 (financial resources), and Table 5-3 (planning and policy resources). The ways in which the City of Homer is looking to expand and improve on its hazard mitigation authorities, policies, programs, and resources are provided in Table 5-4.

Table 5-1: Human and Technical Resources for Hazard Mitigation

Staff/Personnel	Department/Agency	Principal Activities Related to Hazard Mitigation
Planner(s) and technical staff with knowledge of land development, land management practices, human-caused hazards, and natural hazards	City of Homer Planning Department	Anticipates and acts on the need for new plans, policies, and code changes. Applies the approved plans, policies, code provisions, and other regulations to proposed land uses.
Fire Chief	City of Homer Volunteer Fire Department	Provides fire protection services in the City of Homer.
Head of Public Works	City of Homer Public Works Department	Maintains the city's roads, drainage, water distribution, wastewater collection, buildings and facilities, and motor vehicles. Works with developers in conjunction with the planning department on proposed subdivisions, land use variances, right-of-way vacations, zoning changes, and building site plans.
Police Chief	City of Homer Police Department	Provides law enforcement services in the City of Homer.
Harbormaster	City of Homer City Department of Port and Harbor	Manages and maintains port and harbor facilities.
Emergency Manager	City of Homer City Manager's Office	Maintains and updates Homer's Emergency Operations Plan. In addition, coordinates local response and relief activities in the Emergency Operations Center; works closely with local, state, and federal partners to support planning and training and to provide information and coordinate assistance.
Engineers, construction project managers, and supporting technical staff	City of Homer Public Works Department	Provides direct or contract civil, structural, and mechanical engineering services, including contract, project, and construction management.
Engineer(s), project manager(s), technical staff, equipment operators, and maintenance and construction staff	City of Homer Public Works Department	Maintains and operates of a wide range of local equipment and facilities and assists members of the public. This includes providing sufficient clean fresh water, reliable sewer services, street maintenance, storm drainage systems, street cleaning, streetlights, and traffic signals.
Floodplain Administrator	City of Homer Planning Department	Enforces its floodplain requirements through the Flood Development Permit program.
Procurement Services Manager	City of Homer Finance Department	Provides a full range of municipal financial services and administers several licensing measures.

Table 5-1: Human and Technical Resources for Hazard Mitigation

Staff/Personnel	Department/Agency	Principal Activities Related to Hazard Mitigation
Public Information Officer	City of Homer City Management’s Office	Coordinates and facilitates a public information program regarding activities of Homer and its various departments; actively promotes the services and successes of operating departments and the benefits to residents; proactively establishes and maintains productive relationships between Homer and any media; and performs related duties as required.

Table 5-2: Financial Resources for Hazard Mitigation

Type	Source	Purpose	Amount
General Fund	City of Homer Finance Department	Program operations and specific projects.	Variable
Enterprise Funds	City of Homer City Department of Port and Harbor	An enterprise fund is a self-supporting government fund that sells goods and services to the public for a fee. An enterprise fund uses the same accounting framework followed by entities in the private sector. Homer uses an enterprise fund for the port and harbor facilities.	Variable
General Obligation Bonds	City of Homer Police Department	General obligation bonds are appropriately used for the construction and/or acquisition of improvements to real property broadly available to residents and visitors. Such facilities include—but are not limited to—libraries, hospitals, parks, public safety facilities, and cultural and educational facilities. The city uses a general obligation bond for the police station.	Variable
Renewable Energy Fund	Alaska Energy Authority	Provides funding for the development of qualifying and competitively selected renewable energy projects in Alaska. The program is designed to produce cost-effective renewable energy for both heat and power For Fiscal Year 2019, \$11 million has been allocated by the governor to fund the Renewable Energy Fund. This program runs through 2023.	Project-specific
HMA: Hazard Mitigation Grant Program (HMGP)	FEMA	Supports pre- and post-disaster mitigation plans and projects. Available to communities in Alaska after a presidentially declared disaster has occurred in Alaska.	Project-specific
HMA: Building Resilient Infrastructure and Communities (BRIC)	FEMA	Focuses on reducing the nation’s risk by funding public infrastructure projects that increase a community’s resilience before a disaster affects an area.	Project-specific

Table 5-1: Human and Technical Resources for Hazard Mitigation

Staff/Personnel	Department/Agency	Principal Activities Related to Hazard Mitigation	
HMA: Flood Mitigation Assistance	FEMA	Funds projects that reduce or eliminate the risk of repetitive flood damage to buildings insured by the NFIP.	Project-specific
Homeland Security Preparedness Technical Assistance Program	FEMA/Department of Homeland Security	Build and sustain preparedness technical assistance activities in support of the four homeland security mission areas (i.e., prevention, protection, response, recovery) and homeland security program management.	Project-specific
Assistance to Firefighters Grant Program	FEMA/U.S. Fire Administration	Provides equipment, protective gear, emergency vehicles, training, and other resources needed to protect the public and emergency personnel from fire and related hazards. Available to fire departments and nonaffiliated emergency medical services providers.	Project-specific
Community Action for a Renewed Environment	U.S. Environmental Protection Agency	Through financial and technical assistance, this program offers an innovative way for a community to organize and take action to reduce toxic pollution (e.g., stormwater) in its local environment. Through this program, a community creates a partnership that implements solutions to reduce releases of toxic pollutants and minimize exposure to them.	Project-specific
Community Block Grant Program Entitlement Communities Grants	U.S. Department of Housing and Urban Development (HUD)	Acquisition of real property; relocation and demolition; rehabilitation of residential and nonresidential structures; construction of public facilities and improvements, such as water and sewer facilities, streets, neighborhood centers; and the conversion of school buildings for eligible purposes.	Project-specific

Notes:

Table 5-3: Planning and Policy Resources for Hazard Mitigation

Name	Description	Hazards Addressed	Emergency Management
Homer City Ordinances Chapter 21.44 Slopes	The City of Homer has adopted local ordinances to define Steep Slope and to require engineering approval for any development of steep slopes in Homer (Homer City Code [HCC] 21.44.050).	Landslide	Mitigation
City of Homer Emergency Operations Plan	The plan describes the City of Homer’s organizational structures, roles, and responsibilities; protocols for providing emergency response and short-term recovery; the purpose, situation, and assumptions; concept of operations, organization, assignment of responsibilities, and plan development and maintenance; authorities; and references.	Coastal Storm Surge/Erosion, Earthquake, Wildland Fire, Flood, Landslide, Tsunami, Volcano, Severe Weather	Response, Recovery
City of Homer Capital Improvement Plan 2019-2024	Identifies capital projects and equipment purchases, provides a planning schedule and identifies options for financing the plan. The plan/program is usually short-range, 4 to 10 years.	Landslide, Coastal Storm Surge/Erosion, Flood	Mitigation, Preparedness
Homer Comprehensive Plan	Describes hazard areas and lists goals and policies to reduce the potential risk of death, injuries, and economic damage resulting from natural and human-caused hazards.	Erosion, Flood Landslide	Mitigation, Preparedness, Response
NFIP	Makes affordable flood insurance available to homeowners, business owners, and renters in participating communities. In exchange, those communities must adopt and enforce minimum floodplain management regulations to reduce the risk of damage from future floods.	Flood	Mitigation

Table 5-4: Ability to Expand Resources

Capability	Type/Description	Expansion
Human and Technical	Mitigation Specialist	Appoint or assign someone with Homer's government to oversee hazard mitigation grant opportunities, including notifying Homer's departments/agencies of upcoming grant cycles, and spearheading Notice of Intent applications, grant applications, and grant management requirements.
Financial	HMA funding	Apply for BRIC and HMGP funding as it becomes available. The focus should be on projects that mitigate critical infrastructure, provide protection for disadvantaged areas, and address climate change.
Planning and Policy	Climate Action Plan	Develop a Climate Action Plan to reduce or continue to greenhouse emissions through a series of local transportation, land use, building energy, water, waste, and green infrastructure programs and policies.

5.2 NATIONAL FLOOD INSURANCE PROGRAM PARTICIPATION

The NFIP aims to reduce the impact of flooding on residential and nonresidential buildings by providing insurance to property owners and encouraging communities to adopt and enforce floodplain management regulations. Participation in the NFIP is based on an agreement between local communities and the federal government.

The City of Homer joined the NFIP on May 19, 1981, the same day the city was mapped to a FIRM. The current FIRM date for Homer is October 20, 2016. As a participant of the NFIP, the Homer City Planning Department enforces a floodplain management ordinance and participates in FEMA's Community Assisted Visits, which occur on a 3- to 5-year cycle. FEMA's last Community Assisted Visit to Homer occurred in 2011.

5.3 MITIGATION GOALS

Mitigation goals are defined as general guidelines that explain what an agency wants to achieve in terms of hazard and loss prevention. Goal statements are typically long-range policy-oriented statements representing a community-wide vision. FEMA's 2022 Building Resilient Infrastructure and Communities priorities are the basis for the three goals (Table 5-5) for the 2022 LHMP.

Table 5-5: Mitigation Goals

Goal #	Description
1	Enhance climate protection and adaptation efforts
2	Create a healthy and safe community
3	Protect critical facilities and infrastructure against hazards

5.4 RECOMMENDED MITIGATION ACTIONS

Mitigation actions help achieve the goals of the LHMP. The recommended mitigation actions provided in Table 5-6 include: education and awareness; structure and infrastructure projects; preparedness and response; and local plans and regulations. This list addresses every hazard profiled in this plan and is based on the plan's risk assessment as well as lessons learned from recent disasters. It was developed using FEMA success stories and best management practices; FEMA job aids; local and regional plans and reports; and input from planning team members.

