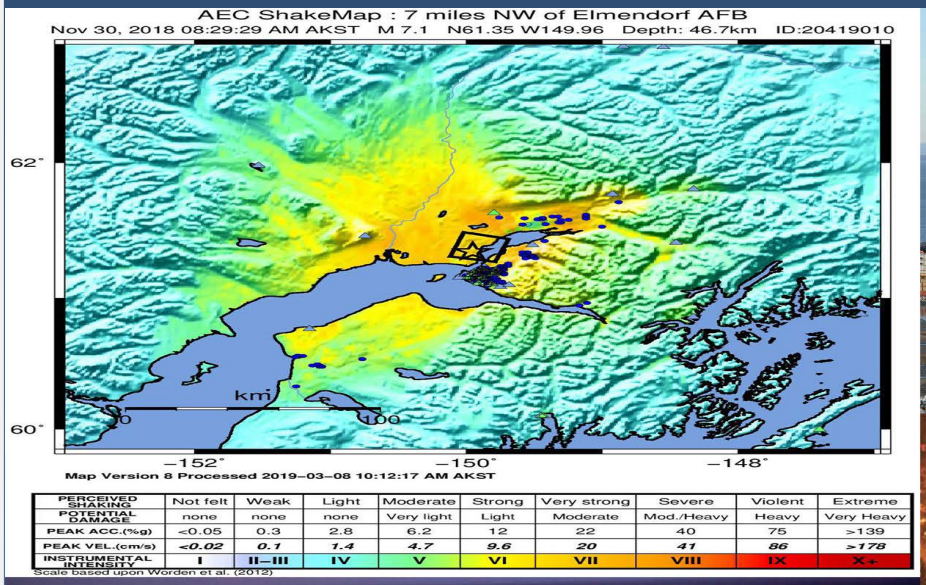
All Hazards
Mitigation Plan Update

Anchorage, Alaska









Municipality of Anchorage
Office of Emergency Management
Emergency Operations Center
1305 E Street
Anchorage, Alaska 99501

April 2022

EXECUTIVE SUMMARY

The Municipality of Anchorage (MOA) is vulnerable to a wide range of natural, technological, and human/societal hazards including earthquakes, avalanches, landslides, ground failures and hazardous material accidents. These are hazards that could cause costly disasters in neighborhoods, business districts, and rural areas. These hazards have the potential to endanger the health and safety of the population and jeopardize economic and environmental vitality. Due to the importance of avoiding or minimizing the vulnerabilities to these hazards, the public and private sector have participated in providing the Mitigation Advisory Committee necessary information for the plan update. The MOA undertook a comprehensive, multi-jurisdictional planning process that culminated in the updated publication of the "All Hazards Mitigation Plan". This plan replaces the one adopted in 2016 by the MOA.

Development and implementation of this plan has been directed by the Mitigation Advisory Committee consisting of representatives from a variety of municipal departments including the Office of Emergency Management, Project Management & Engineering, Maintenance & Operations, Anchorage School District, Anchorage Water & Wastewater Utility, the Port of Anchorage, Anchorage Health Department, Anchorage Police Department and Anchorage Fire Department.

The Mitigation Advisory Committee has identified the hazards threatening the MOA and estimated the relative risks posed to the community by those hazards. Information has been gathered from a variety of sources including various departments within the Municipality, planning offices, and state and federal programs. This information has been used by the All-Hazards Mitigation Committee to assess the vulnerabilities of the facilities and neighborhoods of the Municipality and to the impacts of future disasters potentially involving those hazards. This update reflects the growth experienced over the last five years.

The Municipality of Anchorage (MOA) represented in the updated plan had a population of 288,970 in 2020. At 1,697.2 square miles(4,395.7 km2) of land area, the borough is the fourth largest by area in the United States and larger than the smallest state, Rhode Island.

The Disaster Mitigation Act of 2000 (DMA 2000) requires that local governments have a local mitigation plan approved by the Federal Emergency Management Agency (FEMA) as a condition for receiving future FEMA mitigation funds. This hazard mitigation plan was developed to fulfill federal and state hazard mitigation planning requirements.

Upon approval by FEMA, this plan will be formally adopted by the MOA Assembly.

FEMA REQUIREMENTS

According to the FEMA regulations, a mitigation plan must identify the hazards that occur in Anchorage, contain a strategy to mitigate those hazards and a method of monitoring and updating the plan.

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CHAPTER 1 - INTRODUCTION

1.1 BACKGROUND

The Municipality of Anchorage (MOA) is vulnerable to a wide range of natural, technological, and human/societal hazards including earthquakes, avalanches, landslides, ground failures and hazardous material accidents. These hazards can affect the safety of residents, damage or destroy public and private property, disrupt the local economy, and negatively impact the quality of life.

Typically, we cannot eliminate these hazards altogether, but we can lessen their impact by participating in hazard mitigation. Hazard mitigation is any action taken to reduce or eliminate the long-term risk to property and human life from hazards.

There is a wide variety of mitigation activities available.

Benefits of hazard mitigation include…

- Reduced loss of life, property, essential services, critical facilities, and economic hardship
- Reduced short-term and long-term recovery and reconstruction costs
- Increased cooperation and communication within the community through the planning process
- Expedited pre-disaster and post-disaster grant funding
- Increased disaster resilience
- Improved environmental quality
- Improved economic vitality
- Improved quality of life

They can be structural in nature, such as reinforcing a building's foundation or constructing a levee, or they can be non-structural, such as rezoning a flood-prone area or securing a water heater to a wall. Mitigation activities can focus on preventing the damage from occurring in the first place (by limiting development in hazard-prone areas), or by protecting against damage (strengthening existing or future development so that it is not damaged by a hazard event). More information about hazard mitigation activities can be found in Chapter 6.

One of the most effective tools to reduce vulnerability to hazards is a local hazard mitigation plan. A hazard mitigation plan identifies what hazards exist in the community and establishes goals and specific mitigation activities to be undertaken.

To encourage communities to develop hazard mitigation plans, the United States Congress passed the Disaster Mitigation Act of 2000 (DMA 2000). This Act requires local governments to have a Federal Emergency Management Agency (FEMA)-approved mitigation plan by November 2004 to remain eligible for FEMA Hazard Mitigation Grant Program (HMGP) funding and Building Resilient Infrastructure and Communities (BRIC) as well as Flood Mitigation Assistance (FMA) programs.

This plan for the MOA has been prepared in coordination with the State of Alaska (SOA) Division of Homeland Security and Emergency Management (DHS&EM) to ensure it meets all applicable DMA 2000 requirements. FEMA's Local Mitigation Plan Crosswalk, found in

Appendix A provides a summary of federal and state minimum standards and documents where each requirement is met within the plan.

1.2 PURPOSE

The purpose of this plan is to:

- Identify hazards, mitigation goals and objectives, and potential mitigation projects within the MOA.
- Fulfill the DMA 2000 Local Hazard Mitigation Plan requirements.
- Serve as a qualifying document for hazard mitigation programs coordinated through the DHS&EM and the Department of Commerce, Community, and Economic Development (DCCED).

1.3 HOW THIS PLAN WILL BE USED

A hazard mitigation plan is not intended to be developed and forgotten; it should be a living document. To be effective, the goals of the plan need to be incorporated into the everyday activities of the Municipality. As a result, this plan should be used to modify existing MOA plans and policies so that they support the Municipality's hazard mitigation goals. Issues related to emergency response are not included in this plan; these issues should be addressed in the MOA's Comprehensive Emergency Operations Plan (CEOP).

1.4 SUMMARY OF HAZARDS IN THE MUNICIPALITY OF ANCHORAGE

According to the MOA's 2015 EOP, Anchorage is vulnerable to three main types of hazards: natural, technological, and human/societal hazards. Table 1.1 shows the types of potential hazards in the MOA. More information about natural and technological hazards can be found in Chapter 4.

Table 1.1 Hazards in Anchorage

Natural	Technological
Earthquake	Dam Failure
Wildfire	Energy Emergency
Extreme Weather	Urban Fire
Flooding	Hazardous Materials Release
Avalanche	Radiation Accident
Ground Failure/Landslide	Transportation Accident
Volcanic Ash Fall	Air Pollution
Severe Erosion	Communications Failure
*Communicable Diseases	*Cyber Attack

Source: 2015 MOA Comprehensive Emergency Operations Plan, and Mitigation Advisory Committee

** Added as result of COVID-19 Pandemic and increased occurrence of infrastructure related cyber-attacks, prior to the update of the MOA Comprehensive Emergency Operations Plan*

Hazards can be measured in terms of their frequency and severity. Frequency is the number of times the hazard has occurred. Severity measures how bad the situation may be and is

[1] Hazard information is from various federal, state, public, and private sources and is for planning purposes only.The information should not be used for purposes it was not intended for including permit applications or for construction.

based on several factors, including the number of deaths/injuries; how long critical facilities are shut down; extent of property damage; effect on economy; and the effect on response systems. Table 1.2 shows the frequency and severity of Anchorage's potential hazards.

Table 1.2: Hazard Probability and Priority Ranking Chart for the Municipality of Anchorage

	Probability			
	Has not occurred yet	**Low (11-100 years)**	**Medium (5-10 years)**	**High (1-4 years)**
Catastrophic (Deaths or Injuries: 50 or more)		Severe Earthquake		
Critical			Wildfire	Communications Failure
Limited	Energy Emergency	Civil Disturbance	Ground Failure/Landslide	Avalanche Extreme Weather Urban Fire Transportation Accident
Negligible		Dam Failure Severe Erosion Hazmat Release	Volcano Ash Fall	Minor Earthquake Flooding

Catastrophic: More than 50 deaths/injuries; complete shutdown of critical facilities for 20 days or more; more than 50% property damage; severe long-term effects on economy; severely affects state/local/private sectors' capabilities to begin or sustain recovery activities; overwhelms local and state response resources.

Critical: 10-50 deaths/injuries; shutdown of critical facilities for 8-30 days; 25-50% property damage; short-term effect on economy; temporarily (24-48 hours) overwhelms response resources.

Limited: Fewer than 10 deaths/injuries; shutdown of critical facilities for 3-7 days; 10-25% property damage; temporary effect on economy; no effect on response system.

Negligible: Minor injuries; no deaths; shutdown of critical facilities for fewer than 3 days; less than 10% property damage; no effect on economy; no effect on response system.

Source: 2015 EOP

After the hazards are identified, the potential consequences of the hazard are considered. One potential consequence is property damage. Potential property damage was estimated using Geographical Information System (GIS) analysis. Table 1.3 summarizes the number of parcels and the taxable value (land and structure) that are vulnerable to each hazard. These values represent the parcels that could be vulnerable to a hazard event, the actual number and location of parcels impacted will vary depending on the size and location of the event.

Table 1.3: Vulnerability Summary

Hazard	Number of Parcels	Taxable Value
Earthquake	84,219	$39,974,839,600
Wildfire	84,219	$39,974,839,600
Extreme Weather	84,219	$39,974,839,600
Flooding	432	$376,200,000
Avalanche	206	$124,900,000
Ground Failure/Landslide	5,092	$6,300,000,000
Volcanic Ash Fall	84,219	$39,974,839,600
Severe Erosion	N/A	N/A
Dam Failure	130	$39,900,000
Energy Emergency	84,219	$39,974,839,600
Urban Fire	66,945	$132,357,638,300
Hazardous Materials Release	84,219	$39,974,839,600
Power Failure	84,219	$39,974,839,600
Communications Failure	84,219	$39,974,839,600

Source: MOA 2020 and FEMA Draft Risk Report for Anchorage 2018

Additional information about the property, infrastructure, and populations vulnerable to each hazard can be found in Chapter 4.

1.5 SCOPE

This plan is an update of the 2016 Anchorage All Hazard Mitigation Plan. Chapter 2 (Community Profile) and Chapter 3 (Asset Inventory) were updated to reflect the current conditions. Other changes to Chapter 4 involved updating the natural hazards information, including the vulnerability tables. In Chapter 5 significant updates to the plan's goals and objectives were conducted. The action Items were also reviewed by the Planning Team. All action items were updated to reflect their current status, and additional action items were identified. In addition, modifications to the plan were made to improve readability and ease of use whenever possible. A more detailed summary of changes can be found in Appendix A.

1.6 ORGANIZATION OF THE PLAN

The plan is organized as follows:

Chapter 1

Chapter 1 is an introduction to the plan and includes the purpose, scope, and organization of the plan, as well as a description of the planning process.

Chapter 2

Chapter 2 is a community profile providing an overview of the MOA's:

- Location,
- Natural Setting,
- History,
- Demographics, and
- Economy.

Chapter 3

Chapter 3 is an asset inventory identifying what development could be vulnerable to a hazard event.

Chapter 4

Chapter 4 provides details about the hazards that can occur in Anchorage. For each hazard, there is a description of the hazard's characteristics, the location where the hazard can occur, previous occurrences of the hazard, and what is vulnerable to the hazard. Where possible, the location of the hazard area has been mapped.

Chapter 5

Chapter 5 contains the MOA's mitigation strategy, including mitigation goals, objectives, and action items, as well as an update to all action items since the adoption of the 2017 All Hazards Mitigation Plan. This chapter also contains information about how the mitigation measures will be implemented.

Chapter 6

This chapter is devoted to the maintenance, evaluation, and updating of the plan.

Chapter 7

This chapter lists the references used in the development of the plan.

Appendices

The appendices contain the plan's supporting documentation.

1.7 PLANNING PROCESS

The planning process was led by the MOA's Office of Emergency Management.

The planning process began with two lines of focus; multi-department input and public feedback. Two notices were sent to the community to increase public input to the MOA Hazard Mitigation Plan update.

Invitations to MOA Departments to participate as part of the MOA Hazard Mitigation Planning Committee were also sent via email. As work on the plan developed, additional departments were added to the committee. As the plan update progressed, specific outreach for comment and revisions of the plan was requested from neighboring

communities to include the Native Tribe of Eklutna, the Matanuska-Susitna Borough, and the Kenai Peninsula Borough via email. No formal comments or recommendations of changes on the plan were received from the neighboring communities. The following departments were involved in the development of the updated all-hazards mitigation plan:

Table 1.4: MOA Hazzard Mitigation Planning Committee and Stakeholders

Department/Jurisdiction	Representative/ Position	Contact Information
MOA Office of Emergency Management	Amanda Loach- Director	907-343-1406 Amanda.loach@anchorageak.gov
	Andrew Preis- Emergency Manager	907-343-1404 Andrew.preis@anchorageak.gov
	Drielle Welch- Planner	907-885-9061 Drielle.welch@anchorageak.gov
	Audrey Gray- Emergency Manager	907-343-1407 Audrey.gray@anchorageak.gov
MOA Real Estate	Shelley Rowton- Land Management Officer	907-343-7531 Shelly.rowton@anchorageak.gov
MOA Fire Department	Douglas Schrage- Fire Chief	907-267-4945 Douglas.schrage@anchorageak.gov
	Jodie Hettrick- Prior Fire Chief	N/A
MOA Parks and Recreation	Josh Durand- Director	907-343-4427 Joshua.durand@anchorageak.gov
MOA Health Department	Joe Gerace- Director	907-343-4650 Joseph.gerace@anchorageak.gov
	Renee Aguilar- Emergency Preparedness Planning Coordinator	907-343-6302 Renee.aguilar@anchorageak.gov
	Bill Kays- Prior Emergency Preparedness Program Manager	907-267-4993 William.j.kays@anchorageak.gov
MOA Port of Alaska	Steve Ribuffo-Port Director	907-343-6201 Steve Ribuffo@anchorheak.gov
	Sharen Walsh- Port Modernization Program Director	907-343-6203 Sharen.walsh@anchorageak.gov
MOA Development Services	Jack Frost- Acting Director	907-343-8033 Jack.frost@anchorageak.gov
	Bob Doehl- Prior Director	N/A

Anchorage School District/ MOA	George Vakalis- Consultant	vakalis_george@asdk12.org
	Ashley Lally- Director of Security & Emergency Preparedness	Lally_ashley@asdk12.org
	Deborah Engles- Senior Director of Risk Management and Safety	Engles_deb@asdk12.org
MOA Maintenance & Operations	Saxton Shearer- Director	907-343-8269 Saxton.shearer@anchorageak.gov
	Alan Czajkowski- prior employee	N/A
MOA Public Works	Lance Wilber- Director	907-343-8422 Lance.wilber@anchorageak.gov
	Maury Robinson- Manager	907-343-8191 Maury.robinson@anchorageak.gov
MOA Planning Department	Craig Lyon-Director	907-343-7996 Craig.lyon@anchorageak.gov
	Michelle McNulty- prior employee	N/A
MOA Solid Waste Services	Shaina Kilcoyne- Energy and Sustainability Manager	907-343-6270 Shaina.kilcoyne@anchorageak.gov
MOA Emergency Management Consultant	JT Maddox- contractor	jt@nationaldrsolutions.com
	Darrell Dotson- contractor	darrell@nationaldrsolutions.com
	Jason Wheeler- contractor	jason@nationaldrsolutions.com
MOA Safety Office	Anneliese Roberts- Safety Officer	907-343-2521 Anneliese.roberts@anchorageak.gov
Anchorage Wastewater Utility	Alyssa Farrar- Division Director	907-786-5589 Alyssa.farrar@awwu.biz
MOA Human Resources	Cheryl Evans- prior employee	N/A
MOA I.T. Department	Mark Merchant- Chief Information and Security Officer	907-343-6917 Mark.merchant@anchorageak.gov
	Sioux-z Marshall- prior employee	N/A
MOA Chief Financial Officer	Travis Frisk- Chief Fiscal Officer	907-343-6619 Travis.frisk@anchorageak.gov
	Alex Slivka- prior	N/A

	employee	
MOA Geospatial Data and Information	Tina Miller- Program and Policy Director	907-343-6183 Christina.miller@anchorageak.gov
MOA Watershed Management	Steve Ellis- Flood Hazard Administrator	907-343-8078 steven.ellis@anchorageak.gov
MOA Internal Audit	Mike Chadwick- Internal Auditor	907-343-4438 Michael.chadwick@anchorageak.gov
MOA Municipal Manager	Bill Falsey- Prior Municipal Manager	N/A
Department of Commerce, Community, and Economic Development, State of Alaska	Anita Baker- Grant Administrator II	907-269-4252 Anita.baker@alaska.gov
	Pauletta Bourne- Grant Administrator III	907-451-2721 Pauletta.bourne@alaska.gov
MOA Local Emergency Planning Committee	Doug Lamkin- Facility Owner/Operator, Community Groups	dlamkin@nwalaska.org
	Ron Schwartz, Local disaster planning and service area representative	Emergencymanager@alaska.edu
	Robert Wyatt, Media representative	bobw@alaskapublic.org
	Erich Scheunemann- Vice Chair	Erich.scheunemann@anchorageak.gov
MOA Geotechnical Advisory Committee	Tom Davis- Senior Planner	Tom.davis@anchorageak.gov
The Native Tribe of Eklutna	Carrie Brophil- Land and Environment Co-Director	cbrophil@eklutna.org
Matanuska- Susitna Borough	Casey Cook- Emergency Manager	Casey.cook@matsugov.us
	Jason Bauer- EOC Specialist	Jason.bauer@matsugov.us
	Eric Mohrmann- EOC Specialist	Eric.mohrmann@matsugov.us
	Talon Boeve- EOC Specialist	Talon.boeve@matsugov.us
	David Phillips- EOC Specialist	David.phillips@matsugov.us
	Taunnie Boothby- Planner/Floodplain Manager	Taunnie.boothby@matsugov.us

Kenai Peninsula Borough	Brenda Ahlberg- Emergency Manager	bahlberg@kpb.us

The all-hazards mitigation plan update process began with a MOA planning committee meeting to introduce the process, to inform representatives about the process, and to identify what would be expected from them. This meeting was held on May 17,2021.

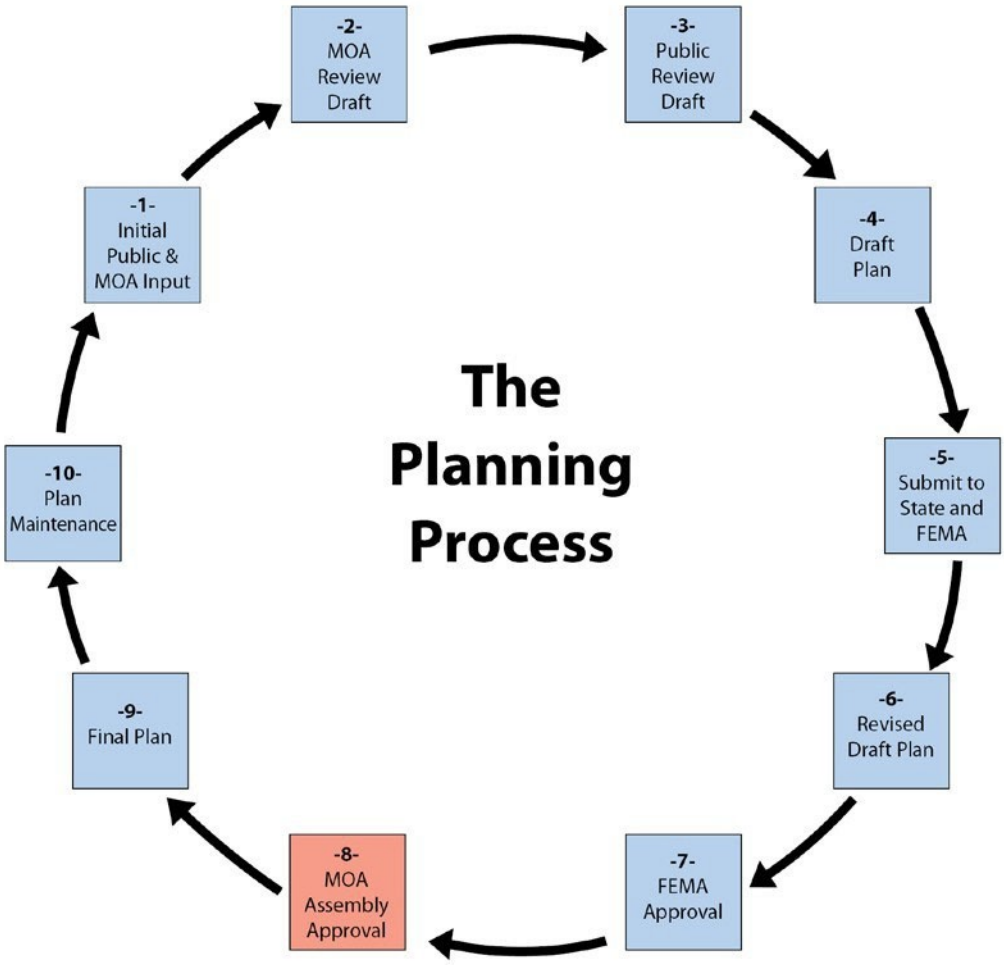
The next step was to review the asset inventory to determine if there were any changes to be made to the list of critical facilities. Each department was responsible for reviewing the list of facilities and identifying the hazards to which the facility was exposed.

Simultaneously, the hazard section was updated. The natural hazard section was updated, and the technological hazard section was drafted based on a review of existing literature, consultation with state and federal agencies and MOA departments, and interviews with MOA staff.

The next step was to review the existing goals, objectives, and action items to identify any changes that might be necessary. First, the existing goals and objectives were reviewed by the planning committee and changes were identified. Each department was also asked to review the list of action items to identify the status of each action item and to identify new action items for their department. Based on input from the planning committee, additional goals and objectives were then added and a list of action items was developed.

The next task was to develop a draft of the updated all-hazards mitigation plan, authorized by the MOA Director of Emergency Management, Amanda Loach. The draft was circulated internally within the MOA for review and to stakeholders. The plan was made available for review by the public and other interested parties. Based on the comments provided, if any, on the public review draft, the plan was revised and submitted to DHS&EM and FEMA for approval. After FEMA approves the plan, it will go to the MOA Assembly for adoption. This process is summarized in Figure 1.1.

Figure 1.1 The Planning Process



1.8 PUBLIC INVOLVEMENT

The plan update announcement was placed on the emergency plans part of the MOA's website. The Municipality of Anchorage held and/or participated in two public meetings to advise and inform the public of updates to the AHMP. The meetings were announced two to three weeks prior to the meeting date on the MOA Boards and Commissions website calendar. The meeting dates were September 27th and December 6th, 2021. Both meetings resulted in attendance from the community, partially because of virtual availability allowing for greater participation. The first meeting, on September 27, 2021, was to notify the community of the AHMP update and request input. There were two community members present, one who voiced questions on the update process, however no recommendations or changes to the plan itself were given. The second meeting was to go over the status of the Draft AHMP at the public meeting for the Local Emergency Planning Committee (LEPC) Meeting and again allow for public input. No formal recommendations or changes to the plan were given. A notice that the AHMP was being updated was posted on the Municipal webpage from August 27th to September 28th, 2021. This notice provided links to the 2016 AHMP and the draft 2022 AHMP, points of contact with phone numbers and an e-mail address

to provide written comments or ask questions. The 2016 version and the most recent 2022 version of the AHMP are posted on both the Project Management and Engineering, and Emergency Management website. You can go to the municipal home page (www.muni.org), search for “all hazard mitigation plan” and it will direct you to the Project Management and Engineering, or Emergency Management website for the AHMP updates. The notices and websites are provided in Appendix B, Public Involvement. The AHMP will still have one more public involvement phase. This will happen during the two week notice for adoption of the AHMP by the Municipal Assembly. The MOA will continue to monitor its e-mail for public comments and a phone option has also been given on the website.

CHAPTER 2 COMMUNITY PROFILE

This chapter is a brief community profile for Anchorage. It contains information about Anchorage's location, history, demographics, economy, and natural setting. This information provides an overview of the MOA's physical and socioeconomic characteristics. A community profile is important because it provides an overview of the community and can be used in conjunction with the asset inventory as a reference when identifying the potential impacts of a hazard event.

2.1 LOCATION

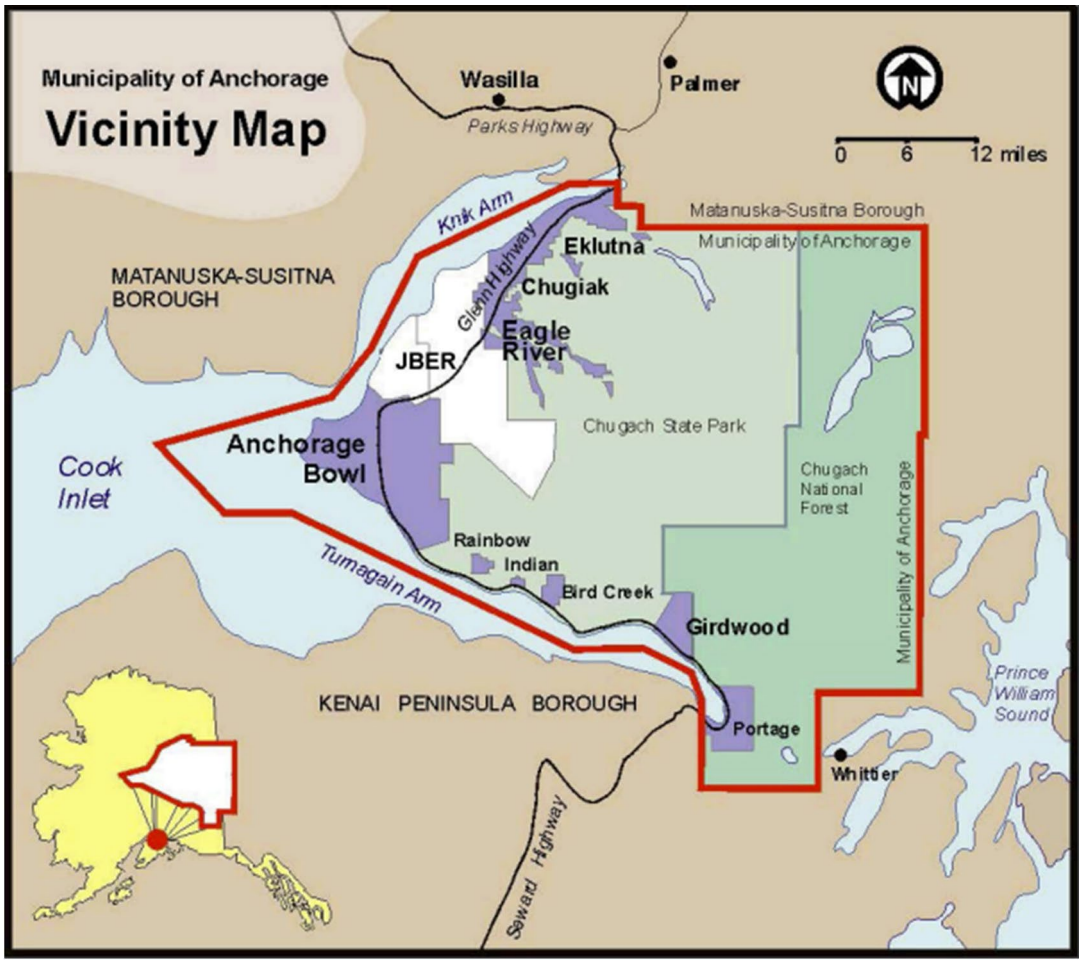
The MOA is in Southcentral Alaska at the head of Cook Inlet. It is a 1,697.2-square-mile area between northern Prince William Sound and upper Cook Inlet. The area consists of mostly rugged mountainous terrain, 84 percent of which is taken up by national forest or state parklands and tidelands. Six percent is occupied by military installation. Only the remaining 10 percent of the entire MOA is inhabited.

The Anchorage Bowl is the most urbanized area of the MOA. It occupies approximately 100 square miles, bounded by Chugach State Park, Turnagain and Knik Arms, and Joint Base Elmendorf - Richardson (JBER) (see Figure 2.1). Settlements north of Joint Base Elmendorf-Richardson include Eagle River, Chugiak, Birchwood, Peters Creek, the Native Village of Eklutna and Eklutna. Mostof this lowland area is between the Chugach Mountains and Knik Arm. South of the Anchorage Bowl are the Turnagain Arm communities of Girdwood, Indian, Rainbow, Bird, andPortage.

2.2 NATURAL SETTING

Anchorage has a unique natural setting, as it is an urban area surrounded by wilderness and water. Several thousand acres of municipal greenbelts and parklands link developed areas with surrounding natural open space and wildlife habitat in Chugach State Park (the second largest state park in the country), the Chugach National Forest, and the 50-square-mile Anchorage Coastal Wildlife Refuge. Anchorage has five salmon species and 52 mammal species, including wolf, bear, lynx, and moose.

Figure 2.1 Municipality of Anchorage



2.3 HISTORY

The Anchorage area was originally inhabited by the Dena'ina Athabascan Indians. The Native Village of Eklutna was one of eight winter settlements and is the last occupied Dena'ina village in the MOA.

2.3.1 ANCHORAGE BOWL

Anchorage was founded in 1914 when the federal government established the field headquarters for the construction of the Alaska Railroad at Ship Creek. Soon after, in 1920, Anchorage was incorporated as a city.

Between 1940 and 1990, Anchorage grew in spurts. Military build-ups, post-1964 earthquake reconstruction, the Trans Alaska Pipeline construction in the mid-1970s, and the early 1980s petroleum boom each pumped up the economy and spurred rapid community growth. Often, the aftermath was recession. By the 1990s, Anchorage had a much more diverse and stable economy, resulting in modest and steady community growth.

[2] Information was taken with permission from *Anchorage 2020: Anchorage Bowl Comprehensive Plan*, the *Girdwood Area Plan*, and the *Chugiak-Eagle River Comprehensive Plan Update*.

2.3.2 CHUGIAK/EAGLE RIVER

The area north of the Anchorage Bowl saw additional development after 1900 when traders and prospectors began to arrive in the area looking for minerals and routes to the gold fields. As a result of federal involvement (home for Native Children and the Eklutna hydroelectric project), Eklutna was the dominant settlement in the area in the 1920s. However, growth occurred closer to Anchorage, with the creation of Fort Richardson Army Reservation and Elmendorf Air Force Base. Many military personnel and civilians associated with military construction jobs moved into the area. The Chugiak/Eagle River area continued to grow as people looked for a more rural lifestyle than that offered in the Anchorage Bowl. Commercial enterprises subsequently followed the population to the area.

2.3.3 GIRDWOOD

Girdwood was founded just before the turn of the century as a supply and transport center for the area's placer and lode gold mines. The mining claims operated through the 1930s, when they stopped due either to the exhaustion of lode deposits or to lawsuits and presidential orders to stop environmentally destructive hydro-mining. In the 1920s, the construction of the Alaska Railroad benefited Girdwood, because the town was a source of timber for rail ties.

Development in the Girdwood area was revived in 1949 because of the construction of the Seward Highway. Much of the growth and development in Girdwood since the 1950s has been associated with skiing and other recreational opportunities.

2.4 DEMOGRAPHICS

For most of its history, Anchorage grew as a community of immigrants and newcomers from outside the state, and Alaska Natives from rural areas within the state. For decades, a seasonal boom-bust economy and military personnel rotations made Anchorage a fast-growing town of transient residents without a strong stake in the community. Those who stayed as permanent residents lived in Anchorage by personal choice, not by chance of birth. They were rooted by their liking for the place and for the distinctive lifestyle it offered. At the time of the 1990 census, barely a quarter of Anchorage residents were born in Alaska.

In the 1990s, economic stability and military cutbacks dramatically slowed immigration and reduced annual population turnover by half. As a result, Anchorage's population has become much less transient and more committed to long-term community betterment.

The population of Anchorage saw a peak in growth in 2013 (see Table 2.1), although the number preferring the lifestyle offered by the smaller outlying communities is increasing. The population residing on the military bases is declining.

Table 2.1 Historic Population of the Municipality of Anchorage

Period (July-based)	2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019
End of Period Population	292,983	295,635	298,164	301,037	300,008	298,637	298,962	297,739	294,488	291,845
Population Change	1,157	2,652	2,529	2,873	-1029	-1,371	325	-1,2123	-3,251	-2,643
Growth Rate (Percentage)	1.58	0.90	0.85	0.96	-0.34	-0.46	0.11	-0.41	-1.10	-0.90
Births	1,144	4,772	4,572	4.690	4,784	4,641	4,563	4,279	4,088	3,913
Birth Rate (Percent)	1.57	1.62	1.54	1.57	1.59	1.55	1.53	1.43	1.38	1.33
Deaths	344	1,455	1,457	1,532	1,588	1,643	1,714	1,741	1,657	1,811
Death Rate (Percent)	0.47	0.49	0.49	0.51	0.53	0.55	0.57	0.58	0.56	0.62
Natural Increase	800	3,317	3,115	3,158	3,196	2,998	2,849	2,538	2,431	2,102
Net Migration	357	-665	-586	-285	-4,225	-4,369	-2,524	-3,761	-5,682	-4,745

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section

Today, Anchorage's population is diverse, especially since Anchorage is a refugee city. Racial and ethnic minorities are the fastest-growingsegment of the population and account for about 32.65 percent of the total population.
Asian/Pacific Islander make up about 7.9 percent of the total population and are the largest minority group. There are also substantial African American, and Hispanic communities, each making up about six percent of the total population. Table 2.2 is a profile of the general demographic characteristics for the MOA.

Table 2.2 Profile of General Demographic Characteristics for the Municipality of Anchorage

	April 2010 Census			April 2020 Estimate*			July 2021 Estimate		
Age	**Total**	**Male**	**Female**	**Total**	**Male**	**Female**	**Total**	**Male**	**Female**
Total	291,826	148,209	143,617	291,247	146,249	144,998	289,697	145,501	144,196
0-4	21,961	11,349	10,612	19,349	9,929	9,420	18,332	9,381	8,951
5-9	20,618	10,542	10,076	19,998	10,159	9,839	19,629	9,961	9,668
10-14	20,443	10,407	10,036	19,993	10,391	9,602	19,945	10,299	9,646
15-19	21,187	10,990	10,197	18,268	9,388	8,880	18,062	9,320	8,742
20-24	24,379	13,059	11,320	20,682	10,955	9,727	20,496	10,949	9,547
25-29	24,820	12,820	12,000	23,484	12,062	11,422	22,121	11,329	10,792
30-34	20,620	10,458	10,162	24,378	12,217	12,161	24,288	12,160	12,128
35-39	19,569	9,843	9,726	22,308	11,164	11,144	22,880	11,536	11,344
40-44	19,493	9,892	9,601	17,899	8,947	8,952	18,645	9,328	9,317
45-49	22,394	11,157	11,237	16,817	8,195	8,622	15,994	7,880	8,114
50-54	22,175	11,084	11,091	16,881	8,428	8,453	16,860	8,370	8,490
55-59	19,088	9,755	9,333	18,694	9,246	9,448	17,573	8,640	8,933
60-64	13,940	7,186	6,754	17,405	8,537	8,868	17,517	8,651	8,866
65-69	8,347	4,169	4,178	13,936	6,921	7,015	14,584	7,229	7,355
70-74	4,962	2,328	2,634	9,479	4,670	4,809	10,189	5,008	5,181
75-79	3,482	1,533	1,949	5,645	2,614	3,031	6,144	2,826	3,318
80-84	2,386	978	1,408	3,249	1,405	1,844	3,464	1,533	1,931
85+	1,962	659	1,303	2,782	1,021	1,761	2,974	1,101	1,873
Median Age	33.0	32.4	33.7	34.9	34.2	35.6	35.4	34.7	36.2

Source: https://live.laborstats.alaska.gov/pop/index.cfm

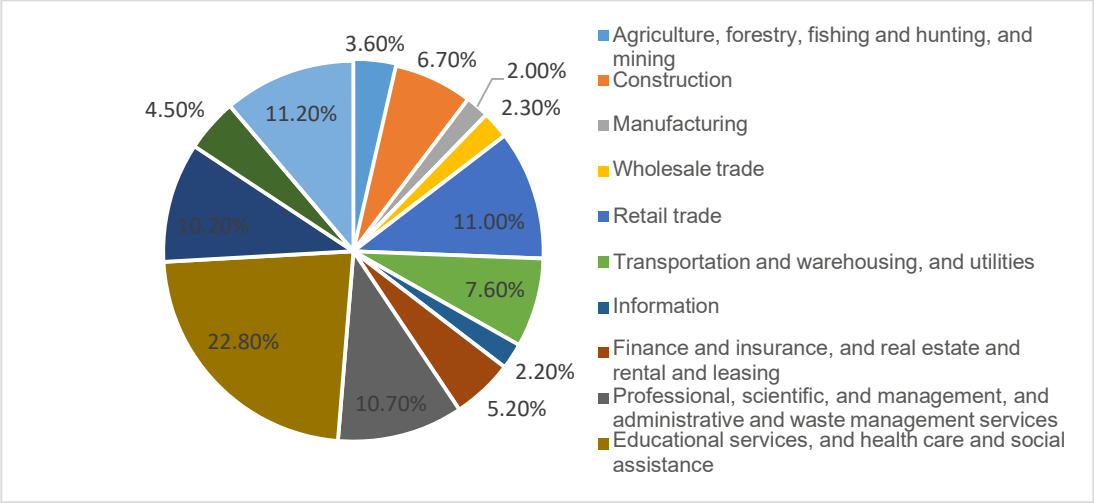
2.4.1 FUTURE POPULATION

Anchorage has lost over 12,000 residents since 2013. Anchorage Economic Development Corporation anticipates moderate additional population losses at least through 2025, driven by the same demographic and economic forces that have pushed the population lower over the past seven years. Where the decline in population might bottom out is unclear, but within their three-year forecast period it is expected that the outflow will ease and stabilize at around 285,000 residents.

2.5 Economy

At first glance, Anchorage appears off the beaten path, lying as far north as Helsinki, Finland, and almost as far west as Honolulu, Hawaii. However, its location, together with air, road, port, and rail transportation facilities, is the city's prime economic asset. Anchorage has capitalized on its location and versatile transportation assets to build a solid economic base. The community is firmly established as the statewide trade, finance, service, transportation, and administrative center and is the distribution gateway for central, western, and northern Alaska. Federal Express and the United Postal Service have made Anchorage a major hub and other firms have expanded their air cargo operations. With over 17 billion pounds of landed cargo, Ted Stevens Anchorage International Airport (TSAIA) is the nation's second busiest air cargo airport in the U.S. and fourth busiest in the world (AEDC). Figure 2.2 shows employment by industry in the MOA.

Figure 2.2 Employment by Industry: Municipality of Anchorage



Source: 2014 American Community Survey

The educational services, and health care services, and social assistance industry are the largest in the MOA. The growth in the health care sector is due largely to the expansion of hospitals and more local provision of services. Residents from outside Anchorage often receive treatment in Anchorage, and Anchorage residents can stay in Anchorage for more oftheir medical care instead of having to go to the "Lower 48."

Tourism is a growing part of the economy (Anchorage Visitor and Convention Bureau, undated). Anchorage continues to receive an increasing number of visitors due to the increase in conventions being held in Anchorage and visits associated with the cruise ship facilities in Seward and Anchorage.

In the Chugiak/Eagle River area, local retail growth in response to the increasing population has made retail trade the area's largest employment sector. Services are second, and the third-largest employment sector is government. Many government jobs are associated with education, although some are with the U.S. Postal Service and the Alaska Department of Corrections. Many residents commute to the Anchorage Bowl for employment (MOA, 2006).Approximately 85% of all workers in the Chugiak/Eagle River area work in the Anchorage Bowl (Department of Transportation and Public Facilities, 2009).

Girdwood's biggest economic sector is services, and the largest employer is the Alyeska Resort. The service industry has more than triple the amount of employment than the next closest category—construction. The third-largest employment sector is trade, mostly associated with tourism. There is seasonality to employment in Girdwood, as many of the jobs are associated with skiing in the winter or with the summer tourists. Many Girdwood residentswho are not employed in the tourism sector commute into the Anchorage Bowl.

Approximately 12,000 people commute daily from the north of Anchorage. Another 16,000 commute from the Matanuska-Susitna Borough (ADOT Annual Average Daily Trips 2014).

CHAPTER 3 ASSET INVENTORY

Before a community can develop its mitigation strategy, it needs to know what should be protected. The purpose of this chapter is to identify what needs to be protected, including Anchorage's critical facilities. Anchorage has many other assets that should be protected, including its infrastructure and existing development. This information will be used in Chapter 4 to describe Anchorage's vulnerability to each hazard.

3.1 INFRASTRUCTURE

Infrastructure is the basic facilities and services needed for a community. Anchorage's infrastructure includes roads, water supplies, wastewater treatment plants, water and wastewater pipes, power plants, electrical lines, bridges, ports, airports, railroads, telecommunications equipment, schools, etc. The critical facilities matrix in Appendix D lists the hazards to which each facility is exposed.

3.1.1 SCHOOLS

The following is a list of public schools in Anchorage. In addition to those listed below, there are several private schools. Schools identified with an asterisk (*) after their name may be used as a shelter. School locations are shown in Figure 3.1.

Charter

- Alaska Native Cultural
- Aquarian
- Eagle Academy
- Family Partnership
- Frontier Charter School
- Highland Tech High School
- Rilke Schule
- Winterberry

Elementary

- Abbott Loop Elementary
- Airport Heights Elementary
- Alpenglow Elementary*
- Aurora Elementary
- Baxter Elementary
- Bayshore Elementary
- Bear Valley Elementary*
- Birchwood ABC
- Bowman Willard Elementary*
- Campbell Elementary*
- Chester Valley Elementary
- Chinook Elementary
- Chugach Optional Elementary
- Chugiak Elementary
- Lake Otis Elementary
- Mountain View Elementary*
- Muldoon Elementary
- North Star Elementary
- Northern Lights ABC
- Northwood Elementary
- Nunaka Valley Elementary
- O'Malley Elementary
- Ocean View Elementary*
- Orion Elementary
- Ptarmigan Elementary
- Rabbit Creek Elementary

- College Gate Elementary
- Creekside Park Elementary
- Denali Montessori Elementary
- Eagle River Elementary
- Fairview Elementary
- Fire Lake Elementary*
- Girdwood Elementary*
- Gladys Wood Elementary
- Government Hill Elementary
- Homestead Elementary
- Huffman Elementary
- Inlet View Elementary
- Kasuun Elementary*
- Kincaid Elementary*
- Klatt Elementary*
- Lake Hood Elementary*
- Ravenwood Elementary*
- Rogers Park Elementary
- Russian Jack Elementary*
- Sand Lake Elementary
- Scenic Park Elementary*
- Spring Hill Elementary*
- Susitna Elementary
- Taku Elementary*
- Trailside Elementary*
- Tudor Elementary
- Turnagain Elementary
- Tyson Elementary*
- Ursa Major Elementary
- Ursa Minor Elementary
- Williwaw Elementary*
- Willow Crest Elementary*
- Wonder Park Elementary

Middle

- Begich Middle School*
- Central Middle School of Science
- Clark Middle School*
- Goldenview Middle School*
- Gruening Middle School*
- Hanshew Middle School*
- Mears Middle School*
- Mirror Lake Middle School*
- Romig Middle School*
- Wendler Middle School*

High

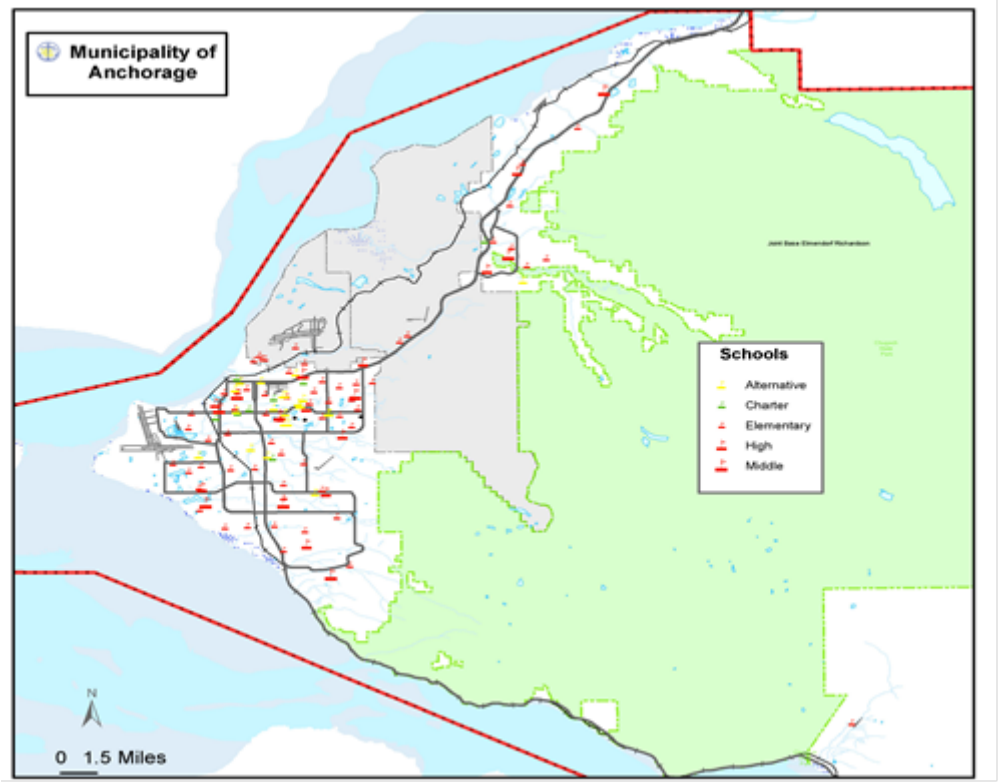
- Bartlett High School*
- Chugiak High School*
- Dimond High School*
- Eagle River High School*
- East High School
- Service High School
- South Anchorage High School
- West High School

Other

- ACE/ACT Program
- Alaska State School for the Deaf and Hard of Hearing
- ASD Virtual
- Benson Secondary/SEARCH
- Bragaw Heights
- Debarr Residential
- Humphrey Heights
- McKinley Heights
- McLaughlin
- New Path
- PAIDEIA Cooperative
- Polaris K-12
- Providence Heights
- SAVE High
- Steller Secondary
- STrEam Academy

- Jesse Lee
- King Tech High School
- Maplewood
- Whaley School

Figure 3.1 Schools



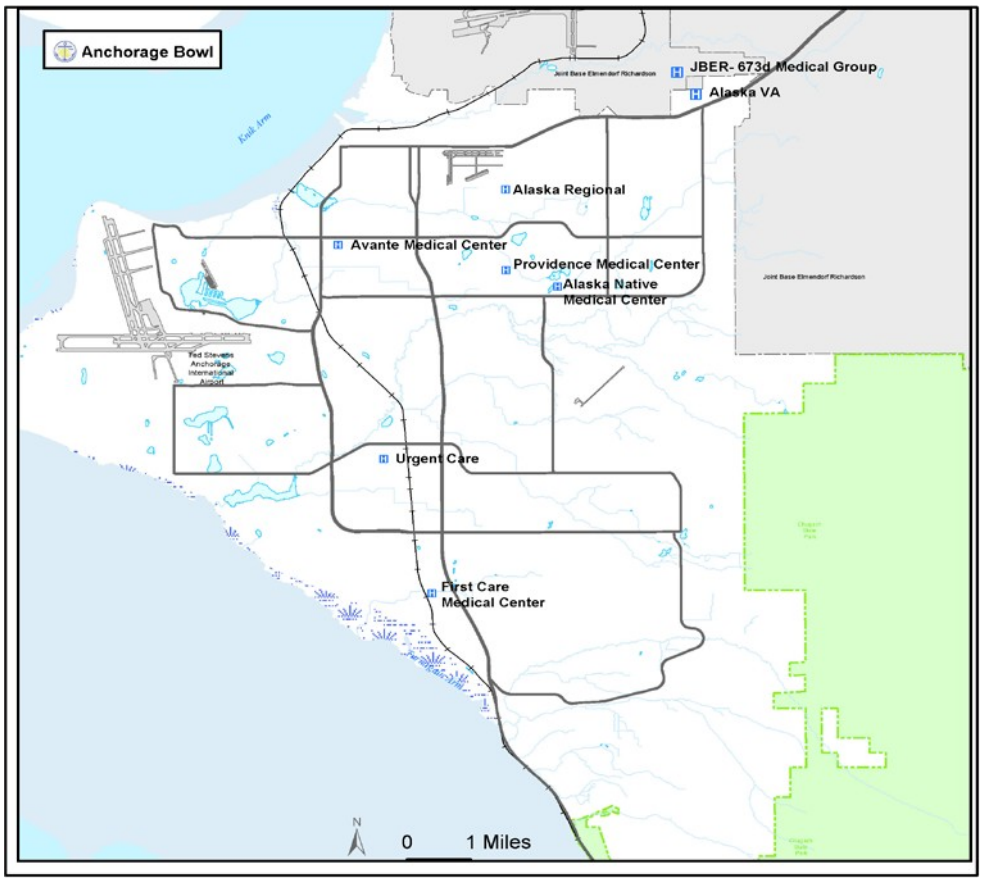
3.1.2 HOSPITALS AND MEDICAL FACILITIES

The main hospitals in Anchorage are:

- Joint Base Elmendorf/Richardson Hospital
- Alaska VA Health Care System
- Alaska Regional Hospital
- North Star Behavioral Health System
- First Care Medical Center
- Providence Alaska Medical Center
- Chris Kyle Patriot Hospital
- Alaska Psychiatric Institute
- Alaska Native Medical Center
- Providence Extended Care Facility
- Medical Park Family Care
- St. Elias Specialty Hospital
- Anchorage Neighborhood Health Center

The locations of these facilities are shown in Figure 3.2.

Figure 3.2 Hospitals and Major Medical Facilities



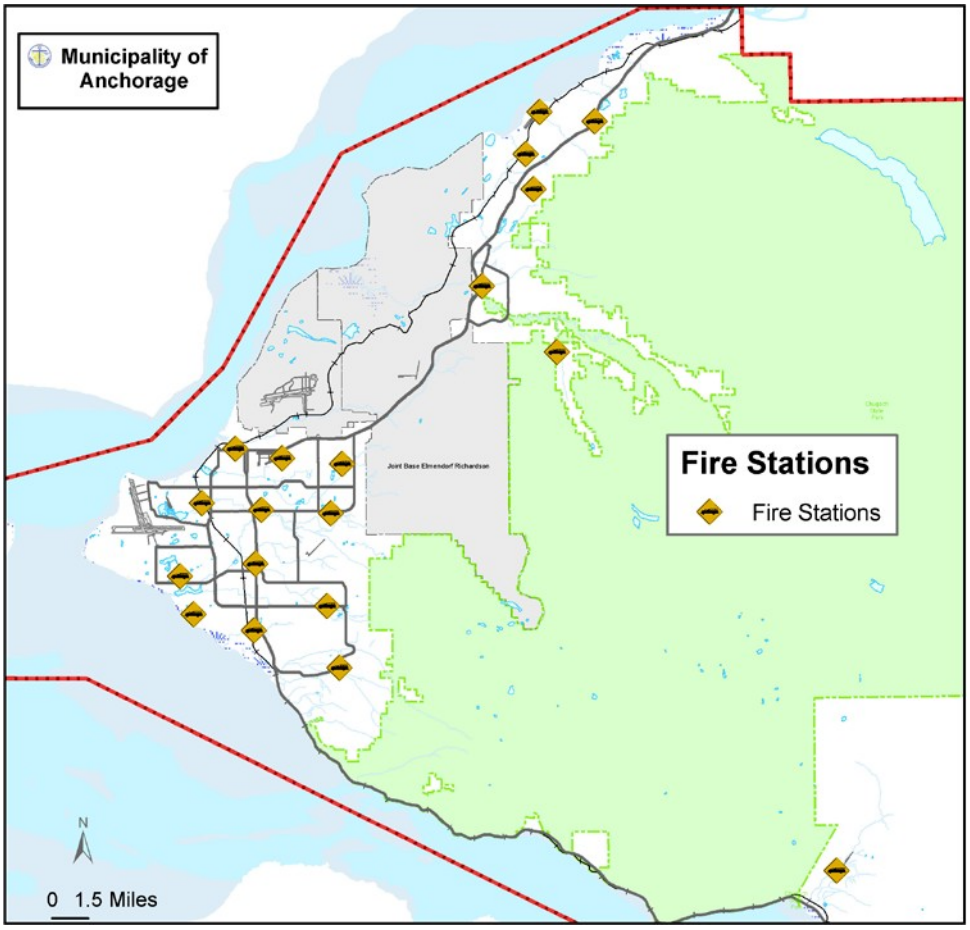
3.1.3 FIRE DEPARTMENTS

Fire protection in MOA is provided by several sources. The Anchorage Fire Department (AFD) covers most of the Anchorage Bowl. Outside the Bowl, communities rely on volunteer fire departments. The fire stations in MOA are:

- AFD Communications Center
- AFD Fire Station #1
- AFD Fire Station #3
- AFD Fire Station #4
- AFD Fire Station #5
- AFD Fire Station #6
- AFD Fire Station #7
- AFD Fire Station #8
- AFD Fire Station #9
- AFD Fire Station #10
- AFD Fire Station #11
- AFD Fire Station #12
- AFD Fire Station #14
- AFD Fire Station #15
- Ted Stevens Int'l Airport Aircraft/Rescue/Fire
- Joint Base Elmendorf/Richardson
- State of Alaska, Division of Forestry
- Bureau of Land Management Fire Services
- Chugiak Volunteer Fire Dept Station #31
- Chugiak Volunteer Fire Dept Station #32
- Chugiak Volunteer Fire Dept Station #33
- Chugiak Volunteer Fire Dept Station #34
- Chugiak Volunteer Fire Dept Station #35
- Station 41 Girdwood Volunteer Fire Dept
- Municipal Emergency Preparedness Office

The locations of these stations are shown in Figure 3.3.

Figure 3.3 Fire Stations



3.1.4 LAW ENFORCEMENT

Police protection is provided by the Anchorage Police Department (APD) and the Alaska State Troopers (AST). The Federal Bureau of Investigation (FBI) has an office in Anchorage. The law enforcement facilities in Anchorage include:

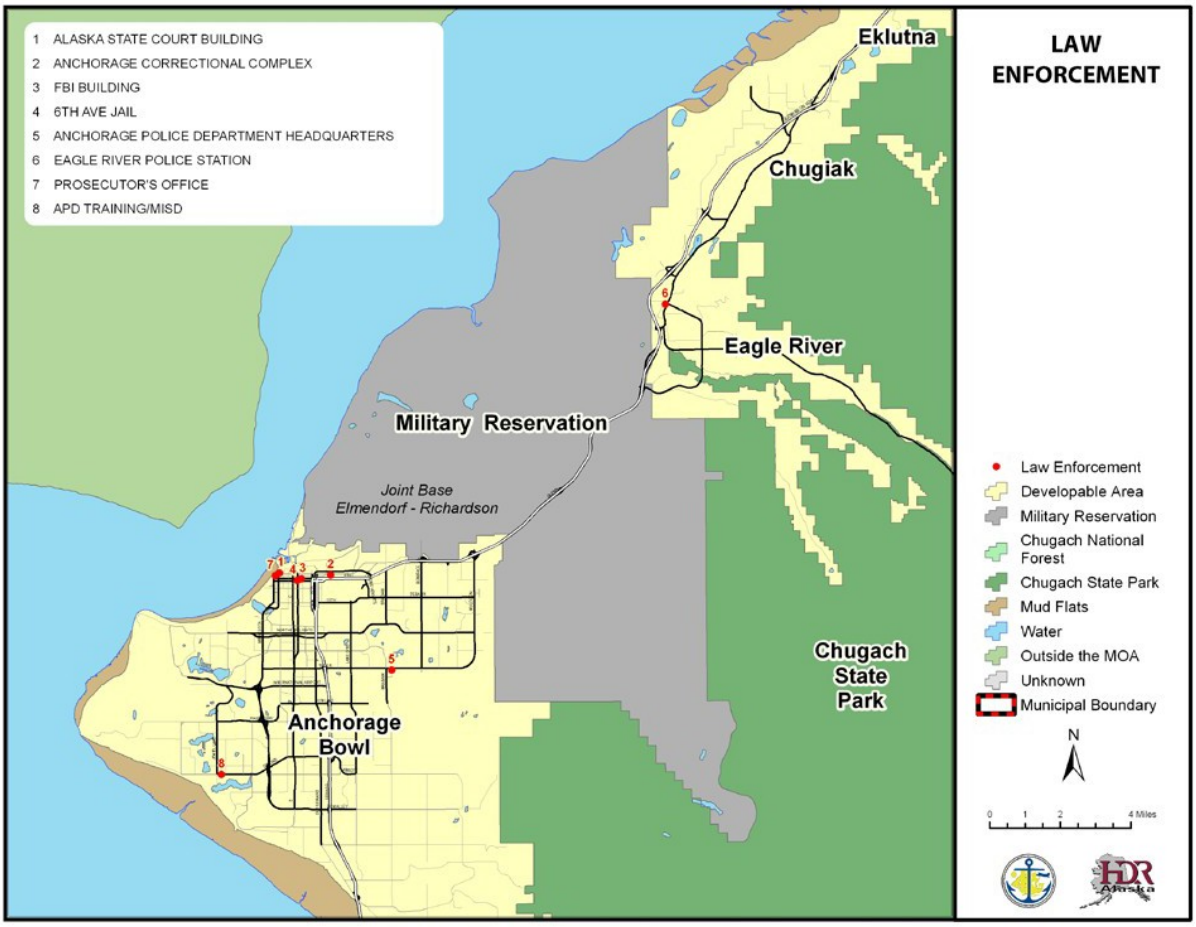
- Airport Police and Fire
- Alaska State Troopers Headquarters
- Anchorage Police Department Headquarters
- Anchorage Safety Center (Public Inebriate Title 47 Protective Custody Facility
- Eagle River Police Substation[3]
- APD Training/Miscellaneous
- Alaska State Court Building
- Anchorage Correctional Complex
- Department of Homeland Security Immigration & Customs Enforcement
- Department of Justice

[3] There are other APD substations in the MOA. They are not listed here because they are not staffed facilities.

- Federal Emergency Management Agency
- FBI Building
- Prosecutor's Office
- U.S. Coast Guard Marine Safety
- U.S. Department of Homeland Security, U.S. Customs and Border Protection
- U.S. Drug Enforcement Administration

The locations of these facilities are shown in Figure 3.4.

Figure 3.4 Law Enforcement Facilities

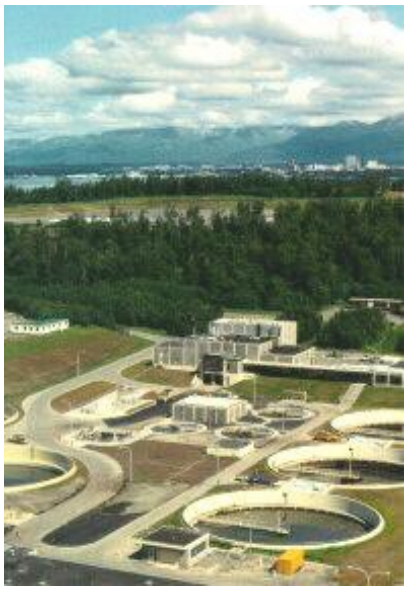


3.1.5 WATER SOURCES

The MOA gets its public potable water from three sources:

- Eklutna Water Treatment Plant (Eklutna Lake)
- Ship Creek Water Treatment Plant
- Wells

The Eagle River/Chugiak area relies on the Eklutna Water Treatment Plant; the Anchorage Bowl is supplied by the Eklutna Water Treatment Plant and the Ship Creek Water Treatment Plant, while Girdwood relies on wells that enter the distribution system at the Girdwood well house.



John M. Asplund Wastewater Treatment

3.1.6 WASTEWATER TREATMENT FACILITIES

The MOA has three public wastewater treatment facilities:

- John M. Asplund Wastewater Treatment Facility
- Eagle River Wastewater Treatment Facility
- Girdwood Wastewater Treatment Facility

Some people have private on-site wastewater systems.

3.1.7 ELECTRICITY

Within MOA, electricity is provided by two utilities:

- Chugach Electric Association
- Matanuska Electric Association

These utilities operate several power plants within MOA, including:

- George M. Sullivan Plant 2
- Generation Plant One (also known as Hank Nikkels Plant 1)
- Eklutna Hydroelectric Power Plant

In addition to the power plants, each utility operates substations and electrical (transmission and distribution) lines.

3.1.8 AIRPORTS

The largest airport in MOA is Ted Stevens Anchorage International Airport (TSAIA). It serves passenger and cargo travel. Merrill Field is one of the largest general aviation (limited to aircraft that weigh 12,500 pounds or less) airports in the United States. Lake Hood, Anchorage's only seaplane base, is considered to be the largestand most active seaplane base in the world (Alaska Department of Transportation & Public Facilities, 2016). However, many local lakes are used for floatplanes in the summer months. Other airports in the MOA are located in Birchwood, Campbell Airstrip, Joint Base Elmendorf Richardson and Girdwood.

3.1.9 RAIL

The Alaska Railroad (ARRC) is headquartered in Anchorage, near Ship Creek. The main ARRC depot is near the headquarters, and the Bill Sheffield Depot is located at the Ted Stevens Anchorage International Airport. Within MOA, the ARRC has more than 100 miles of track.

3.1.10 ROAD

Within the MOA, there are more than 1,000 lane miles[4] of road, with numerous bridges, overpasses, etc. Most of the roads in the Anchorage Bowl are in the Anchorage Roads and Drainage Service Area (ARDSA). Other parts of Anchorage are in Limited Road Service Areas. One of the largest is the Chugiak, Birchwood, Eagle River Rural Road Service Area (CBERRRSA), which has more than 350 lane miles of roadway. Some roadways and main arteries through the Anchorage bowl, including the Seward and Glenn Highways, are owned and maintained by the State.

3.1.1 PORT OF ALASKA

The Port of Alaska is located at the mouth of Ship Creek. Port facilities include three general cargo terminals, two petroleum terminals, a dry barge landing, bulk cement-handling, gantry cranes and roll-on/roll-off capability. Docks are maintained at a full seaway depth of 35 ft. Most products used in Alaska are transported into our state on container ships and barges. The Port of Alaska handles three-quarters of all Southcentral Alaska/Railbelt-bound, waterborne, non-fuel freight. Hazard materials are transported through the port as well as fuel for the entire state.

[4] Lane miles refer to a way of measuring a roadway based on its length and the number of lanes it has. A two lane street that is one mile long has two lane miles

3.1.12 OTHER UTILITIES

Natural Gas Utilities

- ENSTAR

Telephone/Communication Utilities

- GCI
- Alaska Communications Systems (ACS)
- Spark Wireless
- AT&T
- Alaska Telecom
- Matanuska Telephone Association (MTA) Wireless
- TelAlaska
- ASTAC
- Hughesnet
- Verizon
- Borealis Broadband
- ASTAC
- Alaska Fiber Star
- TelAlaska Long Distance, Inc.
- Level 3 Communications, LLC
- EarthLink Business, LLC
- France Telecom Corporate Solutions, LLC
- Comtec Business Systems, Inc.
- Starlink
- Mobilitie, LLC
- Mitel NetSolutions, Inc.
- Metropolitan Telecommunications of Alaska, Inc.
- QuantumShift Communications, Inc.
- Bowhead Communication Services, LLC
- Wide Voice, LLC

3.1.2 HISTORICAL SITES

According to the National Register Information System, the MOA has the following sites listed on the National Register of Historic Places. The State Historic Preservation Office's (SHPO) Alaska Heritage Resources Survey (AHRS) has many more sites considered historically significant within MOA. Because the AHRS has numerous entries and is not available to the general public, information about these sites is not listed here. For more information about these resources, please contact the SHPO. Several historic properties listed on the National Register of Historic Places were also adopted into the Four Original Neighborhoods Historic Preservation Plan as "Landmarks to Save". This includes the Government Hill Wireless Station, Block 13-Army Housing Association Historic District, and the Government Hill Water Tower. Contact the Anchorage Historic Preservation Program Officer

for additional information.

Table 3.1 National Register of Historic Places

Resource Name	Address	City	Listed
A. E. C. Cottage No. 23	618 Christensen Dr.	Anchorage	1990-06-11
Alaska Engineering Commission Cottage No. 25	645 W. 3rd Ave.	Anchorage	1996-02-16
Alex, Mike, Cabin	Off AK 1	Eklutna	1982-09-08
Anchorage Cemetery	535 E. 9th Ave.	Anchorage	1993-04-26
Anchorage City Hall	524 W. 4th Ave.	Anchorage	1980-12-02
Anchorage Depot	411 W. 1st Ave.	Anchorage	1999-08-27
Anchorage Hotel Annex	330 E St.	Anchorage	1999-04-15
Anderson, Oscar, House	4th Ave. extended	Anchorage	1978-06-13
Atwood Campus Center	University Drive	Anchorage	1979-06-22
Beluga Point Site	Address Restricted	Anchorage	1978-03-30
Block 13-Army Housing Association Historic District	Between A and Cordova Streets and 10th and 11th Avenues	Anchorage	Pending, locally eligible
Civil Works Residential Dwellings	786 and 800 Delaney St.	Anchorage	2004-07-21
Crow Creek Consolidated Gold Mining Company	NE of Girdwood	Girdwood	1978-09-13
David, Leopold, House	605 W. 2nd Ave.	Anchorage	1986-07-24
Eklutna Power Plant	NE of Anchorage	Anchorage	1980-06-20
Federal Building-U.S. Courthouse	601 W. 4th Ave.	Anchorage	1978-06-23

Fourth Avenue Theatre (AHRS Site No. ANC-284)	630 W. 4th Ave.	Anchorage	1982-10-05
Gill, Oscar, House	1344 W. 10th Ave.	Anchorage	2001-02-02
Government Hill Federal Housing Historic District		Anchorage	2015-14-01
Government Hill Water Tower	West Harvard Avenue	Anchorage	Pending, locally eligible
Government Hill Wireless Station	123 West Manor	Anchorage	Pending, locally eligible
Historic Pioneer School House	3rd Ave. and Eagle St.	Anchorage	1980-12-03
Indian Valley Mine	Address Restricted	Indian	1989-10-25
KENI Radio Building	1777 Forest Park Dr.	Anchorage	1988-04-18
Kimball's Store	500 and 504 W. 5th Ave.	Anchorage	1986-07-24
Loussac-Sogn Building	425 D St.	Anchorage	1998-05-20
McKinley Tower Apartments	337 E. 4th Ave.	Anchorage	2008-09-12
Mt. Alyeska Roundhouse	Approx. 2 mi. W of Alyeska	Girdwood	2003-11-05
Nike Site Summit	Off Arctic Valley Rd., 12.5 mi. E of Anchorage	Anchorage	1996-07-11
Old St. Nicholas Russian Orthodox Church	Eklutna Village Rd.	Eklutna	1972-03-24
Pilgram 100B Aircraft	Anchorage Aviation Heritage Museum	Anchorage	1986-07-08
Potter Section House	Off AK 1	Anchorage	1985-12-06
Spring Creek Lodge	18939 Old Glenn Hwy.	Chugiak	2001-09-09
WendlerBuilding[5]	400 D St.	Anchorage	1988-06-24

Source: National Register of Historic Places

3.2 EXISTING DEVELOPMENT IN MOA

Anchorage's history has shaped its development patterns, making the Anchorage Bowl the dominant area locale in terms of developed areas in the region. Table 3.2 shows the number of parcels (by land use) in the Anchorage Bowl, the Turnagain Arm area (including Girdwood), and the Chugiak/Eagle River area. Table 3.3 shows the taxable value of the land and buildings in the MOA by land use. The number of parcels was used as a substitutefor the number of structures, as it is assumed that the non-vacant parcels include existing structures (which determine the land use). Development data from 2009 and 2016 has been provided to show potential growth trends. Some of the changes are due to better available data or changes in data collection. Overall, the biggest increase is in residential development.

[5] The Wendler Building does not appear on the National Park Service's National Register of Historic Places Database. However, the weekly register listing for 1988 states this property was entered in the National Register (National Park Service, 1998).

Table 3.2 Number of Parcels by Land Use

Type of Parcels	In Turnagain Communities	In Chugiak/Eagle River	In Anchorage Bowl
Residential	1,485	12,935	60,603
Commercial	225	465	3,375
Industrial	20	86	2,491
Institutional	25	205	805
Parks, Open Space, and	2	194	40
Recreation			
Transportation-Related	91	110	493
Other Land Uses	0	145	213
Vacant Land	621	2,608	7,891
Unidentified	7	80	141
Total	**1,855**	**14,220**	**68,131**

Source: MOA GIS, 2016

Table 3.3 Total Parcels and Taxable Value for MOA

Land Use	# of Parcels	Taxable Value (Land)	Taxable Value (Buildings)	Total
Residential	75024	8526159300	17756156200	26282315500
Commercial	4065	2568664400	4512337400	7081001800
Industrial	2597	1494944600	1907337000	3402281600
Institutional	1035	1215398400	1554183700	2769582100
Open Space	44	24995700	503000	25498700
Transportation	664	0	0	0
Other	562	377462100	36697800	414159900
Vacant	228	0	0	0
Total	84219	14207624500	25767215100	39974839600

Source: MOA-GIS 2016

3.3 FUTURE DEVELOPMENT

Anchorage 2020, the Chugiak Eagle River Comprehensive Plan Update, the Girdwood Area Plan, and numerous other plans all describe future development in the MOA. A few items are highlighted below because they could have a strong influence in the MOA's future vulnerability. It is important to know and track where and what will be developed in the future to plan for its protection and to mitigate hazards during development.

3.3.1 HOUSING

According to the March 2012 *Anchorage Housing Market Analysis*, by McDowell Group and ECO Northwest, there is not enough buildable land to accommodate future housing demand under historicaldevelopment patterns, current land use policies, and development options. The study forecasts a demand for about 18,200 new dwellings in the Anchorage Bowl and 3,300 new dwellings in Chugiak- Eagle River over the next 20 years. However, the study predicts that without increasing the current level of housing density and increasing the rate of redevelopment, the Anchorage Bowl will lack land forabout half of the expected demand. While Chugiak-Eagle River has enough land to meet its own projected demand for all housing types, the study finds it cannot accommodate all the Bowl's projected demand as well.

3.3.2 INFRASTRUCTURE

It is expected that MOA will experience more utility development, including:

- Electrical infrastructure improvements and a new electrical substation to serve southeast Anchorage. The location for the substation has yet to be identified. For more information on potential improvements, please contact Chugach Electric. https://www.chugachelectric.com
- New water and sewer lines (locations to be determined during the Water Master Plan and the Wastewater Master Plan updates). For more details about this process, please visit http://www.awwu.biz

3.3.3 TRANSPORTATION

Population forecasts of more than 500,000 residents in the Mat-Su Borough and the Municipality of Anchorage by 2035 drive a multi-faceted approach toward meeting area transportation needs. The expectation is that there will be greater total vehicle miles traveled throughout the region as greater shares of the population move to more suburban locations, and employment grows predominantly in the Anchorage Bowl. Increased population densities in the Downtown, Midtown, and U-Med District will provide demand and opportunities for increased access by public transportation and non-motorized transportation. Specific recommendations are contained in the *2035 Metropolitan Transportation Plan* and the *Interim 2035 Metropolitan Transportation Plan* (June 26, 2015 public review draft).

3.3.4 OTHER PLANS

Table 3.4 lists several plans that help guide where future development in the MOA will occur.

Table 3.4 MOA Publications, Studies, and Adopted Plans

Name of Plan	Year of Adoption or Publication
Anchorage 2020 – Anchorage Bowl Comprehensive Plan	2001
Anchorage Wetlands Management Plan	2014
Chugiak-Eagle River Comprehensive Plan	2006
Crow Creek Neighborhood Land Use Plan	2007
East Anchorage District Plan	2015
Eagle River Greenbelt Plan	1992
Fairview Neighborhood Plan	2014
Girdwood Commercial Area and Transportation Master Plan	2001
Girdwood Area Plan	1995
Girdwood-Iditarod Trail Route Study	1997
Glacier-Winner Creek Access Corridor Study	1997
Government Hill Neighborhood Plan	2013
Historic Preservation Plan for Anchorage's Four Original Neighborhoods	2013
Potter Valley Land Use Analysis	1999
Section 36 Land Use Study	1992
Ship Creek/Waterfront Land Use Plan	1991
Ship Creek Framework Plan	2014
Spenard Community District Development Plan	1986
3500 Tudor Road Master Plan	2007
Tudor Road Public Lands and Institutions Plan	1986
Utility Corridor Plan	1990
Downtown Anchorage Seismic Risk Assessment and Land Use Regulations to Mitigate Seismic Risk	2010
Geotechnical Hazards Assessment Study (Harding-Lawson Associates)	1979
Snow Avalanche and Mass-wasting Hazard Analysis – Glacier/Winner Creek Areas, Alaska	1993
Anchorage Commercial Land Assessment	2012
Anchorage Housing Market Study	2012
Anchorage Police Department Strategic Plan	2009 - 2013
Anchorage Wildfire strategic Plan	2003
Spenard Corridor Plan	2020
Anchorage 2040 Land Use Plan	2017
Turnagain Arm Comprehensive Plan	2009

CHAPTER 4 – HAZARDS IN THE MUNICIPALITY OF ANCHORAGE

One of the requirements of a hazard mitigation plan is that it describes the hazards that affect a jurisdiction. This chapter profiles the hazards that occur in the MOA by identifying each hazard's location, extent, previous occurrences, and the likelihood of future events.

Hazard mitigation plans are also required to summarize the vulnerability to the hazards. The vulnerability information was calculated by identifying the parcels that intersect each of the hazard zones. Some notes about this method are:

- The taxable value is based on 2021 MOA tax assessor data.
- Using the taxable value underestimates the vulnerability because:
    - Some parcels, such as schools, religious facilities, and military land, are not taxed and therefore do not have a taxable value.
    - Some parcels are treated as economic units (separate parcels that are treated as one for tax purposes) and do not have taxable values listed.
    - Taxable value does not consider the value of the contents.
    - The taxable value is the sum of the land and building taxable values. This is different from the total taxable value listed in the tax assessor's file because tax exemptions have been applied to those totals.
    - If a parcel was in multiple risk areas, the entire parcel was considered to be in the highest risk area (i.e., no partial parcels). However, depending on how much of the parcel is in the hazard zone- and site-specific factors, existing or future structures may not be at risk.
    - The number of unidentified parcels could be wrong due to data issues (i.e., extra polygons in the GIS file, not all tax records associated with a parcel, etc.).

It is important to remember that the information listed in this chapter is meant to provide an overview of each hazard. While based on the best available information, the information is for planning purposes and should not be used for purposes which it was not intended such as securing permits, or for construction.

As part of this update, MOA departments, along with several state and federal agencies, were contacted to find out if new information was available. When available, the additional information was incorporated into the plan. The tables showing the number of parcels vulnerable to each hazard have been updated. The section on volcanoes was revised to focus more on volcanic ash as this is the biggest threat to the MOA compared to other aspects of a volcanic event.

Plan information is continually updated, and the current plan made a specific effort to make the hazard descriptions and vulnerabilities more specific to communities within the jurisdictional boundaries of the MOA

4.1 NATURAL HAZARDS

Natural hazards are unexpected or uncontrollable events caused by nature, such as earthquakes, floods, or volcanic eruptions. In some cases, although rare, they can be human-triggered, such as a human-triggered avalanche. The impacts of a natural hazard can also be worse based on human development and changes to the landscape.

The majority of the following information describing these hazards is from the 2018 State Hazard Mitigation Plan and is used by permission from the DHS&EM.

4.1.1 EARTHQUAKES

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. The 2002 Denali fault ruptured, causing the largest earthquake (Magnitude [M] 7.9) of its kind in North America in over 100 years. On average, Alaska has one “great” (M>8) earthquake every 13 years, one M 7-8 earthquake every year, and six M 6-7 earthquakes every year. Additionally, earthquakes that occur on tectonic plate boundary faults near the coast can generate tsunamis that impact coastal communities (see Tsunami). Earthquakes have killed more than 130 people in Alaska during the past 60 years, and as population centers near active faults and coastlines continue to grow itis imperative that Alaskans prepare for future events.

It is not possible to predict the time and location of the next big earthquake, but the active geology of Alaska guarantees that major damaging earthquakes will continue to occur and can affect almost anywhere in the state. Scientists have estimated where large earthquakes are mostlikely to occur, along with the probable levels of ground shaking to be expected. With this information, as well as information on soil properties and landslide potential, it is possible to estimate earthquake risks in any given area. It is also possible to estimate the potential for earthquakes to generate tsunamis, and to model the extent to which tsunamis will inundate coastal areas.

Alaska earthquake statistics

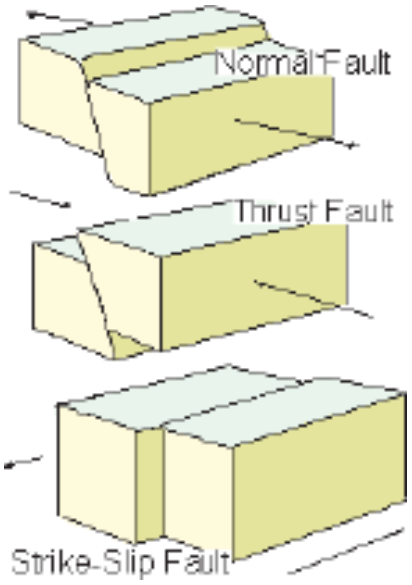
- Alaska is home to the second-largest earthquake ever recorded on Earth (1964 GreatAlaska Earthquake, moment magnitude 9.2)
- Alaska has approximately 11 percent of the world's recorded earthquakes
- Three of the eight largest earthquakes in the world were in Alaska
- Seven of the ten largest earthquakes in the U.S. were in Alaska

In addition to the previously mentioned large earthquakes, since 1900, Alaska has had an averageof:

- Magnitude 5 – 6 earthquakes per year: 45
- Magnitude 4 – 5 earthquakes per year:320
- 1,000 earthquakes located in Alaska each month

Source: Alaska Earthquake Center (AEC)

Earthquake shaking is caused by the release of elastic strain energy that has accumulated on faults within or at the boundary between earth's tectonic plates. Tectonic plates are thin, brittle pieces of the crust (the outer, rigid layer of earth) that move across the earth's surface relative to each other, like slabs of ice on a lake. The plates are constantly in motion because of forces originating from within the earth. The plates' motion causes energy buildup that is periodically released in earthquakes.



Three types of faults. Image courtesy of USGS

Ground shaking is responsible for most of the damage. Ground shaking is the result of the three classes of seismic waves generated by an earthquake. Primary waves (P waves) are the first waves, often felt as a sharp jolt. Secondary, or shear, waves (S waves) are slower and usually have a side-to-side movement. They can be very damaging because structures are more vulnerable to horizontal than vertical motion. Surface waves are the slowest waves, but they can carry the bulk of the energy in a large earthquake.

The intensity of the shaking is dependent on many factors, including the magnitude of the quake, the geology of the area, distance from the epicenter, building design, and local construction practices. The amount of damage to buildings depends on how the specific characteristics of each incoming wave interact with the buildings' height, shape, and construction materials.

Surface faulting is the differential movement of the two sides of a fault. There are three general types of faulting: strike-slip, normal, and thrust (reverse). Strike-slip faults are where

each side of the fault moves horizontally. Normal faults have one side dropping down relative to the other side. Thrust (or reverse) faults have one side moving up and over the fault relative to the other side.

Secondary Hazards

Secondary effects from an earthquake include seismically induced ground failure, snow avalanches, tsunamis, landslides, and infrastructure failure. These will be discussed in greater detail in other sections of the plan.

Richter Scale
On the Richter scale, magnitude is expressed in whole numbers and decimals. A 5.0 earthquake is a moderate event; a 6.0 characterizes a strong event; a 7.0 is a major earthquake; and a great earthquake exceeds 8.0. The scale is logarithmic and open-ended.

Magnitude and Intensity

Earthquakes are usually measured in terms of their magnitude and intensity. Magnitude is related to the amount of energy released during an event, while intensity refers to the effects on people and structures at a particular place. Each earthquake will have only one magnitude but may have many intensities. Earthquake magnitude is usually reported according to the standard Richter scale (M_L) for small to moderate earthquakes. Large earthquakes are reported according to the moment-magnitude scale (M_W) because the standard Richter scale does not adequately represent the energy released by these large events.

Peak Ground Acceleration
Peak ground acceleration (PGA) in percent of g with 10% probability of exceedance in 50 years represents the ground motions that can be reasonably expected in a 50-year period.
The acceleration values are the *peak* or maximum values expected during the earthquake. The "10% probability of exceedance in 50 years" refers to the fact that earthquakes are somewhat random in occurrence. One cannot predict exactly whether an earthquake of a given size will or will not occur in the next 50 years.

Intensity is usually reported using the Modified Mercalli Intensity Scale (MMI). This scale has 12 categories ranging from not felt to total destruction. Different MMI values can be recorded at different locations for the same event, depending on local circumstances such as distance from the epicenter or building construction practices. Soil conditions in Anchorage are a major factor in determining an earthquake's intensity, as areas with unconsolidated fill, liquefiable soils, or that are susceptible to lateral spread will sustain more damage than areas with shallow bedrock. Seismic landslide hazard is a key local issue and is discussed in more detail in see section 4.1.6 Landslide/Ground Failure.

Location

The entire MOA faces a significant threat from earthquakes. Earthquakes that result from the Pacific Plate subducting beneath the North American Plate are most likely to impact the MOA (Haeussler, 2010).

Likelihood of Occurrence - Probability - Low

While it is impossible to know when the next earthquake will affect MOA, given the MOA's seismic history, earthquakes will continue to occur. Earthquakes are commonplace throughout much of Alaska. On average there is a magnitude 7 or greater earthquake somewhere in or offshore Alaska every 1 to 2 years and a magnitude 8 or greater quake about every 13 years. However, given Anchorage's geologic situation, a dangerous damaging earthquake with a lower magnitude of 7 or 8 could occur at any time in the MOA. See Hazard Rating Matrix, Table 1.2.

Peak ground acceleration with a 10% probability of exceedance in 50 years represents events that are reasonably expected to occur. Peak ground acceleration (PGA) is one method to measure the strength of ground movements. The MOA has a peak ground acceleration of 40% g (Wesson et al, 2007). This can be considered a high seismic hazard.

Historic Events

2018 Anchorage Earthquake

The November 30, 2018, Mw 7.1 earthquake near Anchorage, Alaska, occurred as the result of normal faulting at a depth of about 40 km. Focal mechanism solutions for the event indicate slip occurred on a moderately dipping fault striking north-south (dipping either to the east at about 30 degrees, or the west at about 60 degrees). At the location of this earthquake, the Pacific plate is moving towards the northwest with respect to the North America plate at about 57 mm/yr, subducting beneath Alaska at the Alaska-Aleutians Trench, approximately 150 km south-southeast of this event. The location and mechanism of this earthquake indicate rupture occurred on an intra-slab fault within the subducting Pacific slab, rather than on the shallower thrust-faulting interface between these two plates.



The Minnesota off ramp, was heavily damaged by an earthquake on November 30, 2018.

1964 Good Friday Earthquake

The best-known earthquake in Anchorage's history is the March 27, 1964 Good Friday earthquake. This 9.2 M_W earthquake is the largest ever recorded in North America and the second largest in the world. The shaking lasted between four and five minutes and was felt over an area of approximately seven million square miles.



The Government Hill School after the 1964 Good Friday earthquake.

This earthquake occurred at approximately 5:36 pm. The timing of the event may have saved many lives, as several structures with the most damage, such as the Government Hill School were unoccupied at this time. In 1973, the National Research Council observed that this event could have had 50 times the number of deaths and 60 times as much property damage if it had affected a more densely populated area during work/school hours. The ground shaking caused a significant amount of ground deformation as well as triggering landslides and tsunamis. The Turnagain Heights landslide was the most damaging, with more than 100 homes destroyed.

Vulnerability

An earthquake could affect the entire Municipality. The exact number and location of impacted structures will depend on the size, location and frequency of the earthquake. The type of building also plays a role. For example, unreinforced masonry buildings tend to be more vulnerable to earthquake damage than wood framed buildings. Many of the MOA's taller buildings are located in Downtown and Midtown. In addition, infrastructure, including roads and utilities, and other development is vulnerable to an earthquake. The disruptions to the transportation infrastructure including bridges can have an impact on emergency response activities.

