

E. NEW BUSINESS

- 7. Ordinance 2022-XX: Amending the Kenai Peninsula Borough Hazard Mitigation Plan by deleting existing Annex B, City of Kachemak Hazard Mitigation Plan 2015, and adopting 2022 Kachemak City Local Hazard Mitigation Plan Update as the new Annex B.**

Kenai Peninsula Borough

Planning Department

MEMORANDUM

TO: Brent Johnson, Assembly President
Members, Kenai Peninsula Borough Assembly

THRU: Mike Navarre, Mayor

FROM: Robert Ruffner, Planning Director

DATE: October 31, 2022

RE: Ordinance 2022-____, Amending the Kenai Peninsula Borough Hazard Mitigation Plan by Deleting Existing Annex B, City of Kachemak Hazard Mitigation Plan 2015, and Adopting 2022 Kachemak City Local Hazard Mitigation Plan Update as the New Annex B (Mayor)

The Federal Emergency Management Agency (FEMA) requires all states to submit a Hazard Mitigation Plan (HMP) to be eligible for any FEMA funding for non-emergency disasters. HMP's are required to be updated every five years to remain current for mitigation planning efforts and successful grant funding applications.

In 2019, the borough adopted an updated HMP as the local mitigation plan for the area. Kachemak City's last HMP was adopted in 2015 and listed as Annex B in the borough's HMP. On July 13, 2022, Kachemak City Council met to review the final draft of their updated local HMP, which was then adopted via City of Kachemak Ordinance 2022-09. The Kachemak City Council then recommended approval of the plan to the borough.

This ordinance will repeal Annex B of the borough's HMP plan and replace it with newly updated plan, "2022 Kachemak City Local Hazard Mitigation Plan".

Your consideration of this ordinance is appreciated.

Introduced by: Mayor
Date: November 15, 2022
Hearing: December 13, 2022
Action:
Vote:

**KENAI PENINSULA BOROUGH
ORDINANCE 2022-__**

**AN ORDINANCE AMENDING THE KENAI PENINSULA BOROUGH HAZARD
MITIGATION PLAN BY DELETING EXISTING ANNEX B, CITY OF KACHEMAK
HAZARD MITIGATION PLAN 2015, AND ADOPTING 2022 KACHEMAK CITY
LOCAL HAZARD MITIGATION PLAN UPDATE AS THE NEW ANNEX B**

- WHEREAS,** the Federal Emergency Management Agency (“FEMA”) requires all states to submit a hazard mitigation plan to be eligible for any FEMA funding for non-emergency disasters; and
- WHEREAS,** on December 3, 2019, the borough assembly enacted ordinance 2019-31, adopting an updated Hazard Mitigation Plan (“HMP”) as the local mitigation plan for the area within the borough and a required component of the State of Alaska Hazard Mitigation Plan; and
- WHEREAS,** the HMP is a multi-jurisdictional plan developed in coordination with the incorporated cities within the borough, the All Lands/All Hands Interagency Wildfire Mitigation Group, the State of Alaska Division of Homeland Security and Emergency Management, and FEMA; and
- WHEREAS,** the HMP was designed to assist borough residents, local and private organizations and other parties interested in hazard mitigation planning, as well as to coordinate planning efforts between government agencies; and
- WHEREAS,** FEMA disaster recovery funding and grant programs require regular updates to the mitigation plans; and
- WHEREAS,** the HMP update process is required every five years to remain current for mitigation planning efforts and for successful grant funding applications; and
- WHEREAS,** the Kachemak City Council held a public hearing on July 13, 2022 to review the final update of the 2022 Kachemak City Local Hazard Mitigation Plan; and
- WHEREAS,** the Kachemak City Council approved and adopted the 2022 Kachemak City Local Hazard Mitigation Plan via City of Kachemak Ordinance 2022-09, and recommended approval to the borough; and

WHEREAS, the borough Planning Commission at its regularly scheduled meeting of _____, 2022 recommended _____ of the 2022 Kachemak City Local Hazard Mitigation Plan;

NOW, THEREFORE, BE IT ORDAINED BY THE ASSEMBLY OF THE KENAI PENINSULA BOROUGH:

SECTION 1. That the existing Annex B in the borough's HMP plan adopted by KPB 2.80.010 is hereby deleted.

SECTION 2. That the borough's HMP is hereby amended by adopting the Kachemak City Local Hazard Mitigation Plan 2022 update as the new Annex B.

SECTION 3. That this ordinance takes effect immediately upon its enactment.

ENACTED BY THE ASSEMBLY OF THE KENAI PENINSULA BOROUGH THIS * DAY OF * 2022.

Brent Johnson, Assembly President

ATTEST:

Johni Blankenship, MMC, Borough Clerk

Yes:

No:

Absent:

CITY OF KACHEMAK
KACHEMAK, ALASKA
ORDINANCE 2022-09

ORDINANCE 2022-09: AN ORDINANCE OF THE CITY OF KACHEMAK, ALASKA,
ADOPTING THE 2022 KACHEMAK CITY LOCAL HAZARDOUS MITIGATION PLAN

WHEREAS, The State of Alaska Division of Homeland Security and Emergency Management has reviewed and compiled a Hazardous Mitigation Plan in partnership with the City of Kachemak; and

WHEREAS, the plan identifies hazards which routinely impact a community, defines those hazards so community members understand their nature, determine impact locations within the community, describe their potential impact extent, and identify mitigation opportunities ; and

WHEREAS, the Federal Emergency Management Agency (FEMA) requires jurisdictions to submit a plan to be eligible for FEMA Hazard Mitigation Assistance Grants; and

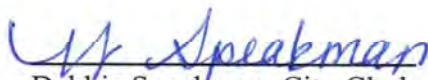
NOW, THEREFORE, THE CITY OF KACHEMAK ADOPTS THE 2022 KACHEMAK CITY LOCAL HAZARDOUS MITIGATION PLAN.

ADOPTED by a duly constituted quorum of the City Council of Kachemak, Alaska, this
13 day of July, 2022.

CITY OF KACHEMAK


William R. Overway, Mayor

ATTEST:


Debbie Speakman, City Clerk

Kachemak City

Local Hazard Mitigation Plan



KACHEMAK CITY
2022 LOCAL HAZARD MITIGATION PLAN

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LIST OF ACRONYMS AND ABBREVIATIONS

°F	degrees Fahrenheit
AECOM	AECOM Technical Services, Inc.
AFG	Assistance to Firefighters Grant
BRIC	Building Resilient Infrastructure and Communities
CFR	Code of Federal Regulations
DMA 2000	Disaster Mitigation Act of 2000
FEMA	Federal Emergency Management Agency
GIS	Geographic Information System
HMA	Hazard Mitigation Assistance
HMGP	Hazard Mitigation Grant Program
LHMP	Local All-Hazard Mitigation Plan
NFIP	National Flood Insurance Program
PGA	peak ground acceleration
SFHA	Special Flood Hazard Area
SNAP	Scenarios Network for Alaska + Arctic Planning
U.S.	United States
USGS	United States Geological Survey

1.0 INTRODUCTION

1.1 COMMUNITY OVERVIEW

Kachemak is a city in the Kenai Peninsula Borough just east of Homer on the northern side of Kachemak Bay (Figure 1). The city comprises 1.6 square miles, all of which is land.

Kachemak was incorporated in 1961. According to the 2020 United States (U.S.) Census, the population of Kachemak is 576, up from 472 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 U.S. 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 grant programs.

1.3 2022 LOCAL HAZARD MITIGATION PLAN SYNOPSIS

The 2022 Local Hazard Mitigation Plan (LHMP) is organized to follow FEMA’s Local Mitigation Plan Review Tool (Appendix A), 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 2022 LHMP structure has been formatted to include the following sections:

- **Section 1 Introduction**, which introduces Kachemak City and provides information on hazard mitigation planning.
- **Section 2 Planning Process**, which provides an overview of the planning process, starting with a timeline. Planning team members are identified in this section, along with a description of their involvement with the planning process. Stakeholder outreach, public involvement, and continued public involvement are also described in this section. In addition, an overview of the existing plans and reports, how those documents were incorporated into the 2022 LHMP, and a plan update method and schedule are detailed in this section. Supporting planning process documentation is provided in Appendix C.
- **Section 3 Hazard Identification**, which provides a description of each of the seven 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 Kachemak’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 Adoption**, which includes information about the formal adoption.
- **Section 7 Appendices**, which include 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 Kachemak, AECOM Technical Services, Inc. (AECOM), and a planning team. The planning process officially kicked-off in January 2022 and ended in June 2022. A timeline of the major planning tasks and milestones by month, including the when 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. City team members are not associated with a specific department or agency.

Table 2-1: LHMP Timeline

Date	Tasks	People Involved
January 2022	First planning team meeting; LHMP kick-off call Initial information collected: hazards to be profiled, critical facility information	LHMP project manager, consultant, planning team
February 2022	Hazard profiles drafted, integration of LHMP into other planning documents determined	consultant
March 2022	Initial public outreach and stakeholder involvement	LHMP project manager, consultant, planning team
March 2022	Hazard figures created, hazard impact assessments drafted Draft mitigation actions developed	LHMP project manager, consultant, planning team
March 2022	Second planning team meeting (hazard maps and draft mitigation actions reviewed)	LHMP project manager, consultant, planning team
March 2022	Prioritization action plan developed	LHMP project manager, consultant, planning team

Table 2-1: LHMP Timeline

Date	Tasks	People Involved
March/April 2022	Internal Draft LHMP	LHMP project manager, consultant, planning team
April/May 2022	Public Draft LHMP Follow-up public outreach and stakeholder involvement	LHMP project manager, consultant, public
May/June 2022	Final Draft LHMP	LHMP project manager, consultant, Alaska Division of Homeland Security and Emergency Management, FEMA Region X
July 2022	Adoption of Final LHMP	LHMP project manager, Kachemak City Council

Table 2-2: Planning Team

Name	Department/Agency, Title	Contribution
Debbie Speakman	Kachemak, City Clerk, 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.
William Overway	Mayor, Kachemak	Participated in planning team meetings and/or reviewed planning team documents; reviewed and commented on hazard figures, mitigation strategies, and the Internal Draft LHMP.
Jessica Evans	AECOM	Consultant; prepared plan, including hazard figures, risk assessment tables, mitigation strategies, and Draft and Final LHMP.