Table 5-6: Recommended Mitigation Actions

No.	Project Name	Hazard Mitigated	Project Description	Type of Development
1	Critical Facility Auxiliary Power (Phase I)	All	Determine which critical facilities require auxiliary power in order to remain functional during de-energization or public safety power shutoff and/or general loss of power and install auxiliary power systems. Auxiliary power systems may include back-up generators, local Solar Photovoltaic plus storage, and microgrids.	Existing
2	Generators (Phase II)	All	Purchase and install generators with main power distribution disconnect switches for identified and prioritized critical facilities susceptible to short-term power disruption. (e.g., first responder, medical facilities, schools, correctional facilities, and water and sewage treatment plants)	New and existing
3	Emergency Radio Communication System Upgrade	All	Continue the city's systematic upgrade of its Emergency Radio Communication System.	Existing
4	Upslope Tidal Marshes	Climate Change	Create tidal marshes with resilience to climate change by providing space for the tidal marshes to spread vertically upslope when sea level rises.	New and existing
5	Downslope Tidal Marshes	Climate Change	Create tidal marshes with resilience to climate change by providing space for tidal marshes to spread vertically downslope to aid upland drainage to the sea	New and existing
6	Seismic Retrofits	Earthquake	Seismically retrofit existing critical facilities to make them more resistant to damage from earthquakes.	Existing
7	Earthquake-Resistant Pipes Replacement	Earthquake, Landslide	Replace aging critical pipes in areas of extreme or violent shaking hazard and landslide hazard areas to improve seismic reliability and safeguard critical water distribution lines against the potential destructive impacts of large-scale earthquakes and accompanying landslides.	Existing
8	Storm Drainage Improvements	Flood	Continue to make capacity/structural improvements to storm drains, channels, and pump stations, as well as green infrastructure systems (such as marshes) to enable them to perform to their capacity in handling water flows.	Existing

Table 5-6: Recommended Mitigation Actions

No.	Project Name	Hazard Mitigated	Project Description	Type of Development
9	Bank and Shoreline Protection	Flood, Erosion	Develop mitigation initiatives such as: rip-rap (large rocks), sheet pilings, gabion baskets, articulated matting, concrete, asphalt, vegetation, or other armoring or protective materials to provide small scale site-specific shoreline bank protection.	New and existing
10	Shoreline Protection on the Homer Spit	Flood, Erosion	Develop mitigation initiatives such as: large-scale gravel placement to provide site-specific shoreline bank protection along the Homer Spit.	New and existing
11	Groundwater Protection	Flood, Erosion	Develop mitigation initiatives to provide site-specific protection for near-surface groundwater.	New and existing
12	Property Buyout on the Homer Spit	Flood, Erosion	Buyout property in areas that are prone to flooding or at risk from erosion, particularly on the Homer Spit, as an alternative to “defend in place” mitigation actions.	Existing
13	Flood Protection Ordinance/Overlay Zone	Flood	Adopt a comprehensive flood protection ordinance/overlay zone for areas that are in the SFHA or subject to flooding. Properties in this overlay are often subject to additional standards concerning development/land uses, building elevation, stream buffers, outdoor storage, building materials, and permitting procedures.	New and existing
14	Sterling Highway Drainage Improvements	Flood, Landslide	Continue implementing elements of the Green Infrastructure Stormwater Management Plan for drainage improvements at Sterling Highway Milepost 172.	Existing
15	Hillside Protection	Landslide	Stabilize landslide-prone areas through stability improvement measures, including interceptor drains, in situ soil piles, drained earth buttresses, and subdrains.	New and existing
16	Landslide Zone	Landslide	Regulate development through zoning and permitting in landslide-prone areas.	New
17	Tree Clearing	Severe weather	Develop and implement tree clearing education programs for residents to keep trees from threatening lives, property, and public infrastructure from severe weather events.	New and existing

Table 5-6: Recommended Mitigation Actions

No.	Project Name	Hazard Mitigated	Project Description	Type of Development
18	Powerline Disconnects	Severe weather	Increase power line wire size and incorporate quick disconnects (breakaway devices) to reduce ice load and windstorm powerline failure during severe wind or winter ice storm events.	New and existing
19	Underground Powerlines	Severe weather	Continue to require new development to implement underground powerlines and relocate aboveground power lines to below ground where possible.	New and existing
20	StormReady Program	Severe weather	Complete certification for the StormReady program. The program encourages communities to take a proactive approach to improving local hazardous weather operations by providing emergency managers with clear-cut guidelines on how to improve their hazardous weather operations.	New and existing
21	TsunamiReady Program	Tsunami	Maintain certification for the TsunamiReady program. The main goal of the program is to improve public safety before, during, and after tsunami emergencies. It aims to do this by establishing guidelines for a standard level of capability to mitigate, prepare for and respond to tsunamis, and work with communities to help them meet the guidelines and ultimately become recognized as “TsunamiReady” by the National Weather Service.	New and existing
22	Tsunami Task Force Recommendations	Tsunami	Implement the recommendations provided by the Public Works Campus Tsunami Task Force, including developing a long-term plan to move the Public Works Campus.	Existing
23	Tsunami Vertical Evacuation Tower	Tsunami	Construct a tsunami vertical evacuation tower on the Homer Spit to provide temporary refuge above tsunami waves.	New
24	Tsunami Warning and Evacuation System	Tsunami	Develop a comprehensive approach to warning, evacuation, and preparedness in the event of a tsunami.	New and existing
25	Wastewater Treatment Upgrades	Volcano	Identify vulnerabilities in critical facilities—particularly air filtration and water systems—to deal with ashfall events.	Existing
26	Air Quality Clean Building	Volcano, Wildfire	Identify a building or room to be a designated “clean building” or “clean room” for use during periods of poor air quality created from wildfires, volcanic ash, or other poor air quality event. Acquire air filters and masks for distribution.	Existing

Table 5-6: Recommended Mitigation Actions

No.	Project Name	Hazard Mitigated	Project Description	Type of Development
27	Property Buyout near Bridge Creek Reservoir	Wildfire	Buyout property in areas that are prone wildfire, particularly on the near the Bridge Creek Reservoir to protect the drinking watershed.	Existing
28	Wildland-Urban Interface Ordinance/Overlay Zone	Wildfire	Adopt a Wildland-Urban Interface ordinance/overlay zone. Properties in this overlay area are often subject to additional standards concerning structure density and location, building materials and construction, vegetation management, emergency vehicle access, water supply, and fire protection.	New and existing
29	Critical Facility Fireproofing	Wildfire	Consider ways to protect radio sites from wildfire, including rebuilding using fire-resistant materials.	Existing
30	Wildfire Risk Coordination	Wildfire	Continue coordinating with and providing support to the Kenai Peninsula Borough and the Alaska Department of Natural Resources during their wildfire assessments and plan implementations.	New and existing
31	Water Supply	Wildfire	Water sources for both residential protections and firefighting capacity should be developed. This includes increased pumping capability at treatment plant, and two additional 10,000-gallon tanks buried along Skyline Drive.	New and existing
32	Water Lines and Hydrants	Wildfire	Provide additional water lines and fire hydrants to the residential neighborhoods along Skyline Drive.	New and existing

5.5 PRIORITIZED ACTION PLAN

A prioritized action plan is an itemized list of recommended mitigation actions that a community/agency hopes to put into practice to reduce its risks and vulnerabilities.

For the 2022 LHMP, the planning team created a two-tier prioritization process based on the following:

- High priority mitigation actions are those that address hazards of immediate concern and are also cost-effective (positive cost-benefit ratio) and may have an identified funding source.
- Medium priority mitigation actions are those that address hazards that are not of immediate concern and/or those that are of immediate concern but are not cost effective or do not have an identified funding source.

The City of Homer determined the hazards and threats of immediate concern based on the 2022 LHMP's hazard profiles, risk assessment, and capability assessment as follows: climate change, earthquake, erosion, flood, landslide, severe weather, tsunami, and wildfire.

The results of the prioritization process are provided in Table 5-7. For each mitigation action listed, potential funding sources, responsible departments or agencies, and implementation timelines have been identified.

Table 5-7: Prioritized Action Plan

No.	Project Name	Priority	Potential Funding Source	Responsibility	Timing
1	Critical Facility Auxiliary Power (Phase I)	High	FEMA BRIC/HMGP	City of Homer Public Works Department	0 to 5 years
2	Generators (Phase II)	High	FEMA BRIC/HMGP	City of Homer Public Works Department	0 to 5 years
3	Emergency Radio Communication System Upgrade	High	City of Homer	City of Homer Public Works Department	0 to 5 years
7	Earthquake-resistant pipes replacement	High	FEMA BRIC/HMGP	City of Homer Public Works Department	0 to 5 years
8	Storm Drainage Improvements	High	FEMA BRIC/HMGP	City of Homer Public Works Department	0 to 5 years
10	Shoreline Protection	High	FEMA BRIC/HMGP	City of Homer Planning Department	0 to 5 years
11	Groundwater Protection	High	City of Homer	City of Homer Planning Department	0 to 5 years
12	Property Buyout on the Homer Spit	Medium	HUD Community Block Grant Program	City of Homer City Manager's Office	0 to 5 years
14	Sterling Highway Drainage Improvements	High	FEMA BRIC/HMGP	City of Homer Public Works Department	0 to 5 years
15	Hillside Protection	High	FEMA BRIC/HMGP	City of Homer Planning Department	0 to 5 years
16	Landslide Zone	High	City of Homer	City of Homer Planning Department	0 to 5 years
17	Tree Clearing	Medium	City of Homer, FEMA BRIC/HMGP	City of Homer City Management's Office	0 to 5 years
19	Underground Power Lines	High	City of Homer	City of Homer Public Works Department	0 to 5 years
20	StormReady Program	Medium	City of Homer	City of Homer Planning Department	0 to 5 years
21	TsunamiReady Program	High	City of Homer	City of Homer Planning Department	0 to 5 years

Table 5-7: Prioritized Action Plan

No.	Project Name	Priority	Potential Funding Source	Responsibility	Timing
24	Tsunami Warning and Evacuation System	High	City of Homer	City of Homer City Manager's Office	0 to 5 years
27	Property Buyout near Bridge Creek Reservoir	High	City of Homer, HUD Community Block Grant Program	City of Homer City Manager's Office	0 to 5 years
28	Wildland-Urban Interface Ordinance/Overlay Zone	High	City of Homer	City of Homer Planning Department	0 to 5 years
29	Critical Facility Fireproofing	High	FEMA BRIC/HMGP	City of Homer Public Works Department	0 to 5 years
31	Water Supply	High	City of Homer	City of Homer Public Works Department	0 to 5 years

5.6 PLAN INTEGRATION

Information about how the 2022 LHMP will be integrated into Homer’s relevant plans and programs moving forward is provided in Table 5-8.

Table 5-8: Integration of the 2022 LHMP

LHMP Section	Existing Plan/Policy/Program	Process/Timeframe
Section 3—Hazard Identification	Homer Comprehensive Plan	Update of the Homer Comprehensive Plan to address hazards in the LHMP that are not currently included in it. Consider creating a hazard profiles section in the Comprehensive Plan.
Section 4—Risk Assessment	City of Homer Emergency Operations Plan	Incorporate based risk assessment findings into the City of Homer Emergency Operations Plan to help identify and ensure critical resources to maintain operations internally and externally.
Section 5—Mitigation Strategy	City of Homer Capital Improvement Plan 2019-2024	Incorporate the mitigation actions provided in Table 5-7 into the City of Homer Capital Improvement Plan by further studying and evaluating the underlying problems or if studies exist that outline potential solutions. Begin the design stage to develop a plan for each identified project, the actions to be taken, engineering and construction required, schedule, and estimated costs.

6.0 PLAN REVIEW, EVALUATION, AND IMPLEMENTATION

This section addresses Element D of the Local Mitigation Plan Regulation Checklist.

Regulation Checklist – 44 CFR 201.6 Local Mitigation Plans	
Element D: Plan Review, Evaluation and Implementation	
D1.	Was the plan revised to reflect changes in development? (Requirement § 201.6(d)(3))
D2.	Was the plan revised to reflect progress in local mitigation efforts? (Requirement § 201.6(d)(3))
D3.	Was the plan revised to reflect changes in priorities? (Requirement § 201.6(d)(3))

6.1 CHANGES IN DEVELOPMENT

The 2022 LHMP was updated to reflect the following changes that affect development:

- Five additional critical facilities were added from the previous 2010 LHMP. Two are large docks on the Homer Spit. The ADOT&PF facility and two electrical substations were added. Linear features, such as roads, sewer lines, and telephone lines were excluded from this plan. In addition, the Port and Harbor office has been relocated since the 2010 LHMP.
- New residential development has occurred at a steady rate since the 2010 LHMP. New residential neighborhoods along West Hill Road and East Hill Road could be in areas of higher risk for landslides or wildfires. The City of Homer has actively curtailed development around the reservoir where there is substantial risk of wildfire.