Table 4.1 Earthquake Vulnerability

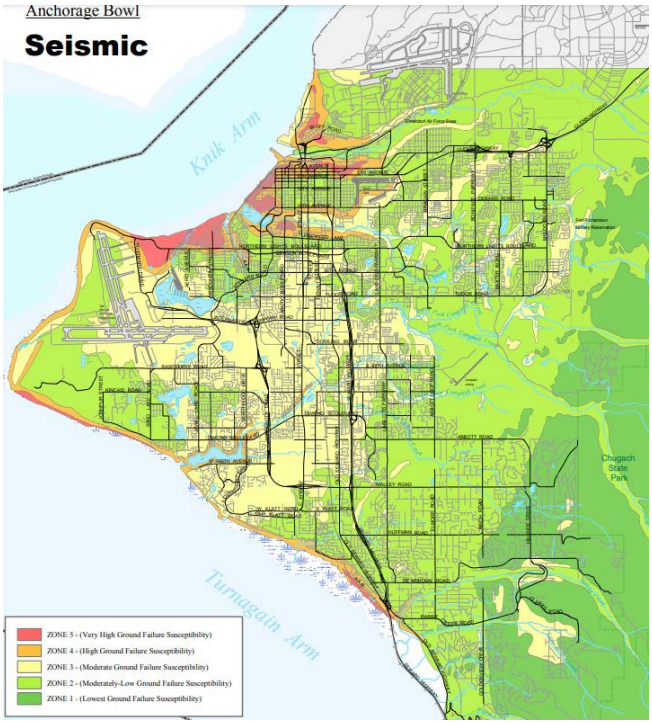
Land Use	# of Parcels	Taxable Value (Land)	Taxable Value (Buildings)	Total
Residential	88,179	9,167,565,472	19,136,201,460	28,303,766,932
Commercial	9,860	5,444,977,037	9,619,693,300	15,064,670,337

Source: MOA GIS, 2021

Earthquakes have a higher potential for injuries and fatalities than many of the other hazards in the MOA. While everyone in the MOA could be impacted by an earthquake, some populations, such as those living in poorly constructed housing may be more vulnerable than other populations. People could be impacted by the loss of utilities and business closures. The MOA is also likely to experience a decrease in tourism.

While the entire Municipality is at risk, communities within the jurisdiction have additional risks that impact the vulnerability to earthquakes. Factors that affect these areas are seismic zones. Map 4.1 Anchorage Seismic Zones represents a map of the variations in hazards.

Map 4.1 Seismic Zones



Source: MOA GIS, 2016

Earthquake Risk Assessment Overview

In 2017 FEMA performed an earthquake risk assessment using Hazus for a Municipality of Anchorage Risk Report. The assessment used a Shake Map created for the M7.1 Border Ranges Scenario.

The team completed all three earthquake risk assessments using local parcel data from the Municipality of Anchorage and the Shake Map as shown in Maps 4.2.

For the study, the team incorporated individual parcel data from the Municipality of Anchorage into Hazus to allow losses to be reported at the parcel level. The team incorporated only properties with buildings (improvements) into the analysis; therefore, the team did not assess impacts to vacant land. The building loss from earthquake assessment is Table 4.2 and displayed in Maps 4,5, and 6.

Table 4.2 Hazus Earthquake Results for M7.1 in the Municipality of Anchorage

COMMUNITY NAME		TOTAL ESTIMATED VALUE (BUILDINGS AND CONTENTS IN DOLLARS)	TOTAL NUMBER OF BUILDINGS	BORDER RANGES M7.1 SCENARIO	
				TOTAL DOLLAR LOSS	LOSS RATIO
Municipality of Anchorage	Anchorage	$57.5B	71,430	$616.5M	1.07%
	Chugiak	$1.7B	2,896	$86.1M	4.96%
	Eagle River	$4.4B	9,038	$222.4M	4.59%
	Girdwood	$513.7M	1,388	$424,586	0.08%
	Indian	$69.0M	130	$140,384	0.20%

Source: FEMA Municipality of Anchorage Risk Report

Building and content values in the Municipality of Anchorage total $65 billion and are highest in Anchorage ($57 billion). Eagle River ($4 billion) and Chugiak ($1 billion) have the second and third highest total building and content values.

Losses estimated from the M7.1 Border Ranges Scenario were high across all communities. The team estimated total building and content dollar loss at close to $951 million, with a municipality-wide loss ratio of 1.44 percent. The team projected that Chugiak (4.96 percent), Chugach State Park (4.67 percent), and Eagle River (4.59 percent) will have the highest loss ratios. The largest total loss values are projected for Anchorage ($616 million) and Eagle River ($222 million).

Essential Facilities

The project team extracted essential facilities identified by the Municipality of Anchorage from the building analysis as shown in Table 4.3.

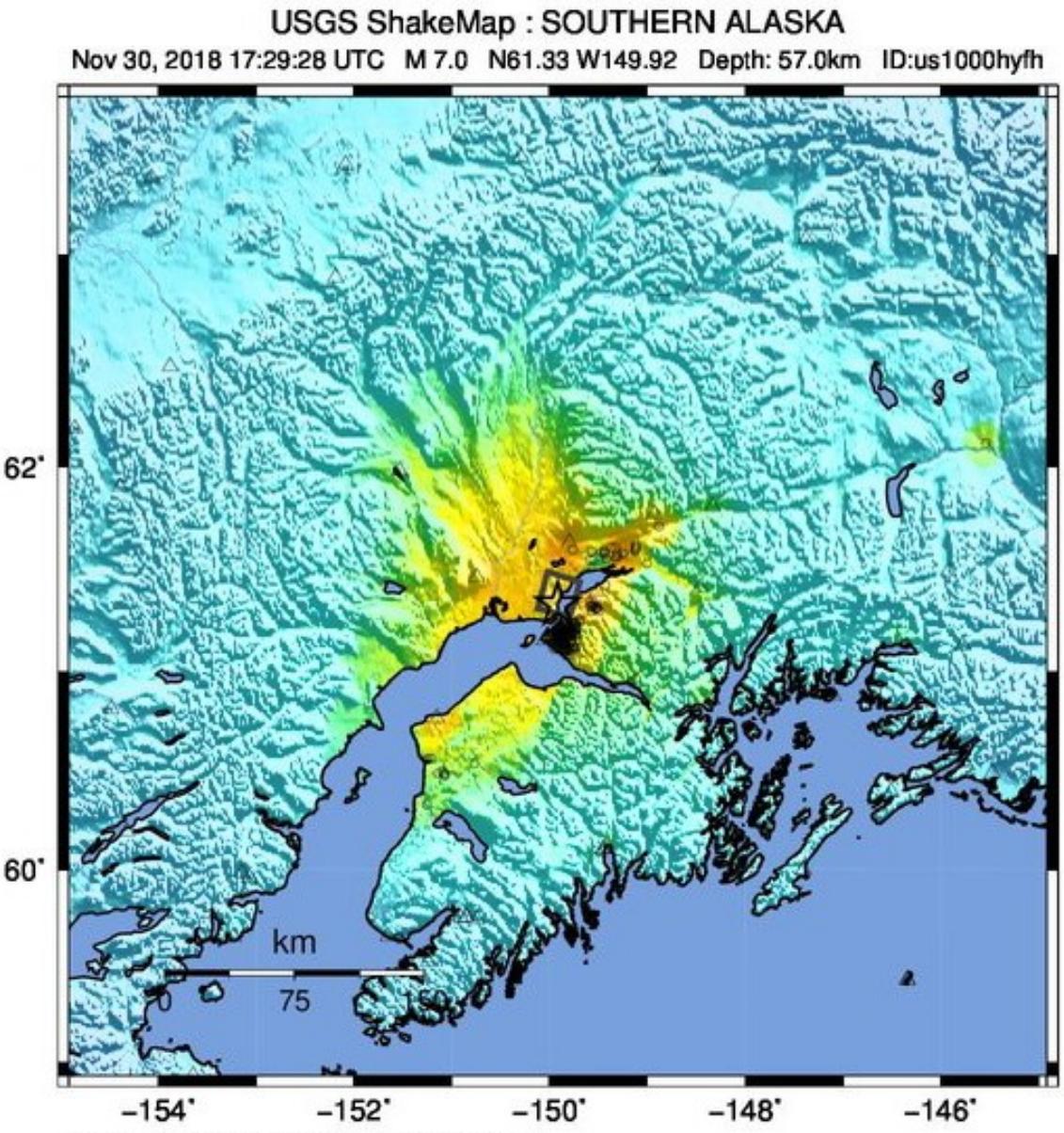
Table 4.3: Essential Facility Damage due to a M7.1 Border Ranges Scenario in the Municipality of Anchorage

ESSENTIAL FACILITY	TOTAL FACILITIES (HAZUS OUTPUT AVAILABLE)	TOTAL FACILITIES VALUE (BUILDING AND CONTENTS)	FACILITIES WITH 5% LOSS RATIO OR HIGHER	PERCENT FACILITIES WITH 5% LOSS RATIO OR HIGHER	TOTAL LOSS	LOSS RATIO
EOC	1	$68.7M	0	0.00%	$2.0M	2.85%
FIRE	19	$374.2M	4	21.05%	$6.3M	1.68%
HEALTH CARE	7	$2.2B	0	0.00%	$42.6M	1.98%
POLICE	2	$56.8M	1	50.00%	$1.6M	2.81%
SCHOOL	91	$3.9B	5	5.49%	$63.6M	1.64%
TOTAL	**120**	**$6.5B**	**10**	**8.33%**	**$116.0M**	**1.78%**

Source: FEMA Municipality of Anchorage Risk Report

Of the essential facilities with a Hazus earthquake output, the project team found that the M7.1 Border Ranges Scenario has the highest total loss at $115 million (also displayed in Map 4.4). This would account for nearly 1.78 percent of defined facilities within the Municipality of Anchorage. For this scenario, no Emergency Operation Centers would experience a loss ratio of 5 percent or higher, allowing emergency services to be maintained and monitored during an estimated earthquake scenario. It was also estimated that 10 facilities with a 5 percent or higher loss ratio. The facilities are schools (five buildings), fire (four buildings), and police (one building). The projection is that schools would have the highest total loss values of all defined facilities.

Map 4.2 Shake Map of November 30, 2018 Earthquake

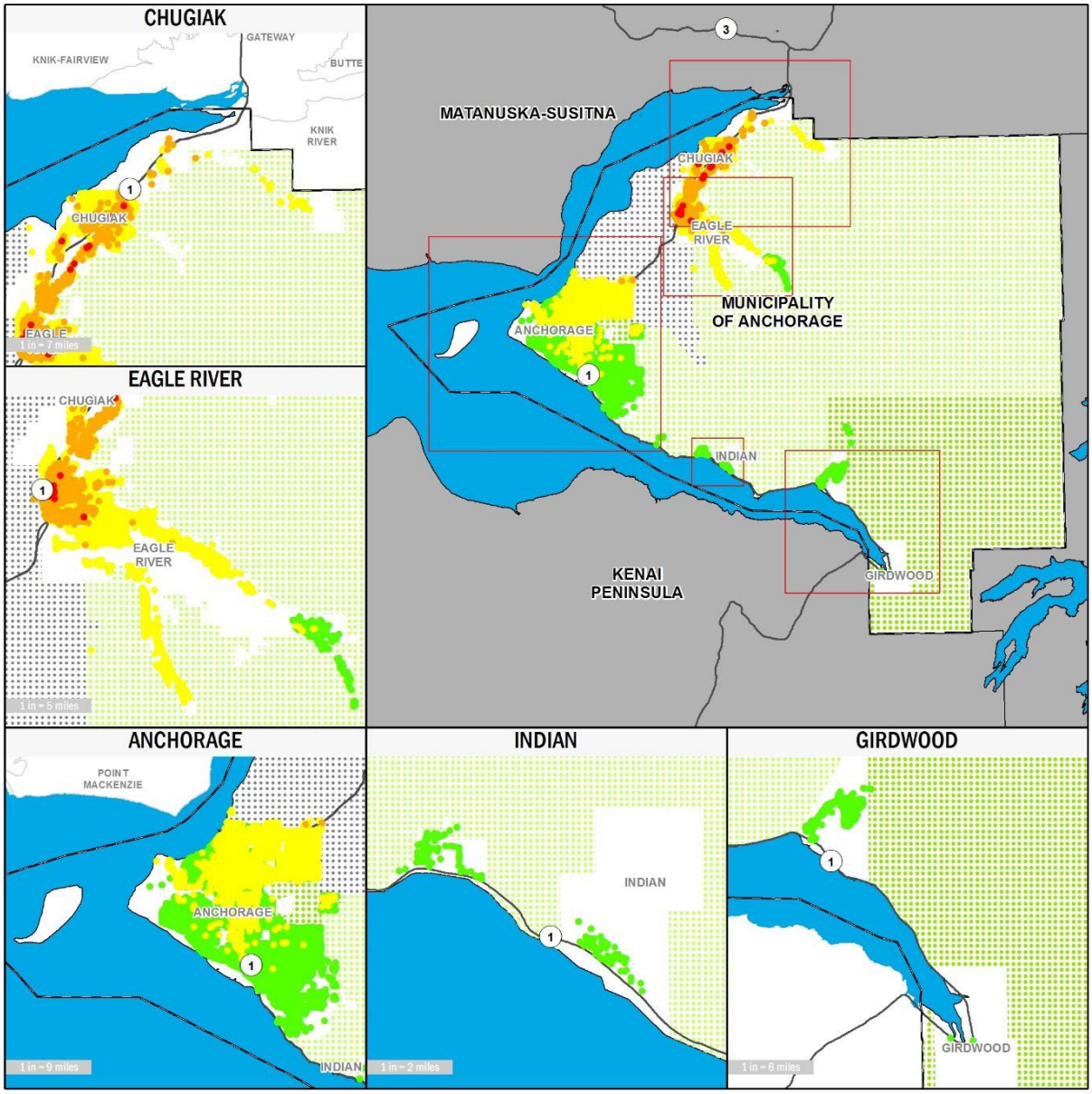


PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	Moderate	Mod./Heavy	Heavy	Very Heavy
PEAK ACC.(%g)	<0.05	0.3	2.8	6.2	12	22	40	75	>139
PEAK VEL.(cm/s)	*<0.02*	*0.1*	*1.4*	*4.7*	*9.6*	*20*	*41*	*86*	*>178*
INSTRUMENTAL INTENSITY	I	II–III	IV	V	VI	VII	VIII	IX	X+

Scale based upon Worden et al. (2012)

Map 4.3 Border Range Scenario - Damage Reference as Loss Ratio in the Municipality of Anchorage

BUILDING DAMAGE - M7.1 EVENT
EARTHQUAKE DAMAGE



MAP SYMBOLOGY

EARTHQUAKE DAMAGE*
- LOW DAMAGE PROBABILITY
- LOW-MID DAMAGE PROBABILITY
- MID-HIGH DAMAGE PROBABILITY
- HIGH DAMAGE PROBABILITY

*LOSS RATIO
0-1.0% LOW | 1.0-5.0% MID-LOW
5.0%-10.0% MID-HIGH | +10.0% HIGH

BASEMAP LAYERS
- PROJECT AREA BOUNDARY
- MILITARY AREA
- FEDERAL LAND
- STATE LAND
- MAJOR ROAD

ABOUT

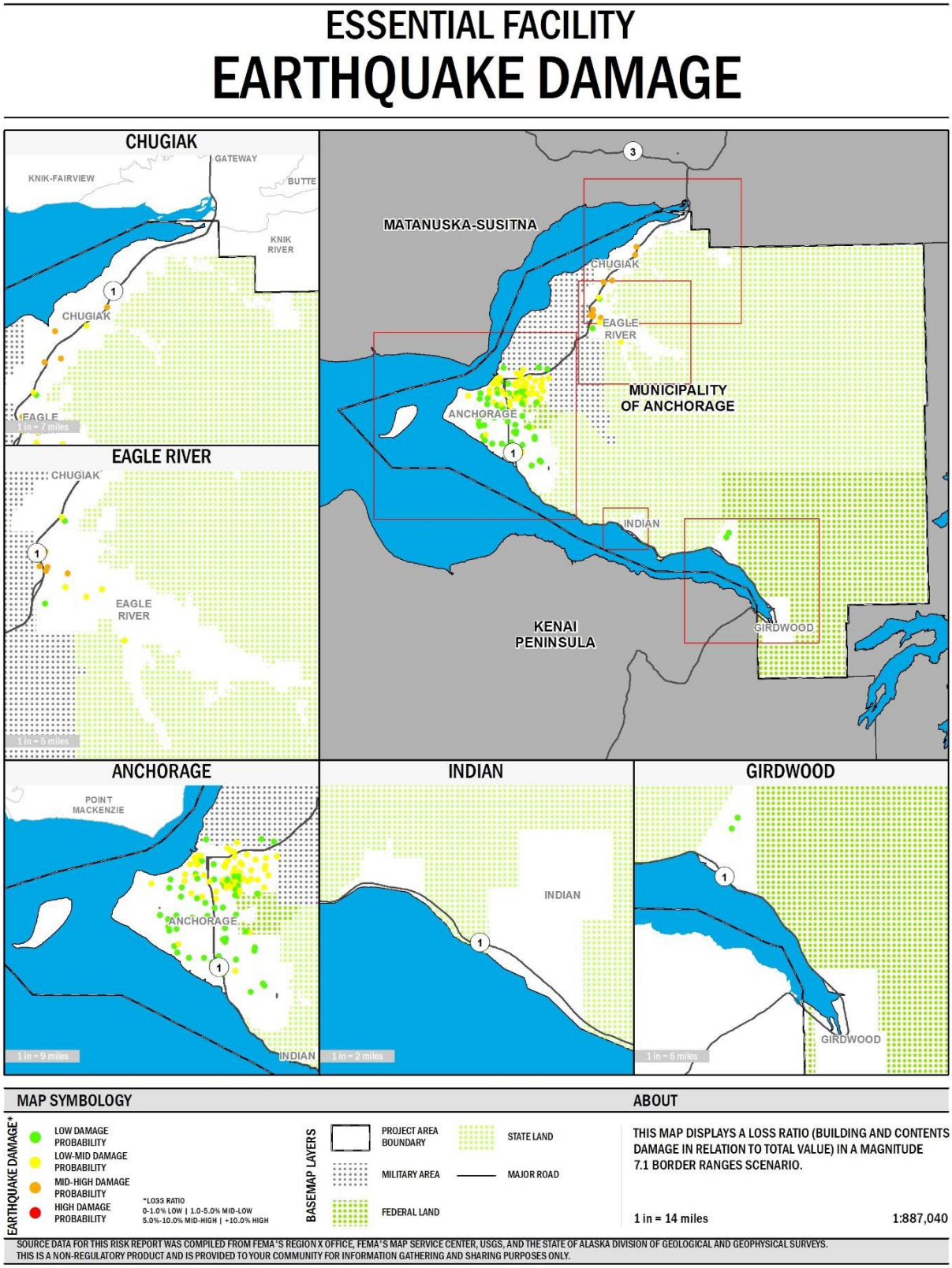
THIS MAP DISPLAYS A LOSS RATIO (BUILDING AND CONTENTS DAMAGE IN RELATION TO TOTAL VALUE) IN A MAGNITUDE 7.1 BORDER RANGES EARTHQUAKE SCENARIO.

1 in = 14 miles

1:887,040

SOURCE DATA FOR THIS RISK REPORT WAS COMPILED FROM FEMA'S REGION X OFFICE, FEMA'S MAP SERVICE CENTER, USGS, AND THE STATE OF ALASKA DIVISION OF GEOLOGICAL AND GEOPHYSICAL SURVEYS.
THIS IS A NON-REGULATORY PRODUCT AND IS PROVIDED TO YOUR COMMUNITY FOR INFORMATION GATHERING AND SHARING PURPOSES ONLY.

Map 4.4 Border Range Scenario - Damage Reference as Loss Ratio in the Municipality of Anchorage to Essential Facilities



Transportation and Utility Assessment

HAZUS also provided an analysis on transportation and utility systems. Transportation systems include highways, railways, light rail, buses, ports, ferries, and airports. Utility systems include potable water, wastewater, natural gas, crude and refined oil, electric power, and communication. The project team took the transportation and utility information from the original HAZUS database. *No local updates were applied, so the number of facilities could vary greatly from what actually exists.* Table 4.4 provides an overview of potential damage to transportation systems in the event of an M7.1 earthquake, summarized at the Municipality level.

Table 4.4 Transportation System Impacts for M7.1 Border Ranges Scenario in the Municipality of Anchorage

TRANSPORTATION SYSTEM	COMPONENT	LOCATIONS/ SEGMENTS	MODERATE DAMAGE OR GREATER	FUNCTIONALITY		INVENTORY VALUE	ECONOMIC LOSS	LOSS RATIO
				After Day 1	After Day 7			
Highway	Segments	23	0	23	23	$476.5M	---	---
	Bridges	99	21	86	90	$2.5B	$207.5M	8.43%
	Tunnels	2	0	2	2	$58.1M	---	---
Railway	Segments	282	0	282	282	$181.2M	---	---
	Bridges	4	0	4	4	$1.1M	---	---
	Facilities	11	0	11	11	$29.5M	$6.7M	22.68%
Light Rail	Segments	0	0	0	0	---	---	---
	Facilities	0	0	0	0	---	---	---
	Facilities	0	0	0	0	---	---	---
Bus	Facilities	1	0	1	1	$1.3M	$300,000	23.08%
Ferry	Facilities	0	0	0	0	---	---	---
Port	Facilities	8	0	8	8	$21.5M	$4.9M	22.60%
Airport	Runways	19	0	19	19	$726.3M	---	---
	Facilities	14	2	13	14	$93.8M	$19.8M	21.11%
TOTAL		**463**	**23**	**449**	**4**	**$4.1B**	**$239.1M**	**5.91%**

Source: FEMA Municipality of Anchorage Risk Report

4.1 2 WILDFIRES

Wildfires are defined as fires that rage out of control in the wilderness, like a forest or countryside. Wildfires are common in wildland settings, where the initiation may often begin unnoticed, promoted by outside influences such as lightning or a human-caused disturbance. These hazard events can occur at any time throughout the year but have higher potential during periods of drought or little rainfall. High winds can also contribute to the spreading of fire. Wildfires spread quickly, igniting brush, trees, and homes.

The MOA's location in the boreal forest makes wildfires (sometimes called a wildland urban interface fire) a concern. Fuel, weather, and topography influence wildland fire behavior. The amount of fuel determines how much energy the fire releases, how quickly the fire spreads, and how much effort is needed to contain the fire. The primary fuels in wildland fires are living and dead vegetation. Weather is the most variable and uncontrollable factor in wildland fire fighting. Weather includes temperature, relative humidity, wind, and precipitation. High temperatures and low humidity encourage fire activity, while low temperatures and high humidity help retard fire behavior. Wind dramatically affects fire behavior and is a critical factor in the spread and control of the fire. Topography directs the movement of air, which can also affect fire behavior. When the terrain funnels air, as in a canyon, it can result in a faster-spreading fire.

For the purposes of this plan, a wildfire is a fire that burns within the line, area, or zone where structures and other human development meet or intermingle withundeveloped wildland or vegetative fuels.

The creation and maintenance of the fire requires the interaction of heat, fuel, and oxygen. This is often referred to as the fire triangle.

Fire Behavior

Fuel, weather, and topography influence wildland fire behavior. Wildland fire behavior can be erratic and extreme, causing fire whirls and firestorms that can endanger the lives of firefighters trying to suppress the blaze. The danger increases when the fire involves developed areas with structures, property and populations. The additional fuel load, high value property, life safety risk, and theneed for simultaneous evacuation and suppression add significant wildfires firefighting challenges.

Figure 3.5 The Fire Triangle. Image from Northern & Intermountain Regions of the U.S.



Fuel [6]

Fuel determines how much energy the fire releases, how quickly the fire spreads, and how much effort is needed to contain the fire. The primary fuels in wildland fires are living and dead vegetation. Fuels differ in how readily they ignite and how hot or long they burn. This depends on the following characteristics:

- Moisture content
- Size and shape
- Fuel loading
- Horizontal continuity of fuels
- Vertical arrangement of fuels

Weather

Weather is the most variable and uncontrollable factor in wildland fire fighting. Weather includes temperature, relative humidity, wind, and precipitation. High temperatures and low humidity encourage fire activity, while low temperatures and high humidity help retard fire behavior. Wind dramatically effects fire behavior and is a critical factor in fire spread and control.

Topography

Topography directs the movement of air, which can also affect fire behavior. When the terrain funnels air, as in a canyon, it can lead to faster spreading. Fire can also travel up-slope quicker than it goes down.
Burning material can roll down the slope and ignite fires below. Certain areas in the MOA with glaciers, including the Eagle River and Eklutna Valleys, may experience local glacial wind effects dramatically influencing fire behavior.

Slope orientation also influences fire behavior. Forests on southern or southwestern slopes (those exposed to the sun) generally have lower humidity and higher temperatures than those on northern or northeast slopes.
Consequently, fire hazard is often higher on south- and southwest-facing hills.

According to the AFD, the factors contributing to Anchorage's wildfire risk include:

- Mixed hardwood and conifer forests that burn readily in high fire danger conditions. White spruce trees have persistent branches that contribute to ladder fuels. Black spruce trees have a very low moisture content that allows them to burn easily when ambient weather conditions provide for low relative humidity, high temperatures, and dry duff layers in the soil.
- Residential and rural neighborhoods exist throughout forested stands that have been affected by the spruce bark beetle. In the MOA, this area extends over 85,000 acres. Dead trees resulting from beetle attacks contribute to forest fuel accumulations that create high risk for wildfire.
- Mutual aid resources to help the AFD may take an hour or more to arrive on site. Suppression resources from the SOA Division of Forestry must travel to Anchorage from Palmer and other locations outside the MOA.
- On the south Anchorage Hillside, Eagle River Valley, South Fork, and other sites around the MOA, there are limited water resources to help fight a wildland fire.
- Many neighborhoods in the MOA have limited ingress and egress routes for suppression apparatus to enter and for residents to evacuate.
- The hilly topography throughout the area contributes to increased rate of fire spread. Where the Miller's Reach Fire of 1996 spread across mostly flat terrain and still burned more than 400 structures, a wildfire in South Anchorage would spread even faster because fire spread rates increase with slope.
- The spring fire season is a dry time in Southcentral Alaska. Dry foliage on trees and dead bluejoint grass burn readily soon after snow melts

[6] Adapted from Eli, 2003 and wildlandfire.com

Location

The entire MOA has the potential for wildfires. The AFD has identified a 345,309- acre study area for wildfire exposure.
Approximately 17,088 acres of this study area are exposed to hazardous wildfire conditions (MOA, 2010b). The exact location of the wildfire hazard changes because it depends on a combination of factors, including availability of fuels, availability of ignition sources, and weather. Because of the changing conditions, the AFD has developed an Anchorage Fire Exposure Model to calculate wildfire exposure. For current information on wildfire exposure, please contact the Wildfire Mitigation Division of the AFD.

The AFD Wildfire Home Assessment
The AFD provides home assessments to provide homeowners with specific recommendations for vegetation management and home maintenance activities to reduce a home's potential to ignite during a wildfire. The AFD is also able to provide financial assistance to remove dead, beetle killed spruce trees and densely growing coniferous trees.

In addition, AFD has been conducting neighborhood wildfire assessments. These assessments are considered works in progress and are re-evaluated throughout the fire season. The assessments contain an evaluation of the hazard; potential hazards/complications, such as power lines; potential staging areas for equipment; water sources, potential safety zones (to wait out passing fire); and potential evacuation sites. They exist for the following areas:

- Tudor Road to Abbott Road, including Far North Bicentennial Park
- Eagle River
- Hiland Road, South Fork
- DeArmoun Road to Potter Creek Heights
- Chugiak

Individual neighborhood assessments are available through the AFD.

Likelihood of Occurrence - Probability - Medium

The high fire danger months are typically May through August in the MOA; however, wildfires can occur in other months. Wildfires are more likely to occur during drought or low-precipitation times and are less likely to occur during high-precipitation times and when snow is on the ground. See Hazard Rating Matrix, Table 1.2.

Wildfires in the MOA are more likely to be caused by humans than by other sources. As development increases in areas with high wildfire potential, the chances of wildfire also increase. The AFD is taking measures to reduce the risk of fires by controlling the amount of fuel available. The AFD does this through controlled burns, homeowner education, and the development of firebreaks.

Historic Events

No declared wildfire disasters have been identified to date in the MOA. However, the potential exists. Every year, the AFD puts out dozens of fires that could be disastrous if not contained early. Between 2010 and 2015, the number of wildfires per year in the MOA ranged from 58 fires in 2012 to 102 fires in 2011. Between 2007 and 2015, the MOA had 773 wildfire calls that burned approximately 152 acres (Table 4.2).

Table 4.2 Wildfires in the MOA, 2010-2015

Cause	Number	Percent	Acres
Undetermined	354	45.80%	72.11
Misuse of Fire/Unintentional	98	12.68%	15.96
Intentional/Incendiary	86	11.13%	14.31
Open/Outdoor Fire	77	9.96%	23.61
Smoking	73	9.44%	7.93
Debris/Vegetation Fire	24	3.10%	3.85
Other	21	2.72%	4.81
Act of Nature/Natural	20	2.59%	2.64
Equipment	19	2.46%	6.53
Structure/Exposure	1	0.13%	.1
Totals	**773**	**100%**	**151.85**

Other Wildfire Events

O'Malley/Hillside Fire, 1973

In May 1973, a small brush fire at a private home, fanned by 40 mile per hour (mph) winds, burned out of control in the foothills of the Chugach range. The fire threatened 25 homes and forced several families to evacuate. By the time firefighters contained the blaze, 300 acres of brush and timber were destroyed.

Dowling Road Fire, 2003

A wildfire near the east end of Dowling Road was ignited by a homeless person's fire. This fire burned approximately 2.5 acres.

Otter Lake Fire, 2006

The Otter Lake Fire began in an approximately five-mile area near the ARRC tracks on Fort Richardson. The fire quickly expanded to approximately 50 acres before it was extinguished.

Piper Fire, 2008

On July 2, 2008, a wildfire burned 10 acres of Municipal park land. This fire was ignited by a homeless person. The AFD was able to extinguish the fire before it reached nearby subdivisions.

Eklutna Lake fires 1999, 2010

There have been two wildfires over 100 acres in the MOA's Eklutna Lake Valley in the last twenty years. In 1999 a landowner ignited a fire to clear brush on a windy day and the fire escaped control and burned over 200 acres. The fire threatened homes and potentially the

MOA's Eklutna Lake water treatment facility, 2010
In May of 2010 there was a wildfire that burnedover 1000 acres at the far end of the lake that threatened Eklutna State Park developments and homes near the lake.

McHugh Creek Fire, 2016
In July 2016 this fire burned approximately 800 acres of steep and remoteterrain in the MOA. The fire affected travel on the Seward Highway. It was reported the fire was started by an unextinguished campfire.

Martin Luther King Jr Fire, 2019
In July 2019, the MLK fire near Campbell tract in Anchorage burned 25 acres and was said to be human caused.

Vulnerability

In 2001, Anchorage was declared a community-at-risk for wildfire by the U.S. Department of Agriculture (USDA) Forest Service (USFS). According to the AFD, a wildfire could occur anywhere in the MOA, so the entire MOA is represented in Table 4.3. Only a portion of these properties are likely to be affected by a given event. The number and location of the impacted parcels depend on the size and location of the wildfire event.

Wildfires have the potential to destroy property and vegetation. Without vegetation, these areas may experience soil erosion which can have an impact on water quality. Wildfires may reduce the amount of animal habitat. Wildfires may also cause injuries or loss of life. Fire response systems are well prepared to deal with wildfires so large numbers of injuries or fatalities are not expected. Additional research would be required to identify the number of people who could be injured or killed as the result of a wildfire.

Table 4.3 Wildfire Vulnerability

Land Use	# of Parcels	Taxable Value e(Land)	Taxable Value (Buildings)	Total
Residential	75024	8526159300	17756156200	26282315500
Commercial	4065	2568664400	4512337400	7081001800

Source: MOA GIS, 2016

More detailed information has not been calculated because the information will change depending on current conditions. For the latest vulnerability information, please contact the Wildfire Mitigation division of the AFD.

4.1.3 EXTREME WEATHER

Extreme weather is a broad category that includes heavy snow, extreme cold, ice storms (freezing rain), high wind, thunder & lightning, hail, coastal storms, and storm surge. High winds, ice storms, and heavy snow are the most likely types of extreme weather in the MOA.

Heavy Snow

Heavy snow is generally considered to be more than sixinches of accumulation in less than 12 hours. (Albanese,2010b). Heavy snow can have a significant impact on an area.

Until the snow can be removed, airports and roadwaysexperience delay, or are closed completely, stopping the flow of traffic, supplies and disrupting emergency and medical services. Heavy snow loads can damage light aircraft and sink small boats. It can also cause roofsto collapse and knock down trees and power lines.

Heavy snowfalls can cause secondary hazards. In the mountains, heavy snow can lead to avalanches. A quickthaw can cause flooding, especially along small streamsand in urban areas. The cost of snow removal, repairingdamages, and the loss of business can have severe economic impacts.

Snow Terminology

A heavy snow is considered to be 6 or more inches of snow in 12 hours. The NWS criteria for a heavy snow advisory is 6 to 11 inches in 12 hours or 12 to 23 inches in 24 hours. A heavy snow warning may be issues for 12 or more inches of snow in 12 hours or 24 or more inches of snow in 24 hours.

Snow Squalls are periods of moderate to heavy snowfall, intense, but of limited duration, accompanied by strong, gusty surface winds, and possibly lightning.

A Snow Shower is a short duration of moderate snowfall.

Snow Flurries are an intermittent light snowfall of short duration with no measurable accumulation.

Blowing Snow is wind-driven snow that reduces surface visibility. Blowing snow can be falling snow or snow that already has accumulated but is picked up and blown by strong winds.

Drifting Snow is an uneven distribution of snowfall and snow depth caused by strong surface winds. Drifting snow may occur during or after a snowfall.

Location

The entire Municipality can get heavy snow but Girdwood tends to receive more snowthan other areas.

In general, the location of heavy snowfall dependson the weather system involved. The typical storm is a low-pressure system originating in Prince William Sound that moves in from the East. This results in heavier snow on the hillside, and less as you get further from the mountains. When the storm is out ofthe south, the snowfall is heavier in West Anchorage (Vonderheide, 2003). Occasionally, air comes up Cook Inlet and hits the mountains. This may lead to heavy snow on the upper hillside and less in the bowl area (Vonderheide, 2003). Blizzards are rare events in the MOA but could occur along the Turnagain Arm. See Figure 4.1 for the average annual snowfall pattern in MOA.

Snowfall Records

Normal snowfall – 74.5'
Top 5 Highest Winter Snowfalls

134.5…….2011-2012
132.6…….1954-1955
128.8…….1955-1956
121.5…….1994-1995
113.9…….2003-2004

Top 5 Lowest Winter Snowfall

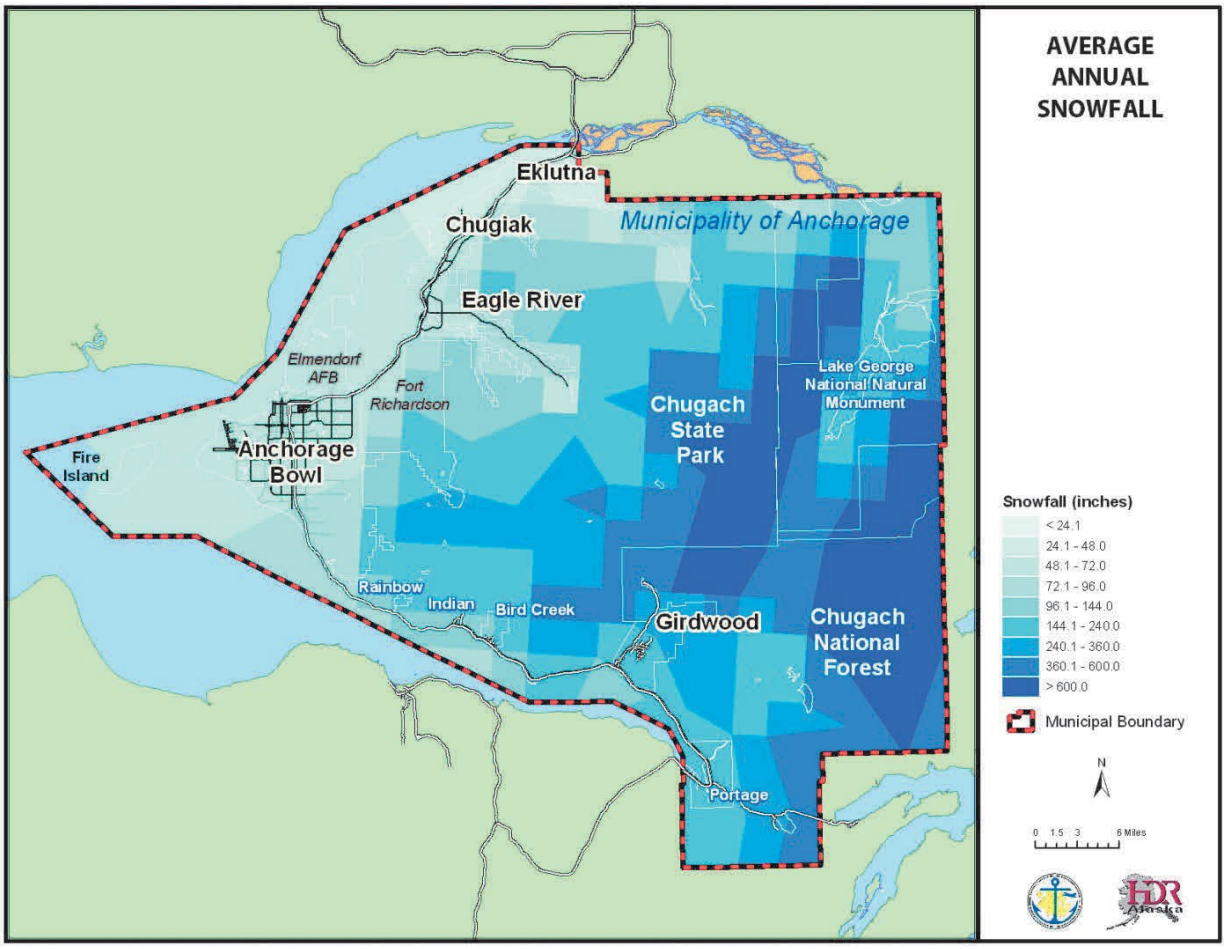
25.1…….2014-2015
30.4…….1957-1958
32.9…….1980-1981
36.8…….2002-2003
38.3…….2015-2016
38.5…….1960-1961

Source: National Weather Service Anchorage Forecast Office's Climate Records List, (1917 – current) Available at https://www.weather.gov/afc/Anchoragerecords

Likelihood of Occurrence

While snow falls frequently in Anchorage during the winter, most snowfalls are not usually heavy. Anchorage tends to experience one or two heavy snowfalls each winter (Albanese, 2010). However, these tend not to result in disaster declarations. The occurrence of heavy snowfall events depends on the weather conditions.

Figure 4.1 Average Annual Snowfall



Historic Events

2002 Heavy Snow Fall

Record heavy snow occurred in MOA on March 17, 2002 when two to three feet of snow fell in less than 24 hours. TSAIA recorded a total of 28.7 inches while an observer near Lake Hood measured over 33 inches. The Municipality was essentially shut down because of the accumulating snow. Fortunately, the storm occurred on a Sunday morning when fewer businesses are open. The following day, both military bases, both universities, and many businesses remained closed, while Anchorage schools remained closed for two days. It took four days for snowplows to reach all areas of the city.

Other Snow Events

On March 20, 2001, 8-12 inches of snow fell in the Anchorage Bowl-Eagle River area.

Vulnerability

As a heavy snowfall could affect the entire Municipality, the entire MOA is represented in Table 4.4. Heavy snowfall can also damage infrastructure and critical facilities. Heavy snowfalls make transportation difficult, especially by road, and result in more money spent on snowplow services. Transportation may be distributed more in steeper areas such as the

Hillside and parts of Eagle River.High numbers of injuries and fatalities are not expected with a heavy snow event. Heavy snow can have a greater impact on people who need access to medical services, emergency services, pedestrians, and people who rely on public transportation. The cost of fuel to heat homes during times of heavy snow can be a financial burden on populations with low or fixed incomes. According to the 2019 American Community Survey 5-Year Estimates, the MOA had approximately 16,073 households with a household income less than $25,000. Homeless populations are also vulnerable. According to the January 2021 single-night homeless count, there were 1,319 homeless people in Anchorage (Anchorage Coalition Data) on 1/26/21. Of those counted 1,167 were considered sheltered and 152 were outside. Heavy snows may also result in school and business closures which may result in some individuals having aloss of income. Heavy snows may also result in school and business closures, which may resultin some individuals having a loss of income.

Table 4.4 Heavy Snow Vulnerability

Land Use	# of Parcels	Taxable Value (Land)	Taxable Value (Buildings)	Total
Residential	75024	8526159300	17756156200	26282315500
Commercial	4065	2568664400	4512337400	7081001800
Industrial	2597	1494944600	1907337000	3402281600
Institutional	1035	1215398400	1554183700	2769582100
Open Space	44	24995700	503000	25498700
Transportation	664	0	0	0
Other	562	377462100	36697800	414159900
Vacant	228	0	0	0
Total	84219	14207624500	25767215100	39974839600

Source: MOA GIS, 2016

Heavy Rain

There is no universal definition of heavy rain. Generally, when rainfall is sufficient to cause localized or widespread flooding, it is considered heavy. The NWS is most concerned about potential flooding with 10% of an area's annual rainfall occurs in one day (Albanese, 2010b).

Heavy rains are sometimes associated with a weather system called the "Pineapple Express". This weather system originates in Hawaii and usually brings heavy rain with it. This rain can lead to flooding. The "Pineapple Express" may also melt snow contributing to flooding.

Location

Precipitation **Records**

Normal Precipitation: 16.08 inches

Highest Annual Precipitation: 27.55 inches (1989)

Lowest Annual Precipitation: 8.08 inches (1969)

Longest Consecutive Days with Measurable Precipitation: 17 days (September 12 – 28, 1979)

Consecutive Days Without Precipitation:

47 (January 6 – February 21, 1939)

Source: National Weather Service Anchorage Forecast Office's Climate Records List, (1917 – current)

The Girdwood area receives the most rainfall in the MOA. See Figure 4.2 for the average annual rainfall pattern. Rainfall also varies with time of year with most precipitation occurring in late summer and fall. Table 4.5 summarizes precipitation in the MOA.

Figure 4.2 Average Annual Rainfall

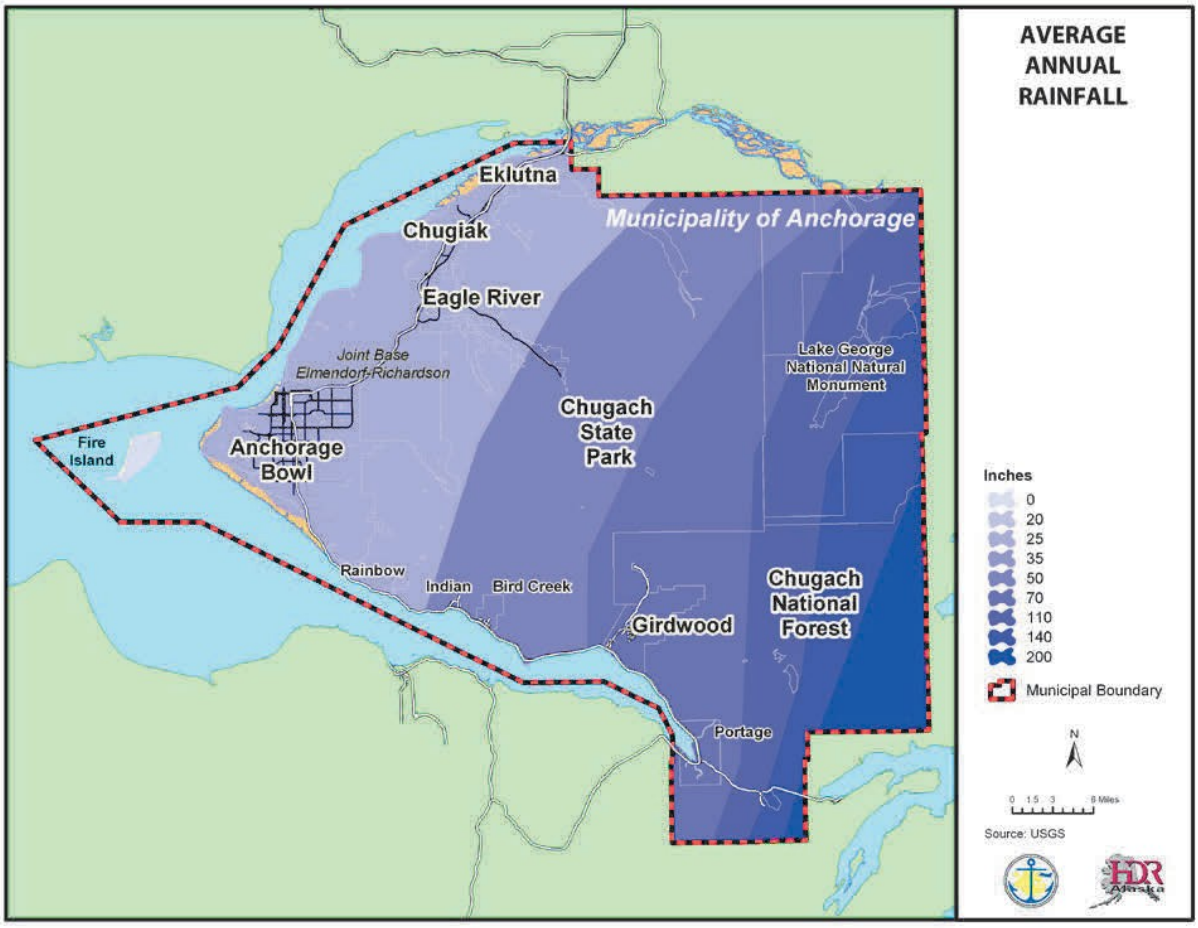


Table 4.5 Precipitation in the MOA

	(a)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
PRECIPITATION (in.)													
Water Equivalent													
-Normal		0.79	0.7	0.69	0.67	0.73	1.14	1.71	2.44	2.70	2.03	1.11	1.12
-Maximum Monthly	42	2.71	3.07	2.76	1.91	1.93	3.40	4.44	9.77	6.64	4.11	2.84	2.67
-Year		1987	1955	1979	1977	1989	1962	1958	1989	1990	1986	1976	1955
-Minimum Monthly	42	0.02	0.07	T	T	0.02	0.17	0.42	0.33	0.76	0.35	0.08	0.09
-Year		1982	1958	1983	1969	1957	1993	1.72	1969	1973	1960	1985	1995
-Maximum in 24 hrs.	42	1.19	1.16	1.25	0.78	1.18	1.84	2.06	4.12	1.92	1.60	1.66	1.62
-Year		1961	1956	1986	1989	1980	1962	1956	1989	1961	1986	1964	1955
Snow, Ice Pellets, Hail													
-Maximum Monthly	42	27.5	48.5	31.0	27.6	3.9	0.0	0.0	0.0	4.6	27.1	38.8	41.6
-Year		1990	1955	1979	1963	1963				1965	1982	1994	1955
-Maximum in 24 hrs.	42	10.5	12.4	14.5	9.1	3.9	0.0	0.0	0.0	3.5	11.2	16.4	17.7
-Year		1955	1956	1959	1955	1963				1965	1991	1964	1955

Likelihood of Occurrence - Probability - High

The occurrence of heavy rain depends on various weather conditions. Low pressure over the Bearing Sea, El Nino or La Nina conditions or the direction the storm is coming from. Storms moving up Cook Inlet can cause significant precipitation in the Anchorage bowl and the Hillside area but usually have little precipitation in Girdwood. While storms coming from the Prince William Sound can cause significant precipitation from Girdwood to Portage areas but may not produce much rain in Anchorage. A warm weather rain event during the winter can cause flooding due to the snow melt, the inability of the water to infiltrate into the ground and decreased ability of the stream channels and storm drains to pass the runoff. See Hazard Rating Matrix, Table 1.2.

Historic Events

Girdwood, 2021

Between October 29 and November 1, 2021, Girdwood experienced historic rainfall. The historic rainfall event washed out Ruane Road, cutting off access to the water treatment plant in Girdwood. Loveland Road was also closed as well as Echo Ridge Drive during the flooding event. A disaster declaration was declared and approved.

Vulnerability

As a heavy rain could affect the entire Municipality, the entire MOA is represented in Table 4.6. The flooding associated with a heavy rain is typically the greatest concern. For more information, please see the flood section. High numbers of injuries and fatalities are not anticipated with a heavy rain event.

Table 4.6 Heavy Rain Vulnerability

Land Use	# of Parcels	Taxable Value (Land)	Taxable Value (Buildings)	Total
Residential	75024	8526159300	17756156200	26282315500
Commercial	4065	2568664400	4512337400	7081001800
Industrial	2597	1494944600	1907337000	3402281600
Institutional	1035	1215398400	1554183700	2769582100
Open Space	44	24995700	503000	25498700
Transportation	664	0	0	0
Other	562	377462100	36697800	414159900
Vacant	228	0	0	0
Total	84219	14207624500	25767215100	39974839600

Source: MOA GIS, 2016

Extreme Cold

What is considered an excessively cold temperature varies according to the normal climate of a region. In areas unaccustomed to winter weather, near freezing temperatures are considered "extreme cold." In Alaska, extreme cold usually involves temperatures below –40º Fahrenheit (F). Excessive cold may accompany winter storms, be left in their wake, or can occur without storm activity.

Extreme cold can also bring transportation to a halt for days or weeks at a time. Aircraft may be grounded due to extreme cold and ice fog conditions. Long cold spells can cause rivers to freeze which increases the likelihood of ice jams and ice jam related flooding. If extreme cold conditions are combined with low or no snow cover, the ground's frost depth can increase, and disturb buried utility pipes.

The greatest danger from extreme cold is to people. Prolonged exposure to the cold can cause frostbite or hypothermia and become life threatening, especially for infants and the elderly. Carbon monoxide (CO) poisonings also increase as people use supplemental heating devices.

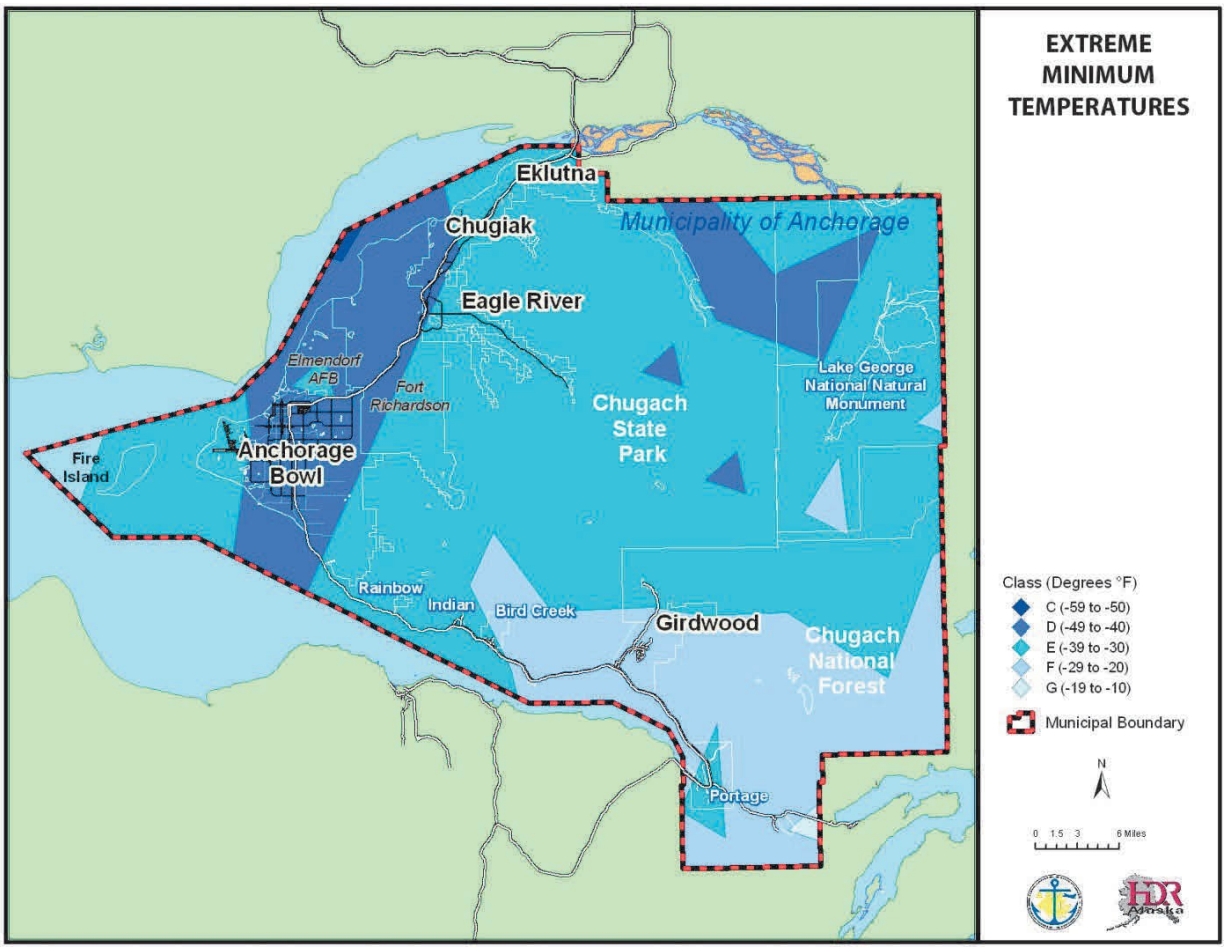
Frostbite is damage to body tissue caused by that tissue being frozen. Frostbite causes a loss of feeling and a white or pale appearance in the extremities.

Hypothermia is low body temperature. Normal body temperature is 98.6ºF. When body temperature drops to 95ºF, however, immediate medical help is needed. Hypothermia also can occur with prolonged exposure to temperatures above freezing.

Location

In MOA, the official temperature is recorded at TSAIA. Due to its close proximity to open water, the airport tends to be warmer than the rest of Anchorage. For example, east Anchorage is generally 10 to 15 degrees cooler than at the airport (Vonderheide, 2003). The Chugiak/Eagle River area tends to get the coolest temperatures in the winter. See Figure 4.3 for the extreme minimum temperatures.

Figure 4.3 Extreme Minimum Temperatures



The coldest months in Anchorage are generally December, January, and February. The temperature tends to decrease, the further inland you are. Table 4.7 summarizes the temperature in the MOA.

Table 4.7 Anchorage Climate Records

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
TEMPERATURE (Deg. F)													
Normals													
-Daily Maximum	23.1	26.6	33.9	44.5	56.0	62.8	65.4	63.5	55.1	40.5	27.8	24.8	43.7
-Daily Minimum	11.1	13.8	19.2	29.1	39.6	47.7	52.2	50.0	42.0	29.1	16.6	13.2	30.3
-Monthly	17.1	20.2	26.6	36.8	47.8	55.2	58.8	56.7	48.6	34.8	22.2	19.0	37.0
Extremes													
-Record Highest	50	48	5.1	69	77	85	84	82	73	64	54	48	85
-Year	1961	1991	1984	2005	1969	1969	2003	1968	1957	2006	2002	1992	JUN 1969
-Record Lowest	-34	-28	-24	-4	17	33	36	31	19	-5	-21	-30	-34
-Year	1975	1999	1971	1985	1964	1961	1964	1984	1992	1956	1956	1964	JAN 1975
NORMAL DEGREE DAYS													
Heating (base 65 Deg. F)	1485	1254	1192	846	533	293	194	256	494	936	1284	1426	10193
Cooling (base 65 Deg. F)	0	0	0	0	0	0	2	0	0	0	0	0	0
PRECIPITATION (Inches)													
Normals													
-Mean Precipitation	0.73	0.72	0.60	0.47	0.72	0.97	1.83	3.25	2.99	2.03	1.16	1.11	
-Snowfall	11.3	10.9	9.9	4.0	0.3	0.0	0.0	0.0	0.4	7.9	13.1	16.7	
Extremes													
-1 Day Maximum Total	1.1	1.16	1.25	1.32	0.97	1.62	2.00	2.76	1.41	1.68	1.16	1.39	2.76
-Year	1987	1956	1986	2008	1980	1962	1956	1997	2012	1952	1964	1955	1997
-Highest Total Precipitation	2.71	3.07	2.76	2.32	1.93	3.40	4.49	9.77	7.35	4.28	2.87	2.67	27.55
-Year	1987	1955	1979	2008	1989	1962	2001	1989	2004	2002	2010	1955	1989
-Lowest Total Precipitation	0.02	0.07	0.01	0.01	0.02	0.02	0.42	0.33	0.72	0.35	0.04	0.09	8.08
-Year	1974	1958	1997	1957	1955	1952	1972	1969	1998	1960	2006	1995	1969
-1-Day Maximum Snow	11.2	13.0	22.0	15.5	5.0	0.0	0.0	0.0	6.0	12.6	10.9	15.6	
-Year	2007	1996	2002	2008	2001	---	---	---	2004	1996	1964	1955	
-Highest Total Snow	29.3	52.1	31.0	30.8	6.10	0.00	0.0	0.0	6.3	28.1	38.8	41.6	133.6
-Year	2007	1996	1979	2008	2001	---	---	---	2004	1996	1994	1955	2011-2012
-Lowest Total Snow	0.5	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	1.4	25.1
-Year	1974	2003	1984	1993	---	---	---	---	---	2003	1995	1980	2014-2015

Source: Alaska Climate Research Center/National Weather Service, 2016

Likelihood of Occurrence - Probability - High

Extreme cold temperatures could happen every winter, depending on weather conditions. However, it is rare for temperatures in the MOA to be colder than -50°F (Albanese, 2010). See Hazard Rating Matrix, Table 1.2.

Historic Events

Extreme cold temperatures can be especially problematic if they are associated with low snow levels as happened in the winter of 1995-1996. The combination of these two factors resulted in the ground freezing to a greater depth than usual (more than 10 feet compared to the usual three of four feet). As utility pipes, including water and wastewater, are buried to a depth of 10 feet, some pipes froze and subsequently broke. Repairing the broken pipes was a massive undertaking as the ground had to be thawed before work could commence (Vonderheide, 2003).

Vulnerability

As extreme cold could affect the entire Municipality, the entire MOA is represented in Table 4.8. An extreme cold event is likely to result less property damage than other hazards such as an earthquake. In the MOA, typically buried pipes are most vulnerable to an extreme cold event. Homeless populations and people who have difficultly heating their homes (due to poor insulation, unable to afford heating costs, etc.) also tend to be more vulnerable. According to the 2019 American Community Survey 5-Year Estimates, the MOA had approximately 16,073 households with a household income less than $25,000. Homeless populations are also vulnerable. According to the January 2021 single-night homeless count, there were 1,319 homeless people in Anchorage (Anchorage Coalition Data on 1/26/21. Of those counted, 1,167 were considered sheltered and 152 were on the streets. Heavy snows may also result in school and business closures which may result in some individuals having a loss of income.

Table 4.8 Extreme Cold Vulnerability

Land Use	# of Parcels	Taxable Value (Land)	Taxable Value (Buildings)	Total
Residential	75024	8526159300	17756156200	26282315500
Commercial	4065	2568664400	4512337400	7081001800
Industrial	2597	1494944600	1907337000	3402281600
Institutional	1035	1215398400	1554183700	2769582100
Open Space	44	24995700	503000	25498700
Transportation	664	0	0	0
Other	562	377462100	36697800	414159900
Vacant	228	0	0	0
Total	84219	14207624500	25767215100	39974839600

Source: MOA GIS, 2016

Ice Storms

Ice storm is the term used to describe occasions when damaging accumulations of ice are expected during freezing rain situations. Ice storms result from the accumulation of freezing rain (rain that becomes super cooled and freezes upon impact with cold surfaces). Freezing rain most commonly occurs in a narrow band within a winter storm that is also producing heavy amounts of snow and sleet in other locations. Ice storms can be devastating and are often the cause of automobile accidents, power outages and personal injuries.

Glace ice, also known as black ice, which occurs when rains hits the cold ground and turns into ice, is possible in the MOA. It is responsible for multiple traffic accidents every winter.

Location

Ice storms can occur anywhere but the atmospheric conditions that can lead to ice storms occur most frequently around Cook Inlet. Freezing rains often approach from the west as storms from the Bering Sea move westward and mix with the pre-existing cold air in the MOA area.

Likelihood of Occurrence - Probability - High

The future occurrence of ice storms in the MOA depends on the weather conditions. Typically, there are a few episodes of light freezing rain each winter. The NWS will issue a freezing rain advisory which is for freezing rain up to 0.24 inches accumulation of ice. In the MOA, most events have an accumulation less than a tenth of an inch (Albanese, 2010b).
More commonly, rain will fall on ice or snowpack covered roads which result in difficult driving conditions. This can occur when there is a storm in the Bering Sea/Bristol Bay area that has ample warm air advecting over the region and is accompanied by a strong southeast Chinook wind. See Hazard Rating Matrix, Table 1.2.

Historic Events

No significant historic ice storms have been identified. In November 2010, there were several days of freezing rain that made the roads slick and resulted in school closures. There was also an ice event in the mid-1990s (Albanese, 2010).

Vulnerability

As an ice storm could affect the entire Municipality, the entire MOA is represented in Table 4.9. An ice storm is likely to result in less building and property damage than other hazards. An ice storm has the potential to damage power lines. Infrastructure, especially above ground power lines are also vulnerable to ice. Ice storms can also increase the number of traffic accidents. Large numbers of injuries and fatalities are not anticipated with an ice storm. Ice storm related power outages can affect people who rely on electricity for life-safety items such as respirators, monitoring equipment or medication that needs to be kept refrigerated.

Table 4.9 Ice Storm Vulnerability

Land Use	# of Parcels	Taxable Value e(Land)	Taxable Value (Buildings)	Total
Residential	75024	8526159300	17756156200	26282315500
Commercial	4065	2568664400	4512337400	7081001800
Industrial	2597	1494944600	1907337000	3402281600
Institutional	1035	1215398400	1554183700	2769582100
Open Space	44	24995700	503000	25498700
Transportation	664	0	0	0
Other	562	377462100	36697800	414159900
Vacant	228	0	0	0
Total	84219	14207624500	25767215100	39974839600

Source: MOA GIS, 2016

High Winds

High winds are generally considered to be winds in excess of 73 mph (Albanese, 2010b). A strong wind can be considered to be between 45 and 72 mph (Albenese, 2010b). They can lead to dangerous wind chill temperatures or combine with loose snow to produce blinding blizzard conditions. High winds have the potential to cause serious damage to a community's infrastructure, especially above ground utility lines. With early season high wind events, like

the events in September 2010 and September 2012, high winds can cause trees to be blow over and uprooted. Later in the year, when trees are free of leaves and the ground is frozen, trees are more likely to break or have limbs broken off than being uprooted (Albanese, 2010b).

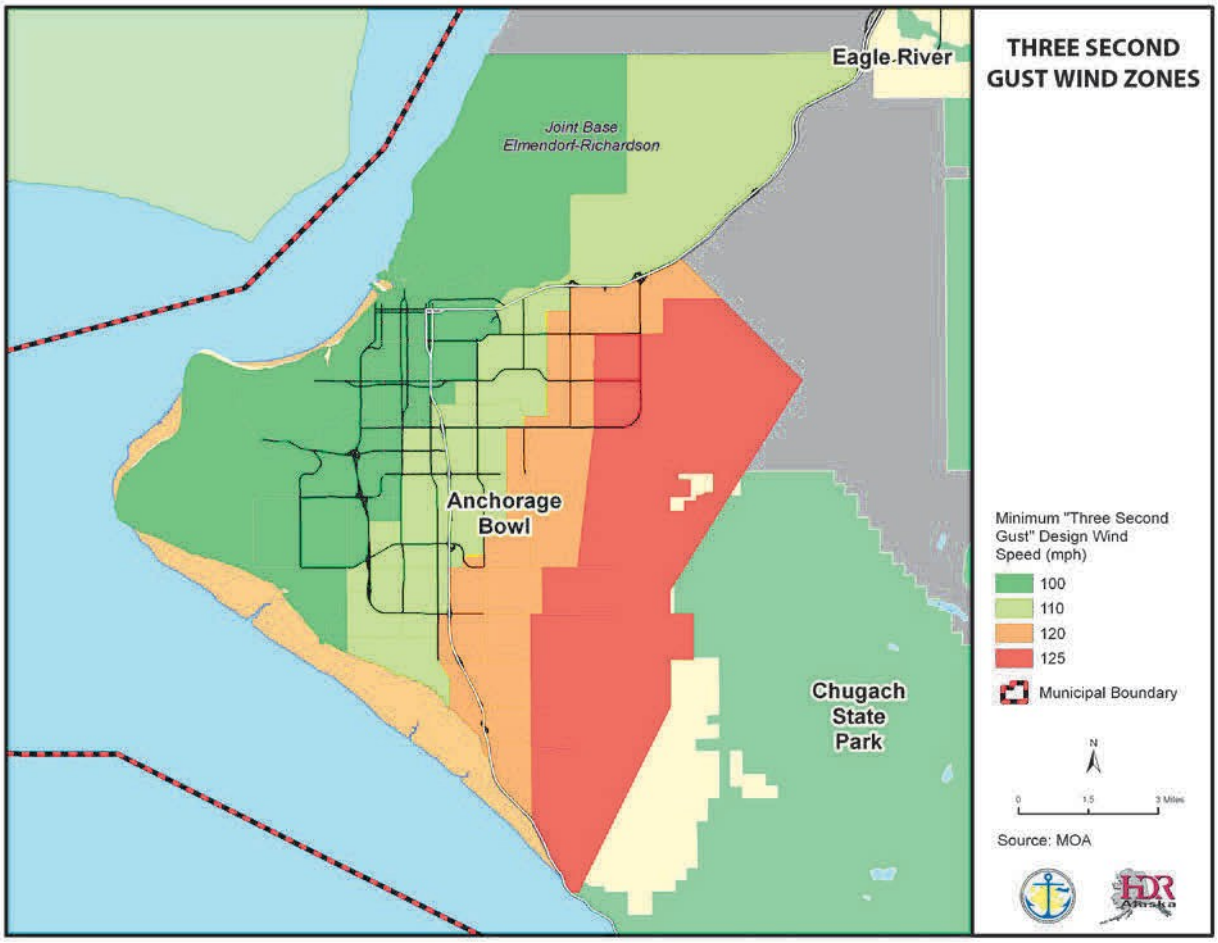
In mountainous areas, down slope windstorms created by temperature and pressure differences across the terrain can produce winds in excess of 100 mph. These windstorms can be particularly damaging as they are gusty in character and may seem to come from several directions.

Location

Typically, high wind warnings are for the Hillside and along Turnagain Arm. These areas common get high winds but the impacts are not that great until the winds are above 85 mph (Albanese, 2010b). When winds exceed 85 mph, it is not unusual for there to be damage. The damage is more widespread (especially along the Hillside and in East Anchorage), when the winds exceed 100 mph. Weaker winds (in the 50 to 60 mph range) will have more of an impact in the downtown area (Albanese, 2010b). The Port of Anchorage gantry crane operations stop at wind speeds greater than 50 miles per hour.

In the MOA, the basic wind speed, for the determination of the wind loads is determined in accordance with the Anchorage "Three Second Gust" wind zone map. This Anchorage Area-Wide Wind Speed Study noted that Anchorage gets strong winds from the southerly direction in the summer and northerly directions during the winter (RWDI, 1998).

Figure 4.4 50-Year Wind Speed



Localized high winds can also occur (see Table 4.10). The most well-known local wind is the Chugach wind which blows off the Chugach Mountains. These Chugach winds are really Chinook winds (a strong warm wind) and mostly affect the eastern side of the Anchorage Bowl. There can be winds just in the Turnagain Arm area, which affects traffic on the New Seward Highway (Vonderheide, 2003). Winds near McHugh Creek can get in the 80-90 mph range (Vonderheide, 2003). There is a Knik Valley wind, which brings warm air from Prince William Sound. The hillside area can experience a Chinook/Chugach wind. Eagle River can get winds from the Southeast. Localized winds in Bear Valley can reach 125 mph.

Table 4.10 Wind Speeds

	(a)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
WIND														
Mean Speed (mph)	42	6.4	6.9	7.0	73	8.4	8.4	7.3	6.9	6.7	6.7	6.5	6.3	7.1
Prevailing Direction		NNE	N	N	N	S	S	S	S	NNE	N	NNE	NNE	N
through 1964	38	03	04	03	15	35	17	16	02	22	03	04	05	03
Fastest Mile		61	52	51	35	33	30	29	31	35	40	41	41	61
-Direction(!!)		1971	1979	1989	1964	1964	1971	1957	1987	1993	1966	1978	1964	JAN
-Speed(mph)														1971
-Year	16	E	NE	NE	SE	S	SE	SE	N	S	S	NE	SE	
Peak Gust	16	64	61	75	43	43	46	40	44	48	55	55	55	NE
-Direction(!!)		1986	1994	1989	1987	1988	1985	1980	1987	1985	1987	1990	1992	75
-Speed(mph)														MAR
-Date														1989

Likelihood of Occurrence - Probability - High

High wind advisories, watches, and warnings are frequently issued by the National Weather Service (NWS) for different parts of Anchorage. See Hazard Rating Matrix, Table 1.2.

Historic Events

<u>September 2012</u>

A cooperative station weather observer in Glen Alps, in the Chugach Mountain foothills east of Anchorage, reported a peak gust to 131 mph on the night of September 4 to 5. Countless large trees were blown down, and there was other wind damage to structures. The damage from this storm was augmented by two factors. First, the ground was still wet and soft from rains in August. Second, the summer's growth of leaves remained on the trees as the wind increased. Combined, these factors strengthened the wind's grip on the forest canopy and weakened the ground that held the trees. At least 50,000 homes and businesses lost power as the storm hit. The Anchorage airport was closed until mid-day September 5.

<u>2003 Winter Storm – Federal Disaster 1461</u>

In March 2003, a winter storm brought high winds and freezing temperatures to Anchorage and surrounding communities for several days. This event involved a Bora wind, which is a very cold northerly wind (sometimes called the Matanuska wind). Bora winds are rare in Anchorage, and usually only occur every 10 to 15 years (Vonderheide, 2003). Prior to this event, the last one occurred in 1989.

Within the Municipality, the worst effects occurred in the west Anchorage area. Ted Stevens Anchorage International Airport had record high winds, sustained winds around 92-94 mph and a peak gust of 109 mph (Scott, Baines, and Papineau, 2004). Damage for the event in MOA alone exceeded $3.5 Million. MOA conducted a voluntary on-line survey about the damage caused by storm.

2000 Central Gulf Coast Storm - Federal Disaster 1316

In December 1999 and January 2000, there was series of severe winter storms (involving high winds and avalanches) that caused damage throughout Southcentral Alaska. Anchorage was one of many jurisdictions included in a Federal Disaster Declaration. In Anchorage, damage from this event included one fatality, property damage, disruption of electrical service, and interruption of rail and road access south of the Potter Weigh Station.

April 1980 Windstorm

On April 1, 1980, a Chinook wind with maximum gust speeds estimated at 134 mph caused approximately $25 million in damages.

Other Wind Events (From RWDI 1998a and b)

- December 3, 1994 - southeasterly downslope windstorm
- February 20, 1994 – northeasterly windstorm
- November 22, 1993 - southeasterly downslope windstorm
- February 3, 1993 – northeasterly windstorm
- December 1, 1992 windstorm - southeasterly downslope windstorm
- Had maximum gust speeds estimated at 112mph
- December 26, 1991 - southeasterly downslope windstorm
- March 4, 1989 – northeasterly windstorm
- November 9, 1986 – southeasterly downslope windstorm
- February 14, 1979 – northeasterly windstorm

Vulnerability

The entire MOA was not included in the Anchorage Area-Wide Wind Speed Study. The area included in the study is shown on Figure 4.4. The size of each wind speed zone is shown in Table 4.11. The vulnerability tables for each wind speed zone (Tables 4.12 – 4.15) only reflect the area included in the study.

Table 4.11 Area of Wind Speed Zones

Minimum "Three Second Gust" Design Wind Speed (mph)	Fastest Mile	Acres
100	85	31,489
110	95	21,545
120	104	12,120
125	109	22,372

Table 4.12 100 mph "Three Second Gust" Vulnerability in the Anchorage Building Service Area

Land Use	# of Parcels	Taxable Value (Land)	Taxable Value (Buildings)	Total
Residential	21338	2597575600	5253931000	7851506600
Commercial	2442	1520269900	3143414100	4663684000
Industrial	1004	488792600	744528000	1233320600
Institutional	240	455801100	316954300	772755400
Open Space	34	20163000	476700	20639700
Transportation	104	2392100	227800	2619900
Other	127	117746600	13342700	131089300
Vacant	397	0	0	0
Total	25686	5202740900	9472874600	14675615500

Source: MOA GIS, 2016

Table 4.13 110 mph "Three Second Gust" Vulnerability in the Anchorage Building Service Area

Land Use	# of Parcels	Taxable Value (Land)	Taxable Value (Buildings)	Total
Residential	12705	1345616400	2849712300	4195328700
Commercial	673	579464500	881644400	1461108900
Industrial	1415	906007900	1044356700	1950364600
Institutional	122	269195800	813039000	1082234800
Open Space	1	254600	0	254600
Transportation	20	0	0	0
Other	13	19226800	11192100	30418900
Vacant	15	0	0	0
Total	14964	3119766000	5599944500	8719710500

Source: MOA GIS, 2016

Table 4.14 120 mph "Three Second Gust" Vulnerability in the Anchorage Building Service Area

Land Use	# of Parcels	Taxable Value (Land)	Taxable Value (Buildings)	Total
Residential	14606	1521998100	3460575500	4982573600
Commercial	220	183366800	298402000	481768800
Industrial	71	57714000	83264100	140978100
Institutional	241	259074200	187242200	446316400
Open Space	1	254600	0	254600
Transportation	4	0	0	0
Other	4	6955400	11452000	18407400
Vacant	42	0	0	0
Total	15189	2029363100	4040935800	6070298900

Source: MOA GIS, 2016

Table 4.15 125 mph "Three Second Gust" Vulnerability in the Anchorage Building Service Area

Land Use	# of Parcels	Taxable Value (Land)	Taxable Value (Buildings)	Total
Residential	11242	1448168400	3085166200	4533334600
Commercial	39	34156200	39603400	73759600
Industrial	1	0	0	0
Institutional	146	169233900	117153000	286386900
Open Space	4	1503900	0	1503900
Transportation	5	0	0	0
Other	0	0	0	0
Vacant	16	0	0	0
Total	11453	1653062400	3241922600	4894985000

Source: MOA GIS, 2016

In general, a windstorm is more likely to cause property damage than injuries and fatalities. High winds can cause falling trees and branches which can bring down utility lines and cause property damage. Windstorms can lead to power failures which can affect people who rely on electricity for life-safety items such as respirators, monitoring equipment or medication that needs to be kept refrigerated. Power failures can also cause school and business closures. Fallen trees and branches can block roads making it difficult to travel around town. Areas that are near forested areas such as the Hillside may be more vulnerable.

Fog

When the air is saturated with water vapor, a drop intemperature will cause the excess water vapor to condense into water droplets. These droplets, if thick enough, will turn into fog.

When it is foggy, ice can be deposited on the roadways, causing black ice conditions (Vonderheide, 2003).

Location

Fog is more frequent in West Anchorage. In the fall and early winter, a northerly wind comes from the north and reduces visibility. In East Anchorage, the drainage winds from the mountains mix the air to help keep the area relatively fog free.

Fog can also occur in the lower parts of Eagle River, but it is rare in the higher elevations.

Likelihood of Occurrence - Probability - High

Fog is likely to occur when the climatic conditions are right. Fog events are usually short-term with no lasting effects. See Hazard Rating Matrix, Table 1.2.

HistoricEvents

No significant historic fog events have been identified to date.

Vulnerability

As fog could affect the entire Municipality, the entire MOA is represented in Table 4.16. Property damage does not typically occur during a dense fog event. Dense fog can reduce visibility leading to an increase in traffic accidents. Traffic accidents have the potential to result in injuries and fatalities. Large numbers of injuries and fatalities due to dense fog is not anticipated. Dense fog may result in closures at local airports.

Table 4.16 Fog Vulnerability

Land Use	# of Parcels	Taxable Value (Land)	Taxable Value (Buildings)	Total
Residential	75024	8526159300	17756156200	26282315500
Commercial	4065	2568664400	4512337400	7081001800

Source: MOA GIS, 2016

Other Weather Events

Other extreme weather events that are possible, but rare, in the MOA include:

- Tornadoes
- Coastal Storms
- Storm Surges
- Hail

4.1.4 FLOODING

Flooding occurs when weather, geology, and hydrology combine to create conditions where river and stream waters flow outside of their usual course and "spill" beyond their banks. In the MOA, these natural factors can be exacerbated by development and result in an increase in the frequency of flood events. The MOA spans a wide range of climatic and geologic regions, resulting in considerable variation in precipitation. Primary factors in the amount of precipitation and area will receive are elevation and slope aspect, or direction. Within the MOA, annual precipitation varies from less than 15 inches at TSAIA to over 70 inches in Girdwood and along Turnagain Arm. Snowmelt from the Chugach Mountains provides a continuous water source throughout the year and can contribute significantly to the development of flooding.

Types of Flooding

Riverine, icing, and urban flooding are the three types[7] of flooding that primarily affect the MOA. Riverine flooding is the overbank flooding of rivers and streams. The natural processes

[7] Flooding types are not exclusive categories and a flood event could have elements of multiple types of floods.

of flooding add sediment and nutrients to fertile floodplain areas. Riverine flooding can be the result of rainfall runoff or snowmelt and can occur on any of the rivers and streams within the MOA. Riverine flooding occurred on many rivers and creeks during the falls of 1995, 1997, 2002, and 2005.

Icing, also called aufeis, occurs when the growth of large bodies of ice on the streambed during freeze-up or breakup creates an obstruction to normal streamflow, causing river and streams to leave their banks. This can occur on many streams within the MOA. During the winters of 2003 and 2006, aufeis lead to overbank flooding on many creeks including Peters Creek and Rabbit Creek.

Urban flooding results from the conversion of land from wetlands or woodlands to parking lots and roads, through which the land loses its ability to absorb rainfall, causing runoff to overwhelm natural and manmade drainages.

Within the MOA, other types of flooding that may occur infrequently include:

Ice Jam Floods – the MOA tends not to have the typical ice jam flood like other parts of Alaska. In the MOA, when an ice jam flood occurs, it tends to be the result of ice collecting in a channel constriction such as a culvert. During a rain event or a sudden thaw, runoff enters a stream before the stream ice can melt, resulting in a flood. This type of flooding is more likely on larger creeks such as Campbell Creek.

Flash Floods - These floods are characterized by a rapid rise in water level and are often caused by heavy rain on small stream basins, ice jam formation, or by dam failure. Flash floods are usually swift moving and debris filled, which cause them to be very powerful and destructive. Steep coastal areas in general are subject to flash floods. A flash flood could occur downstream of a Lake o' the Hills Dam. For more information, please see section 4.2.1, Dam Failure.

Fluctuating Lake Level Floods - Generally, lakes buffer downstream flooding due to the storage capacity of the lake. But when lake inflow is excessive, flooding of the lake shore area can occur.

Alluvial Fan Floods - Alluvial fans are areas of eroded rock and soil deposited by rivers. When various forms of debris fill the existing river channels on the alluvial fan, the water overflows and is forced to cut a new channel. Fast, debris-filled water causes erosion and flooding problems over large areas. The Girdwood area is prone to this type of flooding.

Glacial Outburst Floods - A glacial outburst flood, also known as a jökulhlaup, is a sudden release of water from a glacier or a glacier-dammed lake. They can fail by overtopping, earthquake activity, melting from volcanic activity, or draining through conduits in the glacier dam.

Subglacial releases occur when enough hydrostatic pressure occurs from accumulated water to "float" the glacial ice. Water then drains rapidly from the bottom of the lake.

Other problems related to flooding are deposition and stream bank erosion. Deposition is the accumulation of soil, silt, and other particles on a river bottom or delta. Deposition leads to the destruction of fish habitat and presents a challenge for navigational purposes. Deposition also reduces channel capacity, resulting in increased flooding or bank erosion. Stream bank erosion involves the removal of material from the stream bank. When bank erosion is excessive, it becomes a concern because it results in loss of streamside vegetation, fish habitat, and land and property.

A flood can injure or kill people as well as damage property. A flood may disrupt public utilities including water supplies and water treatment facilities. It can impact the transportation system by washing out roads or damaging bridges and culverts. This can make it difficult for emergency responders to get where they are needed.

Overflowing wastewater treatment systems can expose people to raw sewage which may make them ill. If a flooded building has not been treated properly, mold and mildew may develop which can become a health hazard especially for people with respiratory issues. The contents of a building such as household furnishing can be lost if they are washed away. Important papers, photographs, and similar items may be damaged. Standing pools of water may become breeding grounds for mosquitoes.

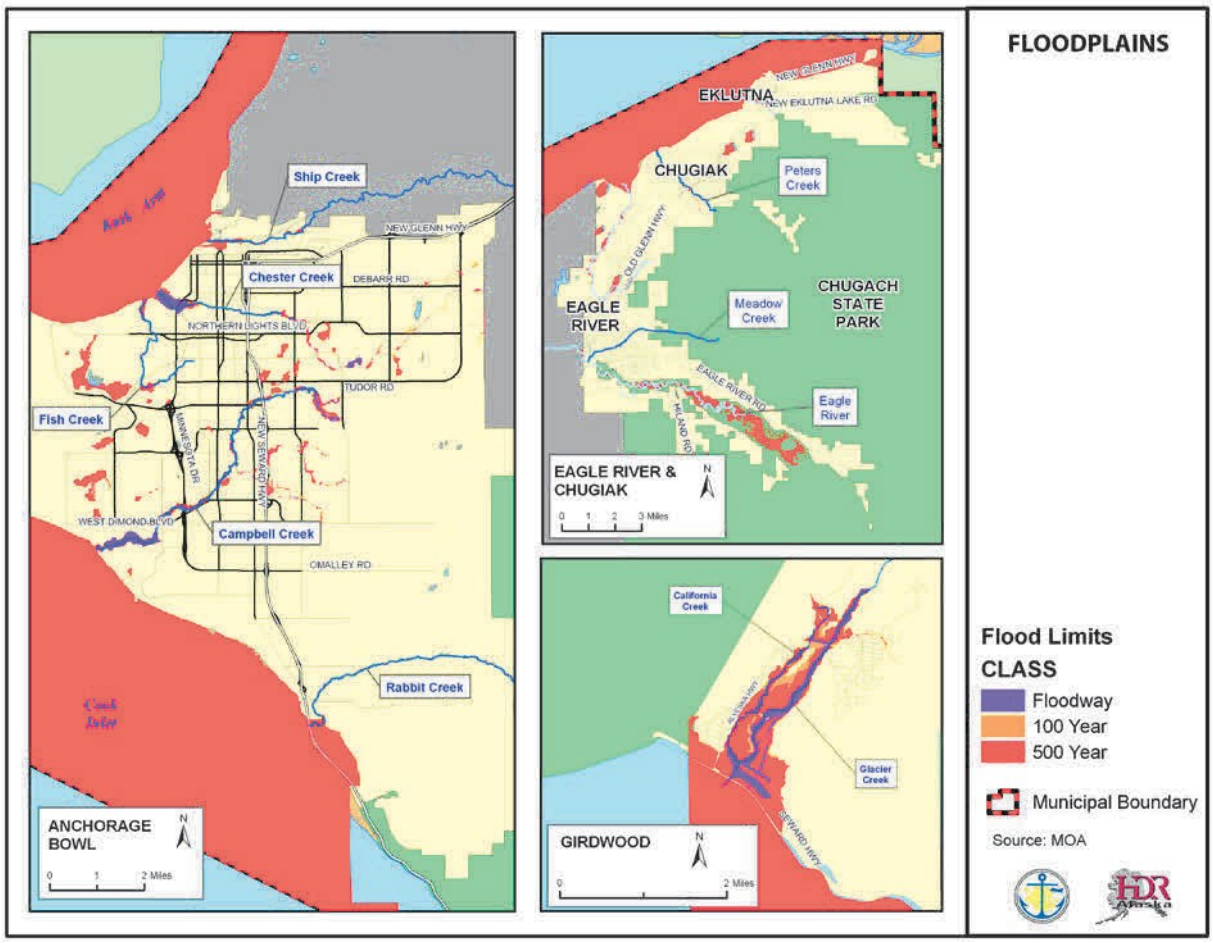
Location

The MOA has many small streams and larger rivers that are susceptible to annual flooding events. Large rivers include the Glacier Creek, Twenty-mile River, Portage Creek, Placer River, Ship Creek, and Eagle River. Smaller streams include California Creek, Virgin Creek, Alyeska Creek, Fire Creek, Chester Creek, Campbell Creek, Little Campbell Creek, Fish Creek, Furrow Creek, Rabbit Creek, Meadow Creek, Hood Creek, and Peters Creek. Additionally, the shorelines of many of the small lakes in Anchorage are subject to periodic flooding. Coastal areas may experience flooding associated with extreme high tides.

The flood hazard varies by location and type of flooding. The FEMA Flood Insurance Study from 2009 identifies potential areas of flooding. The study excluded Fire Island, Joint Base Elmendorf-Richardson, and Kincaid Park (referred to in the study as the PointCampbell Military Reservation. According to this report, most of the development land in MOA is “low, swampy, and subject to inundate from flooding” (FEMA, 2009. There are no flood studies being updated at this time. FEMA would like the MOA to change vertical datum prior to initiating or adopting any new flood studies.

Figure 4.5 shows flood-prone areas in the MOA. This map is for illustrative purposes, as not all the floodplains identified on MOA’s Flood Insurance Rate Maps (FIRM are on this map. The main flood-prone areas are near Glacier and California Creeks in Girdwood, Potter’s Marsh, and along Campbell and Chester Creeks in Anchorage.
Please see the appropriate FIRM in Appendix D for more detailed flood information.

Figure 4.5 Flood-Prone Areas in the MOA



Much of Girdwood is subject to flooding because Girdwood valley occupies a fluvial valley drained by Glacier and California Creeks. The mouth of the valley is at sea level and gains elevation inland of the Seward Highway (MOA, 1995). The entire mouth of the Girdwood valley and the area adjacent to Glacier Creek to the airport is essentially within the 100-year floodplain. Other areas susceptible to flooding are California, Alyeska, and Virgin Creeks. The primary cause of flooding is runoff during heavy rainfall or during rapid snowmelt during the spring (MOA, 1995).

Likelihood of Occurrence - Probability - High

Coastal areas are more likely to flood when there is a storm that causes storm surge, high waves, or intense rainfall. Riverine flooding is more likely to occur in the spring when the snowpack is melting. There is also more chance of flooding in heavy snow seasons. Riverine flooding can also occur in response to heavy rainfall in upstream areas. Glacier outburst floods are not very predictable. See

Property Owner Outreach

On an annual basis, the MOA sends an informational letter to people who own property located in a floodplain. The letter provides an overview of flooding sources within the MOA, the causes of flooding, recent flooding events, flood insurance, floodplain regulation, flood safety tips and a list of contacts where home owners can obtain additional information.