2.2 OPPORTUNITIES FOR STAKEHOLDERS

On March 2, 2022, the LHMP project manager reached out to stakeholders via email (Appendix C) regarding 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), City of Homer (City Planner), Alaska Department of Natural Resources Division of Forestry (Forest Planner), the Kenai Peninsula Borough (Emergency Manager), Friends of Kachemak Bay State Park (general), Kachemak Heritage Land Trust (general), Kenai Peninsula Schools (Director of Planning and Operations), Alaska Department of Transportation (Kenai Area Manager), and ENSTAR (Safety Manager). The Emergency Manager with the Kenai Peninsula Borough responded that they wanted to be kept informed because they would plan on annexing this LHMP into the borough Hazard Mitigation Plan on approval.

The LHMP project manager reached out to the stakeholders again via email on April 20, 2022, inviting them to review and provide comments about the Public Draft LHMP (Appendix C). The Emergency Manager at the Kenai Peninsula Borough responded that they wanted to make sure Kenai Peninsula Borough plans were being reviewed and incorporated into the LHMP.

2.3 PUBLIC INVOLVEMENT

On March 7, 2022, Kachemak City sent an email blast to subscribed residents about the 2022 LHMP kickoff. The city also announced it on the city website and posted a flyer in the community. Two members of the public expressed interest and offered to review the draft plan for input.

Also, on April 20, 2022, Kachemak City sent an email blast to subscribed residents, made an announcement on the city website, and posted a flyer about the Public Draft LHMP and comment period. One member of the public requested a copy for review and was emailed one. No other comments were received. Copies of the city's email blasts and flyers 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
Kachemak City 2009, Kachemak City Comprehensive Community Plan	Reviewed to ensure consistency. Document provided community background information, discussed community concerns around natural hazards.
Kenai Peninsula Borough 2005, Kenai Peninsula Borough Comprehensive Plan	Reviewed to ensure consistency. Document provided community background information, discussed community concerns around natural hazards.
Kenai Peninsula Borough 2019, Kenai Peninsula Borough Hazard Mitigation Plan	Information on borough-wide trends and the nature for all hazards were incorporated into the 2022 LHMP hazard profile and risk assessment sections.
FEMA 2017, Kenai Peninsula Borough Risk Report: Kenai Peninsula Borough and the Incorporated Cities of Homer, Kachemak, Kenai, Seldovia, Seward, and Soldotna	Background flood and earthquake information was incorporated into the 2022 LHMP's hazard identification.
Kenai Peninsula Borough 2022, Community Wildfire Protection Plan	Information on borough-wide trends and nature for wildfire were incorporated into the 2022 LHMP hazard profile and risk assessment sections.
U.S. Forest Service Chugach National Forest 2021, Chugach All-Lands Wildfire Risk Assessment: methods and Results	Information on trends and nature for wildfire were incorporated into the 2022 LHMP hazard profile and risk assessment sections.

2.5 CONTINUED PUBLIC PARTICIPATION

A copy of the 2022 LHMP will remain available at Kachemak's City office and the State of Alaska website. The LHMP project manager will use the community's email blast and flyers 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 city clerk with comments or questions at cityclerk@kachemak.city.

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 city clerk. Should the 2022 LHMP project manager no longer be involved with the LHMP, the mayor and/or city clerk will select a new project manager to oversee the annual reviews and plan update.

The LHMP project manager will receive 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 at the beginning of each year.

Four years after the 2022 LHMP's adoption:

- The mayor/city clerk or designee will complete the Annual Review Tracker.
- The mayor/city clerk or designee will reconvene the planning team and update membership, if necessary.
- The mayor/city clerk 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 mayor/city clerk or designee will develop a new work plan.
- The mayor/city clerk 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 the 2022 LHMP	Public Outreach Conducted	Changes Made to the 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, disaster history, location, extent/severity, and probability of future events. Hazard identification profiles have been developed for each of the seven hazards addressed in Section 3.1 through Section 3.7: climate change, earthquake, flooding, landslide, severe weather, volcano, and wildfire. The hazards profiled for this LHMP are discussed in alphabetical order and not hazard classification, the order does not signify level of risk.

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, from 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 at the forefront 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 walrus), 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 the 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>Kachemak City 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 Kachemak is susceptible to climate change. An increase for the potential of wildfires from the north and debris flow along the bluffs as a result of higher temperature and increased precipitation are a concern.</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 40 years (from late 1970s), 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. At the nearest station to Kachemak (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 the 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 1993-2012 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 Kachemak will experience a temperature increase of 5°F by the end of the century. Likewise, precipitation models show that for the same reporting period Kachemak will see an average rainfall increase of 2.9 inches (Table 3-2).</p> <p>Sea level rise is not modeled for the Kachemak City, but any rise in sea level or storm surge intensity would threaten the coastline of the community.</p>
Recurrence Probability	<p>Climate change is a significant and lasting change in the statistical distribution of weather patterns over periods, 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	40.1°F	43.0°F	45.1°F
Mean Annual Precipitation	27.7 inches	28.7 inches	30.6 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 within 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.</p> <p>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 the 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, typically 10 to 15 feet, but up to 100 feet), flow failures (i.e., massive flows of soil, typically hundreds of feet, but 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 totally 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 U.S. 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>Kachemak is in a region of high seismicity. It is above a boundary between segments of the earthquake-generating Alaska-Aleutian subduction zone with 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 fault line to Kachemak is the Falls Creek-Ninilchik anticline, which is a quaternary fault (i.e., one event per 1,600,000 years) approximately 35 miles away. Several other fault lines lie around Kachemak and on the Kenai Peninsula but are not studied; therefore, no details are known.</p>

Table 3-3: Earthquake

Profile	Description
History	<p>As stated in the 2018 State of Alaska Hazard Mitigation Plan, 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” (i.e., 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 Kachemak.</p> <p>The effects of the March 27, 1964 Great Alaska Earthquake (which had a magnitude of 9.2) in the Homer and Kachemak areas were thoroughly documented after the event. Observations included general damage caused by tectonic subsidence, as well as 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 the Homer Spit as a result of tectonic subsidence (2 to 3 feet). Kachemak relies on the community of Homer for nearly all vital services and access to the Seward Highway. For this reason, large impacts to Homer and its infrastructure also impact Kachemak.</p> <p>Since 2000, there have been 27 earthquakes with a magnitude of 5.0 or greater that occurred within 150 miles of Kachemak City. 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 Kachemak for a 5% probability of exceedance in 50 years are shown on Figure 2. Based on this model, there are 1,065 acres (100% of land area) in the perceived “Severe” shaking zone, with moderate to heavy potential damage.</p>
Recurrence Probability	<p>As shown on Figure 2, the seismic PGA for Kachemak has a 5% probability of severe shaking in Kachemak in the next 50 years. Based on these data, there is a 5% chance of an earthquake occurring in Kachemak that will exceed 49.61 PGA in 50 years.</p>

3.3 FLOOD

Table 3-4: Flood

Profile	Description
Nature	<p>A flood occurs when the existing channel of a stream, river, canyon, or other water course 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.</p> <p>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>Kachemak City experiences flooding from rainfall runoff (in late summer and early fall), snowmelt (in spring and early summer), groundwater floods, and flash floods. Previous flooding in Kachemak was caused primarily from two sources: culverts that freeze, causing ice jams and overflowing; and heavy precipitation on roads that are not up to current building codes in the Kenai Peninsula Borough. The culverts and roads of concern are spread throughout the community.</p> <p>The east side of Kachemak tends to be flatter and wetter than the west side, making it more susceptible to flooding during spring snowmelt.</p> <p>Kachemak City has no Special Flood Hazard Areas (SFHAs) documented by FEMA. Only properties with buildings (improvements) were incorporated into the flood risk assessment conducted by FEMA; therefore, FEMA did not assess impacts to the shoreline in Kachemak. This does not preclude future determinations of SFHAs that could be necessitated by changed conditions affecting the community (e.g., annexation of new lands or shoreline development) or the availability of new scientific or technical data about flood hazards.</p>
History	<p>As mentioned above, impacts in the city of Homer can also impact Kachemak. 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 and Kachemak 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>Estimated depths of the flooding within the Kachemak City boundaries are approximately 1 foot or less.</p>
Recurrence Probability	<p>Floods can occur at any time in Kachemak but are most common in the spring and summer with heavy snowmelt and rainfall runoff. Based on previous occurrences, flood conditions are likely to occur in Kachemak approximately 2 to 5 days each year.</p>

3.4 LANDSLIDE

Table 3-5: 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.</p> <p>In addition, 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 • 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 south 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 include slopes greater than 20 degrees, are shown on Figure 3. The highest concentration of these slopes is along the bluffs running between Skyline Drive East End Road and along the shoreline.</p>
History	<p>The Alaska Division of Geological and Geophysical Surveys identified over 1,000 slope failure scars using aerial photographs and light detection and ranging data from the Homer and Kachemak areas. Most of these slope failure scars represent relatively small and shallow earthflows. As a result of the 1964 Great Alaska Earthquake, there was one landslide and one earth flow of significance, both north of Kachemak city limits; however, the community was impacted.</p> <p>The community reported a landslide in 2012 above China Poot Street.</p>
Extent / Severity	<p>No official landslide dataset exists for Kachemak City. 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 Kachemak that includes slopes greater than 20 degrees is at greatest risk of slide. Approximately 13.5% (144 acres) of Kachemak is in this hazard area.</p>
Recurrence Probability	<p>Landslides have a high probability of recurring in areas where they have occurred in the past. As such, Kachemak can likely expect to experience recurring landslides and rockslides along the bluffs following severe precipitation events. Heavy storm events are likely to occur annually, causing minor landslides.</p>

3.5 SEVERE WEATHER

Table 3-6: Severe Weather

Profile	Description
Nature	<p>Severe weather occurs throughout Alaska with extremes that include 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, which is an event during 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, these storms are not necessarily restricted to the winter season and may occur in the late autumn and early spring as well. • Heavy snow and rain, which occur frequently in coastal areas; snowfall can accumulate 4 inches or more in 12 hours or less. • Freezing rain and ice storms, which 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 to -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 fall 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	<p>The entire Kachemak area is vulnerable to the effects of severe weather. Winter snow may accumulate up to 3 feet per storm, while wind speeds can reach as high as 60 miles per hour.</p>
History	<p>Notable severe weather events from 2000 through 2021 include:</p> <ul style="list-style-type: none"> • In spring 2003, strong winds across the Kenai Peninsula resulted in widespread power outages, downed trees, and structural damage; and also 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 the Kachemak Bay area. The strong wind caused widespread damage from Kenai to Homer. 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 episode was flooding of the Anchor Point River. In addition, North Fork Road was impassable, water was over the Sterling Highway 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 Chain and then moved northward along the Alaska Peninsula and up Cook Inlet. A strong high pressure system behind it brought a large amount of cold air behind the low. This created high winds

Table 3-6: Severe Weather

Profile	Description
	throughout the Cook Inlet area. Homer reported 8 hours of blizzard conditions and near-whiteout conditions.
Extent / Severity	As noted above, wind, rain and heavy snowfall are common in Kachemak throughout the winter season. According to the National Oceanic Atmospheric Administration, in Kachemak, the average annual precipitation is 24 inches, the average annual snowfall is 57 inches and winds are commonly 40-60 MPH in the area.
Recurrence Probability	Based on historic occurrences, Kachemak can expect to experience severe weather conditions about 5 to 6 days each year.