6.2 PROGRESS IN LOCAL MITIGATION EFFORTS

The City of Homer reviewed its 2010 LHMP's mitigation strategy and documented progress made toward each local mitigation effort, provided in Table 6-1. Mitigation actions that had not been implemented were considered for the 2022 LHMP (Table 5-6).

Table 6-1: Progress in Local Mitigation Efforts

Action #	Action	Status
A.1.1.1	Distribute, display, and educate about hazards, flood insurance, and the benefits of various protective measures in public outreach programs. Outreach maybe information in a newsletter, on utility bills, in newspapers, public workshops, kiosk at the fire/police hall, and the library.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
A.1.1.2	Provide the public library with documents about hazards, flood insurance, and the benefits of various protective measures.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
A.1.1.3	Provide information about hazards on the City's website and include links to relevant pages that have local conditions, protective measures, permit requirements and maps.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.

Table 6-1: Progress in Local Mitigation Efforts

Action #	Action	Status
B.1.1.1	Continue to participate in the National Weather Service/West Coast and Alaska Tsunami Warning Center TsunamiReady Program.	Ongoing, mitigation action included in the 2022 LHMP.
B.1.1.2	Maintain regular tsunami warning siren drills so that citizens can learn to recognize and expect.	Ongoing, mitigation action modified and included in the 2022 LHMP.
B.2.1.1	Continue to monitor the tsunami evacuation signs on the Homer Spit to Kachemak Drive, East to the junction with East End Road. This route directs people away from the Beluga Slough crossing, which is in the projected tsunami inundation zone.	Ongoing, mitigation action modified and included in the 2022 LHMP.
B.3.1.1	Reduce susceptibility to damage and disruption by incorporating the Tsunami Hazard and FIRMs into the City's planning and zoning process.	Ongoing, mitigation action modified and included in the 2022 LHMP.
B.3.1.2	New development in tsunami hazard areas to meet the same standards required in the coastal high hazard areas.	Ongoing, mitigation action modified and included in the 2022 LHMP.
B.3.1.2	Require the anchoring of fuel tanks, manufactured home, accessory structures, and recreational vehicles to be anchored to resist flotation, collapse, and lateral movement due to the effects of wind and water loads.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas..
C.1.1.1	Encourage homeowners and property owners to remove dead or diseased trees to create "defensible space."	Ongoing, mitigation action modified and included in the 2022 LHMP.
C.1.1.2	Encourage home and business owners to complete a Fire Wise assessment of their home and/or business.	Ongoing, mitigation action modified and included in the 2022 LHMP.
C.1.1.3	Educate homeowners on wildfire resistive construction techniques and strategies to limit their exposure to wildfire.	Ongoing, mitigation action modified and included in the 2022 LHMP.
C.1.1.4	Provide interested residents with Fire Wise informational packets and brochures.	Ongoing, mitigation action modified and included in the 2022 LHMP.
C.2.1.1	Issue burn permits to Homer residents who wish to dispose of organic materials. Direct nonresidents to the Division of Forestry Website to obtain an open burning permit during the statutory fire season.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
C.3.1.1	Encourage use of composting, chipping, or grinding as an alternative to burning of woody debris.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
C.4.1.1	Maintain open lines of communication between the Division of Forestry, National Weather Service, and the Homer Volunteer Fire Department to determine when fire conditions warrant suspension of burn permits or open burning in general.	Ongoing, mitigation action modified and included in the 2022 LHMP.

Table 6-1: Progress in Local Mitigation Efforts

Action #	Action	Status
C.4.1.2	When conditions warrant suspension of burn permits or open burning in Homer, disseminate that information in the form of press-releases to the local radio and print media.	Ongoing, mitigation action modified and included in the 2022 LHMP.
C.4.1.3	When open burning is prohibited or burn permits are suspended, ensure that the Homer Police Department Dispatch center is notified so that they can advise people who call in to activate their individual permit that a temporary suspension has been placed on open burning.	Ongoing, mitigation action modified and included in the 2022 LHMP.
C.4.1.4	Complete a daily assessment of fire danger during closures or suspensions by 10:00 a.m. each day to determine the need to continue the closure or resend the closure.	Ongoing, mitigation action modified and included in the 2022 LHMP.
C.5.1.1	Develop list of known shelters (from Emergency Plan), safe zones, and critical infrastructure.	Ongoing, mitigation action modified and included in the 2022 LHMP.
C.5.1.2	Review wildfire fuel load and develop mapping of area in need of fuels management activities.	Ongoing, mitigation action modified and included in the 2022 LHMP.
C.5.1.3	Develop and implement fuel reduction plan.	Ongoing, mitigation action modified and included in the 2022 LHMP.
C.5.2.1	Attend local planning meetings when conducted.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
C.5.2.2	Review drafts of the Community Wildfire Protection Plan when available and provide feedback to the Alaska Division of Forestry as appropriate.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
D.1.1.1	Identify buildings and facilities that must be able to remain operable during and following a hazard event.	Ongoing, mitigation action included in the 2022 LHMP.
D.1.1.2	Contract a structural engineering firm to assess the identified buildings and facilities to determine their structural integrity and strategy to improve their earthquake resistance.	Ongoing, mitigation action modified and included in the 2022 LHMP.
D.1.2.1	Identify priorities and budget to retrofit existing infrastructure to existing earthquake resistive construction standards.	Ongoing, mitigation action included in the 2022 LHMP.
D.1.2.2	Develop a Request for Proposals to submit for design and construction of the retrofitting requirements.	Ongoing, mitigation action included in the 2022 LHMP.
D.2.1.1	Reference the International Residential Code (current edition) for seismic and wind load requirements.	Ongoing, mitigation action modified and included in the 2022 LHMP.
D.3.1.1	Compile list of available nonstructural mitigation resources available to the public.	Ongoing, mitigation action included in the 2022 LHMP.
E.1.1.1	Annually review the requirements of the NFIP to conform to enrollment objectives and criteria.	Ongoing, mitigation action included in the 2022 LHMP.

Table 6-1: Progress in Local Mitigation Efforts

Action #	Action	Status
E.2.1.1	Encourage FEMA to restudy and remap the city with an emphasis on the Homer Spit, Beluga Slough, and Beluga Lake.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
E.2.2.1	Acquire funds to develop a watershed and drainage management plan that identifies important natural water storage, low features critical to flood function, and predicts future flood hazards.	Ongoing, mitigation action modified and included in the 2022 LHMP.
E.3.2.1	Develop overlay map of existing infrastructure (drainages, culvert size, storm drains).	Ongoing, mitigation action modified and included in the 2022 LHMP.
E.3.2.2	Identify high risk city structures.	Ongoing, mitigation action modified and included in the 2022 LHMP.
E.3.2.3	Establish an annual inspection of all stormwater management (public and private) and order maintenance as needed.	Ongoing, mitigation action modified and included in the 2022 LHMP.
E.3.2.4	Require maintenance logs on private and public stormwater plans.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
E.4.1.1	Require developers/landowners to provide documentation of compliance with existing Flood Damage Prevention requirements if the project is in a flood hazard area as defined by City Code.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
E.4.2.1	Acquire land in high hazard area to restore or retain flood functions.	Ongoing, mitigation action included in the 2022 LHMP.
E.4.2.2	Identify less hazard prone areas for development. Suitability study and map 2008.	Ongoing, mitigation action modified and included in the 2022 LHMP.
E.4.2.3	Create and maintain buffers and building setbacks from wetlands, creeks, shorelines and drainages.	Ongoing, mitigation action modified and included in the 2022 LHMP.
E.4.2.4	In the flood hazard areas and along the bluff, consider "relocatable structures" on skids or pilings versus permanent foundation structures.	Ongoing, mitigation action modified and included in the 2022 LHMP.
E.4.2.5	Require the anchoring of fuel tanks, manufactured homes, and accessory structures to resist flotation, collapse, and lateral movement due to the effects of wind and water loads.	Ongoing, mitigation action modified and included in the 2022 LHMP.
E.4.2.6	Preserve open space and/or relocate structures out of high-risk areas.	Ongoing, mitigation action modified and included in the 2022 LHMP.
E.4.2.7	Provide a means to regulate clearing, filling, grading, dredging, and other development that may impact flood, drainage, and erosion damage.	Ongoing, mitigation action modified and included in the 2022 LHMP.
E.4.2.8	Minimize adverse impacts of alterations of ground and surface waters and natural flow patterns.	Ongoing, mitigation action modified and included in the 2022 LHMP.

Table 6-1: Progress in Local Mitigation Efforts

Action #	Action	Status
E.4.2.9	Maintain requirements for stormwater control and mitigation through the enforcement of HCC 21.74 Development Activity Plan and HCC 21.75 Stormwater Plan.	Ongoing, mitigation action modified and included in the 2022 LHMP.
E.4.2.10	Integrate hazard identification, ecosystem protection, protection of community infrastructure and shoreline management into zoning and subdivision ordinances.	Ongoing, mitigation action modified and included in the 2022 LHMP.
F.1.1.1	Do not operate nonessential equipment.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
F.1.1.2	Protect office equipment such as copiers, fax machines, and personal computers.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
F.1.1.3	Allow employees to get home before ashfall occurs.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
F.1.1.4	Limit outdoor activity.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
F.1.1.5	Close doors, windows, and vents.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
F.1.1.6	Do not run exhaust-circulating fans.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
F.1.1.7	Check and change (when needed) oil, oil filter, and air filters.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
F.1.1.8	Wear respirator and eye protection during ash cleanup.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
F.1.1.9	Establish a communication system to alert employees.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.

Table 6-1: Progress in Local Mitigation Efforts

Action #	Action	Status
F.1.1.10	Establish an email alert or a call-in voice recording.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
G.1.1.1	Install security systems where hazard materials are stored and/or transferred.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
G.1.2.1	Install security measure at the city water treatment plant.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
G.1.2.2	Secure all remote pump facilities.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
G.1.3.1	Create redundant/backup capability for landline telephone system.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
G.1.3.2	Develop off-site backup information technology system.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
G.1.3.3	Prepare for utility disruption.	Ongoing, mitigation action modified and included in the 2022 LHMP.
G.1.3.4	Secure vital records and other important document.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
G.1.4.1	Encourage local businesses to have adequate cash on hand for emergencies.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
G.1.4.2	Encourage local businesses to establish a regular off-site computer back-up system.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
G.1.4.3	Encourage local businesses to participate in the State's Continuity of Business program through the Department of Homeland Security and Emergency Management.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.

Table 6-1: Progress in Local Mitigation Efforts

Action #	Action	Status
H.1.1.1:	Safely store biological, chemical, and hazardous materials.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
H.1.1.2:	Continue to require Fire Marshal certification for all commercial buildings.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
H.1.1.3:	Monitor, in cooperation with the Department of Health, Public Health Center, spikes in illnesses that may indicate the spread of a natural or human-made pathogen among the population.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.
H.1.1.3:	Continue participation and leadership in the Community Based Emergency Planning Committee established by Public Health.	Ongoing, mitigation action no longer considered as part of the 2022 LHMP due to focus on new and emerging mitigation actions and ideas.