Hazard Rating Matrix, Table 1.2.

Historic Events

Girdwood, 2021

Between October 29 and November 1, 2021, Girdwood experienced historic rainfall. The historic rainfall event washed out Ruane Road, cutting off access to the water treatment plant in Girdwood. Loveland Road was also closed as well as Echo Ridge Drive during the flooding event. A disaster declaration was declared and approved.

July 2015

A 50-year rainfall event, 2 inches of rain in less than 12 hours, recorded by the National Weather Service. Approximately 30 people were evacuated from an apartment building at 12th and Cordova that partly flooded. A storm drain had failed and caused localized flooding.

Summer 2008

During the summer of 2008, an intense localized "cloudburst" caused flooding on the east side of the Anchorage Bowl. Stormwater runoff exceeded the capacity of the constructed and natural drainage system. Floodwaters flowed into the crawlspaces and lower floors of some local residences.

Winter of 2003 and 2006

During the winters of 2003 and 2006, colder than normal temperatures, combined with later than normal snowfall, caused the formation of aufeis in local streams, leading to overbank flooding, particularly on Peters Creek.

Peters Creek Flooding

In 2006, Peters Creek has some of the worst flooding local residents have seen in 50 years. The Anchorage Soil and Water Conservation District (ASWCD) had to blast a series of ice dams on Peters Creek to reopen the creek channel and stop the flooding. Since then, the ASWCD has been working on the Peters Creek Flooding and Erosion Control Project address the flooding issue.

Fall of 1995, 1997, 2002, and 2005

The "Pineapple Express" brought warm weather to Anchorage in the fall of 1995, 1997, 2002, and 2005. The warmer than average temperatures, combined with prolonged precipitation, resulted in flooding throughout Southcentral Alaska, including the MOA. The 1995 event resulted in a federal disaster and is discussed below.

In September 1995, there was a federal disaster declaration (AK-1072-DR) due to flooding caused by heavy rainfall. Most of the damages were outside the MOA, but Girdwood was negatively impacted. Officials in Girdwood had to shut down the wastewater treatment plant when it was overwhelmed by large volumes of mud and water. This resulted in raw sewage being washed into local creeks.

Other Flood Events

August 30, 1989

In August 1989, more than 5 inches of rain fell in the Anchorage area, causing heavy flooding along drainage systems in the MOA. The flooding was concentrated at homes and businesses along Campbell, Chester, and Ship creeks. The flooding resulted in a State Disaster Declaration.

February 10, 1978

During February 1978, the south fork of Campbell Creek experienced flooding and glaciation. Glaciation is when a stream freezes to the bottom or a culvert freezes full. The water flowing on top of the ice also freezes, so more ice develops and spreads into the overbank areas.

The flooding affected an area bounded by East 80th Avenue, Spruce Avenue, Lake Otis Parkway, and Abbott Loop Road. Many residential structures were threatened with water, ice, and contamination of surface and subsurface water. The flooding resulted in a State Disaster Declaration.

Other flooding events are listed in Table 4.17.

Table 4.17 Historic Flooding

Flooding Source and Location	Maximum Discharge (cfs)	Date	Estimated Recurrence Interval (Years)
Ship Creek Near Anchorage	1,860	June 1949	50.0
South Fork Campbell Creek at mouth	891	June 1949	100.0
Chester Creek	N/A	April 1963	5.0
Rabbit Creek	N/A	June 1964	100.0
Eagle River	6,240	September 1967	N/A
Glacier Creek at Girdwood	7,710	September 1967	20.0
Ship Creek Below Power Plant at Elmendorf Air Force Base	1,600	August 1971	20.0
Campbell Creek Near Dimond Boulevard	421	August 1971	1.7
Chester Creek At Arctic Boulevard At Anchorage	95	August 1971	1.1
Peters Creek	N/A	August 1971	50.0
Meadow Creek	N/A	August 1971	5.0

From: Flood Insurance Study, 2002

Vulnerability

The MOA has almost 10,000 acres of floodplain and more than 3,500 parcels that are partially

or wholly located within the regulatory floodplain. Ongoing development increases the developed area that is vulnerable to flooding as natural areas that have historically functioned as flood storage are displaced.

Parcels adjacent to waterbodies are the most vulnerable to flooding. The vulnerability shown in Tables 4.18 and 4.19 are based on the Municipality's flood limit GIS file shown in Figure 4.6. The number and location of parcels impacted may be different during different events. Flood waters may cause road closures leading to a disruption of the transportation infrastructure. While the exact number of people living in the 2,827 residential parcels in a known floodplain, based on the MOA average household size of 2.65, the number of people who could be affected by a flood event is approximately 7,492. Large numbers of injuries and fatalities are not anticipated with a flood event however people could be impacted by the need to evacuate their home, water damaged belongings, and the cost of clean-up activities. Proper clean-up after a flood event is important to prevent mold from developing.

Table 4.18 100-YearFloodplain Vulnerability

Land Use	# of Parcels	Taxable Value (Land)	Taxable Value (Buildings)	Total
Residential	2233	442489300	496510900	939000200
Commercial	283	96818500	84792200	181610700
Industrial	211	9717250	73592500	83309750
Institutional	258	288382700	839591000	1127973700
Open Space	315	146199700	58629200	204828900
Transportation	29	0	0	0
Other	241	250204600	12481500	262686100
Vacant	17	71214500	0	71214500
Watershed	6	612200	0	612200
Total	3593	1305638750	1565597300	2871236050

Source: MOA GIS, 2016

Table 4.19 500-Year Floodplain Vulnerability

Land Use	# of Parcels	Taxable Value (Land)	Taxable Value (Buildings)	Total
Residential	802	98676700	190217500	288894200
Commercial	60	11823300	5437300	17260600
Industrial	71	13311600	15087700	28399300
Institutional	35	10904000	111697800	122601800
Open Space	66	22899500	4033400	26932900
Transportation	2	0	0	0
Other	22	0	0	0
Vacant	1	0	0	0
Watershed	0	0	0	0
Total	1059	157615100	326473700	484088800

Source: MOA GIS, 2016

For more information about potential vulnerabilities, please see the 2009 Flood Insurance Study.

Figure 4.6 Flood Insurance Zones

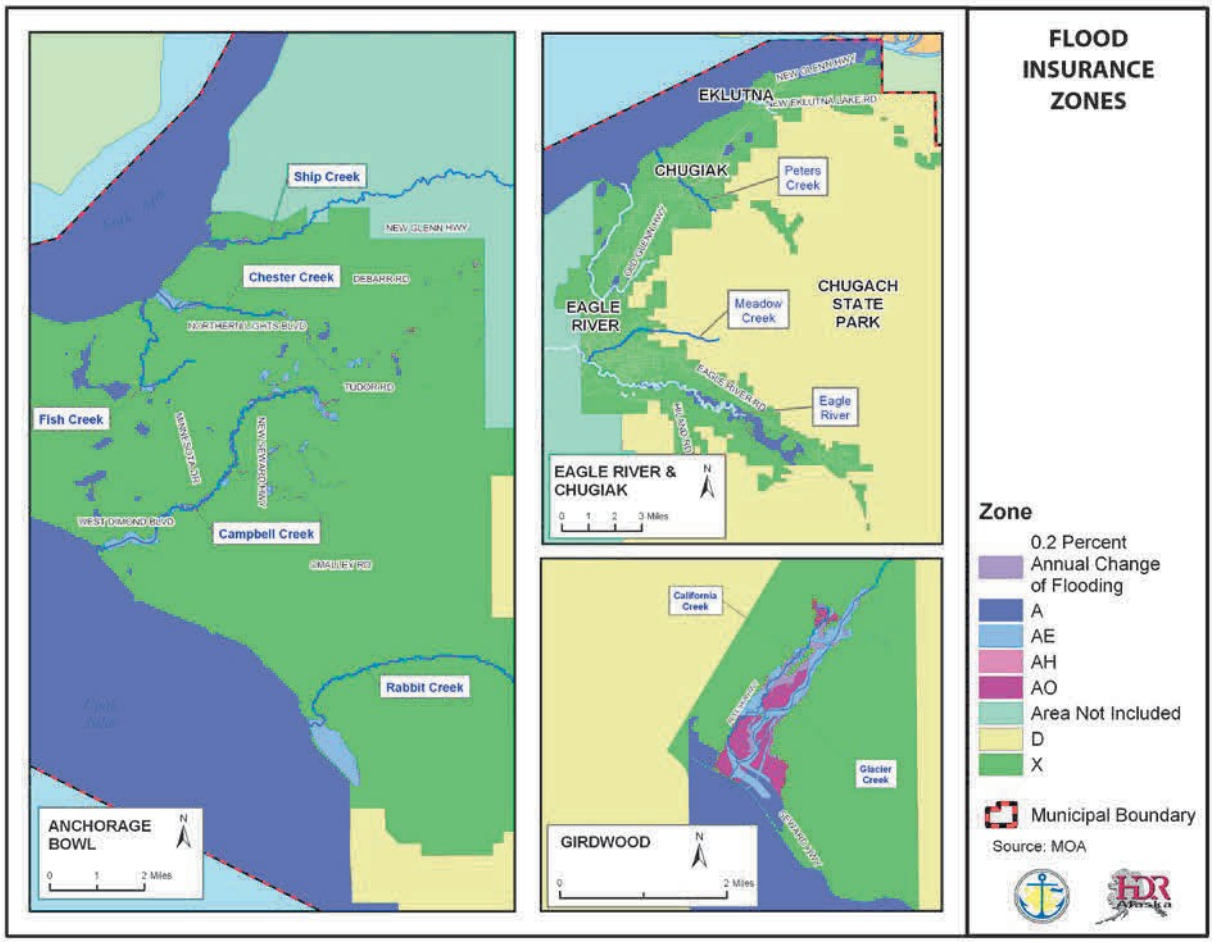
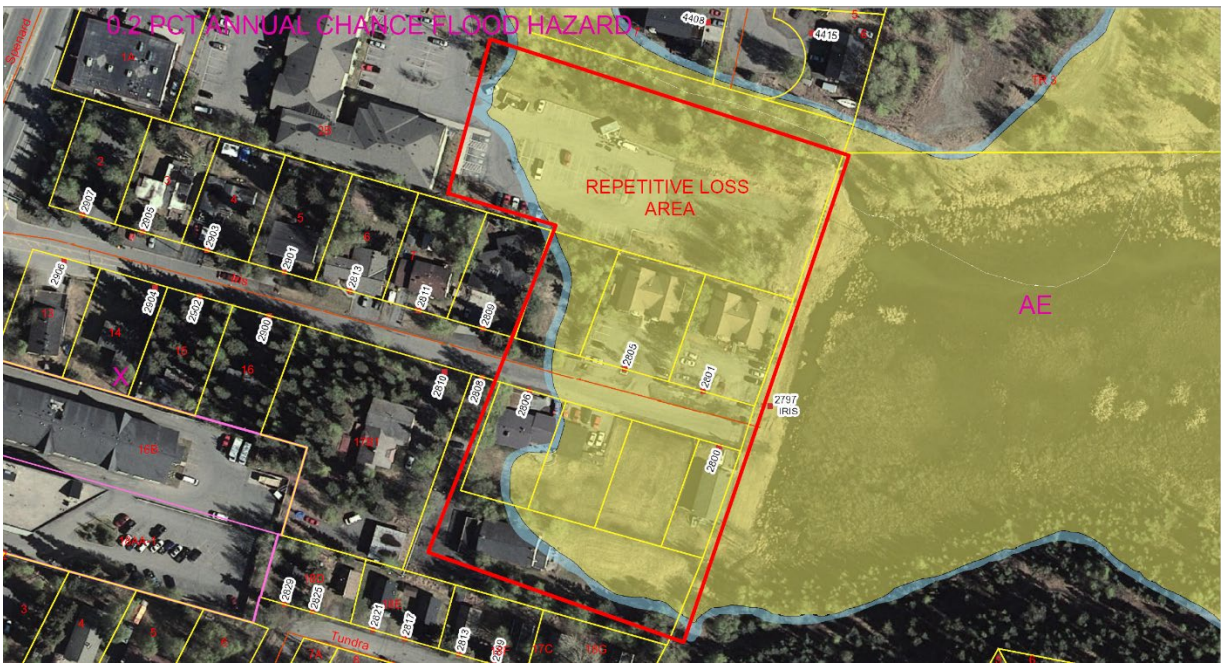


Figure 4.7 Repetitive Loss Area



One property has been identified as a repetitive loss property. This structure is a residential duplex that is located in FEMA mapped Special Flood Hazard Zone AE (Figure 4.7). This zone has been determined to potentially have a 1 percent annual chance of flooding and Base Flood Elevations have been determined. Annually the MOA Watershed Management Services department provides flood information to the property owners inside the boundary of the repetitive loss area map. A repetitive loss property is defined in the Flood Insurance Manual as a National Flood Insurance Program(NFIP) "insured structure that has had at least two paid flood losses of more than $1,000 eachin any 10-year period since 1978."

Flood Insurance

The Municipality of Anchorage participates in the NFIP, which makes federally backed flood insurance available for all structures, whether or not they are located within the floodplain. Membership within NFIP —and the availability of flood insurance to municipal residents — requires the MOA to manage its floodplain in ways that meet or exceed standards set by FEMA. Federal financial assistance requires the purchase of flood insurance for buildings located within the Special Flood Hazard Area, a requirement that affects nearly all mortgages financed through commercial lending institutions. While the mandatory flood insurance purchase requirement has been in effect in the MOA since 1970, this requirement was often overlooked by lending institutions. Today, however, all institutions are complying with the applicable flood insurance purchase requirements and are reviewing all mortgage loans to determine whether flood insurance is required and should have been required in the past.

The MOA requires permits foractivity within the FEMA mapped Special Flood Hazard Areas (SFHA) (see appendix D for a copy of the permit application). The MOA complies with the NFIP and FEMA regulations for work in the floodplain. Copies of the FIRMs, elevation certificates, Letters of Map Changes and other documents are maintained by the MOA. All building permits are reviewed for FEMA/NFIP requirements. The floodplain manager also reviews MOA and ADOT projects that will work in themapped FEMA SFHA. As a participant in the NFIP, the MOA has adopted code to comply with 44 CFR, Part 60.3(d).

The MOA has participated in the NFIP since 1979. The first FIRM became effective in 1979 and the current effective map date is September 25, 2009. The MOA makes PDF versions of the FIRM maps available through their Web site (http://anchoragestormwater.com). The web site also has interactive flood maps that can be searched by address. Digital FIRMs are available through FEMA's Map Service Center. The MOA's floodplain ordinance exceeds the FEMA and state minimum requirements by having a 1-foot freeboard requirement, prohibiting critical facilities from being located in a floodplain, and prohibiting most types of floodway development. The floodplain permitting process is described in Appendix D.

The MOA has a dedicated floodplain manager, whose primary duty is floodplain management. The MOA also currently provides the following administrative services: map and records depository, permit review, cooperative technical partners mapping, assistance with letters of map changespreparation, technical and design assistance, and agency coordination. The only change that would improve the effectiveness of the NFIP program would be the addition of more support from the development community and some sectors of the MOA.

The MOA is in good standing with the NFIP and there are no outstanding compliance issues. The most recent Community Assistance Visit or Community Assistance Contact was in 2019 and there are none scheduled or needed at this time. In 2009 FEMA and the MOA updated all of the FIRMs to digital FIRMs or DFIRMS. There are no new mapping projects pending. Only one Letter of Map Revision (LOMR) is pending for Chester Creek at Muldoon Rd.

Community Rating System

The MOA participated in the Community Rating System (CRS); the current CRS class ranking is 7. Flood hazard policy holders within the Municipality receive a 15 percent discount on their premiums, due to MOA's Flood Hazard Program rating.

4.1.5 AVALANCHE

A snow avalanche is a swift, downhill-moving snow mass. The amount of damage is related to the type of avalanche, the composition and consistency of the avalanche material, the force and velocity of the flow, and the avalanche path.

Avalanche Types

There are two main types of snow avalanches: loose snow and slab. Other types of avalanches include cornice collapse, ice, and slush.

Loose Snow Avalanches

Loose snow avalanches, sometimes called point releases, generally occur when a small amount of un-cohesive snow slips and causes additional un-cohesive snow to travel downhill. They occur frequently as small, local cold dry "sluffs" that removeexcess snow (involving just the upper layers of snow) and keep the slopes relatively safe. Loose avalanches are often small. Most dry loose snow avalanche do not have enough size to cause damage (American Avalanche Association, 2002). Wet loose snow avalanches, most commonly occurring in the spring, also tend to be small but are more likely to cause damage (American Avalanche Association, 2002). Loose snow avalanches can also trigger slab avalanches.
Loose snow avalanches typically occur on slopes above 35 degrees and leave behind an inverted V-shaped scar. They are often caused by snow overloading (common during or just after a snowstorm), vibration, or warming (triggered by rain, rising temperatures or solar radiation).

Slab Avalanches

Slab avalanches are the most dangerous types of avalanches. They happen when a mass of cohesive snow breaks away and travels down the mountainside. As it moves, the slab breaks up into smaller cohesive blocks.

Slab avalanches usually require the presence of structural weaknesses within interfacing layers of the snowpack. The weakness exists when a relatively strong, cohesive snow layer overlies weaker snow or is not well bonded to the underlying layer. Weaknesses are caused by changes in the thickness and type of snow cover due to changes in temperature or multiple snowfalls. The interface fails for several reasons. It can fail naturally due to earthquakes, blizzards, temperature changes, or other seismic and climatic causes, or artificially by human activity. When a slab is released, it accelerates, gaining speed and mass as it travels downhill.

The slab is defined by fractures. The uppermost fracture delineating the top line of the slab is termed the “crown surface;” the area above that is called the crown. The slab sides are called the flanks. The lower fracture indicating the base of the slab is called the “stauchwall.” The surface over which the slab slides is called the “bed surface.” Slabs can range in thickness from less than an inch to 35 feet or greater.

Cornice Collapse

A cornice is an overhanging snow mass formed by wind blowing snow over a ridge crest or the sides of a gully. The cornice can break off and trigger bigger snow avalanches when it hits the wind-loaded snow pillow.

Ice Fall Avalanche

Ice fall avalanches result from the sudden fall of broken glacier ice down a steep slope. They can be unpredictable. They are unrelated to temperature, time of day, or other typical avalanche factors.

Slush Avalanches

Slush avalanches occur mostly in high latitudes. One reason they are more common in high latitudes is because of the rapid onset of snow melt in the spring. Slush avalanches can start on slopes from 5 to 40 degrees, but usually not above 25 to 30 degrees. The snowpack is totally or partially water-saturated. The release is associated with a bed surface that is nearly impermeable to water. It is also commonly associated with heavy rainfall or sudden intense snow melt. Additionally, depth hoar is usually present at the base of the snow cover.

Slush avalanches can travel slowly or reach speeds up to more than 40 mph. Their depth is variable as well, ranging from 1 foot to more than 50 feet.

Avalanche Terrain Factors

There are several factors that influence avalanche conditions. The main factors are slope angle, slope aspect, and terrain roughness. Other factors include slope shape, vegetation cover, elevation, and path history. Avalanches usually occur on slopes above 25 degrees. Below 25 degrees, there usually is not enough stress on the snowpack to cause it to slide. Above 60 degrees, the snow tends to “sluff” off and does not accumulate. It is uncommon for avalanches to occur outside this slope angle range.

Slope aspect, also called orientation, describes the direction a slope faces with respect to the

wind and sun. Leeward slopes loaded by wind-transported snow are problematic because the wind-deposited snow increases the stress and enhances slab formation. Intense direct sunlight, primarily during the spring months, can weaken and lubricate bonds between snow grains, weakening snowpack. Shaded slopes are potentially more unstable because weak layers are held for a longer time in an unstable state.

Terrain influences snow avalanches because trees, rocks, and general roughness act as anchors, holding snow in place. However, once an anchor is buried by snow, it loses its effectiveness. Anchors make avalanches less likely but do not prevent them unless the anchors are so close together that a person could not travel between them.

Avalanche Path

The local terrain features determine an avalanche's path. The path has three parts: the starting zone, the track, and the run-out zone.

The starting zone is where the snow breaks loose and starts sliding. It is generally near the top of a canyon, bowl, ridge, etc., with steep slopes between 25 and 50 degrees. Snowfall is usually significant in this area.

Avalanche Impact Pressures Related to Damage

Impact Pressures		Potential Damage
Kilopascals (kPa)	Pounds per square foot (Lbs/ft^2)	
2-4	40-80	Break windows
3-6	60-100	Push in doors, damage walls, roofs
10	200	Severely damage wood frame structures
20-30	400-600	Destroy wood frame structures, break trees
50-100	1000-2000	Destroy mature forests
>300	>6000	Move large boulders

Source Mears 1992.

The track is the actual path followed by an avalanche. The track has milder slopes, between 15 and 30 degrees. This is where the avalanche will reach maximum velocity and mass. Tracks can branch, creating successive runs that increase the threat, especially when multiple releases share a run-out zone.

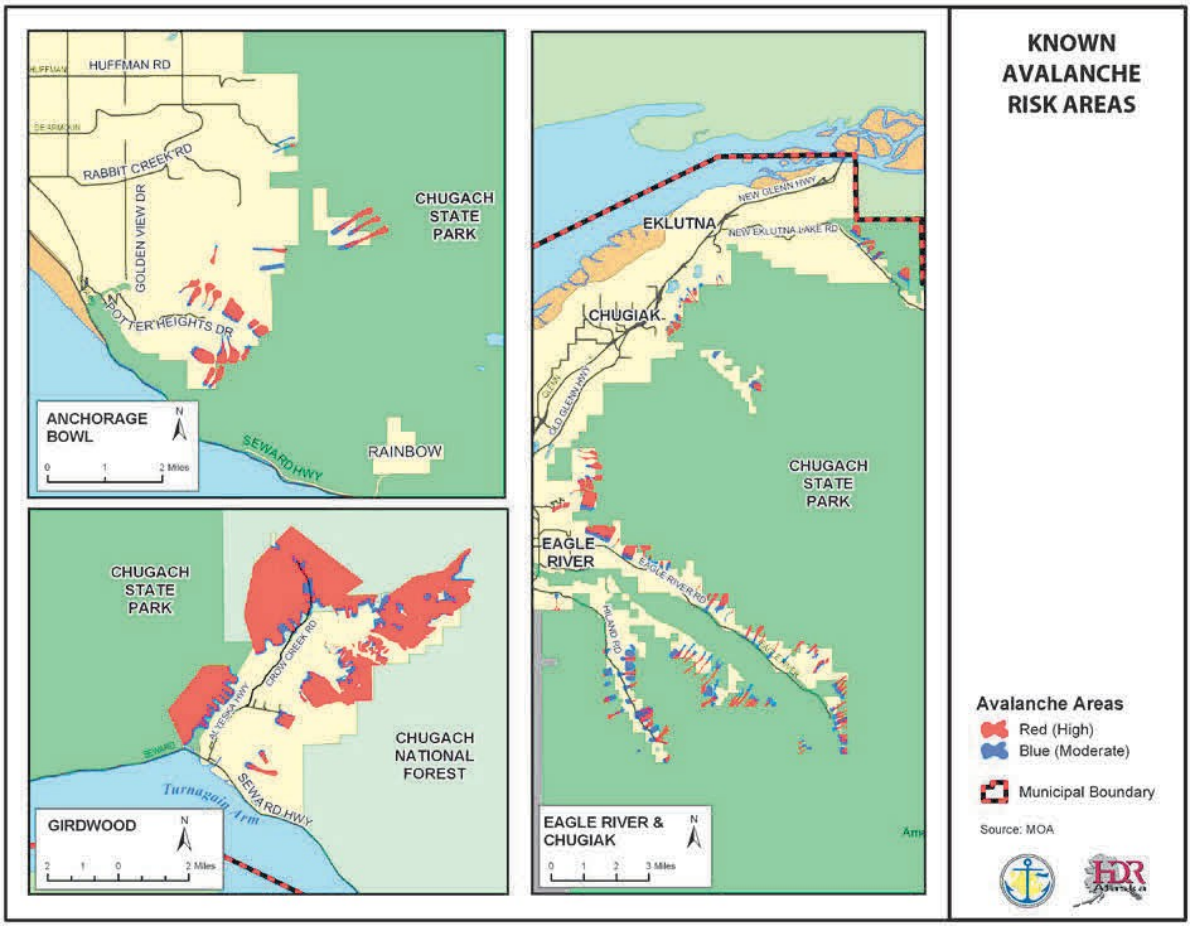
The run-out zone is a flatter area—around 5 to 15 degrees. It is located at the path base where the avalanche slows down, resulting in snow and debris deposition.

The impact pressure determines the amount of damage caused by an avalanche. The impact pressure is related to the density, volume (mass), and velocity of the avalanche.

Location

Avalanches can occur anywhere, but gullies, steep snow-covered slopes, and areas below steep ridges are particularly susceptible. To identify avalanche-prone areas in Anchorage, the Anchorage Snow Avalanche Zoning Analysis was conducted in 1982 by Arthur Mears. This report identified moderate (blue) and high (red) hazard areas, as shown in Figure 4.7.

Figure 4.7 Known Avalanche Risk Areas



The report describes the red zone as subject to avalanches with a 10-year average return period and the blue zone as prone to avalanches with a 100-year average return period. This means that a 10-year avalanche has a 10% annual probability, while a 100-year event has a 1% probability. Because an average return period is used, a 10-year avalanche has a return period of 3 to 30 years, while a 100-year avalanche has a return period of approximately 30 to 300 years. Events greater than a 100-year avalanche will affect parcels outside the blue zone.

The area with the potential for the largest avalanches is the Girdwood/Crow Creek area. Evidence of snow avalanches is prominent along the mountainsides above the Girdwood valley. The western mountainside has high and moderate avalanche danger from Turnagain Arm to California Creek. Avalanche hazard is moderate to high on the eastern mountainside at the head of the valley, near the day lodge and resort area, and southeast of Virgin Creek. Alyeska's day lodge and day parking are located partially in both the moderate and high avalanche hazard areas. Part of the original base area hotel and condos are in a moderate hazard area.

Other areas south of the Anchorage Bowl that may experience avalanches are Bird Creek, Indian, and Rainbow. North of the Anchorage Bowl, the areas near the South Fork of Eagle River, Eagle River, Peters Creek (especially near what is locally known as 4-mile), and Mirror

Lake/N.W. Spur of Mt. Eklutna have avalanche potential. For more details, please refer to the Anchorage Snow Avalanche Zoning Analysis.

Another avalanche-prone area is the Seward Highway between the flats near Bird Point and the entrance to the Girdwood Valley (CSAC, 2004). This may be one of the most dangerous stretches of highway for avalanches due to traffic volume. In this area, avalanches have caused numerous accidents, killed at least five people, and caused other deaths from drowning by sweeping people into Turnagain Arm (CSAC, 2004).

Likelihood of Occurrence - Probability - High

Multiple avalanches occur every year, but they usually occur in more remote areas. The number and location depend on the conditions —the formation of weak layers in the snow, wind loading, terrain, etc. On a large scale, avalanches are hard to predict because winter conditions change and can vary from hour to hour. See Hazard Rating Matrix, Table 1.2.

Historic Events

The most remembered avalanches in recent history are those associated with the 2002 winter storms. Those avalanches resulted in road and rail access to Girdwood being blocked, disruption of electrical service, property damage, and the death of a heavy equipment operator who was clearing debris from an earlier avalanche off the Seward Highway.

2000 Central Gulf Coast Storm - Federal Disaster 1316

In December 1999 and January 2000, a series of severe winter storms triggered avalanches and flooding throughout Southcentral Alaska. Anchorage was one of many jurisdictions included in a Federal Disaster Declaration. In Anchorage, damage from this event included one fatality, property damage, disruption of electrical service, and interruption of rail and road access south of the Potter Weigh Station.

The section of New Seward Highway from Bird Point to Girdwood is very avalanche prone. Between 1951 (when the Seward Highway opened, and 1998) avalanches have blocked the road at least 485 times and have been a factor in more than 60 accidents (CSAC, 2004). In 1998, a six-mile stretch of highway was relocated (from mountainside to a new sea-level route) and was expected to reduce avalanche danger by approximately 70 percent. See Table 4.20 for additional historic avalanche events.

Table 4.20 Known Historic Avalanche Events

Date	Description
February 13, 2010	An avalanche near Mile 7.3 of Hiland Road in Eagle River resulted in a cross-country skier being fatally injured.
March 25, 2009	An avalanche hit an ARRC freight train approximately 5-20 miles south of Portage. Several of the rail cars were buried by the avalanche but there were no fatalities.
January 3, 2006	An avalanche on Ragged Top Mountain near Girdwood, Resulted in fatal injuries to a skier.
February 9, 2006	A snowshoer was fatally injured on Flat Top Mountain.

February 28, 2004	A cornice gave way on Bryon Glacier Peak, near Portage, and triggered an avalanche resulting in the death of a mountain climber.
January 22, 2004	A block of ice slide off the roof of a Forest Service warehouse near Portage and killed a Forest Service employee.
November 11, 2003	A self-triggered slab avalanche occurred in the Chugach State Park on Triangle Peak near the head of the South Fork of the Eagle River Valley. One man was partially buried but his two companions were able to dig him out.
April 1, 2002	An avalanche occurred on the south side of Mount Magnificent, killing two snowshoers. A third man was caught in the avalanche but was able to free himself. The avalanche triggered other slides in the area.
March 28, 2002	Two backcountry skiers and two dogs triggered an avalanche in the south bowl of Three Bowl Path near Mile 6.6 of Hiland Road in Eagle River. One skier was buried under 4 feet of debris and was rescued by the other skier. The following day, while searching for the dogs, a rescuer triggered another slide that hit a house. The slide damaged the fence but not the house; however, there were several feet of debris against the back wall.
November 11, 2000	On the North Gully of Flat Top Mountain, in Chugach State Park, one person was severely injured when he was caught by a small slab avalanche.
February 1, 2000	Avalanche near Bird Flats on the Seward Highway. An Alaska Railroad employee who was helping clear previous slides from the highway was killed when the avalanche struck the bulldozer he was operating. Three avalanches occurred that day. This specific avalanche occurred at the Five Fingers chute and was estimated to have crossed the highway at between 100 and 125 miles per hour. Slides also occurred at Mile 5.7 on the Eklutna Lake Road, Mile 7.5 of the Old Glenn Highway, and the Glenn Highway at Mile 95.
	Late 1999 and early 2000 saw avalanches in Cordova, Valdez, Anchorage, Whittier, Cooper Landing, Moose Pass, Summit, Matanuska-Susitna Valley, and Eklutna from the Central Gulf Coast Storm.
January 25, 2000	An avalanche occurred in the High Traverse area of Alyeska Resort. All skiers in the area were accounted for.
March 1999	An avalanche at Alyeska Resort partially buried two skiers. This was the first time in 25 years that an avalanche hit skiers at the resort.
December 7,1997	One woman was killed in a self-triggered soft slab avalanche while hiking on the Crow Pass Trail. Her companion was not caught by the avalanche but was unable to locate her.
April 1997	There was a series of avalanches between April 5th and 11th that involved skiers, climbers, and snow machiners. A snow machiner was killed in one of those accidents.
1987-88	Several (34) avalanches reached the Seward Highway. Some of the avalanches resulted in temporary highway closures and downed power poles. One avalanche, near Super Scooper (MP 94), struck a vehicle on the highway.
January 1980	Near MP 94, in a chute called Super Scooper, an avalanche hit a vehicle and derailed 4 locomotives and 13 cars of a freight train. Later that winter, avalanches blocked the road again, closing it for 4 days.

March 1979	A series of storms near Bird Hill caused 24 avalanches over several weeks. One slide, with 33 separate tongues, buried 2 miles of highway, closing it for 3 days.
1978	Seward Highway was blocked at least 17 times. One series of slides trapped 20 cars on Bird Hill. Another slide, near MP 99, hit one car and took high voltage lines off 13 poles.
1959-60	The Seward Highway was blocked by avalanches at least 81 times because of frequent blizzards in the Bird Hill area.
1952	On the Girdwood Flats near MP 91.8, an avalanche hit several cars on the highway. One person got out of their vehicle and was hit by a second slide and subsequently died.
1920	Near MP 91, an avalanche buried an Alaska Railroad train. As the train's occupants started to dig themselves out, the train was struck by a second slide. This slide buried 25 people and 4 killed others. It has been reported that several people were swept into Turnagain Arm and drowned.
1918	An avalanche near the present Seward Highway MP 92 killed several draft horses and knocked a telegraph pole over.

Additional avalanche events are listed in Mears, 1993 and Mears, 1982.

Vulnerability

Avalanche vulnerability is calculated using the areas in the MOA's avalanche GIS file (shown in Figure 4.10). The number of parcels in a high-risk avalanche area is shown in Table 4.21, while those in a moderate-risk area are shown in Table 4.22. Only a portion of these parcels are likely to be impacted by a given avalanche event. Other development including above ground utility lines can also be vulnerable to avalanches.

Avalanches have the ability to cause injury and death to people in the impacted area. With the average household size in the MOA being 2.65, the 24 residential parcels there is approximately 64 people living in an area with a known avalanche risk. Most avalanche related fatalities involve outdoor recreationalists such as back country skiers, snowboarders and snowmachiners but not exclusively. Many times, the victim triggers the avalanche. Other people such as passing motorists can also be at risk. Avalanches have the ability to destroy buildings, cover buildings and roads with snow and debris. They can also take down utility lines.

Historically, avalanches have caused the closure of the Seward Highway isolating Girdwood from the rest of the MOA. The avalanche hazard may increase road maintenance costs. Depending on the conditions, more avalanche mitigation measures may be needed.

Table 4.21 High Avalanche Hazard Area Vulnerability

Land Use: Anchorage	# of Parcels	Taxable Value (Land)	Taxable Value (Buildings)	Total
Residential	1	48600	285600	334200
Commercial	0	0	0	0
Industrial	0	0	0	0

Institutional	0	0	0	0
Parks	0	0	0	0
Transportation	0	0	0	0
Other	0	0	0	0
Vacant	25	4641600		4641600
Watershed	10	0	0	0
Total	36	4690200	285600	4975800
Land Use: Chugiak/Eagle River	**# of Parcels**	**Taxable Value (Land)**	**Taxable Value (Buildings)**	**Total**
Residential	97	11521400	25484800	37006200
Commercial	0	0	0	0
Industrial	0	0	0	0
Institutional	4	0	0	0
Parks	0	0	0	0
Transportation	0	0	0	0
Other	10	0	0	0
Vacant	74	8475900		8475900
Watershed	67	0	0	0
Total	252	19997300	25484800	45482100
Total	252			
Land Use: Girdwood	**# of Parcels**	**Taxable Value (Land)**	**Taxable Value (Buildings)**	**Total**
Residential	31	1339400	3202500	4541900
Commercial	12	5402700	1133400	6536100
Industrial	1	459900	185000	644900
Institutional	0	0	0	0
Parks	0	0	0	0
Transportation	0	0	0	0
Other	11	0	0	0
Vacant	15	861800	0	861800
Watershed	2	0	0	0
Total	72	8063800	4520900	12584700

Source: MOA GIS, 2016

Table 4.22 Moderate Avalanche Hazard Area Vulnerability

Land Use: Anchorage	**# of Parcels**	**Taxable Value (Land)**	**Taxable Value (Buildings)**	**Total**
Residential	9	712,400	3,001,900	3,714,300
Commercial	0	0	0	0
Industrial	0	0	0	0

Institutional	2	1981900	0	1981900
Parks	0	0	0	0
Transportation	0	0	0	0
Other	0	0	0	0
Vacant (residential)	34	5,500,500	0	5,500,500
Watershed	8	3415700	0	3415700
Total		11610500	3001900	14,612,400
Land Use: Chugiak/Eagle River	**# of Parcels**	**Taxable Value (Land)**	**Taxable Value (Buildings)**	**Total**
Residential	270	30,820,800	73,422,300	104,243,100
Commercial	0	0	0	
Industrial	0	0	0	0
Institutional	4	2901100		2901100
Parks	3	7108500	0	7108500
Transportation	0	0	0	0
Other	19	38477300		38477300
Vacant	137	20,188,100		20,188,100
Watershed	74	26480200	2938500	29418700
Total	507	125,976,000	76,360,800	202,336,800
Land Use: Girdwood	**# of Parcels**	**Taxable Value (Land)**	**Taxable Value (Buildings)**	**Total**
Residential	15	4461700	6363400	10825100
Commercial	12	5781400	1458000	7239400
Industrial	0	0	0	0
Institutional	0	0	0	0
Parks	0	0	0	0
Transportation	0	0	0	0
Other	3	0	0	0
Vacant	18	1745000		1745000
Watershed	1	0	0	0
Total	49	11988100	7821400	19809500

Source: MOA GIS, 2016

4.1.6 LANDSLIDE/GROUND FAILURE

Ground failure is a general term used to describe hazards that affect the stability of the ground. It can occur in many different ways, including landslides, land subsidence, and failures related to seasonally frozen ground and permafrost. Frequently, ground failure occurs as the result of another hazard such as an earthquake or volcanic eruption.

Seismically- induced ground failure is a major concern in the MOA.

Ground failure tends to cause more property damage than injuries or fatalities. Property damage can occur to buildings and infrastructure such as buried pipes. Ground failure can cause damage to the transportation system including roads, bridges, and railroads. Areas threatened by ground failure may have lower real estate values which can result in lower property tax revenue.

Landslides

Landslide is a generic term for a variety of downslope movements of earth material under the influence of gravity. Some landslides occur rapidly, in mere seconds, while others might take weeks or longer to develop.

It is hard to identify high and moderate zones of hazard intensity for different types of landslides. For example, hazard zones for rock falls can't be identified because the risk depends on the size of the rocks involved. It is known that the bluff near Points Campbell and Woronzof is a "narrow zone of very unstable material with a strong risk of landslide" (Mason, 1997: 198-199). The area near Campbell Lake has a high risk of landslides (Mason, 1997). "Debris flows occur in small, steep drainage basins throughout the" Glacier/Winner Creek area (Mears, 1993:13).

Landslides can occur naturally or be triggered by human activities. They occur naturally when inherent weaknesses in the rock or soil combine with one or more triggering events such as heavy rain, snowmelt, changes in groundwater level, and seismic or volcanic activity. Landslides can be caused by long-term climate change that results in increased precipitation, ground saturation, and a rise in groundwater level, which reduces shear strength and increases the weight of the soil. Erosion that removes material from the base of a slope can also trigger landslides.

Human activities that trigger landslides are usually associated with construction, such as grading that removes material from the base, loads material at the top, or otherwise alters a slope. Changing drainage patterns, groundwater level, slope, and surface water (for example, the addition of water to a slope from agricultural or landscape irrigation, roof downspouts, septic-tank effluent, or broken water or sewer lines) can also cause landslides.

Three main factors that influence landslides are topography, geology, and precipitation. Topography and geology are associated with each other; the steeper the slope, the greater the gravitational influence. Rock strength is important, as certain bedrock formations or rock types appear to be more prone than others to landsliding. Precipitation may erode and undermine slope surfaces. When precipitation is absorbed into the ground, it increases the pore water pressure and lubricates weak zones of rock or soil.

Secondary Effects

Landslides are often associated with other hazards. For example, a landslide may occur during floods because both involve precipitation, runoff, and ground saturation. Landslides are often associated with seismic and volcanic events. It has been estimated that ground failure, not shaking, caused most of the damage in the Good Friday Earthquake in Alaska.

The secondary effects of landslides can extend the damage past the limits of the actual landslide. For example, a landslide that dams a river or creek can cause damage upstream due to flooding and downstream due to flooding that may result from a sudden break in the dammed river. Landslides can also trigger tsunamis and seiches.

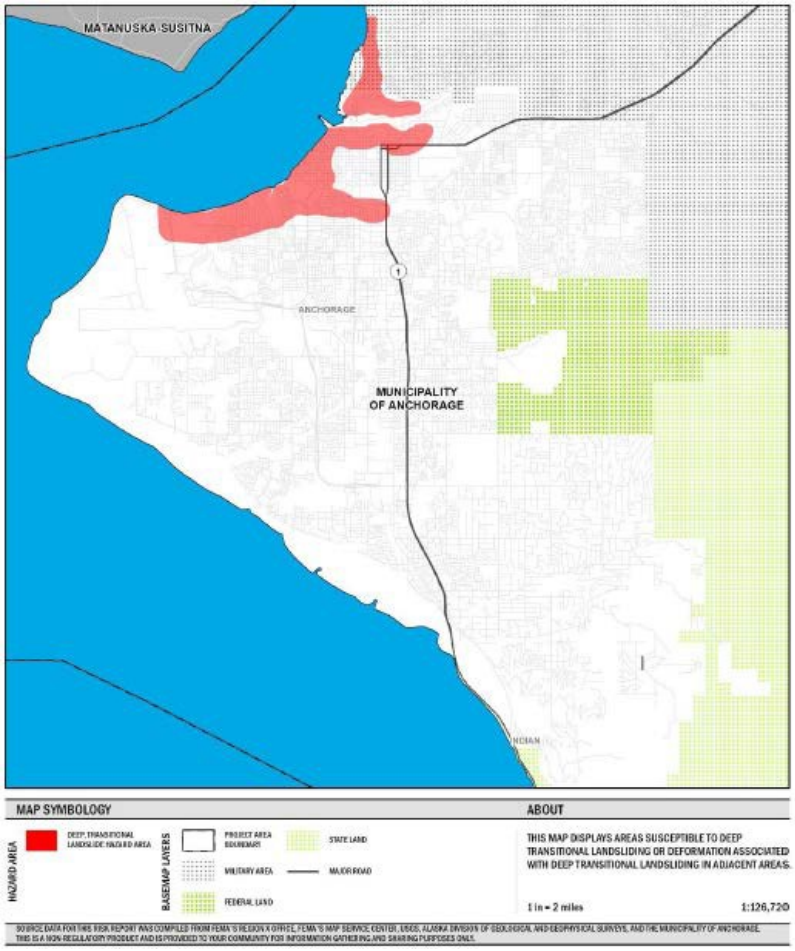
Seismically Induced Ground Failure

In 1979, a Geotechnical Hazards Assessment Study was developed to "inventory all significant geotechnical data with respect to geologic hazards, to analyze the data to provide an indication of the degree of hazard, and to designate those areas of potential hazards upon a series of maps" (Harding-Lawson, 1979:3).

Most landslides caused by the 1964 earthquake fall into two categories: "(1) deep, translational block-type landslides on sub-horizontal shear surfaces, and (2) shallower, more disrupted slides and slumps, on more steeply dipping shear surfaces, along coastal and stream bluffs and other steep slopes" (USGS, 2009). The translational block slides occurred mostly in the downtown and Turnagain Heights areas. These areas tend to have thick (over 30 feet) layers of Bootlegger Cove Formation clay. The shallower slides generally occurred in coastal areas and stream bluffs. The following figures show the seismic landslide hazard for deep translational landslides associated with great subduction zone earthquakes with return periods between approximately 300 and 900 years, shallow landslides with a 2 percent probability of exceedance in 50 years, and shallow landslides with a 10 percent probability of exceedance in 50 years.

The United States Geologic Survey (USGS) recently completed a report on seismic landslide hazards in the Anchorage Bowl (Jobson and Michael, 2009). According to this report, a large portion of the Anchorage Bowl has a low hazard but areas with moderate, high, and very high potential exist.

Figure 4.8 Seismic Landslide Hazards



As Figure 4.8 shows, the areas most likely for a deep translational landslide are Turnagain Heights, Downtown, Government Hill, and along the western portion of Chester Creek and Ship Creek. The areas most likely for shallow landslides are “steeper slopes, principally along coastal and stream bluffs and steep slopes bounding some glacial hills” (Wesson and others, 2007). Areas that have high and very high shallow landslide hazard include the Government Hill, along Chester Creek, along the Turnagain and Knik Arms, and Campbell Lake.

The Chugiak/Eagle River and Turnagain Arm areas were not included in this report. While landslides are possible in these areas, additional research is needed

Land Subsidence

Land subsidence is any sinking or downward settling of the Earth's surface. Common causes of land subsidence in Alaska are sediment compaction and seismic or volcanic activity.

Based on previous experience, the Portage and Girdwood areas are susceptible to subsidence.

Seasonally Frozen Ground

Frost action is the seasonal freezing and thawing of water in the ground and its effect on the

ground and development. Frost heave is when ice formation causes an upward displacement of the ground. When the ground ice thaws, the ground loses bearing strength and its ability to support structures is weakened. This is a widespread problem in Alaska.

Likelihood of Occurrence - Probability - Medium

Ground failure events are difficult to predict, as many of them are triggered by other events such as earthquakes. See Hazard Rating Matrix, Table 1.2.

Historic Events

The 1964 Good Friday earthquake triggered a wide variety of falls, slides, and flows through Southcentral Alaska. The Anchorage area was heavily impacted because of Bootlegger Cove clay failures. Some of the more significant events occurred at 4th Avenue, L Street, Government Hill, and Turnagain Heights. Several less-devastating slides occurred throughout town, including slides at Point Woronzof and Potter Hill.

The Government Hill slide was a complex movement. Government Hill Elementary School was severely damaged by the translational slide. The south wing of the school dropped about 30 feet, while the east wing split lengthwise and collapsed. Part of this slide became an earth flow that spread 150 feet across the flats into the Alaska Railroad yards. Anchorage All-Hazards Mitigation Plan Update

The Turnagain Heights landslide is also considered a complex movement. In fact, it was probably the most complex of all the Anchorage landslides associated with the Good Friday earthquake. The landslide likely began as a block slide, but evolved to include lateral spreading, slumping, and possibly other types of movement. This landslide caused serious damage to a housing development, in which three people died.

The earthquake caused at least one rock avalanche as a slab of rock became detached from the mountain peak overlooking Sherman Glacier. The rock slab disintegrated as it moved downhill, enabling it to reach high velocity and extend a great distance over the glacier. Rockslides were also triggered, including “one relatively significant event in the Winner Creek drainage” (Mears, 1993:12).

Extensive subsidence also occurred as a result of the 1964 Good Friday earthquake. The zone of subsidence covered about 110,039 square miles, including the north and west parts of Prince William Sound, the west part of the Chugach Mountains, most of Kenai Peninsula, and almost all the Kodiak Island group. Some areas experienced subsidence that exceeded seven feet, but most areas subsided less. For example, part of the Seward area is about 3.5 feet

lower than before the earthquake and portions of Whittier subsided more than five feet. The village of Portage, at the head of Turnagain Arm of Cook Inlet, experienced six feet of tectonic subsidence during the earthquake.

Vulnerability

An earthquake could cause seismically induced landslide. For information about earthquakes, please see Section 4.1. The susceptibility for seismically induced ground failure has been determined only for the part of the Municipality shown in Figure 4.9. Table 4.23 shows the

parcels that are susceptible to a deep, translational landslide while Table 4.24 shows the parcels that are susceptible to deformation associated with deep, translational landslides in adjacent areas. A similar calculation could not be conducted to identify the vulnerability to the shallow landslide hazard as the file format did not permit this analysis. Based on an average MOA household size of 2.65, there is approximately 5,955 people living areas that are vulnerability to deep, translational landslides and an additional 3,729 living in the adjacent areas. Infrastructure, including buried pipes, are vulnerable to ground failure.

Table 4.23 Deep, Translational Landslide Vulnerability

Land Use	# of Parcels	Taxable Value (Land)	Taxable Value (Buildings)	Total
Residential	2339	433511900	637984400	1071496300
Commercial	419	223303600	451056700	674360300
Industrial	48	49107700	44055800	93163500
Institutional	43	74470000	77213700	151683700
Open Space	12	3164300	271500	3435800
Transportation	0	0	0	0
Other	3	0	0	0
Vacant	22	0	0	0
Total	2886	783557500	1210582100	1994139600

Source: MOA GIS, 2016

Table 4.24 Deformation in Adjacent Areas Vulnerability

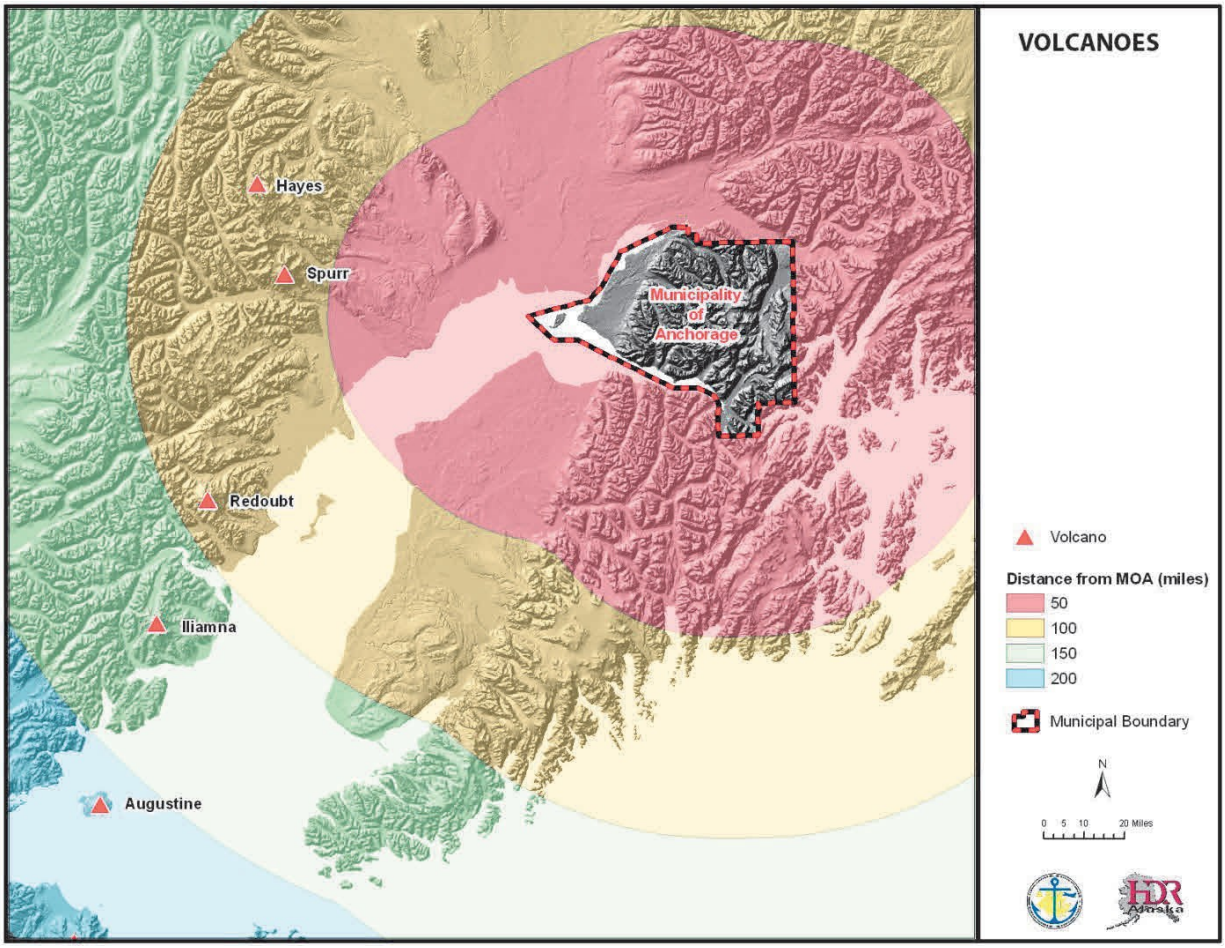
Land Use		# of Parcels	Taxable Value (Land)	Taxable Value (Buildings)	Total
Residential		1350	189932800	320803700	510736500
Commercial		700	362166700	879711300	1241878000
Industrial		80	72405800	123638800	196044600
Institutional		59	39055100	32231200	71286300
Open Space		9	2814000	0	2814000
Transportation		0	0	0	0
Other		4	0	0	0
Vacant		32	0	0	0
Total		2234	666374400	1356385000	2022759400

Source: MOA GIS, 2016

4.1.7 VOLCANIC ASHFALL

According to the Alaska Volcano Observatory (AVO), a volcano is "a vent in the surface of the Earth through which magma and associated gases and ash erupt; also, the form or structure (usually conical) that is produced by the ejected material" (AVO www.avo.alaska.edu, undated). Alaska is home to over 130 volcanoes with 90 of them being active in the last 10,000 years and over 50 have been active since approximately 1760. None of these volcanoes are located within the MOA (see Figure 4.9). Because of the distance between any volcano and the MOA, the MOA will not be likely be directly affected by most elements of a volcanic eruption that occurs in Alaska; with the exception of ash fall.

Figure 4.9 Volcanoes

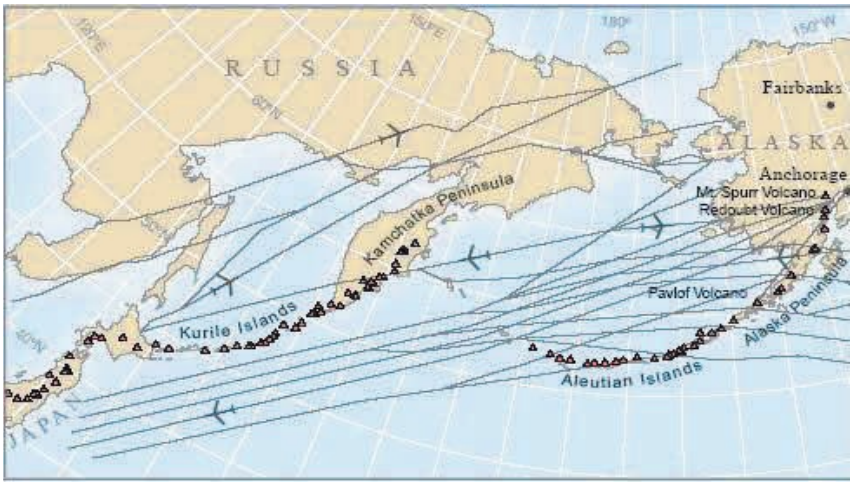


There are a variety of hazards associated with a volcanic eruption, but the primary hazard to the MOA is volcanic ash fall. Volcanic ash consists of small jagged pieces (less than 1/12 inch in diameter) of rocks, minerals, and volcanic glass sent into the air by a volcano (Kenedi and others, 2000). Volcanic ash is created during an explosive volcanic eruption. Alaska's volcanic activity is dominated by explosive volcanism.

Volcanic ash can accumulate on roof tops, power lines or other structures causing them to collapse. Wet ash can conduct electricity and may cause short circuits or the failure of electrical components. Ash fall may interfere with telephone and radio communications. Ash can also interfere with the operation of mechanical equipment, including aircraft. In Alaska, this is a major problem, as many major flight routes are near historically active volcanoes; the main airport for the MOA and all of Alaska, the TSAIA along with Merrill Field, and JBER

Figure 4.10 Flight Routes

Elmendorf AFB air facilities, are all at risk from volcanic ash fall. Ash falling or resuspended can also reduce visibility and make roads and runways slippery making transportation difficult. Ash may be a health risk especially to people with cardiac or respiratory conditions, children and the elderly. Ash is abrasive and can



Alaska's volcanoes and a schematic depiction of selected major North Pacific and Russian Far East air routes. SOURCE: AVO

injure eyes (Kenedi and others, 2000).

Based on proximity, the volcanoes that are most likely to result in ash fall in the MOA are the five Cook Inlet Volcanoes, Hayes, Spurr, Redoubt, Iliamna and Augustine (figure 4.10). Of these, Augustine is considered the most historically active volcano in the Cook Inlet region (Wallace and others, 2010). For more information about these volcanoes, please see the respective volcano hazard report available on the AVO website at http://www.avo.alaska.edu/downloads/classresults.php?pregen=haz

Location

The entire MOA could be impacted by a volcanic ash event. Different areas of the MOA may be impacted by any given event depending on which volcano erupts, wind direction, and duration of the eruption. Due to the prevailing winds, the MOA could receive ash fall from any Cook Inlet volcano depending on wind conditions at the time of the eruption (Waythomas and others, 1997; Waythomas and Waitt, 1998). Recent lake-core studies in the Anchorage area indicate that Mount Spurr volcano is the most prolific source of ash fall in the MOA over the last 12,000 years (Wallace and others, 2010). It is also possible that ash could reach the MOA from a large eruption outside of the Cook Inlet region.

Likelihood of Occurrence - Probability - Medium

Volcanic activity that poses a risk to aircraft or local populations in Alaska is infrequent. The AVO actively monitors Alaska's volcanoes for signs of unrest. AVO is also responsible for issuing warnings of eruptions or activity that may lead to an eruption. See Hazard Rating Matrix, Table 1.2.

The MOA is more likely to experience ash fall from Spurr, Redoubt, and Augustine volcanoes because of the proximity of the MOA to these sources upwind. Based on geologic studies of the Cook Inlet volcanoes, Spurr, Redoubt, and Augustine are considered more frequently active than Hayes or Iliamna volcanoes, According to the USGS, "large-volume, explosive, ash-forming eruptions of Iliamna are probably unlikely in the future but significant disruptive small eruptions could occur (Waythomas and Miller, 1999). Hayes Volcano appears to be largely inactive in the past few thousand years and historical eruptions are unknown (USGS, 2002). However, the largest ash fall event in the MOA in the late Holocene occurred from Hayes Volcano (3,700–4,200 years ago).

Historic Events

In its nearly 100 years of existence, Anchorage has dealt with ash from historical eruptions of Spurr, Redoubt, and Augustine volcanoes. Additional information about these eruptions can be found in the respective Volcano-Hazard Assessments.

Spurr Volcano

In 1992, a series of three ash-producing eruptions occurred from Crater Peak, the active vent on Spurr Volcano. Ash fall from one of the three events occurred in the MOA (August 18) and triggered a disaster declaration. Approximately 0.12 inches (3 mm) of sand-sized ash fell in the MOA. The eruption caused health problems and property damage. Economic losses resulted from businesses, schools, and industrial facility closures. Cars, computers, and other electronic devices were damaged. TSAIA was closed for 20 hours. Two people had heart attacks while shoveling ash (Waythomas and Nye, 2002). Numerous air-quality alerts were

issued for days following the ash-fall event due to resuspension of the ash deposit and air-quality was a concern until the first snow in the fall (Waythomas and Nye, 2002).

The only other historical eruption of Mount Spurr, was in July 1953. Ash from this eruption reached the MOA and deposited about twice as much ash as in 1992 (Waythomas and Nye, 2002).

Redoubt Volcano

The most recent eruption of Redoubt occurred in 2009 and produced at least 19 ash-producing explosions between March 22 and April 4 (Wallace and Schaefer, 2009). Only one such explosion on March 28 resulted in trace (< 0.8 mm or 0.031 in) ash fall in the MOA. Ash-fall impacts to the MOA were relatively minor due to the short duration (<1 hour) of ash fall and occurrence during winter months where the ash quickly mixed with snow on the ground preventing significant resuspension. Economic losses due to disruptions to airline travel were, however, significant and the TSAIA was closed for 22 hours (March 28) and numerous flights were cancelled or rerouted throughout the eruption (Wallace and Schaefer, 2009).

Redoubt Volcano also erupted in 1989–1990 during which some 20 ash-producing explosions occurred (Scott and McGimsey, 1994). Ash fall in the MOA occurred on 3 occasions depositing trace amounts of ash (<0.8 mm or 0.031 in). The most serious impacts were economic losses due to disruptions to airline travel and the KLM Boeing 747-400 jet aircraft that temporarily lost power when it encountered a diffuse volcanic ash plume causing millions of dollars in damage. The volcanic ash cloud affected flights from TSAIA, Merrill Field, and Joint Base Elmendorf Richardson. As a result of eruption, the lost revenue to TSAIA is estimated at $2.6 million (Waythomas and others, 1997). The volcanic ash resulted in some school and business closures. Some people experienced respiratory problems from inhaling fine ash particles.

Augustine Volcano

The most recent eruption of Augustine occurred in 2006 when 13 major ash-producing explosions occurred between January 11 and mid-March. This was the fifth major eruption in 75 years (Power and others, 2010). Impacts from this event were considered minor with the biggest economic losses associated with cancelled, diverted, and rescheduled flights to avoid possible exposure to ash (Neal and others, 2010). The level of respirable particulate matter in the air within the MOA was reportedly elevated on several days during the eruption but did not exceed Environmental Protection Agency (EPA) standards (Wallace and others, 2010). There is no known significant property damage or adverse health effects associated with this eruption (Neal and others, 2010).

The 1986 eruption of Augustine (March-April) deposited trace (<0.8 mm or 0.031 in) amounts of ash in the MOA and caused significant disruptions to air traffic. A dome formed in the crater and caused some to fear it would subsequently collapse and trigger a tsunami along the east shore of Cook Inlet, as occurred in 1883. This eruption caused flights to and from TSAIA to be cancelled and military aircraft were evacuated from Elmendorf Air Force Base. The level of respirable particulate matter in the air within the MOA was elevated for several days in late March but remained just below the health emergency threshold (EPA national standard), although some sensitive people experienced respiratory problems. Many schools and businesses were temporarily closed (Swanson and Kinele, 1988).

A significant eruption also occurred in 1976 and produced ash plumes during January,

February, and April. Minor ash fall (0.6 in or 1.5 mm) occurred in the MOA on January 24–25 (Shackelford, 1978). Advisories to remain indoors were issued and many schools and businesses were closed in the MOA. Some people experienced respiratory problems and visibility in some locations was reduced to about 300 feet (100 meters or less) (Waythomas and Waitt, 1998). Ash was ingested by the equipment at the Beluga power plant, the primary power supply for Anchorage (Swanson and Kinele, 1988).

Vulnerability

Because the ash from a volcanic eruption could affect the entire Municipality, the entire MOA is represented in Table 4.32. In general, weather patterns and wind direction during an eruption will influence where ash fall occurs. Air transportation is particularly vulnerable to volcanic ash clouds as these clouds can travel great distances and cover broad areas. Ash may lead to increased traffic accidents as it reduces visibility and can make roadways slippery (IVHHN, unknown). Disruptions to the transportation system may cause delayed shipments of goods into the area.

Ashfall can disrupt power service. Power generation facilities may close to prevent equipment damage. As wet ash is conductive, equipment may need to be shut down to be properly cleaned or serviced (USGS, 2009a). Ash can contaminate water supplies making them unsafe to drink (IVHHN, unknown). Volcanic ash can cause changes in water quality (turbidity, acidity, and chemistry), increased wear on water delivery and treatment systems and high demand for water during cleanup activities (USGS 2009). Building roofs may collapse under the weight of the ash (IVHHN, unknown). In addition, volcanic ash also poses a health risk to people especially those cardiac or respiratory conditions such as asthma and emphysema (IVHHN, unknown). Volcanic ash can also cause eye irritation and skin irritation (IVHHN, unknown).

Table 4.25 Volcanic Ash Vulnerability

Land Use	# of Parcels	Taxable Value (Land)	Taxable Value (Buildings)	Total
Residential	75024	8526159300	17756156200	26282315500
Commercial	4065	2568664400	4512337400	7081001800
Industrial	2597	1494944600	1907337000	3402281600
Institutional	1035	1215398400	1554183700	2769582100
Open Space	44	24995700	503000	25498700
Transportation	664	0	0	0
Other	562	377462100	36697800	414159900
Vacant	228	0	0	0
Total	84219	14207624500	25767215100	39974839600

Source: MOA GIS, 2016

4.1.8 EROSION

Erosion is a process that involves the wearing away, transportation, and movement of land. Erosion rates can vary significantly because erosion can occur quite quickly as the result of a flash flood, coastal storm, or other event. It can also occur slowly, as the result of long-term environmental changes. Erosion is a natural process, but its effects

Bluff erosion occurs when water runs off the land, forming gullies. It is also caused by wave action at the toe of the bluff or when a bluff collapses under the weight of a heavy snow or rainfall.

can be exacerbated by human activity.

Erosion rarely causes death or injury. However, erosion causes the destruction of property, development, and infrastructure. In Alaska, coastal erosion is the most destructive, riverine erosion a close second, and wind erosion a distant third.

Classifying erosion can be difficult, as there are multiple terms used to refer to the same type of erosion. For example, riverine erosion may be called stream erosion, stream bank erosion, or riverbank erosion, among other terms. Coastal erosion is sometimes referred to as tidal erosion. Sometimes bluff erosion is included in coastal erosion; other times they are considered two separate processes. The same goes for beach erosion. For this plan, coastal erosion encompasses bluff and beach erosion, while riverine erosion will be considered synonymous with stream erosion, stream bank erosion, and riverbank erosion.

Coastal Erosion

Coastal erosion is the wearing away of land, through natural activity or human influences, that results in loss of beach, shoreline, or dune material. Coastal erosion occurs over the area roughly from the top of the bluff out into the near-shore region, to about the 30-foot water depth. It is measured as the rate of change in position or the horizontal displacement of a shoreline over a period of time. Bluff recession is the most visible aspect of coastal erosion because it causes dramatic in the landscape. As a result, this aspect of coastal erosion usually receives the most attention.

On the coast, the forces of erosion are embodied in waves, currents, and wind. Surface and ground water flow, and freeze-thaw cycles may also play a role. Not all of these forces may be present at any particular location.

Coastal erosion can occur from rapid, short-term daily, seasonal, or annual natural events such as waves, storm surge, wind, coastal storms, and flooding, or from human activities including boat wakes and dredging. The most dramatic erosion often occurs during storms, particularly because the highest-energy waves are generated under storm conditions. Coastal erosion also may be from multi-year impacts and long-term climatic change such as sea-level rise, lack of sediment supply, subsidence, or long-term human factors such as the constructionof shore protection structures and dams or aquifer depletion. Studies are underway to determine the effects generated from global warming.

Ironically, attempts to control erosion through shoreline protective measures such as groins, jetties, seawalls, or revetments can actually lead to increased erosion activity. This is because shoreline structures eliminate the natural wave run-up and sand

Definitions

Groin - A narrow, elongated coastal-engineering structure built on the beach perpendicular to the trend of the beach. Its purpose is to trap longshore drift to build up a section of beach.

Jetty - A narrow, elongated coastal-engineering structure built perpendicular to the shoreline at inlets to stabilize the position of a navigation channel, to shield vessels from wave forces, and to control the movement of sand along adjacent beaches to minimize the movement of sand into a channel.

Seawall - A vertical, wall-like coastal-engineering structure built parallel to the beach or duneline and usually located at the back of the beach or the seaward edge of the dune. It is designed to halt shoreline erosion by absorbing the impact of waves.

Revetment - An apron-like, sloped, coastal-engineering structure built on a dune face or fronting a seawall. It is designed to dissipate the force of storm waves and prevent undermining of a seawall, dune or placed fill.

deposition processes and can increase reflected wave action and currents at the waterline. The increased wave action can cause localized scour both in front of and behind structures and prevent the settlement of suspended sediment.

Factors Influencing the Erosion Process

There are a variety of natural and human-induced factors that influence the erosion process. For example, shoreline orientation and exposure to prevailing winds, open ocean swells, and waves influence erosion rates. Beach composition influences erosion rates as well. For example, a beach composed of sand and silt, such as those near Shishmaref, is easily eroded, whereas beaches consisting primarily of boulders or large rocks are more resistant to erosion.Other factors may include:

- Shoreline type
- Geomorphology of the coast
- Structure types along the shoreline
- Density of development
- Amount of encroachment into the high hazard zone
- Proximity to erosion inducing coastal structures
- Nature of the coastal topography
- Elevation of coastal dunes and bluffs
- Shoreline exposure to wind and waves.

Location

Coastal erosion is occurring west of TSAIA, as:

> …several hundred yards of bluff have eroded in this century, much of it since 1949. The bluffs erode when high-energy storms enter Cook Inlet and generate large waves at their bases. Storms arriving in the fall are the most dangerous because the bluffs are not yet frozen and their sediment can be easily eroded (Mason, 1997: 193).

Coastal erosion is also occurring near the Tony Knowles Coastal Trail because "piles of construction or earthquake rubble plus a rock revetment built by the state to protect the bike path are increasing local rates of shoreline erosion by blocking lateral beach sand transport" (Mason, 1997:198).

Riverine Erosion

Rivers constantly alter their course, changing shape and depth, trying to find a balance between the sediment transport capacity of the water and the sediment supply. This

process, called riverine erosion, is usually seen as the wearing away of riverbanks and riverbeds over a long period of time.

Riverine erosion is often initiated by failure of a riverbank, causing high sediment loads, or by heavy rainfall. This generates high volume and velocity run-off that will concentrate in the lower drainages within the river's catchment area. When the stress applied by these river flows exceeds the resistance of the riverbank material, erosion will occur.

As the sediment load increases, fast-flowing rivers will erode their banks downstream. Eventually, the river becomes overloaded or velocity is reduced, leading to the deposition of sediment further downstream or in dams and reservoirs. The deposition may eventually lead to the river developing a new channel.

While all rivers change in the long-term, short-term rates of change vary significantly. In less-stable braided channel reaches, erosion and deposition of material are a constant issue. In more stable meandering channels, episodes of erosion may only occur occasionally. The erosion rate depends on the sediment supply and amount of run-off reaching the river. These variables are affected by many things including earthquakes, floods, climatic changes, loss of bank vegetation, urbanization, and the construction of civil works in the waterway.

Riverine erosion has many consequences, including the loss of land and development on that land. It can cause increased sedimentation of harbors and river deltas, hinder channel navigation, and affect marine transportation.

Other problems include reduction in water quality due to high sediment loads, loss of native aquatic habitats, damage to public utilities (roads, bridges and dams) and maintenance costs from trying to prevent erosion sites.

Location

Most of the MOA is not impacted by riverine erosion, although it may occur in some localized areas. For example, "Peters, Meadow, and Rabbit Creeks experience high-velocity flows that can lead to extensive erosion of banks and washouts at inadequate stream crossings" (FEMA, 2002:11).

Likelihood of Occurrence - Probability - Low

Riverine erosion will always occur in Anchorage and Eagle River because rivers and other flowing waterbodies are constantly altering their course. See Hazard Rating Matrix, Table 1.2.

HistoricEvents

No significant riverine erosion events have been identified.

Vulnerability

A recent GIS file showing the location of riverine erosion is not available. Only property adjacent to a river may be affected by riverine erosion. Property is considered more vulnerable to riverine erosion that people.

Wind Erosion

Wind erosion is when wind is responsible for the removal, movement, and redeposition of land. It occurs when soils are exposed to high-velocity wind, which picks up the soil and

carries it away. The wind moves soil particles 0.0039 -0.0197 inch in size in a hopping or bouncing fashion (known as saltation) and those larger than 0.0197 inch by rolling (known as soil creep). The finest particles (less than 0.0039 inches) are carried in suspension. Wind erosion can increase during periods of drought.

Wind erosion can cause a loss of topsoil, which can hinder agricultural production. The dust can reduce visibility, which can cause automobile accidents, hinder machinery, and have a negative effect on air and water quality, creating animal and human health concerns. Wind erosion can also cause damage to public utilities and infrastructure.

Location

Every parcel in MOA could be affected by wind erosion. Those in higher wind areas are more likely to experience wind erosion.

Likelihood of Occurrence - Probability - Low

In Anchorage, wind erosion is not a significant problem, but it can occur during a weather event with strong winds. See Hazard Rating Matrix, Table 1.2.

HistoricEvents

No significant wind erosion events have been identified.

Vulnerabilit*y*

Every parcel in MOA could be vulnerable to wind erosion, but this is not a significant threat.Property is considered more vulnerable to wind erosion than people. Point Woronzof has a lack of vegetation, lack of a talus pile at the base, and lack of a protective mudflat, which indicate erosion about two feet per year (Mason, 1997). PointCampbell is also eroding but at a slightly slower rate (Mason, 1997).

Likelihood of Occurrence

Coastal erosion is a natural process that continually occurs. Unlike other parts of Alaska, it would be rare to have a single event in the MOA associated with a significant amount of coastal erosion.

HistoricEvents

No significant coastal erosion events have been identified.

Vulnerability

Only coastal areas are vulnerable to coastal erosion. Property is considered more vulnerable to coastal erosion than people.

4.2 TECHNOLOGICAL HAZARDS

Technological hazards are hazards originating from technological or industrial accidents, dangerous procedures, infrastructure failures, or human error or omission.

4.2.1 DAM FAILURE

Alaska Statute 46.17.900(3) defines a dam as an "artificial barrier and its appurtenant works, which may impound or divert water." Dam safety is regulated by Alaska Statute 46.17 and 11 Alaska Administrative Code 93 Article 3, Dam Safety, which became effective in May 1987. Dam failures involve the unintended release of impounded water. A dam failure can destroy property and cause injury and death downstream. A dam failure does not always involve a total collapse of the dam. Dams may fail due to structural deficiencies, poor initial design or construction, lack of maintenance or repair, weakening of the dam through aging, debris blocking the spillway, other disasters such as earthquakes, improper operation, or vandalism.

The failure of a dam can be result in a major catastrophe with substantial economic impacts and loss of life. There are varying degrees of failure that can contribute to the uncontrolled release of water from the reservoir, ranging from improper gated spillway operation to the partial or full breach of the main structural component of the dam. Lesser degrees of failure often occur in advance of a catastrophic failure and are generally amenable to mitigation if detected and properly addressed. According to the State Hazard Mitigation Plan, there are several general causes of dam failure, including:

In Alaska, dams exist for many purposes, some of which include:

- Hydroelectric
- Water supply
- Flood control and storm water management
- Recreation
- Fish and wildlife habitat
- Fire protection
- Mine tailings

- Inadequate spillway capacity, which results in dam overtopping during extreme rainfall events.
- Internal erosion or piping caused by seepage through the embankment or foundation or along conduits.
- Improper or insufficient maintenance, leading to decay and deterioration.
- Inadequate design, improper construction materials, and poor workmanship.
- Operation issues.
- Failure of upstream dams on the same river system.
- Landslides into a dam's reservoir, creating a wave that overtops the dam.
- Seismic instability.

Location

According to DNR, there are 10 dams in the MOA (Table 4.26 and Figure 4.11).

Table 4.26 Dams Located Within the MOA

DAM ID	Name	Nearby Development	Hazard Potential Classification	Emergency Action Plan	Regulatory Jurisdiction
AK00033	Eklutna	Eklutna Village	High	Yes	State
AK00034	Lake "O" The Hills	Anchorage	High	Yes	State
AK00189	Lower Fire Lake Dam	Eagle River	High	Yes	State
AK00028	Campbell Lake Dam	Anchorage	Low	Not Required	State
AK00029	Westchester Lagoon Dam	Anchorage	Significant	No	State

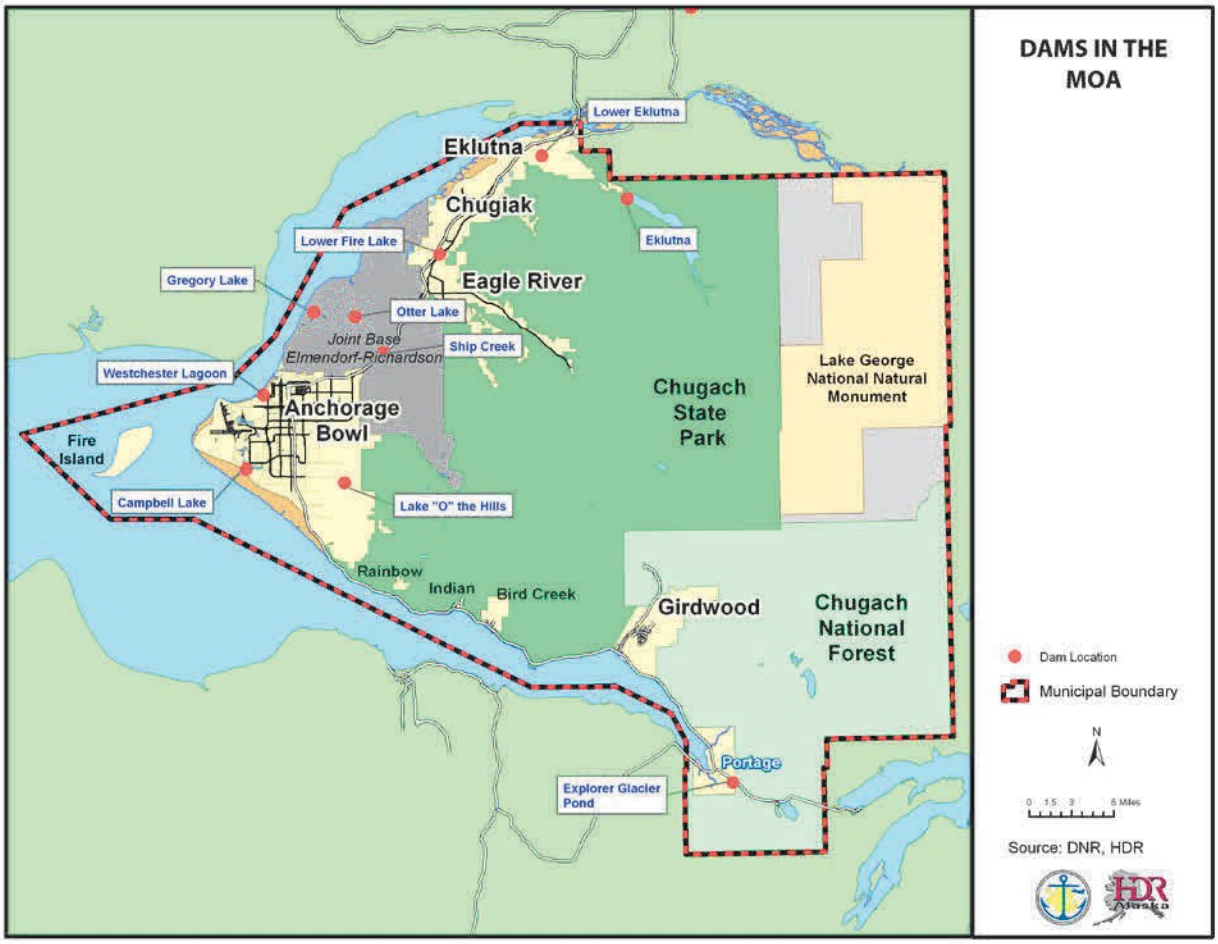
AK00093	Lower Eklutna	Eklutna Village	Significant	No	State
AK00035	Ship Creek Dam	Anchorage	Low	Not Required	Federal
AK00036	Gregory Lake Dam	Elmendorf Air Force Base	Low	Not Required	Federal
AK00076	Otter Lake Dam	Ft. Richardson Army Base	Low	Not Required	Federal
AK82401	Explorer Glacier Pond Dam	Portage	Low	No	Federal

Source: State Hazard Mitigation Plan, 2018

Likelihood of Occurrence - Probability - Low

Dam failures can occur wherever there is a dam. The risk increases as dams age and deteriorate from deferred maintenance and decay. Eighty percent of older dams designed and constructed before Alaska adopted dam safety regulations (1989) may have a higher risk due to design inadequacy. The State is especially concerned about those dams with known or suspected deficiencies because they pose a greater failure risk than properly designed and structurally sound dams. See Hazard Rating Matrix, Table 1.2.

Figure 4.11 Map of Dams in the MOA



Historic Events

Only one dam failure in Alaska has resulted in a fatality. Anchorage's Lake O' the Hills dam failed in 1972, resulting in the downstream death of a child swept into a culvert by the floodwaters. The inundation map for this dam includes the grounds

adjacent to O'Malley Elementary School, homes, and O'Malley Road. Table 4.27 lists the known dam failures in Anchorage since 1962.

Table 4.27 Dam Failures in Anchorage Since 1962

Name	NID No.	Description	Class	Height	Date of Failure	Type of Failure	Consequences	Suspected Cause
Campbell Lake Dam	AK00028	Earth embankment	Low	11	1964	Full breach	Repair costs	Foundation liquefaction, slope stability
Lake O' the Hills	AK00034	Earth embankment	High	13	1964	Unknown	Unknown	Seismic
Old Eklutna Dam	None	Earth and sheet pile	Low	NA	1964	Structural damage	Replacement costs	Seismic racking
Lake O' the Hills	AK00034	Earth embankment	High	13	1972	Full breach	One life lost	Inadequate low level outlet design, and construction, classic piping
Campbell Lake Dam	AK00028	Earth embankment	Low	11	1989	Full breach	Repair costs	Insufficient spillway capacity

Source: State Hazard Mitigation Plan, 2018

Vulnerability

Areas located within the inundation area of a dam are vulnerable to dam failure. However, most dams within the MOA have not had their inundation areas mapped. The exceptions are the Lake O' the Hills dam and the Eklutna dam. The inundation mapping for these areas is several years old. The actual dam inundations areas may be different due to increased development in the area, changes in the amount of water being impounded, or other reasons. Maps are in Appendix F.

4.2.2 ENERGY MANAGEMENT

An energy emergency refers to the inability to produce and transmit sufficient quantities of energy to the public, businesses and industry. It can involve one or more energy resources such as heating oil, natural gas, gasoline, coal, or electricity.

An energy emergency can develop quickly. For example, a storm could cause a power line to break. It could also develop over days or weeks. For example, during the 1973 OPEC (Oil Producing and Exporting Countries) embargo, gasoline, fuel oil, and other petroleum derivatives were in short supply. An energy emergency could even develop over years or decades. For example, increased development puts pressure on the amount of energy needed; if a utility company expands to meet that need but the revenue is not sufficient, the utility company could potentially close.

The 2011 plan identified potential winter natural gas shortages due to the Cook Inlet Gas Fields and infrastructure to supply peak demands. The Cook Inlet Natural Gas Storage Alaska facility was constructed. This is a ground injection facility able to store natural gas for peak demands. The facility was ready for operation November 2013. The MOA and some utilities still maintain the energy watch campaign on their web-sites but it appears there has not been any practice of the system for the past few years. Long duration energy disruption, 24 hours or

"Energy Watch" Campaign. The MOA and regional utility organizations have worked together to create a public awareness campaign designed to ask residents to conserve energy use in the event of an energy emergency.

greater, during extreme cold weather can cause significant damage to buildings in Anchorage if the structures remain unheated.

Location

All areas of the MOA are susceptible to energy emergencies.

Likelihood of Occurrence - Probability – Has not occurred yet

Typically, several small localized power outages occur every year. However, a large- scale, extended-duration power outage is not considered likely. See Hazard Rating Matrix, Table 1.2.

Historic Events

While power outages are not rare, they typically occur for a short duration and are limited to a small geographic area. There have been no known prolonged citywide power outages orother type of energy emergency recorded in Anchorage.

Vulnerability

The MOA is vulnerable to localized short-term energy emergencies. Because an energy emergency could affect the entire Municipality, the entire MOA is represented in Table 4.28. Power failures are more likely to affect people than the built environment though. As the MOA continues to grow, the amount of energy demanded will increase. This has the potential of increasing the city's vulnerability unless the energy supply also increases. Facilities that rely on electricity for life safety needs such as hospitals and nursing homes tend to be more vulnerable to an energy emergency. While these facilities tend to have back-up generators, they may not be able to meet the needs of the facility for an extended period of time. Extended power outages will also have negative impact on the local economy as many businesses will be unable to functions. Businesses with perishable inventories, such as grocery stores and restaurants may suffer permanent losses.

Table 4.28 Parcels Vulnerable to Energy Emergencies

Land Use	# of Parcels	Taxable Value (Land)	Taxable Value (Buildings)	Total
Residential	75024	8526159300	17756156200	26282315500
Commercial	4065	2568664400	4512337400	7081001800

Source: MOA GIS, 2016

4.2.3 URBAN FIRE (CONFLAGRATION)

An urban fire is one involving a structure or property within an urban or developed area. For the purposes of this plan, urban fires are defined as major fires affecting (or with the potential to affect) multiple properties. These types of fires are rare in modern, developed cities but could happen if associated with another disaster such as an earthquake, secondary to an aircraft crash, during civil unrest, where multiple ignitions could occur simultaneously, overwhelming the fire department's ability to respond.

Location

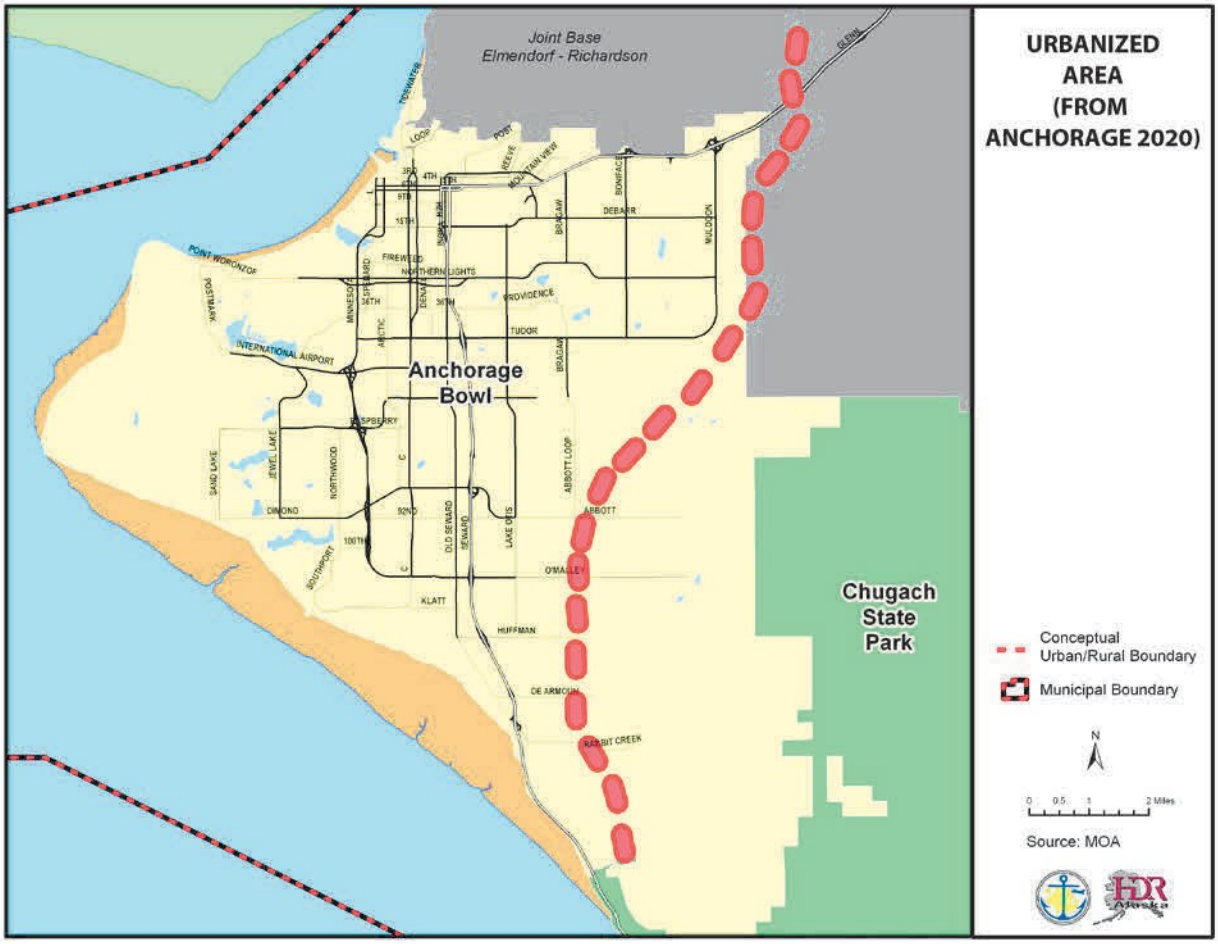
Every parcel in the urbanized portion of the MOA, as identified in Anchorage 2020 (see Figure 4.13) has the potential for a major urban fire. In general, the potential for a conflagration is higher in high-density areas that have structures located close to each other.