3.6 VOLCANO

Table 3-7: 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 within and beneath the volcano, the vent connects to one or more linked storage areas of molten or partially molten rock.</p> <p>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 ground or surface water come 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	As shown on Figure 4, the entire community of Kachemak is at risk for moderate tephra ashfall hazard, with 0.25 inch to 1 inch of accumulation.
History	<p>The Alaska Volcano Observatory is monitoring three volcanoes within 100 miles of Kachemak:</p> <ul style="list-style-type: none"> • Augustine, 70 miles away, which was last active in 2006 when it had explosive eruptions that produced ash plumes that deposited small amounts of ash in Kachemak. • Iliamna, 60 miles away, which was last active in 1953 when it emitted a large cloud of smoke. • Redoubt, 80 miles way, which was last active in 2009 when it erupted over several months with multiple ash-producing explosions, culminating in an eruption with an ash cloud that

Table 3-7: Volcano

Profile	Description
	reached 50,000 feet and moved swiftly to the southeast, depositing up to 2 millimeters of ashfall in Kachemak. It had also recorded eruptions in 1968 and 1990.
Extent / Severity	As noted above, all of the Kachemak area is susceptible to moderate tephra ashfall. According to the Alaska Volcano Observatory, ash accumulation of 0.25 inch to 1 inch is likely from moderate tephra ashfall.
Recurrence Probability	Given the proximity of three active volcanoes and history of past events, it is probable that Kachemak City will have an ashfall event within the next 50 years.

3.7 WILDFIRE

Table 3-8: 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 (such as unattended burns, campfires, or off-road vehicles without spark-arresting muffles); or by natural events, such as 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 that influence 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. 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 on Figure 5, the northeast areas of Kachemak are at the highest risk to wildfires. Most of the community has moderate or high wildland fuel risk, with some areas of very high or extreme risk.</p> <p>The northern border of Kachemak is in the wildland-urban interface; these areas, which are primarily residential, are at higher risk from fires on the Kenai Peninsula. The Kenai Peninsula Borough noted that East End Road, Skyline Drive, Caribou Lake, and Diamond Ridge are at the highest risk for future wildfires.</p>

Table 3-8: Wildfire

Profile	Description
History	<p>The Alaska Interagency Coordination Center tracks wildfires throughout the state. Each year there are wildfires across the Kenai Peninsula. The fire season in the Kenai Peninsula usually extends from the beginning of April to the end of September, with May through late August being the most active fire months.</p> <p>Kachemak, 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 cause. Although they do occur, lightning-caused fires 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 with potential loss of life. In May 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, grass, and areas of beetle kill. Although outside Kachemak City limits, these recent fires demonstrate the potential for rapid fire spread given the weather conditions, topography, and availability of local and state wildfire fighting crews.</p>
Extent / Severity	<p>Much of Kachemak is vulnerable to wildfires. The Kenai Peninsula Borough noted that 99.2% of the community is classified as Wildland Urban Interface.</p> <p>As shown on Figure 5, 87% of the land area in Kachemak 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. In addition, wildfires can cause fire-related injuries; and local and regional transport of smoke, ash, and fine particles, which increase respiratory and cardiovascular risks.</p>
Recurrence Probability	<p>Recorded wildland fires within the past 10 years and 50 miles of Kachemak 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 infrequency as climate change and bark beetle kills create more fuels 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. This analysis creates 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 earthquake, landslide, volcano, and wildfire.

For the 2022 LHMP, hazard impact assessments were prepared for Kachemak City’s land area, population center, and critical facilities (Table 4-1). Land area of 1,065 acres (1.66 square miles) was determined using Geographic Information System (GIS). The population center, which is a region is a geographical point that describes a center point of Kachemak’s population, of 788 acres (1.2 square miles) was determined using GIS. Critical facilities (Figure 6) are those that provide services and functions essential to Kachemak City, 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 and libraries; or large public gathering spots and places of worship. For the 2022 LHMP, a list of 10 critical facilities and private critical facilities was provided by the city’s planning team. 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 provided to Kachemak City 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	1,065.00 acres
Population Center	788.12 acres
Critical Facilities	10

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

Hazard Area	Acres	Percent of Total Acres
Climate Change	1,065.00	100
Earthquake		
Weak-Light	0	0
Moderate	0	0
Strong-Severe	1065.00	100
Flood	No mapping data are available for flooding. Based on existing reports and the community planning team, less than 25% of the total land area is susceptible to flooding.	
Landslide	143.63	13.5
Severe Weather	1,065.00	100
Volcano		
Low	0	0
Low-Moderate/Moderate	1065.00	100
High	0	0
Wildfire		
Moderate	132.92	12.48
High	804.39	75.53
Very High	124.98	11.74
Extreme	1.11	0.10

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

Hazard Area	Acres	Percent of Total Acres
Climate Change	788.12	100
Earthquake		
Weak-Light	0	0
Moderate	0	0
Strong-Severe	788.12	100
Flood	No mapping data are available for flooding. Based on existing reports and the community planning team, less than 25% of the population center is susceptible to flooding.	
Landslide	89.18	11.32
Severe Weather	788.12	100
Volcano		

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

Hazard Area	Acres	Percent of Total Acres
Low	0	0
Low-Moderate/Moderate	788.12	100
High	0	0
Wildfire		
Moderate	128.42	16.29
High	576.02	73.09
Very High	83.45	10.59
Extreme	0.22	0.03

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

Hazard Area	Number	Percent of Total Facilities
Climate Change	10	100
Earthquake		
Weak-Light	0	0
Moderate	0	0
Strong-Severe	10	100
Flood	3	30
Landslide	1	10
Severe Weather	10	100
Volcano		
Low	0	0
Low-Moderate/Moderate	10	100
High	0	0
Wildfire		
Moderate	1	10
High	7	70
Very High	2	20
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 Kachemak is vulnerable to climate change. Over the next century, weather patterns that are considered extreme today are expected to become normal. Kachemak’s overall vulnerabilities to climate change include sea level rise, coastal erosion, increased average annual maximum temperature, increased average annual precipitation, and severe moisture deficit/drought, and wildfires.</p> <ul style="list-style-type: none"> • Sea level rise: 10% of the critical facilities and infrastructure in the city are along the shoreline could 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 Kachemak will experience a temperature increase of 5°F by the end of the century, while precipitation models show that for the same reporting period, Kachemak will experience an average rainfall increase of 2.9 inches. Drier, hotter conditions can also make wildfires more frequent and intense. Wildfires can burn homes, businesses, and critical facilities; interrupt transportation and utilities; reduce air quality; and cause death to people and animals. • Wildfires: Much of Kachemak is vulnerable to wildfires. As shown on Figure 5, 87% of the land area in Kachemak 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. In addition, wildfires can cause fire related injuries; and local and regional transport of smoke, ash, and fine particles, which increase respiratory and cardiovascular risks.
Earthquake	<p>All of Kachemak City is vulnerable to ground shaking from an earthquake and the entire city is in severe perceived ground shaking hazard areas; 100% of Kachemak’s residents live in and 100% of critical facilities and infrastructure are situated in the severe shaking potential areas.</p> <p>Those that live in severe shaking potential areas can expect earthquake events to produce moderate to heavy damage. According to USGS, this could mean slight 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 USGS, this could mean that well-designed framed structures could be thrown out of plumb and substantial buildings could experience partial building collapse.</p> <p>An earthquake risk assessment was conducted by FEMA in 2017. Two scenarios were analyzed. The first scenario used the January 2016 magnitude 7.1 Old Iliamna earthquake event and estimated a loss of improved parcels of \$141,658 (0.16%). The second scenario simulated the Great Alaska Earthquake and estimated a loss of \$3,739,163 (4.30%). The estimated value of structure loss is provided in Table 4-6.</p>
Flood	<p>Kachemak City is most vulnerable flooding from snowmelt and heavy rainfall. Approximately 25% of Kachemak’s land mass is susceptible to flooding; those areas are on the east side, which is typically wetter, or are concentrated around culverts and known locations along roads that are not built to code.</p> <p>Floods can block roadways and cause erosion, mudflows, debris flows, and water damage to structures. In addition, floods can result in land loss, injury, and even death. There are no SFHAs documented by FEMA.</p>

Table 4-5: Overall Summary of Vulnerability

Hazard	Vulnerability
Landslide	<p>No official landslide dataset exists for the Kachemak City. 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 Kachemak that includes slopes greater than 20 degrees is at greatest risk of slide. Approximately 11% (89.18 acres) of Kachemak is in this hazard area. The critical asset most at risk to landslides is the beach where coal deposits are accessed.</p> <p>Landslides can involve rapidly moving water and debris that can cause damage to buildings and critical facilities, including moving them off of their foundations and/or impact water, sewer, and roadways. Landslides may also cause injury or death to those trapped; and lead to flash flooding and additional slides.</p>
Severe Weather	<p>All of Kachemak City is vulnerable to severe weather. The Kachemak 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. High winds and high storm surge can cause extensive damage to community facilities and infrastructure, including power lines, roads, and erosion mitigation installments. Kachemak has an extensive history of storm damage.</p> <p>In addition, the Seward Highway between Anchorage and Homer is closed every year in intervals due to an avalanche event or for avalanche control, which can further isolate the community.</p>
Volcano	<p>Ashfall is 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 major flight routes are near historically active volcanoes. Ash accumulation may also interfere with the distribution of electricity due to shorting of transformers and other electrically components (ash can conduct electricity).</p> <p>Based on modeling, all of Kachemak 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 is vulnerable to wildfires. As shown on Figure 5, 87% of the land area in Kachemak 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 of the structures are constructed of wood and other flammable materials. Standing timber and other natural fuels interface with the community. History has demonstrated that fire brands 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 Kachemak 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 fire in Kachemak 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, therefore increasing flood and landslide potential, harming aquatic life, and degrading water quality.</p>

Table 4-6: Facilities Most Affected by Earthquake

Category	Number of Structures	Total Value (Building and Contents)	Estimated Loss from M9.2 Earthquake	M9.2 Earthquake loss Ratio
Residential	46	\$5,333,162	\$1,012,601	6.01%
Commercial	15	\$1,576,932	\$89,704	5.69%

4.3 NATIONAL FLOOD INSURANCE PROGRAM INSURED STRUCTURES

The National Flood Insurance Program (NFIP), managed by FEMA, provides flood insurance to property owners, and businesses. The Kenai Peninsula Borough participates in the NFIP, and it includes the communities of Kachemak and Seldovia. There are no NFIP-insured structures in Kachemak.