Notes: Regarding Action Numbers, A=public education actions; B=tsunami actions; C=wildfire actions; D=earthquake actions; E=flood actions; F=ash actions; G=technological hazard actions; H= biological, chemical and hazardous materials actions.

In addition, supporting local plans, studies, and programs were reviewed to determine progress in local mitigation efforts. Relevant ongoing actions are provided in Table 5-6.

6.3 CHANGES IN PRIORITIES

The 2010 LHMP's mitigation strategy was prioritized using the STAPLEE (social, technical, administrative, political, legal, environmental, and economic), which FEMA recommended (FEMA 386-9) as a prioritization method in the early to mid-2000s. While the STAPLEE has been replaced in the 2022 LHMP by a more streamlined prioritization process, the priorities (listed below) have not changed:

- To build a culture and practice of disaster resilience by addressing hazards of immediate concern, a mitigation project must have social support.
- To be implemented in a timely manner, a mitigation project must be economically feasible and have an identified funding source.

7.0 PLAN ADOPTION

This section addresses Element E of the Local Mitigation Plan Regulation Checklist.

Regulation Checklist – 44 CFR 201.6 Local Mitigation Plans
Element E: Plan Adoption
E1. Does the Plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval? (Requirement §201.6(c)(5))
E2. For multi-jurisdictional plans, has each jurisdiction requesting approval of the plan documented formal plan adoption? (Requirement §201.6(c)(5))

7.1 FORMAL ADOPTION

The 2022 LHMP was formally adopted on [date] by the Homer City Council. A copy of the adoption resolution is on file with the community and the Alaska Division of Homeland Security and Emergency Management.

8.0 APPENDICES

APPENDIX A—FIGURES

Figure 1: Overview Map

Figure 2: Earthquake Hazard Areas

Figure 3: Flood Hazard Areas

Figure 4: Land Failure Hazard Areas

Figure 5: Bluff Point Landslide Area

Figure 6: Tsunami Hazard Areas

Figure 7: Maximum Estimated Tsunami Inundation, Downtown Homer

Figure 8: Volcanic Ash Hazard Areas

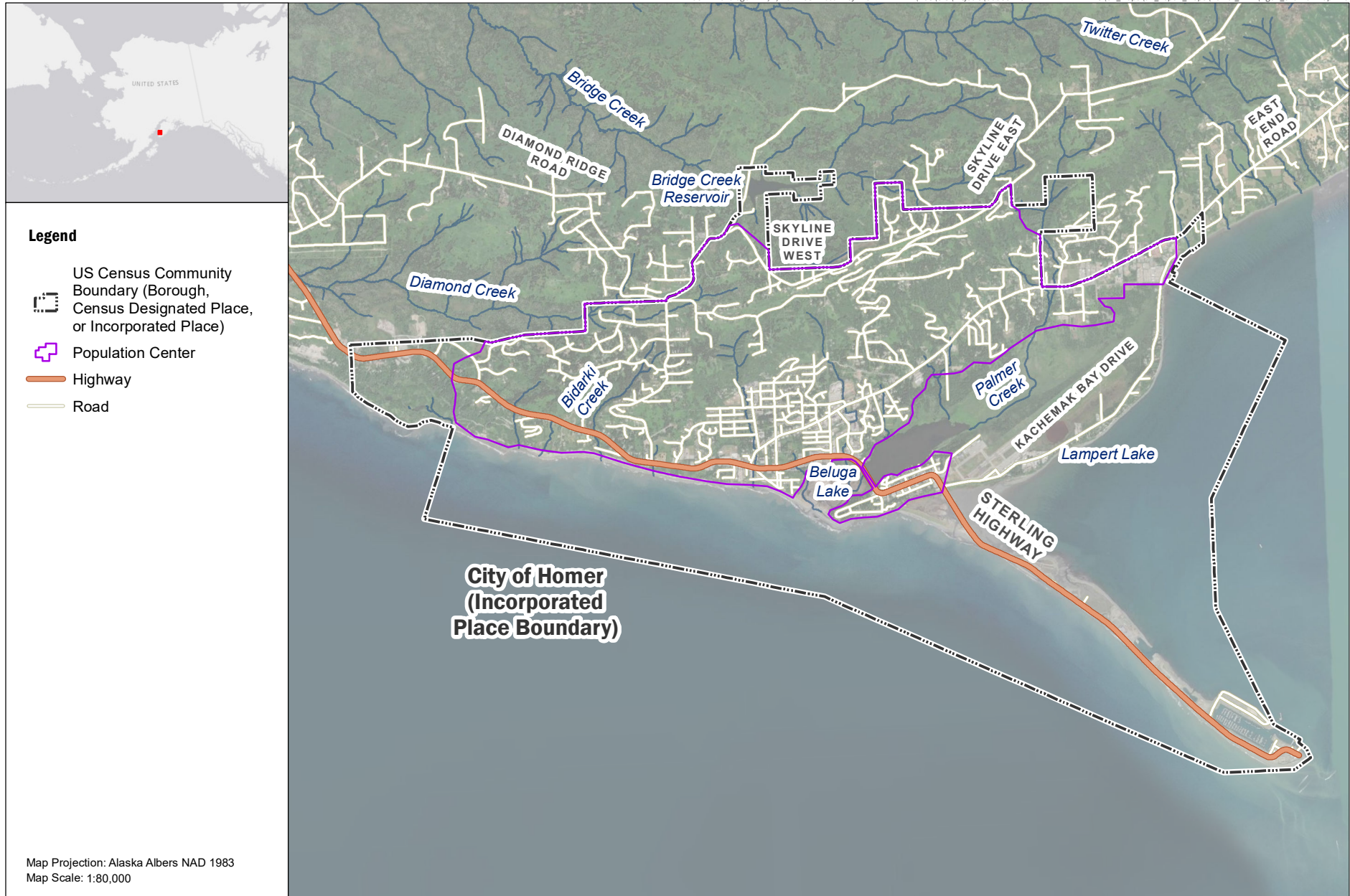
Figure 9: Wildfire Hazard Areas

Figure 10: Critical Facilities

APPENDIX B—FEMA DOCUMENTATION

[This appendix will contain the FEMA LHMP Review Tool]

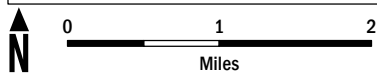
APPENDIX C—PLANNING PROCESS



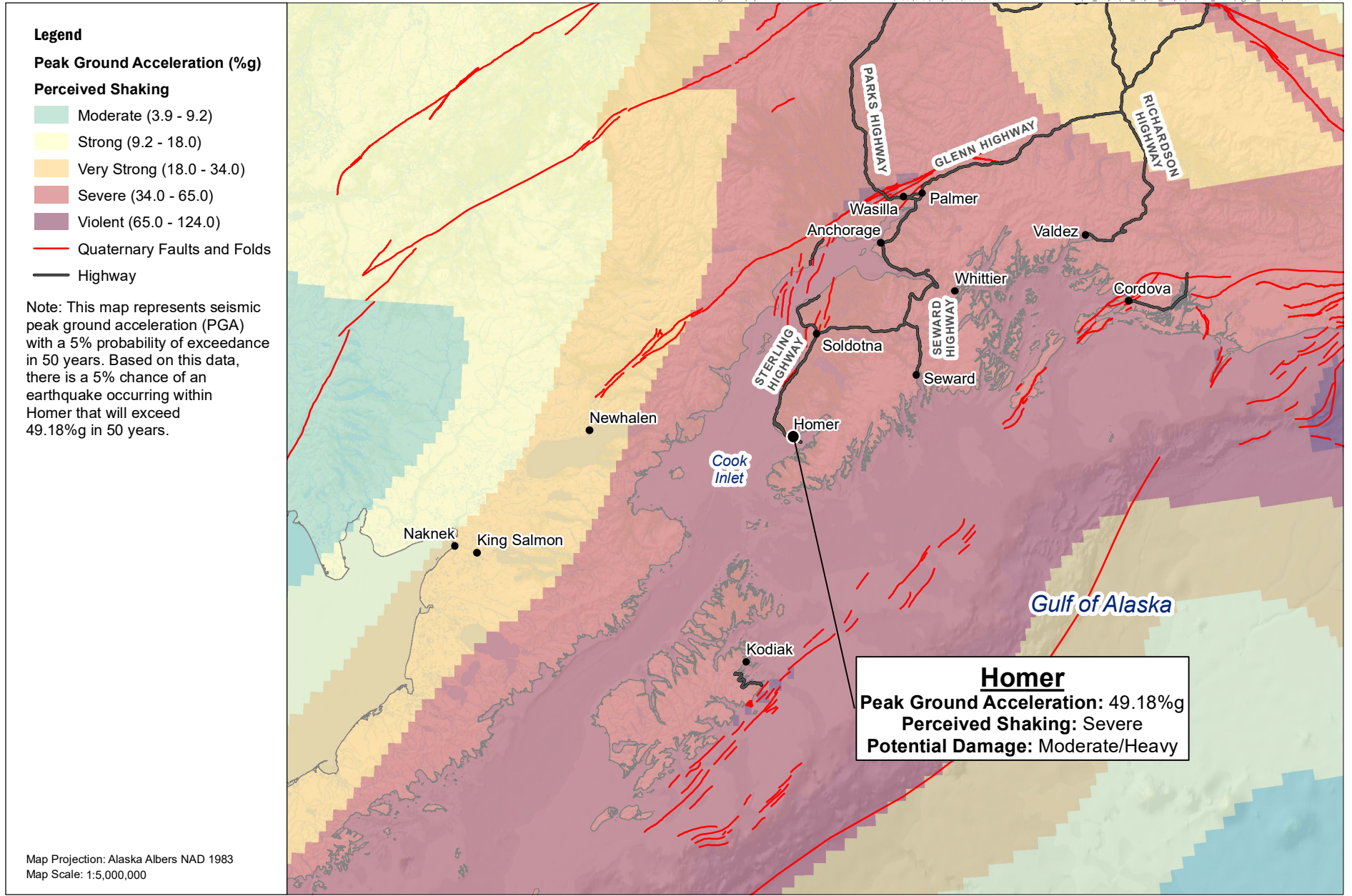
Legend

- US Census Community Boundary (Borough, Census Designated Place, or Incorporated Place)
- Population Center
- Highway
- Road

Map Projection: Alaska Albers NAD 1983
Map Scale: 1:80,000



US Census TigerLine (2021)
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

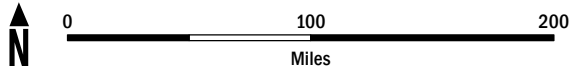


- Legend**
- Peak Ground Acceleration (%g)**
- Perceived Shaking**
- Moderate (3.9 - 9.2)
 - Strong (9.2 - 18.0)
 - Very Strong (18.0 - 34.0)
 - Severe (34.0 - 65.0)
 - Violent (65.0 - 124.0)
- Quaternary Faults and Folds
- Highway