Parts of the Chugiak/Eagle River area also have the potential for a conflagration but a specific geographic area has not been identified. The downtown area, which tends to have higher densities, is more likely than areas with lower densities.

Likelihood of Occurrence - Probability - High

In the MOA, there is not a significant likelihood of a major urban fire but the potential exists. Modern building codes, construction techniques, building materials have been developed to reduce the possibility of a major urban fire. A major urban fire is more likely to occur as the secondary effect of another hazard such as an earthquake as fire department resources may have to respond to multiple incidences simultaneously, water for firefighting purposes may be unavailable, etc. See Hazard Rating Matrix, Table 1.2.

Figure 4.13 Map of Urbanized Area from Anchorage 2020



Historic Events

There have been no major urban fires in the MOA in recent years that have resulted in a disaster declaration. Fires within the urbanized portion of the MOA are usually quickly contained and are typically limited to one or two buildings.

One of the most significant urban fires in recent history occurred on June 5, 2007 at the Park Place Condominiums. This fire was accidentally started during plumbing maintenance. Damages from the fire were estimated at $19 million: $14 million in property loss and $5 million in personal content loss.

Vulnerability

Every parcel in the urbanized portion of the Anchorage Bowl could be vulnerable to a major urban fire and is represented in Table 4.29. This is not considered a significant threat. Hotels, nursing homes, theaters, daycares, assisted living facilities, nightclubs and other places where large groups of people tend to gather tend to have a higher potential for injuries and fatalities.

Table 4.29 Parcels Vulnerable to Urban Fire in the Anchorage Bowl

Land Use	# of Parcels	Taxable Value (Land)	Taxable Value (Buildings)	Total
Residential	55,130	6,165,655,300	13,159,778,900	19,325,434,200
Commercial	3,375	2383528500	4349166300	6732694800
Industrial	2491	1452514500	1872148800	3324663300
Institutional	368	650247000	1348498700	1998745700
Parks	259	287975300	9803500	297778800
Transportation	129	89869000	49512800	139381800
Other	0	0	0	0
Vacant (residential)	5,193	538,939,700	0	538,939,700
Watershed	0	0	0	0
Total	66945	11487847200	19575309000	31063156200

Source: MOA GIS, 2016

A geographic boundary has not been established for the Eagle River area so the number of parcels and their value that could be impacted has not been calculated as part of this update.

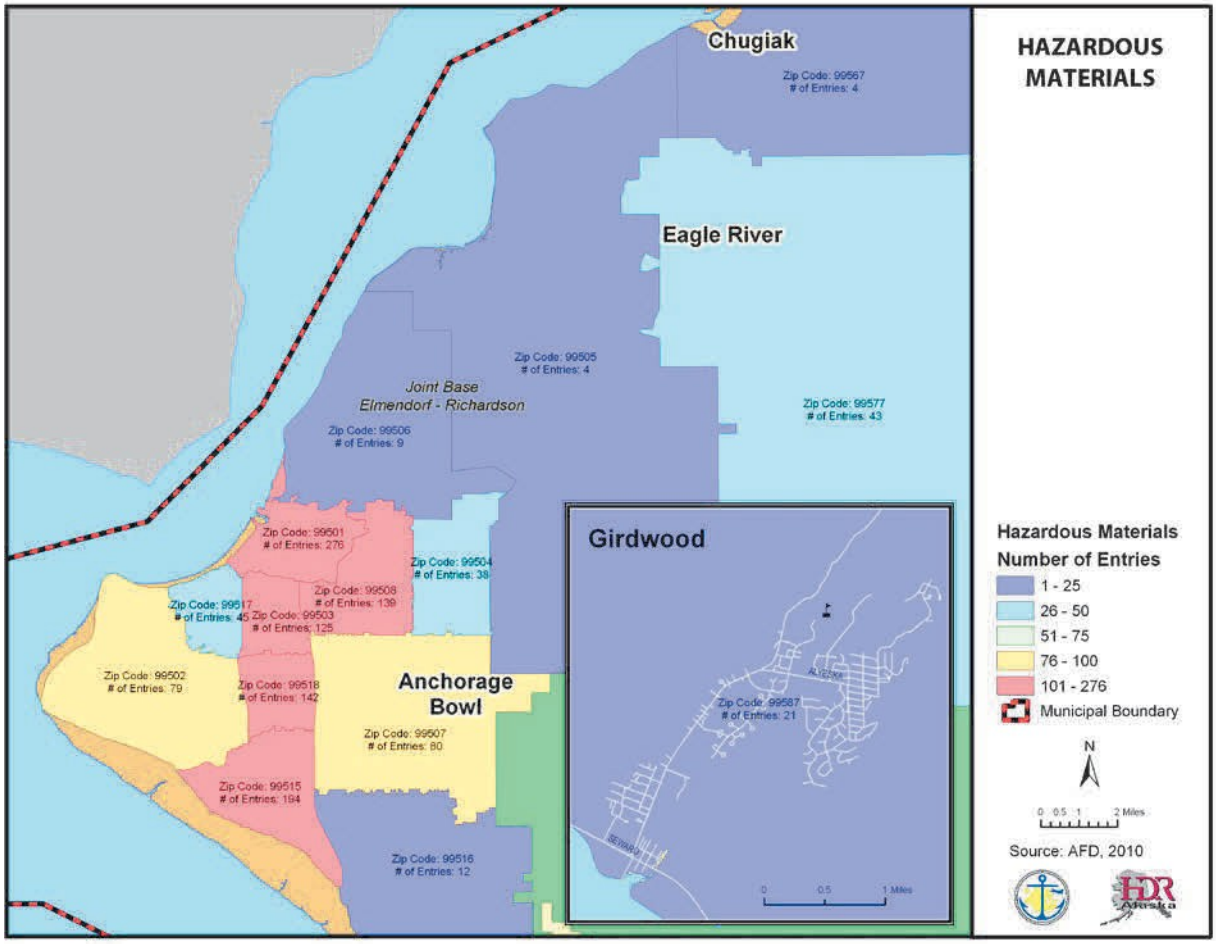
4.2.4. HAZARDOUS MATERIALS (HAZMAT) RELEASE

In general, a hazardous material is any substance or a material that has the potential to harm humans, animals, or the environment. A hazardous materials incident is the intentional or accidental release of toxic, combustible, illegal, or dangerous nuclear, biological, or chemical agents into the environment. The types of material that can cause a hazardous materials incident are wide ranging. Examples include materials such as chlorine, sulfuric acid, gasoline, medical/biological waste, etc. Many accidents happen at fixed sites (where hazardous materials are stored or handled), but incidents may also occur during transportation (by road, rail, pipeline or waterway). Terrorist incidents are not covered in this chapter.

Location

Hazardous materials incidents are more likely to occur where hazardous materials are located. Facilities that meet certain requirements are required to report information regarding the type and volume of hazardous materials to the State of Alaska and the AFD. According to the AFD records (as of July, 2016), zip code 99506 has the highest number of reportable hazardous materials. This zip code includes the Ship Creek area which has a higher percentage of industrial land uses (see Figure 4.14).

Figure 4.14 Map of the Distribution of Hazardous Materials



The MOA Solid Waste Services Division has two sites to collect hazardous wastes. The first Hazardous Waste Collector Center is located at the Anchorage Regional Landfill (near the intersection of the Glenn Highway and Hiland Road). The second Household Hazardous Waste Collection Facility is located at the Central Transfer Station near E. 54th and Juneau (east of the Old Seward Highway). These sites are for household use only.

Transportation related incidents are more likely on the main transportation routes such as the Seward and Glenn Highways and the Alaska Railroad. Materials enter the Port of Anchorage and are dispersed around the State. However, they can also occur on local roads or by air or marine vessel traffic.

Pipelines, such as the pipeline used to transport fuel from the Port of Anchorage to TSAIA, are another potential source of a hazardous materials incident.

Likelihood of Occurrence - Probability - Low

Small-scale hazardous materials incidents occur every year although the exact number is unavailable. As the MOA continues to grow, it is likely that the number of facilities using hazardous materials will increase and so will the likelihood of a hazardous materials incident. Additionally, as the State of Alaska itself grows, so too will the demand for Hazardous Materials

needed statewide, more of which are brought through the Port of Anchorage. In the year 2015 there were a total of 417 HazMat calls requiring AFD response. 289 of these were fuel/chemicals. 137 were a release of CO and 144 pertained to a gas leak in nature. See Hazard Rating Matrix, Table 1.2.

Historic Events

There have been no events that resulted in a declared disaster. However, small scale hazardous materials incidents have occurred. For example, on June 9, 2009, there was a chemical spill at TSAIA that resulted in a cargo hanger being evacuated for an hour.

Vulnerability

As a hazardous material incident could occur at a facility or during transportation, the entire MOA is considered vulnerable to a hazardous materials incident (see Table 4.30).

Table 4.30 Parcels Vulnerable to a Hazardous Material Incident

Land Use	# of Parcels	Taxable Value (Land)	Taxable Value (Buildings)	Total
Residential	75024	8526159300	17756156200	26282315500
Commercial	4065	2568664400	4512337400	7081001800

Source: MOA GIS, 2016

Areas with higher concentrations of hazardous material usage, such as industrial areas, are more vulnerable. Zip code 99501 has the highest number of hazardous materials. People living in close proximity to a hazardous material incident are more vulnerable. The number of people vulnerable to a hazardous material incident will depend on the location of the event.

Areas with higher concentrations of hazardous material usage, such as industrial areas, are more vulnerable. Zip code 99501 has the highest number of hazardous materials. People living in close proximity to a hazardous material incident are more vulnerable. The number of people vulnerable to a hazardous material incident will depend on the location of the event, the amount of material involved and the specific material involved.

Discharges/Releases, nuclear facilities (such as power plants, waste storage sites, and processing plants) in eastern Russia and Japan could impact Alaska because weather patterns have the potential to bring radioactive fallout to the state. Most Russian facilities are considered to have substandard construction and have had a history of reported and unreported releases (Alaska Department of Environmental Conservation, 2010).

4.2.6 TRANSPORTATION ACCIDENT

The transportation system in the MOA consists of air, road, rail, and marine systems. All of these modes have the potential for accidents that could lead to a disaster. For this plan, a transportation accident is any large-scale aircraft, vehicular, railroad, or marine accident, i.e., one that is not handled on a day-to-day basis by emergency responders.

Anchorage is home to many public airports, the largest of which is TSAIA. TSAIA is the major passenger and cargo facility and is located on the western edge of the city. Merrill Field, one of the busiest general aviation[8] airports in the country, is located just east of downtown. Several of the flight paths of both airports pass over developed parts of the Municipality. Other airports located within the MOA include Birchwood Airport and Girdwood Airport. There are also two military air fields on JBER. In addition, the MOA has one seaplane base (Lake Hood), although several lakes are used by seaplanes, including Sand Lake, Campbell Lake, and Lower Fire Lake.

The MOA is vulnerable to two major types of air transportation accidents; a crash involving a large passenger aircraft or a crash causing casualties on the ground. Mid-air collisions between two aircrafts are also possible.

As a coastal community, the MOA has the potential for marine accidents. The type of accident of greatest concern involves barges transporting materials, fuels, or other hazardous materials. Most goods designated for Alaska come through the Port of Alaska. The Port also provides all of the jet fuel to JBER and between 66 to 80 percent of the fuel to TSAIA (MOA, 2016). The Port also exports petroleum products.

There are several major transportation routes in the MOA, including the Seward and Glenn Highways, which connect the MOA to adjacent boroughs (see Figure 4.19). There are approximately 1,800 miles of roadway in the MOA.

There are approximately 140 miles of railroad track in the MOA. The ARRC operates passenger and freight trains on this track.

Location

The majority of airplane crashes occur immediately before landing or after takeoff. The areas most likely to be impacted by a plane crash are under or close to the flight path, especially if they are within 5 miles of an airport (see Figure 4.15).

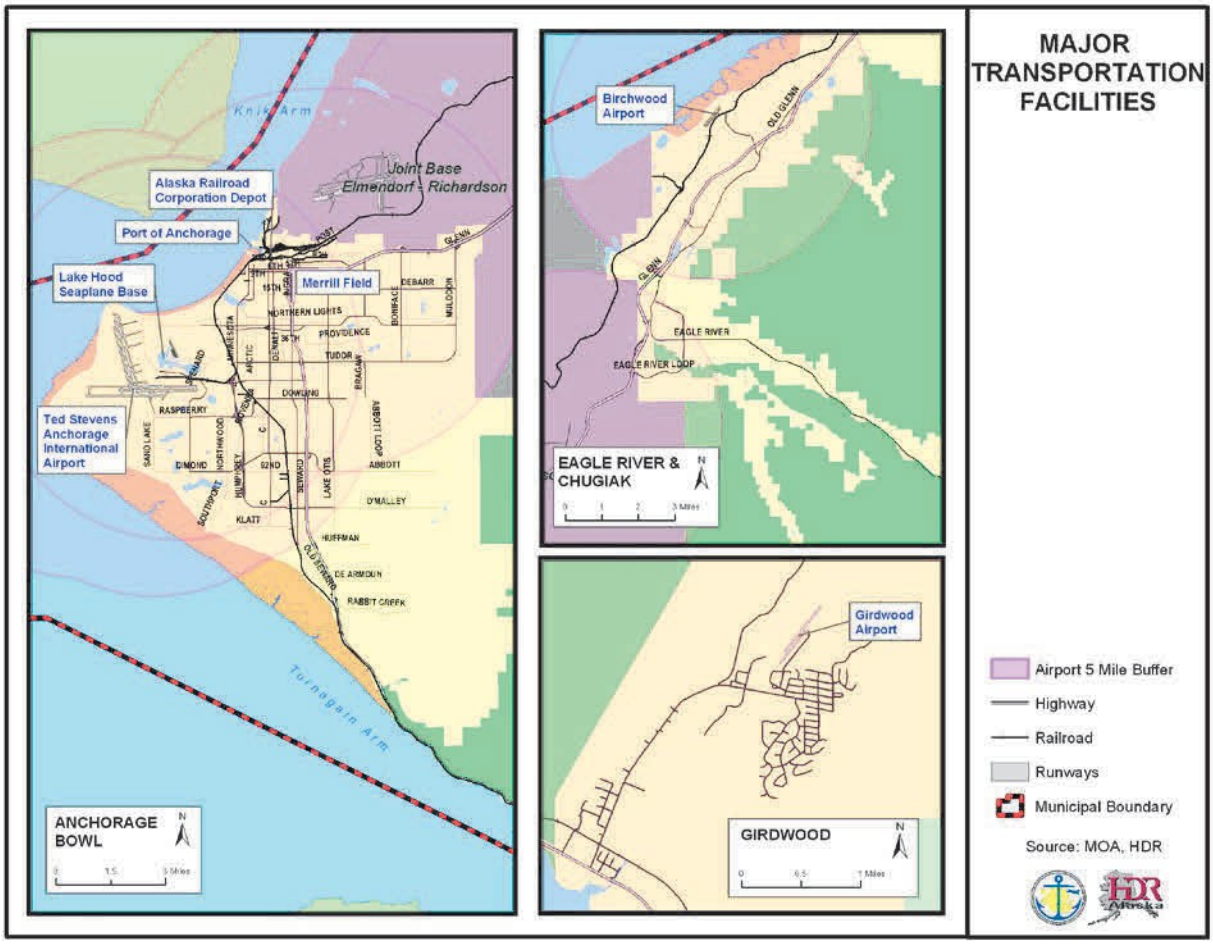
A marine accident is more likely in the Port of Alaska area and in shipping lanes but with the high tides in Anchorage and strong currents could rapidly affect the entire coastline.

A motor vehicle accident could occur on any roadway in the MOA but is more likely on roads with higher traffic volumes.

A rail accident would occur along the railroad tracks.

[8] General aviation refers to non-military flying except scheduled passenger airlines (Department of Transportation & Public Facilities, 2006).

Figure 4.15 Map of Major Transportation Facilities



Historic Events

From January 1, 2004 to December 14, 2009, there were 70 reported aircraft accidents/incidents within the MOA (National Transportation Safety Board, 2010). Most of the accidents/incidents were minor; only 3 of the 70 accidents involved fatalities.

On May 27, 2011, a small plane crashed shortly after takeoff from the Birchwood airport. The crash killed the five people on board. The crashed caused the closure of the ARRC tracks for several hours.

On June 29, 2010, a cargo plane crashed shortly after takeoff on Elmendorf Air Force Base. The crash killed all four crew members on board. The crash also damaged the ARRC's main rail line and a parallel siding, forcing train traffic to be suspended until repairs could be made.

On June 2, 2010, a plane crashed just after taking off from Merrill Field resulting in one fatality and four people seriously injured. The plane crash occurred during rush hour near a busy intersection (7th Avenue and Ingra Street). Traffic in the downtown area was disrupted for several hours due to road closures.

On September 22, 1995, an E-3B Airborne Warning and Control Systems (AWACS) jet carrying

a crew of 24 crashed just after takeoff from Elmendorf Air Force Base. The cause of the crash was due to bird strikes.

On August 24, 2013, an airplane was coming in to land at Merrill Field and was told to wait due to another plane on the runway. The plane continued over the runway at approximately 100 feet when it suddenly pitched to the left and crashed. It was determined that the plane had been starved for fuel due to the nose-high altitude during the go-around and the engines failed. Two people were killed in this accident.

On May 28, 2014, a Robinson R44 II helicopter collided with the ground and caught fire while conducting practice flights for an external load project that was coming up at the Birchwood Airport. The pilot was killed in the crash.

On July 2, 2014, a plane crashed at Merrill Field killing the pilot after undergoing maintenance and modifications over the course of several years. The elevator controls had been misrigged and were in the opposite locations resulting in the reversal of control inputs. Witnesses stated that the airplane climbed steeply in an extreme nose-high attitude until it pivoted and descended straight to the ground.

On August 6, 2015, two people were missing after a Piper PA-18-150 plane crashed into the Knik Arm off the Birchwood Airport. The airplane was located and recovered, with extensive damage. The two occupants were never recovered and are presumed deceased.

On December 21, 2015, a small airplane lost engine power after taking off from Girdwood and landed on a highway bridge. No one was injured or killed.

On December 29, 2015, a Cessna 172 was destroyed and the pilot lost his life when the plane collided with an office building in downtown Anchorage.

The worst crash in Anchorage occurred on November 27, 1970. A DC-8-63F plane went off the end of the runway at TSAIA and was destroyed in a post-crash fire. The National Transportation Safety Board determined that the probable cause was that the plane was not traveling fast enough during takeoff. Of the 229 people on board, there were 47 fatalities (Embry-Riddle Aeronautical University, 1972).

Other aircraft accidents include:

- An in-flight engine separation on March 31, 1993
- A collision between two aircrafts at TSAIA on December 23, 1983
- A crash during landing on December 4, 1978; five of the seven people on board were fatally injured.

According to the Minerals Management Service's Alaskan Shipwreck online database, there have been approximately 19 marine accidents since 1900. The actual number of accidents is likely to be different because not all accidents are reported and because the location description may not be detailed enough to determine if the accident with within the MOA limits. Reported accidents include:

- A ship ran into the dock at the Port of Anchorage and damaged a 30-ton section of dock on February 10, 1972
- A ship ran into the Port of Anchorage dock on July 22, 1974 and damaged the pier
- A strong wind pushed a ship onto the mudflats on April 19, 1982
- A ship ran into the dock on March 17, 1985 and damaged part of the dock

Motor vehicles accidents are typically small-magnitude events, some with fatalities, but of no impact to the entire community. According to the 2013 MOA Annual Traffic Report, in 2013 there were 4,283 accidents, including 13 that involved fatalities. In the past, there have numerous accidents that resulted in roadway closures for several hours, but there have been no accidents that resulted in a disaster declaration.

According to the Federal Rail Administration database, there were 4 train accidents in the MOA from 2000 to 2009, with no fatalities.

Likelihood of Occurrence - Probability - High

Most airplane accidents are likely to involve general aviation aircraft. However, it is unlikely that a general aviation aircraft could cause a citywide emergency. However, the presence of large planes over the developed portion of the city makes a large crash a possibility.

Marine, road, and rail accidents that result in a citywide emergency are also possible; however, the likelihood is considered low.

Vulnerability

The entire MOA is vulnerable to a transportation accident and is shown in Table 4.32. In general, the areas closer to a transportation route are more vulnerable than areas further away. A major transportation accident could have an impact on the local economic if it results in a long-term shut down of that transportation mode.

Table 4.32 Parcels Vulnerable to Transportation Accidents

Land Use	# of Parcels	Taxable Value (Land)	Taxable Value (Buildings)	Total
Residential	75024	8526159300	17756156200	26282315500
Commercial	4065	2568664400	4512337400	7081001800
Industrial	2597	1494944600	1907337000	3402281600
Institutional	1035	1215398400	1554183700	2769582100
Open Space	44	24995700	503000	25498700
Transportation	664	0	0	0
Other	562	377462100	36697800	414159900
Vacant	228	0	0	0
Total	84219	14207624500	25767215100	39974839600

Source: MOA GIS, 2016

In subsequent updates of the plan, additional research should be conducted to identify the areas vulnerable to each mode of transportation. For example, areas underneath the flight

In subsequent updates of the plan, additional research should be conducted to identify the areas vulnerable to each mode of transportation. For example, areas underneath the flight path for one of the airports would be more vulnerable to an airplane crash than other parts of the MOA.

4.2.7 COMMUNICATIONS FAILURE

A communications failure is the interruption or loss of communications systems including transmission lines, communications satellites, and associated hardware and software necessary for the communications system to function. A communications failure may be the result of an equipment failure, human acts (deliberate or accidental) or the result of another hazard event.

When a communications failure occurs, it can have a wide range of affects. A failure that results in a small delay in response times by emergency service providers might have a minimal impact on the community in general even though it may be problematic to individuals who require those services. A failure of the 911 system or an emergency warning system has the potential to impact the entire community.

Location

All parts of the MOA have the potential to be impacted by a communications failure.

Likelihood of Occurrence - Probability - High

The likelihood of a large-scale extended communications failure is high. It is assumed that there will be widespread communication failures during an earthquake.

Historic Events

Communication failures in the MOA have been limited to small scale outages associated with equipment failures or natural events such as severe weather storms and mainly affecting landline and cellular telecommunication capabilities.

There have been no failures of the 911 system in the MOA since the late 1990s. Backup systems are in place so when the APD dispatch is unable to answer 911 calls, the calls are directed to the AFD. In the past 5 years, there have been 3 instances where the back-up system has been activated. Two of these events were caused by human error which the third event was caused by a computer failure (Kurtz, 2010).

On May 19, 2002, the APD dispatch and the 911 center was evacuated due to a fire/air conditioning overheating which resulted in Halon being discharged (Roberts, 2010).

Vulnerability

Anyone who relies on technology such as telephones, are somewhat vulnerable to experiencing some type of communications failure. Interruptions in day to day communications would create problems for businesses, public agencies, citizens, andemergency services. The most common problems would range from minor inconveniences of our citizens to loss of production and revenues for businesses.

Emergency services could face more serious consequences, as nonexistent communications failure could escalate what would have been a minor emergency into adisaster situation.

CHAPTER 5 MITIGATION STRATEGY

The purpose of this chapter is to document the MOA's mitigation strategy, which is based on the findings presented in the preceding chapters. This chapter is divided into the following sections:

- Hazard Mitigation Goals and Objectives
- Hazard Mitigation Strategies
- Action Plan
- Table 5.1 All Hazards Mitigation Plan Tracking

The goals, objectives, and action items in this chapter are intended to guide everyday activities and provide a long-term hazard mitigation approach for the MOA to follow. The intent is that these goals, objectives, and action items will be incorporated into future MOA plans, policies, and projects. The goals are broad statements about what the MOA wants to achieve in terms of hazard mitigation. Objectives identify how the MOA will achieve those goals. The Action Plan items are specific actions that will be taken or projects that will be built to implement this mitigation plan.

A review of the goals, objectives and action items was conducted as part of this plan update. The planning group was asked to review the goals, objectives and action items identified in the 2016 plan and has provided written and verbal input. This has resulted in changes in the goal and objectives with corresponding updates to our action items. These updates are reflected in **Table 5.1: All Hazards Mitigation Plan.**

5.1 GOALS AND OBJECTIVES

Goal 1: Implement and maintain the MOA All Hazards Mitigation Plan.

Objective 1.1 Ensure municipal involvement by appointed personnel in this plan.

Objective 1.2 Require periodic meetings with municipal personnel and the public.

Objective 1.3 Ensure funding for plan maintenance and 5 year updates.

Objective 1.4 Ensure this plan is updated and enhanced to include other recent local plan updates, hazard data and studies. Integrate this plan into future plans and local comprehensive plans.

Goal 2: Inform the community on the local hazards and ways to be prepared if ahazard event occurs.

Objective2.1 Educate individuals and businesses about hazards, disaster preparedness, and mitigation.

Objective2.2 Increase coordination between hazard mitigation goals and existing and future plans, including the incorporation of effective hazard mitigation strategies into the Capital Improvement Program and Anchorage Comprehensive Plan.

Objective2.3 Educate public officials, developers, realtors, contractors, building owners, and the general public about hazard risks and building requirements.

Objective2.4 Partner with Municipal Departments and other agencies serving vulnerable populations to minimize harm in the event of an emergency.

Objective 2.5 Ensure hazard information/maps are easy to access and up to date in the municipal GIS database.

Objective 2.6 Partner with private sector to promote employee education about disaster preparedness while on the job and at home.

Goal 3: Increase the survivability and resiliency of municipal structures andfunctions for local hazards.

Objective 3.1 Conduct surveys of essential municipal buildings and infrastructure to determine if seismic and life safety retrofits are required.

Objective 3.2 As surveys are completed prioritize the municipal facilities to receive upgrades.

Objective 3.3 Implement the facility upgrades as funding becomes available.

Objective 3.4 Incorporate non-structural mitigation into existing buildings.

Objective 3.5 Create redundancies for critical networks such as water, sewer, digital data, power, and communications.

Goal 4: Improve the resiliency of essential private sector functions

Objective 4.1 Create a planning document to determine which private sector facilities should be prioritized for MOA assistance in disaster recovery

Objective 4.2 Develop a recovery plan for essential private sector functions such as health care or food distribution facilities

Objective 4.3 Determine if essential private sector functions should be required to implement seismic upgrades.

Objective 4.4 Minimize economic loss.

Goal 5: Land Use Planning: Develop land use regulations to reduce the hazard risk tothe general population and property.

Objective 5.1 Conduct studies to determine hazard areas within the MOA

Objective 5.2 Adopt and enforce public policies to minimize impacts of development and enhance safe construction in high hazard areas.

Objective 5.3 Integrate the All Hazards Mitigation Plan into local comprehensive and land use plans.

Goal 6: Reduce the flood risk to the community

Objective 6.1 Continue to participate in the National Flood Insurance Program.

Objective 6.2 Revise and update flood hazard information whenever possible.
Objective 6.3 Implement flood reductions measures and improve local drainage.

Goal 7: Emergency Management: Create and maintain a community wherepeople and property are safe.

(From Anchorage 2020, LRTP, Housing & Community Development Consolidated Plan, Work Force & Economic Development Plan)

Objective7.1 Develop mechanisms in advance of a major emergency to cope with subsequent rebuilding and recovery phases.

Objective7.2 Plan for and respond to the secondary effects of disasters, such as hazardous waste and hazardous materials spills, when planning and developing mitigation projects.

Objective7.3 Promote disaster contingency planning and facility safety among institutions that provide essential services such as food, clothing, shelter, and health care.

Objective7.4 Improve disaster warning systems.

Goal 8: Reduce the Urban and rural Wildfire Risk

Objective8.1 Support the AFD Wildfire Strategic Plan.

Objective 8.2 Promote Firewise homes through the concepts in Firewise Alaska: lanscaing and vegetation management; structure protection through preparedness; building design, siting, and construction material; and homeowner aareness.

Objective 8.3 Promote vegetation management in greenbelts and parks to limit fire spread.

Objective 8.4 Maintain the wildfire risk model.

Objective 8.5 Maintain and develop additional water resources.

Objective 8.6 Improve road connectivity for evacuation purposes.

5.2 IMPLEMENTATION

5.2.1 STRATEGIES

The MOA will implement the mitigation measures identified in this plan by using the comprehensive plan, Capital Improvement Plan, and other hazard mitigation tools they have at their disposal.

While there are many different ways to mitigate hazards, not all are appropriate for all situations. Each situation must be evaluated in order to decide what activities are the most appropriate. General strategies that can be used to mitigate hazards include:

Structural Features

Structural features are designed to control the hazard and restrict the exposed area. The construction of a structure such as a dam, levee, or avalanche deflection wall can lessen the impact of a hazard event. Structures can be incorporated into new development, but this should be discouraged in hazard-prone areas. The following departments can implement this strategy:

- PM&E
- Port of Anchorage
- Maintenance and Operations

Land Use Planning

Land use planning can guide development away from hazard-prone areas. Planning is more effective at protecting future development. The responsibility for land use planning is with the Planning and Development Services Department.

Zoning

Zoning ordinances regulate development by dividing a community into areas and by establishing development criteria for each area. They may restrict certain uses in hazard-prone areas or add restrictions such as minimum elevations. Zoning is more effective with future development. Zoning can:

- Prevent new development in hazard-prone areas
- Preserve or establish low densities in hazard-prone areas
- Control changes in use and occupancy of structures in hazard-prone areas
- Establish performance standards
- Require special use permits

The Planning Department and the Planning and Zoning Commission have the primary responsibility for zoning in the MOA.

Subdivision Regulations

Subdivision regulations govern how a parcel of land can be subdivided into two or more smaller parcels. It is better to incorporate mitigation measures into subdivision regulations before a parcel of land is developed. These regulations are better at protecting future development than existing development. The Planning Department, Development Services

and the Platting Board administer the MOA's subdivision regulations.

Capital Improvement Plan

A Capital Improvement Plan (CIP) is used to guide major public expenditures for physical improvements over a given period of time. These expenditures can be used to mitigate existing and future development. For example, funds could be used to retrofit an existing structure, build a new levee, or purchase property. The lack of investment in infrastructure in hazard-prone areas may also act to restrict development, as it is too costly for a private developer to build the necessary improvements. All municipal departments have input into the CIP, but the Office of Management & Budget is the coordinating department.

Open Space Preservation

Open space preservation is a tool to keep existing open spaces in hazard-prone areas from being developed. This prevents putting more people and facilities at risk. Typically, a municipal government will acquire the property from a private property owner. The property then becomes zoned as open space, which limits the future development of the property. Property that is already government-owned can also be preserved as open space. Open space is usually managed by the Parks & Recreation Department.

Acquisition

Acquisition involves purchasing property in high-risk areas and demolishing any structures on it to prevent the structure from being damaged during a hazard event. The structure is demolished to ensure that it is not re-used in the future. This technique is appropriate for mitigation of existing structures. It can also be used to buy vacant land in high-risk areas to prevent development from occurring. Many departments would be involved in the acquisition of property and structures.

Relocation

Relocation is similar to acquisition, except that any structures on the property are relocated out of a hazard-prone area. The structure may be relocated to a different parcel or within the same parcel. This technique is also more appropriate for existing structures. Many departments would be involved in the relocation of structures.

Building Codes

Building codes are a compilation of laws, regulations, ordinances, or other statutory requirements adopted by a government legislative authority relating to the physical structure of buildings. They establish minimum requirements regarding the construction of astructure to protect public health, safety, and welfare. They apply to new buildings as well asthose undergoing significant renovations, which makes building codes helpful in protecting new and existing development. Enforcement is essential in order for building codes to be an effective hazard mitigation tool. It is also less expensive and easier to incorporate mitigation measures into new structures than it is to retrofit existing ones. Development Services is responsible for administering the building code in Anchorage.

Insurance

Insurance provides funding to rebuild a structure and replace its contents after a hazard event. Insurance is appropriate for mitigating existing structures. The problem with insurance is that it can make it easier to rebuild in a hazard-prone area, thus creating a repetitive loss situation. Because municipal governments such as the MOA are typically self-insured, this strategy is used more by private property owners. The Risk Management Department is responsible for ensuring the MOA's insurance needs are met.

Education

Education involves teaching the public about potential natural hazards, the importance of mitigation, and how to prepare for emergency situations. It is used to inform residents, business owners, visitors, etc. about the hazards in the area and what they can do to protect themselves and their property. Examples include real estate disclosure, homeowner wildfire reduction publications, and training. Many departments within the MOA can undertake education activities, including OEM, the Mayor's Office, AFD, Planning Department and Development Services.

5.3 ACTION PLAN

The action plan consists of specific activities or projects that will be used to implement the goals and objectives of this hazard mitigation plan. The action items are categorized by the hazard being addressed with action items addressing more than one hazard being grouped in a multi-hazard category. The action plan contains many items that have no funding sources identified. The timelines are dependent upon obtaining funding. If and when funding becomes available, more specific timelines will be established. This list is in the early stages of development and will be updated as needed. For each item, several characteristics are listed, including:

- Purpose: Why this item is included in the action plan
- How Identified: How the action item was identified
- Coordination Organization : The primary organization to implement the action item
- Objective: The objectives being implemented
- Status/Timeline: What stage the project is at or the target start date
- Priority: The priority of the project as determined by the process established in Appendix G (Departments have not begun to use this tool and priorities will be included in the next version of the mitigation plan.)
- Cost: The estimated cost of the project (if known)
- Potential Funding Sources: Possible sources of funding (if known)
- Hazard: The hazard being addressed (for multi-hazard action items only)
- Benefit Cost: Determines the benefit to the community for the resources expended.

Goal 1: Implement and maintain the MOA All Hazards Mitigation Plan.

Action 1. The MOA shall establish a Mitigation Advisory Committee for the All Hazards Mitigation Plan and establish a semi-annual meeting schedule.

- Purpose: To review the status of the plan and make recommendations on updates

and priorities.

- How Identified: Planning Team
- Coordinating Organization: Municipal Manager
- Objective: 1.1
- Hazard: All
- Status/Timeline: 6 months from plan adoption
- Priority: High
- Cost: Staff time
- Potential Funding Sources: MOA Budget
- Benefit Cost: Little to no cost to appoint committee members and will greatly aid the implementation of this plan.

Action 2. Review and update prioritization strategy (in Appendix F). Upon completion, prioritize action items.

- Purpose: Prioritizing the projects will help the MOA make decisions regarding how to allocate the resources available for hazard mitigation activities.
- How Identified: Planning Team
- Coordinating Organization: Mitigation Advisory Committee
- Objective: 1.2
- Hazard: All
- Status/Timeline: 6 months from plan adoption
- Priority: High
- Cost: Staff time
- Potential Funding Sources: MOA Budget
- Benefit Cost: Little to no cost and once a Mitigation Advisory Committee is appointed this action item can easily be accomplished

Action 3. Ensure funding is provided for plan maintenance and revision. In year 3 of the plan the MOA should apply for State or Federal Grants for plan revision.

- Purpose: To ensure complete plan maintenance and revision with maximum agency and public involvement.
- How Identified: Planning Team
- Coordinating Organization: Mitigation Advisory Committee
- Objective: 1.3
- Hazard: All
- Status/Timeline: Ongoing
- Priority: High
- Cost: staff time and potential consultant contract.
- Potential Funding Sources: MOA Budget, State and Federal Grants
- Benefit Cost: This action will have little cost to the MOA with significant potential for benefit to the community to implement a plan update.

Goal 2. Inform the community on the local hazards and ways to be prepared if a hazard event

occurs.

Action 4. The MOA will continue to review and advise the community on the various methods of making structures and their contents more disaster-resistant, which would include workshops, literature, and public safety announcements. The MOA will also partner with private agencies on a public outreach and education campaign. Multilingual outreach will also be used.

- Purpose: To educate people about hazard mitigation.
- How Identified: by Planning Team
- Coordinating Organization: All departments
- Objective: 2.1, 2.3, 2.4, 2.6
- Hazard: All
- Status/Timeline: The staff of some departments currently perform this function.
- Priority: Medium
- Cost: unknown, varies by department
- Potential Funding Sources: MOA Budget, State and Federal Grants
- Benefit Cost: This action item is currently ongoing with minimal cost and has a benefit to community outreach of pre-disaster preparation.

Action 5. Acquire updated air photos or LiDAR information for the entire MOA

- Purpose: To allow the MOA to provide more accurate information to the public.
- How Identified: Planning Team
- Coordinating Organization: PM&E/GIS
- Objective: 2.5
- Hazard: All
- Status/Timeline: Continuous, 2-3 years for air photos and 5 years for LIDAR
- Priority: Medium
- Cost: will be determined at the time of procurement
- Potential Funding Source: Municipal Budget, State and Federal Grants
- Benefit Cost: This process is ongoing and its cost is not budget breaking but it is not insignificant. Obtaining periodic updates to LIDAR and aerial imagery is important to maintaining hazard maps.

Action 6. Work Collaboratively with other departments to incorporate the All Hazards Mitigation Plan available into other municipal long-range plans, e.g. Anchorage Comprehensive Plan, 2040 Land Use Plan, Climate Action Plan, Metropolitan Transportation Plan. To the best of our ability, ensuremitigation strategies are integrated into MOA long-range plans and capital improvement budgets.

- Purpose: To ensure hazard concerns, mitigation strategies and goals are incorporated into public planning documents.
- How Identified: Planning Team
- Coordinating Organization: Municipal Manager, Planning Director
- Objective: 2.2
- Hazard: All
- Status/Timeline: Will be implemented as MOA plans are updated.
- Priority: High

- Cost: $3,140,000
- Potential Funding Sources: MOA Budget State and Federal Grants
- Benefit Cost: This will allow the MOA to focus development and management practices to reduce the risk or improve the recovery from local hazards.

Goal 3: Increase the survivability and resiliency of municipal structures and functions against local hazards

Action 7. Retrofit and enhance MOA-owned facilities that will be needed during and after a hazard.

- Purpose: To limit the amount of damage caused by an earthquake
- How Identified: Planning Team
- Coordinating Organization: M&O, Port, AWWU, PM&E, Chugach Electric, SWS, Merrill Field, ASD
- Objective: 3.3, 3.4, 3.5
- Hazard: All
- Status/Timeline: 3 to 5 years
- Priority: Medium
- Cost: Depends on facility
- Potential Funding Sources: MOA Budget, CIP bonds, State and Federal Grants
- Benefit Cost: This action item has significant costs. The Hazard Mitigation Committee will have to use their best judgement to determine which facilities will receive priority for this funding. The benefit is survivability of functions and facilities in a hazard event.

Action 8. Identify critical infrastructure and other facilities that need to be seismically retrofitted or rebuilt to current seismic standards.

- Purpose: To ensure emergency response capability and equipment after a hazard event.
- How Identified: AFD and APD Strategic Plans
- Coordinating Organization: A FD / AP D / O E M / M&O/Development Services
- Objective: 3.1, 3.2, 3.5
- Hazard: Earthquake
- Status/Timeline: Initiate a survey of high priority municipal infrastructure not already evaluated within two years and develop a plan to address the retrofitting within three years. AFD Fire Stations 8,10,11, & 12 are the only stations that have not been upgraded to meet current seismic requirements.
- Priority: High
- Cost: Staff time to coordinate surveys of the buildings. The costs for the building analysis and retrofits are unknown.
- Potential Funding Sources: Capital Improvement Bonds, operations budget for smaller projects, state and federal funding sources for larger projects.
- Benefit Cost: This is a medium to high cost to implement. This action is essential for

maintaining emergency services after a hazard event ensuring public safety.

Action 9. Retrofit or enhance to improve the resiliency of police stations as listed in the APD's Strategic Plan and CIB/CIP plan.

- Purpose: To ensure the availability of emergency response and equipment after a hazard event.
- How Identified: APD Strategic Plan/CIB Budget
- Coordinating Organization: APD, M&O
- Objective: 3.3, 3.4, 3.5
- Hazard: All
- Status/Timeline: 3 – 5 years
- Priority: Medium to High
- Cost: Phase II (Storage building $13.5 million)
  Phase III (Evidence Warehouse/ Tactical Storage $80 million)Phase IV (HQ retrofit $18 million)
- Potential Funding Sources: MOA Budget, Bonds, State and Federal Grants.
- Benefit Cost: This is a medium to high cost to implement. This action is essential for maintaining emergency services after a hazard event ensuring public safety

Action 10. Complete the Port of Alaska modernization.

- Purpose: The port modernization project will replace the 55-year old port with updated, robust infrastructure and systems, making it more hazard-resistant than the existing port.
- How Identified: Port of Anchorage
- Coordinating Organization: Port of Alaska
- Objective: 3.3
- Hazard: Earthquake, extreme weather, hazardous materials, transportation accident
- Status/Timeline: This project is ongoing and is expected to be completed between 2022 and 2024. The actual completion date will depend on a variety of factors, including the availability of funding.
- Priority: High
- Cost: Approximately $600 million
- Potential Funding Sources: Federal appropriations and grants, State grants, Port profits, revenue bonds
- Benefit Cost: The Port of Alaska is the main hub for the majority goods and food delivered to Alaska. This infrastructure is critical to the daily lives of Alaskans. Improving the resiliency of this facility is a priority.

Action 11. Continue to strengthen the existing Port of Alaska pilings until they can be replaced

- Purpose: The structural pile thicknesses are below standard and are likely to collapse during an earthquake.
- How Identified: Port of Alaska Pile Condition – Seismic Vulnerability Study (R&M, 2014)

- Coordinating Organization: Port of Alaska
- Objective: 3.3
- Hazard: All
- Status/Timeline: This project proceeds on an annual basis and will no longer be needed when the Port modernization is complete.
- Priority: High
- Cost: Between $1 and $3 million annually.
- Potential Funding Sources: Port Capital Budget, State and Federal Grants.
- Benefit Cost: This infrastructure is critical to the daily lives of Alaskans. Improving the resiliency of this facility is a priority.

Action 12. Install gas shut-off valves in MOA-owned public facilities used in response/recovery efforts.

- Purpose: To reduce the possibility of gas leaks after a hazard event.
- How Identified: Planning Committee
- Coordinating Organization: M&O
- Objective: 3.3
- Hazard: All
- Status/Timeline: In progress; several MOA facilities have already been retrofitted.
- Priority: Medium
- Cost: To be completed (approximately $5,000 to $7,000 per facility)
- Potential Funding Sources: MOA Budget, Bonds, State and Federal Grants
- Benefit Cost: The MOA is currently funding portions of this project. Installing gas shut-off valves reduces the risks to people and facilities during and after a seismic event.

Action 13. Perform seismic and structural analysis of all ASD owned facilities

- Purpose: To identify and prioritize structural deficiencies.
- How Identified: ASD's Capital Improvement Planning process.
- Coordinating Organization: ASD
- Objectives: 3.1
- Hazard: Earthquake
- Status/Timeline: Within 1 Year.
- Priority: High
- Cost: $500,000.00
- Potential Funding Sources: ASD General Funds, Bonds, State and Federal Grants.
- Benefit Cost: The school facilities are occupied by our children much of the time andare planned to be used as shelters after a hazard event if necessary. Determining which structures need seismic upgrades and which building need upgrades the most, allow proper prioritization for the use of available funds. This analysis may also be used to determine if a facility should not be planned for use as a shelter. This will improve safety for the citizens in the community.

Action 14. Construct necessary seismic and structural upgrades of all ASD owned facilities.

- Purpose: To address deficiencies and identified in the districtwide seismic analysis.
- How Identified: Future district wide seismic analysis.

- Coordinating Organization: ASD
- Objectives: 3.3
- Hazard: Earthquake
- Status/Timeline: As funds become available
- Priority: High
- Cost: To be determined
- Potential Funding Sources: ASD General Funds, Bonds, State and Federal Grants.
- Benefit Cost: The school facilities are occupied by our children much of the time andare planned to be used as shelters after a hazard event if necessary. Conducting the seismic and structural upgrades ensures safety of the building occupants (children) and will insure resilient structures to be used as shelters for the community post-earthquake.

Goal 4: Improve the resiliency of essential private sector functions.

Action 15. Develop a recovery plan for essential private sector functions.

- Purpose: Develop a plan to determine which private sector functions are essential and will receive priority from the MOA for re-construction after a hazard event
- How Identified: Planning Team
- Coordinating Organization: Development Services and Planning Department
- Objective: 4.1, 4.2, 4.3, 4.4
- Hazard: All
- Status/Timeline: This will be work into department schedules as time allows
- Priority: Low
- Cost: Unknown
- Potential Funding Sources: MOA Budget, State or Federal Grants
- Benefit Cost: Local government must plan for or determine which private service functions/facilities must receive priority to re-establish operations to serve the public after a hazard event. These services would probably be focused on medical and food distribution facilities which would be essential for a post hazard event recovery.

Goal 5: Land Use Planning; Develop land use regulations to reduce the hazard risk to the general population and property.

Action 16. Continue to implement the policies and strategies in Anchorage 2020-Anchorage Bowl Comprehensive Plan that addresses crime prevention and public safety, natural and man-made hazards, and emergency response.

- Purpose: To implement community safety/hazard mitigation in Anchorage through applicable functional, neighborhood, and district plans. Update the APD 5-year Strategic Plan and the APD Emergency Management Plan.
- How Identified: Through inter-agency coordination, Anchorage 2020 Plan, AO-2002-119.

- Coordinating Organization: OEM/APD/AFP/Planning Department/Development Services
- Objective: 5.1, 5.2
- Hazard: All
- Status/Timeline: 3 to 5 years
- Priority: High
- Cost: MOA staff and GIS resources.
- Potential Funding Sources: MOA budget, State and Federal Grants
- Benefit Cost: Land use planning that considers hazards as an integral component to
- policies cans be established that will ensure reductions of loss and damage to structures.

Action 17. Incorporate the action items identified in the Downtown Seismic Risk Assessment into local ordinances.

- Purpose: To help ensure the action items identified in this assessment are coordinated with other MOA activities
- How Identified: Consultant, Planning Team
- Coordinating Organization: Planning Department and Development Services
- Objective: 5.1, 5.2
- Status/Timeline: By 2024
- Priority: Medium
- Cost: Under $10,000
- Potential Funding Sources: MOA Budget, State and Federal Grants
- Benefit Cost: Land use planning that considers hazards as an integral component to policies cans be established that will ensure reductions of loss and damage to structures.

Action 18. Update snow avalanche mapping for Chugiak/Eagle River, Anchorage Bowl, and Turnagain Arm/Girdwood.

- Purpose: Update snow avalanche hazard maps.
- How Identified: From 2011 Plan, Public Requests and the Planning Committee.
- Coordinating Organization: Planning Department, Development Services
- Objective: 5.1, 5.2
- Hazard: Avalanche
- Status/Timeline: 3 years
- Priority: Low
- Cost: Staff and GIS resources, Avalanche Consultant
- Potential Funding Sources: MOA Budget, State or Federal Grants
- Benefit Cost: This would allow for more accurate hazard maps for the community to protect people and structures. This would also allow for improved land use planning as the community expands into more rural areas.

Action 19. Update Seismic Hazard Mapping.

- Purpose: Update seismic hazard maps.
- How Identified: From 2011 Plan, Public Requests and the Planning Committee.
- Coordinating Organization: Planning Department, Development Services
- Objective: 5.1, 5.2

- Hazard: Avalanche
- Status/Timeline: 3 years
- Priority: Low
- Cost: Staff and GIS resources, seismic mapping consultant
- Potential Funding Sources: MOA Budget, State or Federal Grants
- Benefit Cost: This would allow for more accurate hazard maps for the community to protect people and structures. This would also allow for improved land use planning as the community expands into more rural areas.

Goal 6: Reduce the flood risk to the community

Action 20. The MOA shall continue to apply floodplain management regulations for development in the flood plain and floodway.

- Purpose: To continue to minimize vulnerability to flooding.
- How Identified: NFIP requirement
- Coordinating Organization: PM&E
- Objective: 6.1
- Hazard: Flood
- Status/Timeline: Ongoing
- Priority: Mandatory function
- Cost: Included in the PM&E Watershed Management Budget.
- Potential Funding Sources: MOA Budget
- Benefit Cost: This is an ongoing function that protects people and structures from flood hazards.

Action 21. The MOA shall continue to utilize the FEMA Flood Insurance Rate Map to define the special flood hazard area, the floodway, and the floodplain.

- Purpose: To define the special flood hazard area, the floodway, and the floodplain in a consistent manner.
- How Identified: NFIP requirement
- Coordinating Organization: PM&E
- Objective: 6.1
- Hazard: Flood
- Status/Timeline: Daily Function
- Priority: Mandatory function
- Cost: Staff Time included in the PM&E Watershed Management Budget.
- Potential Funding Sources: MOA Budget
- Benefit Cost: This is an ongoing function that protects people and structures from flood hazards.

Action 22. Annually review and amend, as appropriate, a list of potential flood mitigation projects such as culvert replacement, channel rehabilitation and property acquisition.

- Purpose: To identify sites the MOA would like to consider purchasing.
- How Identified: PM&E Drainage Studies

- Coordinating Organization: PM&E
- Objective: 6.3, 3.1, 3.3
- Hazard: Flood
- Status/Timeline: Part of ongoing activities.
- Priority: Low
- Cost: Staff time
- Potential Funding Sources: MOA Budget, Bonds, State and Federal Grants.
- Benefit Cost: This is an ongoing function that protects structures from localized flooding.

Action 23. Annually identify and prioritize Flood Insurance Rate Maps that need to be updated.

- Purpose: Because all the FIRMs cannot be updated simultaneously, having a prioritized list would tell the city what to update when resources are available.
- How Identified: Planning Team, Community Input
- Coordinating Organization: PM&E
- Objective: 6.2
- Hazard: Flood
- Status/Timeline: Initial list should be developed within one year of plan adoption.
- Priority: Low
- Cost: Staff time
- Potential Funding Sources: MOA Budget, State and Federal Grants
- Benefit Cost: This allows the local government to better mitigate the flood risk to the community and to allow the community to benefit from flood hazard mitigation projects.

Action 24. Update the Flood Insurance Study.

- Purpose: To update information about the flooding hazard in the MOA.
- Coordinating Organizations: PM&E
- Objective: 6.2, 2.5
- Hazard: Flood
- Status/Timeline: to be completed in early 2024
- Priority: Medium
- Cost: Depends on the scope of the update.
- Potential Funding Sources: MOA Budget, Bonds, State or Federal Grants
- Benefit Cost: This allows the local government to better mitigate the flood risk to the community and to allow the community to benefit from flood hazard mitigation projects. It would also allow for improved land use planning for flood hazards.

Action 25. Convert the local vertical datum to a national standard vertical datum

- Purpose: To reduce the risk to people and property from flooding.
- How Identified: by FEMA
- Coordinating Organization: PM&E
- Objective: 6.1, 6.2, 2.5
- Hazard: Flood
- Status/Timeline: 3 years
- Priority: Medium
- Cost: $300 - $500 Thousand

- Potential Funding Sources: MOA Budget, Bonds, State and Federal Grant
- Benefit Cost: This is the first step in obtaining updated Flood Insurance Rate maps and Flood Insurance Studies for the community. It will allow for protection against flooding.

Action 26. Annually review the list of drainage studies that need updating.

- Purpose: To identify which drainage studies need to be updated and the order in which they should updated
- How Identified: AHMP Planning Committee, community input
- Coordinating Organization: Watershed Management
- Objective: 6.2, 6.3, 3.2
- Hazard: Flood
- Status/Timeline: Ongoing
- Priority: Low
- Cost: To be completed
- Potential Funding Sources: MOA Budget, Bonds, State and Federal Grants
- Benefit Cost: This will allow for better planning of performing and implementing drainage studies to prevent localized flooding. This will prevent property damage and improve quality of life in poorly drained neighborhoods.

Action 27. Map estimated dam inundation areas within the Municipality and evaluate alternative methods to mitigate the potential risk of a dam failure in these areas.

- Purpose: To assess and recommend alternative methods to mitigate the risk of dam failure on residents and structures located within estimated dam inundation areas
- How Identified: Planning Team
- Coordinating Organization: PM&E, Development Services
- Objective: 6.2, 4.4
- Hazard: Flood
- Status/Timeline: A GIS layer for the Lake O' the Hills Dam is completed. An electronic version of the Eklutna Lake Dam inundation area by 2023.
- Priority: Medium
- Cost: 1 week of staff time

  (may be less if the GIS layer can be acquired from the firm that developed the inundation area map)
- Potential Funding Sources: MOA Budget, Bonds, State and Federal Grants
- Benefit Cost: This will allow the MOA to meet a State of Alaska Dam Safety Requirement and will allow local government to use the inundation studies to determine if additional pre-disaster mitigation planning should be done.

Goal 7: Emergency Management

Action 28. Identify ways to improve local public information and warning capabilities.

Purpose: To provide improved warnings to the residents of Anchorage

- How Identified: By OEM
- Coordinating Organization: OEM
- Objective: 7.1, 2.1

- Hazard: All
- Status/Timeline: Ongoing
- Priority: Medium
- Cost: To be determined
- Potential Funding Sources: Current funding, although grants and other funds may be needed to implement the improvements
- Benefit Cost: This will allow local government to better prepare the public for local hazards and warn them of imminent disasters.

Action 29. Update the MOA Continuity of Operations Plan (COOP)

Purpose: To ensure essential functions of Municipal Government during a crisis

- How Identified: By OEM
- Coordinating Organization: OEM
- Objective: 7.1, 7.3, 2.3
- Hazard: All
- Status/Timeline: 2 years
- Priority: Medium
- Cost: To be completed
- Potential Funding Sources: MOA Budget, State or Federal grants
- Benefit Cost: This will allow local government to update the COOP for current needs and situations. This will allow the MOA to continue essential government and or emergency functions during and after a disaster event.

Action 30. Update the MOA Comprehensive Emergency Operations Plan (CEOP), and Damage Assessment Plan

Purpose: To ensure essential functions of Municipal Government during a crisis

- How Identified: By OEM
- Coordinating Organization: OEM
- Objective: 7.1, 7.3, 2.3
- Hazard: All
- Status/Timeline: 2 years
- Priority: Medium
- Cost: To be completed
- Potential Funding Sources: MOA Budget, State or Federal grants
- Benefit Cost: This will allow local government to update the CEOP for current needs and situations. This will allow the MOA to continue essential government and or emergency functions during and after a disaster event.

Goal 8: Reduce the urban rural wildfire risk

Action 31. Review existing zoning ordinances to determine if additional wildfire mitigation measurescould be incorporated to address wildfire mitigation which has been proposed for inclusion in updates to Title 21. Consider adoption of theInternational Code Council Wildland Urban Interface Code (current edition).

- Purpose: To help incorporate wildfire mitigation measures into future development

- How Identified: AFD Wildfire Strategic Plan
- Coordinating Organization: AFD, Development Services, Planning Department, Parks and Recreation
- Objective: 8.1,
- Hazard: Wildfire
- Status/Timeline: Tied to the update of Title 21
- Priority: medium
- Cost: Staff time to develop code language and code adoption process
- Potential Funding Source: Operations budget, Bonds, State and Federal Grants
- Benefit Cost: Land use planning that considers hazards as an integral component to policies cans be established that will ensure reductions of loss and damage to structures and safety of the public.

Action 32. Conduct fire-wise home assessments.

- Purpose: Conduct Firewise home assessments to enable homeowners in certain parts of the MOA to obtain insurance.
- How Identified: AFD Wildfire Strategic Plan
- Coordinating Organizations: AFD
- Objective: 8.2, 8.1, 2.1, 4.4
- Hazard: Wildfire
- Status/Timeline: ongoing
- Priority: Medium
- Cost: Varies by year
- Potential Funding Sources: MOA Budget, Bonds, State and Federal Grants
- Benefit Cost: This ongoing program improves the safety of residents and structures in areas with limited firefighting capabilities. It encourages homeowners to develop and maintain their property in a manner that reduces the fire risk.

Action 33. Update the wildfire risk model.

- Purpose: The 2009 wildfire risk model is currently in use. AFD needs to update the model to 2016
- How Identified: AFD Wildfire Strategic Plan
- Coordinating Organization: AFD
- Objective: 8.1, 8.4, 2.1, 2.3, 2.5
- Hazard: Wildfire
- Status/Timeline: The update will be completed if Federal Wildland Urban Interface grant is secured.
- Priority: medium
- Cost: Staff time to make the necessary updates
- Potential Funding Sources: MOA Budget, Bonds, State and Federal Grants
- Benefit Cost: The current risk model is outdated. Updating the model will allow local government to plan and manage firefighting resources for the current needs of the community and will provide information for land use planning inputs.

Action 34. Continue and maintain vegetation management.

Purpose: To provide public lands vegetation management when DOF has personnel

- available for mitigation; To provide homeowner assessments and education so that homeowners can manage vegetation on their private property; and to provide wood lots for the disposal of vegetation from private properties through rant funds and business partnerships.
- How Identified: Wildfire Strategic Plan
- Coordinating Organization: AFD/SOA Division of Forestry
- Objective: 8.1, 8.2, 8.3
- Hazard: Wildfire
- Status/Timeline: The vegetation management is an ongoing program that supported with federal funding. This is an AFD long term project
- Priority: Medium
- Cost: Staff resources to manage the vegetation, funding for the wood lot usage and funding for the Firewise Program to encourage private homeowners to address residential areas
- Potential Funding Sources: MOA Budget, Bonds, State and Federal Grants
- Benefit Cost: This ongoing program improves the safety of residents and structures in areas with limited firefighting capabilities. It encourages homeowners to develop and maintain their property in a manner that reduces the fire risk. It allows local government to reduce the fire hazard of publicly owned greenbelts thereby reducing the risk to adjoining structures.

Action 35. Develop additional water resources for wildfire response purposes.

- Purpose: Develop additional water resources would assist in fighting wildfires.
- How Identified: AFD Strategic Plan
- Coordinating Organization: AFD/AWWU
- Objective: 8.1, 8.5
- Hazard: Wildfire
- Status/Timeline: No action has been taken due to insufficient funding and staff resources.
- Priority: Medium
- Cost: AFD Staff resources to identify locations. The development of water resources for firefighting is very costly (drilling wells, installing hydrant systems, installing drafting equipment).
- Potential Funding Sources: MOA Budget, Bonds, State or Federal Grants.
- Benefit Cost: Large sections of the local community do not have public water systems which make firefighting in extremely difficult due to limited water supply. Having an adequate water supply can mean the difference between containing a fire or extinguishing the fire.

Action 36. Update the MOA Community Wildfire Protection Plan

- Purpose: To ensure wildfire preparedness is an essential function of Municipal Government
- How Identified: By Hazard Mitigation Committee
- Coordinating Organization: AFD
- Objective: 7.1, 7.3, 2.3
- Hazard: Wildfire
- Status/Timeline: 3 years

- Priority: Medium
- Cost: To be completed
- Potential Funding Sources: MOA Budget, State or Federal grants
- Benefit Cost: This will allow local government to update the Wildfire Protection Plan for current needs and situations. This will allow the MOA to continue essential government and or emergency functions during and after a disaster event.

KEY CATEGORIES	
Goal kept - with no changes	
Goal kept - with changes	
Goal deleted - no longer viable as is	

Table 5.1: All Hazards Mitigation Plan.

Goal	Action Items	Description	Action Coordination Organization	Comments	Priority	Date
1		**Implement and maintain MOA All Hazard Mitigation Plan**		OEM updating All Hazard Mitigation Plan with grant funding.		
	A1	**Establish Mitigation Advisory Committee (MAC)**	Municipality Manager	Review and Update prioritization. Upon completion prioritize action items	High	
2022 Status: TBD upon MAC review						
	A2	**Review and Update Prioritization**	Mitigation Advisory Committee (MAC)	Review and Update prioritization. Upon completion prioritize action items	High	
2022 Status: TBD upon MAC review						
	A3	**Ensure Funding sources**	MAC	Apply for Federal/ State funding for maintenance and revisions. Each dept will seek funds. Ensure funding for 3-year revision	Medium	
2022 Status: TBD upon MAC review						
2		**Community Outreach of Hazards**		Inform public of hazards and preparedness options		
	A4	**MOA review and Advise public of Mitigation/Preparedness**	All Departments	Public forum-Quake Smart		6/6/ 2017
2022 Status: From 7-30-19 Meeting: All Depts (A4) – public information and outreach of hazards ongoing						
	A5	**Updated Air Photo/ LIDAR**	PM&E/ GIS	Acquire Updated Air Photos or LIDAR information for entire MOA		
2022 Status: From 7-30-19 Meeting: GIS (A5) - Working on updating critical facilities database. Also NEED vegetation data!						
	A6	**Make Mitigation Plans Available**	Planning Director	Ensure mitigation strategies and goals are incorporated into planning documents		
2022 Status: From 7-30-19 Meeting: GIS (A5) - Working on updating critical facilities database. Also NEED vegetation data!						
3		**MOA structure resiliency**		Increase the survivability and resiliency of municipal structures and functions against local hazards		

	A7	**Retrofit/ enhance MOA facilities**	M&O/Port/AWWU/ML&P/ PM&E/ CEA/SWS			
2022 Status: From 7-30-19 Meeting: SWS (A6) – Already working through process to replace one (or more) building(s)						
Goal	**Action Items**	**Description**	**Action Coordination Organization**	**Comments**	**Priority**	**Date**
	A8	**Identify Critical facilities**	AFD/APD/OEM/M&O/Development Services	ID critical facilities that may need to be retrofitted or rebuilt to meet seismic standards.		
2022 Status: From 7-30-19 Meeting: GIS (A7) – working on updating database of critical facilities						
	A9	**APD station resiliency**	APD/M&O	ID/retrofit and enhance APD stations to meet current seismic standards		
2022 Status: From 7-30-19 Meeting: APD (A8) – Seismic retrofitting still needed in some APD facilities to be brought up to code						
	A10	**Complete Port of Anchorage modernization**	Port of Anchorage	Drainage improvements Peach, Brown, Wynn, Page, Farmer, and 1st streets.		
2022 Status: From 7-10-19 Meeting: Port (A9, 10) – First stage of the petroleum/cement dock rebuild. Also pursuing $22million for other projects. Have already jacketed many piles that are damaged/corroded. Continuing to jacket more piles. Two Port projects have already been approved to receive annual mitigation funding						
	A11	**Port of Anchorage pilings repair**	Port of Anchorage	Continue to strengthen Port pilings until they can be replaced		
2022 Status: From 7-10-19 Meeting: Port (A9, 10) – First stage of the petroleum/cement dock rebuild. Also pursuing $22million for other projects. Have already jacketed many piles that are damaged/corroded. Continuing to jacket more piles. Two Port projects have already been approved to receive annual mitigation funding						
	A12	**Gas shut off valves**	M&O	Install gas shut off valves in MOA owned facilities used for response / rescue operations		
2022 Status: From 7-30-19 Meeting: M&O (A11) – a few more gas valve shut off devices going to be installed soon (funding in-house). Pursuing other grant-dependent projects						
	A13	**Seismic and structural analysis of all ASD owned facilities**	ASD			
2022 Status: From 7-30-19 Meeting: - Half buildings have had Tier 1 seismic analysis completed - 5 projects identified for mitigation application. Projects being scoped currently. Ceiling stabilization, lighting stabilization. Mechanical/electrical bracing. Walls have been identified to be made more stable and up to code. - Came up with a 1-10 scale with FEMA for rating buildings. Wanting to bring all ASD buildings up to a 6.5 level (most currently at 3-5 range) - 404 and 406 - Also working on pipe strapping as an on-going effort						
	A14	**Upgrade all ASD owned facilities to meet seismic and structural codes.**	ASD			
2022 Status: From 7-30-19 Meeting: - Half buildings have had Tier 1 seismic analysis completed - 5 projects identified for mitigation application. Projects being scoped currently. Ceiling stabilization, lighting stabilization. Mechanical/electrical bracing. Walls have been identified to be made more stable and up to code.						

Goal	Action Items	Description	Action Coordination Organization	Comments	Priority	Date
- Came up with a 1-10 scale with FEMA for rating buildings. Wanting to bring all ASD buildings up to a 6.5 level (most currently at 3-5 range) - 404 and 406 - Also working on pipe strapping as an on-going effort						
4		**Improve resiliency of essential private sector functions**				
	A15	**Develop recovery plan for essential private sector functions**	Development Services/Planning Section			
2022 Status: From 7-30-19 Meeting: Dev Services (A14) – work with private sector to meet code standards. No additional costs associated with code enforcement outside normal costs						
5		**Develop land use regulations to reduce hazard risk to general population and property**				
	A16	**Continue to implement Anchorage 2020-Anchorage Bowl Comprehensive Plan**	OEM/APD/AFD/Planning Dept./Development Services	Olie Rd. – pave 1.3 mile and concrete ditches	$460,000	2020
2022 Status: From 7-30-19 Meeting: A15 – stick with 2020 plan so far. Working toward 2040 plan						
	A17	**Incorporate action items ID in Downtown Seismic Risk Assessment into local ordinances**	Planning Dept./Development Services			
2022 Status: TBD upon MAC review						
	A18	**Update Avalanche mapping**	Planning Dept./Development Services			
2022 Status: From 7-30-19 Meeting: avalanche mapping needs updating, as do seismic and wind zone maps.						
	A19	**Update Seismic Hazard mapping**	Planning Dept./Development Services			

2022 Status: From 7-30-19 Meeting: seismic mapping needs updating, as do seismic and wind zone maps.						
6		**Reduce Flood risk**				
Goal	**Action Items**	**Description**	**Action Coordination Organization**	**Comments**	**Priority**	**Date**
	A20	**Continue to apply floodplain management regulations in flood plain and floodway**	PM&E	Ongoing		
2022 Status: TBD upon MAC review						
	A21	**MOA will continue to utilize FEMA Flood Insurance Rate Map**	PM&E	Ongoing		
2022 Status: TBD upon MAC review						
	A22	**Annual review/amendment of flood mitigation projects**	PM&E	As funding allows.		
2022 Status: TBD upon MAC review						
	A23	**Annually ID and Update Flood Insurance Rate Maps**	PM&E	Ongoing/if funding is available.		
2022 Status: TBD upon MAC review						
	A24	**Update Flood Insurance Study**	PM&E	If funding is available.		
2022 Status: TBD upon MAC review						
	A25	**Convert Local vertical datum to a National vertical datum.**	Convert Local vertical datum to a National vertical datum.	If funding is available		
2022 Status: TBD upon MAC review						
	A26	**Annually review/update drainage studies**	Watershed Management	Ongoing process as resources are available.		
2022 Status: TBD upon MAC review						
	A27	**Map estimated dam inundation areas**	PM&E / Development Services	Evaluate alternative methods to mitigate the potential risk of a dam failure.		

Goal	Action Items	Description	Action Coordination Organization	Comments	Priority	Date
	2022 Status:					
7		**Emergency Management**		From 7-30-19 Meeting: looking into IPAWS COOP Guidelines published		
	A28	**ID ways to improve public information and warning capabilities**	OEM			
	2022 Status: TBD upon MAC review					
	A29	**Update MOA Continuity of Operations Plan (COOP)**	OEM			
	2022 Status: TBD upon MAC review					
	A30	**Update MOA Comprehensive Operations Plan (CEOP)**	OEM	As part of update, include update of Damage Assessment Section in the CEOP		
	2022 Status: TBD upon MAC review					
8		**Reduce urban/rural wildfire risk**				
	A31	**Review existing zoning ordinance for wildfire mitigation**	AFD/Development Services/Planning Dept.			
	2022 Status: From 7-30-19 Meeting: NEEDED to update existing zoning ordinance for wildfire mitigation! Want to do, lack of funding. Eligible for mitigation funding					
	A32	**Conduct Fire-wise home assessments**	AFD/Development Services/Planning Dept.	Firewise assessments continued through the 2021 fire season. AFD leadership is considering an alternative to contracting for coordinating Firewise activities in 2022.		11/19/2021
	2022 Status: From 7-30-19 Meeting: Fire Wise home assessments an ongoing project. Just received some more grant funding that will fund inspections for the next 2-3 years. Will be applying for additional funding. Working with UA system to make university's campuses Fire Wise. APU needs a lot of inspection and Fire Wise mitigation.					
	A33	**Update wildfire risk model**	AFD	We are checking with MOA GIS to learn what we can about the AFEM. It was developed in 2005-06 timeframe. The model and outputs may be outdated.		11/19/2021
	2022 Status: From 7-30-19 Meeting: AFEM (Anchorage Fire Exposure Model) has changed. Vegetation and spruce bark beetle data missing and NEEDED (GIS).					
	A34	**Continue and maintain vegetation management**	AFD	AFD leadership is considering an alternative to contracting for coordinating Firewise activities in 2022.		11/19/2021
	2022 Status: TBD upon MAC review					

	A35	**Develop additional water resources for wildfire response**	AFD/AWWU			
Goal	**Action Items**	**Description**	**Action Coordination Organization**	**Comments**	**Priority**	**Date**
2022 Status: From 7-30-19: Looking into expanding water service up to Hillside remote areas. Also looking into developing urban water sources. Will be applying for funding for both						
	A36	**Update MOA Community Wildfire Protection Plan**	AFD/AWWU			

CHAPTER 6 PLAN MAINTENANCE

6.1 PLAN ADOPTION

The Municipality of Anchorage's Assembly will be responsible for adopting the Anchorage All-Hazards Mitigation Plan Update.

Prior to being adopted, the department responsible for the plan will submit it to the State Hazard Mitigation Officer (SHMO) at DHS&EM for review and approval. The SHMO will then submit the plan to the FEMA Region X for review and pre-adoption approval. The plan will be adopted for approval by the Anchorage Assembly. FEMA will then grant full approval of the plan and the MOA will be eligible for Hazard Mitigation Grant Programs funds.

6.2 MONITORING AND EVALUATION

The Anchorage All-Hazards Mitigation Plan, like all plans, requires periodic review to ensure that it remain up to date, reflects current information, and still meets the goals of Anchorage. The MOA Hazard Mitigation Planning Committee will review the plan annually and after every federally declared disaster. The review will determine if there have been any significant changes in the Municipality that affect the Plan. If it is determined that significant changes have occurred, the plan will be amended to remain current.

Issues that may be addressed during the evaluation include:

- Are new or different goals, objectives, and action tasks needed?
- Are there any implementation problems?
  - Not enough funding?
  - Conflicts with other goals?
  - Is the plan achieving the desired result?
- Should other hazards be addressed?
- Do we have new information that should be incorporated?
- Does the prioritization of tasks/goals reflect current priorities?

6.3 UPDATING

This plan is intended to be a "living" document that will help inform all interested parties about the MOA's natural hazard mitigation policies and projects. It will be reviewed and updated on a regular basis. The mitigation strategies identified will act as a guide for MOA departments in determining projects for which to seek FEMA and other mitigation funds from outside sources.

6.3.1 ANNUAL REVIEW

The Office of Emergency Management Director or designee is responsible for monitoring, evaluating, and updating the plan. The review and update process are as follows:

1. The MOA Hazard Mitigation Committee will meet to consider:
   - Progress made on plan recommendations during the previous 12 months
   - Mitigation accomplishments in projects, programs, and policies
   - Status of mitigation projects included on the MOA's CIP list

- New mitigation needs identified
- Cancellation of planned initiatives, and the justification for doing so
- Changes in membership to the Committee

The meeting should occur approximately four months before FEMA PDM grants are due, to allow the MOA enough time to develop a grant application should they wish to apply.

2. The Office of Emergency Management will request input from other departments and outside entities not represented on the MOA Hazard Mitigation Planning Committee on issues listed above. A special effort will be made to gather information on non-capital projects and programs important to mitigation.

3. The Office of Emergency Management will make "minor" changes to the Plan, such as updates to the CIP, without seeking outside approval.

4. "Major" changes—those related to new policies or recommended projects—will go through a more formal review process, including a possible review by the MOA Hazard Mitigation Planning Committee.

5. To allow for ongoing public input, the Office of Emergency Management will post the plan permanently on the MOA's website along with contact information that will encourage people to submit questions or comments.

6.3.2 FOLLOWING A MAJOR DISASTER

If disaster warrants Presidential Disaster Declaration, the Office of Emergency Management will convene the MOA Hazard Mitigation Planning Committee within 2 months of the declaration date. For other events, the Office of Emergency Management will determine if the committee should meet. Because recovery can be a long process and the full impact of a disaster may not be known formany months, this initial meeting may need to be followed by additional meetings over time. The annual update process described above will also be used following a major disaster. However, post-disaster deliberations will also consider the following:

- "Lessons Learned" from the disaster, and what new initiatives should be added to the plan to help reduce the likelihood of similar damage in the future
- Follow-up needed on items relevant to mitigation from any after-action reports produced by the Municipality
- Integration of mitigation into the recovery process

6.3.3 FIVE YEAR UPDATE

Every five years, the plan will be updated and re-submitted for adoption to the MOA Assembly. Prior to this, the Office of Emergency Management will use the following process to make sure all relevant parties are involved:

1. ***At year three the Office of Emergency Management will make an application to the State/FEMAfor a grant to fund the 5-year update of this plan.***

2. Follow steps 1 and 2 of the Annual Review process (Section 6.3.1).

3. Hold public meetings and meetings with identified groups of interested parties and outside organizations to gain input and feedback.

4. Integrate relevant feedback and circulate revised plan to the Hazard Mitigation Committee.

5. Upon incorporation of the stakeholder comments, the revised plan will be submitted to the Alaska State Hazard Mitigation Officer, and FEMA concurrently for their review. The plan will be updated based on their comments.

6. The revised plan will then be submitted to FEMA for review. The plan will be updated based on FEMA's comments and re-submitted to FEMA if necessary, to obtain a CriteriaMet/Plan Not Adopted determination.

7. Submit the plan to the MOA Assembly for adoption by resolution.

8. Submit the adopted plan to FEMA.

The next five-year update process should begin in 2025, with Assembly Adoption occurring in 2026.

6.4 CONTINUED PUBLIC INVOLVEMENT

Before the Assembly approves the plan, it will be presented to the public. Two public meetings will be held, and a 30-day comment period provided before the plan is presented to the Assembly. However, because the plan is a living document, public involvement in the plan should be always encouraged. The MOA website will have a page devoted to the Anchorage All-Hazards Mitigation Plan. This page will have the most recent approved plan, a method of providing feedback on the plan, and notices about plan activities such as updates and public meetings.

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Appendix A

Summary of Changes

This addendum is a summary of the substantive changes made during the 2022 update of the MOA All-Hazards Mitigation Plan.

Section	Summary of Change
	No changes in priorities are necessary.
Various	All demographic tables were updated with current information if it was available.
3/4	Maps of schools, fire stations, urbanized area and medical facilities were updated
3	Provided additional information on other plans that influence future development in the Municipality.
3	Lists of fire stations, police stations, schools and medical facilities were updated
4	Updated an approximate value of parcels without a taxable value. The value was provided by the Municipality's Tax Assessor office.
4	All vulnerability tables were updated to reflect 2021 tax assessment values. Where possible, additional information about vulnerabilities was included.
5.3	Each Action Item was updated to reflect its current status. Based on input from MOA staff, additional action items were added to the plan.
5.1	The goals and objectives were completely rewritten to meet current FEMA requirements for local hazard mitigation plans
5.3	All action items were completely reviewed by the planning committee and were rewritten, added or deleted. Two meetings of the planning committee were conducted along with electronic correspondence for this review and revision.
Annex	Added Flood Insurance Risk Maps, Watershed Maps, updated planning team participation, community participation, flood community risk score.

Appendix B
Public Involvement

MUNICIPALITY OF ANCHORAGE

Select Language ▼

All Hazards Mitigation Plan Update Public Meeting

Department

Emergency Management

Category

Public Meeting

Start Date

9/27/2021 5:30 PM

End Date

9/27/2021 7:30 PM

Additional Information

All Hazard Mitigation Plan Update

Summary

Virtual meeting on Microsoft Teams, link is below in details section.

Details

In 2001 the Municipality of Anchorage adopted the existing All-Hazards Mitigation Plan. This plan was designed to meet the federal regulations set forth in the Disaster Mitigation Act of 2000, which required all local, county, tribal, and state governments to develop a multi-hazard mitigation plan for their jurisdiction in order to be eligible for certain disaster-related funds. The goal of the All-hazards Mitigation Plan is to reduce or eliminate the amount of damage that may occur during a disaster. The 2016 All-hazards Mitigation Plan was adopted by the Municipality of Anchorage Assembly by resolution on February 2017. The plan was approved by the Federal Emergency Management Agency in April 2017. The plan is required to be adopted every five years and will require re-adoption by April 2022.

The plan's main purpose is listed in the following bullet items.

- Identification of Hazards that may impact Anchorage Vulnerability Assessment
- Assessment of the MOA's capability to mitigate hazards
- Hazards mitigation goals and objectives
- Hazards mitigation actions and/or projects
- Implementation Strategy
- Plan Maintenance Strategy

The Municipality of Anchorage is announcing the revision of this plan to receive public input. The current plan is available here.

There will be a public meeting to discuss the plan and receive comments on September 27, 2021 5:30-7:30 at this Teams meeting link. You may also submit comments by email to Amanda.loach@anchorageak.gov or call 907-343-1401.

Noticed:

8/27/2021 11:15 AM

Note Ends:

9/28/2021 8:00 AM

Contact For Information:

Amanda Loach, Director of the Office of Emergency Management (907) 343-1406, amanda.loach@anchorageak.gov

Municipality of Anchorage Official Web Site

City Hall is located at:
632 West 6th Avenue
Anchorage, Alaska 99501

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All-Hazards Mitigation Plan

In 2001 the MOA adopted the existing All-Hazards Mitigation Plan. This plan was designed to meet the federal regulations set forth in the Disaster Mitigation Act of 2000, which required all local, county, tribal, and state governments to develop a multi-hazard mitigation plan for their jurisdiction in order to be eligible for certain disaster-related funds.

The goal of the All-hazards Mitigation Plan is to reduce the amount of damage that may occur during a full disaster. The 2016 All-hazards Mitigation Plan was adopted by the Municipality of Anchorage by resolution on March 21, 2017. The plan is required to be adopted every five years and will require re-adoption by 2011. The plan's main purpose is listed in the following bullet items.

- Identification of Hazards that may impact Anchorage Vulnerability Assessment
- Assessment of the MOA's capability to mitigate hazards
- Hazards mitigation goals and objectives
- Hazards mitigation actions and/or projects
- Implementation Strategy
- Plan Maintenance Strategy

Click on this link for the current 2016 MOA Hazard Mitigation Plan.

Click here for the Appendices.

How can I get involved or obtain more information?

For more information on the 2016 Hazards Mitigation Plan, please contact:

Steve Ellis or Kristi Bischofberger, Watershed Manager

343-8078 343-8058

ellissm@muni.org bischofbergerkl@muni.org

Municipality of Anchorage (MOA)

Hazard Mitigation Advisory Committee Public Meeting

9/27/2021

Contact Information:

Amanda Loach
Director
Office of Emergency Management
Emergency Operations Center
Municipality of Anchorage
1305 E Street, Anchorage, Alaska 99501
W: (907) 343-1406
C: (907) 250-4953

Location of the plan for review: http://www.muni.org/Departments/OEM/Plans/Pages/default.aspx
Send requested Information to: OEM: Amanda.loach@anchorageak.gov

Meeting called to order at 5:30pm

1. Roll Call

2. Opening Remarks
   - Amanda Loach

3. Public comments
   - Please provide:
     - Name
     - Address
     - Contact Information

4. Introductions
   - Municipality of Anchorage - All Hazards Mitigation Plan Team
     - Amanda Loach
     - Andrew Preis
     - Darrell Dotson
     - Jason Wheeler

5. Quick review of current mitigation activities
   - Plan has been approved by FEMA
   - Last updated in 2017, as a 5-year plan
   - Need to have an approved plan to apply for future mitigation funding

6. Project Timeline
   - 9-20-21: MOA OEM hazard mitigation advisory group hazard identification
   - 9-27-21: MOA OEM public meeting to update on progress
   - 10-12-21:
     - Complete review of asset inventory to determine if there are any changes to be made to the list of critical facilities.
     - Updating the natural hazard section and the technological hazard section drafted based on a review of current data

- 10-19-21: Review the existing goals, objectives, and action items to identify any changes that might be necessary
- 10-22-21: MOA OEM hazard mitigation advisory group risk assessment and action item prioritization.
- 11-26-21: Make updated draft available for review by the public and other stakeholders
- 12-17-21: Submit revised plan to State of Alaska DHS&EM and FEMA for approval

8. Types of Public Feedback

- Ideas to help mitigate events have you or your communities experienced since the last update.
  - Earthquake damages
  - Flooding events have occurred in your community.
  - Fire events that have occurred.
  - Losses to extreme cold temperatures in your community.
  - Damages caused by flooding.
  - Damages to roads including washout of roads.
  - Damages to water control structures like culverts, ditches, dams, dikes, etc.

9. Questions and closing comments

10. Adjournment

Meeting adjourned 7:30pm

Public Meeting: All-Hazard Mitigation Plan

Chat | Files | Meeting Notes | Whiteboard | +

Gray, Audrey L. was invited to the meeting.

Loach, Amanda named the meeting to .

September 27, 2021

Last read

Meeting started 9/27/21 10:46 AM

Darrell Dotson (Guest) has temporarily joined the chat.

Meeting ended 33s 9/27/21 10:46 AM

Darrell Dotson (Guest) no longer has access to the chat.

Preis, Andrew B. was invited to the meeting.

Meeting ended 0s 9/27/21 5:23 PM

Meeting started 9/27/21 5:24 PM

Eugene Carl Haberman (Guest) has temporarily joined the chat.

Darrell Dotson (Guest) has temporarily joined the chat.

Jason Wheeler (Guest) has temporarily joined the chat.

EOC - Logistics Section Chief has temporarily joined the chat.

Meeting ended 2h 6m 9/27/21 7:30 PM

Meeting
Transcript

Eugene Carl Haberman (Guest) no longer has access to the chat.

00:00:00.000 --> 00:00:25.400
Jason Wheeler
So again this is a public meeting for public input on the all hazards plan mitigation plan for the municipality of Anchorage, going to go through and a couple of agenda items here today, essentially to talking about quick review of where we are with the current plan and the new plans development. Some of the items to to be.

00:00:25.460 --> 00:00:34.560
Jason Wheeler
We achieved in the next few months, submitting the next plan for review by the state and FEMA.

00:00:35.270 --> 00:00:42.740
Jason Wheeler
And allowing for some public comment just in terms of any items that the public may have.

00:00:43.630 --> 00:00:44.730
Jason Wheeler
Considered for

00:00:46.160 --> 00:01:15.030
Jason Wheeler
mitigation ideas to to be incorporated into the new plan development. So I see that we have 4 folks on today. My name is again Jason Wheeler. I've been an Emergency Management for just short of 30 years I've worked in the state of Florida, primarily in my government life spent about 20 years, there and have been in private practice for the last.

00:01:15.890 --> 00:01:17.840
Jason Wheeler
10 years I've worked in.

00:01:18.550 --> 00:01:21.020
Jason Wheeler
A variety of States and.

00:01:21.680 --> 00:01:28.340
Jason Wheeler
Done quite a few plans worked in recovery operations response preparedness.

00:01:29.750 --> 00:01:32.470
Jason Wheeler
And so from there going through roll call.

00:01:32.520 --> 00:01:32.880
Jason Wheeler
Cool.

00:01:34.390 --> 00:01:37.780
Jason Wheeler
And I don't know I mean to, if you want me to try to share.

00:01:39.290 --> 00:01:41.930
Jason Wheeler
The agenda or if you want to try and put that up.

00:01:42.920 --> 00:01:47.680
Loach, Amanda
Yeah, I'm having a little bit of technical difficulties with pulling up the agenda.

00:01:48.220 --> 00:02:09.620
Loach, Amanda
Uh if you want to run through the the run, a show until I can get that up in the in the viewing then I. I think I I think I went through how how it was going to go. But if you would like to go through the order of how you have it then go ahead.

00:02:09.080 --> 00:02:10.950
Jason Wheeler
So what I'll do is I'll just.

00:02:11.670 --> 00:02:16.840
Jason Wheeler
List the outlines in terms of what our agenda items are.

00:02:17.550 --> 00:02:27.210
Jason Wheeler
And from there, I believe once we get that all set up for you to present so roll call would be those in attendance today.

00:02:28.050 --> 00:02:29.200
Jason Wheeler
Uh I have.

00:02:29.960 --> 00:02:33.630
Jason Wheeler
Amanda there'll Dotson Andrew.

00:02:34.290 --> 00:02:36.120
Jason Wheeler
And Eugene.

00:02:37.640 --> 00:02:41.230
Jason Wheeler
Is there anybody else on that would like to be acknowledged?

00:02:42.330 --> 00:02:43.900
Eugene Carl Haberman
Eugene Carl Habermann.

00:02:47.150 --> 00:02:49.070
Jason Wheeler
Mister Miller Hi there.

00:02:47.510 --> 00:02:53.410
Eugene Carl Haberman
Hello it's me, yeah, yeah, it's Eugene Carl Habermann, not just Eugene.

00:02:54.010 --> 00:02:54.890
Jason Wheeler
Sorry about that.

00:02:56.450 --> 00:02:57.700
Jason Wheeler
Make a note.

00:02:58.880 --> 00:03:03.210
Eugene Carl Haberman
CARLHABERMAN, thank you.

00:02:59.020 --> 00:02:59.280
Jason Wheeler
Cool.

00:03:03.760 --> 00:03:04.340
Jason Wheeler
Alright.

00:03:06.400 --> 00:03:07.760
Jason Wheeler
So then we'll go from there.

00:03:10.080 --> 00:03:13.260
Jason Wheeler
From there, we'll go to an introductory.

00:03:13.940 --> 00:03:15.220
Jason Wheeler
Or those in attendance.