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	
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))	
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))	
C3. Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement §201.6(c)(3)(i))	
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))	
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))	
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))	

5.1 AUTHORITIES, POLICIES, PROGRAMS, AND RESOURCES

Kachemak’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 Kachemak 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	Kenai Peninsula Borough 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.
Engineer(s), building inspectors / code enforcement officers or other professional(s), and technical staff trained in construction requirements	Kachemak City Council, Kenai Peninsula Borough Planning Department	Oversees the effective, efficient, fair, and safe enforcement of the building codes.
Engineer(s), project manager(s), technical staff, equipment operators, and maintenance and construction staff	Kachemak City Council	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.
Procurement Services Manager	Kachemak City Clerk	Provides a full range of municipal financial services and administers several licensing measures.
Fire Chief	City of Homer Volunteer Fire Department	Provides fire protection services to Kachemak City.
Public Information Officer	Kachemak City Clerk	Coordinates and facilitates a public information program regarding activities of Kachemak 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 the community and any media; and performs related duties as required.
Police Chief	Alaska State Troopers	Provides law enforcement services in Kachemak City.

Table 5-2: Financial Resources for Hazard Mitigation

Type	Source	Purpose	Amount
General Fund	Kachemak City	Program operations and specific projects.	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
Hazard Mitigation Assistance (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.	Project-specific
HMA: Building Resilient Infrastructure and Communities	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
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	Builds and sustains 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 (AFG) 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	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

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

Name	Description	Hazards Addressed	Emergency Management
Kenai Peninsula Borough 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.	Flood, Erosion, Landslide, Avalanche, Earthquake, Volcano, Tsunami, Wildfire	Mitigation, Preparedness, Response
Kenai Peninsula Borough Hazard Mitigation 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.	Flood and Erosion, Wildfire, Earthquake, Weather, Tsunami and Seiche, Volcano, Avalanche	Mitigation, Preparedness, Response
Kenai Peninsula Borough Code of Ordinances	Promotes public health, safety, and general welfare through laws enforced by the Borough. Building permits are issued and based on the current edition of the building code and local amendments, which encompass building, electrical, mechanical, plumbing, state energy requirements, and state accessibility laws. The Borough can update and revise local amendments, as needed or required.	Flood, Wildfire	Mitigation
Public Outreach	Kachemak City uses an email distribution list and posts flyer to provide outreach to the community on relevant events, activities, and planning processes happening in the city.	All	All Phases

Table 5-4: Ability to Expand Resources

Capability	Type/Description	Expansion
Human and Technical	Mitigation Specialist	Appoint or assign someone with the City to oversee hazard mitigation grant opportunities, including notifying the City Council of upcoming grant cycles, and spearheading Notice of Intents applications, grant applications, and grant management requirements.
Financial	HMA funding	Apply for Building Resilient Infrastructure and Communities (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	Emergency Operations Plan	Develop an Emergency Operations Plan to assign responsibility to organizations and individuals for carrying out specific actions at projected times and places in an emergency that exceeds the capability or routine responsibility of any one agency.
Planning and Policy	Climate Action Plan	Develop a Climate Action Plan to reduce 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 Kenai Peninsula Borough participates in the NFIP program and it includes the communities of Seldovia and Kachemak under its participation.

The Kenai Peninsula Borough joined the NFIP on May 19, 1981, the same day the borough was mapped to a Flood Insurance Rate Map. The current Flood Insurance Rate Map date for the borough is October 20, 2016. As a participant of the NFIP, the Kenai Peninsula Borough Department of River Center enforces a floodplain management ordinance and participates in FEMA's Community Assisted Visits, which occur on a 3- to 5-year cycle.

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 of the 2022 LHMP, provided in Table 5-5.

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; local plans and regulations; and floodplain management (which includes preventive, property protection, natural resource protection, structural projects, and public information). 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. The list addresses hazards that impact the critical facilities listed in Figure 6 and takes into consideration the built environment. 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 and sustainability practitioners.

Table 5-6: Recommended Mitigation Actions

No.	Project Name	Hazard Mitigated	Project Description	Type of Development
1	Community Planning	All	Establish a formal role for the hazard mitigation planning team to develop a sustainable process to implement, monitor, review, and evaluate community-wide mitigation actions.	New and existing
2	Emergency Operations Plan and Centralized Emergency Response Location	All	Prepare an Emergency Operations Plan. As part of that plan, identify a location (potentially the City building) to serve as an emergency command center and evacuation shelter in the event of a natural disaster. This facility would house shelter supplies, provisions, and medical supplies. Identify a person or people in the community to oversee response and logistics of emergency response.	New and existing
3	Creek Restoration	Climate change	Continue to restore creeks to more natural conditions to ensure flood protection and enhance the ability of wildlife species to adapt to climate change.	New and existing
4	Construction Codes	Earthquake	Reduce earthquake damage to structures, facilities, roads, and utilities by requiring that construction practices be adequate for the anticipated earthquake events.	New
5	Seismic Retrofits	Earthquake	Seismically retrofit existing critical facilities to make them more resistant to earthquakes. Repair damage caused by previous earthquakes.	Existing
6	Storm Drains, Channels, and Ditches Improvements	Flood	Continue to repair and make capacity/structural improvements to storm drains, ditches, channels, and pump stations to enable them to perform to their design capacity in handling water flows. Install passive floodproofing measures in existing critical facilities that cannot be elevated and are in a floodplain.	Existing
7	Culvert and Ditch Installation	Flood	Install ditches/culverts for the passage of water in areas of repeat flooding.	New
8	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
9	High Wind Reinforcement	Severe weather	Reinforce critical facilities and homes against high winds.	Existing

Table 5-6: Recommended Mitigation Actions

No.	Project Name	Hazard Mitigated	Project Description	Type of Development
10	Underground Utility Placement	Severe weather	Develop, implement, and maintain partnership program with electrical utilities to use underground utility placement methods where possible to reduce or eliminate power outages from severe storms. Consider developing incentive programs.	New
11	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.	Existing
12	Large-Scale Fuel Break Program	Wildfire	Develop a coordinated fuel break program that maps when and where fuel breaks have been developed and maintained, and carry out fuel break measures where needed.	New and existing
13	Replacement Fire Engine	Wildfire	Acquire a new fire engine to replace the current vehicle that is nearing its “timed-out” date. A new vehicle would provide public safety in the event of a wild or domestic fire.	New

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, are cost-effective (positive cost-benefit ratio), and have an identified funding source.
- Medium 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.

Kachemak City determined the hazards and threats of immediate concern as flood and wildfire based on the 2022 LHMP's hazard profiles, risk assessment, and capability assessment.

The results of the above 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	Community Planning	High	Kachemak City	Kachemak City	0 to 5 years
3	Creek Restoration	Medium	FEMA BRIC/HMGP	Kachemak City	0 to 5 years
5	Seismic Retrofits	Medium	FEMA BRIC/HMGP	Kachemak City	0 to 5 years
6	Storm Drains, Channels, and Ditches Improvements	High	FEMA BRIC/HMGP	Kachemak City	0 to 5 years
7	Culvert and Ditch Installation	High	FEMA BRIC/HMGP	Kachemak City	0 to 5 years
8	Hillside Protection	Medium	FEMA BRIC/HMGP	Kachemak City	0 to 5 years
11	Air Quality Clean Building	Medium	FEMA AFG	Kachemak City	0 to 5 years
12	Large-Scale Fuel Break Program	High	FEMA BRIC/HMGP	Kachemak City, Alaska Department of Natural Resources	0 to 5 years
13	Replacement Fire Engine	High	FEMA AFG	Kachemak City	0 to 5 years

5.6 PLAN INTEGRATION

Information regarding how the 2022 LHMP will be integrated into Kachemak's and the Kenai Peninsula Borough's relevant plans and programs moving forward is provided in Table 5-8.

Table 5-8: Integration of 2022 LHMP

LHMP Section	Existing Plan/Policy/Program	Process/Timeframe
Section 3—Hazard Identification	Kachemak City Comprehensive Community Plan	Update of the Kachemak City Comprehensive Community Plan to address hazards in the LHMP that are not currently included in the Comprehensive Community Plan. Consider creating a hazard profiles section in the Comprehensive Community Plan.
Section 5—Mitigation Strategy	Kenai Peninsula Borough Hazard Mitigation Plan	Incorporate the mitigation actions provided in Table 5-6 into the Kenai Peninsula Borough Hazard Mitigation Plan by further studying and evaluating the underlying problems or using existing studies 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 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))	

6.1 FORMAL ADOPTION

The 2022 LHMP was formally adopted on July 13, 2022, by the Kachemak City Council. A copy of the adoption resolution is on file with the community and the Alaska Division of Homeland Security and Emergency Management.