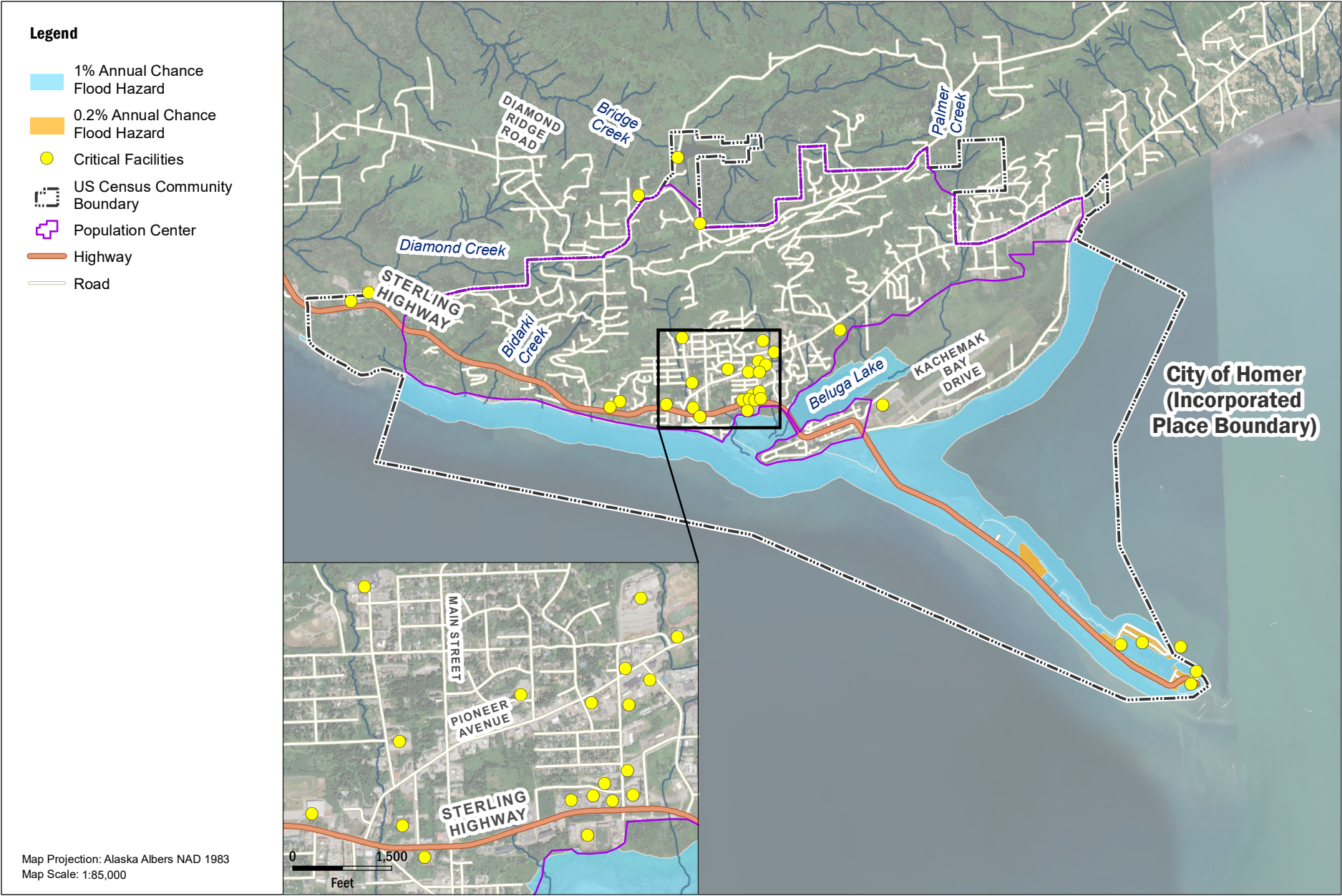
Note: This map represents seismic peak ground acceleration (PGA) with a 5% probability of exceedance in 50 years. Based on this data, there is a 5% chance of an earthquake occurring within Homer that will exceed 49.18%g in 50 years.

Homer
 Peak Ground Acceleration: 49.18%g
 Perceived Shaking: Severe
 Potential Damage: Moderate/Heavy

Map Projection: Alaska Albers NAD 1983
 Map Scale: 1:5,000,000



DGGS (2013); USGS (2007); US Census TigerLine (2021)
 Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
 Esri, Garmin, GEBCO, NOAA NGDC, and other contributors



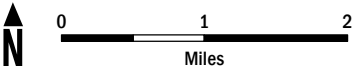
Legend

- 1% Annual Chance Flood Hazard
- 0.2% Annual Chance Flood Hazard
- Critical Facilities
- US Census Community Boundary
- Population Center
- Highway
- Road

Map Projection: Alaska Albers NAD 1983
Map Scale: 1:85,000

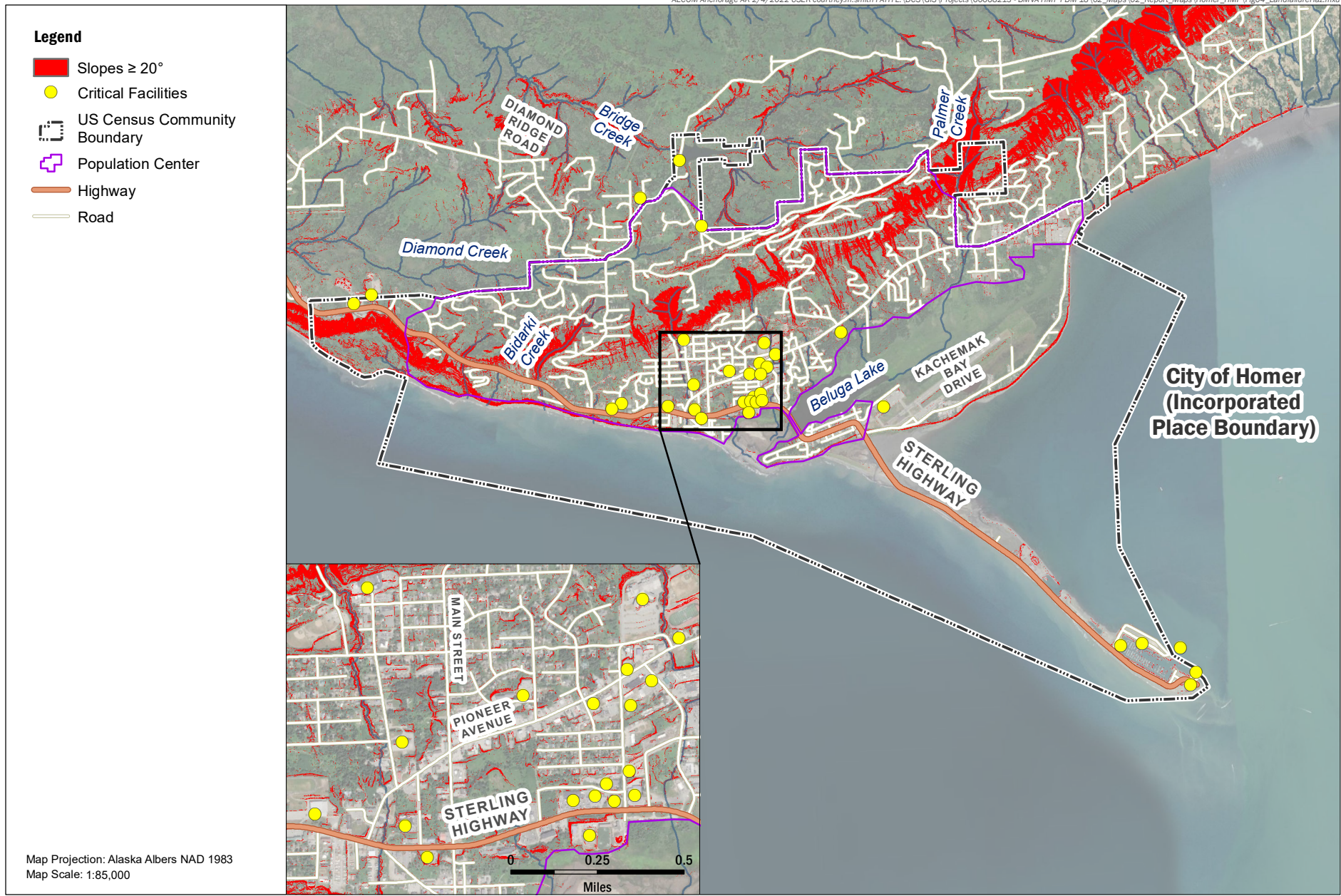
**City of Homer
(Incorporated
Place Boundary)**

FEMA (2021); US Census TigerLine (2021)
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar
Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN,
and the GIS User Community



FLOOD HAZARD AREAS

Figure 3



US Census TigerLine (2021)
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar
Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN,
and the GIS User Community