00:03:15.870 --> 00:03:16.380
Jason Wheeler
Ah.

00:03:17.430 --> 00:03:26.180
Jason Wheeler
And we're going to go over a quick review of our activities that we have so far in terms of the plan review.

00:03:27.220 --> 00:03:30.630
Jason Wheeler
Uh talk about some milestones in our project timeline.

00:03:31.880 --> 00:03:38.500
Jason Wheeler
Uh and then offer some opportunity for the types of feedback that we're looking for in terms of public comment.

00:03:39.300 --> 00:03:44.690
Jason Wheeler
And then we'll give an opportunity for questions and any closing comments.

00:03:46.510 --> 00:03:47.320
Jason Wheeler
So.

00:03:49.070 --> 00:03:56.250
Jason Wheeler
Opening remarks, Amanda would you do you have any other comments that you would like to to add or do you want to just move into?

00:03:56.990 --> 00:04:00.260
Jason Wheeler
Uhm public comment opportunities at this time.

00:04:01.900 --> 00:04:07.700
Loach, Amanda
No, I just wanted to note for the record my contact information.

00:04:08.390 --> 00:04:12.140
Loach, Amanda
Amanda Loach Office of Emergency Management.

00:04:13.280 --> 00:04:21.750
Loach, Amanda
Municipality of Anchorage, 1305 East Street, Anchorage, Alaska, 99501.

00:04:23.090 --> 00:04:31.530
Loach, Amanda
I can also be reached by phone if it's easier. If anyone wants to give public comment but verbally 907.

00:04:32.200 --> 00:04:35.790
Loach, Amanda
343-1406.

00:04:37.980 --> 00:04:38.410
Jason Wheeler
K.

00:04:39.620 --> 00:04:52.030
Loach, Amanda
We also have the plan located on our website. If anyone would relate that like to review the all hazard mitigation plan on the office of Emergency Management website.

00:04:55.840 --> 00:05:11.390
Loach, Amanda
And if anyone has any requested information regarding the plan or wants to give comment regarding the plan. My email address, Amanda Amanda Dot, Loach LOAC.

00:05:11.580 --> 00:05:15.130
Loach, Amanda
Each@anchorageAK.gov.

00:05:18.670 --> 00:05:19.260
Jason Wheeler
K.

00:05:20.760 --> 00:05:21.190
Jason Wheeler
So.

00:05:22.010 --> 00:05:22.790
Jason Wheeler
I'm sorry go ahead.

00:05:23.520 --> 00:05:45.450
Loach, Amanda
Oh, I was just gonna say come like you mentioned we have a few people on the line up. I'd like to introduce Darrell Dodson as well. He's one of our Emergency Management recovery consultants and Andy Price. He's another emergency program manager at the office of Emergency Management.

00:05:49.140 --> 00:05:54.230
Loach, Amanda
So thank you for everybody that's making time for this tonight.

00:05:55.180 --> 00:05:58.750
Loach, Amanda
And UM, I'll turn it over to you then.

00:05:59.810 --> 00:06:10.880
Jason Wheeler
OK, so the next item on our agenda is public comment and so we're going to offer up the opportunity looks like we have the you know see.

00:06:11.830 --> 00:06:13.420
Jason Wheeler
Somebody just joined as well.

00:06:15.870 --> 00:06:17.990
Jason Wheeler
Logistics section chief or is that?

00:06:22.650 --> 00:06:24.470
Jason Wheeler
OK, so.

00:06:25.190 --> 00:06:28.980
Preis, Andrew B.
Yeah, I forwarded the invite to an interested member of the community.

00:06:29.720 --> 00:06:30.210
Jason Wheeler
OK.

00:06:31.850 --> 00:06:39.860
Jason Wheeler
Uh so at this point will open up some time. We're going to try to limit it to 5 minutes to keep us on task.

00:06:40.530 --> 00:06:44.740
Jason Wheeler
For public comment is there anybody who would like to make public comment at this time.

00:06:45.790 --> 00:06:46.080
Loach, Amanda
So.

00:06:48.420 --> 00:06:49.610
Eugene Carl Haberman
Hello can you hear me?

00:06:49.940 --> 00:06:51.480
Jason Wheeler
Yes, Sir Mister Raven.

00:06:52.310 --> 00:06:53.270
Eugene Carl Haberman
OK. Yeah.

00:06:53.710 --> 00:07:00.250
Eugene Carl Haberman
Uh I'll try to I didn't bring my timer, but I got something close to use that maybe give me an idea on the time.

00:07:00.740 --> 00:07:21.310
Eugene Carl Haberman
Uh my name is Eugene Car Habermann. I represent myself follow the public process when the public process done appropriately decision made by the governing body is more likely public interest first

would you have on the on the notice that I see on the muni website for this meeting it notes a copy the plan of 2016.

00:07:22.290 --> 00:07:29.350
Eugene Carl Haberman
You're asking for public comment for public comment of what a plan of 2016 were in 2021.

00:07:30.110 --> 00:07:46.170
Eugene Carl Haberman
Remind you you have a draft out there for the public to see are you going back to an old plan that and whereas the status of that old plan of 2016. This does not make any sense. There's no logic. Here also when the numbers came out and with that plan that was out there.

00:07:46.770 --> 00:07:48.660
Eugene Carl Haberman
Uh you you.

00:07:48.720 --> 00:07:54.150
Eugene Carl Haberman
Come you don't give any guidance. You don't didn't publish in agenda at all.

00:07:54.420 --> 00:07:55.050
Eugene Carl Haberman
Uhm.

00:07:55.960 --> 00:08:25.770
Eugene Carl Haberman
All I got there was a conjoined with the teams meeting and then Mister code. I understand that scenario, but then Mister Kovit. There should be having more of a conversation not less with the people, particularly dealing with covid, but that's what's happened and there has been shortcuts made and you're dealing with a plan a situation that one of the issues is dealing with earthquake you deal with Hall has good stuff anyone. Scenarios is coded as as a serious issue. So I'm I'm worried about what kind of comedy.

00:08:25.910 --> 00:08:46.840
Eugene Carl Haberman
And expect to get from the public and also it's not identified. Also as word as this plan. Go to once you receive comments from this meeting is there. Other part is there public hearings. Elsewhere, like at the Anchorage Assembly meetings or the planning and zoning Commission. You know one would think that that would be where you want the so called plan, but so called plan of 2016 does not make sense.

00:08:47.850 --> 00:09:18.150
Eugene Carl Haberman
What what is it? What has been written since then and that is being proposed since then or are you getting comments from the public on that existing existing plan is saying, You should make the following changes in your writing something up and then you go for public hearing that's not clear at all in this whole process and that lack of clarity. It creates confusion and also lack of notice for such an important

thing that affects fix the management of the city and this probably of Anchorage, the largest city in the state is.

00:09:18.230 --> 00:09:47.480
Eugene Carl Haberman
Uh not the way to go not the way to go at all, and I think I'll just close with those comments. Just there and you may have some questions, but but the sides are looking at who's online. It's not clear. But it sounds like there's very few people online to this meeting and then note. This meeting at the meeting started at 5:30. Maybe people get out of work at 5:00 o'clock. I know, don't be like the anchor to Sammy when they start their meetings at 5:00 o'clock in the evening, I caught it Tuesday night.

00:09:48.090 --> 00:10:19.880
Eugene Carl Haberman
Do you need to connect with the people and starting at 5:00 is not at 5:30 doesn't that are really good time and it's and I see a visual here for team I guess I could see one phase so it's showing here. But you need to have a baby. Lucia that agenda of the thing and you shouldn't have a hard copy of this stuff too. I guess I gave went through a whole mess of things as an outline of problems, she got in this whole thing and I'm sure the feds have to approve your so called plan when you do it, but The thing is my comments don't give a good picture that you're you're going into the right direction and connecting with people.

00:10:20.060 --> 00:10:50.370
Eugene Carl Haberman
Before, you before you adopt things in this body language and I guess that's all I have to say, 'cause I don't want to go over my time respectfully and thank you very much and by the way you're asking for public comments. I had all these questions out in this right now, but one would have been better as I have an introduction to where this, whole thing is, they get the public to know it should have been in writing and then before getting public comment. So we have a grass. I'm worried about what you have public comment now and then some of you here.

00:10:50.450 --> 00:10:59.720
Eugene Carl Haberman
The word bureaucrats are making statements afterwards and the public needs is here before and so they could respond to your statements and thank you very much.

00:11:01.000 --> 00:11:10.980
Loach, Amanda
Hey thanks Gene I this is Eugene. Sorry do you prefer if I call? You Eugene or Mister Haberman. This is Amanda Loach over at the office of Emergency Management?

00:11:11.520 --> 00:11:21.450
Eugene Carl Haberman
Right This is yeah, Eugene Eugene and I know my name is Eugene Carl Haberman and as the assembly members know for the record so anyway. Thank you.

00:11:20.790 --> 00:11:27.930
Loach, Amanda
OK, we would you would you like me to answer some of your questions here or do you want me to?

00:11:27.980 --> 00:11:33.840
Loach, Amanda
Hey uh just leave your questions where air your comments where they're at.

00:11:34.720 --> 00:12:04.950
Eugene Carl Haberman
Well, I appreciate your answers the question so everyone else could hear him and be on the record by the way one part that I didn't didn't say it was just good thing is how you doing. This record, whereas a tape of this meeting gonna show up somewhere so people could tune in later on. That would be a logical thing I know I know like this me means the committee meetings. You go to a certain place and you can capture those meetings on video or audio what you know scenario, so this particular conversation is of importance and were are you taking that tape and is it gonna be out there for people to see.

00:12:05.190 --> 00:12:17.710
Eugene Carl Haberman
And by the way just a footnote. I forgot to say is I did go to your website and I tried to capture were announcement of this meeting it's on the public notice page. But I didn't see anything showing up a connection agenda or whatever on the Main.

00:12:18.250 --> 00:12:21.310
Eugene Carl Haberman
A website for you Department OK thank you.

00:12:23.670 --> 00:12:34.330
Loach, Amanda
OK, so we will make note of all and and I did want to note that we're trying to make this meeting as accessible as possible. That's why we do have the closed captioning.

00:12:34.860 --> 00:12:52.160
Loach, Amanda
Uh but we're also transcribing it to make sure that we have notes available. Afterwards and we will make sure to take your comments and try to make this as accessible as possible in the future.

00:12:52.770 --> 00:13:21.660
Loach, Amanda
Uhm you, you did, ask about making changes to the current plan and that will be occurring between now and April of 2022. So this was kind of a a beginning of that process to try to talk to the public about Hazard Mitigation and the existing plan that we have and then as well. The the planning process moving forward, 'cause as you know.

00:13:22.270 --> 00:13:31.190
Loach, Amanda
Some plans are are not a thing they're living documents and receiving public comment as part of that process.

00:13:32.160 --> 00:13:44.370
Loach, Amanda

Uh so I I know I didn't answer all of your questions. But I tried to catch a few of them that I had answers to and and give you some answers back is that helpful Eugene.

00:13:44.940 --> 00:14:13.990
Eugene Carl Haberman
Yeah, it was helpful, but there's an outline that should be. And I would call and document formats of going at chart exactly what steps work goes like this function of meeting that you're having now and what are the steps that follow also where is it gonna go to the Anchorage Assembly for public hearing when the planning zoning Commission if at all? When those kind of things I mean, I'm still in the dark on that stuff, and that should be more of a document form so the public knows so and then that did you did answer one particular thing that was very helpful?

00:14:14.310 --> 00:14:19.500
Eugene Carl Haberman
And that is the fact that this is a start. It's not the end of the public products.

00:14:18.320 --> 00:14:18.800
Loach, Amanda
Yeah.

00:14:19.980 --> 00:14:41.700
Loach, Amanda
Yep, and and it won't go to the Planning Commission. It will eventually go to the assembly to the assembly for approval after it's been looked over by the state. And FEMA FEMA does have to approve this plan, but our friend Jason Kilar. We'll talk more about that process.

00:14:42.070 --> 00:14:43.380
Loach, Amanda
Uh shortly.

00:14:44.220 --> 00:15:00.410
Eugene Carl Haberman
But why don't the public see this kicker this says the 2016 plan by saw right it's 2021 why isn't there a document of proposed draft that the public is seeing along with the one of the previous plan? Why is that not happen?

00:15:00.790 --> 00:15:12.660
Loach, Amanda
We will be drafting the 2021-2022 if you will plan as part of this planning process. The plan, only gets updated every 5 years.

00:15:15.990 --> 00:15:18.890
Eugene Carl Haberman
OK, so, so uh when is it draft come out?

00:15:19.990 --> 00:15:24.740
Loach, Amanda
The draft is hooked will hopefully be done by the end of the calendar year.

00:15:26.300 --> 00:15:44.610
Eugene Carl Haberman
OK, so beat the well is there gonna be like public meetings before then before the trap comes out and then they'll be aware of that that this that. The trap is not out, but we're getting comments net you're getting comments now and and other areas and then you're going to do a draft and then you can go back for public comment.

00:15:45.150 --> 00:15:56.960
Loach, Amanda
We will allow for a public forum and it's in the planning process. But we will allow for a public public forum for review of the draft before it's before it's adopted by the assembly.

00:15:58.600 --> 00:15:59.010
Eugene Carl Haberman
K.

00:15:59.990 --> 00:16:11.800
Eugene Carl Haberman
Again, it would it I just close with this and I appreciate your answering the questions as transparent as you are. Thank you very much and welcome and welcome me as as much as you are. I appreciate that much.

00:16:07.680 --> 00:16:08.160
Loach, Amanda
You're welcome.

00:16:12.380 --> 00:16:16.310
Eugene Carl Haberman
But it would be so helpful to see that outline from the beginning and.

00:16:16.940 --> 00:16:32.690
Eugene Carl Haberman
You have a 200 page document proximately that's a lot of pages that go through uh and complicated and you've got. I'll give you just a footnote here. Some of the parties. I mentioned these family and I mentioned the.

00:16:33.610 --> 00:16:40.750
Eugene Carl Haberman
A planning and zoning button. Uh good good one. I just can't stop becomes the top of my head. I forgot all about the Geotech Commission.

00:16:41.720 --> 00:16:48.750
Eugene Carl Haberman
It deals with earthquakes that would be the logical one that should be incorporated in getting their review and in participation in.

00:16:49.420 --> 00:16:56.210
Eugene Carl Haberman

And then also the other ones are obviously are certain elements of the misspelling Vanquish in one was dealing with the port.

00:16:57.260 --> 00:17:14.370
Eugene Carl Haberman
The port and then you guys certain departments health Department and so forth so the you've got certain entities in certain conditions out there that need to be incorporated and not put output on the side. I it, it needs to be at the very beginning. Not not while this thing is going on. That's what I would say.

00:17:16.150 --> 00:17:31.580
Loach, Amanda
Yep, and and Jason will talk a little bit more about how we include those internal stakeholders. Like the port and the Anchorage Health Department in our planning process thanks. Thank you, though we appreciate we appreciate it.

00:17:29.160 --> 00:17:29.550
Eugene Carl Haberman
OK.

00:17:32.120 --> 00:17:45.040
Eugene Carl Haberman
Just one last comment. Please don't say a word. I discourage people from using the word stakeholders. They colors and and it created situation of certain people are invited other people are not.

00:17:45.850 --> 00:17:57.980
Eugene Carl Haberman
Uh it's a public meeting so you invite the public and bring people in and you and your notices are abroad out too. So it's it's it's so widely out and not a special group.

00:17:58.890 --> 00:18:16.400
Eugene Carl Haberman
That that I'll use cars 'cause I frankly had see sometimes that language, particularly out in Anchorage, using the word stakeholders and whenever stakeholders happens. Someone is left out of the picture and you need to treat the noses and all as a public notice and public announcement of public participation.

00:18:21.230 --> 00:18:21.780
Eugene Carl Haberman
Thank you.

00:18:27.520 --> 00:18:32.560
Jason Wheeler
OK, thank you Eugene Carl Hey women are there any other?

00:18:32.610 --> 00:18:35.820
Jason Wheeler
For comments from the public at this time.

00:18:41.310 --> 00:18:48.560
Jason Wheeler
OK hearing nothing will move onto some the next item in the agenda quick review of current mitigation activities.

00:18:49.280 --> 00:18:53.280
Jason Wheeler
Obviously we have an existing plan that has been approved.

00:18:53.900 --> 00:19:09.190
Jason Wheeler
Uh and so those the plan itself offers a number of things, it gives the opportunity for the community to to participate and understand how they may mitigate against future disasters, both man-made.

00:19:09.790 --> 00:19:15.430
Jason Wheeler
Uh and natural disasters as Eugene Carl human expressed.

00:19:15.900 --> 00:19:25.220
Jason Wheeler
Uh this cycle, we will also focus much more on biological hazards. Those will be included in incorporated into the new plan that will be submitted.

00:19:26.690 --> 00:19:32.130
Jason Wheeler
And up to this point we've we've gone through a series of meetings with.

00:19:33.740 --> 00:19:57.230
Jason Wheeler
Other governmental entities that currently have operational activities in the plan and responsibilities for operational activities in the event of a disaster so those. I don't want to call them stakeholders. But those entities that are responsible for participating in response activities beyond the public that have a?

00:19:57.270 --> 00:19:57.710
Jason Wheeler
Yeah.

00:19:59.200 --> 00:20:23.790
Jason Wheeler
The law abiding responsibility to to support the community there in in Anchorage, and and up to this point. The meetings that we've had have been to offer additional information for what will be updating with new data. Both earthquake data bloodfire those are couple of the examples that we've begun to incorporate.

00:20:25.170 --> 00:20:28.580
Jason Wheeler
Once we have all of this information new data.

00:20:29.490 --> 00:20:54.100
Jason Wheeler
And and the the draft of this plan. Updated then we'll move into obviously. We've had a public meeting here for some comment and this is again just like everybody up to this point whether it be a governmental entity. The planners themselves. The public as Eugene Carl Habermann expressed all of those individuals who have participated up to this point.

00:20:54.910 --> 00:21:09.260
Jason Wheeler
Are able to offer their insight in the existing plan and those those items in the existing plan that they feel need to be refreshed. Readdressed updated for the new cycle of this plan approval process.

00:21:10.830 --> 00:21:19.970
Jason Wheeler
So the next agenda item is a project timeline, so a couple of things. Let's see on 920. We had a Hazard Mitigation Advisory Group.

00:21:20.020 --> 00:21:21.810
Jason Wheeler
Had a meeting.

00:21:22.500 --> 00:21:37.970
Jason Wheeler
And from there, we had a number of individuals from respective like Eugene Carl Habermann mentioned the new director for health was there also the port had representation.

00:21:38.030 --> 00:21:46.460
Jason Wheeler
Uh uh a number of levels there and we're going to incorporate some more staff from that group, obviously Emergency Management had staff involved.

00:21:47.310 --> 00:21:48.020
Jason Wheeler
So.

00:21:48.800 --> 00:21:49.550
Jason Wheeler
Oh, there, we are.

00:21:50.910 --> 00:21:54.480
Jason Wheeler
So again item number 6:00 in the project timeline.

00:21:55.490 --> 00:21:58.670
Jason Wheeler
On 920 we had our advisory group.

00:21:59.290 --> 00:21:59.970
Jason Wheeler
Meeting.

00:22:00.870 --> 00:22:06.530
Jason Wheeler
Today we're having our first public meeting and just updating on where we are in the process.

00:22:07.210 --> 00:22:13.680
Jason Wheeler
Again, this is an opportunity for public to review those items that are in the existing plan.

00:22:14.470 --> 00:22:19.020
Jason Wheeler
And determine if there's some items that they feel like maybe incorporated into that draft.

00:22:19.830 --> 00:22:24.000
Jason Wheeler
Uh on between now and the middle of October.

00:22:24.760 --> 00:22:40.360
Jason Wheeler
We will complete the review of asset inventory determine if there are any changes made to list of critical facilities. Obviously over that timeline. There's then additional buildings built updated hazard zones changed so.

00:22:41.050 --> 00:22:50.170
Jason Wheeler
Those will be incorporated updating the natural and natural hazards section, and technological hazards section, some of the things like I mentioned with.

00:22:51.480 --> 00:22:58.950
Jason Wheeler
Biological hazards because we're in the midst of a pandemic become much more relevant so we'll be updating those items.

00:22:59.940 --> 00:23:10.690
Jason Wheeler
Uh middle late part of October review. The existing goals objectives and action items to identify any changes that might be necessary.

00:23:12.090 --> 00:23:13.430
Jason Wheeler
At the end of October.

00:23:14.330 --> 00:23:19.260
Jason Wheeler
The advisory group risk assessment and action items will be prioritized.

00:23:22.000 --> 00:23:24.250
Jason Wheeler
Amanda if you can move to the next page.

00:23:24.300 --> 00:23:25.890
Jason Wheeler
Page missing.

00:23:29.800 --> 00:23:30.350
Jason Wheeler
K.

00:23:31.360 --> 00:23:46.190
Jason Wheeler
Uh 1126 will make the updated and craft available for review by the public and any other and I know you Eugene Carl Haberman said he doesn't like stakeholders, but but again, it's public and other entities that we've.

00:23:47.280 --> 00:23:49.900
Jason Wheeler
Typically been working with so it's not restricted in any way.

00:23:49.960 --> 00:24:02.800
Jason Wheeler
I will have another draft available and then in mid December will submit that revised plan that has incorporated all of our input from various groups.

00:24:03.460 --> 00:24:05.100
Jason Wheeler
To the state of Alaska?

00:24:05.930 --> 00:24:18.310
Jason Wheeler
And and from there, it will move to FEMA or their review and an approval so item number 8, here as we move through the agenda types of public feedback.

00:24:19.010 --> 00:24:20.270
Jason Wheeler
These are areas that.

00:24:21.910 --> 00:24:29.910
Jason Wheeler
That individuals may be able to help in terms of mitigate events that you or your community have experienced since the last update.

00:24:31.430 --> 00:24:32.860
Jason Wheeler
I think as Carl Habermann.

00:24:33.350 --> 00:24:46.870
Jason Wheeler
Yeah, I mean, Eugene Carl Habermann mentioned earthquake damages. We also have flooding events that may have happened in your community fire events that have occurred losses, too due to extreme cold temperatures.

00:24:47.640 --> 00:24:48.150
Jason Wheeler
Uh.

00:24:48.940 --> 00:24:49.630
Jason Wheeler
Flooding.

00:24:50.790 --> 00:24:53.300
Jason Wheeler
Then just 2 roads, including washouts.

00:24:54.570 --> 00:25:06.320
Jason Wheeler
Damaged water control structures like culverts, etc and again. Those items are areas that we would look for feedback not only from our partners in other.

00:25:08.150 --> 00:25:10.120
Jason Wheeler
Organizations in the in.

00:25:10.860 --> 00:25:19.820
Jason Wheeler
Municipality but also again from those in the public that having information that they'd like to try to incorporate into the new revised plans.

00:25:20.770 --> 00:25:24.430
Jason Wheeler
So that's a an update of where we are in the process currently.

00:25:25.320 --> 00:25:27.670
Jason Wheeler
If there are any other question, we see here.

00:25:30.790 --> 00:25:33.080
Jason Wheeler
Let's see if there's any other information.

00:25:33.940 --> 00:25:37.680
Jason Wheeler
From our notes or questions that Mister Haberman had.

00:25:38.650 --> 00:25:39.160
Jason Wheeler
Uhm.

00:25:39.840 --> 00:26:05.550
Jason Wheeler
Yeah, again some of the individual groups that that were identified earlier and the public comment section are certainly incorporated into the planning process that we've had previously and that we will continue to have going forward. So I hope that answers a couple other questions that were were addressed earlier and if there's anything else that I can answer. Let me double check and make sure I'm not missing anything in the notes.

00:26:08.960 --> 00:26:19.230
Loach, Amanda
And again for everyone that's here. I have the closed captioning and the transcription turned on so there will be transcription available to you.

00:26:19.700 --> 00:26:25.270
Loach, Amanda
Uhm after this to make sure that we capture everything we need to in the notes Jason.

00:26:25.920 --> 00:26:57.430
Jason Wheeler
Right and then the next public meeting will have a copy of those the minutes made available for those that want to participate and then again, once the plan itself is approved. All of that information is incorporated into the revised plan as demonstrated by the requirements of the mitigation process when it's approved by FEMA there's statutory requirements that are that are put forward in the planning process. So those will be incorporated into the appendices of the new and updated plan so you'll be able to.

00:26:57.690 --> 00:26:58.970
Jason Wheeler
Review those there as well.

00:27:00.190 --> 00:27:02.300
Jason Wheeler
So given that.

00:27:03.200 --> 00:27:04.920
Jason Wheeler
We've come to the place of.

00:27:05.880 --> 00:27:15.780
Jason Wheeler
Any additional questions or or closing comments. So I'll just open it up for any additional questions by those that are that are in the meeting here.

00:27:25.920 --> 00:27:36.160
Jason Wheeler
OK hearing nothing uh any closing comments. Amanda I simply say thank you for allowing us to participate in this we certainly look forward to.

00:27:36.880 --> 00:27:46.230
Jason Wheeler
Uh putting together a good plan and and working together with you all to to put forward something the best project that we can for the municipality.

00:27:47.490 --> 00:27:52.940
Loach, Amanda
Yeah, and and to everyone that's here. Thank you for your patience with a man.

00:27:54.720 --> 00:27:57.740
Loach, Amanda
Trying to work through the UM.

00:27:58.530 --> 00:28:11.470
Loach, Amanda
The public process with while still keeping in mind any safety precautions that we can during the high risk covid.

00:28:13.620 --> 00:28:25.430
Loach, Amanda
A state which we have in the municipality right now like I appreciate everyone 's patience with us. We're not used to conducting meetings online so I I do? Appreciate it.

00:28:31.520 --> 00:28:43.480
Loach, Amanda
Other than that I I I think if nobody has any more comments. I think we'll just wait a minute. This may address another one of Eugene and Eugene Carl Haven Mens.

00:28:45.170 --> 00:29:07.110
Loach, Amanda
Some concerns about making sure that people that are just getting off work at 5:00 o'clock are able to to have comments. We will hang out here until 7:30 to make sure if somebody wants to come into the meeting late that they will get that they'll have someone here to to talk with.

00:29:15.040 --> 00:29:16.540
Loach, Amanda
You're you're on mute Jason.

00:29:20.300 --> 00:29:25.730
Jason Wheeler
With that I'll put myself on mute and I'll be here in case there's any additional comments or questions.

00:29:27.150 --> 00:29:27.480
Loach, Amanda
Thank you.

00:29:28.650 --> 00:29:29.290
Jason Wheeler
Thank you all.

00:29:32.850 --> 00:29:36.560
Loach, Amanda
And I will stay here, with you, Jason as long as I can thanks.

00:29:39.380 --> 00:29:39.970
Jason Wheeler
Thank you.

00:47:58.960 --> 00:47:59.850
Eugene Carl Haberman
Can anyone hear me?

00:48:03.350 --> 00:48:03.740
Eugene Carl Haberman
Hello.

00:48:05.430 --> 00:48:06.380
Eugene Carl Haberman
Can anyone hear me?

00:48:07.120 --> 00:48:07.760
Jason Wheeler
Yes, Sir.

00:48:08.470 --> 00:48:09.980
Eugene Carl Haberman
Uh yeah, this Fusion called Habermann.

00:48:10.630 --> 00:48:29.660
Eugene Carl Haberman
I I I've been attending your meeting and listening and The thing is I understand when the statement is will because of people just getting out of work there staying on line and stayed the 7 the problem is gonna be is if anyone connects to and logs in.

00:48:30.570 --> 00:48:37.380
Eugene Carl Haberman
I have no clue that you're really having a meeting there because if no voices are no anything going on and people probably gonna say.

00:48:39.130 --> 00:48:54.100
Eugene Carl Haberman

I don't hear anything? I don't hear anything? And that's gonna be that to me would be a problem, so respectfully. I do appreciate you wanting to connect. I think there's a problem with this silence and that's what I'm concerned about if you understand what I'm saying.

00:48:54.840 --> 00:49:22.730
Jason Wheeler
Yes, Eugene call him and so the the good thing about the the team meetings is when you log into the meeting or when you leave. We have the ability to monitor that so just as you jumped on there to speak against the opportunity to see that and again. It's being recorded, so we'll we'll have ample notification that unless somebody just jumps on real quick and off again.

00:49:23.090 --> 00:49:37.260
Jason Wheeler
We are acting like we'd have ample opportunity. Just be like if they walked into the room. If we were in a physical location. We have the opportunity to to to address them and and give them an opportunity to to offer public comment that's our.

00:49:36.760 --> 00:49:43.870
Eugene Carl Haberman
OK, so you're so you're gonna say. When you see someone jump down the line. You're going to quickly say who's calling in please and you know that kind of thing.

00:49:44.170 --> 00:49:52.150
Jason Wheeler
Well, it, it identifies so you have on your your identification your Eugene Carl Habermann. It's it's identified on the actual.

00:49:44.500 --> 00:49:45.220
Eugene Carl Haberman
This application.

00:49:51.730 --> 00:49:55.280
Eugene Carl Haberman
Right right, I'm aware of that, but I'm more concerned about others.

00:49:56.290 --> 00:50:01.860
Eugene Carl Haberman
Coming signing in and not being connected because all they hear is silence and that's where I was concerned about.

00:49:56.430 --> 00:49:58.310
Jason Wheeler
Right it would identify that studio.

00:50:02.110 --> 00:50:08.130
Jason Wheeler
As soon as they login will will give them ample opportunity to to offer some public comment.

00:50:08.620 --> 00:50:18.780
Eugene Carl Haberman
OK, OK, OK, I just be fair with you waiting and I just respectfully was concerned about that. OK, thank you. Thank you and I'll just I'll mute myself.

00:50:08.720 --> 00:50:10.150
Jason Wheeler
That's our goal is our.

00:50:15.570 --> 00:50:16.050
Jason Wheeler
Sure.

00:50:19.180 --> 00:50:20.170
Jason Wheeler
Alright thanks a lot.

00:50:26.180 --> 00:50:28.120
Eugene Carl Haberman
I mean, mute unmute myself.

00:50:30.780 --> 00:50:32.240
Jason Wheeler
OK, same here.

01:32:48.300 --> 01:32:49.120
Eugene Carl Haberman
Is anyone there?

01:32:53.060 --> 01:32:53.470
Eugene Carl Haberman
Hello.

01:32:59.140 --> 01:32:59.510
Eugene Carl Haberman
Hello.

01:33:00.000 --> 01:33:02.220
Jason Wheeler
Hello do Eugene Carl Habermann how are you doing?

01:33:02.460 --> 01:33:10.120
Eugene Carl Haberman
Yeah, I thought you were just going to go to 7:00 o'clock because it's several minutes after 7, said that you wanna end. The meeting 'cause it's after 7:00 o'clock.

01:33:06.020 --> 01:33:06.680
Jason Wheeler
Makes sense.

01:33:10.860 --> 01:33:17.650
Jason Wheeler
No Sir we offered 2 hours for public input so from 530 to 730.

01:33:15.000 --> 01:33:16.780
Eugene Carl Haberman
Oh, OK, So what how long is it.

01:33:17.990 --> 01:33:23.860
Eugene Carl Haberman
0730. I miss heard OK. It's 730 OK, then I was just checking in thanks a lot bye bye.

01:33:20.230 --> 01:33:20.640
Jason Wheeler
OK.

01:33:24.330 --> 01:33:24.910
Jason Wheeler
No no problem.

01:55:22.020 --> 01:55:29.190
Jason Wheeler
OK, which went up to the end of our time here, there's nothing else. Thank you all for participating.

01:55:29.890 --> 01:55:36.450
Jason Wheeler
Yeah, and we look forward to talking to you again in the middle of October end of October.

01:55:42.280 --> 01:55:50.820
Loach, Amanda
Thanks Jason thanks thanks. Jason thanks Eugene and Daryl and Jason thanks a lot have a good night everybody.

01:55:42.370 --> 01:55:42.910
Jason Wheeler
And with that.

01:55:43.830 --> 01:55:44.140
Jason Wheeler
Uh.

01:55:51.130 --> 01:55:53.580
Eugene Carl Haberman
Yeah, this is Jane thank you very much.

01:55:51.310 --> 01:55:51.990
Jason Wheeler
Thanks. You too.

01:55:53.540 --> 01:55:54.740
Jason Wheeler
Bye. Bye.

01:55:54.240 --> 01:55:55.010
Loach, Amanda
Bye. Bye.

Local Emergency Planning Committee Meeting December 6, 2022

Event Date

From: 12/6/2021 1:00 PM

To: 12/6/2021 3:00 PM

Summary

Loussac Library, Learning Commons
3600 Denali Street

Details

Local Emergency Planning Committee annual meeting

DATE: **December 6, 2021**
CHAIR: Amanda Loach

RECORDER: Audrey Gray

MEMBERS PRESENT *(**P** = Present, **O** = Online, **A**=Absent)*

David Barton	A	Nichole Tham-DCRA/DCCED	P		
Doug Lamkin	P	Drielle Welch-OEM	P		
Amanda Loach	P	John Werner-JBER OEM	P		
Erich Scheunemann	P	Anita Baker-DCRA/DCCED	P		
Ron Swartz	O	Lore Olson-ANMC	O		
George Vakalis	O	Jade Gamble-DEC	O		
Robert Wyatt	A	Doug Schrage-AFD	O		
Support Staff		Michelle Weston-Girdwood Fire & Rescue	O		
Audrey Gray-OEM	P	Jason Wheeler-NDRS Consultant for OEM	O		
Andrew Preis-OEM	P	Roy English-DHS & EM	O		
Agency Representatives		Kelley Biastock-AHD	O		
Roy English-DHS & EM	O				
Kelley Biastock-AHD	O	Public:			
Meg Kohler-DEC	O	Neverley Wake	O		
Aviva Braun-NWS Anchorage	A				
Kathy Shea-DEC	P				
JJ Little-DHS & EM	P				
Gerard Asselin-APD	P				

AGENDA/ITEM	DISCUSSION	RECOMMENDATION/ACTIONS	FOLLOW-UP (Track, Open, Close)
Call to Order and Introductions	Call to order at 13:05		N/A
Welcome and Roll Call	Chair Loach welcomed all to the meeting and roll call completed.		N/A
Safety Minute	Winter Car Safety was presented by Andrew Preis from OEM		N/A

Consent Agenda-Approval of previous meeting minutes from 10/17/19 and 1/23/2020	Mr. Vakalis motion to approve, Scheunemann second, no discussion, unanimously approved		Close
Consent Agenda-Approval of Agenda	Vakalis motion to approve agenda, Lambkin second , no discussion, unanimously approved		Close
Presentations	Ms. Nichole Tham and Ms. Anita Baker from DCCED gave a presentation on the CDBG-DR and CDBG-MIT funding for recovery from the 2018 Pt. MacKenzie Earthquake. Ms. Sally Russell Cox also in attendance from DCCED to assist with questions.	Municipality will need to let the State know what projects they would like to do with the funding available from CDBG-DR and CDBD-MIT.	Track
Reports-Community Right to Know Act	Chair Loach gave a report from AFD on Tier II facilities that are required to report into E-plans, reporting timeframe is Jan 1-Mar 1, approximately 460 facilities report annually. IN addition, Chair Loach went over the number of hazardous materials incidents have happened in the MOA from 1/1/2020 to 11/15/2021.		Close
Emergency Plans	Chair Loach updated committee on staffing changes to OEM to include the addition of 2 staff for recovery and 1 for planning efforts. Ms. Gray presented on the Integrated Preparedness Plan created in July 2021. Mr. Preis presented on the Threats, hazards, identifying risk assessment (THIRA) and the Whole Community Input Form (WCIF) completed in July 2021. Ms. Welch presented on where we are in the process of the rewrite of the Hazard Mitigation Plan and the Comprehensive Emergency Operations Plan. Ms. Loach presented on funding opportunities the OEM has in HMGP, EMPG and SHSP, BRIC funding.		Close

State Emergency Response Committee	Mr. Vakalis, the Anchorage LEPC representative on the SERC, presented information from the previous meetings. SERC looks at all plans that deal with emergencies in the state. The SERC is looking at the structure of LEPCs to assist in making them more efficient.		close
DHS & EM	J.J. Little is the new person responsible for assistance and oversight of LEPCs at DHS & EM.		Close
Alaska Partners for Infrastructure Protection	Kathy Shea spoke briefly on the purpose of APIP and offered if agencies need an invite to their virtual meetings to contact her for the information.		close
Joint Medical Emergency Planning Group	JMEPG working on Hazard Vulnerability Assessment for all healthcare facilities. DHSS planning a TTX on 12Jan as a lead in exercise for 28Feb -1Mar, focused on hospital evac and patient movement. Annual communications drill being held in next few months. Annual TTX held by JMEPG and Alaska Regional Hospital will be an active shooter scenario, focused on recovery.		Close
Communications: AWARN and ALMR	Ms. Gray gave an update on the changes to the way Nixle is utilized in the MOA. Ms. Loach discussed the timeline of Integrated Public Alert and Warning System (IPAWS) implementation for the Municipality		Close
Anchorage Health Department	Kelley Biastock introduced herself and gave a COVID-19 update.		Close

Citizen Corps	Mr. Swartz gave an update on UAA CERT Team. CERT team was used in UAA EOP update. IN the future they will continue My PI program for teenagers. Chief Weston reported Girdwood CERT has 12 volunteers who help with road blocking and extra hands during emergencies		close
Emergency Operations Center	Ms. Loach gave an update on the EOC. The EOC is a part of the OEM and is currently not activated/open. Many employees from around the Municipality come together to staff the EOC. The EOC has changed from a department model to an ICS based EOC. The OEM has a duty officer on call 24/7, runs through AFD/APD dispatch. Ms. Loach reported on the flooding in Girdwood that impacted the area over the Halloween weekend. OEM was asked to amplify public information and has continued to gather information to assist in recovery efforts.	MS. Loach will update the LEPC on recovery efforts in Girdwood at the next meeting.	open
Unfinished Business	N/A		close
New Business: LEPC Open positions	Many positions are open on the Anchorage LEPC as indicated in the agenda. The Committee would like individuals to fill all positions stated in the agenda with qualified people. Ms. Loach indicated all interested people must submit a letter if interest stating their role in the community and why they would like to serve on the committee. If any committee members have ideas of folks the OEM could reach out to fill these positions to send the information to Ms. Gray or Mr. Preis.	New committee members interest letters will be brought to the next LEPC meeting for consideration by the committee for inclusion. After the committee members are approved, candidates must be approved by the SERC before they are able to begin serving on the Anchorage LEPC.	open

Extend meeting time	Motion to extend meeting time—Mr. Vakalis motioned, second from Scheunemann, no discussion, unanimously passes.		close
Changes in Ex-Officio positions	Health/Medical Ex-Officio position will be offered to Dr. Savitt the Chief Medical Officer at AHD National Weather service Ex-Officio Position will be offered to Aviva Braun, Warning Coordinator with the Anchorage NWS office DHS & EM Ex-Officio Position will be offered to whoever DHS & EM designates.	New Ex-Officio members will be voted on in the next meeting and requested to attend.	Open
Changes in LEPC support staff	Ms. Loach announced the new LEPC support staff who will start after the current meeting will be Andrew Preis with OEM and Drielle Welch with OEM.		close
LEPC By-Laws changes	Committee approved tabling these changes until committee has brought on new members.	Tabled until new committee members are in place.	open
Upcoming plans for review	Ms. Welch said the HMP must be updated prior to April 10, 2022 and is slated to have the first draft copy complete by December 17, 2021. Ms. Welch also presented EOP information. EOP will be updated and the new plan will provide more clarity around who does what in an emergency. Currently awaiting a contract to begin this work and is slated to have a first draft by August 2022. Committee will be asked to review both plans before they are finalized.		open
Public Comment	Ms. Anita Baker commented she would like to see the LEPC reach out to the Federation of Community Councils for LEPC membership in high disaster impact areas of the Municipality.		close
Committee Member Comment	Chief Scheunemann commented that during the pandemic when hospitals were on diversion status, they continued to support EMS bringing patients into the emergency departments without any significant delays in patient offload times.		none

ADJOURNMENT:	Next meeting will be Tuesday March 22, 2022 Mr. Lambkin motion to adjourn, second by Mr. Scheunemann. Adjourned at 15:10.	None

Signed

Date

ELECTED OFFICIAL & EMERGENCY MANAGERS

MOA Mayor	Dave Bronson	mayor@muni.org
MOA Director, Emergency Management	Amanda Loach	Amanda.loach@anchorageak.gov

Appendix C
Critical Facility Matrix

CRITICAL FACILITY EXPOSURE

Natural Hazards

	Hazard									
	Earthquake	Wildfire	Extreme Weather	Flooding	Avalanche	Ground Failure/Landslide	Volcanic Ashfall	Severe Erosion	Infectious Disease	Food/Water Contamination
Facility Name										
Fire Departments										
AFD Fire Station #1	√	X	√	X	X	√	√	X	X	X
AFD Fire Station #3	√	X	√	X	X	√	√	X	X	X
AFD Fire Station #4	√	X	√	X	X	√	√	X	X	X
AFD Fire Station #5	√	X	√	X	X	√	√	X	X	X
AFD Fire Station #6	√	X	√	X	X	√	√	X	X	X
AFD Fire Station #7	√	X	√	X	X	√	√	X	X	X
AFD Fire Station #8	√	√	√	X	X	√	√	X	X	X
AFD Fire Station #9	√	X	√	X	X	√	√	X	X	X
AFD Fire Station #10	√	√	√	X	X	√	√	X	X	X
AFD Fire Station #11	√	X	√	X	X	√	√	X	X	X
AFD Fire Station #12	√	√	√	√	X	√	√	X	X	X
AFD Fire Station #14	√	X	√	X	X	√	√	X	X	X
AFD Fire Station #15	√	X	√	X	X	√	√	X	X	X
Chugiak Volunteer Fire Department #1	√	X	√	X	X	√	√	X	X	X
Chugiak Volunteer Fire Department #2	√	X	√	X	X	√	√	X	X	X
Chugiak Volunteer Fire Department #3	√	X	√	X	X	√	√	X	X	X
Girdwood Fire Department	√	X	√	√	X	√	√	X	X	X
Hospitals										
UASF Elmendorf Hospital	√	?	√	X	X	√	√	X	X	X
Anchorage Pioneer Home	√	?	√	X	X	√	√	X	X	X
VA Clinic	√	?	√	X	X	√	√	X	X	X

	Hazard									
	Earthquake	Wildfire	Extreme Weather	Flooding	Avalanche	Ground Failure/Landslide	Volcanic Ashfall	Severe Erosion	Infectious Disease	Food/Water Contamination
Alaska Regional Hospital	√	?	√	X	X	√	√	X	X	X
North Star Behavioral Health System	√	?	√	X	X	√	√	X	X	X
Providence Hospital	√	?	√	X	X	√	√	X	X	X
Alaska Psychiatric Institute	√	?	√	X	X	√	√	X	X	X
Alaska Native Hospital	√	?	√	X	X	√	√	X	X	X
Providence Extended Care Facility	√	?	√	X	X	√	√	X	X	X
Schools										
Charter										
Alaska Native Cultural	√	?	√	?	?	√	√	X	X	X
Aquarian	√	?	√	X	X	√	√	X	X	X
Eagle Academy	√	?	√	X	X	√	√	X	X	X
Family Partnership	√	?	√	X	X	√	√	X	X	X
Frontier Charter School	√	?	√	X	X	√	√	X	X	X
Highland Tech High School	√	?	√	X	X	√	√	X	X	X
Rilke Schule	√	?	√	?	?	√	√	X	X	X
Winterberry	√	?	√	?	?	√	√	X	X	X
Elementary										
Abbott Loop Elementary	√	√	√	X	X	√	√	X	X	X
Airport Heights Elementary	√	X	√	X	X	√	√	X	X	X
Alpenglow Elementary	√	X	√	X	X	√	√	X	X	X
Aurora Elementary	√	X	√	X	X	√	√	X	X	X
Baxter Elementary	√	X	√	X	X	√	√	X	X	X
Bayshore Elementary	√	X	√	X	X	√	√	X	X	X
Bear Valley Elementary	√	√	√	X	X	√	√	X	X	X

	Hazard									
	Earthquake	Wildfire	Extreme Weather	Flooding	Avalanche	Ground Failure/Landslide	Volcanic Ashfall	Severe Erosion	Infectious Disease	Food/Water Contamination
Birchwood ABC	√	X	√	X	X	√	√	X	X	X
Bowman Willard Elementary	√	X	√	X	X	√	√	X	X	X
Campbell Elementary	√	√	√	X	X	√	√	X	X	X
Chester Valley Elementary	√	X	√	√	X	√	√	X	X	X
Chinook Elementary	√	X	√	X	X	√	√	X	X	X
Chugach Optional Elementary	√	X	√	X	X	√	√	X	X	X
Chugiak Elementary	√	X	√	X	X	√	√	X	X	X
College Gate Elementary	√	X	√	X	X	√	√	X	X	X
Creekside Park Elementary	√	X	√	X	X	√	√	X	X	X
Denali Elementary	√	X	√	X	X	√	√	X	X	X
Eagle River Elementary	√	X	√	X	X	√	√	X	X	X
Fairview Elementary	√	X	√	X	X	√	√	X	X	X
Fire Lake Elementary	√	X	√	X	X	√	√	X	X	X
Girdwood Elementary*	√	X	√	X	X	√	√	X	X	X
Gladys Wood Elementary	√	X	√	X	X	√	√	X	X	X
Government Hill Elementary	√	X	√	X	X	√	√	X	X	X
Homestead Elementary	√	X	√	X	X	√	√	X	X	X
Huffman Elementary	√	X	√	X	X	√	√	X	X	X
Inlet View Elementary	√	X	√	X	X	√	√	X	X	X
Kasuun Elementary	√	X	√	X	X	√	√	X	X	X
Kincaid Elementary	√	X	√	X	X	√	√	X	X	X
Klatt Elementary	√	X	√	X	X	√	√	X	X	X
Lake Hood Elementary	√	X	√	X	X	√	√	X	X	X
Lake Otis Elementary	√	X	√	X	X	√	√	X	X	X
Mountain View Elementary	√	X	√	X	X	√	√	X	X	X
Mt. Iliamna Elementary	√	X	√	X	X	√	√	X	X	X

	Hazard									
	Earthquake	Wildfire	Extreme Weather	Flooding	Avalanche	Ground Failure/Landslide	Volcanic Ashfall	Severe Erosion	Infectious Disease	Food/Water Contamination
Mt. Spurr Elementary	√	X	√	X	X	√	√	X	X	X
Muldoon Elementary	√	X	√	X	X	√	√	X	X	X
North Star Elementary	√	X	√	X	X	√	√	X	X	X
Northern Lights ABC	√	X	√	X	X	√	√	X	X	X
Northwood Elementary	√	X	√	X	X	√	√	X	X	X
Nunaka Valley Elementary	√	X	√	X	X	√	√	X	X	X
O'Malley Elementary	√	√	√	X	X	√	√	X	X	X
Ocean View Elementary*	√	?	√	X	X	√	√	X	X	X
Orion Elementary	√	?	√	X	X	√	√	X	X	X
Ptarmigan Elementary	√	X	√	X	X	√	√	X	X	X
Rabbit Creek Elementary	√	X	√	X	X	√	√	X	X	X
Ravenwood Elementary	√	X	√	X	X	√	√	X	X	X
Rogers Park Elementary	√	X	√	X	X	√	√	X	X	X
Russian Jack Elementary*	√	X	√	X	X	√	√	X	X	X
Sand Lake Elementary	√	X	√	√	X	√	√	X	X	X
Scenic Park Elementary*	√	X	√	X	X	√	√	X	X	X
Spring Hill Elementary	√	√	√	X	X	√	√	X	X	X
Susitna Elementary	√	X	√	X	X	√	√	X	X	X
Taku Elementary	√	X	√	√	X	√	√	X	X	X
Trailside Elementary*	√	X	√	X	X	√	√	X	X	X
Tudor Elementary	√	X	√	X	X	√	√	X	X	X
Turnagain Elementary	√	X	√	X	X	√	√	X	X	X
Tyson Elementary*	√	X	√	X	X	√	√	X	X	X
Ursa Major Elementary	√	X	√	X	X	√	√	X	X	X
Ursa Minor Elementary	√	X	√	X	X	√	√	X	X	X
Williwaw Elementary	√	X	√	X	X	√	√	X	X	X
Willow Crest Elementary*	√	X	√	X	X	√	√	X	X	X

	Hazard									
	Earthquake	Wildfire	Extreme Weather	Flooding	Avalanche	Ground Failure/Landslide	Volcanic Ashfall	Severe Erosion	Infectious Disease	Food/Water Contamination
Wonder Park Elementary	√	X	√	X	X	√	√	X	X	X
Middle										
Begich Middle School*	√	X	√	X	X	√	√	X	X	X
Central Middle School of Science	√	X	√	X	X	√	√	X	X	X
Clark Middle School*	√	X	√	X	X	√	√	X	X	X
Goldenview Middle School*	√	X	√	X	X	√	√	X	X	X
Gruening Middle School*	√	X	√	X	X	√	√	X	X	X
Hanshew Middle School*	√	√	√	X	X	√	√	X	X	X
Mears Middle School*	√	X	√	√	X	√	√	X	X	X
Mirror Lake Middle School*	√	X	√	X	X	√	√	X	X	X
Romig Middle School*	√	X	√	X	X	√	√	X	X	X
Wendler Middle School*	√	X	√	X	X	√	√	X	X	X
High										
Bartlett High School*	√	X	√	X	X	√	√	X	X	X
Chugiak High School*	√	X	√	X	X	√	√	X	X	X
Dimond High School*	√	X	√	X	X	√	√	X	X	X
Eagle River High School*	√	X	√	X	X	√	√	X	X	X
East High School*	√	X	√	X	X	√	√	X	X	X
Service High School*	√	√	√	X	X	√	√	X	X	X
South Anchorage High School*	√	X	√	X	X	√	√	X	X	X
West High School*	√	X	√	X	X	√	√	X	X	X
Other										
ACE/ACT Program	√	?	√	X	X	√	√	X	X	X
Alaska State School for the Deaf and Hard of Hearing**	√	?	√	X	X	√	√	X	X	X
AVAIL Program	√	?	√	X	X	√	√	X	X	X
Benny Benson/SEARCH	√	?	√	X	X	√	√	X	X	X
Booth Secondary	√	?	√	X	X	√	√	X	X	X

	Hazard									
	Earthquake	Wildfire	Extreme Weather	Flooding	Avalanche	Ground Failure/Landslide	Volcanic Ashfall	Severe Erosion	Infectious Disease	Food/Water Contamination
Bragaw Residental	√	?	√	X	X	√	√	X	X	X
COHO School	√	?	√	X	X	√	√	X	X	X
Continuation Program	√	?	√	X	X	√	√	X	X	X
Crossroads	√	?	√	X	X	√	√	X	X	X
Debarr Residential**	√	?	√	X	X	√	√	X	X	X
Jesse Lee	√	?	√	X	X	√	√	X	X	X
King Career Center	√	?	√	X	X	√	√	X	X	X
Maplewood**	√	?	√	X	X	√	√	X	X	X
McKinley Heights	√	?	√	X	X	√	√	X	X	X
McLaughlin	√	?	√	X	X	√	√	X	X	X
My High**	√	?	√	X	X	√	√	X	X	X
North Star**	√	?	√	X	X	√	√	X	X	X
Polaris K-12	√	?	√	X	X	√	√	X	X	X
Providence Girls**	√	?	√	X	X	√	√	X	X	X
Providence Heights	√	?	√	X	X	√	√	X	X	X
SAVE High	√	?	√	X	X	√	√	X	X	X
Steller Secondary	√	?	√	X	X	√	√	X	X	X
Whaley	√	?	√	X	X	√	√	X	X	X
Law Enforcement										
Alaska State Court Building	√	?	√	X	X	√	√	X	X	X
Alaska State Troopers Headquarters	√	?	√	X	X	√	√	X	X	X
Anchorage Correctional Complex	√	?	√	X	X	√	√	X	X	X
Anchorage Police Department Headquarters	√	?	√	X	X	√	√	X	X	X

	Hazard									
	Earthquake	Wildfire	Extreme Weather	Flooding	Avalanche	Ground Failure/Landslide	Volcanic Ashfall	Severe Erosion	Infectious Disease	Food/Water Contamination
APD - Eagle River Substation	√	?	√	X	X	√	√	X	X	X
APD Training/Misc	√	?	√	X	X	√	√	X	X	X
FBI Building	√	?	√	X	X	√	√	X	X	X
Prosecutor's Office	√	?	√	X	X	√	√	X	X	X
Shelters (excluding schools used as shelters)										
Spenard Recreation Center	√	?	√	X	X	√	√	X	X	X
Fairview Recreation Center	√	?	√	X	X	√	√	X	X	X
Boys & Girl's Club, Mt. View	√	?	√	X	X	√	√	X	X	X
Egan Center	√	?	√	X	X	√	√	X	X	X
Sullivan Area	√	?	√	X	X	√	√	X	X	X
AT&T Pavilion (formerly Cellular One)	√	?	√	?	X	√	√	X	X	X
Subway Sports Center	√	?	√	?	X	√	√	X	X	X
Anchorage Senior Center	√	?	√	?	X	√	√	X	X	X
Chugiak Senior Center	√	?	√	?	?	?	√	?	?	?
Anchorage Square and Round Dance Center	√	?	√	?	X	√	√	X	X	X
Dena'ina Center	√	?	√	?	X	√	√	X	X	X
Kincaid Park	√	√	√	?	?	√	√	?	X	X
Change Point Church	√	?	√	?	X	√	√	X	X	X
UAA Sports Complex	√	?	√	?	X	√	√	X	X	X
UAA	√	?	√	?	?	√	√	X	X	X
UAA Student Union	√	?	√	?	?	√	√	X	X	X
Ben Boeke Ice Arena	√	?	√	?	X	√	√	X	X	X

	Hazard									
	Earthquake	Wildfire	Extreme Weather	Flooding	Avalanche	Ground Failure/Landslide	Volcanic Ashfall	Severe Erosion	Infectious Disease	Food/Water Contamination
Dempsey Anderson Ice Arena	√	?	√	?	?	?	√	?	X	X
Anchorage City Church	√	?	√	?	?	√	√	X	X	X
Jewel Lake Church	√	?	√	?	?	√	√	X	X	X
American Legion	√	?	√	?	?	√	√	X	X	X
Anchorage Bible Fellowship	√	?	√	?	?	√	√	X	X	X
Holy Cross Parish	√	?	√	?	?	√	√	X	X	X
St. Johns Methodist Church	√	?	√	?	?	√	√	X	X	X
Abbott Loop Church	√	?	√	?	?	√	√	X	X	X
St. Andrews Parish	√	?	√	?	?	√	√	X	X	X
Riverside Community Church	√	?	√	?	?	√	√	X	X	X
Community Covenant Church	√	?	√	?	?	√	√	X	X	X
Other Municipal Facilities										
Eklutna Water Treatment Facility	√	?	√	X	X	√	√	X	X	√
Eagle River Waste Treatment Facility	√	?	√	X	X	√	√	X	X	X
AWWU Ship Creek Treatment Facility	√	?	√	X	X	√	√	X	X	X
City Hall	√	?	√	X	X	√	√	X	X	X
Anchorage Health Department	√	?	√	X	X	√	√	X	X	X
Point Woronzof Sewage Facility	√	?	√	X	X	√	√	X	X	X
AWWU Headquarters	√	?	√	X	X	√	√	X	X	X
Emergency Operations Center	√	X	√	X	X	√	√	X	X	X

	Hazard									
	Earthquake	Wildfire	Extreme Weather	Flooding	Avalanche	Ground Failure/Landslide	Volcanic Ashfall	Severe Erosion	Infectious Disease	Food/Water Contamination
Municipal Parks & Recreation	√	?	√	X	X	√	√	X	X	X
Michael Building	√	?	√	X	X	√	√	X	X	X
Permit and Development Center	√	X	√	X	X	√	√	X	X	X
Northwood Warm Storage Building	√	?	√	?	?	?	√	?	X	X
Northwood/Dispatch/Maintenance/Office Building	√	?	√	?	?	?	√	?	X	X

* Also acts as Shelter

**Not housed in MOA or ASD owned building

Legend

√	Yes
?	Unknown
X	No

CRITICAL FACILITY EXPOSURE

Technological Hazards

	Hazard									
							Transportation Accident			
Facility Name	Air Pollution[1]	Dam Failure	Energy Emergency	Urban Fire	Hazardous Materials	Radiation Release	Aircraft	Marine	Motor Vehicle	Rail
Fire Departments	X	X	✓	✓	X	X	X	X	X	X
AFD Fire Station #1	X	X	✓	✓	X	X	X	X	X	X
AFD Fire Station #3	X	X	✓	✓	X	X	X	X	X	X
AFD Fire Station #4	X	X	✓	✓	X	X	X	X	X	X
AFD Fire Station #5	X	X	✓	✓	X	X	X	X	X	X
AFD Fire Station #6	X	X	✓	✓	X	X	X	X	X	X
AFD Fire Station #7	X	X	✓	✓	X	X	X	X	X	X
AFD Fire Station #8	X	X	✓	✓	X	X	X	X	X	X
AFD Fire Station #9	X	X	✓	✓	X	X	X	X	X	X
AFD Fire Station #10	X	X	✓	✓	X	X	X	X	X	X
AFD Fire Station #11	X	X	✓	✓	X	X	X	X	X	X
AFD Fire Station #12	X	X	✓	✓	X	X	X	X	X	X
AFD Fire Station #14	X	X	✓	✓	X	X	X	X	X	X
AFD Fire Station #15	X	X	✓	✓	X	X	X	X	X	X
Chugiak Volunteer Fire Department #1	X	X	✓	✓	X	X	X	X	X	X
Chugiak Volunteer Fire Department #2	X	X	✓	✓	X	X	X	X	X	X
Chugiak Volunteer Fire Department #3	X	X	✓	✓	X	X	X	X	X	X
Girdwood Volunteer Fire Department	X	X	✓	✓	X	X	X	X	X	X

[1] Excludes Volcanic Ash fall

	Hazard									
							Transportation Accident			
Facility Name	Air Pollution[1]	Dam Failure	Energy Emergency	Urban Fire	Hazardous Materials	Radiation Release	Aircraft	Marine	Motor Vehicle	Rail
Hospitals										
UASF Elmendorf Hospital	✓	X	✓	✓	✓	?	✓	X	✓	X
Anchorage Pioneer Home	✓	?	✓	✓	✓	?	✓	?	✓	?
VA Clinic	✓	X	✓	✓	✓	?	✓	X	✓	X
Alaska Regional Hospital	✓	X	✓	✓	✓	?	✓	X	✓	X
North Star Behavioral Health System	✓	X	✓	✓	✓	?	✓	X	✓	X
Providence Hospital	✓	X	✓	✓	✓	?	✓	X	✓	X
Alaska Psychiatric Institute	✓	X	✓	✓	✓	?	✓	X	✓	X
Alaska Native Hospital	✓	X	✓	✓	✓	?	✓	X	✓	X
Providence Extended Care Facility	✓	X	✓	✓	✓	?	✓	X	✓	X
Schools										
Charter										
Aquarian	✓	X	✓	✓	✓	?	✓	X	✓	?
Alaska Native Cultural	✓	X	✓	✓	✓	?	✓	X	✓	?
Eagle Academy	✓	X	✓	X	✓	?	✓	X	✓	?
Family Partnership	✓	X	✓	✓	✓	?	✓	X	✓	?
Frontier Charter School	✓	X	✓	✓	✓	?	✓	X	✓	?
Highland Tech High School	✓	X	✓	✓	✓	?	✓	X	✓	?
Rilke Schule	✓	X	✓	✓	✓	?	✓	X	✓	?
Winterberry	✓	X	✓	✓	✓	?	✓	X	✓	✓
Elementary										
Abbott Loop Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?
Airport Heights Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?
Alpenglow Elementary	✓	X	✓	X	✓	?	✓	X	✓	?

	Hazard									
							Transportation Accident			
Facility Name	Air Pollution[1]	Dam Failure	Energy Emergency	Urban Fire	Hazardous Materials	Radiation Release	Aircraft	Marine	Motor Vehicle	Rail
Aurora Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?
Baxter Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?
Bayshore Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?
Bear Valley Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?
Birchwood ABC	✓	X	✓	X	✓	?	✓	X	✓	?
Bowman Willard Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?
Campbell Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?
Chester Valley Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?
Chinook Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?
Chugach Optional Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?
Chugiak Elementary	✓	X	✓	X	✓	?	✓	X	✓	?
College Gate Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?
Creekside Park Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?
Denali Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?
Eagle River Elementary	✓	X	✓	X	✓	?	✓	X	✓	?
Fairview Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?
Fire Lake Elementary	✓	X	✓	X	✓	?	✓	X	✓	?
Girdwood Elementary*	✓	X	✓	✓	✓	?	✓	X	✓	?
Gladys Wood Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?
Government Hill Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?
Homestead Elementary	✓	X	✓	X	✓	?	✓	X	✓	?
Huffman Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?
Inlet View Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?
Kasuun Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?

	Hazard									
							Transportation Accident			
Facility Name	Air Pollution[1]	Dam Failure	Energy Emergency	Urban Fire	Hazardous Materials	Radiation Release	Aircraft	Marine	Motor Vehicle	Rail
Kincaid Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?
Klatt Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?
Lake Hood Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?
Lake Otis Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?
Mountain View Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?
Mt. Iliamna Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?
Mt. Spurr Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?
Muldoon Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?
North Star Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?
Northern Lights ABC	✓	X	✓	✓	✓	?	✓	X	✓	?
Northwood Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?
Nunaka Valley Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?
O'Malley Elementary	✓	?								
Ocean View Elementary*	✓	X	✓	✓	✓	?	✓	X	✓	?
Orion Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?
Ptarmigan Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?
Rabbit Creek Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?
Ravenwood Elementary	✓	X	✓	X	✓	?	✓	X	✓	?
Rogers Park Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?
Russian Jack Elementary*	✓	X	✓	✓	✓	?	✓	X	✓	?
Sand Lake Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?
Scenic Park Elementary*	✓	X	✓	✓	✓	?	✓	X	✓	?
Spring Hill Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?
Susitna Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?
Taku Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?

	Hazard									
							Transportation Accident			
Facility Name	Air Pollution[1]	Dam Failure	Energy Emergency	Urban Fire	Hazardous Materials	Radiation Release	Aircraft	Marine	Motor Vehicle	Rail
Trailside Elementary*	✓	X	✓	✓	✓	?	✓	X	✓	?
Tudor Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?
Turnagain Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?
Tyson Elementary*	✓	X	✓	✓	✓	?	✓	X	✓	?
Ursa Major Elementary	✓	X	✓	X	✓	?	✓	X	✓	?
Ursa Minor Elementary	✓	X	✓	X	✓	?	✓	X	✓	?
Williwaw Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?
Willow Crest Elementary*	✓	X	✓	✓	✓	?	✓	X	✓	?
Wonder Park Elementary	✓	X	✓	✓	✓	?	✓	X	✓	?
Middle										
Begich Middle School*	✓	X	✓	✓	✓	?	✓	X	✓	?
Central Middle School of Science	✓	X	✓	✓	✓	?	✓	X	✓	?
Clark Middle School*	✓	X	✓	✓	✓	?	✓	X	✓	?
Goldenview Middle School*	✓	X	✓	✓	✓	?	✓	X	✓	?
Gruening Middle School*	✓	X	✓	X	✓	?	✓	X	✓	?
Hanshew Middle School	✓	X	✓	✓	✓	?	✓	X	✓	?
Mears Middle School*	✓	X	✓	✓	✓	?	✓	X	✓	?
Mirror Lake Middle School	✓	X	✓	X	✓	?	✓	X	✓	?
Romig Middle School*	✓	X	✓	✓	✓	?	✓	X	✓	?
Wendler Middle School*	✓	X	✓	✓	✓	?	✓	X	✓	?
High										
Bartlett High School*	✓	X	✓	✓	✓	?	✓	X	✓	?
Chugiak High School*	✓	X	✓	X	✓	?	✓	X	✓	?
Dimond High School*	✓	X	✓	✓	✓	?	✓	X	✓	?
Eagle River High School*	✓	X	✓	X	✓	?	✓	X	✓	?
East High School*	✓	X	✓	✓	✓	?	✓	X	✓	?

	Hazard									
							Transportation Accident			
Facility Name	Air Pollution[1]	Dam Failure	Energy Emergency	Urban Fire	Hazardous Materials	Radiation Release	Aircraft	Marine	Motor Vehicle	Rail
Service High School*	✓	X	✓	✓	✓	?	✓	X	✓	?
South Anchorage High School*	✓	X	✓	✓	✓	?	✓	X	✓	?
West High School*	✓	X	✓	✓	✓	?	✓	X	✓	?
Other										
ACE/ACT Program	✓	X	✓	✓	✓	?	✓	X	✓	?
Alaska State School for the Deaf and Hard of Hearing**	✓	X	✓	✓	✓	?	✓	X	✓	?
AVAIL Program	✓	X	✓	✓	✓	?	✓	X	✓	?
Benny Benson/SEARCH	✓	X	✓	✓	✓	?	✓	X	✓	?
Booth Secondary	✓	X	✓	✓	✓	?	✓	X	✓	?
Bragaw Residential	✓	X	✓	✓	✓	?	✓	X	✓	?
COHO School	✓	X	✓	X	✓	?	✓	X	✓	?
Continuation Program	✓	X	✓	✓	✓	?	✓	X	✓	?
Crossroads	✓	X	✓	✓	✓	?	✓	X	✓	?
Debarr Residential**	✓	X	✓	✓	✓	?	✓	X	✓	?
Jesse Lee	✓	X	✓	✓	✓	?	✓	X	✓	?
King Career Center	✓	X	✓	✓	✓	?	✓	X	✓	?
Maplewood**	✓	X	✓	✓	✓	?	✓	X	✓	?
McKinley Heights	✓	X	✓	✓	✓	?	✓	X	✓	?
McLaughlin	✓	X	✓	✓	✓	?	✓	X	✓	?
My High**	✓	X	✓	✓	✓	?	✓	X	✓	?
North Star**	✓	X	✓	✓	✓	?	✓	X	✓	?
Polaris K-12	✓	X	✓	✓	✓	?	✓	X	✓	?
Providence Girls**	✓	X	✓	✓	✓	?	✓	X	✓	?
Providence Heights	✓	X	✓	✓	✓	?	✓	X	✓	?
SAVE High	✓	X	✓	✓	✓	?	✓	X	✓	?

	Hazard									
							Transportation Accident			
Facility Name	Air Pollution[1]	Dam Failure	Energy Emergency	Urban Fire	Hazardous Materials	Radiation Release	Aircraft	Marine	Motor Vehicle	Rail
Steller Secondary	✓	X	✓	✓	✓	?	✓	X	✓	?
Whaley	✓	X	✓	✓	✓	?	✓	X	✓	?
Law Enforcement										
Alaska State Court Building	✓	X	✓	✓	✓	?	✓	X	✓	?
Alaska State Troopers Headquarters	✓	X	✓	✓	✓	?	✓	X	✓	X
Anchorage Correctional Complex	✓	X	✓	✓	✓	?	✓	X	✓	?
Anchorage Police Department Headquarters	✓	X	✓	✓	✓	?	✓	X	✓	?
APD Training/Misc	✓	X	✓	✓	✓	?	✓	X	✓	?
APD - Eagle River Substation	✓	X	✓	X	✓	?	✓	X	✓	?
FBI Building	✓	X	✓	✓	✓	?	✓	X	✓	X
Prosecutor's Office	✓	X	✓	✓	✓	?	✓	X	✓	?
Shelters										
Chief William Tyson	✓	X	✓	✓	✓	?	✓	X	✓	X
Spenard Recreation Center	✓	X	✓	✓	✓	?	✓	X	✓	X
Fairview Recreation Center	✓	X	✓	✓	✓	?	✓	X	✓	X
Boys & Girl's Club, Mt. View	✓	X	✓	✓	✓	?	✓	X	✓	X
Egan Center	✓	X	✓	✓	✓	?	✓	X	✓	?
Sullivan Area	✓	X	✓	✓	✓	?	✓	X	✓	X
AT&T Pavilion (formerly Cellular One)	✓	?	✓	✓	✓	?	✓	X	✓	?
Subway Sports Center	✓	?	✓	✓	✓	?	✓	X	✓	?
Anchorage Senior Center	✓	?	✓	✓	✓	?	✓	?	✓	

	Hazard									
							Transportation Accident			
Facility Name	Air Pollution[1]	Dam Failure	Energy Emergency	Urban Fire	Hazardous Materials	Radiation Release	Aircraft	Marine	Motor Vehicle	Rail
Chugiak Senior Center	✓	?	✓	?	✓	?	✓	?	✓	?
Anchorage Square and Round Dance Center	✓	?	✓	✓	✓	?	✓	?	✓	?
Dena'ina Center	✓	?	✓	✓	✓	?	✓	?	✓	?
Kincaid Park	✓	?	✓	✓	✓	?	✓	?	✓	?
Change Point Church	✓	?	✓	✓	✓	?	✓	?	✓	?
UAA Sports Complex	✓	?	✓	✓	✓	?	✓	?	✓	?
UAA	✓	?	✓	✓	✓	?	✓	?	✓	?
UAA Student Union	✓	?	✓	✓	✓	?	✓	?	✓	?
Ben Boeke Ice Arena	✓	?	✓	✓	✓	?	✓	?	✓	?
Dempsey Anderson Ice Arena	✓	?	✓	✓	✓	?	✓	?	✓	?
Anchorage City Church	✓	?	✓	✓	✓	?	✓	?	✓	?
Jewel Lake Church	✓	?	✓	✓	✓	?	✓	?	✓	?
American Legion	✓	?	✓	?	✓	?	✓	?	✓	?
Anchorage Bible Fellowship	✓	?	✓	?	✓	?	✓	?	✓	?
Holy Cross Parish	✓	?	✓	?	✓	?	✓	?	✓	?
St. Johns Methodist Church	✓	?	✓	?	✓	?	✓	?	✓	?
Abbott Loop Church	✓	?	✓	?	✓	?	✓	?	✓	?
St. Andrews Parish	✓	?	✓	?	✓	?	✓	?	✓	?
Riverside Community Church	✓	?	✓	?	✓	?	✓	?	✓	?
Community Covenant Church	✓	?	✓	?	✓	?	✓	?	✓	?
Other Municipal Facilities										
Eklutna Water Treatment Facility	✓	?	✓	X	?	?	✓	X	✓	?

	Hazard									
							Transportation Accident			
Facility Name	Air Pollution[1]	Dam Failure	Energy Emergency	Urban Fire	Hazardous Materials	Radiation Release	Aircraft	Marine	Motor Vehicle	Rail
Eagle River Waste Treatment Facility	✓	?	✓	X	?	?	✓	X	✓	?
AWWU Ship Creek Treatment Facility	✓	?	✓	✓	?	?	✓	?	✓	?
City Hall	✓	X	✓	✓	?	?	✓	X	✓	X
Department of Health & Human Services	✓	?	✓	✓	✓	X	✓	X	X	X
Point Woronzof Sewage Facility	✓	X	✓	✓	?	?	✓	?	✓	X
AWWU Headquarters	✓	X	✓	✓	?	?	✓	X	✓	X
Emergency Operations Center	✓	X	✓	✓	✓	✓	✓	X	✓	X
Municipal Parks & Recreation	✓	X	✓	✓	?	?	✓	X	✓	X
Michael Building	✓	X	✓	✓	?	?	✓	X	✓	X
Planning and Development Center	✓	X	X	✓	X	✓	✓	?	✓	?
Northwood Warm Storage Building	✓	?	✓	✓	?	?	✓	?	✓	?
Northwood/Dispatch/Maintenance/Office Building	✓	?	✓	✓	?	?	✓	?	✓	?

* Also acts as Shelter
**Not housed in MOA or ASD buildings

Legend:

✓ Yes
? Unknown
X No

Appendix D

Flooding

Date Received:_____ Received By:_____

Project/Permit Number:_____

Fee:_____

(To be Completed by MOA)

Municipality of Anchorage
Project Management & Engineering Department
Mail: P.O. Box 196650, Anchorage, AK 99519-6650
4700 Elmore Road, Anchorage, AK 99507
Phone (907) 343-8135 Fax (907) 343-8088
www.muni.org

FLOOD HAZARD PERMIT APPLICATION

(Please fill out application completely; Indicate NA if necessary. Property information can be found at http://neighborhood.muni.org/ or http://redirect.muni.org/propappraisal/public.html)

PART I – APPLICANT INFORMATION

APPLICANT**:** _____

MAILING ADDRESS: _____

CITY:_____ STATE:_____ ZIP: _____

PHONE:_____ FAX: _____ EMAIL:_____

OWNER (If Different): _____

MAILING ADDRESS: _____

CITY:_____ STATE:_____ ZIP: _____

PHONE:_____ FAX: _____ EMAIL:_____

PART II - LOCATION OF PROPOSED PROJECT

TAX PARCEL ID(s): _____

SUDIVISION: _____

LOT(s): _____ BLOCK: _____

ADDRESS/OTHER LOCATION INFORMATION: _____

_____

PART III – PROJECT DESCRIPTION:

PROPOSED WORK – CHECK ALL THAT APPLY

- ☐ STRUCTURE
  - ☐ RESIDENTIAL
  - ☐ COMMERCIAL
  - ☐ NEW CONSTRUCTION
  - ☐ ALTERATION
  - ☐ ADDITION
- ☐ MOBILE HOME
  - ☐ PRIVATE LOT
  - ☐ MOBILE HOME PARK
- ☐ GRADE/EXCAVATION/FILL
- ☐ ROAD CONSTRUCTION
- ☐ NEW SUBDIVISION
- ☐ WATERCOURSE ALTERATION
- ☐ BRIDGE/CULVERT (Please Circle)
- ☐ UTILITY
  - ☐ MAINLINE
  - ☐ SERVICE CONNECT
- ☐ OTHER _____

EXISTING STRUCTURES

1) FAIR MARKET VALUE OF STRUCTURE(s) BEFORE IMPROVEMENT: _____

2) COST OF IMPROVEMENTS: _____

ADDITIONAL IMPERVIOUS AREA TO BE ADDED TO THE FLOODPLAIN (ROOF, PAVEMENT, ETC) _____SQ. FT.

DETAILED PROJECT NARRATIVE (*Attach additional documentation if necessary*)

_____

_____

_____

_____

_____

_____

_____

_____

_____

PART IV – SUBMITTAL REQUIREMENTS

Check box to indicate information has been provided. ***All applications require the submittal of a site plan****.*

☐ SITE PLAN SHOWING THE NATURE, LOCATION, DIMENSIONS, AND ELEVATION (NGS 1972) OF THE PROPERTY LOCATED WITHIN THE FLOODPLAIN, EXISTING OR PROPOSED STRUCTURES, LOCATION OF PROPOSED FILL, LOCATION OF STORAGE OF MATERIALS INCLUDING FUEL, AND LOCATION OF DRAINAGE FACILITIES. (*Refer to Appendix A for clarification)*

☐ PROPOSED ELEVATION (NGS 1972) OF THE LOWEST FLOOR, INCLUDING BASEMENTS/CRAWLSPACES OF ALL STRUCTURES.

☐ PROPOSED ELEVATION (NGS 1972) OF ALL MACHINERY SERVING THE STRUCTURE INCLUDING FURNACES, HOTWATER HEATERS, AIR CONDITIONING, DUCTWORK, AND UTILITY METERS

☐ FOR NON-RESIDENTIAL CONSTRUCTION ONLY, ELEVATION AND CERTIFICATION BY A REGISTERED ENGINEER OR ARCHITECT THAT FLOOD-PROOFING METHODS FOR ANY NON-RESIDENTIAL STRUCTURES MEET THE FLOOD-PROOFING CRITERIA OF THE MUNICIPAL FLOOD ORDINANCE.

☐ BASE FLOOD ELEVATIONS FOR NEW SUBDIVISONS OR DEVELOPMENT

☐ WRITTEN DESCRIPTION, IF APPLICABLE, DESCRIBING THE EXTENT WHICH A WATERCOURSE WILL BE ALTERED OR RELOCATED AS A RESULT OF THE PROPOSED DEVELOPMENT

☐ NO-RISE CERTIFICATION PREPARED BY A REGISTERED PROFESSIONAL ENGINEER FOR ALL PROJECTS LOCATED IN THE FLOODWAY, AND FOR ALL HYDRAULIC STRUCTURES, DRAINAGE FACILITIES, AND FILL IN FLOOD AREAS WITH BASE FLOOD ELEVATIONS WHERE NO FLOODWAYS HAVE BEEN IDENTIFIED. (Refer to Appendix C)

ASSOCIATED PERMITS

MUNICIPAL PERMITS	PERMIT/CASE NUMBER
☐ RESIDENTIAL/COMMERCIAL BUILDING OR LAND USE PERMIT	_____
☐ FILL AND GRADE	_____
☐ STORM WATER POLLUTION PREVENTION PLAN (SWPPP)	_____NA_____
☐ PLANNING PLAT OR SITE PLAN REVIEW	_____

STATE AND FEDERAL PERMITS (Attach Documentation)	STATUS
☐ ARMY CORPS OF ENGINEERS 404 WETLAND PERMIT	_____
☐ FISH HABITAT PERMIT	_____
☐ COASTAL PROJECT REVIEW	_____
☐ OTHER _____	_____

ADDITIONAL REQUIREMENTS

IF A PERMIT CAN BE ISSUED FOR A PROPOSED STRUCTURE, IT WILL BE THE RESPONSIBILITY OF THE APPLICANT TO PROVIDE AN FINAL AS-BUILT DRAWING AND ELEVATION CERTIFICATE PREPARED BY A REGISTERED PROFESSIONAL LAND SURVEYOR. A FINAL CERTIFICATE OF OCCUPANCY WILL NOT BE ISSUED UNTIL THESE DOCUMENTS HAVE BEEN SUBMITTED.

In signing this application, the landowner(s) or agent hereby grants the Municipality of Anchorage the right to enter the above described location to inspect the work proposed, in progress, or work completed.

I hereby affirm and certify that I am one of the owners or am under contract with the owners, and I believe that the above information and/or statements are true in all respects to the best of my knowledge.

_____ _____

SIGNATURE (*Check One)* ☐ *Owner* ☐ *Applicant* *Date Signed*

FLOOD HAZARD PERMIT FEES

NOTICE: <u>All fees are payable at time of application.</u>

If issuance of a permit for one of these types of developments is, after review, refused by the Municipality of Anchorage, one half of the permit fee deposited will be returned to the applicant.

PROJECT TYPE		FEE
Structure		
	Addition	$ 50.00
	Alteration	50.00
	New residential	200.00
	New commercial	200.00
Watercourse Alteration or Obstruction		600.00
Utility mainline		200.00
Utility service connect		50.00
New subdivision (Plus $200.00 per lot within the floodplain)		600.00
Mobile Home		
	Private Lot	100.00
	Mobile home park (Plus $50.00 per mobile home space within the floodplain)	200.00
Street/Road Construction		400.00
Bank/Slope Restoration (No in-channel work)		50.00
Other		50.00

FOR MOA USE ONLY

FEE CALCULATION	FEE
Structure	_____
Watercourse Alteration	_____
Utility	_____
Subdivision	_____
Mobile Home	_____
Street/Road Construction	_____
Bank/Slope Restoration	_____
Other:_____	_____
TOTAL	_____

APPENDIX A – SITE PLAN REQUIREMENTS

A SITE PLAN IS AN ACCURATE AND DETAILED MAP OF YOUR PROPERTY:

It shows the size, shape, and special features of your property; and the size and location of any buildings or other improvements to the property. Site plans show what currently exists on your property, and any changes or improvements you are proposing to make.

A SITE PLAN MUST CONTAIN THE FOLLOWING INFORMATION:

1. Legal description of parcel, north arrow, and scale
2. All property lines, easements and their dimensions.
3. Names of adjacent roads, location of driveways.
4. Location of streams, or lakes with setbacks indicated
5. Location, size, and shape of all buildings, existing and proposed, with elevation of lowest floor indicated
6. Location and dimensions of existing or proposed sewage systems.
7. Location of all propane tanks, fuel tanks, and generators
8. Dimensions and depth of any fill on site. .
9. A survey showing the existing ground elevations at 4 corners of the building
10. Proposed ground elevations at 4 corners of the building, it applicable
11. Location of any proposed temporary construction fencing, buildings, fuel storage, and erosion control structures.

ELEVATION NOTE: The Municipality of Anchorage requires all VERTICAL datum to be based on 1972 NGS datum. Assumed datum will not be accepted unless the property is located in areas where 1972 NGS datum has not been established.

For structures proposed in the flood plain, the lowest floor elevation must be one foot above the base flood elevation. **Crawlspace grade is also considered "floor elevation" for the purpose of this requirement.**

For those areas where 1972 NGS datum does not exist, a plot plan with contours, lot corner elevations using assumed datum, high-water mark and existing water levels of creeks, lakes, or streams, and proposed lowest living floor elevations, is required.

APPENDIX B- FLOODPLAIN CONSTRUCTION STANDARDS

USE OF FLOOD RESISTANT MATERIALS

The Federal Emergency Management Agency (FEMA) guidelines for flood resistant materials are contained in Technical Bulletin 2-93. This publication is available for review or reproduction upon request. This publication is also available on the Web.

Portions of buildings below the base flood elevation (BFE) are often constructed entirely out of concrete, which is considered a flood resistant material. It is also a common building practice to frame up from a concrete stem wall with wood construction to create a garage/storage space below the elevated first floor. Since garage spaces typically utilize sheetrock to achieve the necessary fire separation, construction of this type results in the use of materials subject to flood damage.

In order to comply with FEMA's guidelines for flood resistant materials as listed in Technical Bulletin 2-93, the use of untreated wood and sheetrock to cover wall members below the BFE is prohibited. The preferred design alternative (other than concrete walls) will be the use of pressure treated heavy timber construction (6"x10" horizontal, 8"x8" vertical) and pressure treated frame members. The ceiling can be protected with sheetrock if the first floor above the protected ceiling is one foot above the BFE and the sheetrock is less than one foot below that elevation. Cement board may be used as a substitute for sheetrock. Siding below the BFE shall utilize the acceptable materials listed in Technical Bulletin 2-93.

The area of a building below the BFE may only used for building access, parking and storage. No living space is permitted below the BFE.

REQUIRED ELEVATION

All construction below the BFE is susceptible to flooding and must consist of flood-resistant materials. The BFE will be established by this department and conveyed to the applicant for incorporation into the building plans. In order to adequately determine if flood-resistant materials are required, applicants proposing construction in flood prone areas shall provide a survey of existing ground elevations of the four corners of the proposed development and the proposed ground elevations of the proposed development.

The BFE shall be shown on the elevation drawings for the proposed structure. The BFE will be established by this department and conveyed to the applicant for incorporation into the building plans.

BASEMENTS

The Municipal Flood Ordinance requires that the lowest floor, including basement, be elevated one foot above the BFE. The National Flood Insurance Program defines a basement as "any area of the building having its floor subgrade (below ground level) on all sides."

Applicants proposing construction in flood prone areas will need to be aware of final interior and exterior grade levels of the proposed structure. Subgrade basements and crawlspaces can incur significant flood insurance penalties.

OPENINGS TO EQUALIZE HYDROSTATIC FLOOD FORCES

The Municipal Flood Ordinance requires that all fully enclosed areas below the lowest floor that are usable solely for parking, building access, or storage in an area other than a basement or crawl space shall have a minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area according to FEMA specifications. The bottom of all openings shall be no higher than one foot above grade. Openings may be equipped with screens, louvers or other coverings or devices provided that they permit the automatic entry and exit of floodwaters.

The vents should be placed on opposing walls to allow the entry and exit of floodwaters. Detailed information about FEMA's flood venting requirement may be found in Technical Bulletin 1. This publication is available for review or reproduction upon request. This publication is also available on the Web.

ELECTRICAL GEAR AND EQUIPMENT

All electrical, heating, ventilation, plumbing and air conditioning equipment that is permanently affixed to a structure and which may be subject to floodwater damage shall be elevated a minimum of one foot above the BFE or higher unless otherwise constructed to prohibit the entry of flood waters. FEMA has published a document titled *Protecting Building Utilities from Flood Damage* that gives specific guidance on proper construction technique. This publication is available for review or reproduction upon request. This publication is also available on the Web.

FILL/ENCROACHMENT GUIDELINES

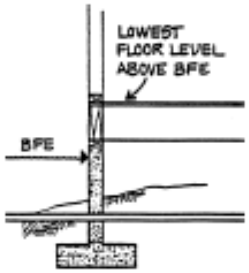
Proposed developments cumulatively may not increase base flood heights more that one-foot anywhere in the identified floodplain. (Applies only to floodplains with BFEs but without identified floodways.)

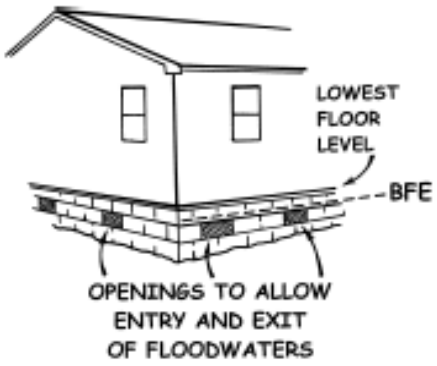
All watercourse alterations or modifications must not reduce the carrying capacity of the stream or increase BFEs. Watercourse alterations or modifications must not reduce the carrying capacity of the stream or increase BFEs. The applicant must submit an analysis that compares existing channel capacity with proposed capacity. Alteration or modification must maintain carrying capacity of the watercourse. Floodway regulations apply for alterations within a designated floodway (Appendix C).

If fill is to be placed within the floodplain areas the applicant must include with the application the volume, height, and sideslope of the fill perimeter within the floodplain. The applicant must also indicate the method used to protect the fill from erosion. The placement must not interfere with any existing utilities or easements. Fill must not unreasonably obstruct or divert the flow of surface water to the detriment of adjacent or hydraulically affected property owners.

SPECIFIC FLOODPLAIN CONSTRUCTION STANDARDS

Residential Structures:
Residential structures must have the lowest floor including basement elevated at least to or above the BFE. This elevation requirement can be accomplished by any of the following three (3) methods:





1. Foundation Stem Walls:
The crawlspace must not be below grade. It must have as a minimum two permanent openings no more than one foot above grade. The total area of the openings must be no less than 1 square inch for every square foot of enclosed space. This helps to relieve hydrostatic pressure on the foundation during a flood. Any covers placed over the openings must be able to open automatically during flood flows without human intervention. Screens are acceptable if they permit entry and exit of floodwater.

2. Fill:
A poured slab placed over compacted fill can also be used to elevate the lowest floor of a structure to one foot above the BFE. Please note that when a building site is filled, it is still in the floodplain and no basements are permitted.