CITY OF KACHEMAK
KACHEMAK, ALASKA
ORDINANCE 2022-09

ORDINANCE 2022-09: AN ORDINANCE OF THE CITY OF KACHEMAK, ALASKA,
ADOPTING THE 2022 KACHEMAK CITY LOCAL HAZARDOUS MITIGATION PLAN

WHEREAS, The State of Alaska Division of Homeland Security and Emergency Management has reviewed and compiled a Hazardous Mitigation Plan in partnership with the City of Kachemak; and

WHEREAS, the plan identifies hazards which routinely impact a community, defines those hazards so community members understand their nature, determine impact locations within the community, describe their potential impact extent, and identify mitigation opportunities ; and

WHEREAS, the Federal Emergency Management Agency (FEMA) requires jurisdictions to submit a plan to be eligible for FEMA Hazard Mitigation Assistance Grants; and

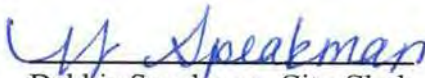
NOW, THEREFORE, THE CITY OF KACHEMAK ADOPTS THE 2022 KACHEMAK CITY LOCAL HAZARDOUS MITIGATION PLAN.

ADOPTED by a duly constituted quorum of the City Council of Kachemak, Alaska, this
13 day of July, 2022.

CITY OF KACHEMAK


William R. Overway, Mayor

ATTEST:


Debbie Speakman, City Clerk



FEMA

July 29, 2022

The Honorable William Overlay
Mayor, City of Kachemak
P.O. Box 958
Homer, Alaska 99603

Dear Mayor Overlay:

The United States Department of Homeland Security's Federal Emergency Management Agency (FEMA) Region 10, approved the *City of Kachemak Hazard Mitigation Plan* approved effective July 26, 2022, through July 25, 2027, in accordance with the planning requirements of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), as amended, the National Flood Insurance Act of 1968, as amended, the Water Infrastructure Improvements for the Nation Act and Title 44 Code of Federal Regulations Part 201. A FEMA-approved local mitigation plan is a condition of receiving certain non-emergency Stafford Act assistance and FEMA mitigation grants from the following programs:

- Hazard Mitigation Grant Program
- Building Resilient Infrastructure and Communities
- Flood Mitigation Assistance
- Rehabilitation of High Hazard Potential Dam Grant Program

FEMA individually evaluates all application requests for funding according to the specific eligibility requirements of the applicable program. Though a specific mitigation activity or project identified in the plan may meet the eligibility requirements, it may not automatically receive approval for FEMA funding under any of the programs.

Approved mitigation plans may be eligible for points under the National Flood Insurance Program's Community Rating System (CRS). For additional information regarding the CRS, please visit: www.fema.gov/national-flood-insurance-program-community-rating-system or contact your local floodplain manager. Over the next five years, we encourage your communities to follow the plan's schedule for monitoring and updating, and to develop further mitigation actions. To continue eligibility, jurisdictions must review, revise as appropriate, and resubmit the plan within five years of the original approval date.

If you have questions regarding your plan's approval or FEMA's mitigation grant programs, please contact Erin Leaders, Hazard Mitigation Plan Manager with Alaska Division of Homeland Security and Emergency Management, at (907) 428-7055, who coordinates and administers these efforts for local entities.

Sincerely,

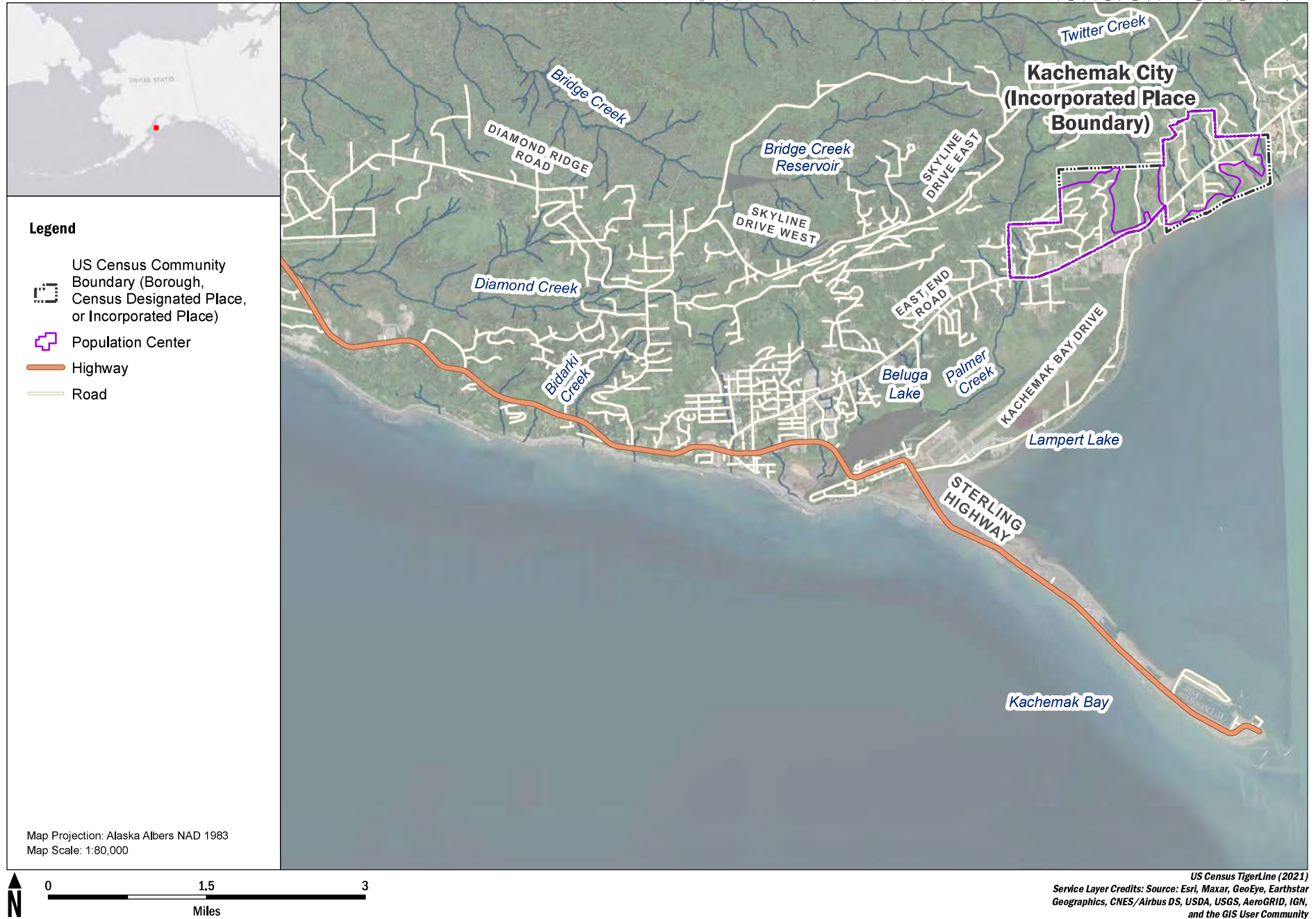
Kristen Meyers, Director
Mitigation Division

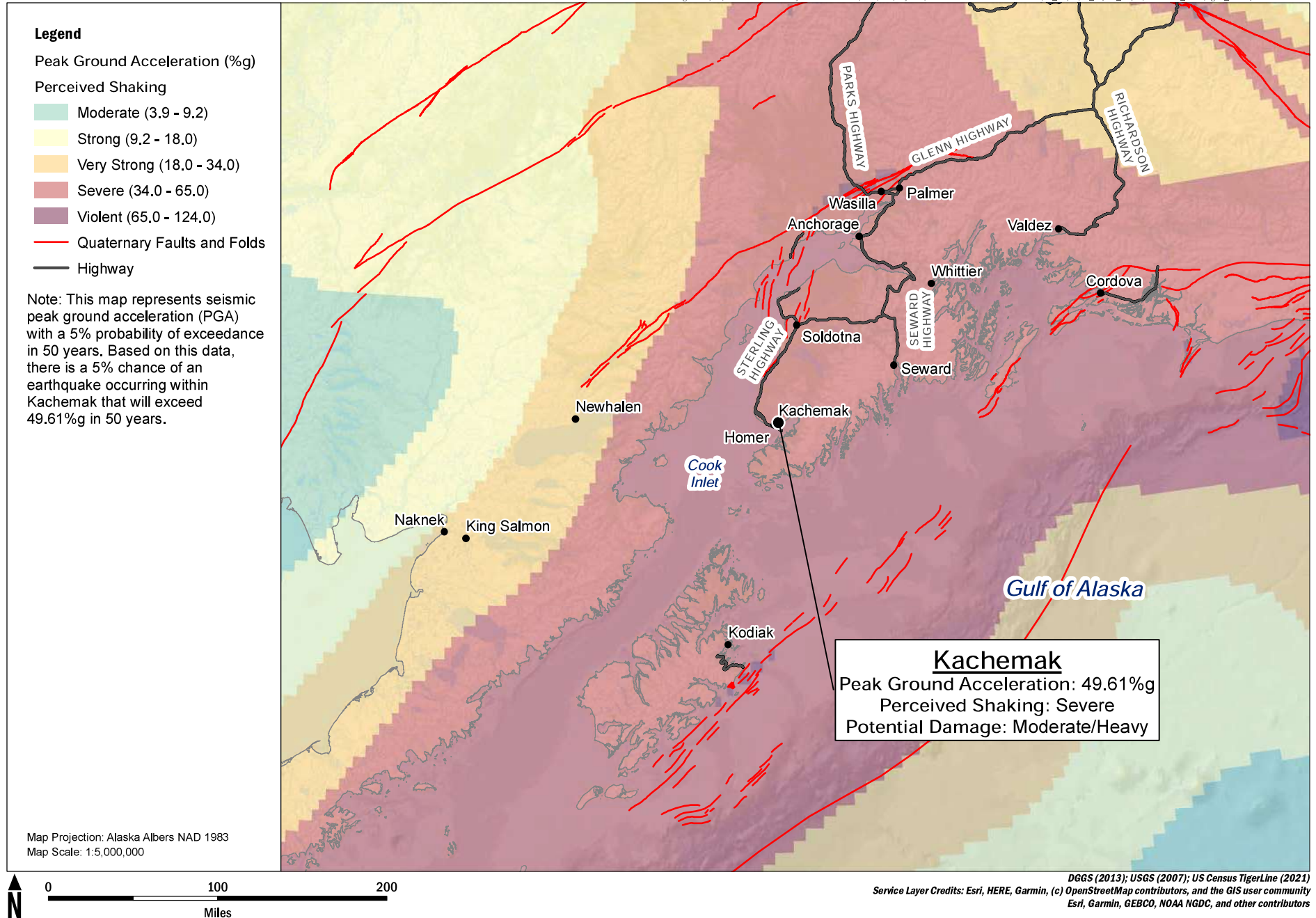
cc: Terry Murphy, Alaska Division of Homeland Security and Emergency Management