LAND FAILURE HAZARD AREAS

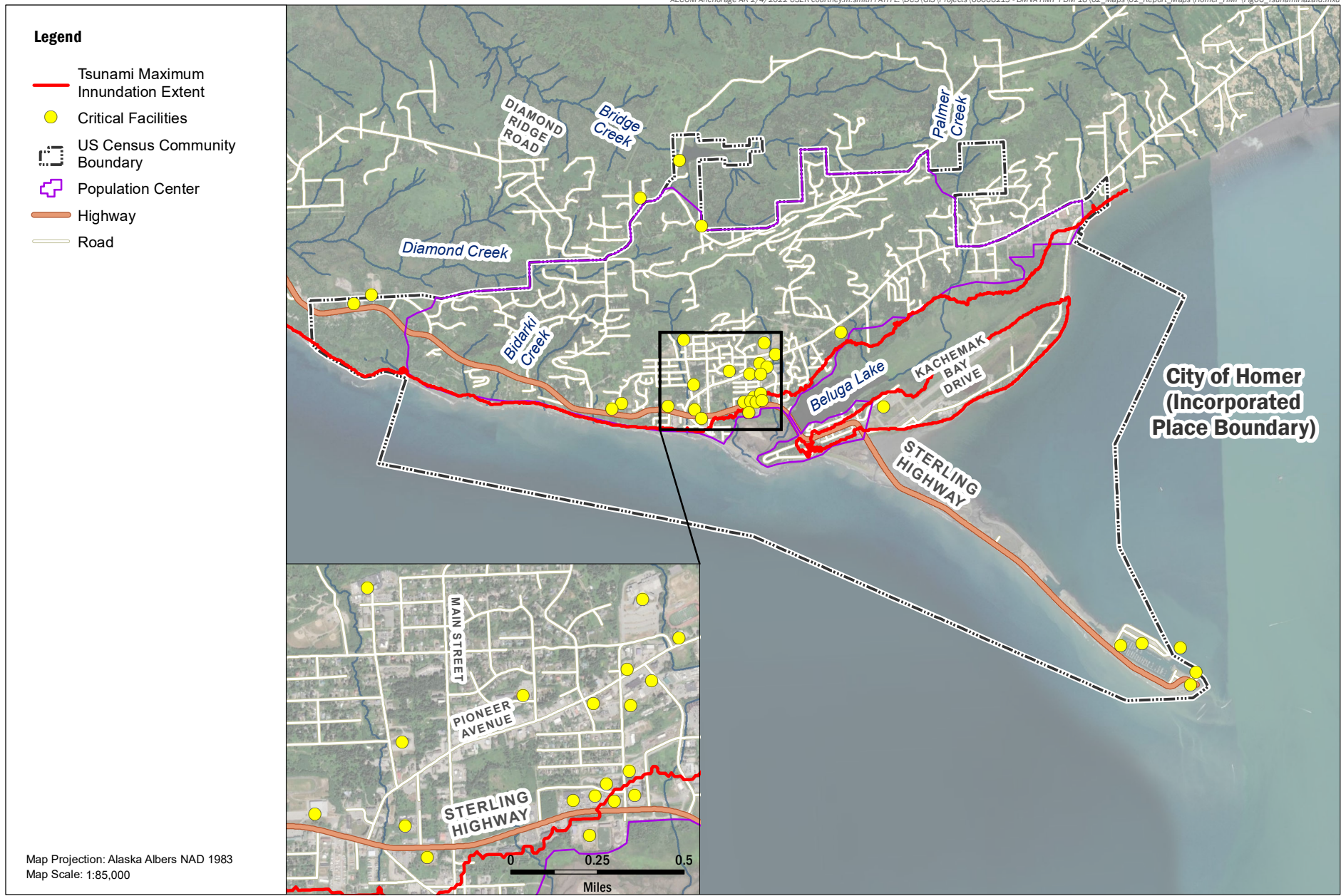
Figure 4



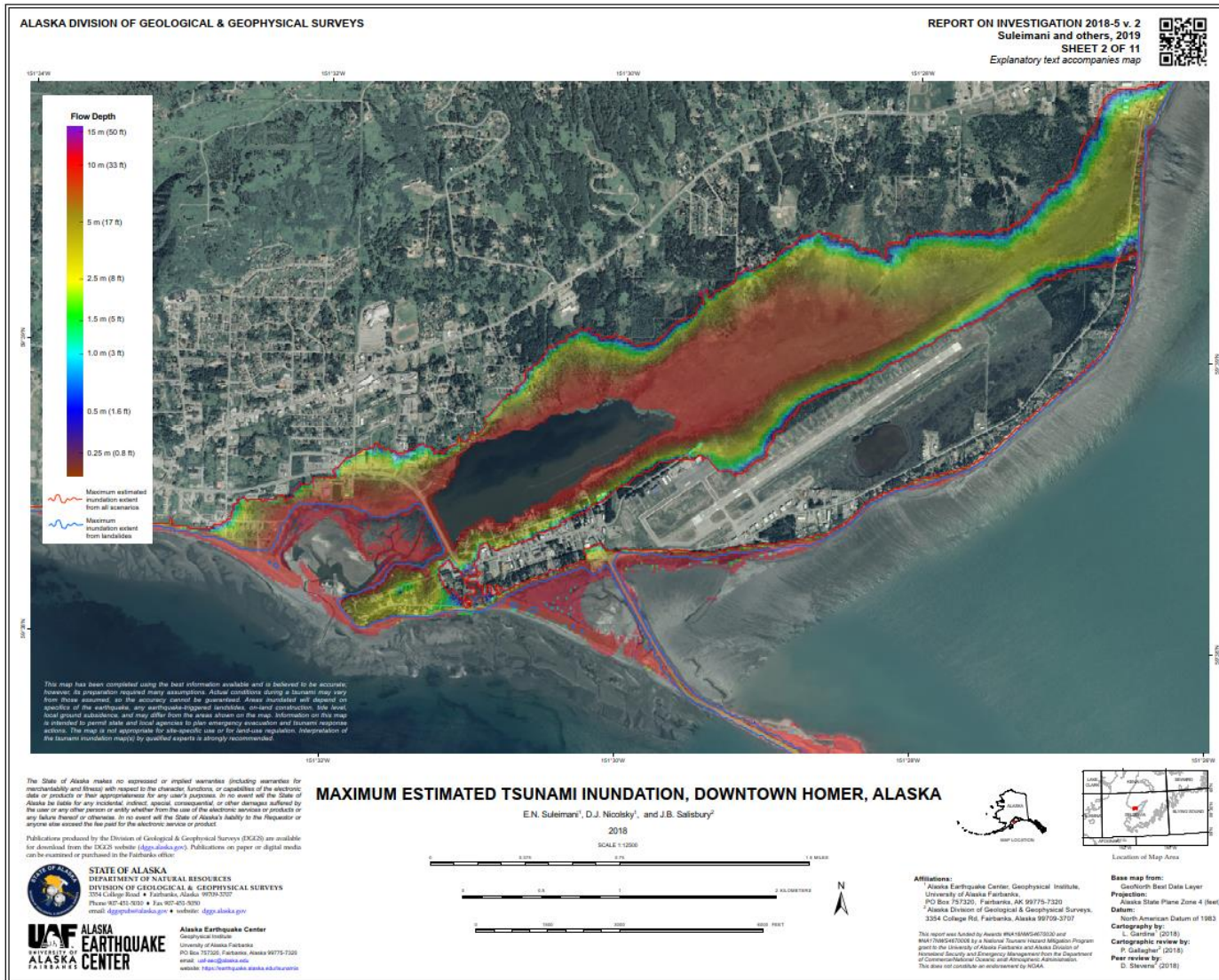
BLUFF POINT LANDSLIDE AREA

Figure 5

Deep-seated landslide susceptibility near the Bluff Point Landslide. Note that the landslide body (southwest of the yellow headscarp line) is also a landslide deposit and is highly susceptible to repeated failure.

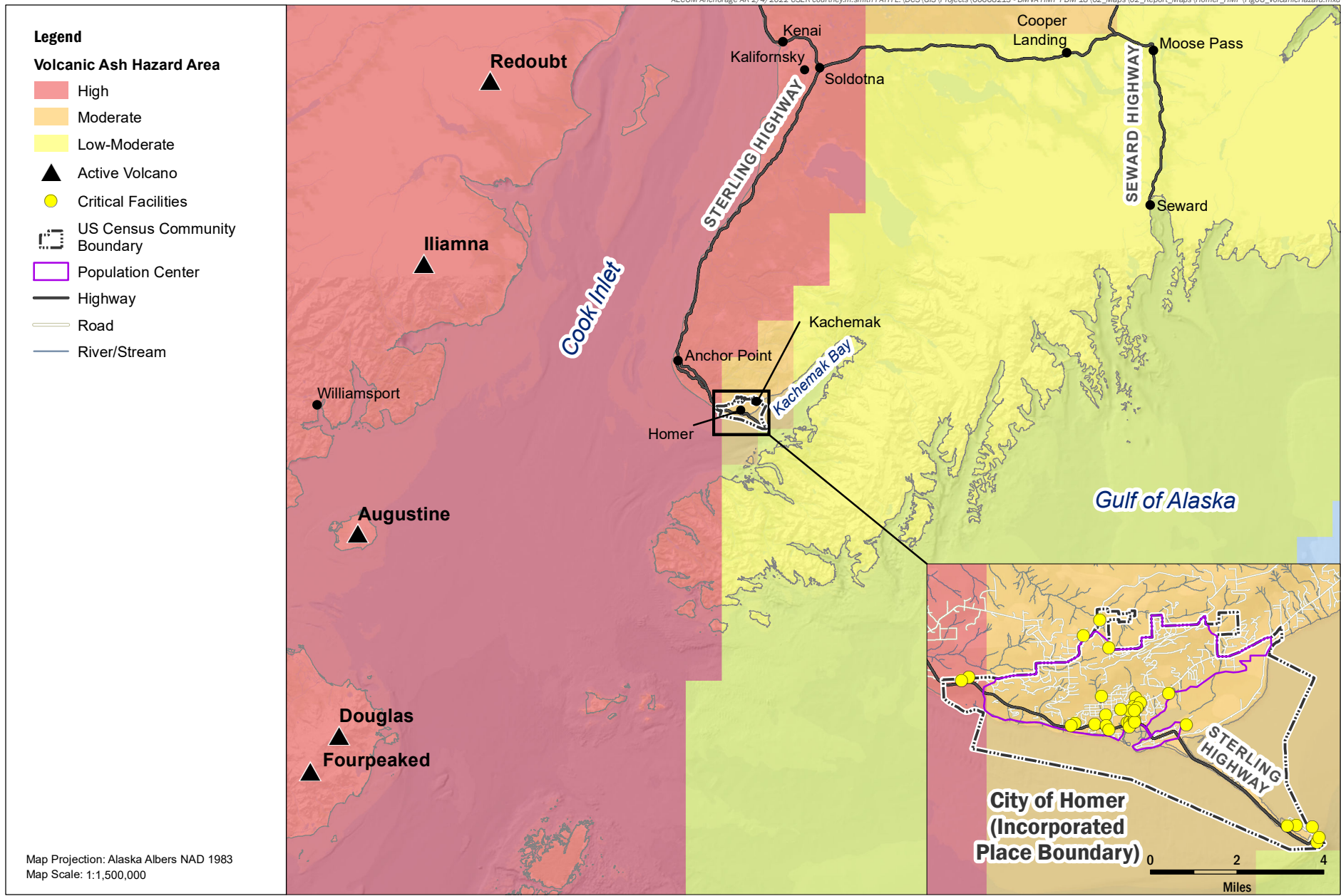


DGGS (2019); US Census TigerLine (2021)
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar
Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN,
and the GIS User Community

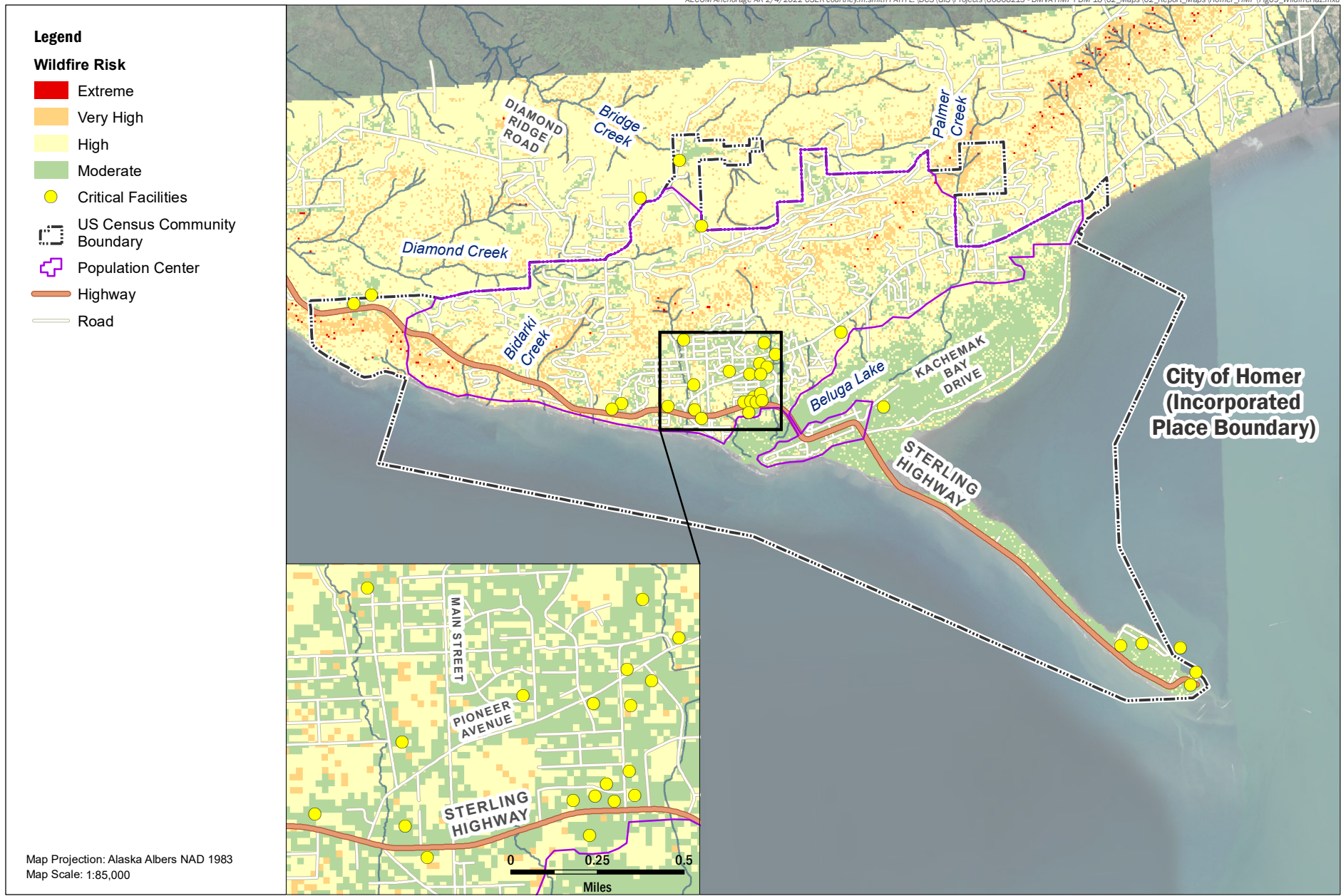


MAXIMUM ESTIMATED TSUNAMI INUNDATION, DOWNTOWN HOMER

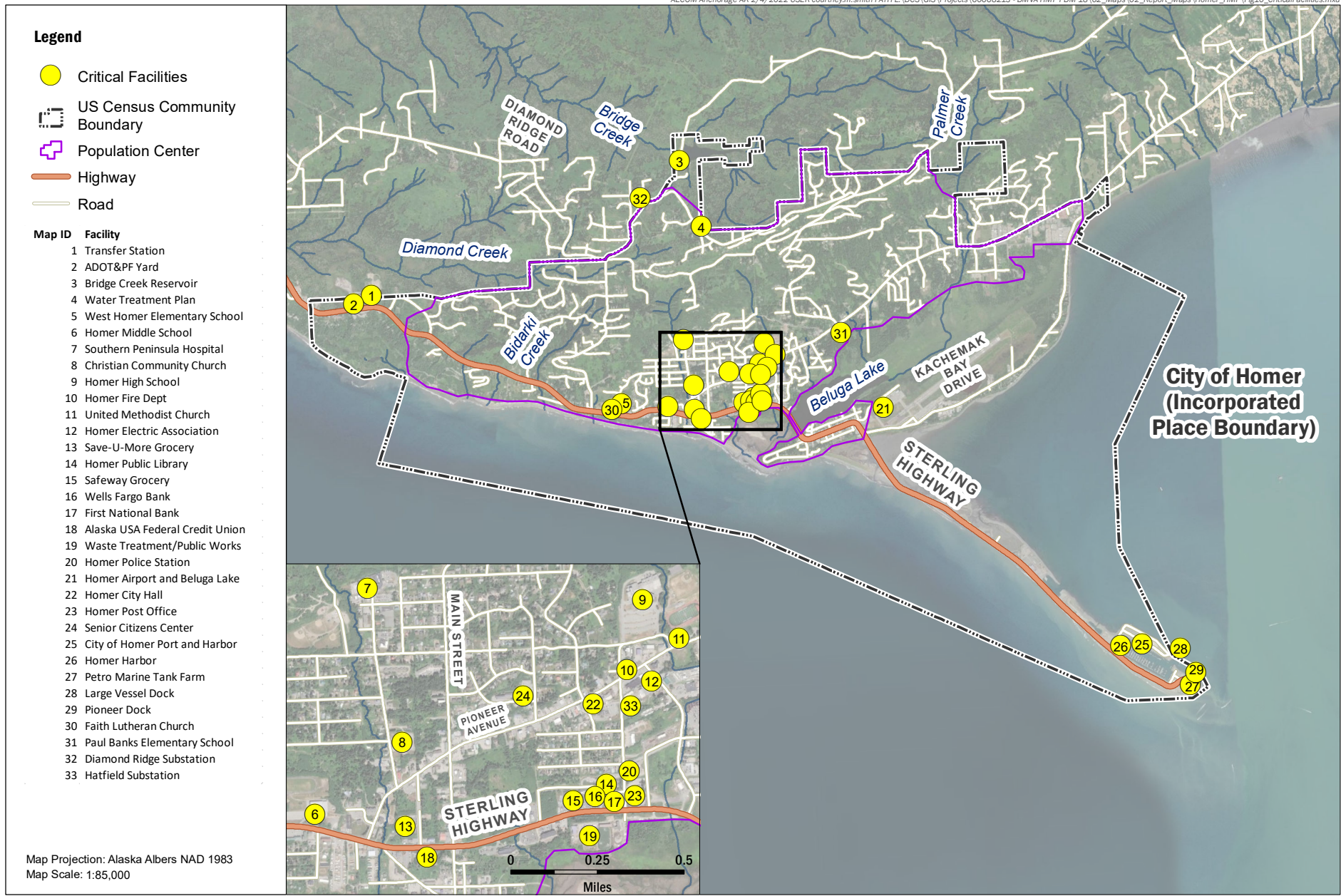
Figure 7



American Geological Institute (2003); State of Alaska (2018); US Census TigerLine (2021)
Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Esri, Garmin, GEBCO, NOAA NGDC, and other contributors



US Census TigerLine (2021)
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar
Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN,
and the GIS User Community



US Census TigerLine (2021)
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

City Planner Abboud responded to the concerns of Mr. Ginnever stating that the right of way would not affect any properties outside the proposed actions. He then clarified that the easements would not affect any private lands outside the subject area.

Vice Chair Highland closed the public comment period and opened the floor to questions from the Commission, hearing none, she requested a motion and second.

VENUTI/BENTZ MOVE TO ADOPT STAFF REPORT 22-21 AND RECOMMEND APPROVAL OF THE LLOYD RACE & EKER ESTATES LUJAN 2022 PRELIMINARY PLAT TO SHIFT A COMMON LOT LINE BETWEEN TWO PARCELS RESULTING IN TWO PARCELS OF ROUGHLY FIVE ACRES EACH.

City Planner Abboud provided clarification that staff recommendations should be included in the motion for the record in response to questions from Vice Chair Highland.

VENUTI/BENTZ MOVED TO AMEND THE MOTION TO INCLUDE STAFF RECOMMENDATIONS:

1. DEDICATE A 15 FOOT UTILITY EASEMENT FRONTING RACE ROAD.
2. DEDICATE A 30 FOOT DRAINAGE EASEMENT CENTERED ON THE CREEK.
3. DEDICATE A 15 FOOT UTILITY EASEMENT ALONG MISSION ROAD AND BARANOF AVENUE
4. MISSION ROAD APPEARS TO BE 40 FEET WIDE ALONG LOT 1 A. VERIFY THE WIDTH OF MISSION ROAD ALONG LOT 1-A AND DEDICATE ANY ADDITIONAL RIGHT OF WAY NEEDED TO CREATE FORTY FEET OF RIGHT OF WAY FROM CURRENT CENTER OF THE RIGHT OF WAY AS SHOWN ON THE MAP, NOT AS CONSTRUCTED.)

There was no discussion.

VOTE (Amendment) NON-OBJECTION. UNANIMOUS CONSENT.

Motion carried.

There was no further discussion on the main motion as amended.

VOTE. NON-OBJECTION. UNANIMOUS CONSENT.

Motion carried.

PENDING BUSINESS

NEW BUSINESS

- A. Staff Report 22-22, 2022 Local Hazard Mitigation Plan

Vice Chair Highland introduced the item and invited City Planner Abboud to provide his report for the Commission.

City Planner Abboud provided a summary of Staff Report 22-22 for the Commission noting the processes to date and next steps.

City Planner Abboud facilitated discussion on the draft local hazard mitigation plan for the following points:

- Coordination with existing plans such as the Transportation Plan and Comprehensive Plan Table 2-3: Existing Plans and reports - Opportunity to incorporate information from or point to these plans in more detail:

Comp Plan: The land use planning process can help drive investments in nearly every type of nature-based solution to natural hazards. Preserving parks and greenways before all remaining land is developed may be most important.

Transportation Plan: Managing flooding and erosion

- Section 3: Hazard Identification Climate Change:

- Add bullet: Introduction of harmful or invasive species, with changing weather patterns and warming creating a change in the migration patterns.
 - If the species have a more prolonged existence in the County, there may also be a greater number of infestation events or a higher value of loss tied to infestation. Some invasive plants have been shown to destabilize soil due to high densities and shallow root systems, negatively impacting nearby buildings and septic systems. Other invasive plant species such as have been known to clog culverts and streams, increasing flooding risk. Utilities may be interrupted by invasive plants, blocking the water intakes of treatment plants and power generation facilities. Marine invasive can be hazardous to port and harbor facilities, including biofouling of encrusting organisms like tunicates, and habitat and bank stabilization issues with European Green Crab.¹

- Pg 43. Flooding. Recurrence probability. Address fall flood events- frozen ground with extensive rainfall. Less predictable events with changing climate and weather patterns.

- Section 5: Mitigation Strategy

- 5-2 wrong heading on pg 63. Human not financial resources
- Financial resources include:
 - Other External Grants:
 - In addition to applying for hazard mitigation grants, this community could apply for habitat conservation grants, water quality grants, and coastal resilience grants.
 - NOAA's Community-Based Restoration Program
 - National Coastal Resilience Fund
 - Capital Improvement Plan
 - Stormwater Utility Fees and Incentives
 - Clean Water State Revolving Fund (EPA)
 - Incentivizing Private Investment
- Mitigation: Actions might include wetland protection, low impact development, and use of green infrastructure

- Table 5-3: Planning and Policy Resources for Hazard Mitigation

- Add other city zoning code? Or Building Code?
 - One of the most cost-effective ways to safeguard our communities against natural disasters is to adopt and follow hazard-resistant building codes. Not only are casualties

¹ Resource provided by Commission Bentz:

https://www.tompkinscountyny.gov/files2/planning/Climate_Adaptation/Section%205.4.6%20-%20Infestation%20and%20Invasive_032521_dfr.pdf

reduced, but the cost of building damage is also reduced during a natural disaster.

Building codes also help communities get back on their feet faster by minimizing indirect costs such as business interruptions and lost income.

- 5.4 Table 5-6: Recommended action Add: Property buyout of wetlands with green infrastructure value
 - Inclusion of the information on earthquakes, expressed concerns on the hillside behind the hospital and then questioned the steep slopes code and if that should be reviewed.

City Planner Abboud responded that they can revisit the code and there is always room for improvement, he reported that he has been working with the Public Works Director/City Engineer on the coastal setback items which fits into the steep slope guidelines and can get more complex but they can have an evaluation done as it plays along with erosion and destabilization. They are better off than most communities in Alaska but not to the degree that California is.