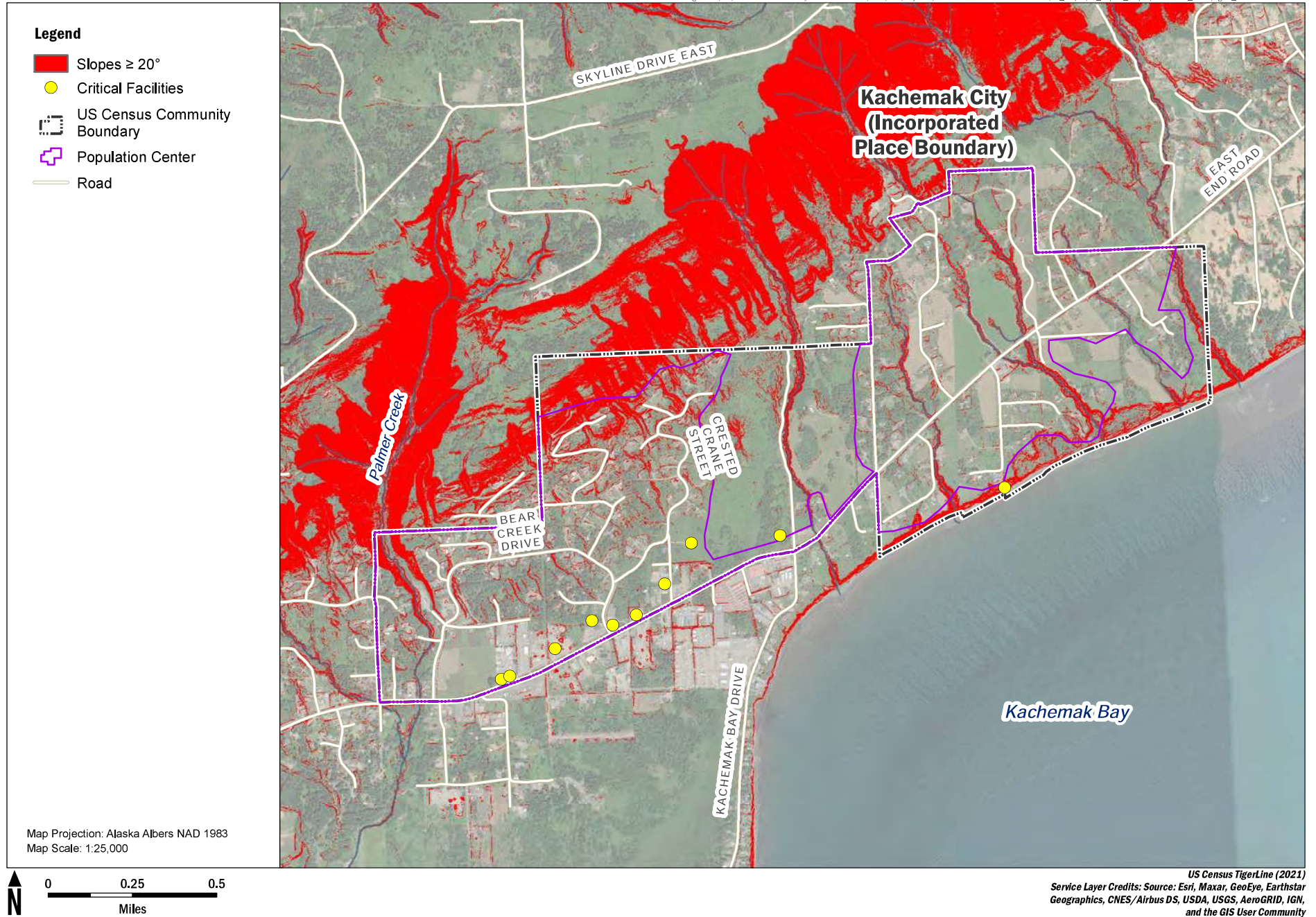
Enclosure

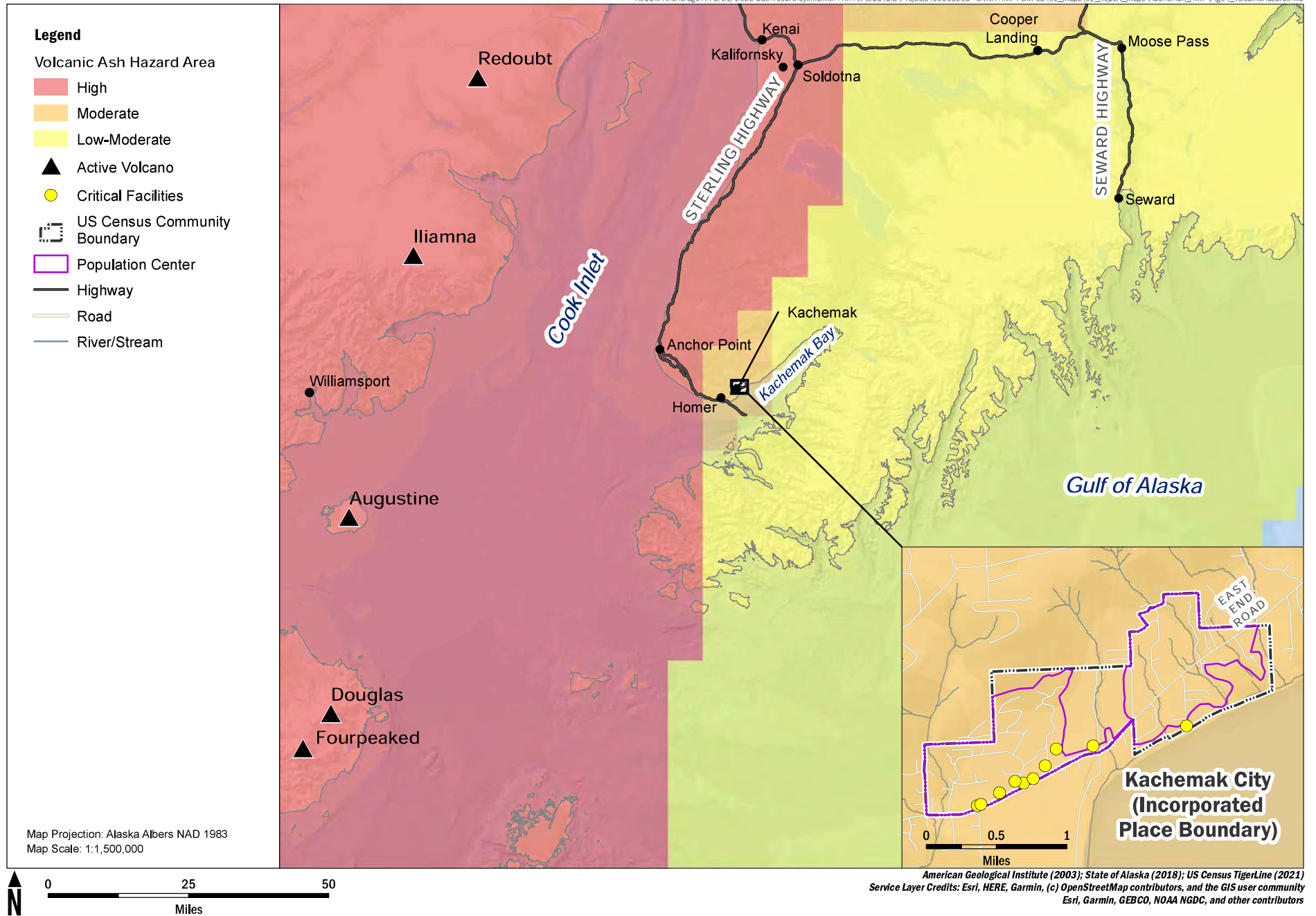
7.0 APPENDICES

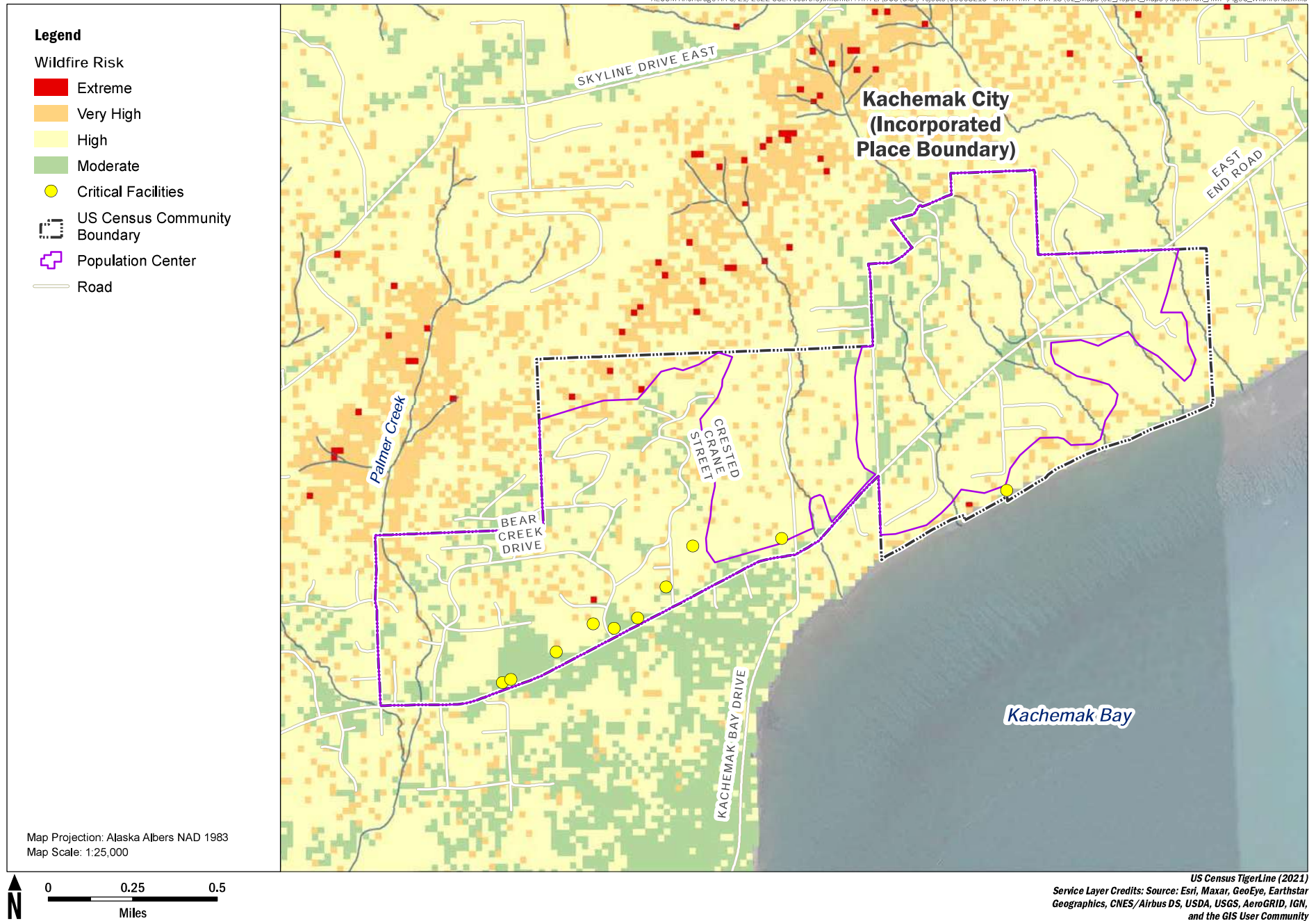
APPENDIX A—FIGURES

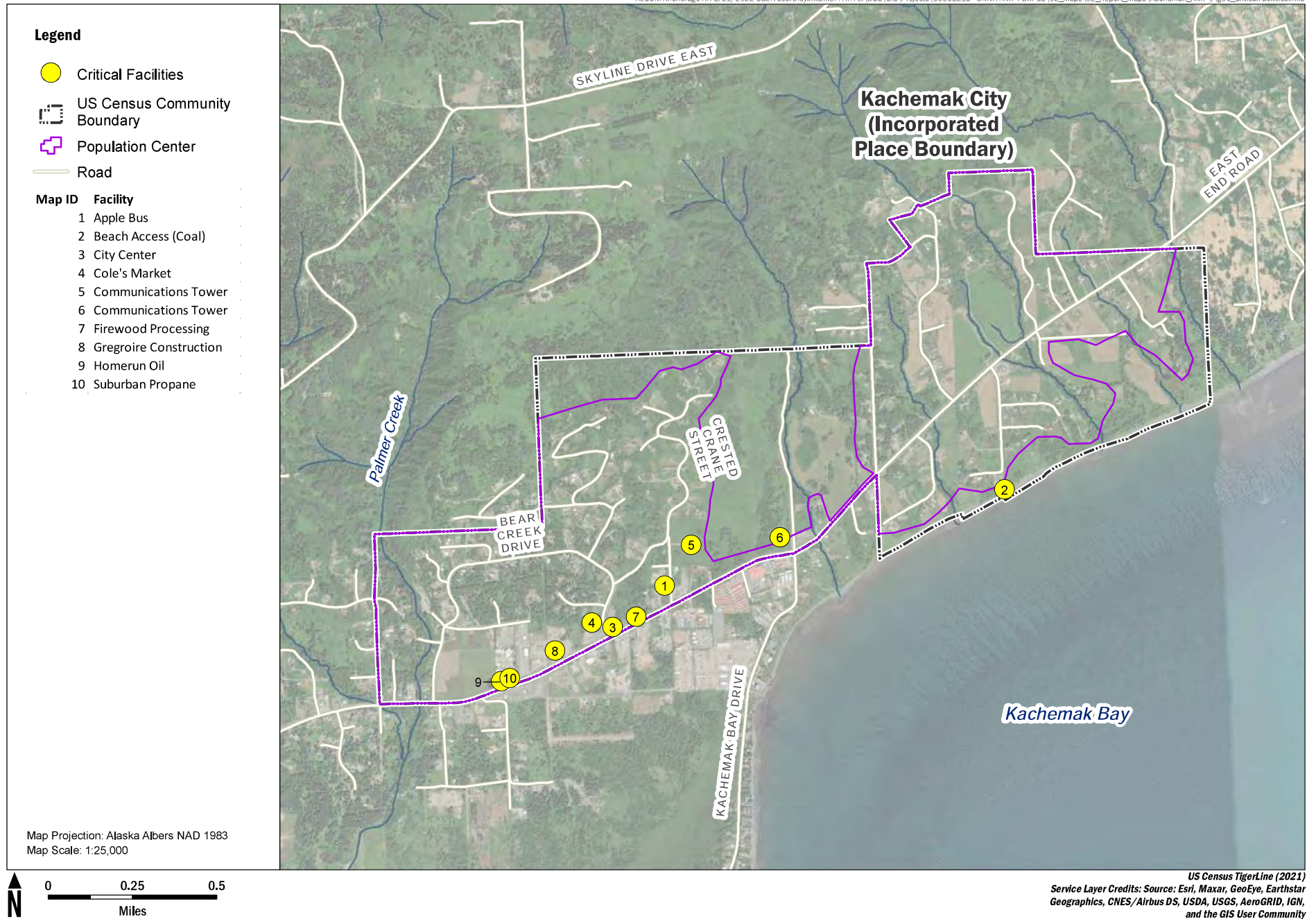












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APPENDIX B—FEMA DOCUMENTATION

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: Kachemak City	Title of Plan: 2022 Kachemak City Local Hazard Mitigation Plan	Date of Plan: May, 2022
Local Point of Contact: Debbie Speakman	Address:	
Title: Kachemak City Clerk		
Agency:		
Phone Number: 907-235-8897	E-Mail: cityclerk@kachemak.city	

State Reviewer: Erin M. Leaders	Title: EMS II/Planner	Date: 5/12/2022
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FEMA Reviewer	Sarah Mahan and John McCandless
Title	Hazard Mitigation Planner
Date:	June 7, 2022
Date Received in FEMA Region 10	June 1, 2022
Plan Not Approved	
Plan Approvable Pending Adoption	6/14/2022
Plan Approved	7/26/2022

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
Regulation (44 CFR 201.6 Local Mitigation Plans)	Sec 2.0 Planning Process/pp. 2-1 – 2-5 (PDF 8-12)	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: p. 2-1 – 2-2 (pdf 8-9)	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: p. 2-2 (pdf 9) , 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 2.3: p. 2-3 (pdf 10), Appendix C	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: p. 2-3 (pdf 10)	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: p. 2-3 (pdf 10)	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: p. 2-3 – 2-5 (pdf 10-12)	Met	
ELEMENT A: REQUIRED REVISIONS			
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)(i))	Sec 3.1-3.7: p. 3-2 – 3-13 (pdf 14-25)	Met	

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))	Sec 3.1-3.7: p. 3-2 – 3-13 (pdf 14-25)	Met	
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))	Sec 4.1-4.2: p. 4-1 – 4-6 (pdf 26-31)	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: p. 4-6 (pdf 31)	Met	
<u>ELEMENT B: REQUIRED REVISIONS</u>			
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: p. 5-1 – 5-5 (pdf 32-36)	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: p. 5.5 (pdf 36)	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: p. 5-5 – 5-6 (pdf 36-37)	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: p. 5-6 – 5-8 (pdf 37-39); Appendix A	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: p. 5-9 (pdf 40)	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: p. 5-9 – 5-10 (pdf 40-41)	Met	
<u>ELEMENT C: REQUIRED REVISIONS</u>			
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))	N/A		
D2. Was the plan revised to reflect progress in local mitigation efforts? (Requirement §201.6(d)(3))	N/A		
D3. Was the plan revised to reflect changes in priorities? (Requirement §201.6(d)(3))	N/A		
<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 6.1: p. 6-1 (pdf 42)	Met	
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:

- The graphics created for the plan outreach in Appendix C were very concise and visually engaging.
- The planners engaged the public through several modes of communication, including non-electronic. This broadened the audience and increased the effectiveness of the overall engagement.

Opportunities for Improvement:

- When it is time to update the plan, expand the planning team to include city staff from relevant departments. This can help to strengthen the expertise that goes into the planning process and create an in-depth update.
- When discussing the opportunities for stakeholder participation, include details about which stakeholders chose to participate and how.
- The planners reached out to the public via several means; expand these means to include social media posts. Additionally, specify where the community flyers were posted. Explain why those locations were chosen to maximize engagement with the public.
- Increase the opportunities and methods for engagement for more public participation. Hosting presentations and posting online project updates can provide chances to gather valuable community input on the plan's implementation. This will eventually inform the mitigation strategy during the plan update.

Element B: Hazard Identification and Risk Assessment

Strengths:

- The description of impacts for climate change in the nature section of the hazard profile (Table 3-1) are really good and community-specific. Use this method for each of the hazards profiled to fulfill element B3a when updating the plan. This way, the impacts described for each hazard are more useful when creating the mitigation strategies.
- The descriptions for hazard location are specific. This really ties together the varying risks and impacts to the geography of the community at a more detailed level.

Opportunities for Improvement:

- Discuss how and why the hazards included in the plan were chosen. This will better support sub-element B1b and give a better context of your community's vulnerability.
- Include the figures from the appendix in the risk assessment section, along with additional maps, tables and graphs. This will better support the hazard profiles and make the information easier to understand.

Element C: Mitigation Strategy

Strengths:

- The existing authorities, programs, policies and resources are thoroughly categorized and cataloged in the tables. This created a good layout to review and leverage the various mechanisms for hazard mitigation action implementation.

Opportunities for Improvement:

- Expand the mitigation goals along with the BRIC priorities. Add goals that directly support the identified community-specific risks.
- Add objectives within each mitigation goal to further enhance each goal.
- Be more specific in your action plan. For example, specify the position or title responsible for implementing and administering a mitigation action, and further narrow the timeframe for implementing an action.