Further discussion on these topics ensued:

- the condition of the Bridge Creek Dam
 - o this has not been spoken of pointedly
 - o not sure of any mitigation proposals if something happened with the dam
- Page 60, Emergency Shelters – the city has several places that are designated as emergency shelters and concerns were raised during previous earthquakes, regarding the use of the schools as an emergency shelter due to possible structural damage. It was noted during the visioning event that more table top exercises should be conducted.
- the amount of valuation of the new police station should be corrected
- Reviewing the document brings forth that the City is involved in many things that can go awry even in their small little town
- additional errors noted on table 4.6 page 60 of the packet

A. Minutes for Regular Meeting March 2, 2022

Vice Chair Highland introduced the items and invited Commissioner Venuti to bring forth his comments on the section of the minutes regarding the memorandum.

Commissioner Venuti expressed that the minutes reflected that not all Commissioners were supportive of building code and he believed that to be incorrect as he did not recall that any Commissioners were against establishing building code.

City Planner Abboud reported that he included the unapproved minutes as an attachment to the memorandum in response to questions on whether City Council has seen the minutes.

Additional comments from the Commission ensued that there was unanimous consent on the implementation of building code but not for establishing a building department.

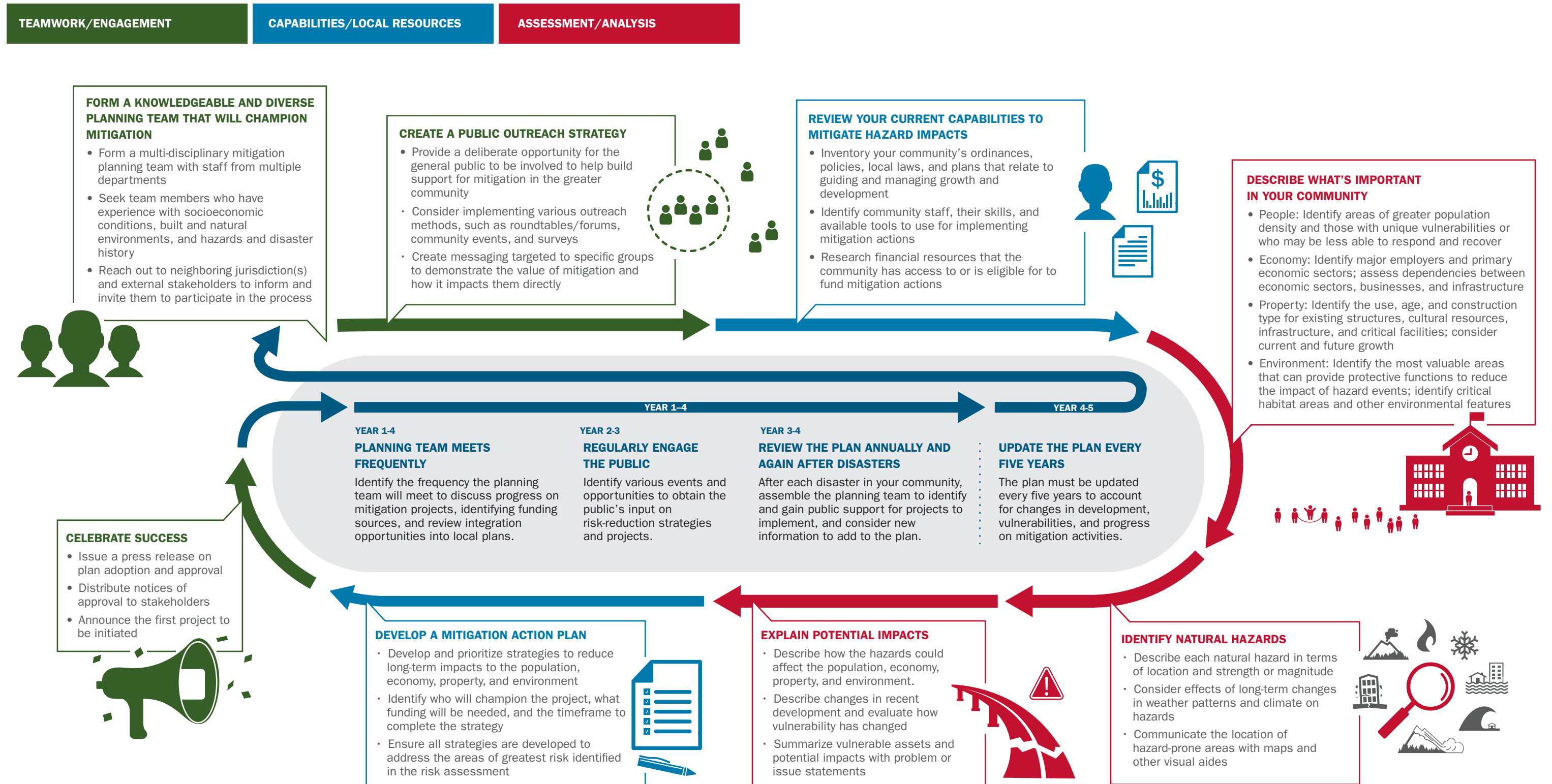
Deputy City Clerk Krause responding to questions on process stated that she can review the audio and correct the minutes if the Commission believes that they currently do not reflect the action and discussion taken. The Commission can then approve the corrected minutes at the next meeting. Mrs.

FEMA Region 10 Natural Hazards Mitigation Planning Process



Local governments have the responsibility to protect the health, safety, and welfare of their citizens through mitigation. Mitigation is most effective when it is based on a comprehensive, long-term plan that is developed before a disaster occurs. The purpose of mitigation planning is to identify local policies and actions that can be implemented over the long term to reduce risk and future losses from hazards.

It's important to recognize that the process is as important as the plan itself. In mitigation planning, as with most other planning efforts, the plan is only as strong as the process and variety of stakeholders involved in its development. The plan should also serve as the written record, or documentation, of the planning process.





FEMA

REGION X

BENEFITS OF NATURAL HAZARD MITIGATION PLANNING

Mitigation is most effective when it is based on a comprehensive, long-term plan that is developed before a disaster occurs. The purpose of mitigation planning is to identify local policies and actions that can be implemented over the long term to reduce risk and future losses from hazards. These mitigation policies and actions are identified based on an assessment of an area's hazards, vulnerabilities, and risks, and the participation of a wide range of stakeholders and the public in the planning process.

A Federal Emergency Management Agency-approved hazard mitigation plan (HMP) is a requirement for receiving certain types of non-emergency disaster assistance, including funding for mitigation projects. Ultimately, hazard mitigation planning enables action to reduce loss of life and property, lessening the impact of disasters.

HMPs ensure communities are eligible for hundreds of millions of dollars in support each year to:

- ▶ Retrofit roads, bridges culverts, and similar structures to prevent recurring damage from winter storms and seasonal flooding;
- ▶ Buy properties in high-risk floodplains and convert them into local parks and trails; and
- ▶ Develop HMPs and additional planning mechanisms that integrate hazard mitigation information.

Less widely known, the hazard mitigation planning process further helps local governments by bringing community partners together to identify vulnerabilities and reduce risk through planning, public works projects, and emergency management functions.



For example, while an emergency management department may facilitate and coordinate the hazard mitigation planning process, the land use planning and public works departments share information to propose mitigation strategies related to their long-term strategic goals, as well as daily permitting efforts.

Your Federal and State partners are available to support your community in this process to help make the most of your mitigation planning process. We can:

1. Contribute to technical assistance in risk analysis;
2. Assist in identifying effective mitigation actions;
3. Provide examples of creative planning processes;
4. Suggest examples for integrating with other planning mechanisms or community goals; and
5. Provide ideas to increase participation by other departments in the planning process.



GET THE MOST OUT OF YOUR HAZARD MITIGATION PLAN

- **Focus on the mitigation strategy.** The mitigation strategy is the plan's primary purpose. All other sections contribute to and inform the mitigation strategy and specific hazard mitigation actions.
- **Emphasize that the planning process is as important as the plan itself.** In mitigation planning, as with most other planning efforts, the plan is only as good as the process and people involved in its development. The plan should also serve as the written record, or documentation, of the planning process.
- **Use the plan and a tool to capture your community's identity.** To have value, the plan must represent the current needs and values of the community and be useful for local officials and stakeholders. Develop the mitigation plan in a way that best serves your community's purpose and people.

MITIGATION ACTION BENEFIT BY SECTOR



Land Use Planning

- Mitigation action can support land use planning and decision making by protecting lives, future development, substantially damaged or improved structures, and other local priorities for maintaining the local economy and a community's identity.



Public Works

- Protect infrastructure investments, either through siting or design improvements, achieved through mitigation action.



Emergency Management

- The HMP is a tool for bringing many departments together to strategize and prioritize mitigation actions. Mitigation actions can complement all areas of emergency management including the preparedness, response, and recovery of a community post-event.



Economic/Community Development

- Mitigation actions implemented strategically throughout a jurisdiction contribute to continuity of operations and help foster effective community development.

Some examples include altering green and grey stormwater infrastructure to account for extreme weather events, purchasing generators to help maintain continuity of operations post-disaster, or integrating risk data into ordinances and building codes to influence future development for the purpose of protecting lives and investments in locations vulnerable to natural hazards.

ADDITIONAL RESOURCES

FEMA Hazard Mitigation Webpage

<https://www.fema.gov/hazard-mitigation-planning>

Washington State Enhanced Plan

<https://mil.wa.gov/other-links/enhanced-hazard-mitigation-plan>

Oregon Hazard Mitigation

<http://www.oregon.gov/oem/hazardsprep/Pages/Hazard-Mitigation.aspx>

Idaho Hazard Mitigation

<https://ioem.idaho.gov/Pages/Plans/Mitigation/MitigationPlanning.aspx>

Alaska Hazard Mitigation

<https://ready.alaska.gov/Plans/Mitigation>

COMPONENTS OF NATURAL HAZARD MITIGATION PLANNING

Three key components contribute to natural hazard mitigation planning.



BENEFITS OF NATURAL HAZARD MITIGATION PLANNING

MITIGATION ACTION CAN SUPPORT:

- Land use planning and decision making by protecting lives, future development, substantially damaged or improved structures, and other local priorities for maintaining the local economy and a community's identity;
- The protection of infrastructure investments;
- Collaboration of many departments to strategize and prioritize mitigation actions;
- All areas of emergency management including the preparedness, response, and recovery of a community post-event; and
- Continuity of operations and fostering effective community development

3 KEY COMPONENTS THAT CONTRIBUTE TO NATURAL HAZARD MITIGATION PLANNING



BECOME ELIGIBLE FOR
MITIGATION FUNDING
& ASSISTANCE



COLLABORATION &
SUPPORT FROM
FEDERAL & STATE
PARTNERS

BENEFITS OF NATURAL HAZARD MITIGATION PLANNING



DEVELOPING A TOOL
BOX OF LOCAL TIPS
& TRICKS FOR HAZARD
MITIGATION ACTION



MITIGATION ACTION CAN SUPPORT:

- Land use planning and decision making by protecting lives, future development, substantially damaged or improved structures, and other local priorities for maintaining the local economy and a community's identity;
- The protection of infrastructure investments;
- Collaboration of many departments to strategize and prioritize mitigation actions;
- All areas of emergency management including the preparedness, response, and recovery of a community post-event; and
- Continuity of operations and fostering effective community development