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

Strengths:

- N/A

Opportunities for Improvement:

- N/A

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 jurisdictions(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												
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3												
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APPENDIX C—PLANNING PROCESS

Evans, Jessica

From: Evans, Jessica
Sent: Wednesday, March 2, 2022 1:00 PM
To: Evans, Jessica
Cc: 'Kachemak City Clerk'
Subject: Kachemak Local Mitigation Plan

Good Afternoon,

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

The 2022 LHMP development process will take place over the next several months. Hazards addressed in the plan will include: climate change, earthquake, flood, landslide, severe weather, 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 development process, please contact me or Debbie Speakman (cityclerk@kachemak.city).

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

Sent on behalf of:

Kachemak City Clerk
Phone: (907)-235-8897
New email address: cityclerk@kachemak.city
New Website: www.kachemak.city

Jessica Evans
Environmental Scientist/Planner, IAP Practices, Alaska
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2022 Kachemak Local Hazard Mitigation Plan

Our community is launching an effort known as the 2022 Local 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 Kachemak from future hazard events.

Hazards addressed in our plan include the following:

- **Climate Change**
- **Earthquake**
- **Flood**
- **Landslide**
- **Severe Weather**
- **Volcano**
- **Wildfire**

Once our plan is completed 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-mitigation-planning>

To learn more about our plan, please contact Debbie Speakman at cityclerk@kachemak.city. We will provide an update once a draft plan is developed.



Evans, Jessica

From: Kachemak City Clerk <cityclerk@kachemak.city>
Sent: Monday, March 7, 2022 1:02 PM
To: Debbie Speakman
Cc: Evans, Jessica
Subject: [EXTERNAL] Kachemak City Local Hazard Mitigation Plan
Attachments: Haz Mit 2022- Public Flyer 1.docx.pdf; Haz Mit 2022- Public Flyer 1.docx-page-001.jpg

Our community is launching an effort known as the Kachemak City 2022 Local 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 Kachemak from future hazard events.

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To learn more about our plan, please contact Debbie Speakman at cityclerk@kachemak.city or Jessica Evans at jessica.evans@aecom.com. We will provide an update once a draft plan is developed.

--

Kachemak City Clerk
Phone: (907)-235-8897
New email address: cityclerk@kachemak.city
New Website: www.kachemak.city

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To learn more about hazard mitigation planning, please visit:

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

To learn more about our plan, please contact Debbie Speakman at cityclerk@kachemak.city. We will provide an update once a draft plan is developed.



March 4, 2022

Public Notice

Notice is hereby given that the City of Kachemak Park's Committee is scheduled Tuesday, March 08, 2022 at 6:30 PM, at the Kachemak Community Center Clerk's Office, 59906 Bear Creek Drive.

March 2, 2022: PUBLIC Notice

Notice is hereby given that a ***Kachemak City Regular City Council meeting*** scheduled for March 09, 2022 at 6:00 PM, at the Kachemak Community Center, 59906 Bear Creek Drive.

PUBLIC NOTICE

Notice is hereby given that the City of Kachemak is accepting applications for Matching Road Grants for the upkeep and repair of road located within the City.

The City of Kachemak is now accepting applications for FY23 Matching Road Grants for the upkeep and maintenance of roads within the City. **Applications for Road Grants must be received by April 1, 2022 for consideration by the City Council at the Regular Council Meeting to be held Wednesday, April 13th at 6pm.**

Attached are two ordinances relating to City Code, the first is Ord 2009-07 which should be used to apply for matching grants for 2023 noting that Council is accepting public comment on Ordinance 2022-02 which will replace 2009-07.

Council will be discussing Ord 2022-02 at the upcoming Regular Council Meeting this coming Wednesday, March 9th at 6pm. Public comment on this ordinance can be made via email, written comment or public testimony. Emailed and written comments must be received by the Clerk's Office no later than 3pm on March 9th.

****Applications MUST be submitted with all information requested. Applications that do not contain all information required by City Code will be returned to the applicant.**

Please note that the applications will change upon the acceptance of Ordinance 2022-02 by the City Council.

Evans, Jessica

From: Evans, Jessica
Sent: Wednesday, April 20, 2022 2:21 PM
To: Evans, Jessica
Cc: Kachemak City Clerk
Subject: Kachemak City Local Hazard Mitigation Plan: Draft for Review
Attachments: Kachemak_LHMP_DRAFT_042022.pdf

Good afternoon,

As you may remember from our last email on March 2, Kachemak City is developing a 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 Kachemak LHMP. 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 the community from future hazard events. Hazards addressed in the plan include: climate change, earthquake, flood, landslide, severe weather, volcano, and wildfire.

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

A copy of our plan is attached and available to review until **May 6, 2022**. If you have questions or comments, please contact Debbie Speakman at cityclerk@kachemak.city or myself at jessica.evans@aecom.com.

Thank you for your continued interest and participation.

Sent on behalf of Kachemak City.

Jessica

Jessica Evans
Environmental Scientist/Planner, IAP Practices, Alaska
D +1-907-261-6764
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2022 Kachemak Local Hazard Mitigation Plan

Our community has prepared a public draft of the 2022 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 Kachemak from future hazard events.

Hazards addressed in our plan include the following:

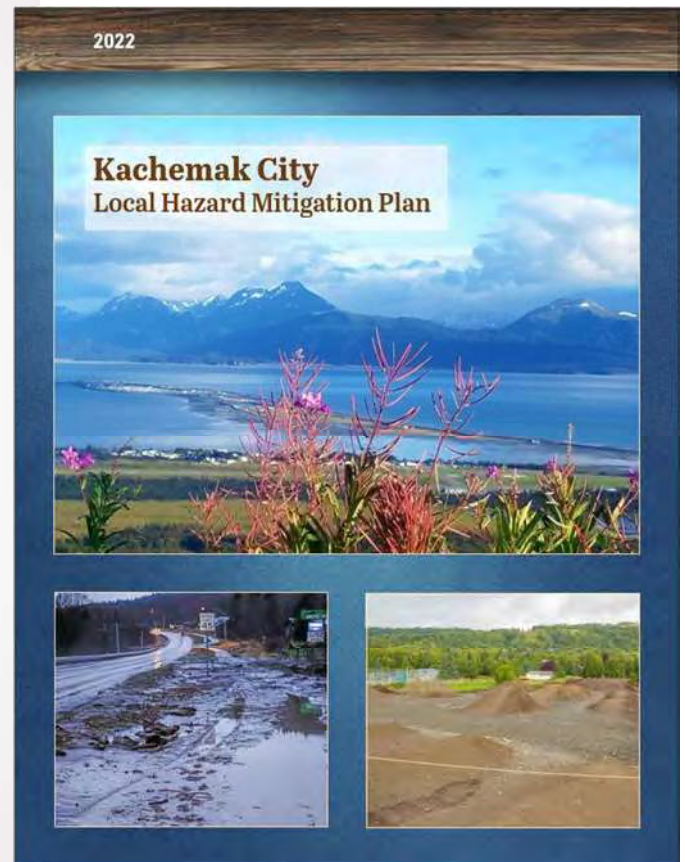
- **Climate Change**
- **Earthquake**
- **Flood**
- **Landslide**
- **Severe Weather**
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Once our plan is finalized and approved by FEMA, our community will be eligible to apply for and receive certain types of nonemergency disaster assistance, including 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-mitigation-planning>

A copy of our plan is available to review until May 6 and can be found upon request to Debbie Speakman at cityclerk@kachemak.city or Jessica Evans at jessica.evans@aecom.com.



Evans, Jessica

From: Kachemak City Clerk <cityclerk@kachemak.city>
Sent: Wednesday, April 20, 2022 2:47 PM
To: Debbie Speakman
Cc: Evans, Jessica
Subject: [EXTERNAL]
Attachments: Haz Mit Plan-page-001.jpg

We have completed a public draft of the 2022 Kachemak LHMP. 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 the community from future hazard events. Hazards addressed in the plan include: climate change, earthquake, flood, landslide, severe weather, volcano, and wildfire.

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A copy of our plan is available for public review until **May 6, 2022**. If you have questions or comments, please contact Debbie Speakman at cityclerk@kachemak.city or myself at jessica.evans@aecom.com.

Thank you for your continued interest and participation.

--

Kachemak City Clerk
Phone: (907)-235-8897
New email address: cityclerk@kachemak.city
New Website: www.kachemak.city

City of Kachemak

City of Kachemak

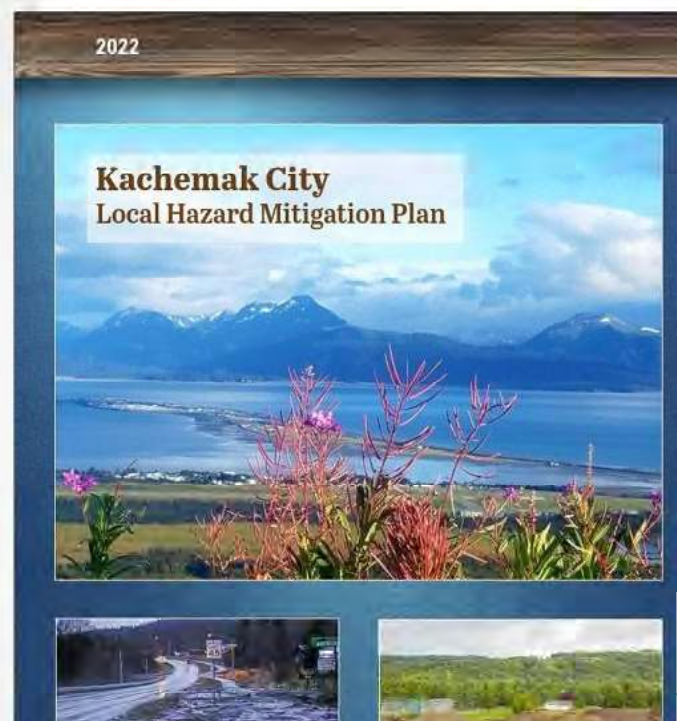
2022 Kachemak Local Hazard Mitigation Plan

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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-mitigation-planning>

A copy of our plan is available to review until May 6 and can be found upon request to Debbie Speakman at cityclerk@kachemak.city or Jessica Evans at jessica.evans@aecom.com.



Notice is hereby given that a ***Kachemak City Regular City Council meeting*** scheduled for April 13, 2022 at 6:00 PM, at the Kachemak Community Center, 59906 Bear Creek Drive.

Notice is hereby given that a ***Kachemak City Parks Committee Meeting*** scheduled for Monday, April 11th at 6:00 PM, at the Kachemak Community Center, 59906 Bear Creek Drive.