3. Piers, Piles and Posts:
This method is commonly used to avoid large fills and when flood heights are extreme. The supporting members must be designed to resist hydrostatic and hydrodynamic forces. Fully enclosed areas below the BFE can only be used for parking, access and limited storage. In addition, the following conditions must be met for any enclosed area below the BFE:

a) Service equipment (e.g., furnaces, water heaters, washers/dryers, etc.) are NOT

permitted below the BFE.

b) All walls, floors, and ceiling materials located below the BFE must be unfinished and constructed of materials resistant to flood damage.

c) The walls of any enclosed area below the BFE must be designed by a registered professional engineer or architect in a manner to prevent lateral movement, collapse or flotation of the structure. There must be at least two openings on each wall and the bottom of all openings must be no higher than one foot above grade.

Non-residential Structures

Must have the lowest floor including basement elevated to or above the BFE, or floodproofed at least one foot above BFE. If floodproofed, structures must be dry-floodproofed, which means keeping the water out. Non-residential (commercial) structures, together with attendant utility and sanitary facilities, are designed so that the structure is watertight below the base flood level. The walls are impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy. Additionally, the structure must be designed to:

- prevent seepage, collapse or cracking of basement walls
- prevent buckling of basement floors
- prevent back-up of water from sewer lines
- have all openings located one foot above BFE
- all protective features must operate automatically without human intervention

Note: Dry floodproofing measures must be certified by a licensed engineer and only apply to non-residential structures.

APPENDIX C – "NO-RISE" ANAYLSIS PROCEDURES

Section 60.3(d)(3) of the National Flood Insurance Program (NFIP) requires that the Municipality to prohibit encroachments, including fill, new construction, substantial improvements, and other development within the adopted regulatory floodway unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in flood levels within the city during the occurrence of the base (100-year) flood discharge.

In most cases, the "No-Rise Certificate" must be supported by technical data based upon the standard step-backwater computer model utilized to develop the 100-year floodway shown on the Anchorage's effective Flood Insurance Rate Map (FIRM) or Flood Boundary and Floodway Map (FBFM) and the results tabulated on the Flood Insurance Study (FIS) for Anchorage.

The analysis procedure is outlined in the attached document from the Federal Emergency Management Agency. While the attached guidelines specifically address floodway development the same procedure can be used to determine the impact of projects in flood zones without BFEs has that have the potential to increase flood elevations.

U.S. Department of Homeland Security
Region X
130 228th Street, SW
Bothell, WA 98021-9796

FEMA

Procedures for "No-Rise" Certification
For Proposed Developments in the Regulatory Floodway

Section 60.3 (d) (3) of the National Flood Insurance Program (NFIP) regulations states that a community shall "prohibit encroachments, including fill, new construction, substantial improvements and other development within the adopted regulatory floodway unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in flood levels within the community during the occurrence of the base (100-year) flood discharge."

Prior to issuing any building, grading or development permits involving activities in a regulatory floodway the community must obtain a certification stating the proposed development will not impact the pre-project base flood elevations, floodway elevations, or floodway data widths. The certification should be obtained from the applicant and be signed and sealed by a professional engineer.

The engineering or "no-rise" certification must be supported by technical data.

The supporting technical data should be based upon hydraulic analyses that utilize the same model used to prepare the effective Flood Insurance Study (FIS) report and Flood Insurance Rate Map (FIRM) unless it is demonstrated that the 'effective' hydraulic model is unavailable or its use is inappropriate. If an alternative hydraulic model is used, the new model must be calibrated to reproduce the FIS profiles within 0.5 feet. Hydraulic model used in the analysis must be on FEMA's accepted models list, or documentation must be provided showing the model meets the requirements of NFIP regulation 65.6(a)(6).

Although communities are required to review and approve the "no-rise" submittals, they may request, in writing, technical assistance and review from the FEMA regional office. However, if this alternative is chosen, the community must review the technical submittal package and verify that all supporting data, listed in the following paragraphs, are included in the package before forwarding to FEMA.

To support a "no-rise" certification for proposed developments encroaching into the regulatory floodway, a community will require that the following procedures be followed:

1. Current Effective Model: Submit a written request for the effective model for the specified stream and community, identifying the limits of the requested data. A fee will be assessed for providing the data. Send data requests to:

   Michael Baker Jr., Inc.
   3601 Eisenhower Avenue
   Alexandria, Virginia 22304
   (703) 960-8800

2. Duplicate Effective Model: Upon receipt of the effective computer model, the engineer should run the original model to duplicate the output in the effective (FIS).

3. Corrected Effective Model: The model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections, or incorporates more detailed topographic information than that used in the current effective model. Floodway limits should be manually set at the new cross-section locations by measuring from the effective FIRM or FBFM. The cumulative reach lengths of the stream should also remain unchanged. The Corrected Effective model must not reflect any man-made physical changes since the date of the effective model.

4. Existing, or Pre-Project Conditions Model: Revise the Duplicate Effective or the Corrected Effective model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project. If no modifications have occurred since the date of the effective model, then the model would be identical to the Duplicate Effective or Corrected Effective model. The results of this Existing Conditions analysis will indicate the 100-yr elevations at the project site.

5. Proposed, or Post-Project Conditions Model: Modify the Existing Condition or Pre-Project Conditions Model (or Duplicate Effective model or Corrected Effective model, as appropriate) to reflect revised or post-project conditions. The overbank roughness coefficients should remain the same unless a reasonable explanation of how the proposed development will impact Manning's "n" values is included with the supporting data. The results of this analysis will indicate the 100-year elevation for proposed conditions at the project site. These results must indicate NO impact on the 100-year floodway elevations when compared to the Existing Conditions or Pre-Project Conditions model. If an increase results the project will require the submittal of a CLOMR prior to the start of the project.

The "no-rise" supporting data and a copy of the engineering certification must be submitted to and reviewed by the appropriate community official prior to issuing a permit.

The "no-rise" supporting data should include, but may not be limited to:

1) Copy of the Duplicate Effective model;

2) Copy of the Corrected Effective model;

3) Existing conditions, or Pre-Project conditions model

4) Proposed conditions or Post-Project conditions model.

5) FIRM and topographic map, showing floodplain and floodway, the additional cross-sections, the site location with the proposed topographic modification superimposed onto the maps, and a copy of the effective FIRM or FBFM showing the current regulatory floodway.

6) Documentation clearly stating analysis procedures. All modifications made to the original FIS model to represent revised existing conditions, as well as those made to the revised existing conditions model to represent proposed conditions, should be well documented and submitted with all supporting data.

7) Copy of effective Floodway Data Table copied from the (FIS) report.

8) Statement defining source of additional cross-section topographic data and supporting information.

9) Cross-section plots, of the added cross sections, for revised existing and proposed conditions.

10) Certified planimetric (boundary survey) information indicating the location of structures on the property.

11) Copy of the source from which input for original FIS model was taken.

12) CD with all input and output files.

13) Printout of output files from EDIT runs for all three floodway models.

The engineering "no-rise" certification and-supporting technical data must stipulate NO impact on the 100-year flood or floodway elevations at the new cross-sections and at all existing cross-sections anywhere in the model. Therefore, the revised computer model should be run for a sufficient distance (usually one mile, depending on hydraulic slope of

the stream) upstream and downstream of the development site to insure proper "no-rise" certification.

Attached is a sample "no-rise" certification form that can be completed by a registered professional engineer and supplied to the community along with the supporting technical data when applying for a development permit.

ENGINEERING "NO-RISE" CERTIFICATION

This is to certify that I am a duly qualified engineer licensed to practice in the State of _____.

It is to further certify that the attached technical data supports the fact that proposed _____ will
(Name of Development)
not impact the 100-year flood elevations, floodway elevations and floodway widths on _____ at published sections
(Name of Stream)
in the Flood Insurance Study for _____,
(Name of Community)
dated _____ and will not impact the 100-year flood elevations, floodway elevations, and floodway widths at unpublished cross-sections in the vicinity of the proposed development.

Attached are the following documents that support my findings:

_____
_____
_____

_____ _____
(Date) (Signature)

_____
(Title)

seal: _____
(Address)

Municipality of Anchorage
Project Management and Engineering
MEMORANDUM

DATE: October 9, 2019

TO: William D. Falsey, Municipal Manager

THRU: Kent Kohlhase, Director, Project Management & Engineering

THRU: Kristi L. Bischofberger, Watershed Manager

FROM: Steven Ellis, Floodplain Administrator

SUBJECT: FEMA Community Rating System

Attached, for your signature, is the annual recertification application for the Community Rating System (CRS). The Federal Emergency Management Agency (FEMA) has developed the CRS Program to reward communities that adopt regulations and participate in activities that reduce the risk of flooding. The chief reward to the community is in the form of reduced flood insurance premiums for residential and commercial property owners. Individuals who own homes and businesses in mapped flood zones are required to purchase flood insurance by their banks.

- Anchorage is currently rated as a Class 6 CRS Community.
  - A Class 6 rating means citizens of the MOA enjoy a 20 percent reduction in flood insurance premiums.
  - The class ratings are from 1 to 10. A Class 1 is a high (best) rating and Class 10 is a low rating.

- FEMA has assigned points to various activities that a community implements and for regulations it adopts.
  - A community improves its rating for each 500 points it accumulates.

- A new CRS Manual was issued in 2017.
  - Modifications to the CRS Manual changes how we are scored.
  - To be rated as a Class 6 Community or better, the community's Building Code Effectiveness Grading Schedule (BSEGS) score must be a Class 5 or better for both commercial and residential property.
  - The MOA is currently rated a Class 3 for commercial property and a Class 99 for one and two family residential property. Class 99 is considered unrated.
  - Based on the CRS Manual the best score the MOA can receive, with 1 being the highest and 10 being the lowest, is a Class 7.

We anticipate a Class 7 rating, changing our insurance premium discount from 20 to 15 percent.

Attachments:
CC – 230 Verification

INSURANCE SERVICES OFFICE, INC.
1000 Bishops Gate Blvd, Suite 300, P.O. Box 5404, Mt. Laurel, New Jersey 08054
Phone: (856) 787-0412 or (800) 444-4554 FAX 1-800-777-3929
Please direct correspondence to: Marlene Jacobs, ISO Specialist, 1177 E Virginia St. Stayton, OR 97383

December 16, 2019

Mr. Steve Ellis
Flood Hazard Administrator
Post Office Box 196650
Anchorage, Alaska 99519

Dear Mr. Ellis:

Enclosed are the preliminary results regarding credits for the Community Rating System (CRS) 2019 cycle verification visit with the Municipality of Anchorage, Alaska.

A total of 1937 credit points are verified which results in a recommendation that the community retrograde from a CRS Class 6 to a CRS Class 7.

Attached are the draft verification report and credit calculation worksheet (AW-720). This report is subject to further review by Insurance Services Office, Inc. (ISO) and acceptance by DHS/FEMA. I anticipate FEMA will accept the verification report as written and the community will receive confirmation of the assigned flood insurance premium discount prior to the effective date of May 1, 2020.

After the rate takes effect or within one year of the cycle visit date, the community will be required to submit an annual recertification. Consistent implementation of the activities credited will ensure a successful recertification process. Please continue to document the activities credited on an annual basis until the next cycle verification visit.

The next cycle verification visit is scheduled to occur approximately five years from the date of the last visit. Prior to the beginning of 2024, the CRS Specialist will once again contact you to coordinate the verification process.

Thank you for your assistance and cooperation during our visit. It was a pleasure working with you and learning about your community.

Sincerely,

Marlene Jacobs

Marlene Jacobs, CFM
ISO/CRS Senior Floodplain Specialist

Cc: Mr. William Falsey Municipal Manager
Ms. Roxanne Pilkenton, DHS/FEMA Region X
Ms. Karen Wood-McGuiness, DHS/FEMA Region X
Mr. Jimmy Smith, Alaska State NFIP Coordinator

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

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Coastal Base Flood Elevations shown on this map apply only landward of 0.0' Mean Sea Level (MSL) Tidal Datum. Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures.** Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 6. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

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NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, MD 20910-3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242,** or visit its website at http://www.ngs.noaa.gov/.

Base map digital files provided by Municipality of Anchorage DPW and AK DNR. Information compiled at scales of 1:1200 to 1:24000 during 2000-06. Streams and lake shorelines associated with FHAs digitized from Army Corp. of Engineers flood hazard workmaps from MOA DPW.

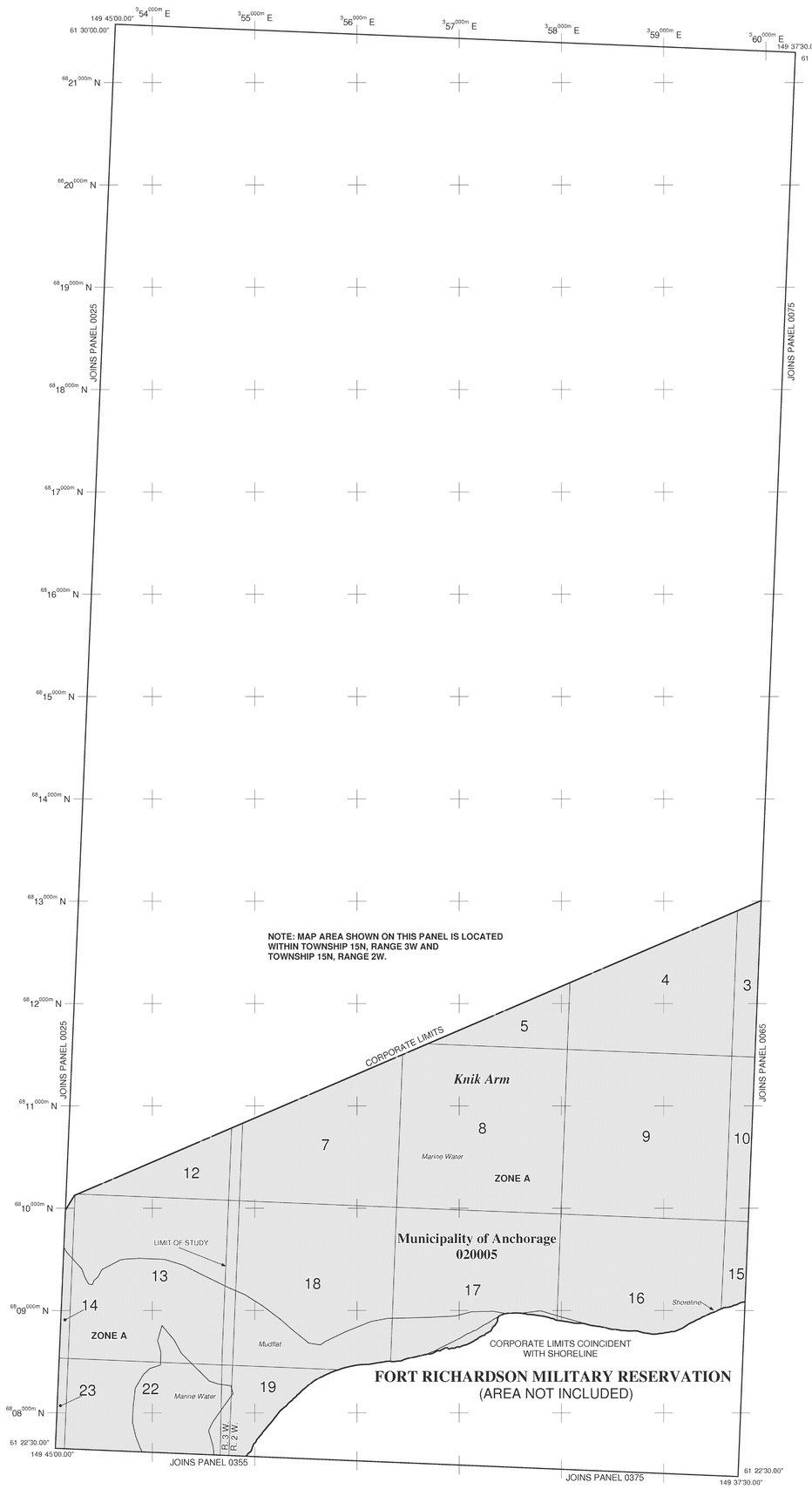
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Please refer to the separately printed **Map Index** for an overview map showing the layout of map panels for this jurisdiction.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, *a Flood Insurance Study report,* and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://www.msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	Floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the Mean Sea Level (MSL) Tidal Datum

A — A	Cross section line
23 - - - - - - - - 23	Transect line
97°07'30", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4275 000m N	1000-meter Universal Transverse Mercator grid ticks, zone 6
6000000 M	5000-foot grid ticks: New York State Plane coordinate system, east zone (FIPSZONE 3101), Transverse Mercator
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORY
4700 South Bragaw Street, Anchorage, Alaska 99507 (Maps available for reference only, not for distribution.)

INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
September 5, 1979
FLOOD INSURANCE RATE MAP REVISIONS
September 18, 1987 - to update map format.
March 5, 1990 - to change Base Flood Elevations and Special Flood Hazard Areas, reflect updated topographic information and to incorporate previously issued Letters of Map Revision.
July 2, 2002 - to add Special Flood Hazard Areas and Base Flood Elevations.
September 25, 2009 - to update corporate limits, change zone designations and to incorporate previously issued Letters of Map Revision.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 2000'
1000 0 2000 4000 FEET
600 0 600 1200 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0050D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 50 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0050	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
0200050050D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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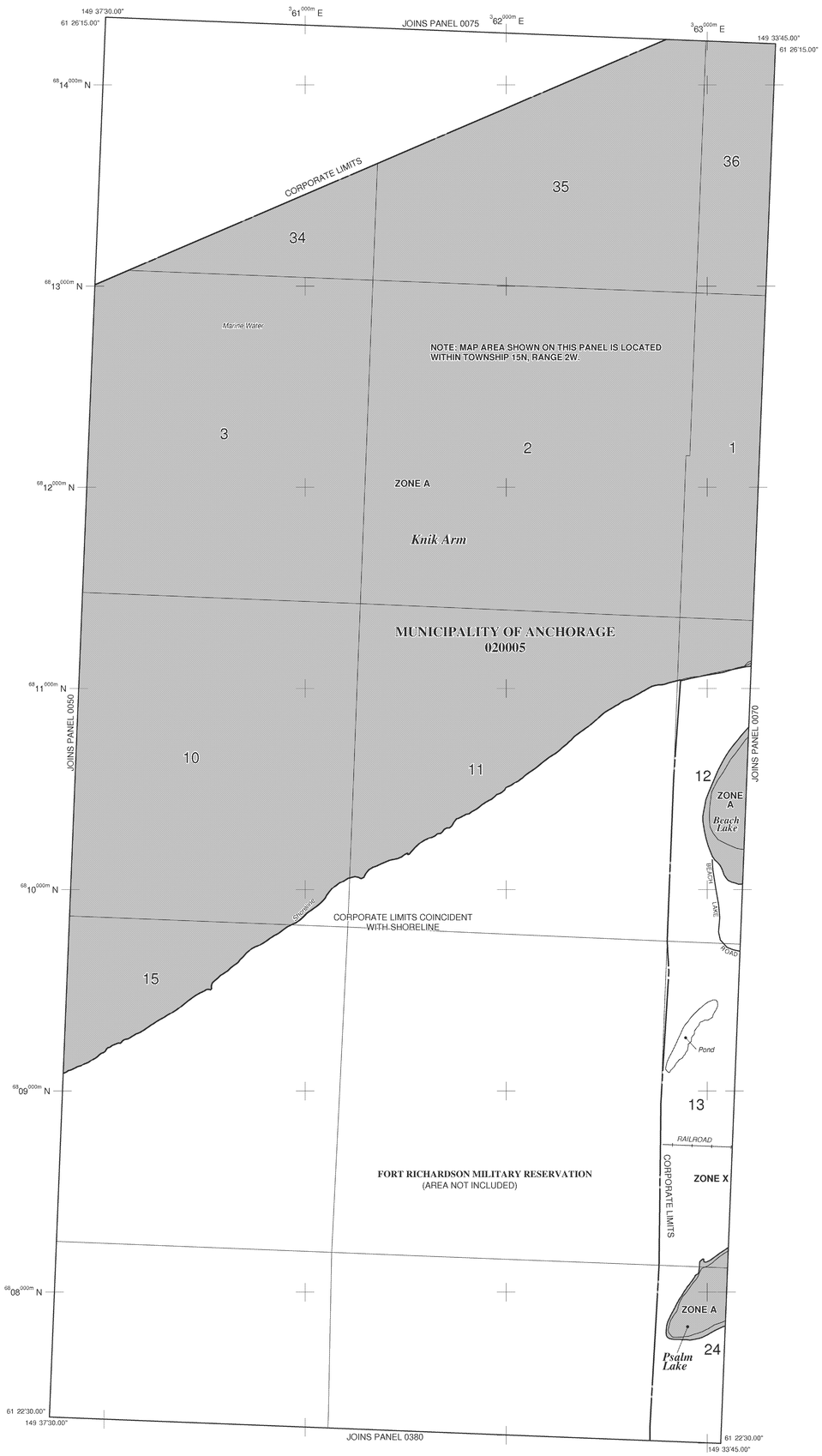
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LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	Floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the Mean Sea Level (MSL) Tidal Datum

A — A	Cross section line
23 - - - - - 23	Transect line
97 07'30", 32 22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4275 000m N	1000-meter Universal Transverse Mercator grid ticks, zone 6
6000000 M	5000-foot grid ticks: New York State Plane coordinate system, east zone (FIPSZONE 3101), Transverse Mercator
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORY
4700 South Bragaw Street, Anchorage, Alaska 99507 (Maps available for reference only, not for distribution.)

INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
September 5, 1979
FLOOD INSURANCE RATE MAP REVISIONS
September 18, 1987 - to update map format.
March 5, 1990 - to change Base Flood Elevations and Special Flood Hazard Areas, reflect updated topographic information and to incorporate previously issued Letters of Map Revision.
July 2, 2002 - to add Special Flood Hazard Areas and Base Flood Elevations.
September 25, 2009 - to update corporate limits, change zone designations and to incorporate previously issued Letters of Map Revision.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0065D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 65 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0065	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
0200050065D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

NOTES TO USERS

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Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

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The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 6. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

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NGS Information Services
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National Geodetic Survey
SSMC–3, #9202
1315 East–West Highway
Silver Spring, MD 20910–3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713–3242,** or visit its website at http://www.ngs.noaa.gov/.

Base map digital files provided by Municipality of Anchorage DPW and AK DNR. Information compiled at scales of 1:1200 to 1:24000 during 2000-06. Streams and lake shorelines associated with FHAs digitized from Army Corp. of Engineers flood hazard workmaps from MOA DPW.

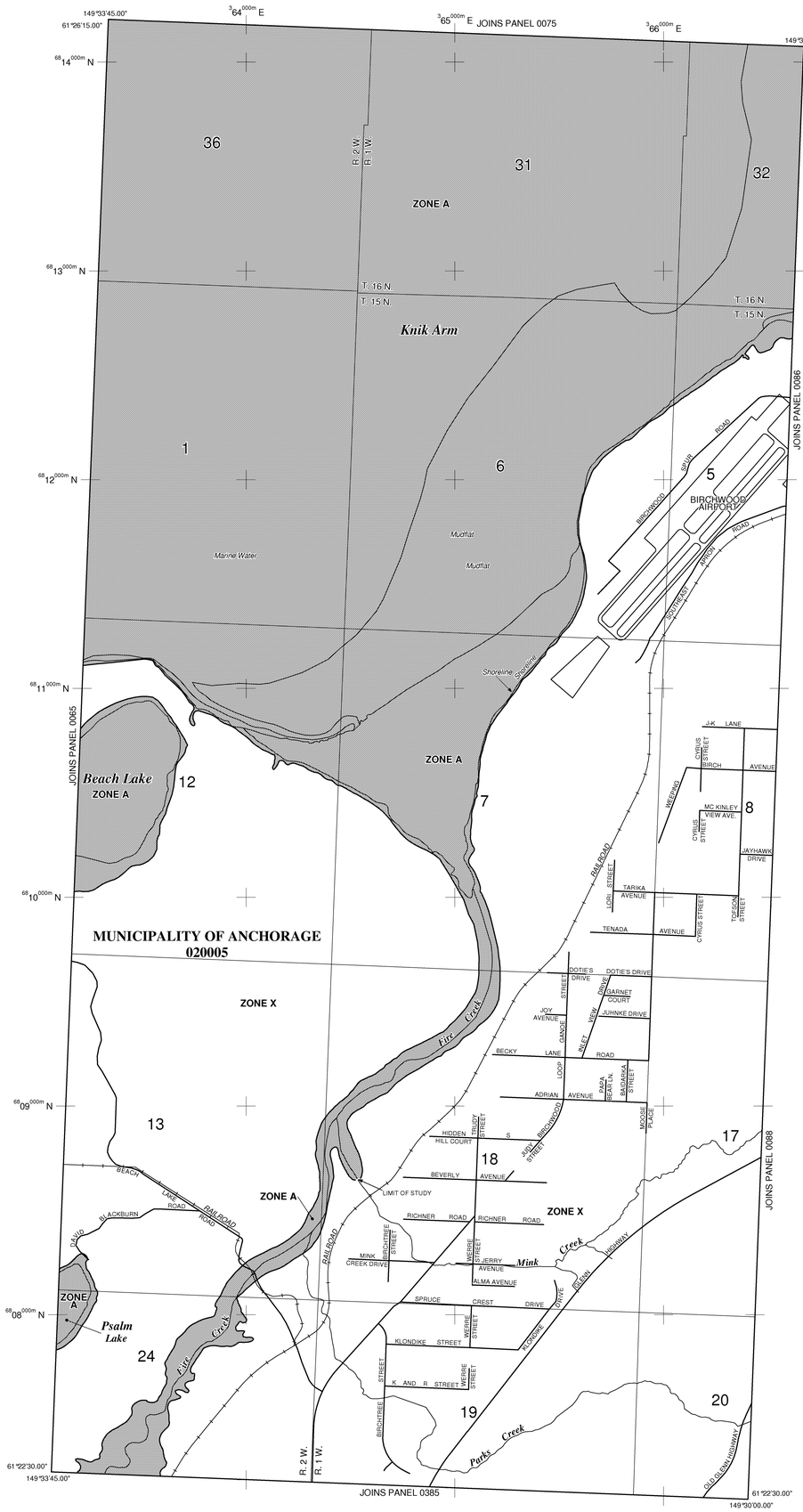
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LEGEND

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FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- **ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- **ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
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COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

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* Referenced to the Mean Sea Level (MSL) Tidal Datum

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- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

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INITIAL NFIP MAP DATE
September 5, 1979
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500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0070D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 70 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0070	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
0200050070D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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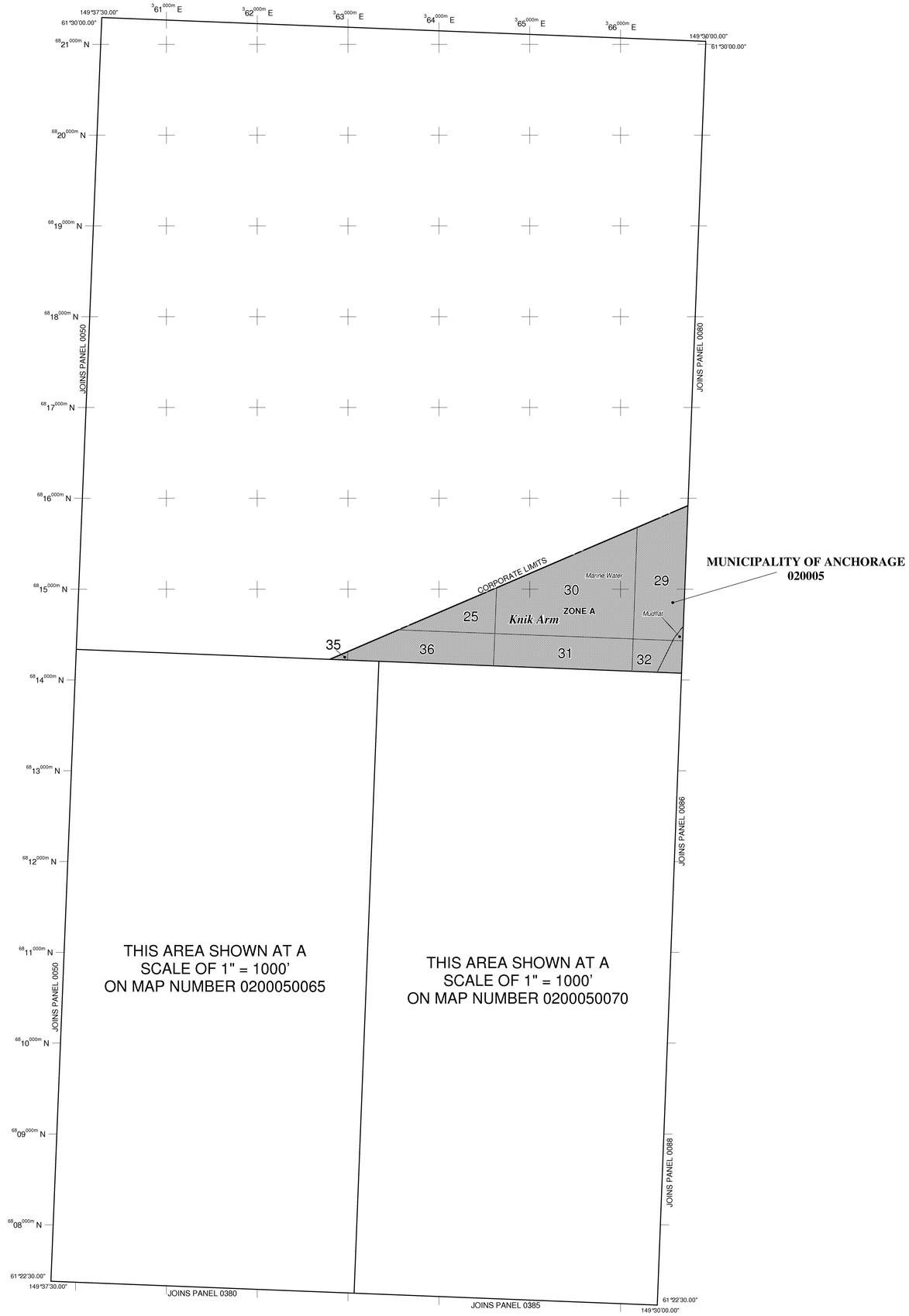
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LEGEND

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1000 0 2000 4000 FEET
600 0 600 1200 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0075D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF

ANCHORAGE,
ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 75 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0075	D

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MAP NUMBER
0200050075D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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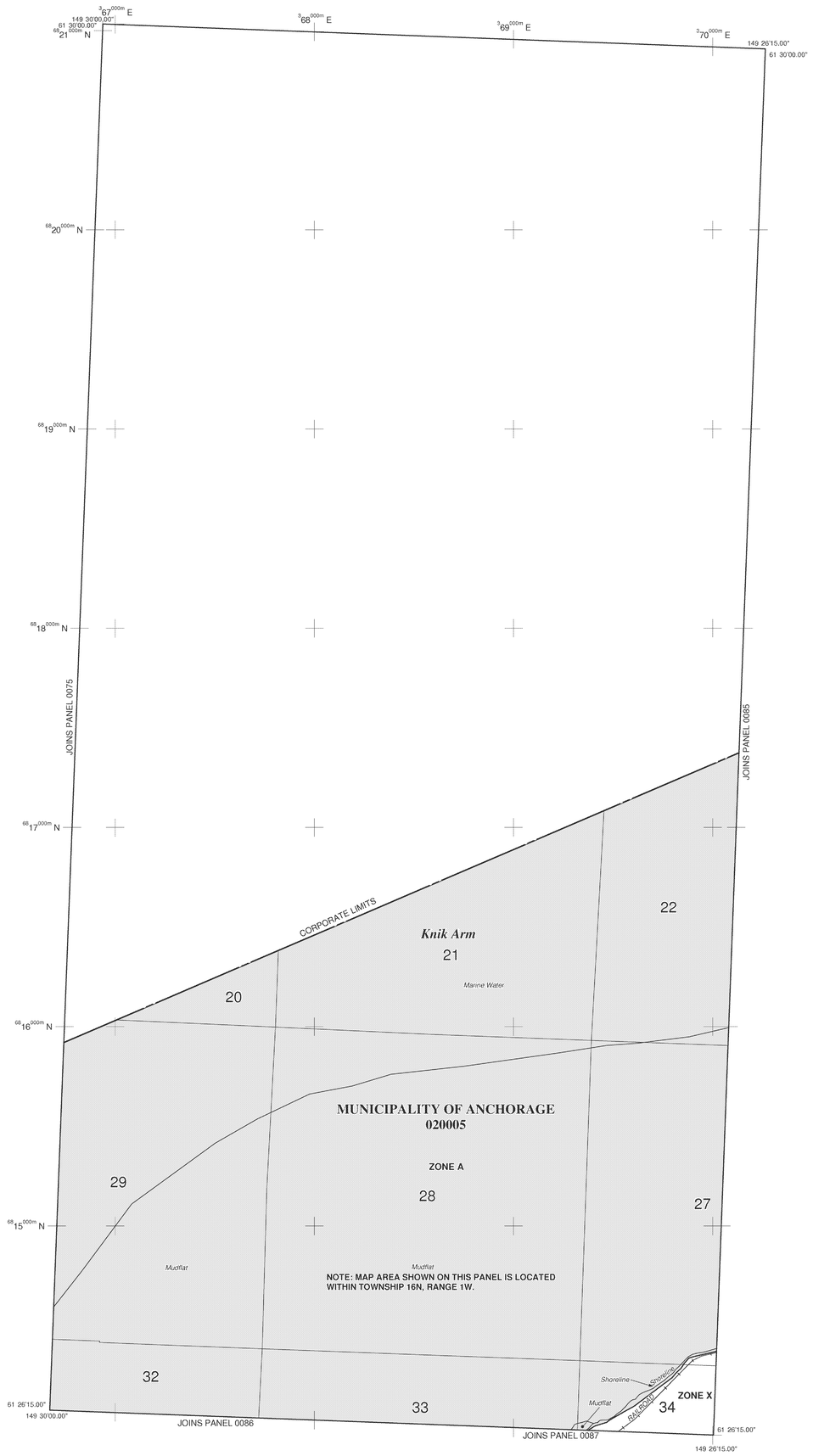
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ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	Floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the Mean Sea Level (MSL) Tidal Datum

A — A	Cross section line
23 - - - - - - - 23	Transect line
97 07'30", 32 22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4275 000m N	1000-meter Universal Transverse Mercator grid ticks, zone 6
6000000 M	5000-foot grid ticks: New York State Plane coordinate system, east zone (FIPSZONE 3101), Transverse Mercator
DX5510	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORY
4700 South Bragaw Street, Anchorage, Alaska 99507 (Maps available for reference only, not for distribution.)

INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
September 5, 1979
FLOOD INSURANCE RATE MAP REVISIONS
September 18, 1987 - to update map format.
March 5, 1990 - to change Base Flood Elevations and Special Flood Hazard Areas, reflect updated topographic information and to incorporate previously issued Letters of Map Revision.
July 2, 2002 - to add Special Flood Hazard Areas and Base Flood Elevations.
September 25, 2009 - to update corporate limits, change zone designations and to incorporate previously issued Letters of Map Revision.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0080D

FIRM

FLOOD INSURANCE RATE MAP

MUNICIPALITY OF

ANCHORAGE, ALASKA

ANCHORAGE DIVISION COUNTY

PANEL 80 OF 1975

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0080	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
0200050080D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

NOTES TO USERS

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Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures.** Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 6. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

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NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, MD 20910-3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242,** or visit its website at http://www.ngs.noaa.gov/.

Base map digital files provided by Municipality of Anchorage DPW and AK DNR. Information compiled at scales of 1:1200 to 1:24000 during 2000-06. Streams and lake shorelines associated with FHAs digitized from Army Corp. of Engineers flood hazard workmaps from MOA DPW.

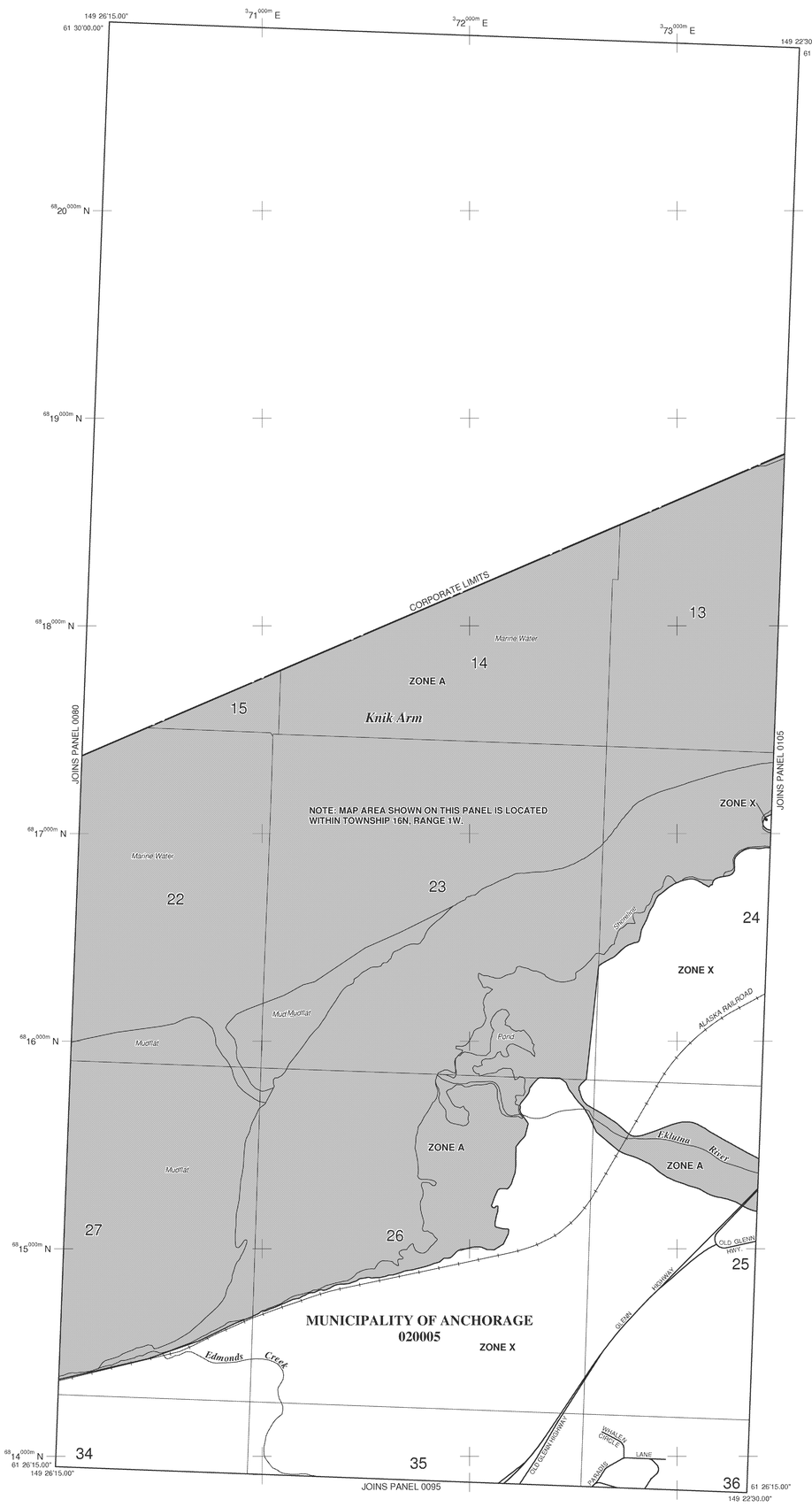
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LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	Floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the Mean Sea Level (MSL) Tidal Datum

A — A	Cross section line
23 - - - - - - - 23	Transect line
97 07'30", 32 22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4275 000m N	1000-meter Universal Transverse Mercator grid ticks, zone 6
6000000 M	5000-foot grid ticks: New York State Plane coordinate system, east zone (FIPSZONE 3101), Transverse Mercator
DX5510	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORY
4700 South Bragaw Street, Anchorage, Alaska 99507 (Maps available for reference only, not for distribution.)

INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
September 5, 1979
FLOOD INSURANCE RATE MAP REVISIONS
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MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0085D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 85 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)
CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0085	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
0200050085D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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National Geodetic Survey
SSMC- 3, #9202
1315 East- West Highway
Silver Spring, MD 20910- 3282

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Base map digital files provided by Municipality of Anchorage DPW and AK DNR. Information compiled at scales of 1:1200 to 1:24000 during 2000-06. Streams and lake shorelines associated with FHAs digitized from Army Corp. of Engineers flood hazard workmaps from MOA DPW.

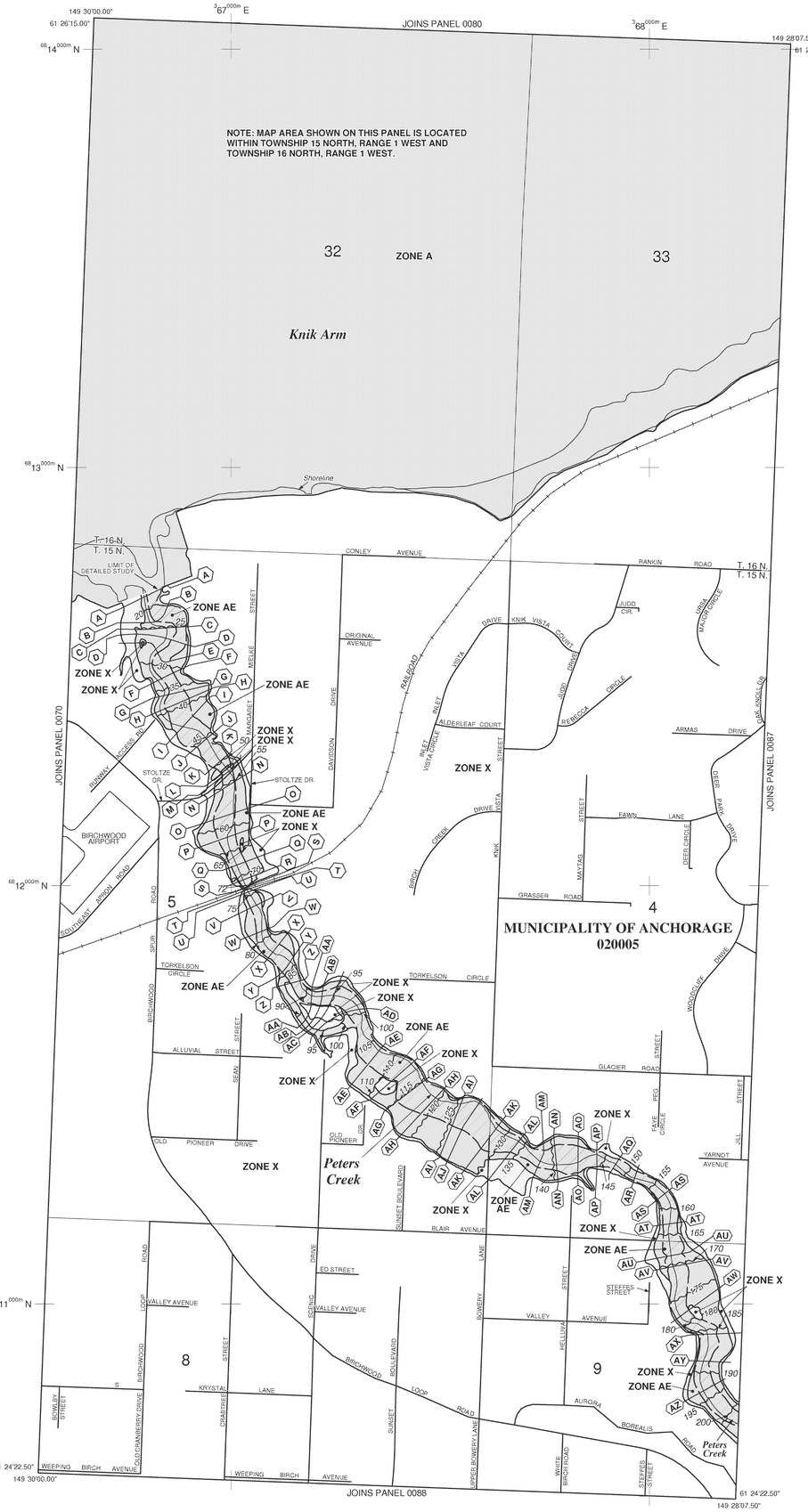
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LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

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ZONE A	No Base Flood Elevations determined.
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ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

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MAP REPOSITORY
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INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

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MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0086D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 86 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)
CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0086	D

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MAP NUMBER
0200050086D
MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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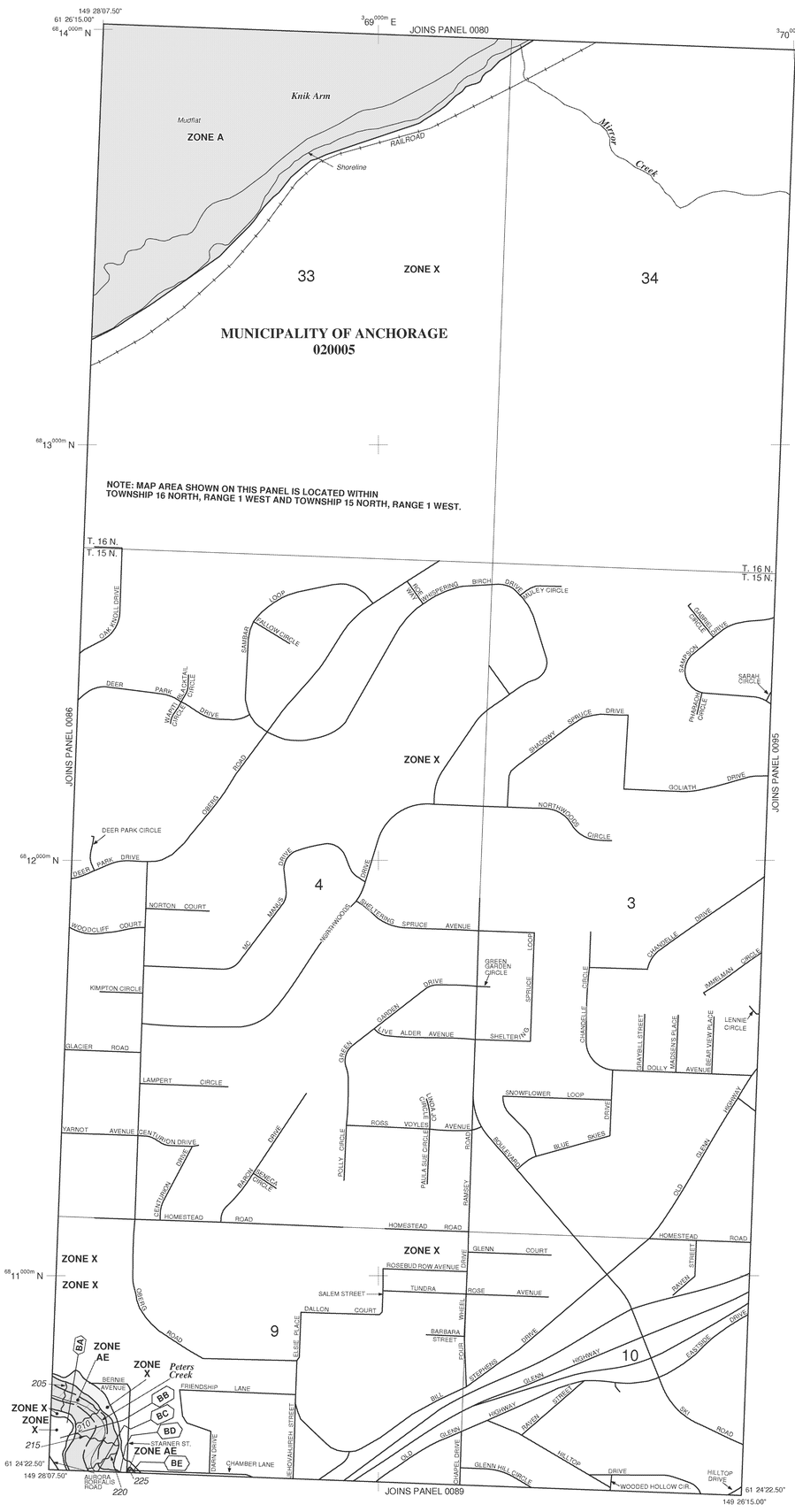
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FLOODWAY AREAS IN ZONE AE

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	Floodplain boundary
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	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the Mean Sea Level (MSL) Tidal Datum

A — A	Cross section line
23 - - - - - - 23	Transect line
97 07'30", 32 22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4275 000m N	1000-meter Universal Transverse Mercator grid ticks, zone 6
6000000 M	5000-foot grid ticks: New York State Plane coordinate system, east zone (FIPSZONE 3101), Transverse Mercator
DX5510	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORY
4700 South Bragaw Street, Anchorage, Alaska 99507 (Maps available for reference only, not for distribution.)

INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
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MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0087D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 87 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0087	D

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MAP NUMBER
0200050087D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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National Geodetic Survey
SSMC–3, #9202
1315 East–West Highway
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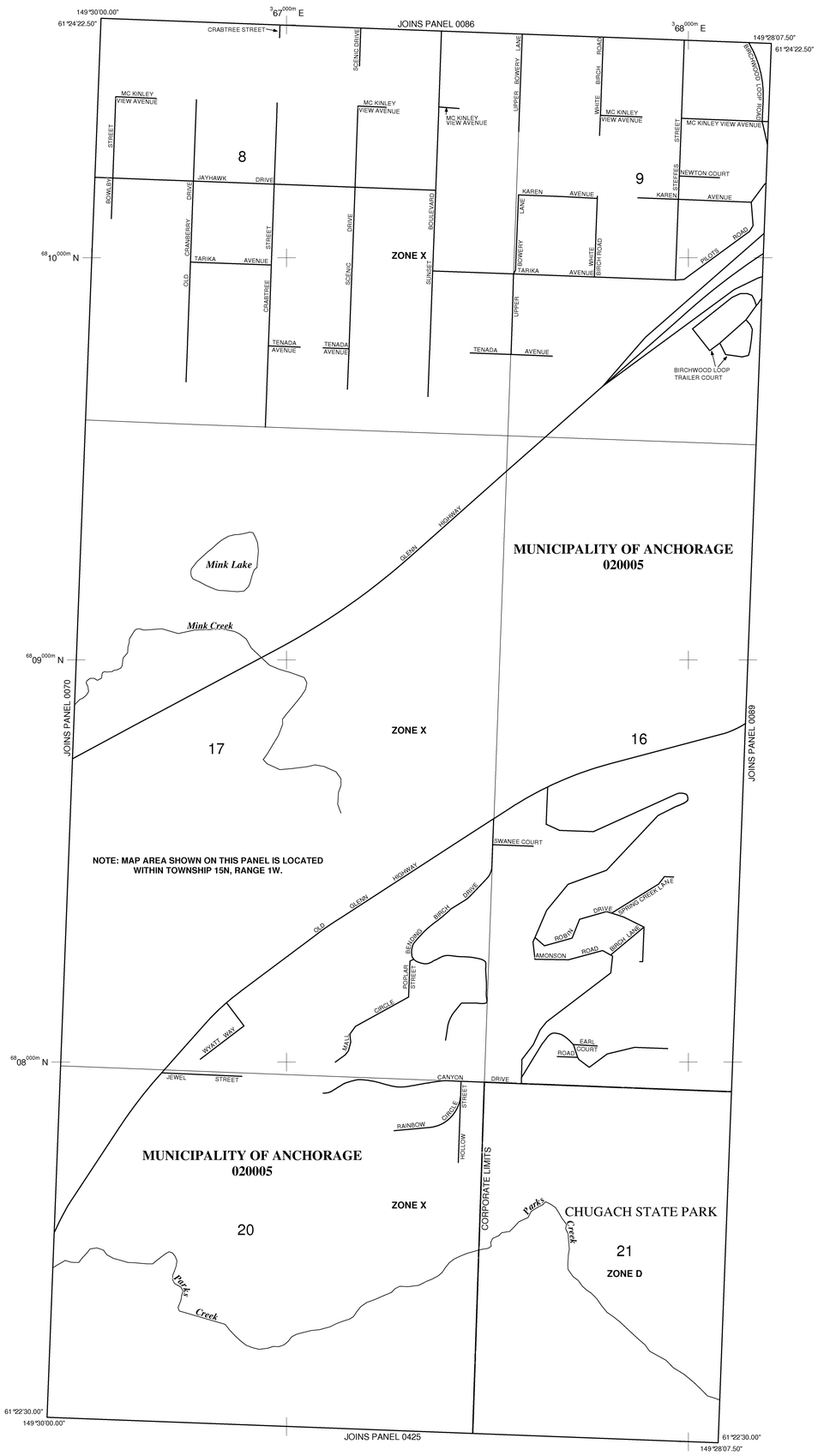
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LEGEND

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- **ZONE A** No Base Flood Elevations determined.
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- **ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
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FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- **ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- **ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
- **ZONE D** Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

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NAD

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NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0088D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 88 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0088	D

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MAP NUMBER
0200050088D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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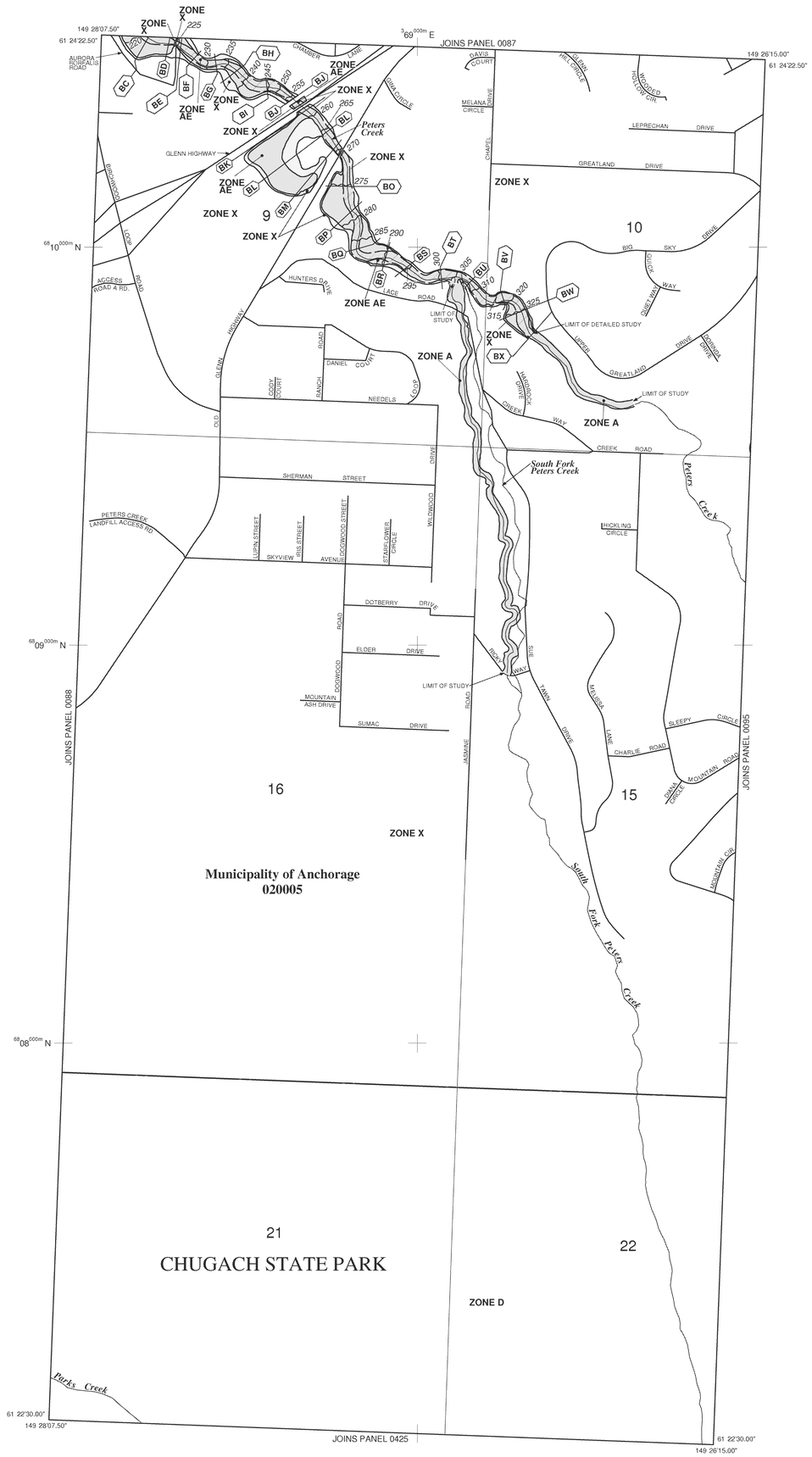
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OTHER FLOOD AREAS

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NFIP

PANEL 0089D

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FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 89 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)
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SEPTEMBER 25, 2009

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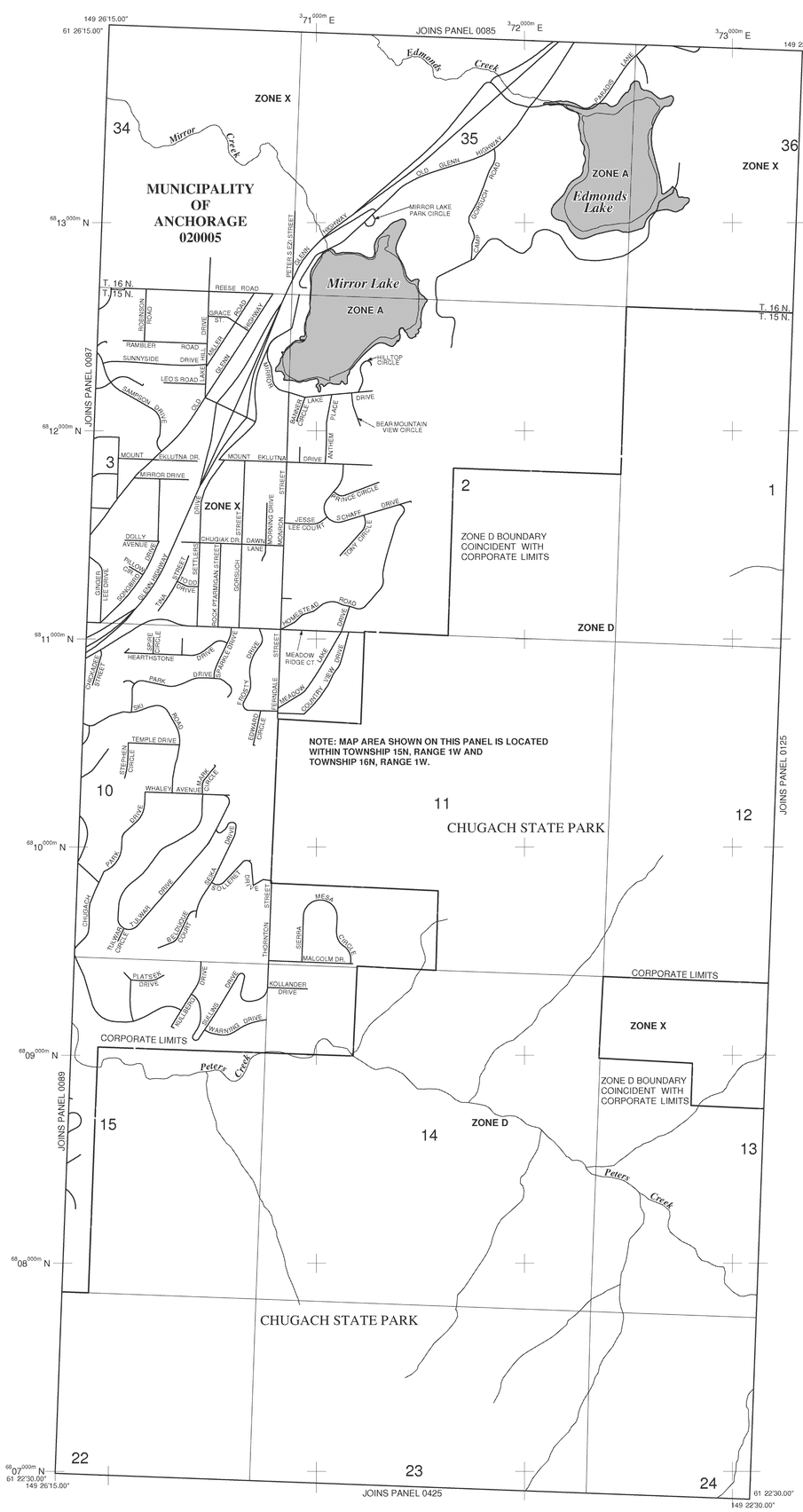
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September 5, 1979
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FLOOD INSURANCE RATE MAP EFFECTIVE
September 5, 1979
FLOOD INSURANCE RATE MAP REVISIONS
September 18, 1987 - to update map format.
March 5, 1990 - to change Base Flood Elevations and Special Flood Hazard Areas, reflect updated topographic information and to incorporate previously issued Letters of Map Revision.
July 2, 2002 - to add Special Flood Hazard Areas and Base Flood Elevations.
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To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1- 800- 638- 6620.

MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0095D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 95 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0095	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
0200050095D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

NOTES TO USERS

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Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

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NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC- 3, #9202
1315 East- West Highway
Silver Spring, MD 20910- 3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713- 3242,** or visit its website at http://www.ngs.noaa.gov/.

Base map digital files provided by Municipality of Anchorage DPW and AK DNR. Information compiled at scales of 1:1200 to 1:24000 during 2000-06. Streams and lake shorelines associated with FHAs digitized from Army Corp. of Engineers flood hazard workmaps from MOA DPW.

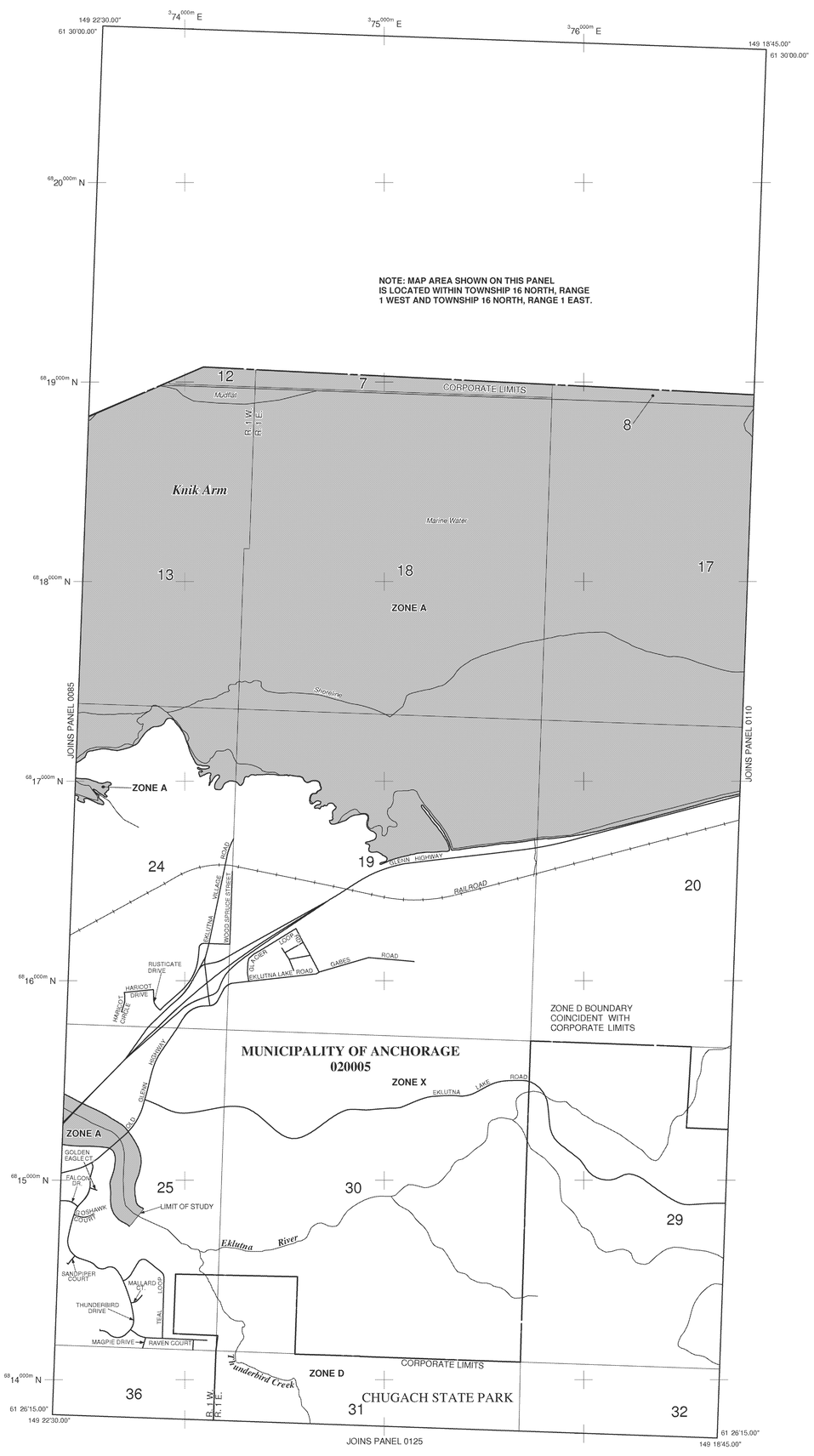
This map reflects more detailed and up- to- date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables *in the Flood Insurance Study report (which contains authoritative hydraulic data)* may reflect stream channel distances that differ from what is shown on this map.

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LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	Floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the Mean Sea Level (MSL) Tidal Datum

A A	Cross section line
23 23	Transect line
97 07'30", 32 22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4275 000m N	1000-meter Universal Transverse Mercator grid ticks, zone 6
6000000 M	5000-foot grid ticks: New York State Plane coordinate system, east zone (FIPSZONE 3101), Transverse Mercator
DX5510	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORY
4700 South Bragaw Street, Anchorage, Alaska 99507 (Maps available for reference only, not for distribution.)

INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
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500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0105D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 105 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0105	D

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MAP NUMBER
02000501 05D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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1315 East-West Highway
Silver Spring, MD 20910-3282

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Base map digital files provided by Municipality of Anchorage DPW and AK DNR. Information compiled at scales of 1:1200 to 1:24000 during 2000-06. Streams and lake shorelines associated with FHAs digitized from Army Corp. of Engineers flood hazard workmaps from MOA DPW.

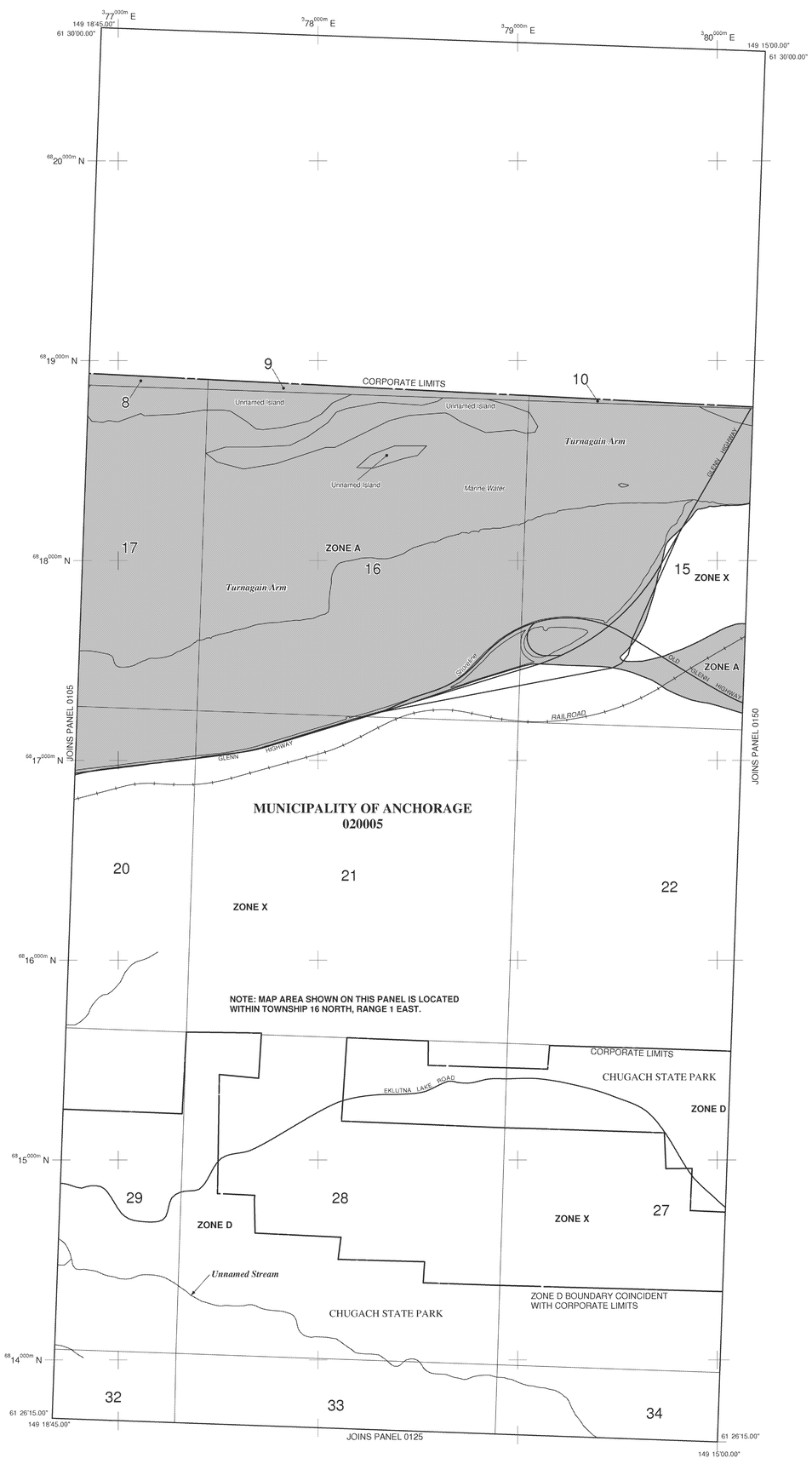
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LEGEND

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FLOODWAY AREAS IN ZONE AE

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OTHER FLOOD AREAS

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OTHER AREAS

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	Floodway boundary
	Zone D boundary
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(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the Mean Sea Level (MSL) Tidal Datum

A — A	Cross section line
23 — 23	Transect line
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4275 000m N	1000-meter Universal Transverse Mercator grid ticks, zone 6
6000000 M	5000-foot grid ticks: New York State Plane coordinate system, east zone (FIPSZONE 3101), Transverse Mercator
DX5510	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORY
4700 South Bragaw Street, Anchorage, Alaska 99507 (Maps available for reference only, not for distribution.)

INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
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500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0110D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 110 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0110	D

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MAP NUMBER
02000501 10D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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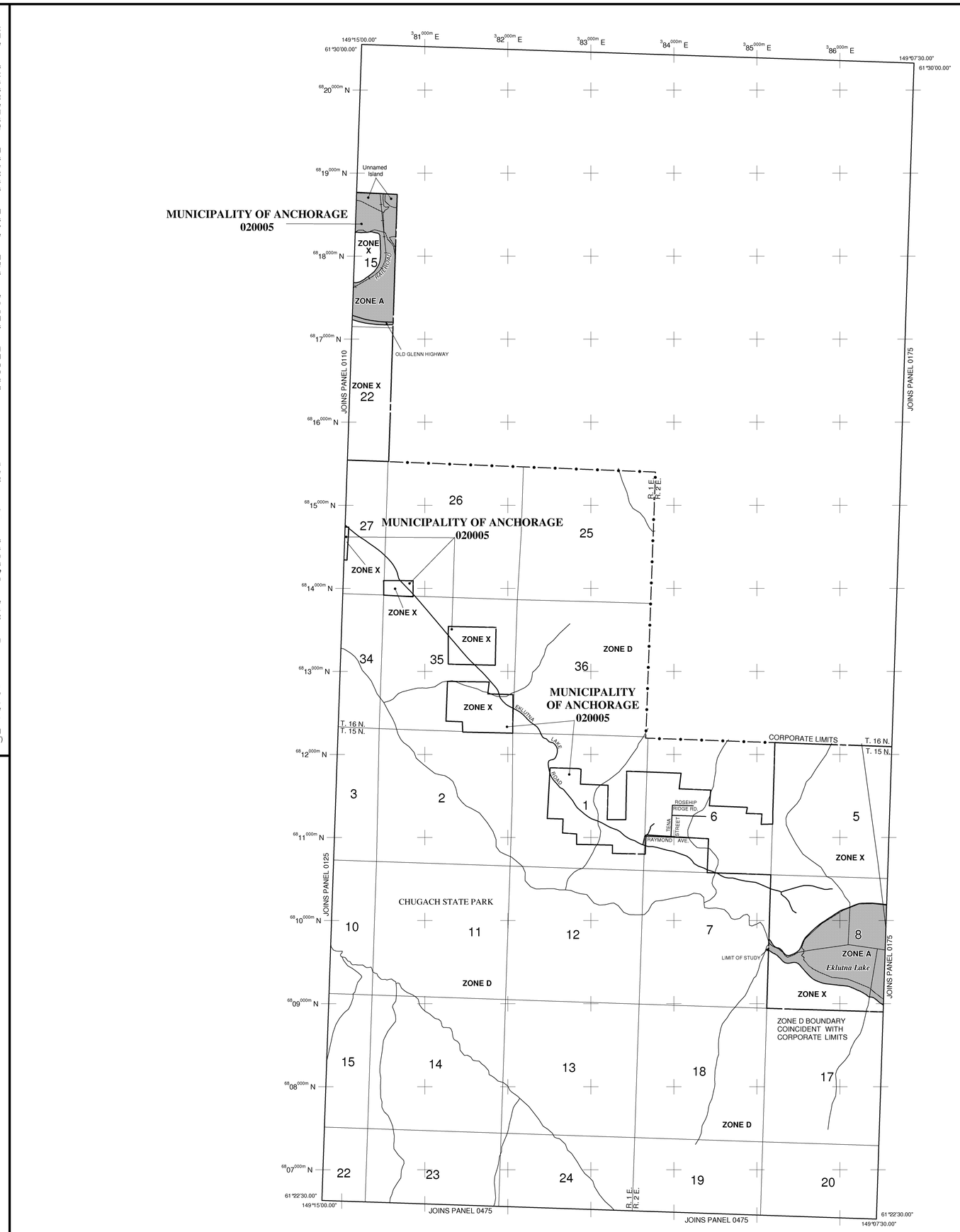
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OTHER FLOOD AREAS

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4700 South Bragaw Street, Anchorage, Alaska 99507 (Maps available for reference only, not for distribution.)

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September 5, 1975
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1000 0 2000 4000 FEET
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NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0150D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 150 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)
CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0150	D

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MAP NUMBER
0200050150D
MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

NOTES TO USERS

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Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

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NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC- 3, #9202
1315 East- West Highway
Silver Spring, MD 20910- 3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713- 3242,** or visit its website at http://www.ngs.noaa.gov/.

Base map digital files provided by Municipality of Anchorage DPW and AK DNR. Information compiled at scales of 1:1200 to 1:24000 during 2000-06. Streams and lake shorelines associated with FHAs digitized from Army Corp. of Engineers flood hazard workmaps from MOA DPW.

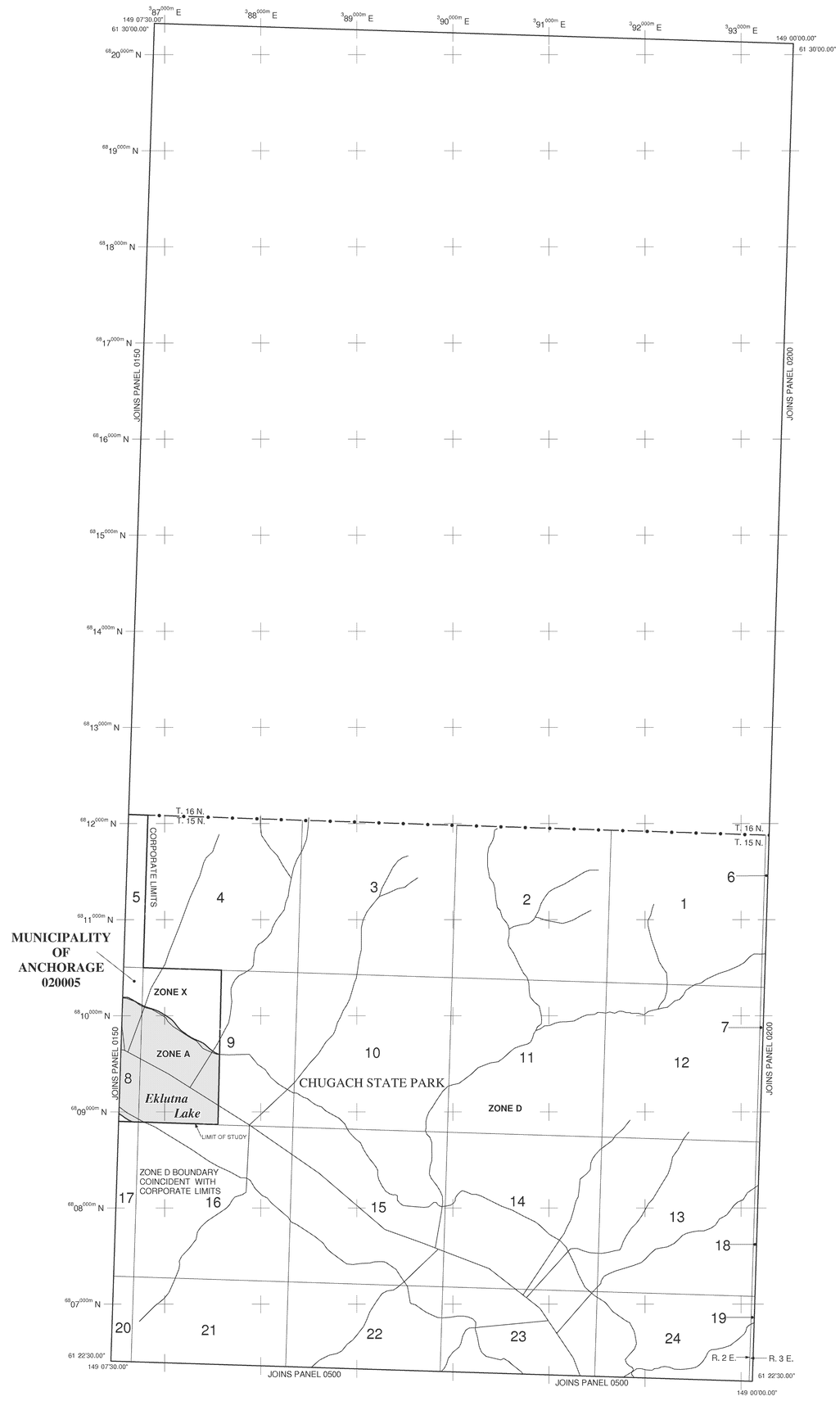
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LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	Floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the Mean Sea Level (MSL) Tidal Datum

A — A	Cross section line
23 — 23	Transect line
97 07'30", 32 22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4275000mN	1000-meter Universal Transverse Mercator grid ticks, zone 6
6000000 M	5000-foot grid ticks: New York State Plane coordinate system, east zone (FIPSZONE 3101), Transverse Mercator
DX5510	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORY
4700 South Bragaw Street, Anchorage, Alaska 99507 (Maps available for reference only, not for distribution.)

INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
September 5, 1979
FLOOD INSURANCE RATE MAP REVISIONS
September 18, 1987 - to update map format.
March 5, 1990 - to change Base Flood Elevations and Special Flood Hazard Areas, reflect updated topographic information and to incorporate previously issued Letters of Map Revision.
July 2, 2002 - to add Special Flood Hazard Areas and Base Flood Elevations.
September 25, 2009 - to update corporate limits, change zone designations and to incorporate previously issued Letters of Map Revision.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1- 800- 638- 6620.

MAP SCALE 1" = 2000'
1000 0 2000 4000 FEET
600 0 600 1200 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0175D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 175 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0175	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
0200050175D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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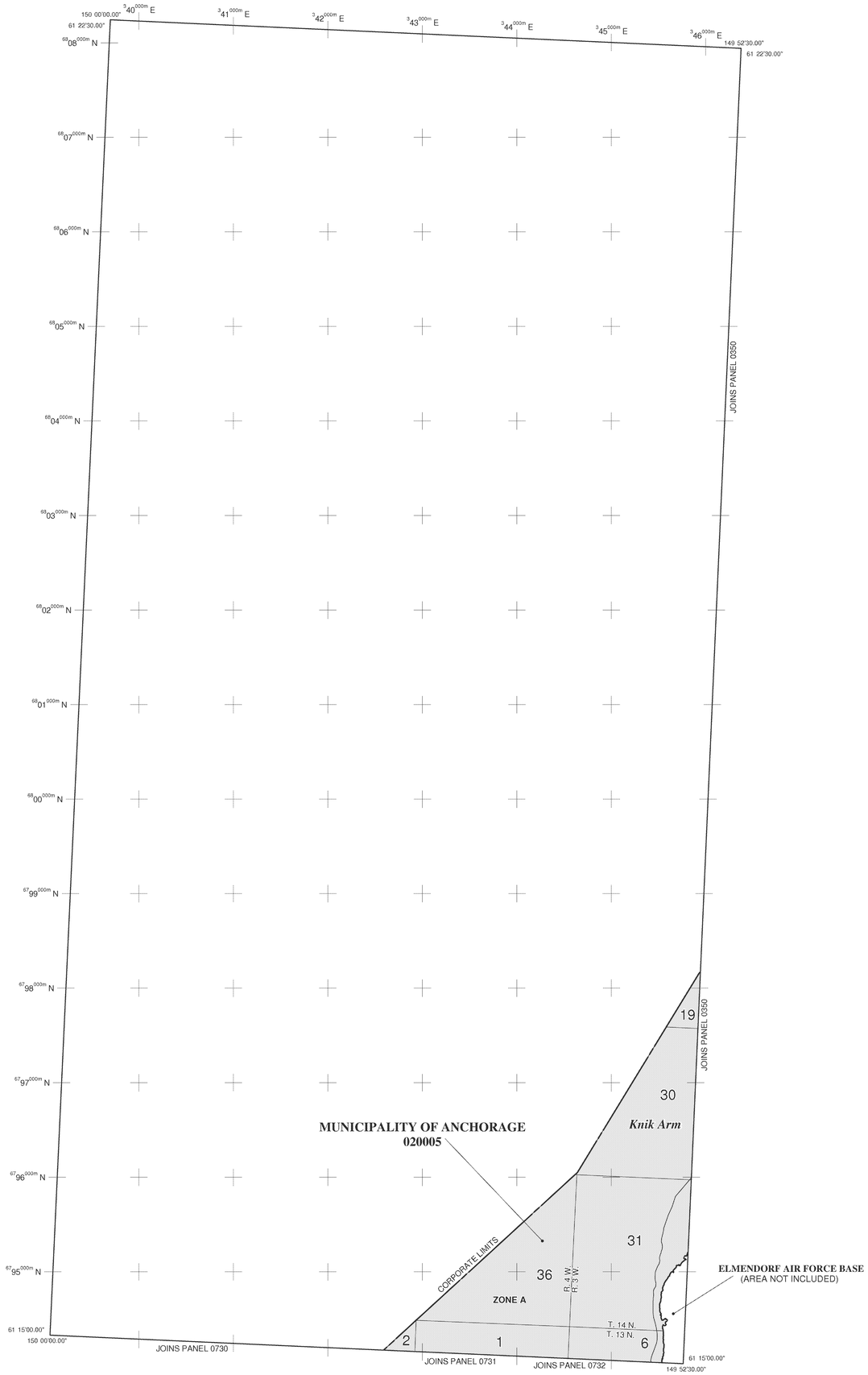
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FLOODWAY AREAS IN ZONE AE

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M1.5	River Mile

MAP REPOSITORY
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INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
September 5, 1979
FLOOD INSURANCE RATE MAP REVISIONS
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MAP SCALE 1" = 2000'
1000 0 2000 4000 FEET
600 0 600 1200 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0325D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 325 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0325	D

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MAP NUMBER
0200050325D
MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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1315 East-West Highway
Silver Spring, MD 20910-3282

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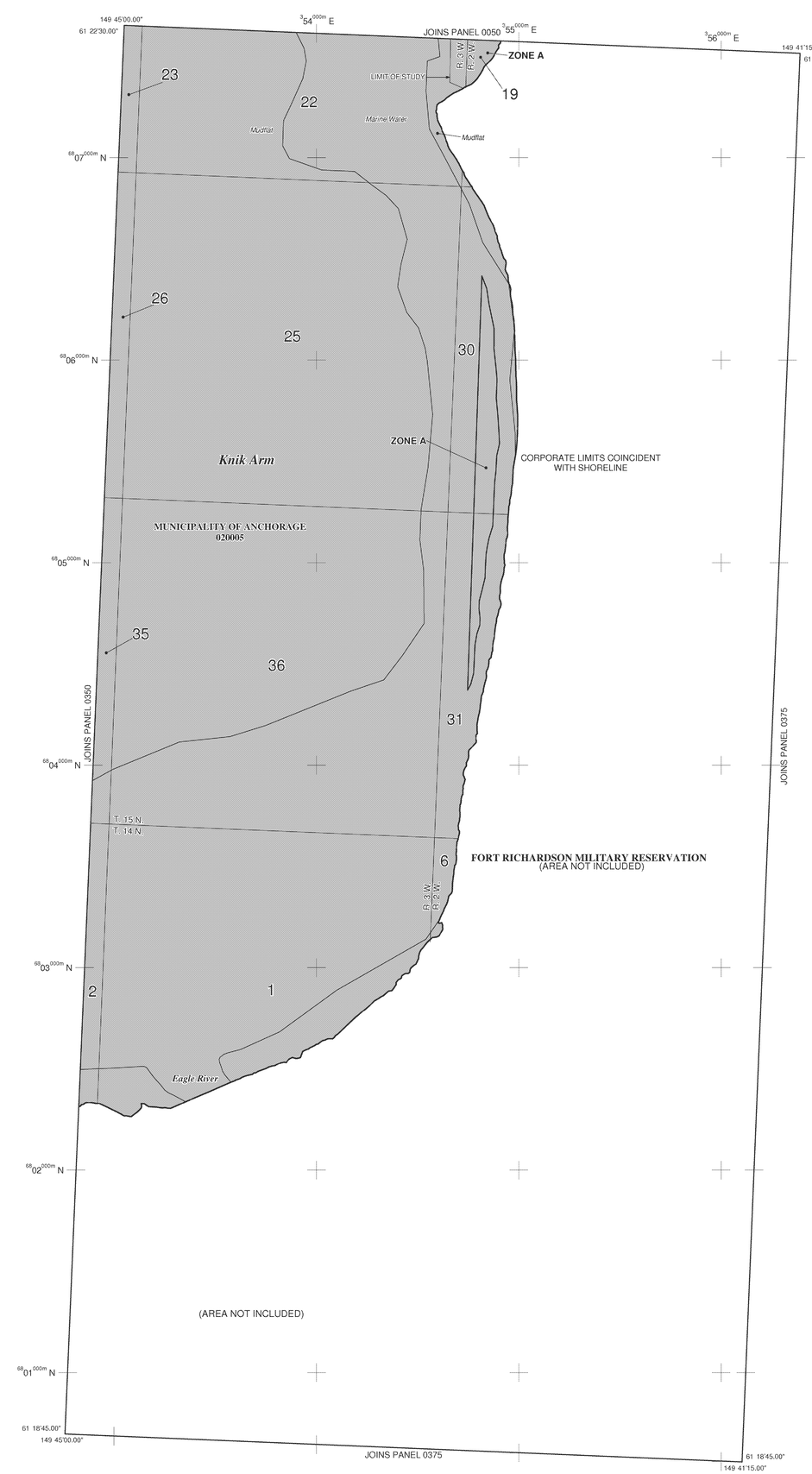
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LEGEND

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OTHER FLOOD AREAS

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COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

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M1.5	River Mile

MAP REPOSITORY
4700 South Bragaw Street, Anchorage, Alaska 99507 (Maps available for reference only, not for distribution.)

INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
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500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0355D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 355 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0355	D

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MAP NUMBER
0200050355D
MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC- 3, #9202
1315 East- West Highway
Silver Spring, MD 20910- 3282

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Base map digital files provided by Municipality of Anchorage DPW and AK DNR. Information compiled at scales of 1:1200 to 1:24000 during 2000-06. Streams and lake shorelines associated with FHAs digitized from Army Corp. of Engineers flood hazard workmaps from MOA DPW.

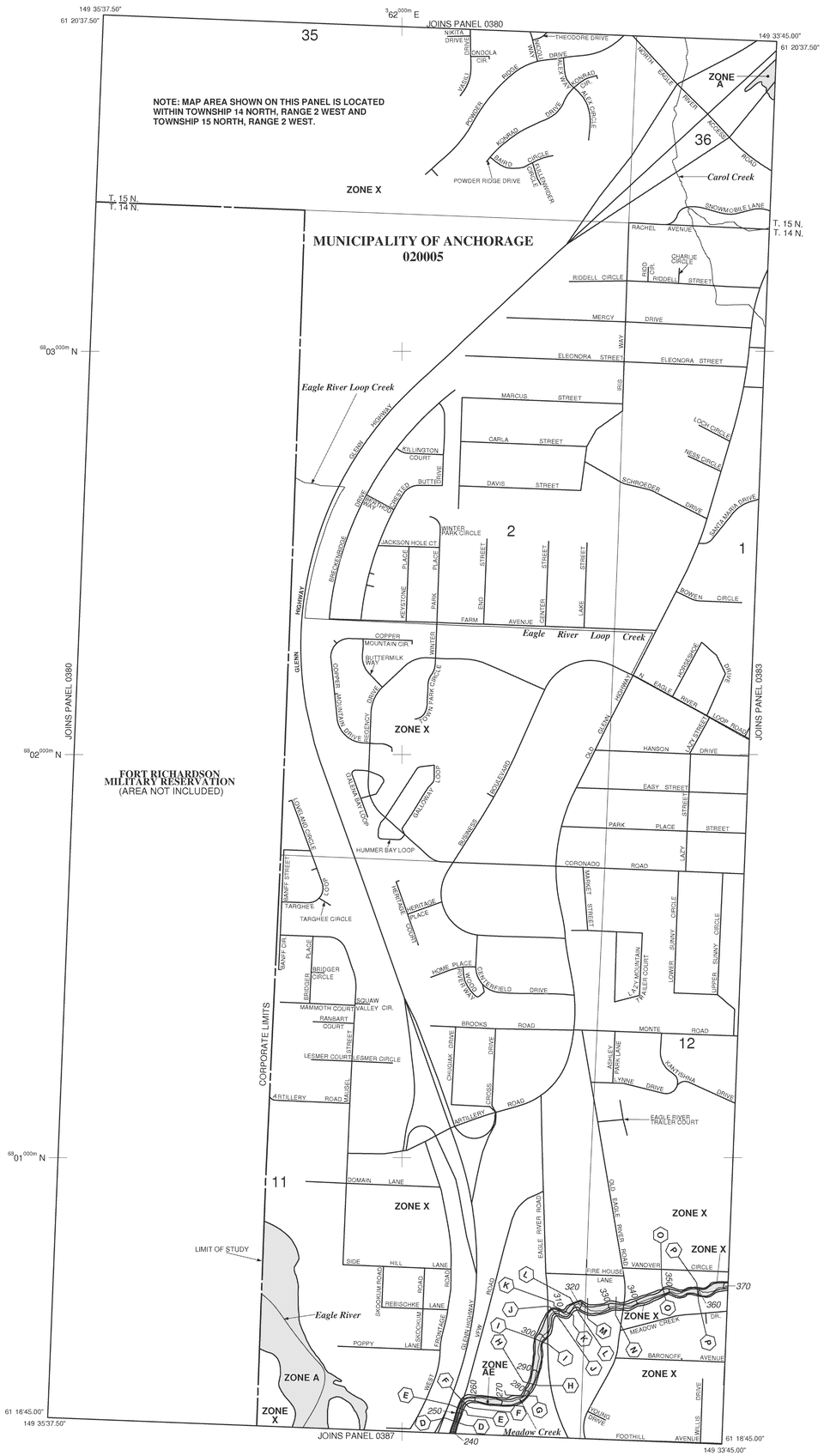
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LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
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ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	Floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the Mean Sea Level (MSL) Tidal Datum

A — A	Cross section line
23	Transect line
97 07'30", 32 22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4275000m N	1000-meter Universal Transverse Mercator grid ticks, zone 6
6000000 M	5000-foot grid ticks: New York State Plane coordinate system, east zone (FIPSZONE 3101), Transverse Mercator
DX5510	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORY
4700 South Bragaw Street, Anchorage, Alaska 99507 (Maps available for reference only, not for distribution.)

INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
September 5, 1979
FLOOD INSURANCE RATE MAP REVISIONS
September 18, 1987 - to update map format.
March 5, 1990 - to change Base Flood Elevations and Special Flood Hazard Areas, reflect updated topographic information and to incorporate previously issued Letters of Map Revision.
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MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0379D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 379 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)
CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0379	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
0200050379D
MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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Base map digital files provided by Municipality of Anchorage DPW and AK DNR. Information compiled at scales of 1:1200 to 1:24000 during 2000-06. Streams and lake shorelines associated with FHAs digitized from Army Corp. of Engineers flood hazard workmaps from MOA DPW.

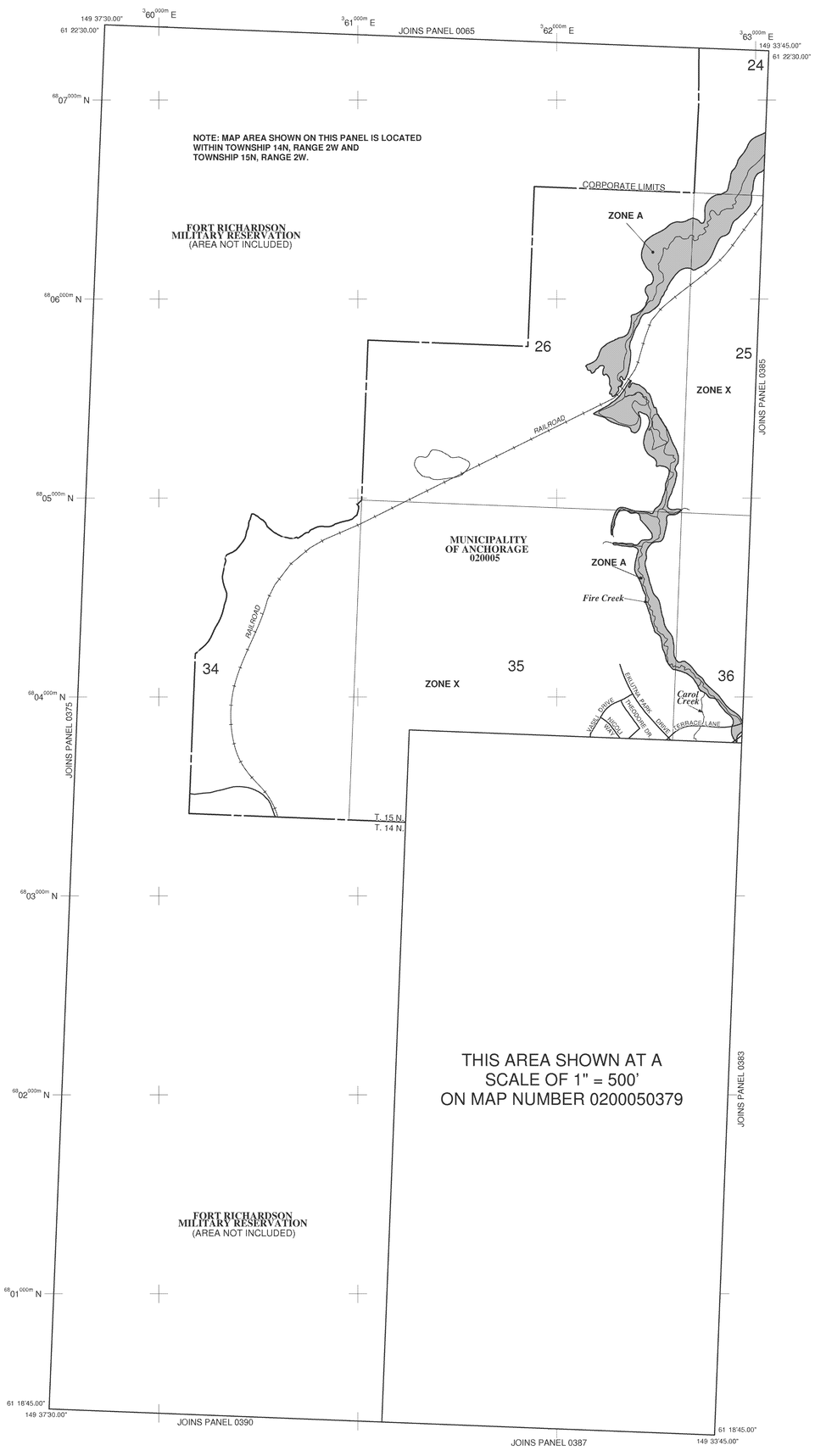
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FLOODWAY AREAS IN ZONE AE

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OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

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A — A	Cross section line
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DX5510	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

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INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
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FLOOD INSURANCE RATE MAP REVISIONS
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MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0380D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 380 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0380	D

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MAP NUMBER
0200050380D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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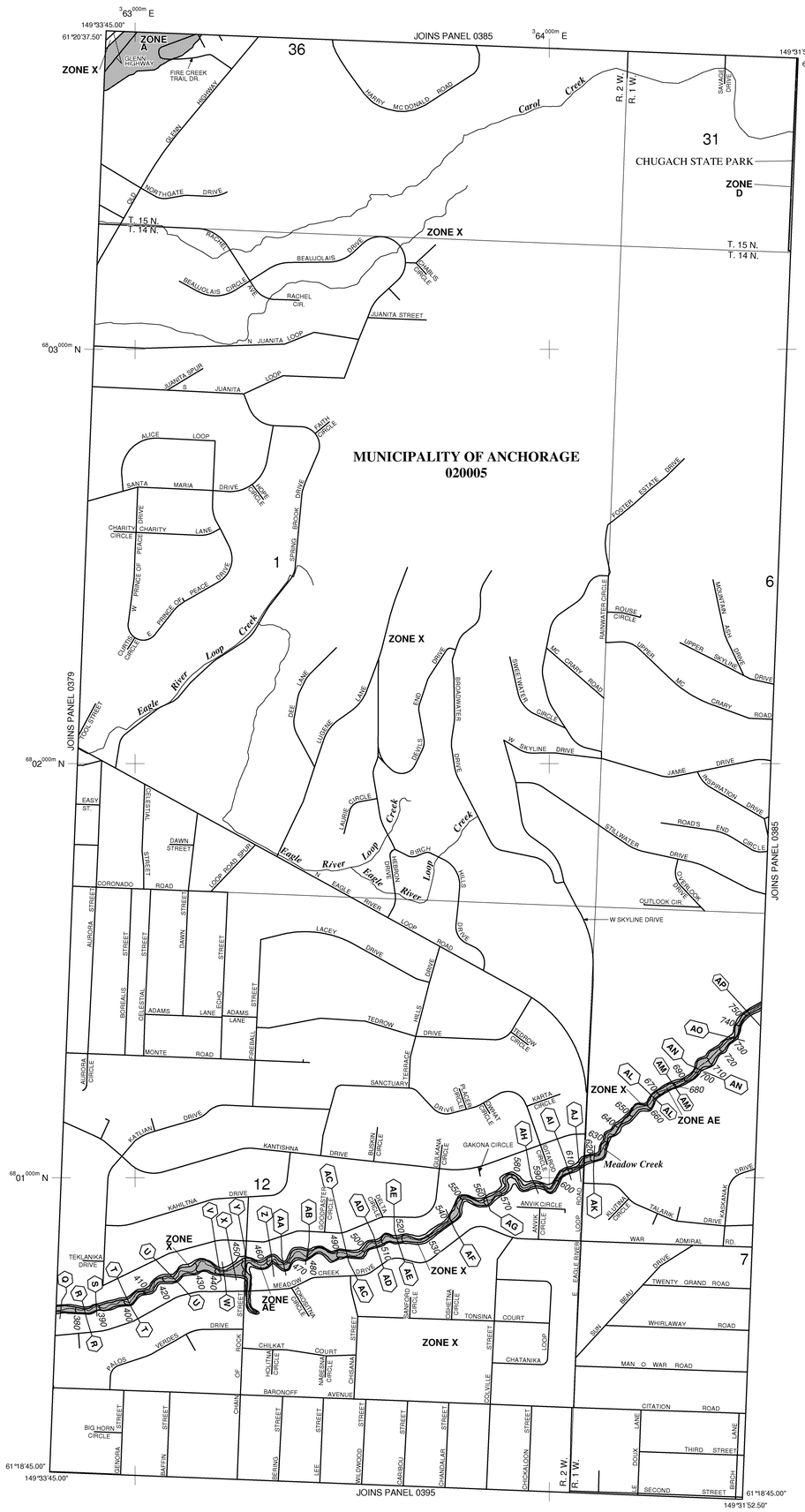
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LEGEND

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FLOODWAY AREAS IN ZONE AE

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150 0 150 300 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0383D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 383 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)
CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0383	D

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MAP NUMBER
0200050383D
MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC–3, #9202
1315 East–West Highway
Silver Spring, MD 20910–3282

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Base map digital files provided by Municipality of Anchorage DPW and AK DNR. Information compiled at scales of 1:1200 to 1:24000 during 2000-06. Streams and lake shorelines associated with FHAs digitized from Army Corp. of Engineers flood hazard workmaps from MOA DPW.

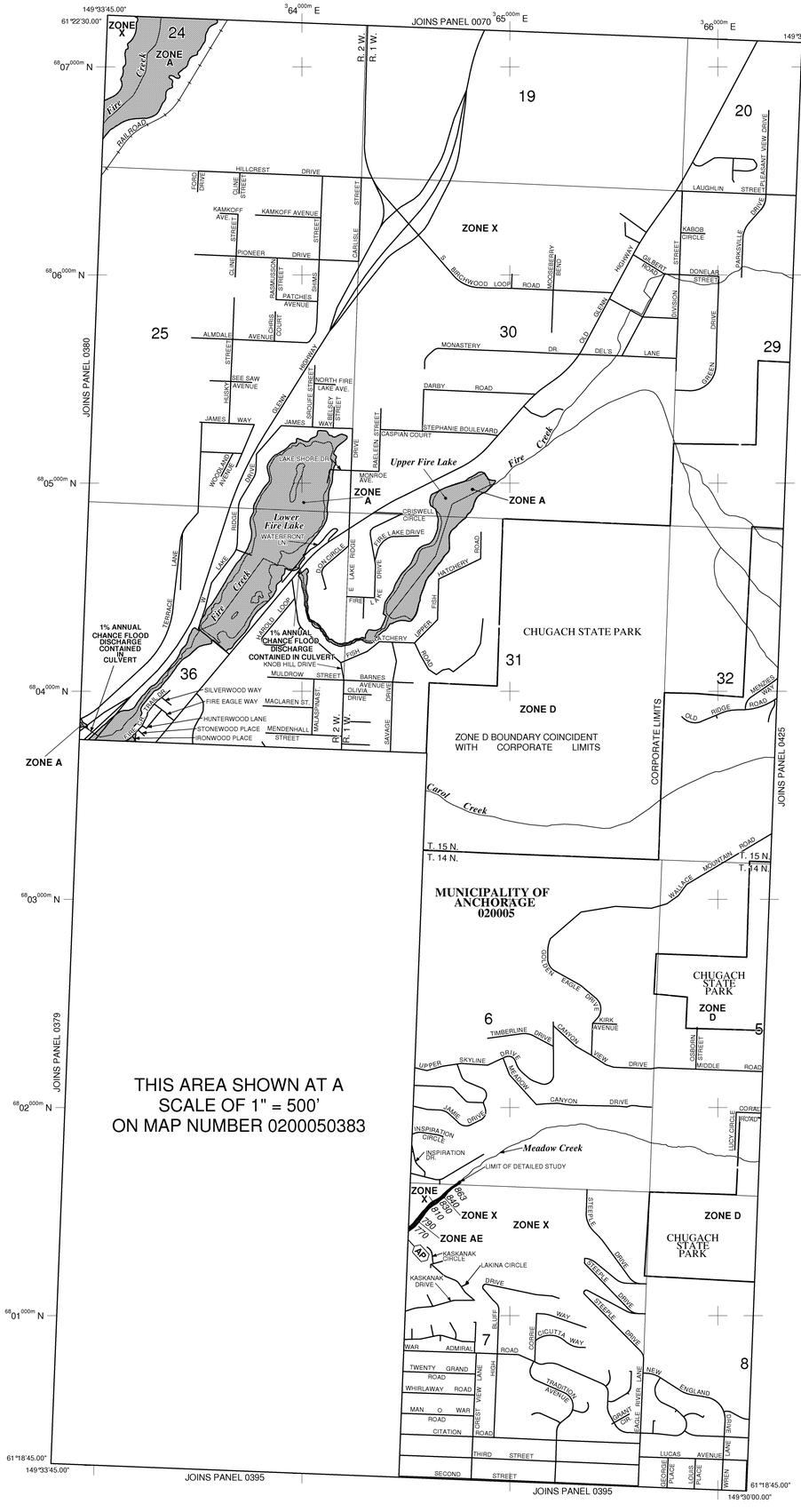
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LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	Floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the Mean Sea Level (MSL) Tidal Datum

A — A	Cross section line
23 — 23	Transect line
97°07'30", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4275 000m N	1000-meter Universal Transverse Mercator grid ticks, zone 6
6000000 M	5000-foot grid ticks: New York State Plane coordinate system, east zone (FIPSZONE 3101), Transverse Mercator
DX5510	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORY
4700 South Bragaw Street, Anchorage, Alaska 99507 (Maps available for reference only, not for distribution.)

INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
September 5, 1979
FLOOD INSURANCE RATE MAP REVISIONS
September 18, 1978 –to update map format.
March 5, 1990 – to change Base Flood Elevations and Special Flood Hazard Areas, reflect updated topographic information and to incorporate previously issued Letters of Map Revision.
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MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0385D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 385 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0385	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
0200050385D

EFFECTIVE DATE
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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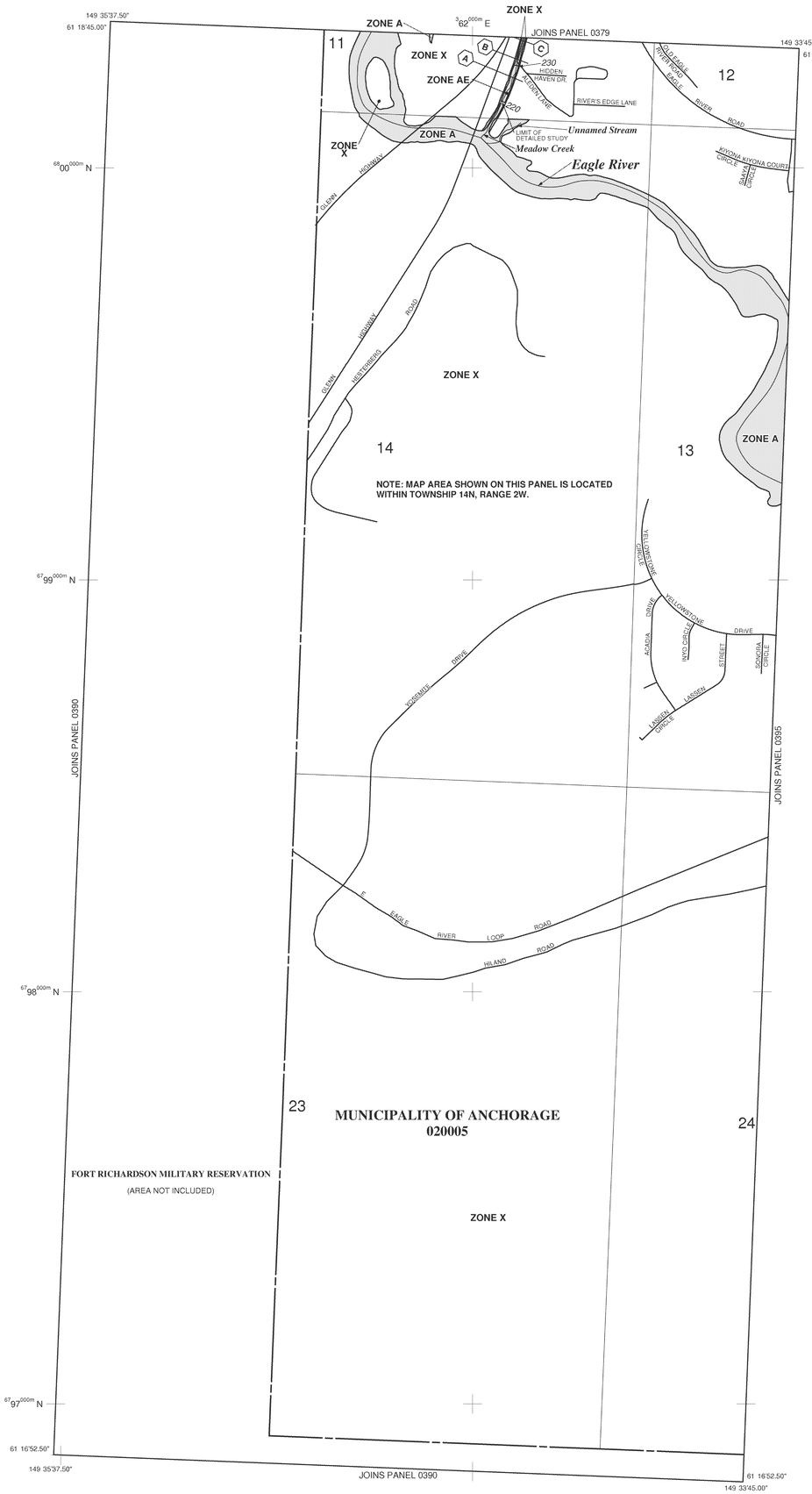
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LEGEND

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FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

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	Floodplain boundary
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MAP REPOSITORY
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INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
September 5, 1979
FLOOD INSURANCE RATE MAP REVISIONS
September 16, 1987 - to update map format.
March 5, 1990 - to change Base Flood Elevations and Special Flood Hazard Areas, reflect updated topographic information and to incorporate previously issued Letters of Map Revision.
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MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NFIP

PANEL 0387D

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 387 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0387	D

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MAP NUMBER
0200050387D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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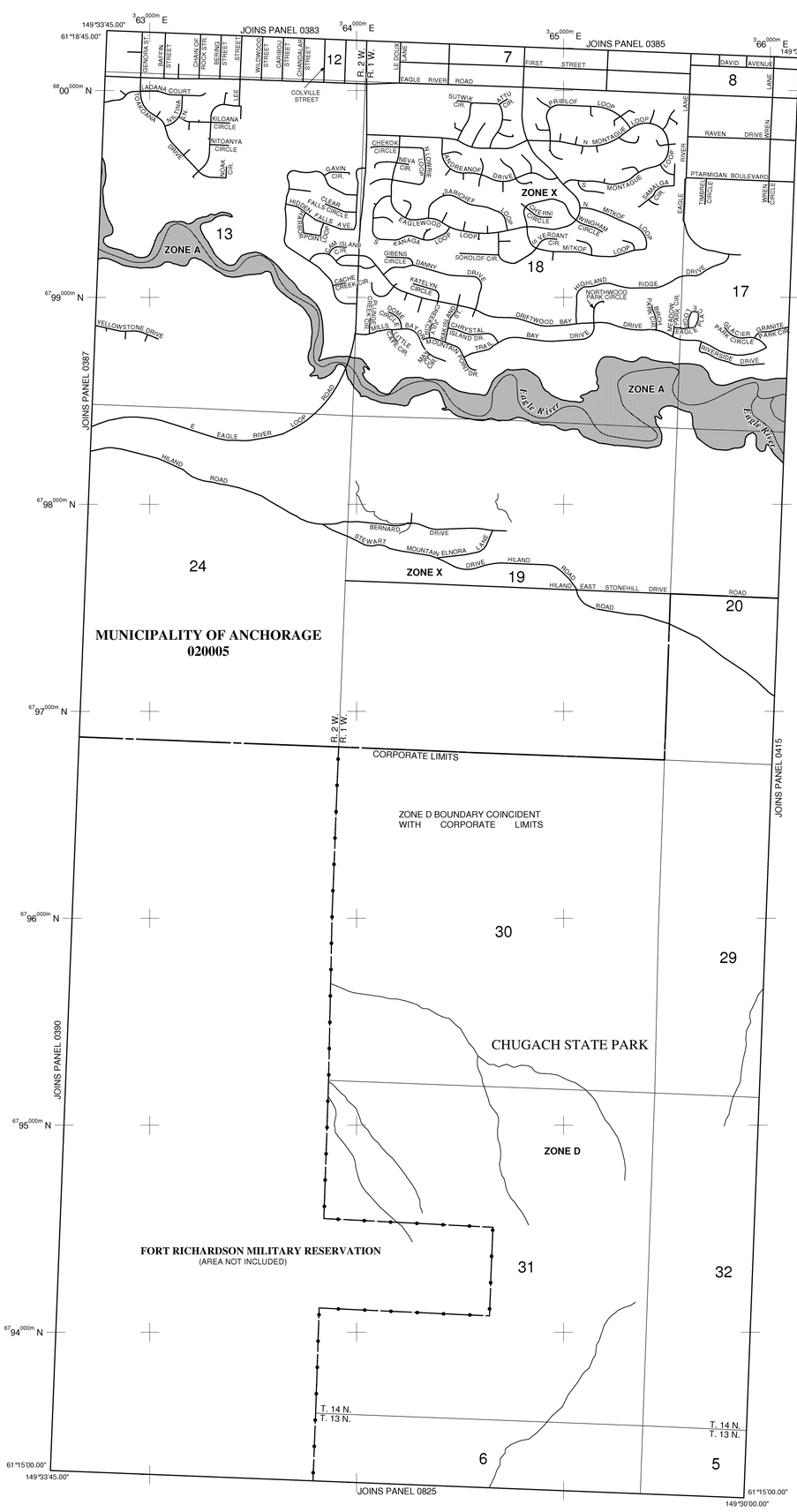
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September 5, 1979
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500 0 1000 2000 FEET
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NFIP

PANEL 0395D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 395 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0395	D

NATIONAL FLOOD INSURANCE PROGRAM

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MAP NUMBER
0200050395D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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National Geodetic Survey
SSMC- 3, #9202
1315 East- West Highway
Silver Spring, MD 20910- 3282

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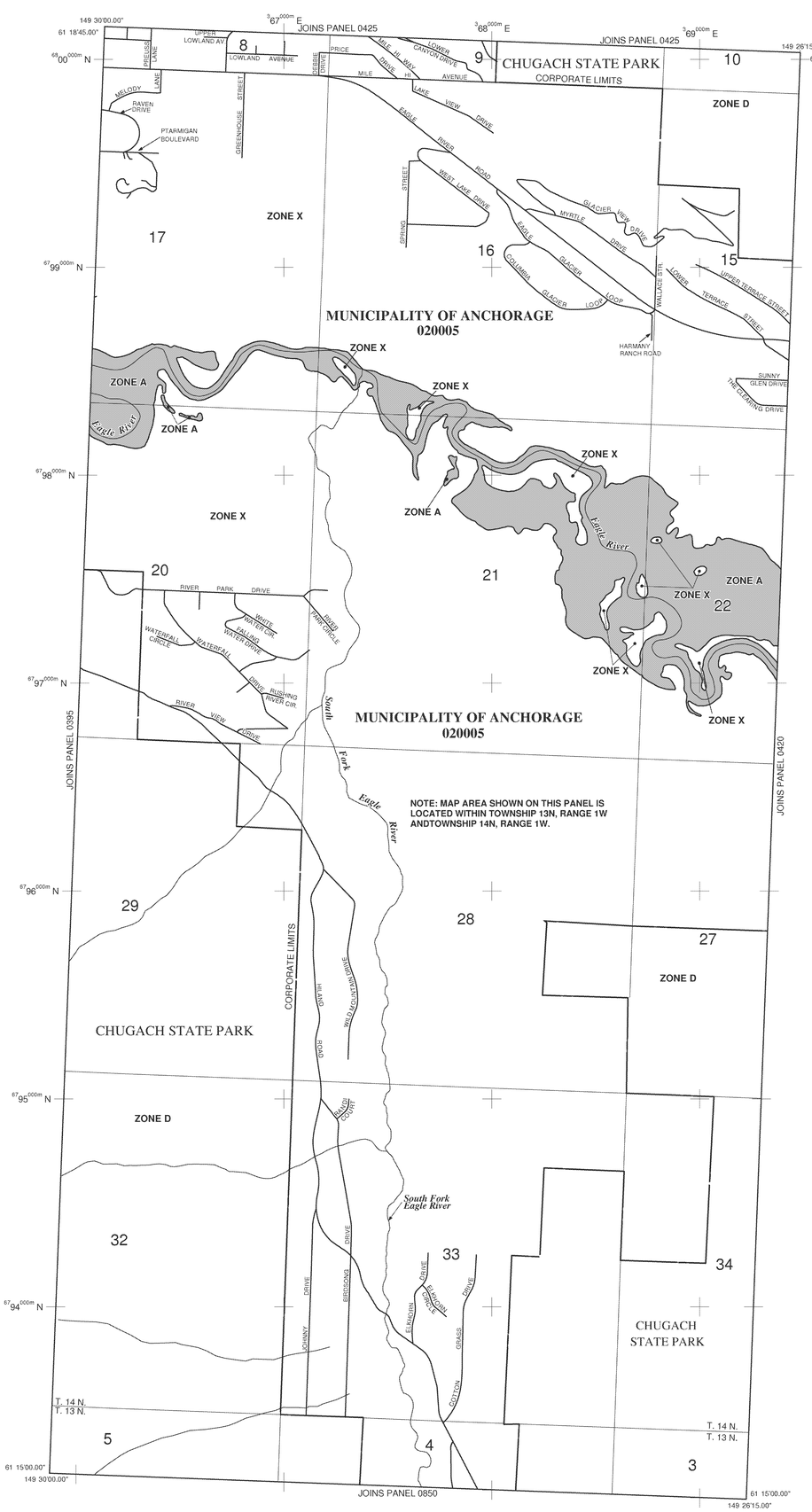
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LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
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ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	Floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the Mean Sea Level (MSL) Tidal Datum

A — A	Cross section line
23 — 23	Transect line
97 07'30", 32 22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4275 000m N	1000-meter Universal Transverse Mercator grid ticks, zone 6
6000000 M	5000-foot grid ticks: New York State Plane coordinate system, east zone (FIPSZONE 3101), Transverse Mercator
DX5510	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORY
4700 South Bragaw Street, Anchorage, Alaska 99507 (Maps available for reference only, not for distribution.)

INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
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FLOOD INSURANCE RATE MAP REVISIONS
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MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0415D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 415 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0415	D

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MAP NUMBER
0200050415D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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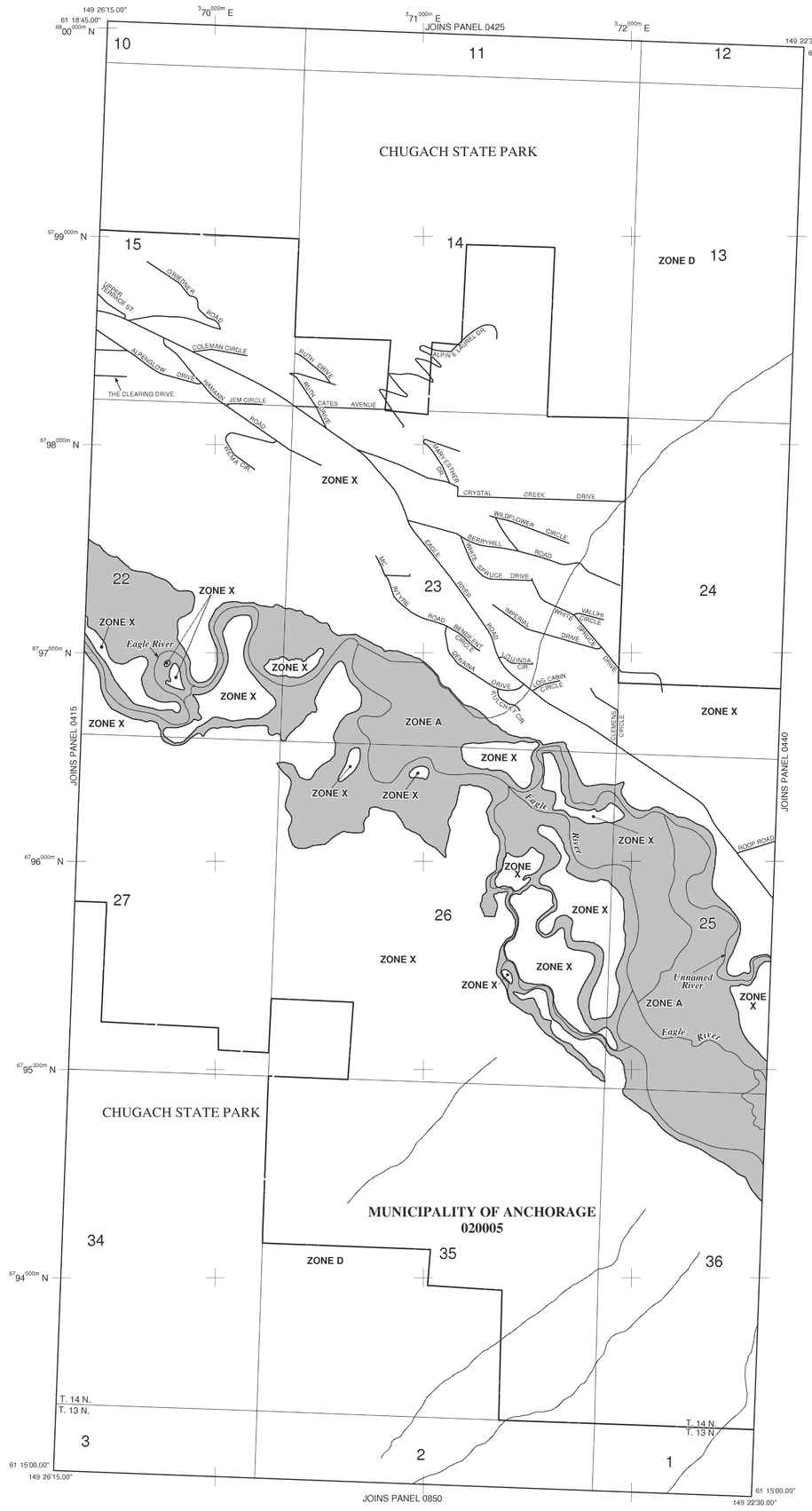
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FLOODWAY AREAS IN ZONE AE

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OTHER FLOOD AREAS

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500 0 1000 2000 FEET
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NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0420D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 420 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)
CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0420	D

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MAP NUMBER
0200050420D
MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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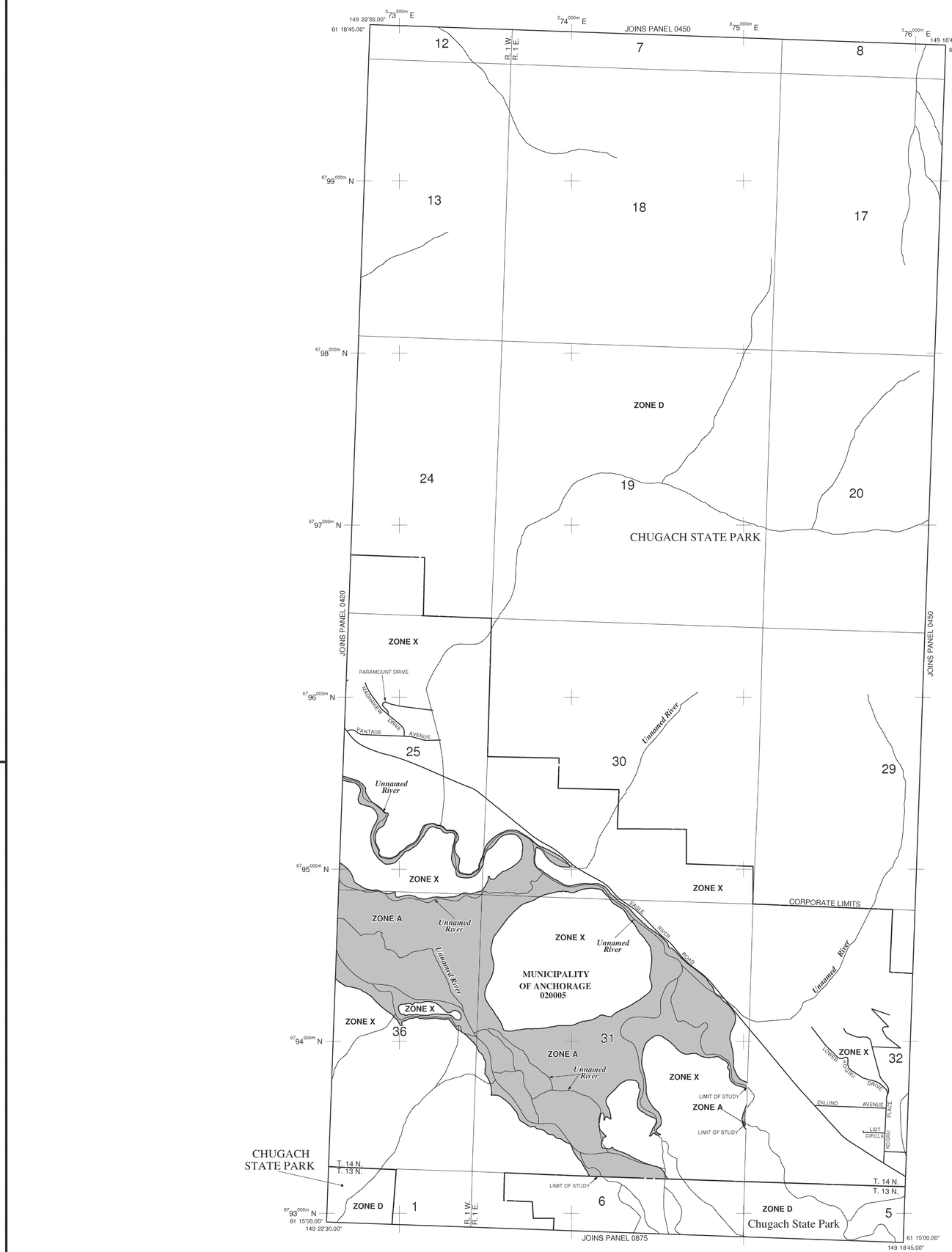
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NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0440D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 440 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0440	D

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MAP NUMBER
0200050440D
MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, MD 20910-3282

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Base map digital files provided by Municipality of Anchorage DPW and AK DNR. Information compiled at scales of 1:1200 to 1:24000 during 2000-06. Streams and lake shorelines associated with FHAs digitized from Army Corp. of Engineers flood hazard workmaps from MOA DPW.

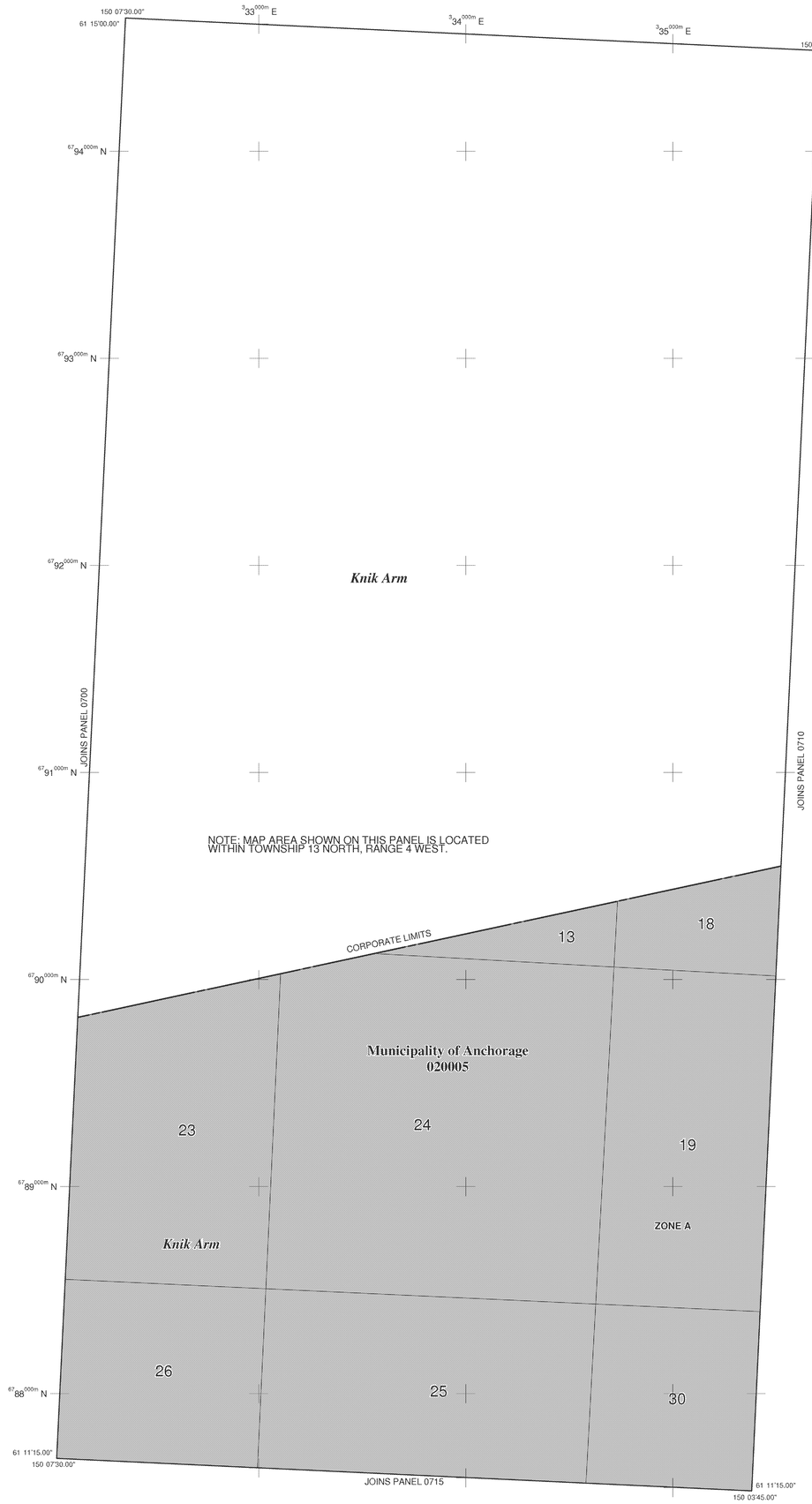
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LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	Floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the Mean Sea Level (MSL) Tidal Datum

A — A	Cross section line
23 — 23	Transect line
97°07'30", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
$^{42}75^{000m}$N	1000-meter Universal Transverse Mercator grid ticks, zone 6
6000000 M	5000-foot grid ticks: New York State Plane coordinate system, east zone (FIPSZONE 3101), Transverse Mercator
DX5510	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORY
4700 South Bragaw Street, Anchorage, Alaska 99507 (Maps available for reference only, not for distribution.)

INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
September 5, 1979
FLOOD INSURANCE RATE MAP REVISIONS
September 18, 1987 - to update map format.
March 5, 1990 - to change Base Flood Elevations and Special Flood Hazard Areas, reflect updated topographic information and to incorporate previously issued Letters of Map Revision.
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MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0705D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 705 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0705	D

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MAP NUMBER
0200050705D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

NOTES TO USERS

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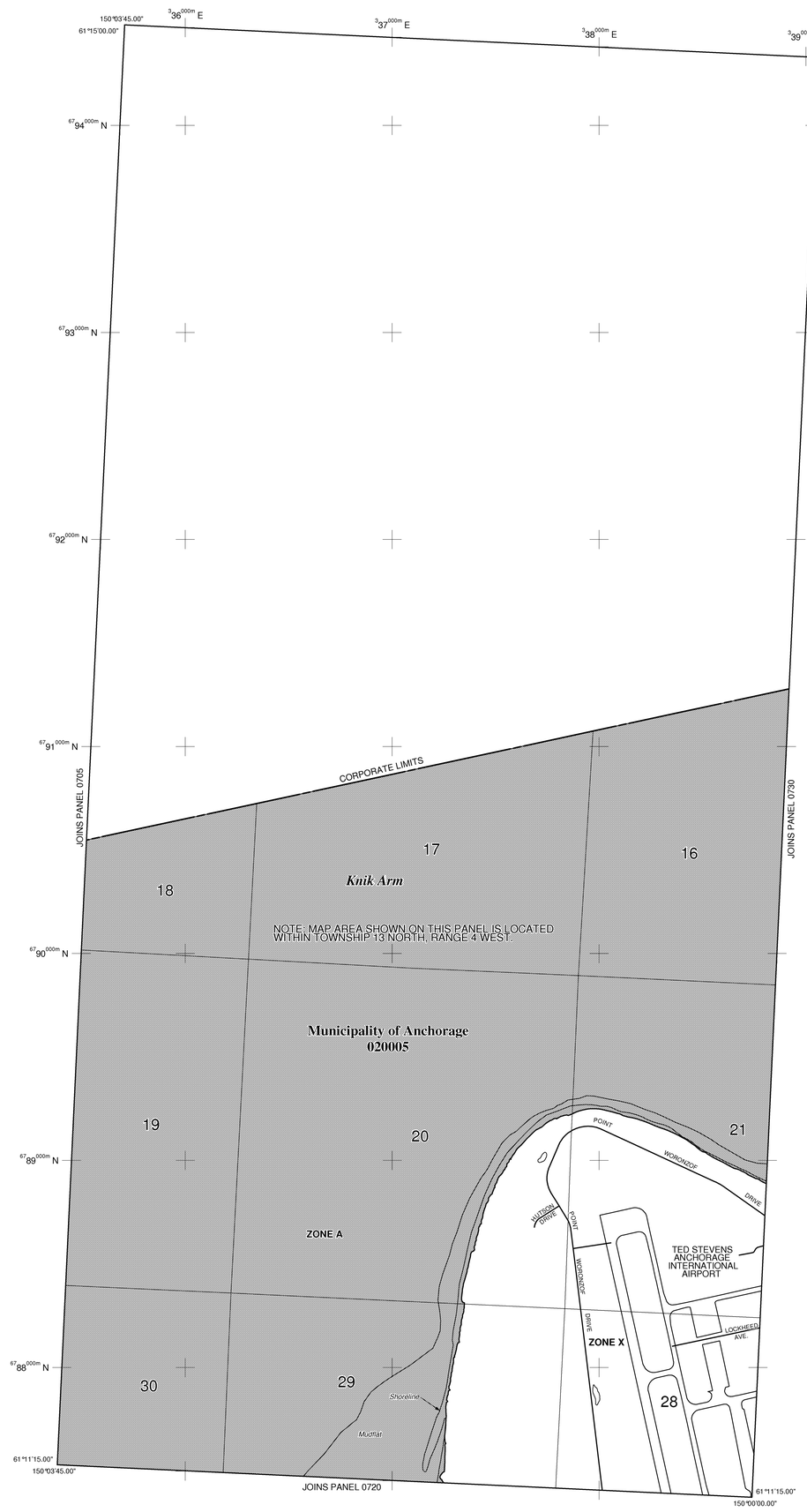
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FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

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OTHER AREAS

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COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

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	Floodplain boundary
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	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
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500 0 1000 2000 FEET
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NFIP

PANEL 0710D

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 710 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0710	D

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MAP NUMBER
0200050710D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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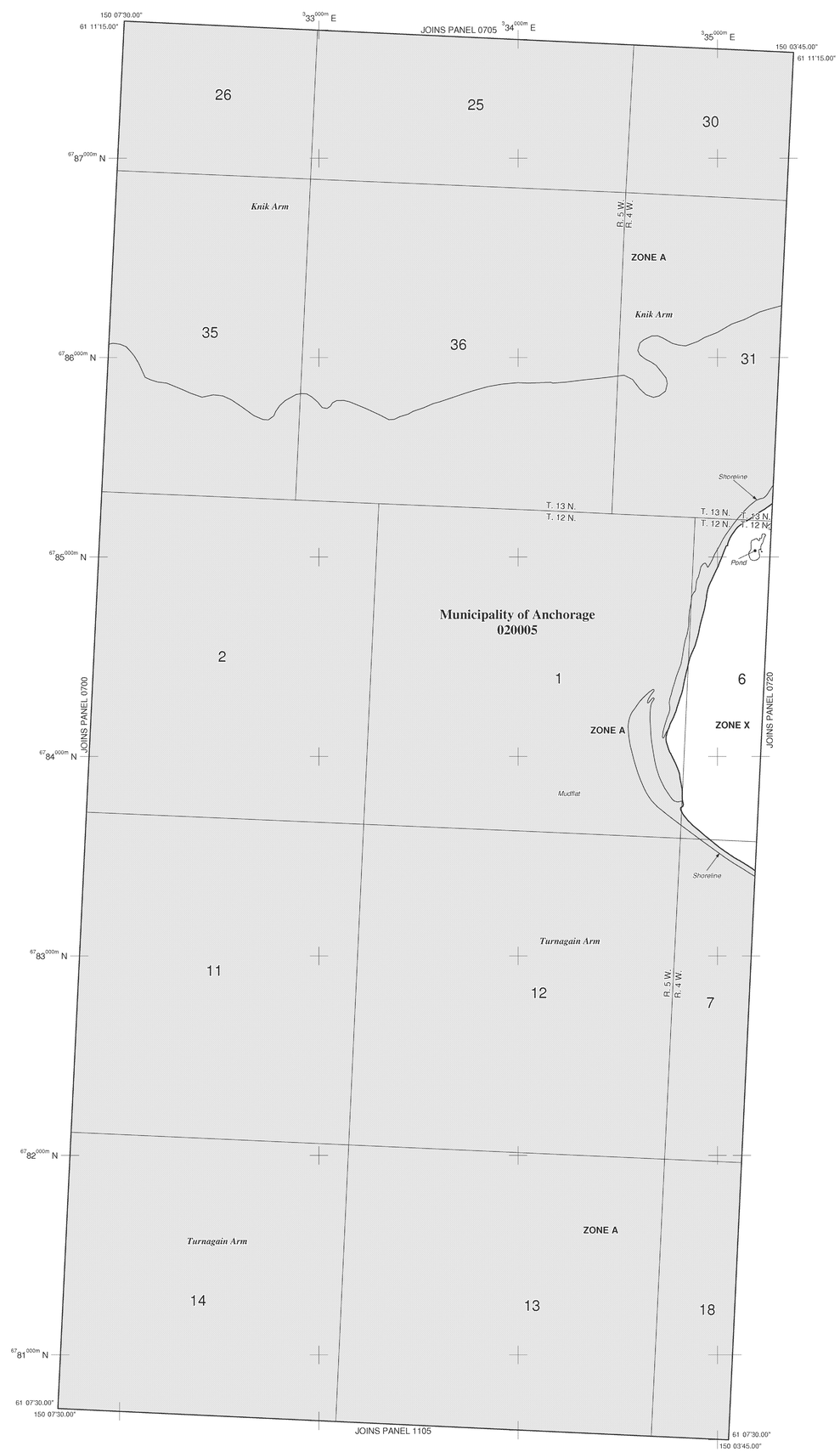
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LEGEND

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INITIAL NFIP MAP DATE
September 5, 1979
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500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0715D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 715 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0715	D

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MAP NUMBER
0200050715D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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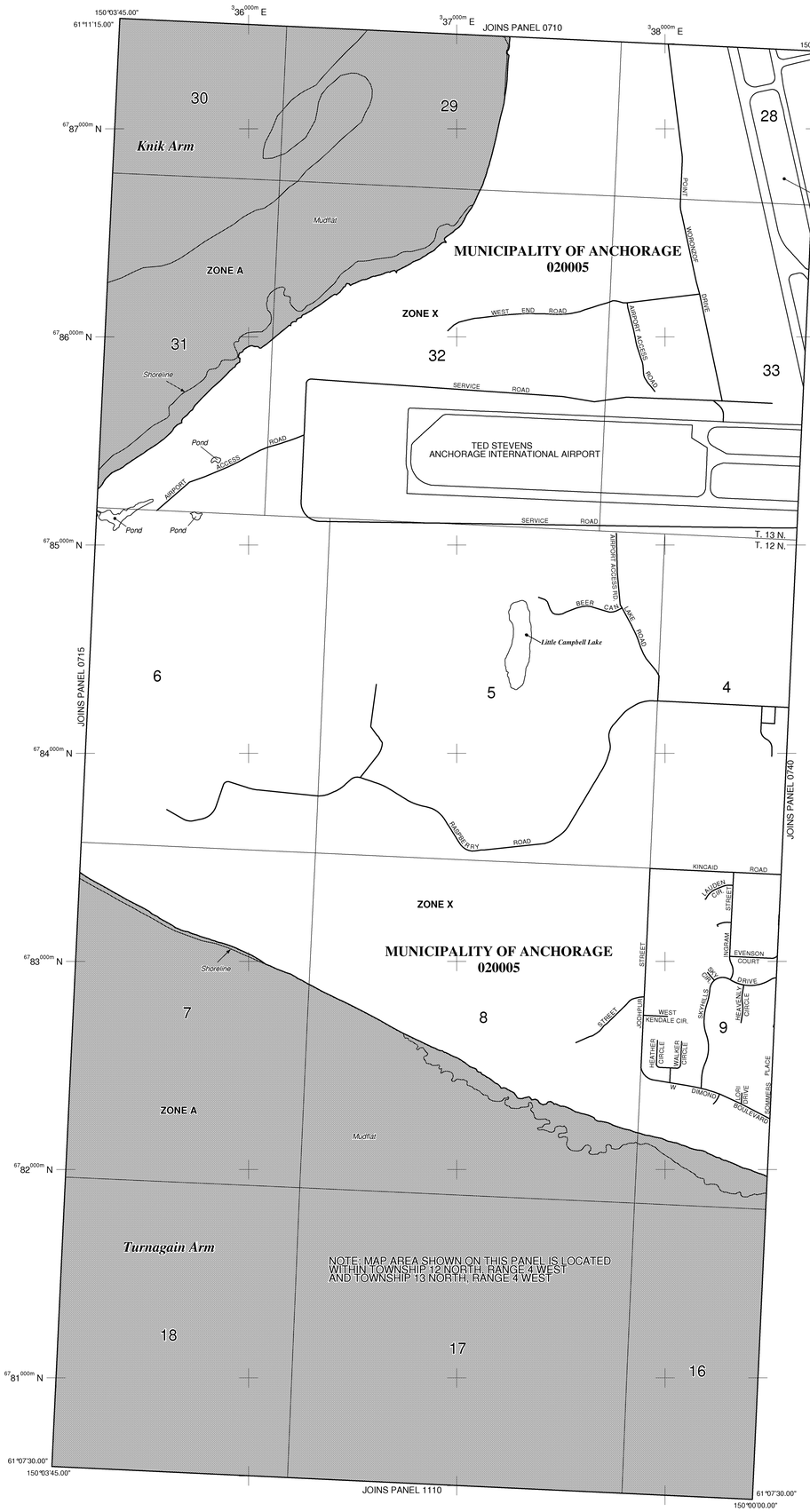
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LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

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- **ZONE A** No Base Flood Elevations determined.
- **ZONE AE** Base Flood Elevations determined.
- **ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
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- **ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- **ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- **ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- **ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- **ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- **ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
- **ZONE D** Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the Mean Sea Level (MSL) Tidal Datum

- A — A — Cross section line
- 23 — 23 — Transect line
- 97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 4275 000m N — 1000-meter Universal Transverse Mercator grid ticks, zone 6
- 6000000 M — 5000-foot grid ticks: New York State Plane coordinate system, east zone (FIPSZONE 3101), Transverse Mercator
- DX5510 × — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 • — River Mile

MAP REPOSITORY
4700 South Bragaw Street, Anchorage, Alaska 99507 (Maps available for reference only, not for distribution.)

INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
September 5, 1979
FLOOD INSURANCE RATE MAP REVISIONS
September 18, 1978 –to update map format.
March 5, 1990 –to change Base Flood Elevations and Special Flood Hazard Areas, reflect updated topographic information and to incorporate previously issued Letters of Map Revision.
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MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0720D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 720 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0720	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
0200050720D
MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

NOTES TO USERS

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Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

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NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC- 3, #9202
1315 East- West Highway
Silver Spring, MD 20910- 3282

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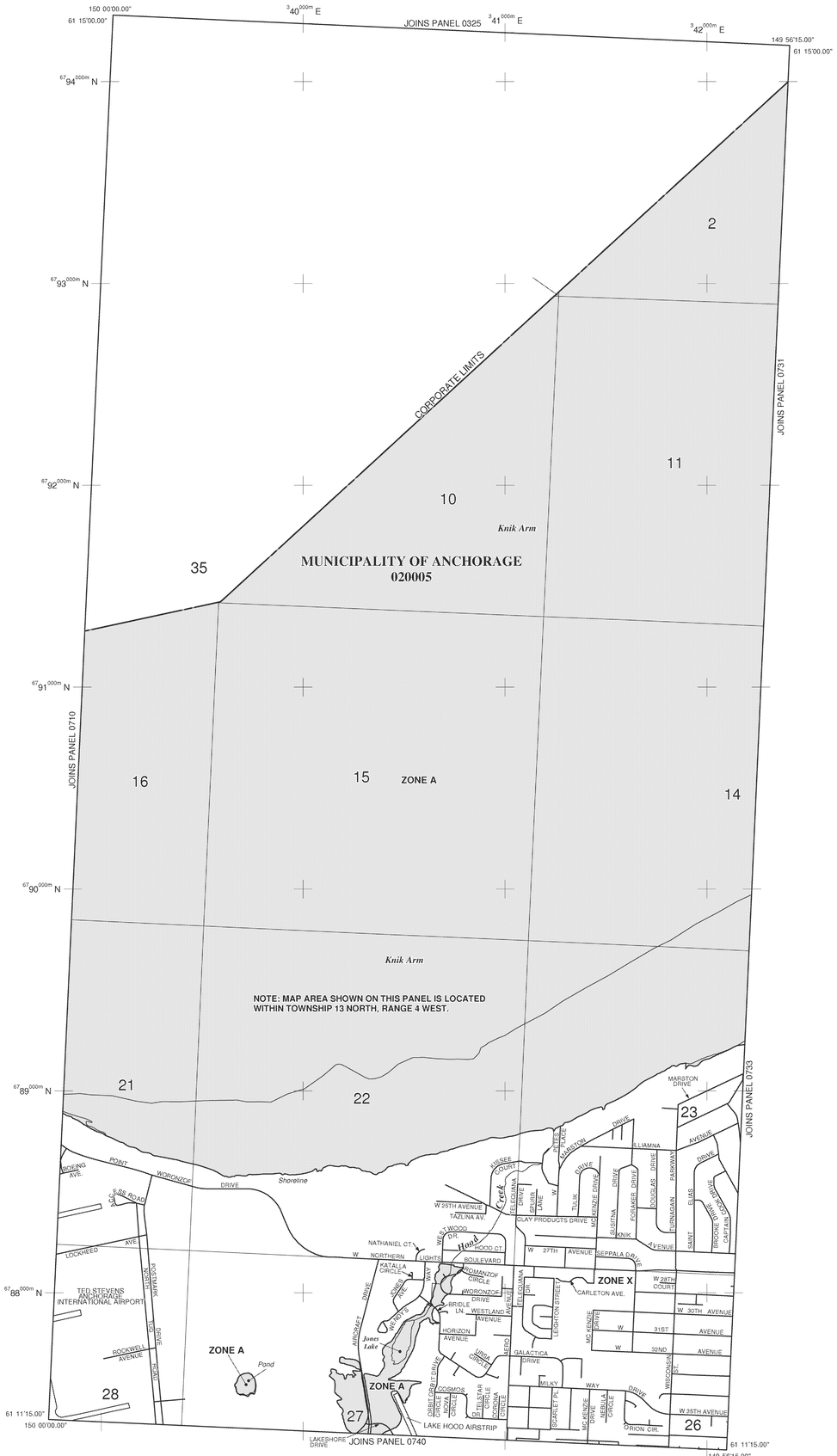
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FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

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OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
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COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

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	Floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
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* Referenced to the Mean Sea Level (MSL) Tidal Datum

A — A	Cross section line
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DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

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INITIAL NFIP MAP DATE
September 5, 1979
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FLOOD INSURANCE RATE MAP EFFECTIVE
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500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0730D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 730 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0730	D

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MAP NUMBER
0200050730D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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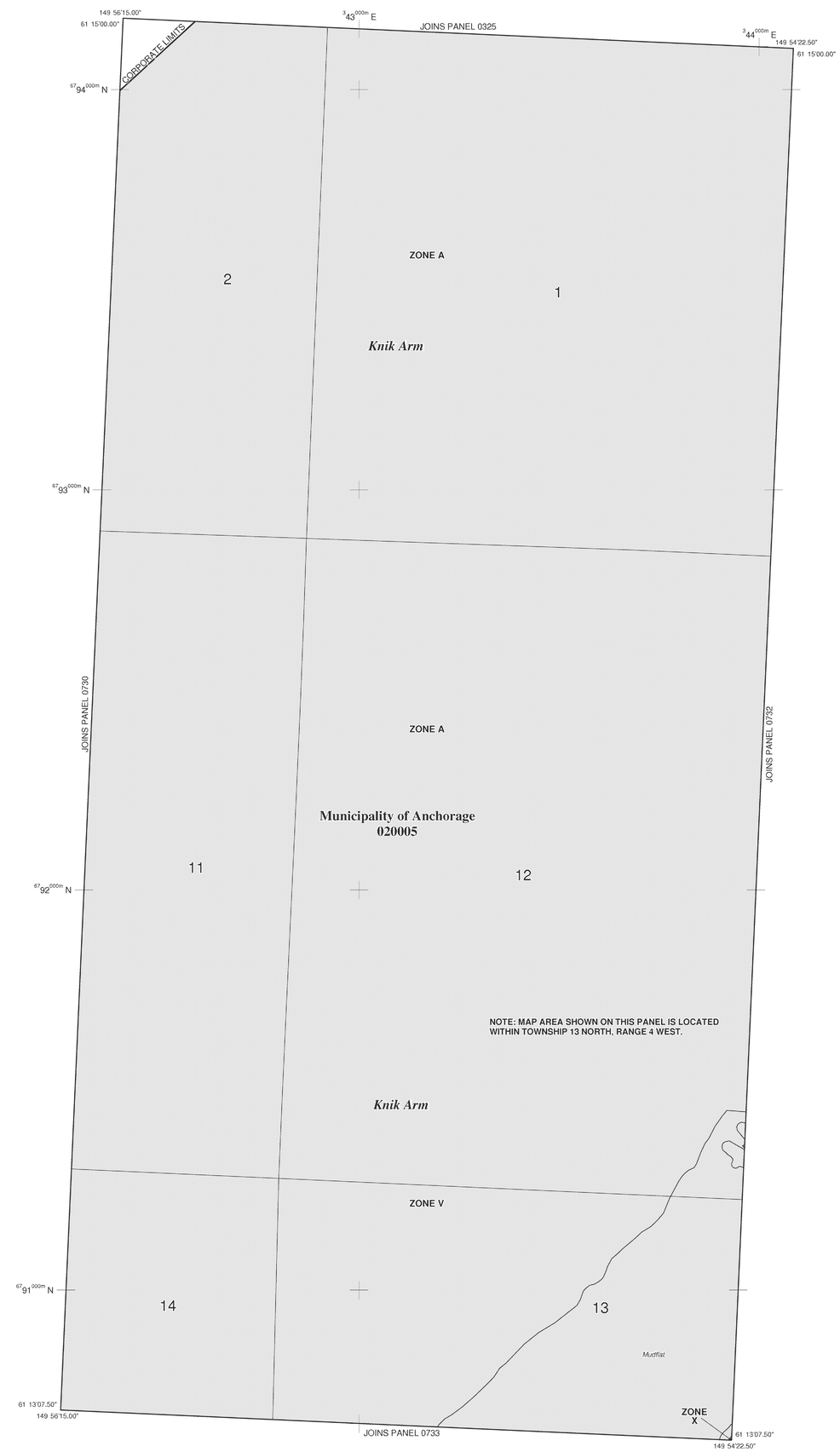
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LEGEND

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FLOODWAY AREAS IN ZONE AE

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MAP REPOSITORY
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September 5, 1979
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MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0731D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 731 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0731	D

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MAP NUMBER
0200050731D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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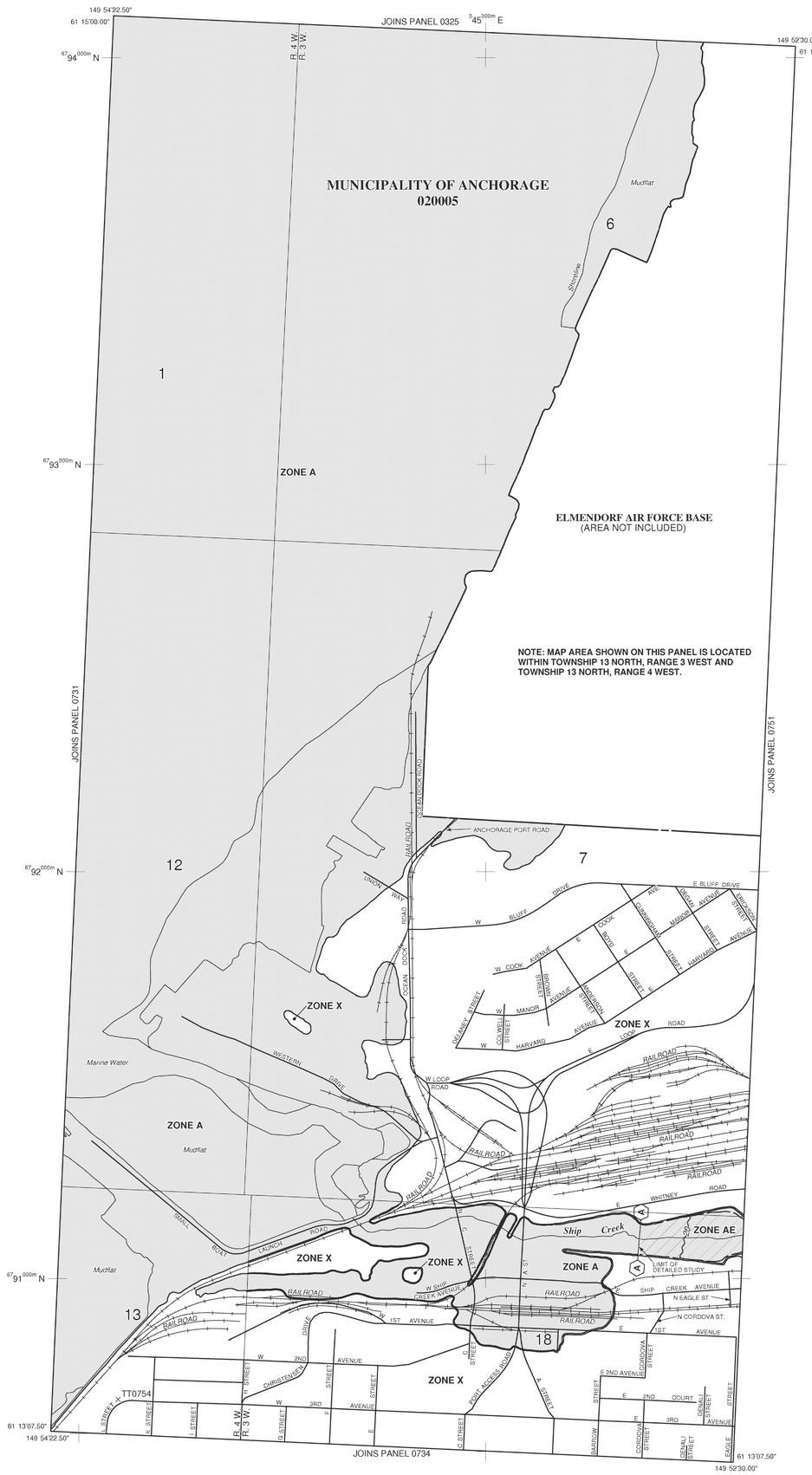
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LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

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ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
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ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	Floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the Mean Sea Level (MSL) Tidal Datum

A — A	Cross section line
23 - - - - - 23	Transect line
97 07'30", 32 22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4275 000m N	1000-meter Universal Transverse Mercator grid ticks, zone 6
6000000 M	5000-foot grid ticks: New York State Plane coordinate system, east zone (FIPSZONE 3101), Transverse Mercator
DX5510	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORY
4700 South Bragaw Street, Anchorage, Alaska 99507 (Maps available for reference only, not for distribution.)

INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
September 5, 1979
FLOOD INSURANCE RATE MAP REVISIONS
September 16, 1987 - to update map format.
March 5, 1990 - to change Base Flood Elevations and Special Flood Hazard Areas, reflect updated topographic information and to incorporate previously issued Letters of Map Revision.
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MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0732D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE,
ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 732 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0732	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
0200050732D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

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NOAA, N/NGS12
National Geodetic Survey
SSMC- 3, #9202
1315 East- West Highway
Silver Spring, MD 20910- 3282

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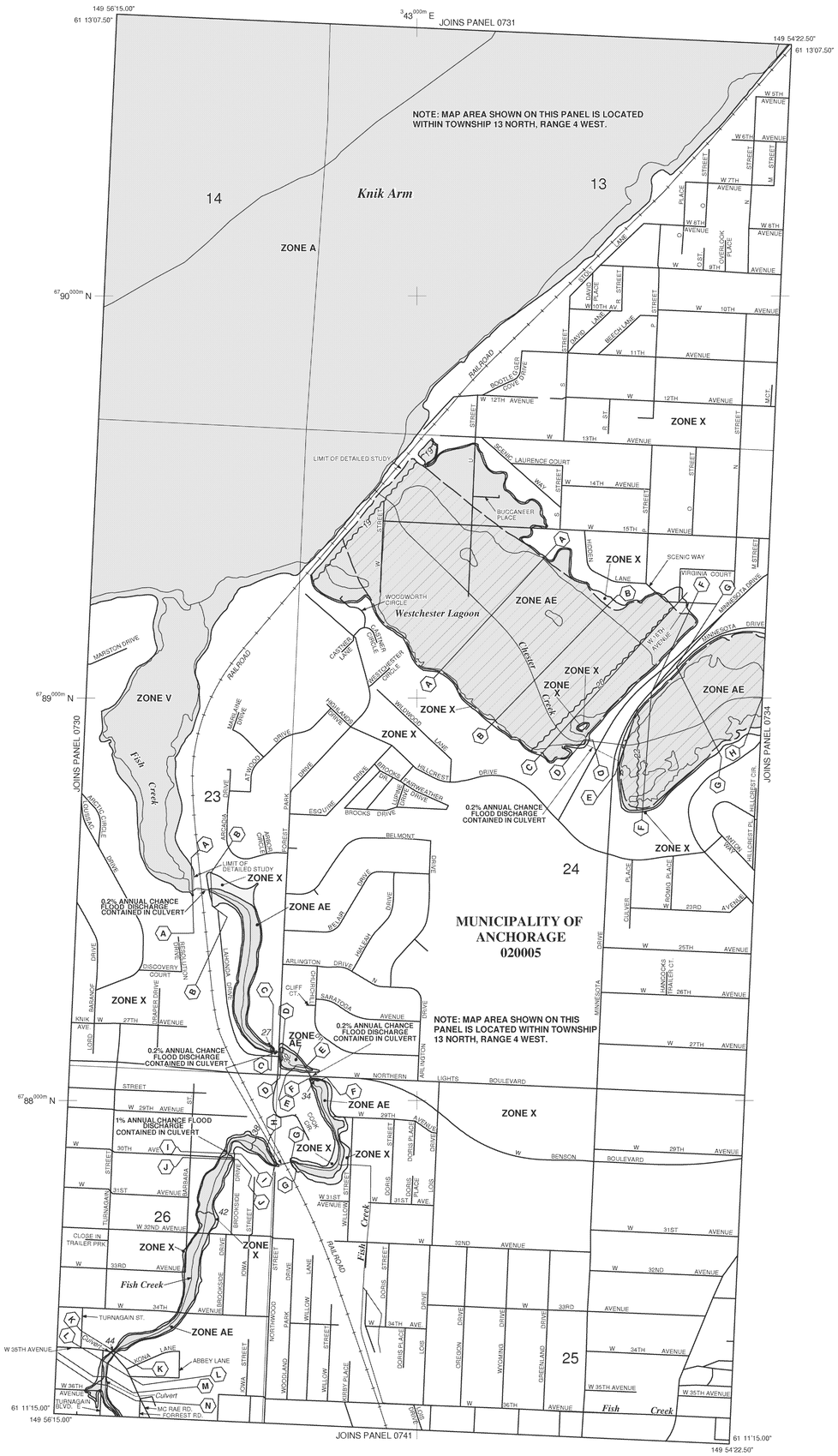
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FLOODWAY AREAS IN ZONE AE

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OTHER FLOOD AREAS

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NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0733D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 733 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0733	D

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MAP NUMBER
0200050733D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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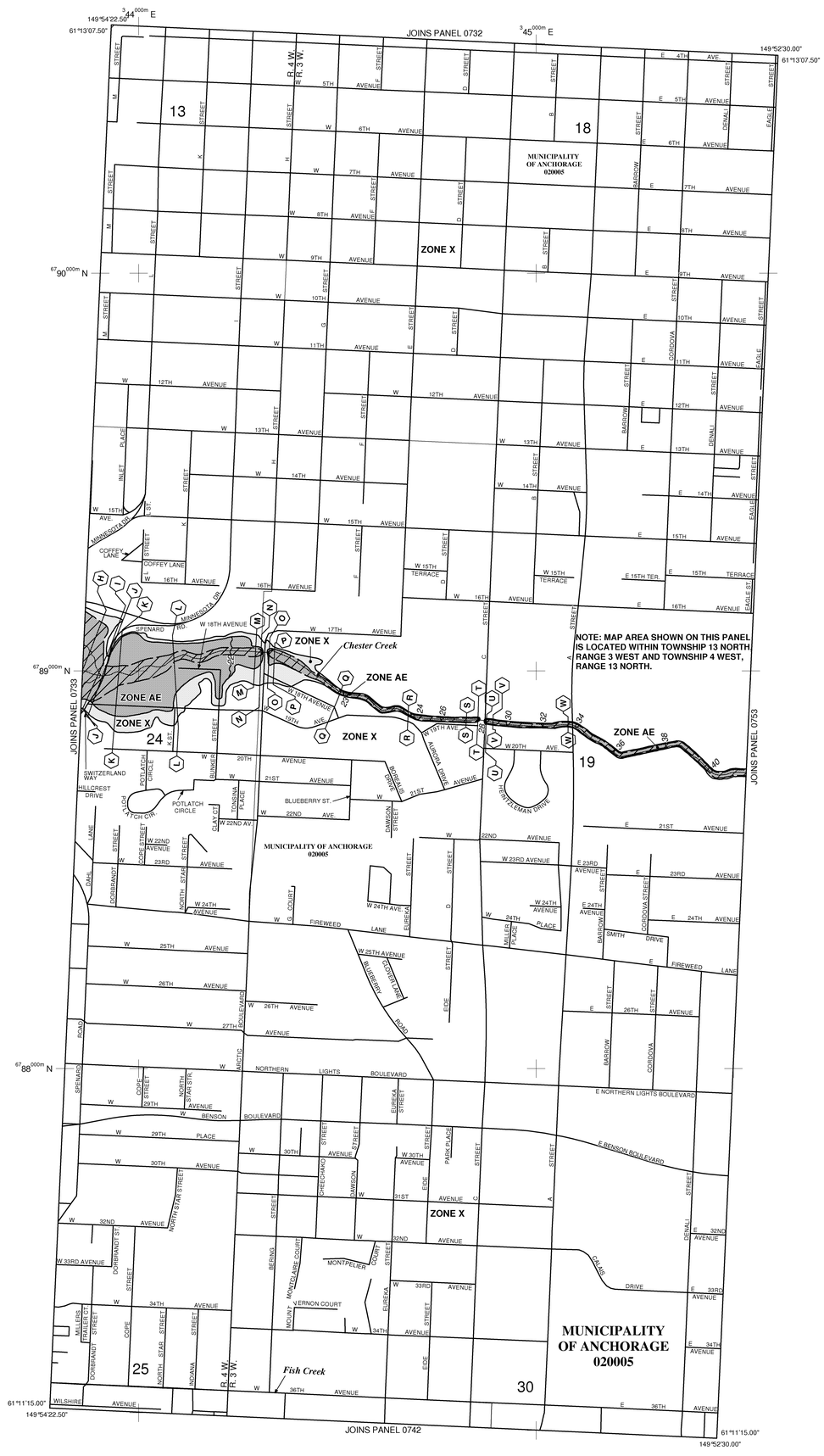
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NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0734D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 734 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0734	D

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MAP NUMBER
0200050734D

MAP REVISED
SEPTEMBER 25, 2009

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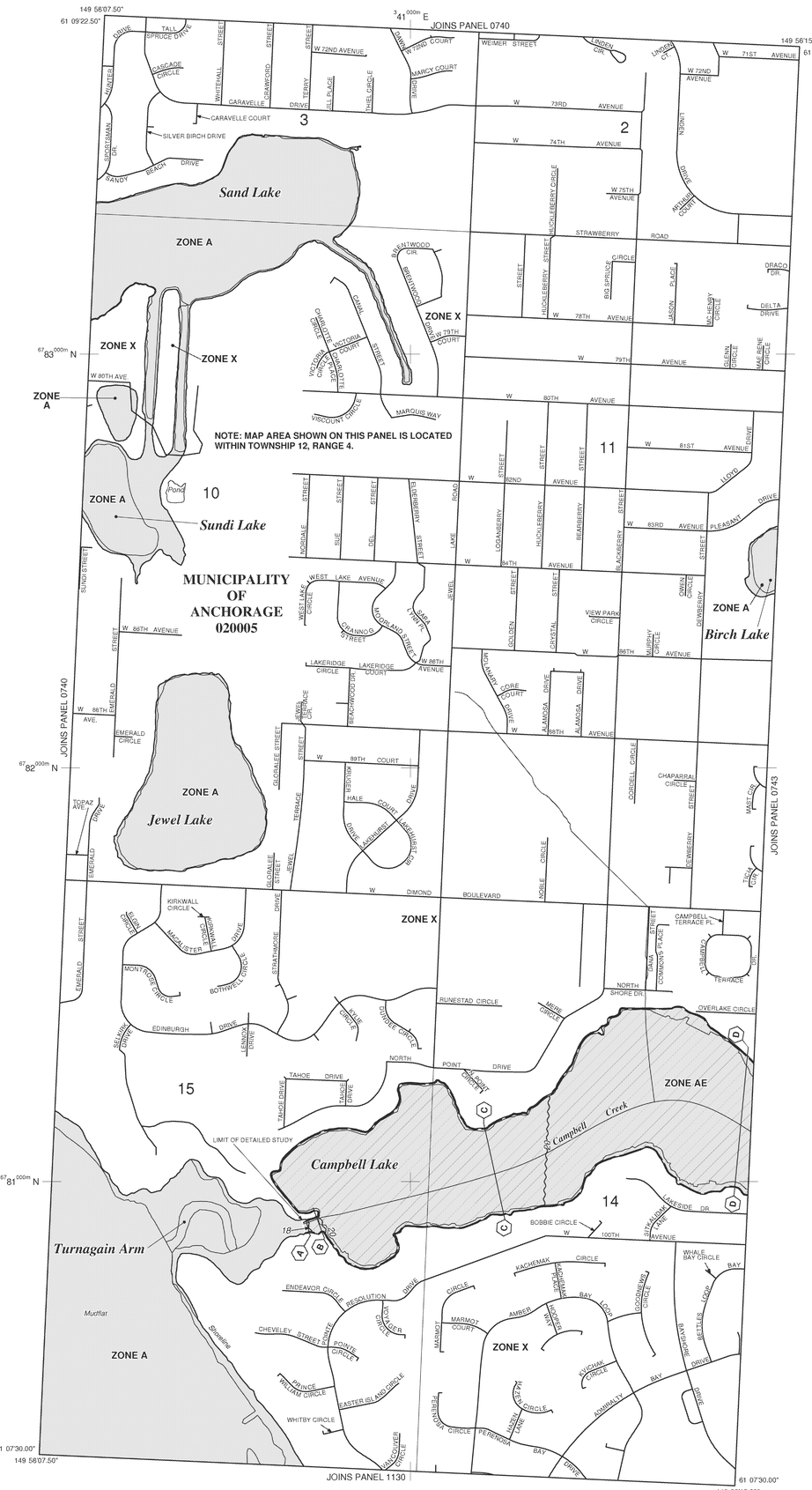
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LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	Floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the Mean Sea Level (MSL) Tidal Datum

A — A	Cross section line
23 - - - - - 23	Transect line
97 07'30", 32 22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4275 000m N	1000-meter Universal Transverse Mercator grid ticks, zone 6
6000000 M	5000-foot grid ticks: New York State Plane coordinate system, east zone (FIPSZONE 3101), Transverse Mercator
DX5510	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORY
4700 South Bragaw Street, Anchorage, Alaska 99507 (Maps available for reference only, not for distribution.)

INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
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MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NFIP

PANEL 0739D

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 739 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0739	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
0200050739D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

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National Geodetic Survey
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1315 East- West Highway
Silver Spring, MD 20910- 3282

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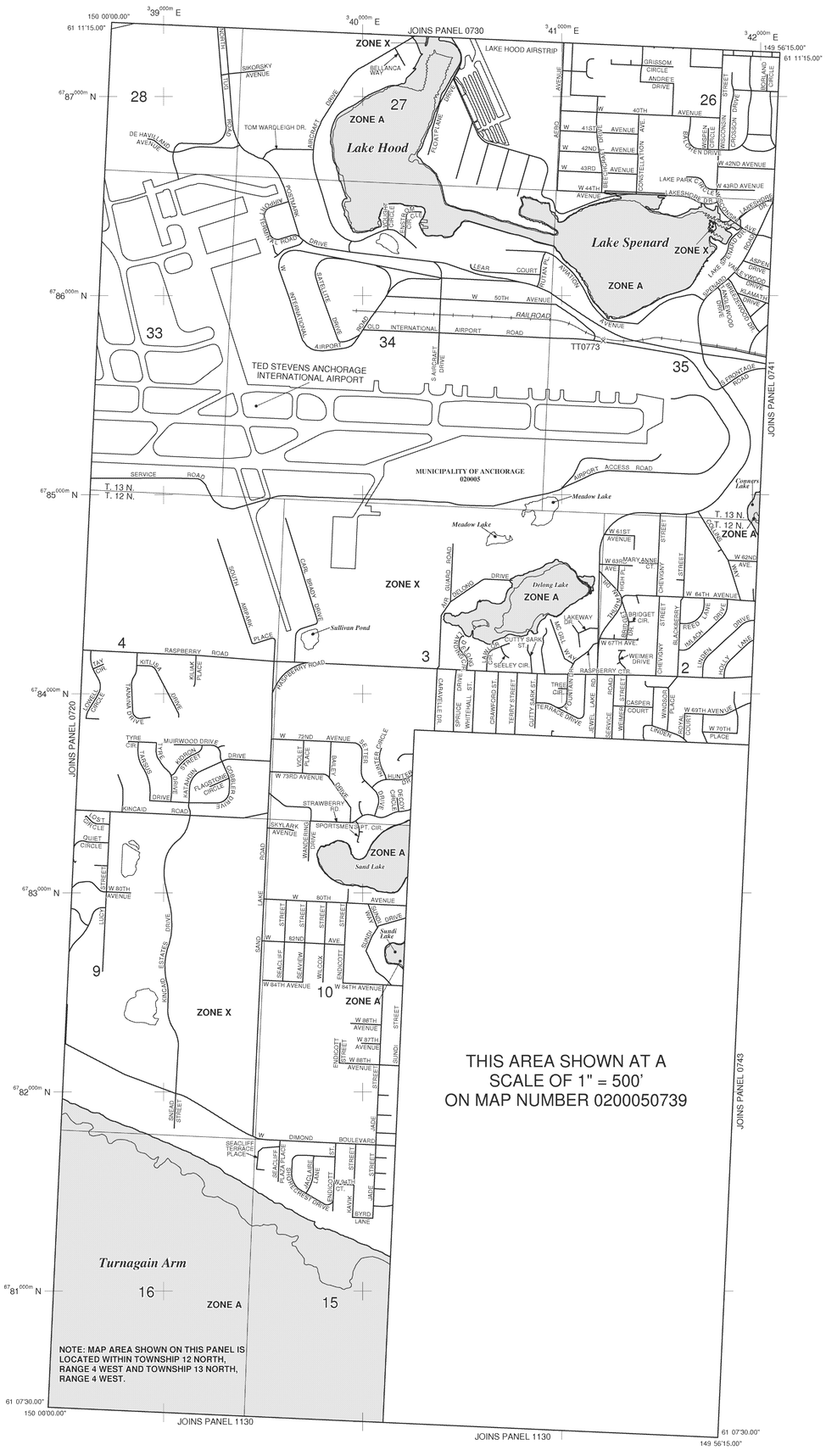
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FLOODWAY AREAS IN ZONE AE

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OTHER FLOOD AREAS

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MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

PANEL 0740D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 740 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0740	D

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MAP NUMBER 0200050740D
MAP REVISED SEPTEMBER 25, 2009

Federal Emergency Management Agency

NATIONAL FLOOD INSURANCE PROGRAM

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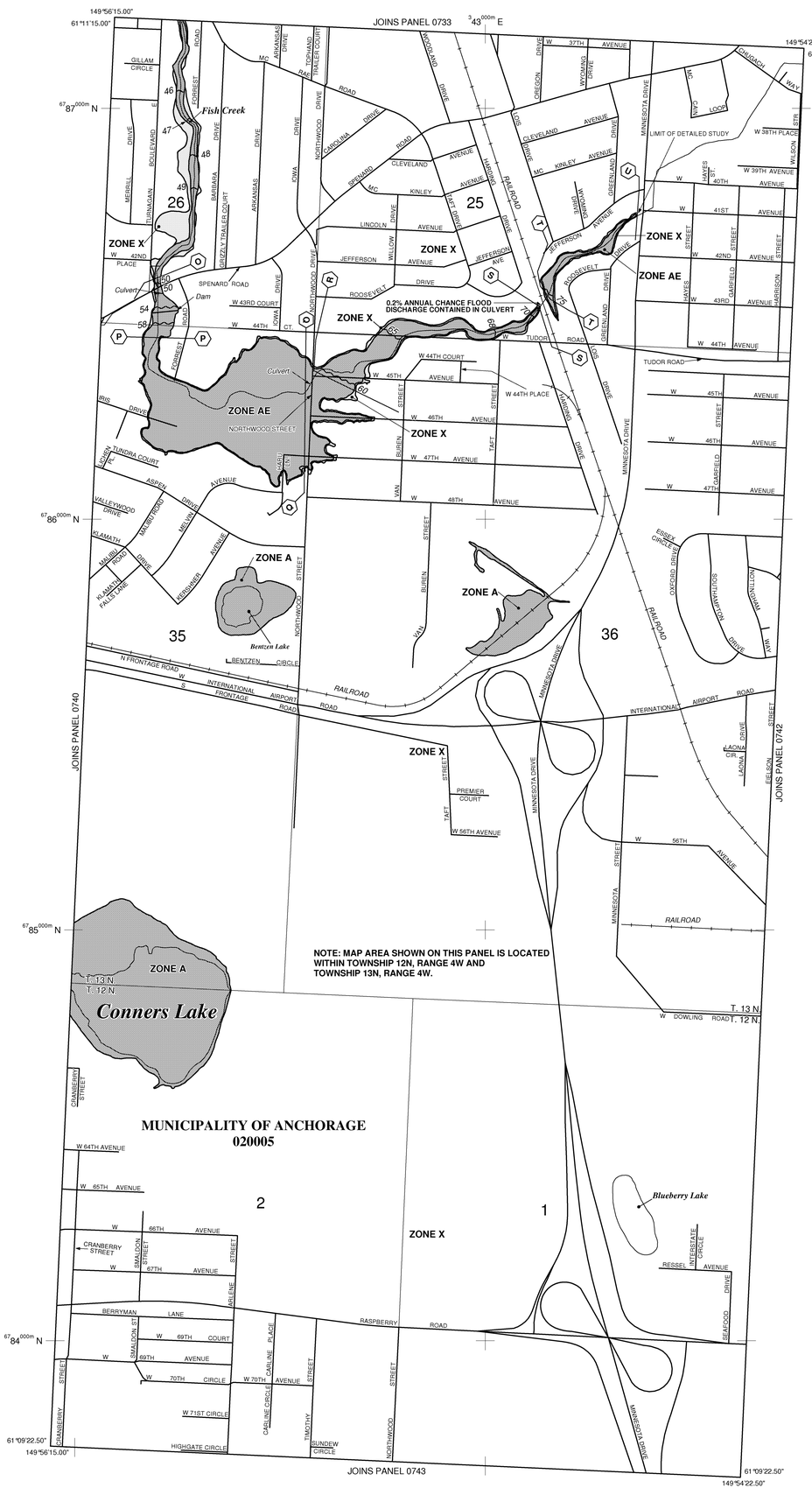
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OTHER FLOOD AREAS

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250 0 500 1000 FEET
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NFIP

PANEL 0741D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 741 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0741	D

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MAP NUMBER
0200050741D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

NATIONAL FLOOD INSURANCE PROGRAM

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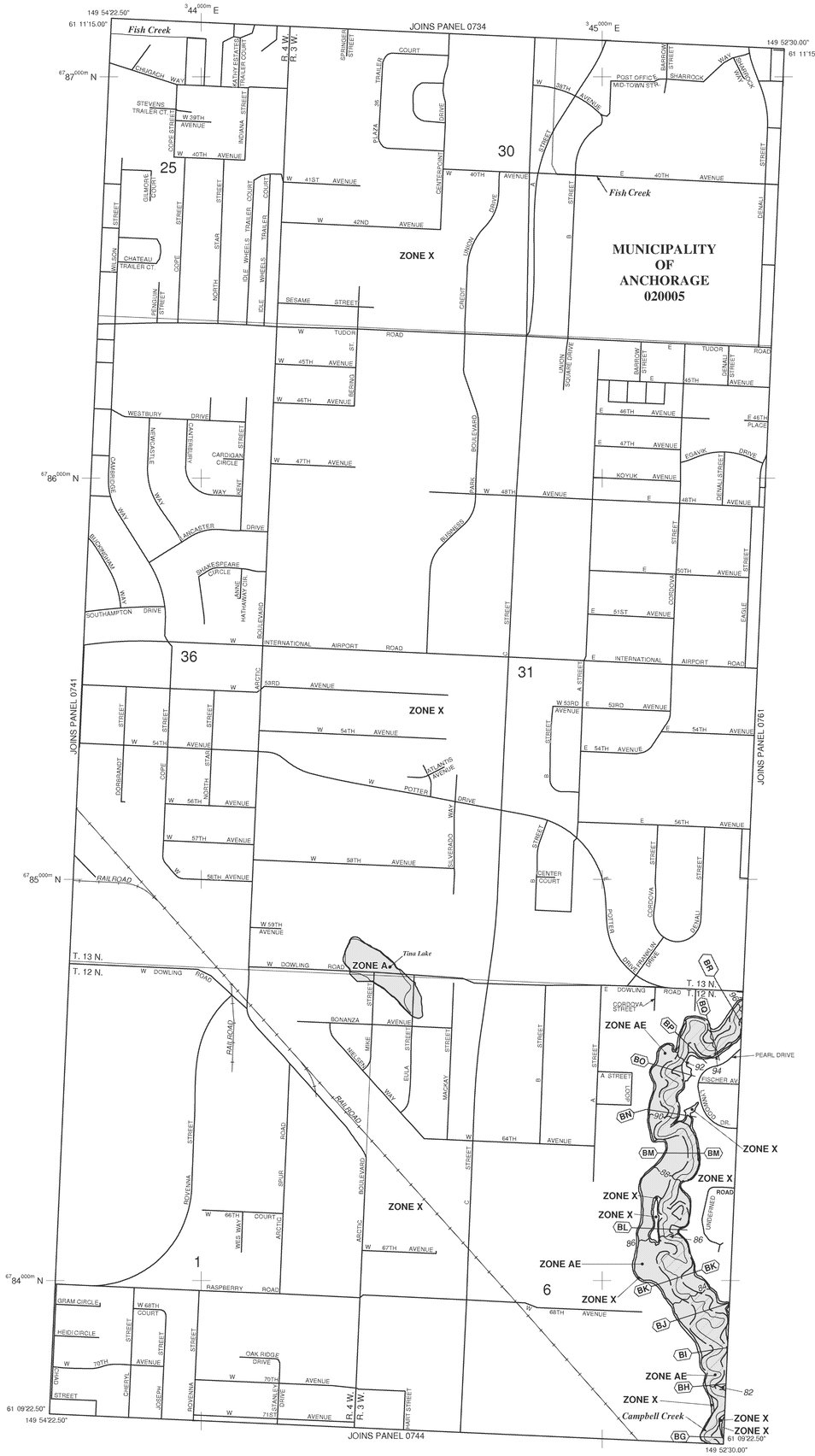
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Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de- annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map showing the layout of map panels for this jurisdiction.

Contact the **FEMA Map Service Center** at 1- 800- 358- 9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, *a Flood Insurance Study report,* and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1- 800- 358- 9620 and its website at http://www.msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1- 877- FEMA MAP** (1- 877- 336- 2627) or visit the FEMA website at http://www.fema.gov/.


JOINS PANEL 0734
JOINS PANEL 0741
JOINS PANEL 0761
JOINS PANEL 0744
149 54'22.50"
61 11'15.00"
149 52'30.00"
61 09'22.50"
Fish Creek
Campbell Creek
Tina Lake
MUNICIPALITY OF ANCHORAGE 020005
ZONE X
ZONE A
ZONE AE
T. 13 N.
T. 12 N.
R. 4 W.
R. 3 W.
CHURCH WAY
STEVENS TRAILER CT.
W 39TH AVENUE
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E 46TH PLACE
W TUDOR ROAD
E TUDOR ROAD
W DOWLING ROAD
E DOWLING ROAD
W INTERNATIONAL AIRPORT ROAD
E INTERNATIONAL AIRPORT ROAD
RASPBERRY ROAD
RAILROAD
W POTTER DRIVE
W SOUTHAMPTON DRIVE
W WESTBURY DRIVE
W LANCASTER DRIVE
W SESAME STREET
W BERING ST.
W 66TH COURT
W 59TH AVENUE
W ARCTIC BOULEVARD
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E NORTHERN LIGHTS BOULEVARD
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NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC- 3, #9202
1315 East- West Highway
Silver Spring, MD 20910- 3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713- 3242,** or visit its website at http://www.ngs.noaa.gov/.

Base map digital files provided by Municipality of Anchorage DPW and AK DNR. Information compiled at scales of 1:1200 to 1:24000 during 2000-06. Streams and lake shorelines associated with FHAs digitized from Army Corp. of Engineers flood hazard workmaps from MOA DPW.

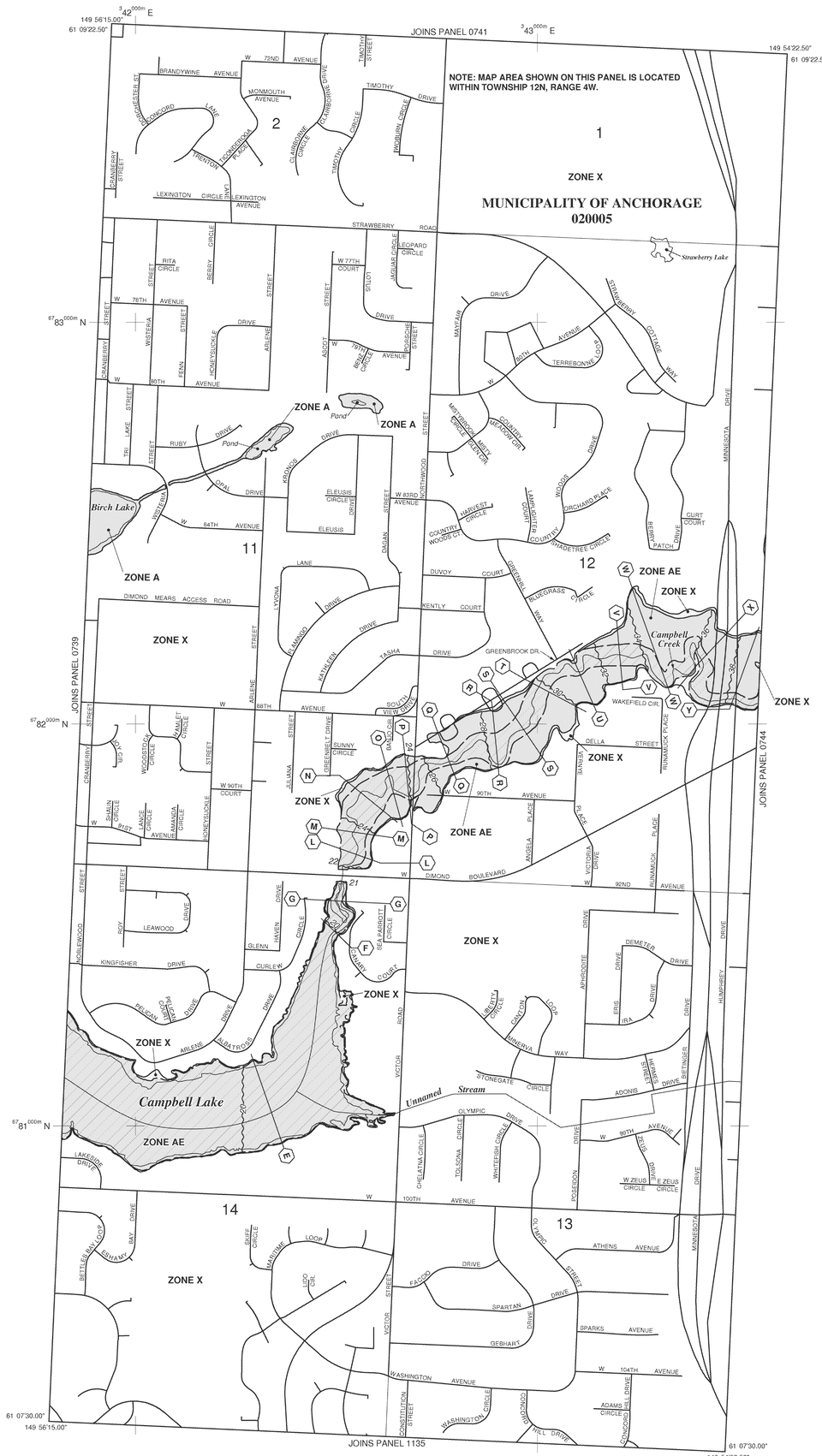
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Please refer to the separately printed **Map Index** for an overview map showing the layout of map panels for this jurisdiction.

Contact the **FEMA Map Service Center** at 1- 800- 358- 9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, *a Flood Insurance Study report,* and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1- 800- 358- 9620 and its website at http://www.msc.fema.gov/.

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LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	Floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the Mean Sea Level (MSL) Tidal Datum

A — A	Cross section line
23 - - - - - 23	Transect line
97 07'30", 32 22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4275 000m N	1000-meter Universal Transverse Mercator grid ticks, zone 6
6000000 M	5000-foot grid ticks: New York State Plane coordinate system, east zone (FIPSZONE 3101), Transverse Mercator
DX5510	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORY
4700 South Bragaw Street, Anchorage, Alaska 99507 (Maps available for reference only, not for distribution.)

INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
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FLOOD INSURANCE RATE MAP REVISIONS
September 18, 1987 - to update map format.
March 5, 1990 - to change Base Flood Elevations and Special Flood Hazard Areas, reflect updated topographic information and to incorporate previously issued Letters of Map Revision.
July 2, 2002 - to add Special Flood Hazard Areas and Base Flood Elevations.
September 25, 2009 - to update corporate limits, change zone designations and to incorporate previously issued Letters of Map Revision.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1- 800- 638- 6620.

MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0743D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 743 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)
CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0743	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
0200050743D
MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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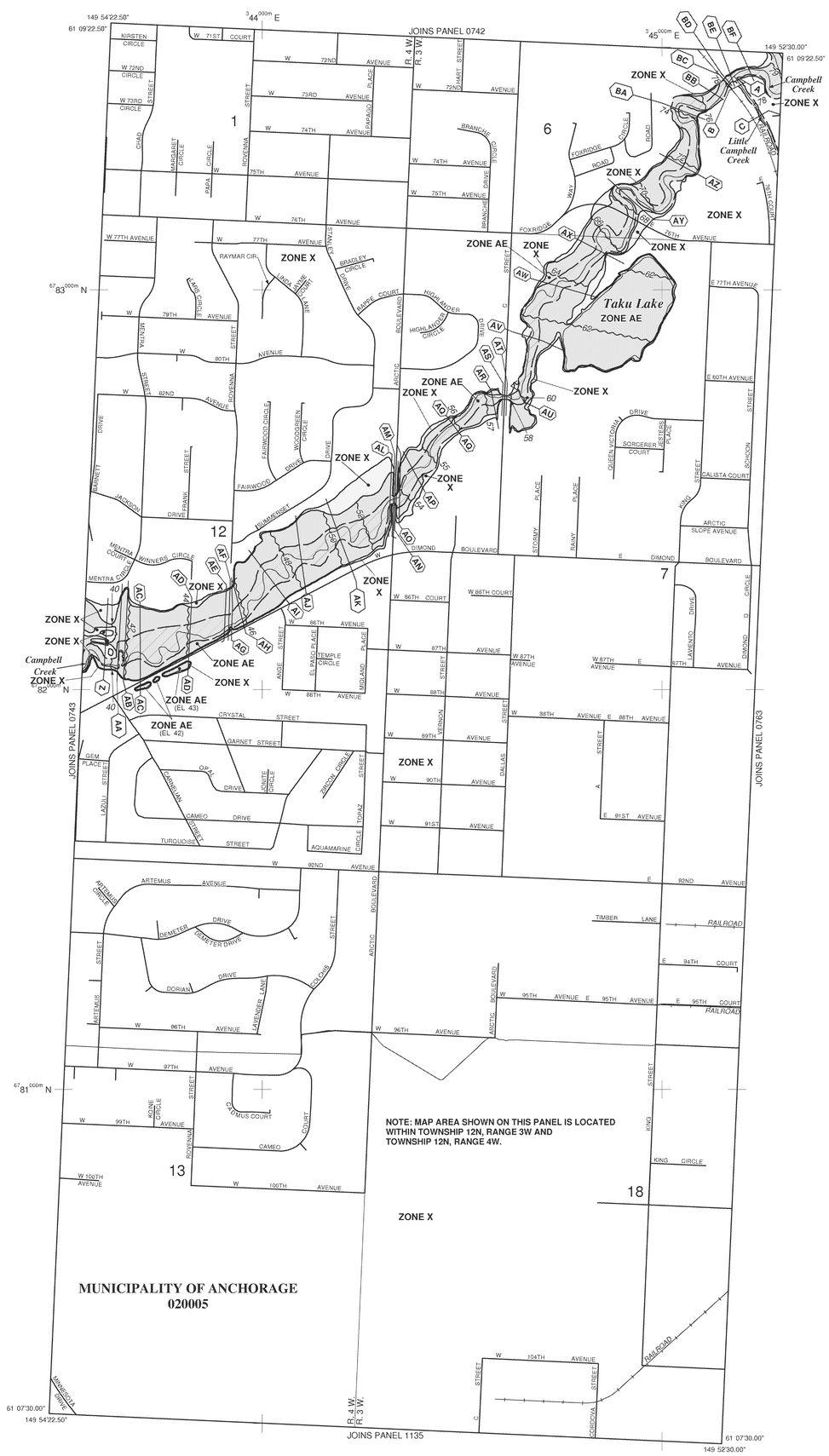
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NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0744D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 744 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

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MAP NUMBER
0200050744D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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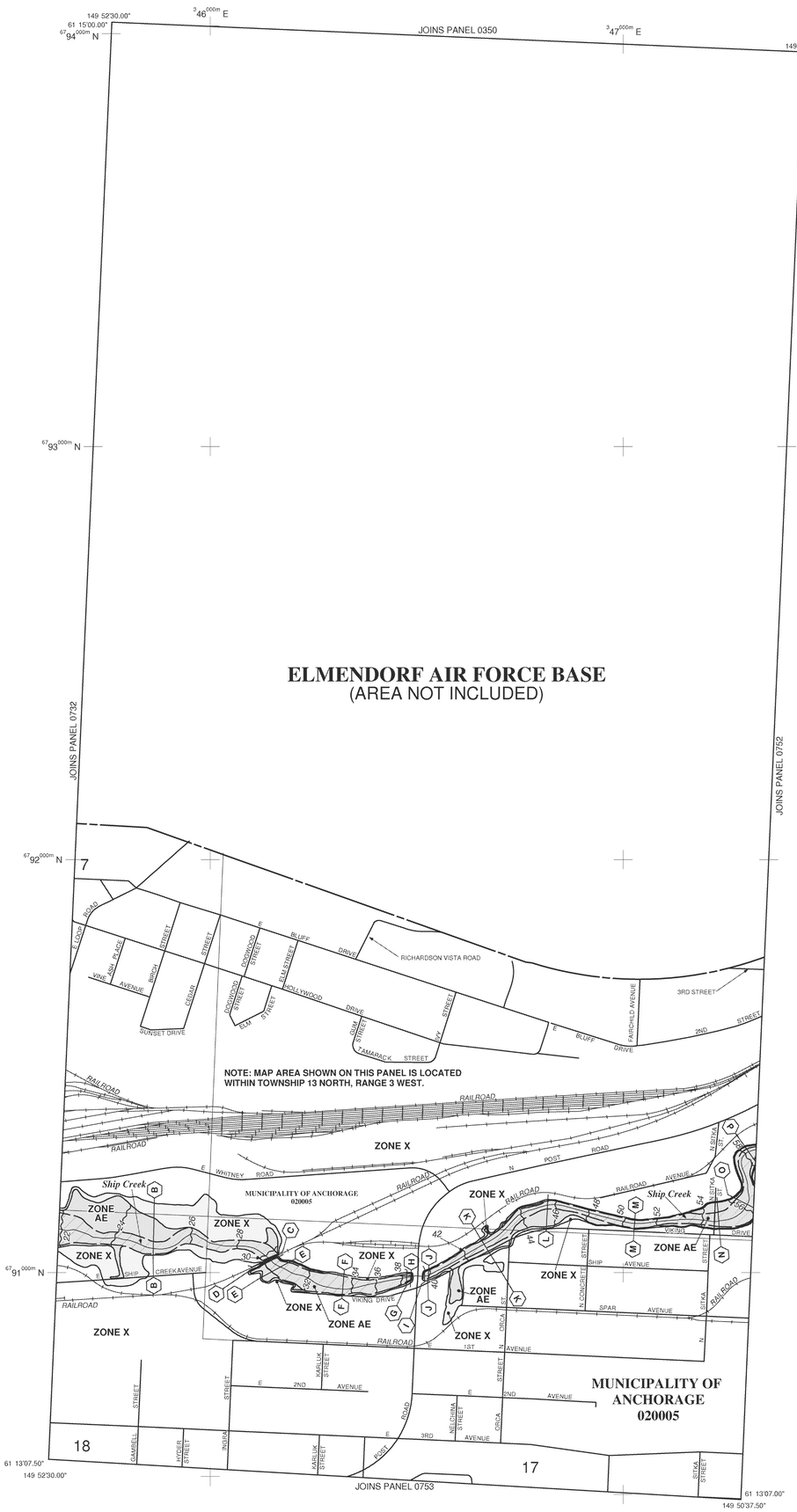
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LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
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ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
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ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	Floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the Mean Sea Level (MSL) Tidal Datum

A — A	Cross section line
23 - - - - - - - 23	Transect line
97 07'30", 32 22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4275 000m N	1000-meter Universal Transverse Mercator grid ticks, zone 6
6000000 M	5000-foot grid ticks: New York State Plane coordinate system, east zone (FIPSZONE 3101), Transverse Mercator
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORY
4700 South Bragaw Street, Anchorage, Alaska 99507 (Maps available for reference only, not for distribution.)

INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
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MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0751D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 751 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)
CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0751	D

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MAP NUMBER
0200050751D
MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0752D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 752 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)
CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0752	D

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DEPARTMENT OF HOMELAND SECURITY

MAP NUMBER
0200050752D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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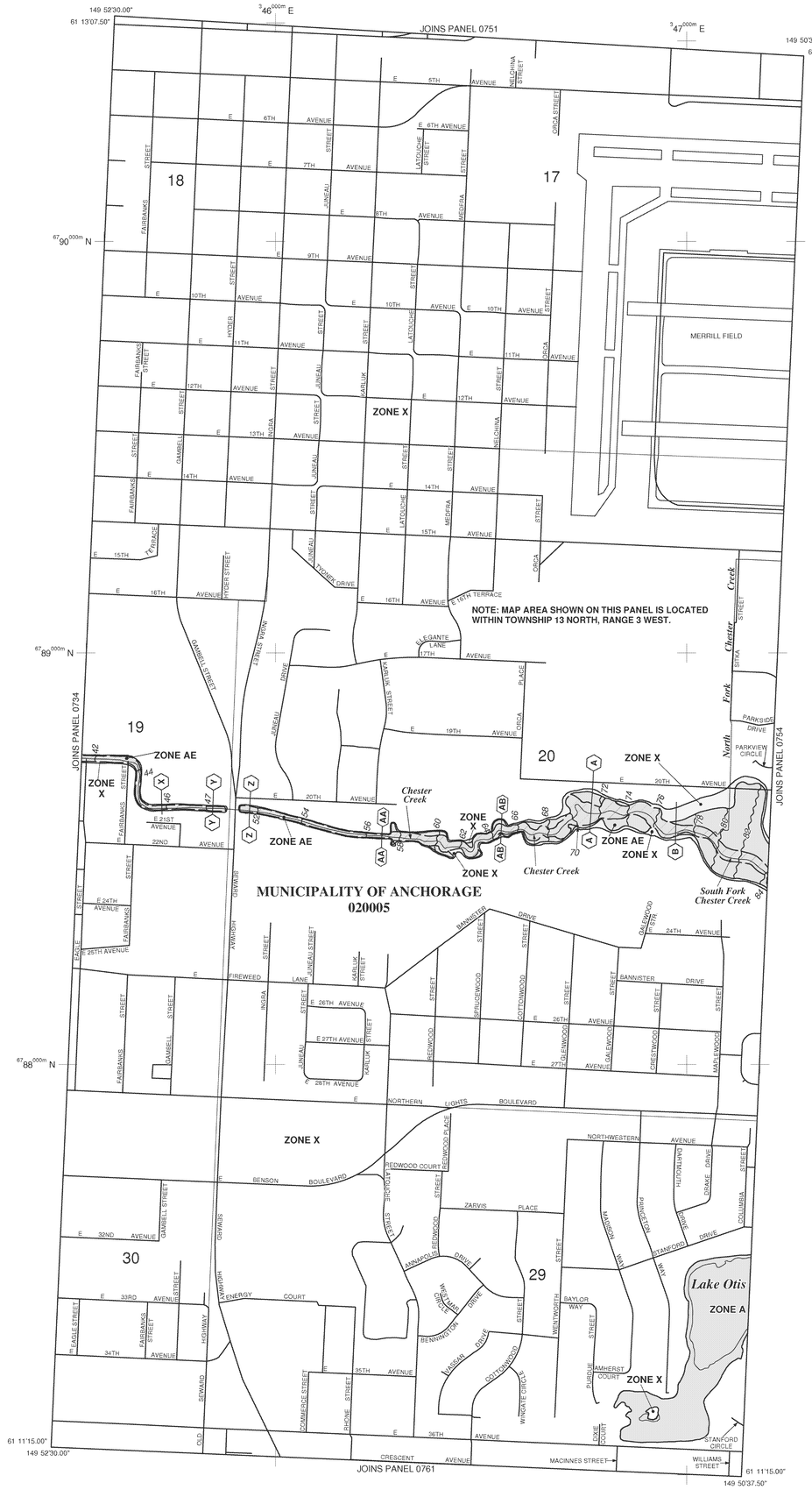
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149 52'30.00"
61 13'07.50"
3 46 000m E
149 50'37.50"
61 13'07.00"
JOINS PANEL 0751
JOINS PANEL 0734
JOINS PANEL 0754
JOINS PANEL 0761
67 90 000m N
67 89 000m N
67 88 000m N
61 11'15.00"
149 52'30.00"
149 50'37.50"
61 11'15.00"
MUNICIPALITY OF ANCHORAGE
020005
ZONE X
ZONE AE
ZONE A
NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 13 NORTH, RANGE 3 WEST.
MERRILL FIELD
Chester Creek
South Fork Chester Creek
Lake Otis
17
18
19
20
29
30
E 5TH AVENUE
E 6TH AVENUE
E 7TH AVENUE
E 8TH AVENUE
E 9TH AVENUE
E 10TH AVENUE
E 11TH AVENUE
E 12TH AVENUE
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E 16TH AVENUE
E 17TH AVENUE
E 19TH AVENUE
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E 21ST AVENUE
22ND AVENUE
E 24TH AVENUE
E 25TH AVENUE
E 26TH AVENUE
E 27TH AVENUE
E 28TH AVENUE
E 32ND AVENUE
E 33RD AVENUE
34TH AVENUE
E 35TH AVENUE
E 36TH AVENUE
CRESCENT AVENUE
NORTHERN LIGHTS BOULEVARD
NORTHWESTERN AVENUE
BENSON BOULEVARD
FAIRBANKS STREET
GAMBELL STREET
JUNEAU STREET
KARLUK STREET
LATOUCHE STREET
MEDFRA STREET
ORCA STREET
INGRA STREET
DENALI STREET
BARROW STREET
WOODROW STREET
WOOD STREET
SEWARD HIGHWAY
ENERGY COURT
TUDOR ROAD
DIMOND BOULEVARD
MINNESOTA DRIVE
ARCTIC BOULEVARD
OMALLEY ROAD
DAIMLER DRIVE
ELEGANTE LANE
REDWOOD COURT
REDWOOD PLACE
ZARVIS PLACE
ANNAPOLIS DRIVE
BENNINGTON DRIVE
WARSAW DRIVE
WINGATE CIRCLE
STANFORD CIRCLE
MACINNES STREET
WILLIAMS STREET
PARKSIDE DRIVE
PARKVIEW CIRCLE
BANNISTER DRIVE
OAKWOOD PARK DRIVE
SPRUCEWOOD STREET
COTTONWOOD STREET
REDWOOD STREET
GLENWOOD STREET
MALCOLM STREET
CRESTWOOD STREET
MAPLEWOOD STREET
CAMELOT DRIVE
HAVENSHIRE DRIVE
SENATE DRIVE
STANFORD DRIVE
COLUMBIA STREET
WENTWORTH STREET
BAYLOR WAY
AMHERST COURT
PURDUE STREET
DIXIE COURT
EAGLE STREET
FLAGLE STREET
SUMMERSE STREET
RHONE STREET
OLD SEWARD HIGHWAY
ZONE X
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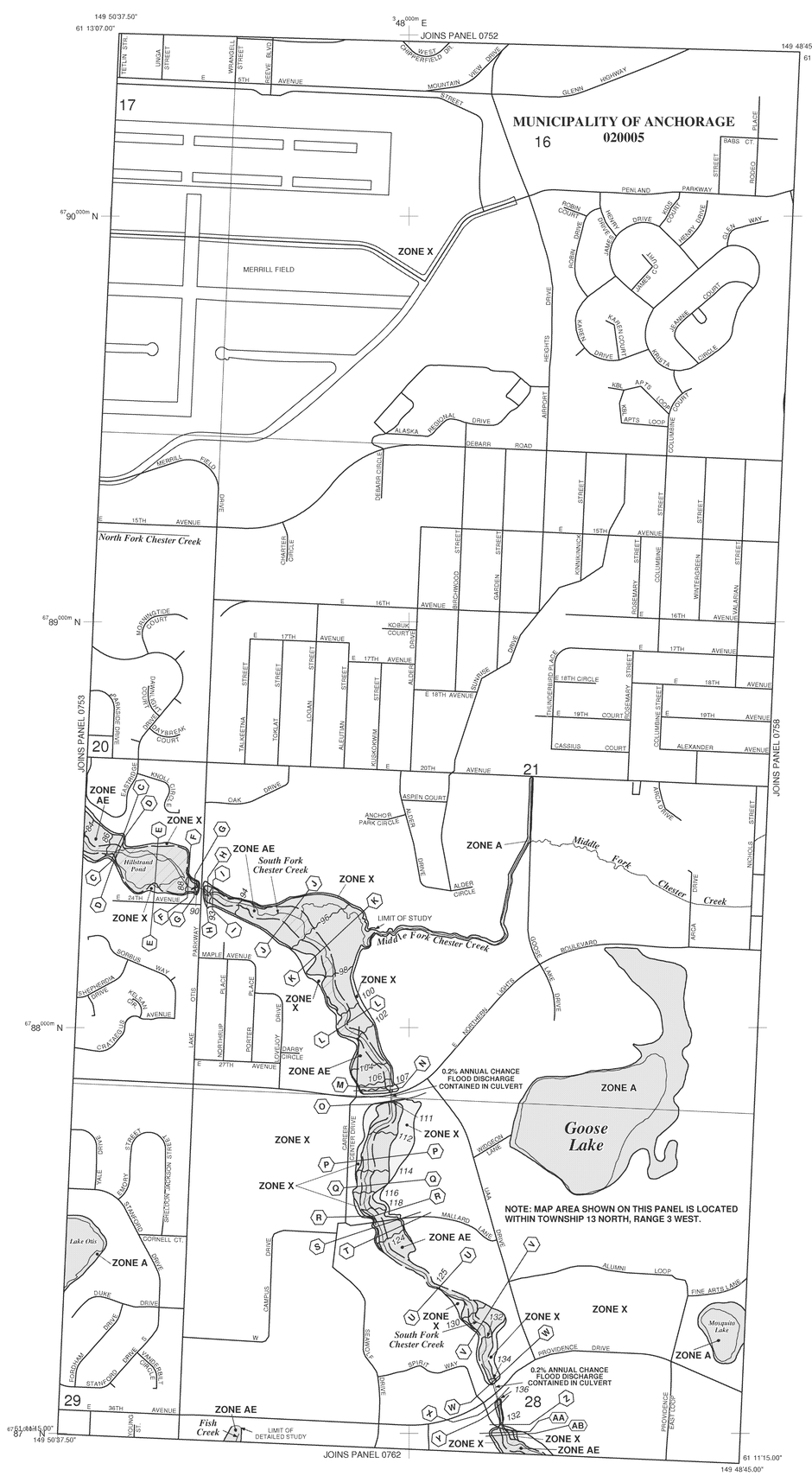
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149 50'37.50"
61 13'07.00"
3 48 000m E
JOINS PANEL 0752
149 48'45.00"
61 13'07.50"
MUNICIPALITY OF ANCHORAGE
020005
16
17
20
21
29
28
67 90 000m N
67 89 000m N
67 88 000m N
67 87 000m N
61 11'15.00"
149 50'37.50"
149 48'45.00"
JOINS PANEL 0753
JOINS PANEL 0758
JOINS PANEL 0762
ZONE X
ZONE AE
ZONE A
MERRILL FIELD
North Fork Chester Creek
Middle Fork Chester Creek
South Fork Chester Creek
Goose Lake
Lake Otis
Fish Creek
Hillstand Pond
LIMIT OF STUDY
LIMIT OF DETAILED STUDY
0.2% ANNUAL CHANCE FLOOD DISCHARGE CONTAINED IN CULVERT
NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 13 NORTH, RANGE 3 WEST.
PENLAND PARKWAY
DEBARR ROAD
ALASKA REGIONAL DRIVE
E 15TH AVENUE
E 16TH AVENUE
E 17TH AVENUE
E 18TH AVENUE
E 19TH AVENUE
E 20TH AVENUE
E 24TH AVENUE
E 27TH AVENUE
E 36TH AVENUE
MAPLE AVENUE
OAK DRIVE
ASPEN COURT
ALDER CIRCLE
ANCHOR PARK CIRCLE
ALDER DRIVE
ARCA DRIVE
GOOSE LAKE BOULEVARD
E. KORTLESEN ESTATES
MALLARD LAKE DRIVE
ALUMNI LOOP
FINE ARTS LANE
PROVIDENCE DRIVE
SPIRIT WAY
CASSIUS COURT
ALEXANDER AVENUE
CAMPUS DRIVE
AIRPORT HEIGHTS DRIVE
KBL APTS COLUMBINE COURT
TBF APTS LOOP
ROBIN COURT
HEATHER DRIVE
JEANNE COURT
JEANNE CIRCLE
KATHERINE DRIVE
KATHERINE COURT
FRIDA CIRCLE
BABS CT
ROSEO PLACE
GLEN WAY
JAMES CO COURT
CHANTER CIRCLE
DEBARR CIRCLE
KOBUK COURT
BIRCHWOOD STREET
GARDEN STREET
KANNIKANNICK STREET
ROSEMARY STREET
COLUMBINE STREET
WINTERGREEN STREET
VILLARIAN STREET
THUNDERBIRD PLACE
E 18TH CIRCLE
E 19TH COURT
ROSEMARY STREET
COLUMBINE STREET
ROSEMARY STREET
ROSEMARY DRIVE
BOMMARITO TIDE COURT
DAYBREAK COURT
SAMSON DRIVE
TALKEENA STREET
TOKLAT STREET
LOGAN STREET
ALEUTIAN STREET
KUSKOKWIM STREET
ALDER STREET
KNOLL CIRCLE
KNOLL PLACE
OAKBRIDGE DRIVE
SORBUS WAY
SHEPHERDIA DRIVE
KRASAN AVENUE
CRATAEGUS LANE
OTIS PLACE
NORTHROP PLACE
POINTER DRIVE
LOVEJOY DRIVE
DARBY CIRCLE
CARIBOU DRIVE
CARIBOU STREET
MOOSEHORN STREET
TALE AGENCY DRIVE
STANFORD DRIVE
CORNELL CT.
DUKE DRIVE
JORDAN DRIVE
LAMBERT CIRCLE
STANFORD DRIVE S
WYGREM LANE
LIMA DRIVE
SEWARD DRIVE
NICHOLS STREET
ARCA DRIVE
ZONE X 0.2% ANNUAL CHANCE FLOOD DISCHARGE CONTAINED IN CULVERT
ZONE X
ZONE AE
ZONE A
ZONE X South Fork Chester Creek
ZONE X Middle Fork Chester Creek
ZONE X Mosquito Lake
ZONE AE Fish Creek
ZONE X ZONE AE
ZONE X ZONE A
ZONE X ZONE AE
ZONE X ZONE X
ZONE X ZONE AE
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ZONE X ZONE X
ZONE X ZONE AE
ZONE X ZONE X

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Silver Spring, MD 20910–3282

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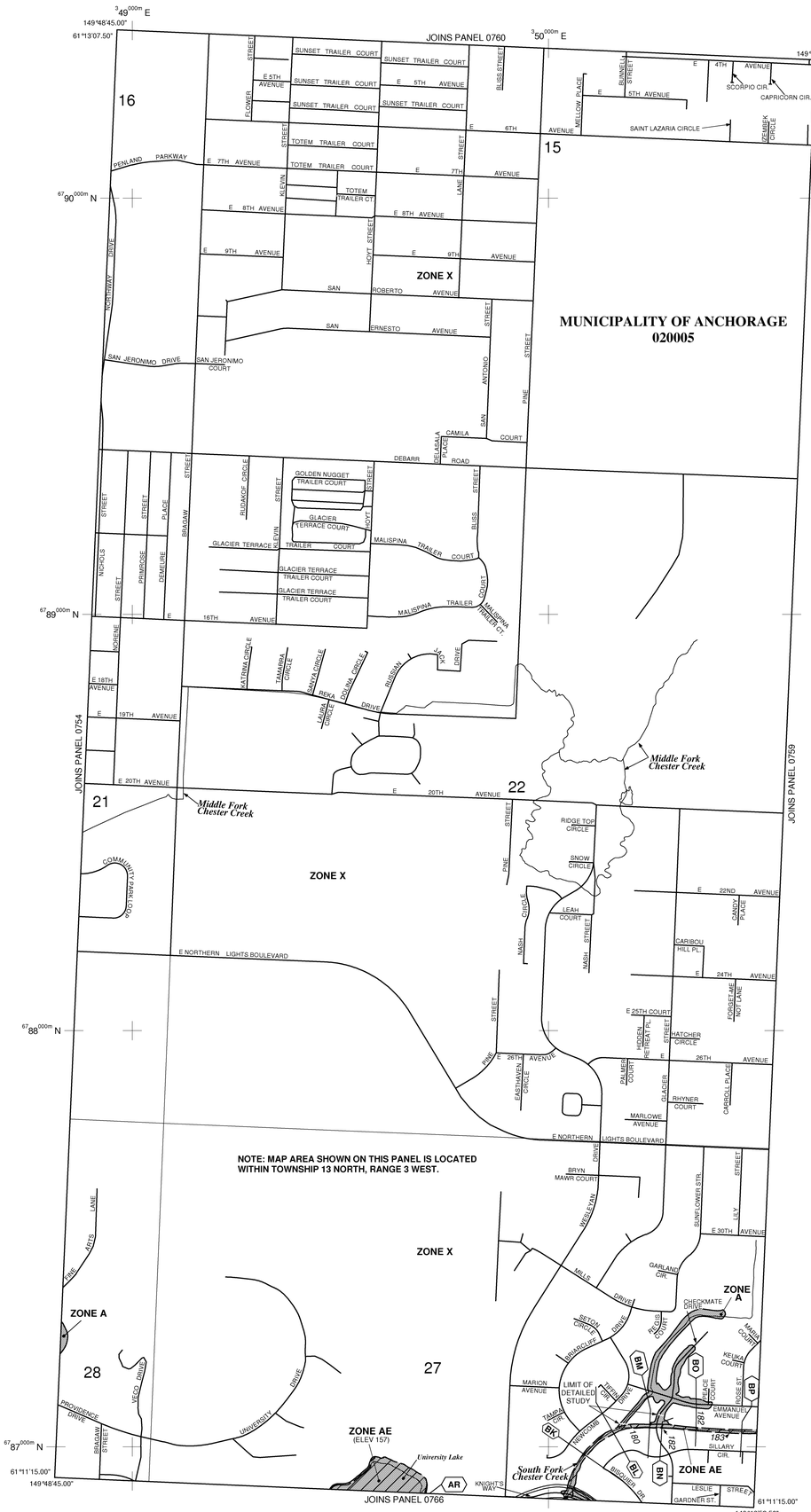
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LEGEND

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The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

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- A — A — Cross section line
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- DX5510 × — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 • — River Mile

MAP REPOSITORY
4700 South Bragaw Street, Anchorage, Alaska 99507 (Maps available for reference only, not for distribution.)

INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
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MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0758D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 758 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0758	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
0200050758D
MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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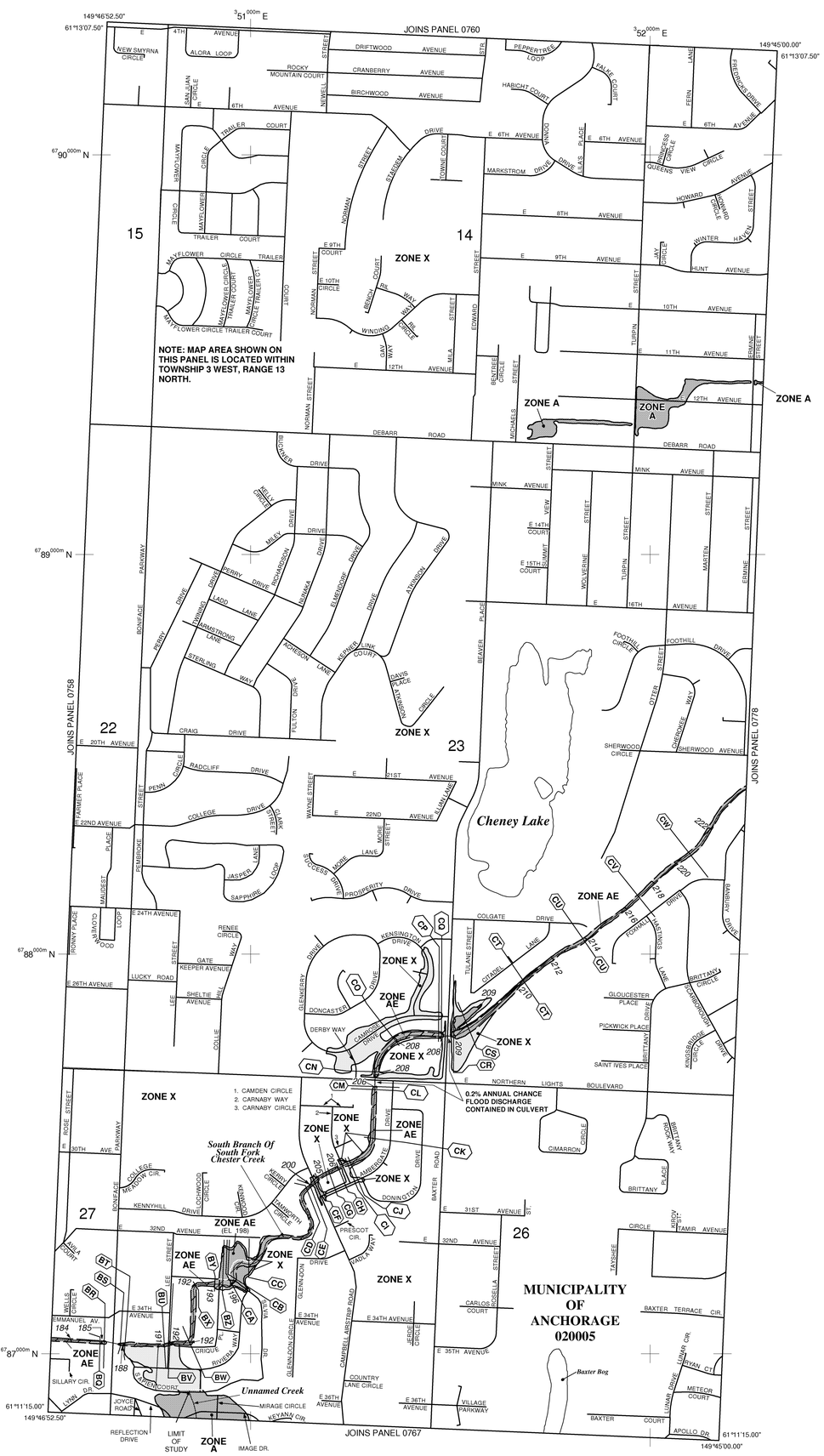
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NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0759D

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MUNICIPALITY OF
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ANCHORAGE DIVISION COUNTY

PANEL 759 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

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0200050759D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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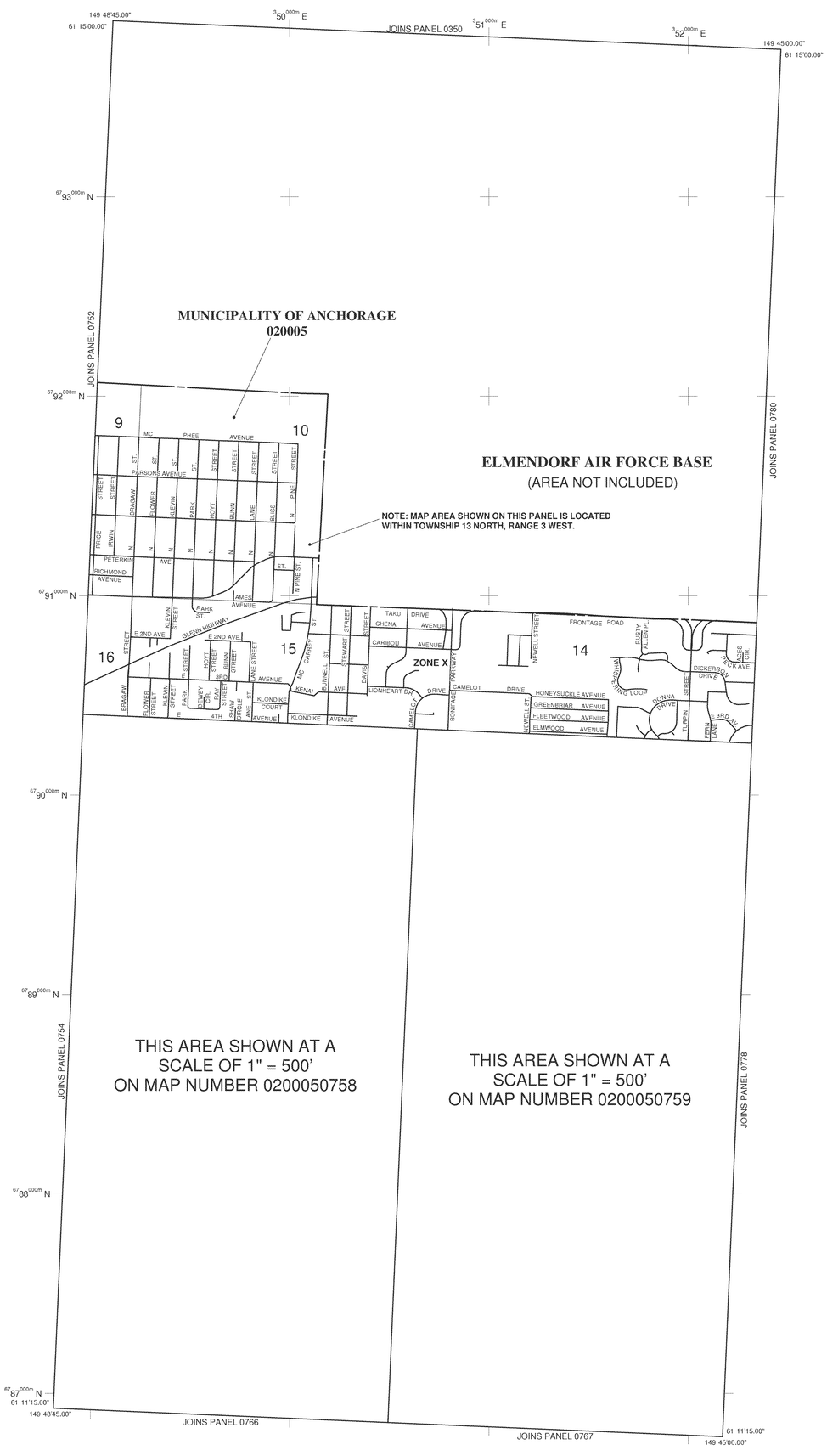
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LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	Floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the Mean Sea Level (MSL) Tidal Datum

A — A	Cross section line
23 - - - - - 23	Transect line
97 07'30", 32 22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4275 000m N	1000-meter Universal Transverse Mercator grid ticks, zone 6
6000000 M	5000-foot grid ticks: New York State Plane coordinate system, east zone (FIPSZONE 3101), Transverse Mercator
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile

MAP REPOSITORY
4700 South Bragaw Street, Anchorage, Alaska 99507 (Maps available for reference only, not for distribution.)

INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
September 5, 1979
FLOOD INSURANCE RATE MAP REVISIONS
September 18, 1987 - to update map format.
March 5, 1990 - to change Base Flood Elevations and Special Flood Hazard Areas, reflect updated topographic information and to incorporate previously issued Letters of Map Revision.
July 2, 2002 - to add Special Flood Hazard Areas and Base Flood Elevations.
September 25, 2009 - to update corporate limits, change zone designations and to incorporate previously issued Letters of Map Revision.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1- 800- 638- 6620.

MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0760D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 760 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0760	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
0200050760D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

NOTES TO USERS

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Coastal Base Flood Elevations shown on this map apply only landward of 0.0' Mean Sea Level (MSL) Tidal Datum. Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures.** Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

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Flood elevations on this map are referenced to the Mean Sea Level tidal datum. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum.** For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC–3, #9202
1315 East–West Highway
Silver Spring, MD 20910–3282

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Base map digital files provided by Municipality of Anchorage DPW and AK DNR. Information compiled at scales of 1:1200 to 1:24000 during 2000-06. Streams and lake shorelines associated with FHAs digitized from Army Corp. of Engineers flood hazard workmaps from MOA DPW.

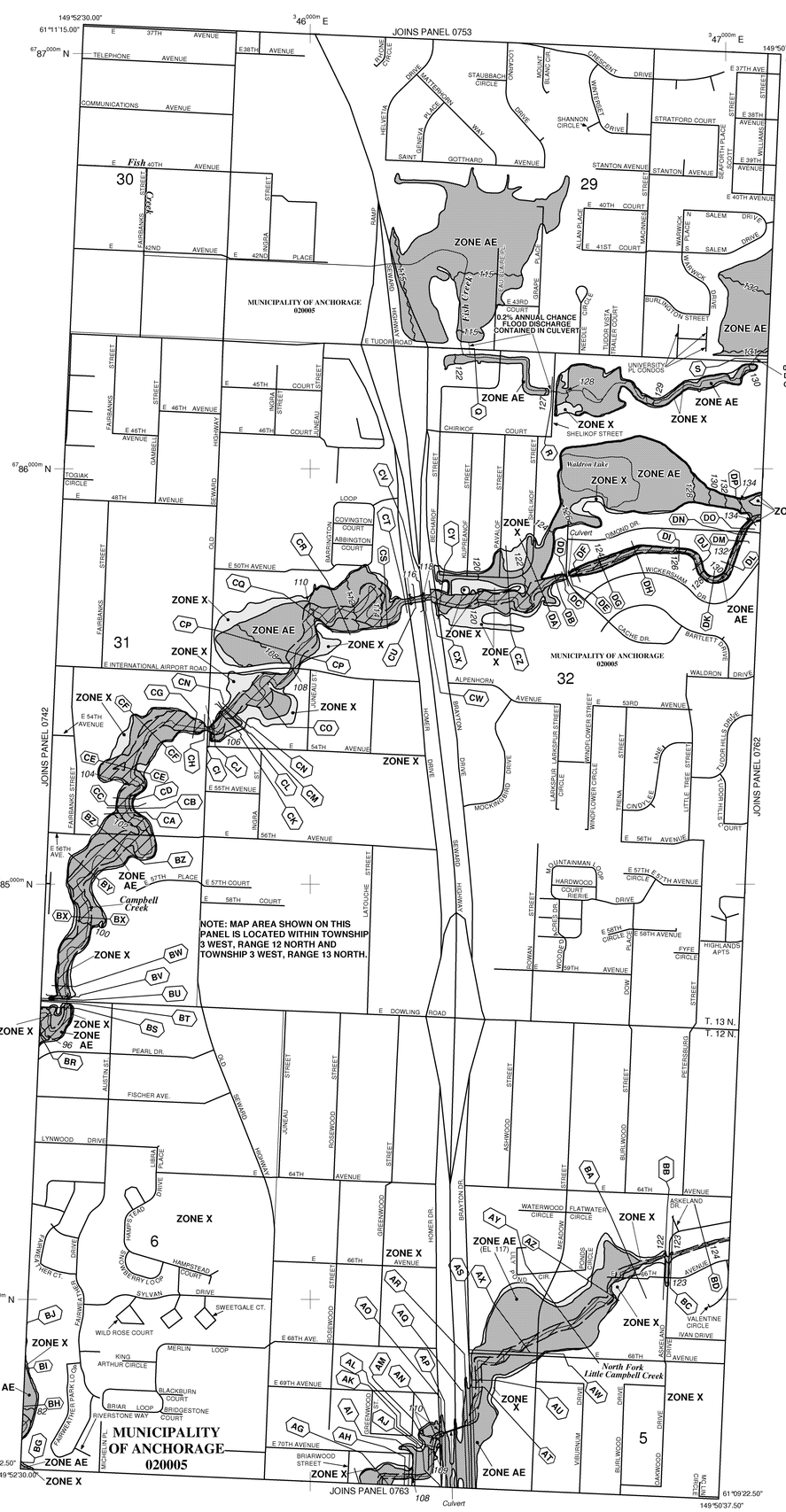
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LEGEND

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- **ZONE A** No Base Flood Elevations determined.
- **ZONE AE** Base Flood Elevations determined.
- **ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
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- **ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- **ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- **ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- **ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- **ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- **ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
- **ZONE D** Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

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- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the Mean Sea Level (MSL) Tidal Datum

- A — A — Cross section line
- 23 — 23 — Transect line
- 97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 4275000mN — 1000-meter Universal Transverse Mercator grid ticks, zone 6
- 6000000 M — 5000-foot grid ticks: New York State Plane coordinate system, east zone (FIPSZONE 3101), Transverse Mercator
- DX5510 × — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

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INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
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MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0761D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 761 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0761	D

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MAP NUMBER
0200050761D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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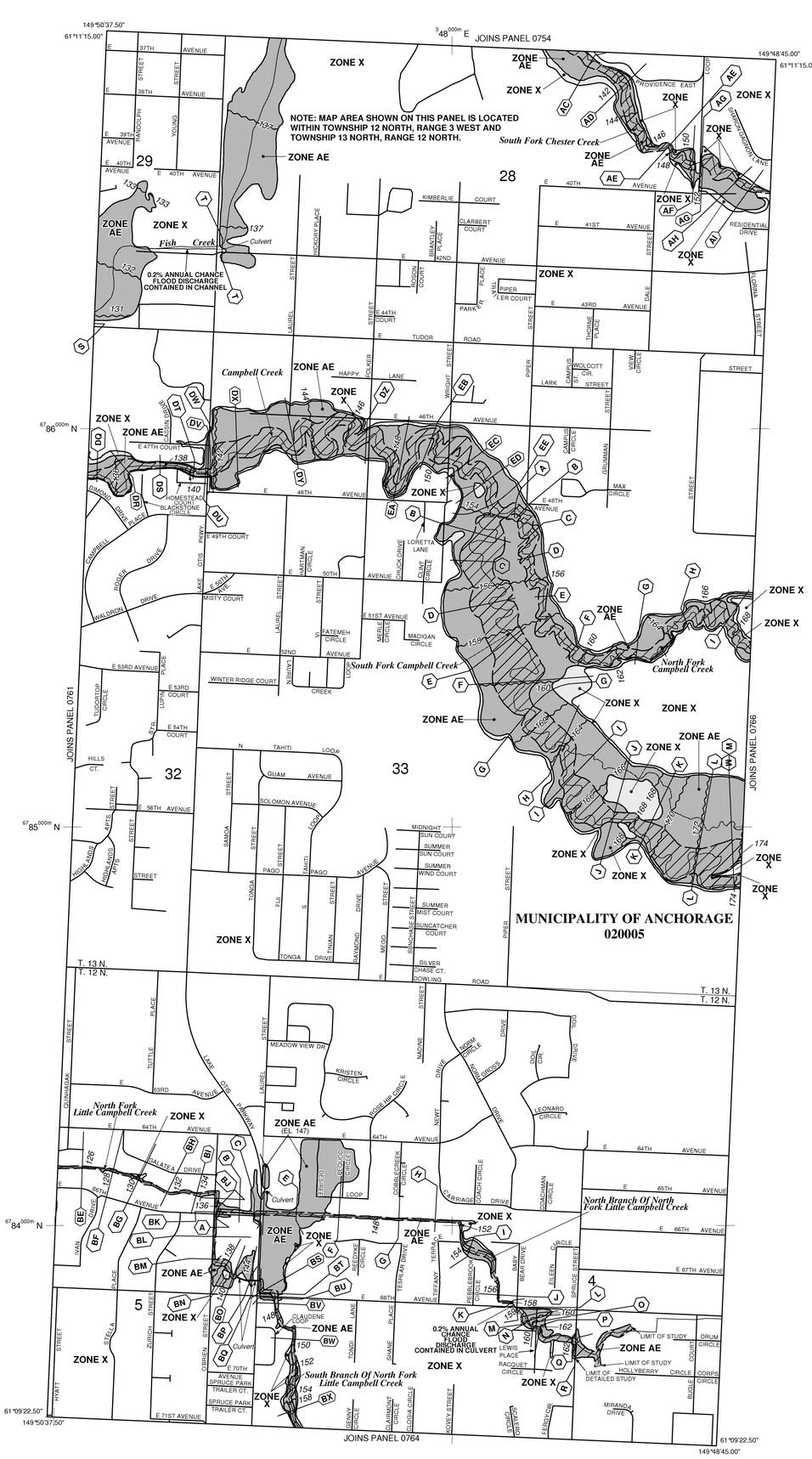
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LEGEND

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ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

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OTHER AREAS

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M1.5	River Mile

MAP REPOSITORY
4700 South Bragaw Street, Anchorage, Alaska 99507 (Maps available for reference only, not for distribution.)

INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
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MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0762D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 762 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0762	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
0200050762D

MAP REVISED
SEPTEMBER 2, 2009

Federal Emergency Management Agency

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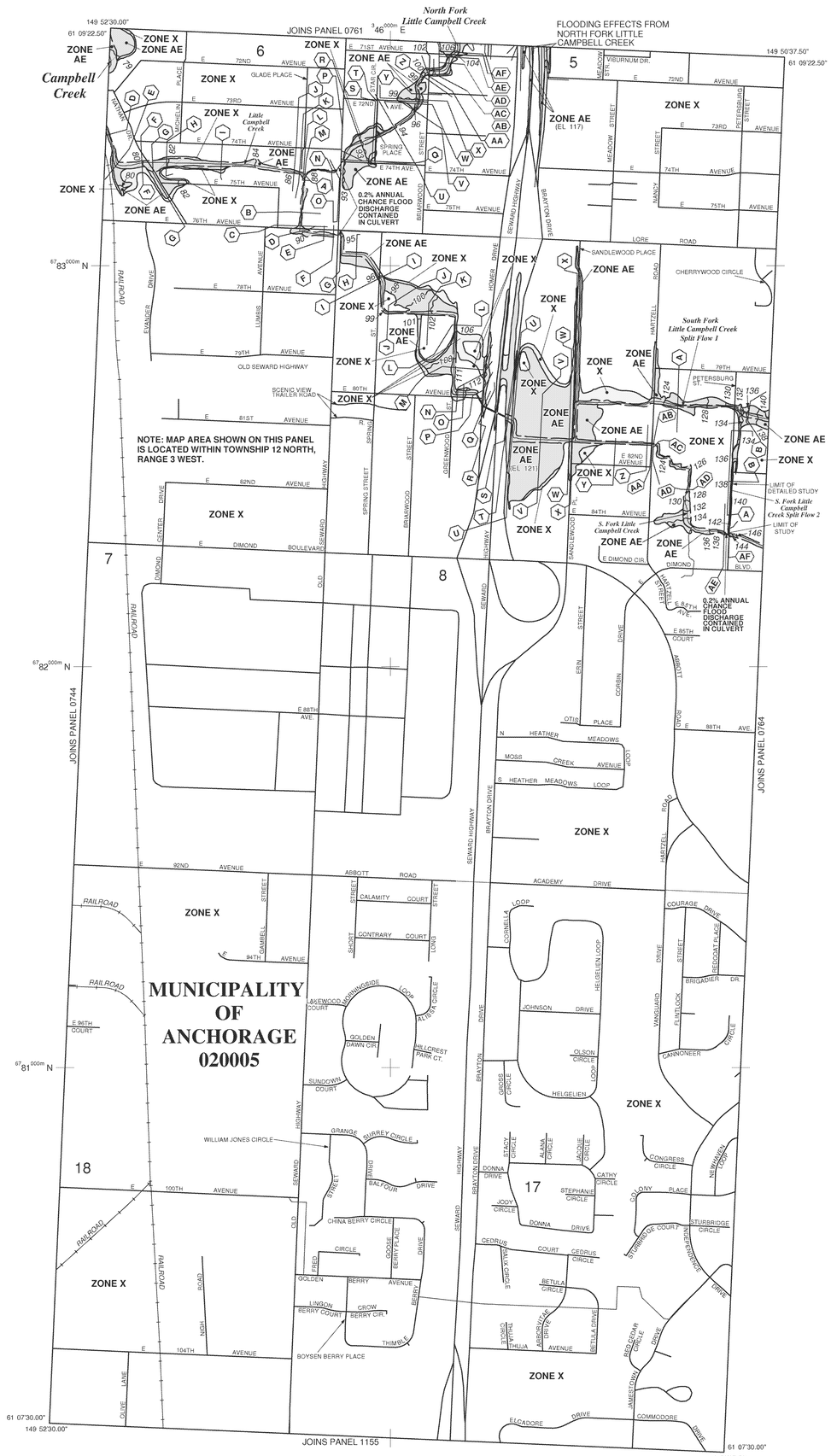
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LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	Floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the Mean Sea Level (MSL) Tidal Datum

A — A	Cross section line
23 - - - - - 23	Transect line
97 07'30", 32 22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4275000mN	1000-meter Universal Transverse Mercator grid ticks, zone 6
6000000 M	5000-foot grid ticks: New York State Plane coordinate system, east zone (FIPSZONE 3101), Transverse Mercator
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORY
4700 South Bragaw Street, Anchorage, Alaska 99507 (Maps available for reference only, not for distribution.)

INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
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MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0763D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 763 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0763	D

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MAP NUMBER 0200050763D

MAP REVISED SEPTEMBER 25, 2009

Federal Emergency Management Agency

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Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

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National Geodetic Survey
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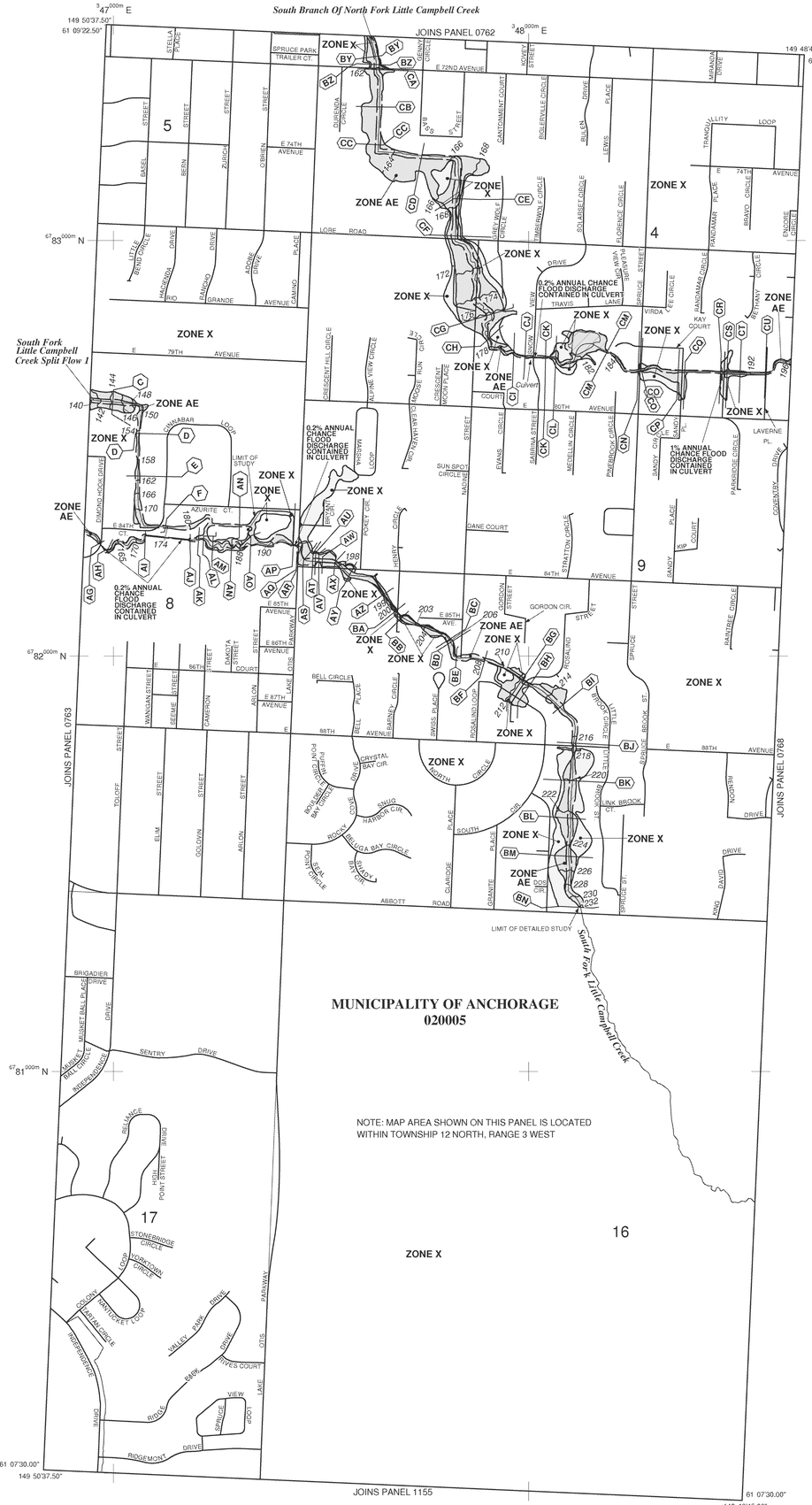
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LEGEND

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FLOODWAY AREAS IN ZONE AE

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OTHER FLOOD AREAS

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NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0764D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 764 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0764	D

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MAP NUMBER
0200050764D
MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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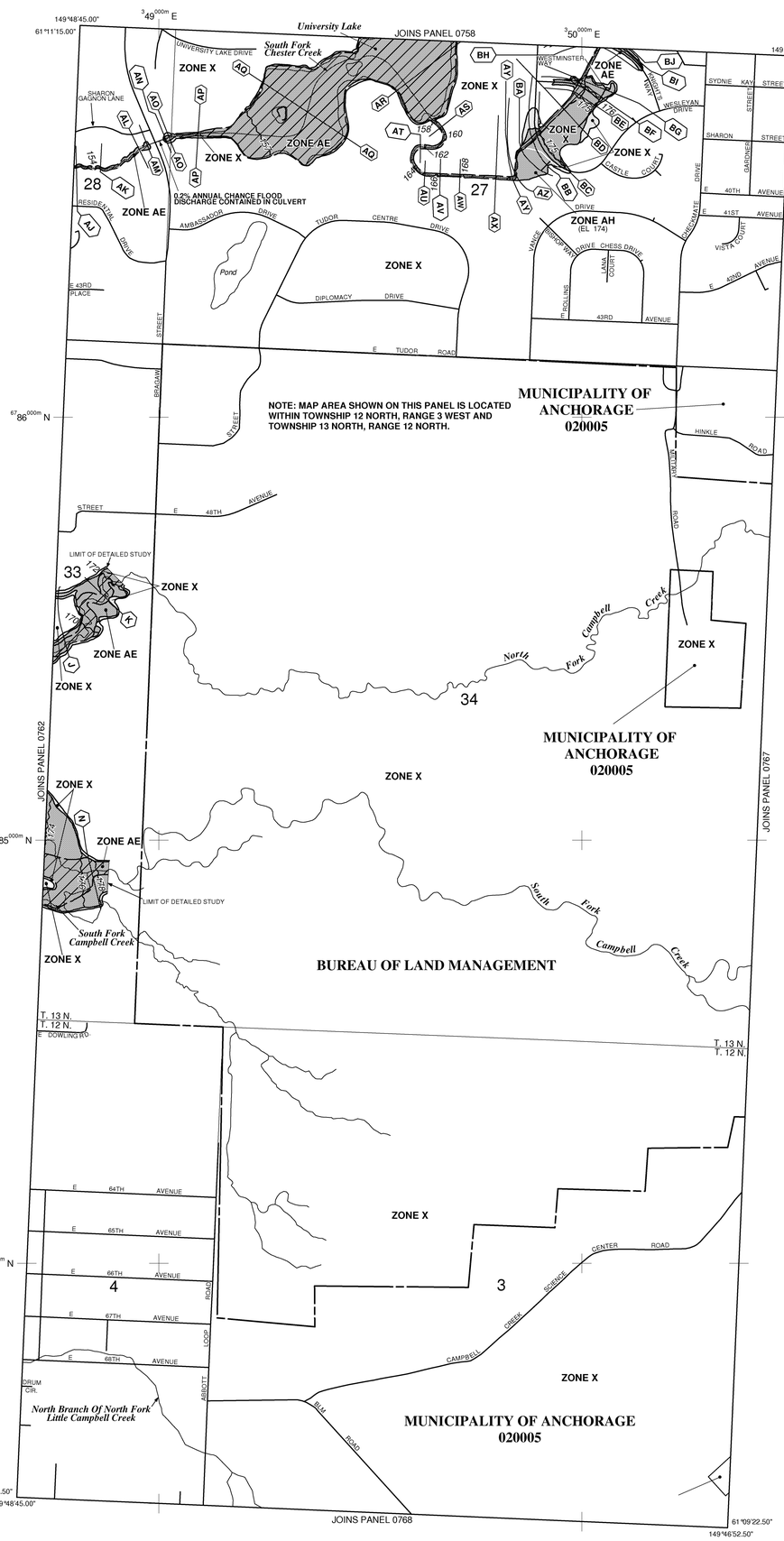
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LEGEND

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NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0766D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
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PANEL 766 OF 1975
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CONTAINS:

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ANCHORAGE, MUNICIPALITY OF	020005	0766	D

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MAP REVISED SEPTEMBER 25, 2009

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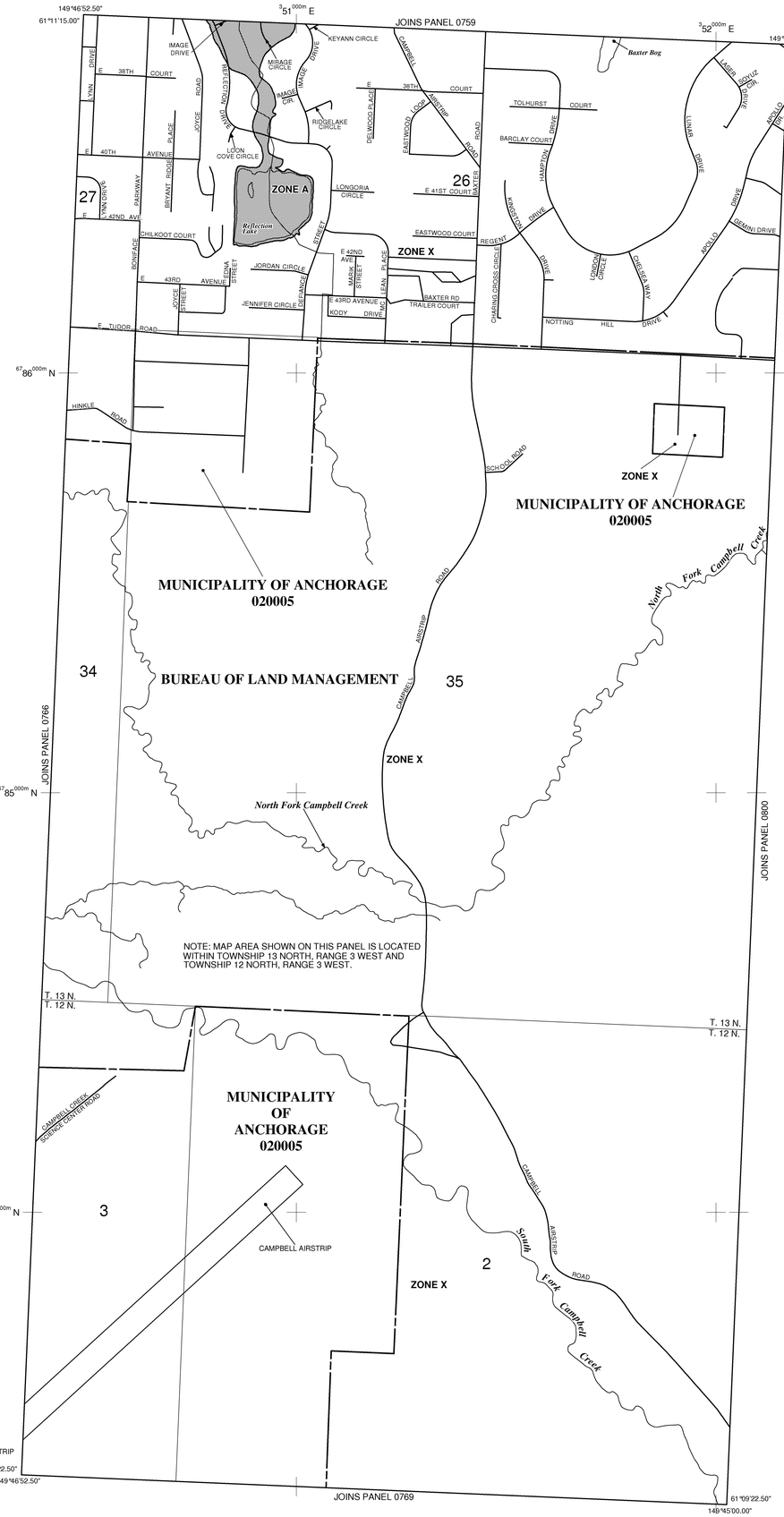
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ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	Floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the Mean Sea Level (MSL) Tidal Datum

A — A	Cross section line
23 — 23	Transect line
97°07'30", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4275 000m N	1000-meter Universal Transverse Mercator grid ticks, zone 6
6000000 M	5000-foot grid ticks: New York State Plane coordinate system, east zone (FIPSZONE 3101), Transverse Mercator
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORY
4700 South Bragaw Street, Anchorage, Alaska 99507 (Maps available for reference only, not for distribution.)

INITIAL NFIP MAP DATE
September 5, 1975
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
September 5, 1975
FLOOD INSURANCE RATE MAP REVISIONS
September 18, 1978 –to update map format.
March 5, 1990 – to change Base Flood Elevations and Special Flood Hazard Areas, reflect updated topographic information and to incorporate previously issued Letters of Map Revision.
July 2, 2002 –to add Special Flood Hazard Areas and Base Flood Elevations.
September 25, 2009 –to update corporate limits, change zone designations and to incorporate previously issued Letters of Map Revision.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1–800–638–6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET
150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0767D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 767 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0767	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
0200050767D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

NOTES TO USERS

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Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

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NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC–3, #9202
1315 East–West Highway
Silver Spring, MD 20910–3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713–3242,** or visit its website at http://www.ngs.noaa.gov/.

Base map digital files provided by Municipality of Anchorage DPW and AK DNR. Information compiled at scales of 1:1200 to 1:24000 during 2000-06. Streams and lake shorelines associated with FHAs digitized from Army Corp. of Engineers flood hazard workmaps from MOA DPW.

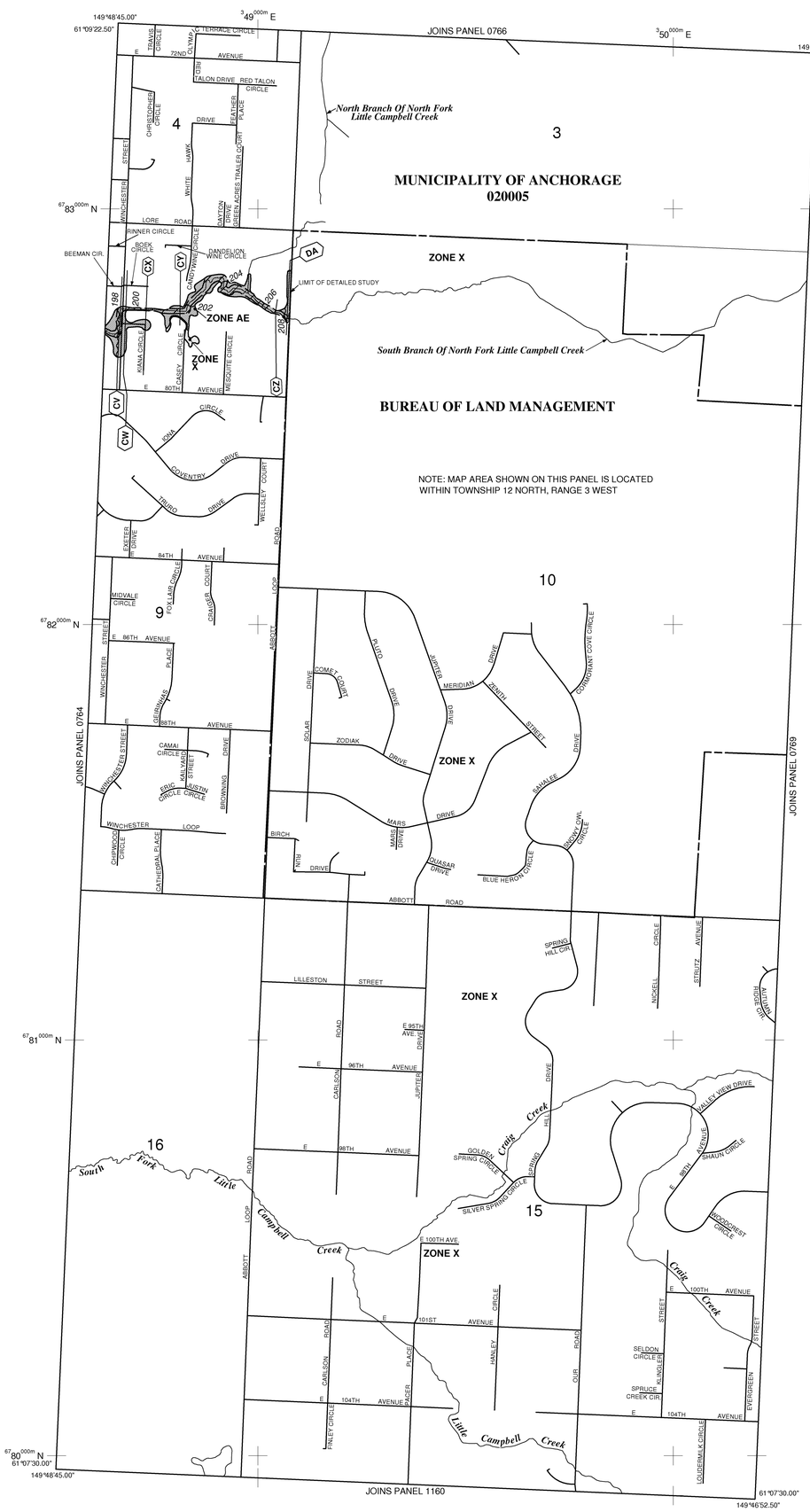
This map reflects more detailed and up–to–date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables *in the Flood Insurance Study report (which contains authoritative hydraulic data)* may reflect stream channel distances that differ from what is shown on this map.

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LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- **ZONE A** No Base Flood Elevations determined.
- **ZONE AE** Base Flood Elevations determined.
- **ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- **ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- **ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- **ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- **ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- **ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- **ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
- **ZONE D** Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the Mean Sea Level (MSL) Tidal Datum

- A–A — Cross section line
- 23–23 — Transect line
- 97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 42 75 000m N — 1000-meter Universal Transverse Mercator grid ticks, zone 6
- 6000000 M — 5000-foot grid ticks: New York State Plane coordinate system, east zone (FIPSZONE 3101), Transverse Mercator
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORY
4700 South Bragaw Street, Anchorage, Alaska 99507 (Maps available for reference only, not for distribution.)

INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
September 5, 1979
FLOOD INSURANCE RATE MAP REVISIONS
September 18, 1978 –to update map format.
March 5, 1990 – to change Base Flood Elevations and Special Flood Hazard Areas, reflect updated topographic information and to incorporate previously issued Letters of Map Revision.
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MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0768D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 768 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0768	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
0200050768D

MAP REVISED
SEPTEMBER 2, 2009

Federal Emergency Management Agency

NOTES TO USERS

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National Geodetic Survey
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1315 East-West Highway
Silver Spring, MD 20910-3282

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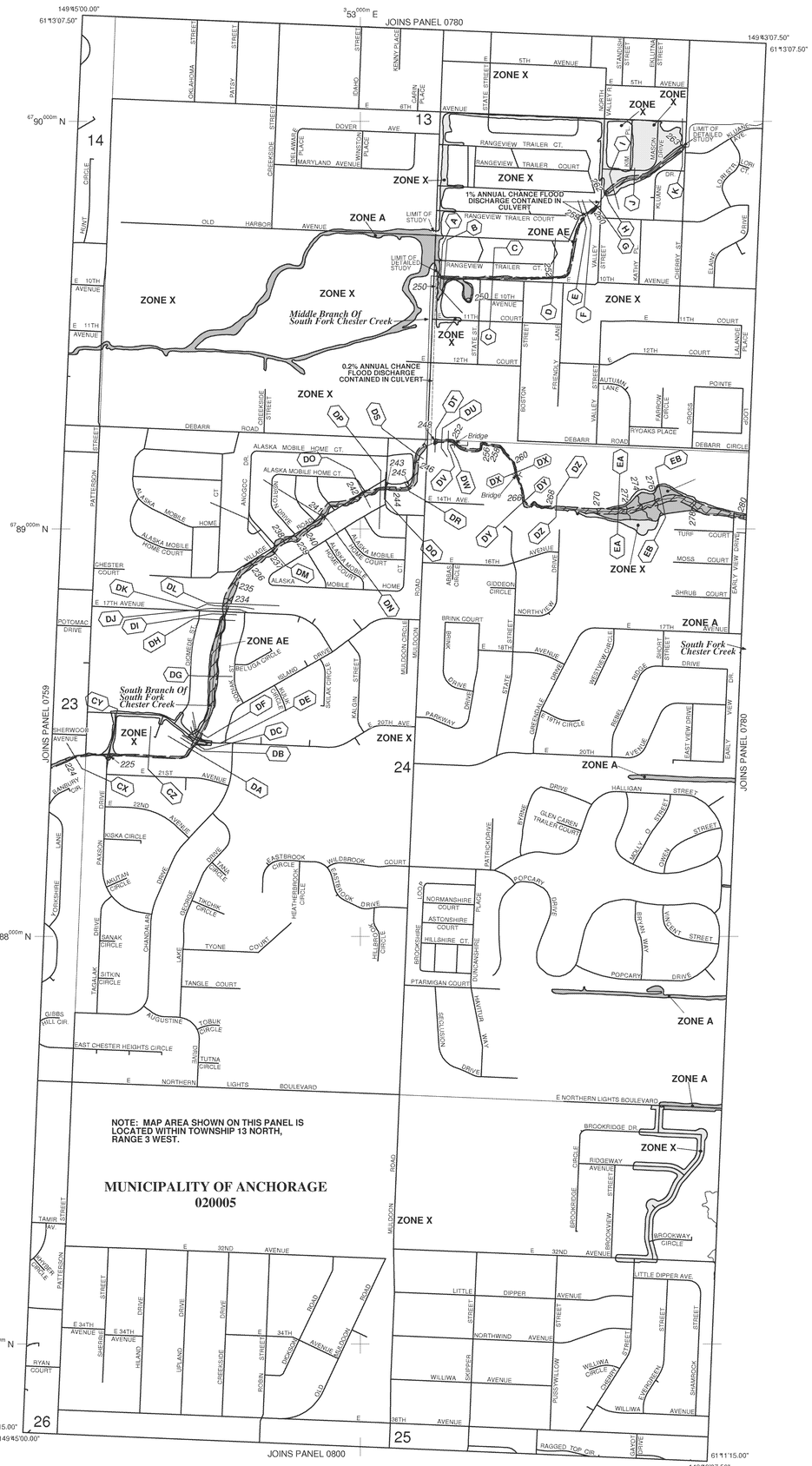
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LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
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FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

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	Floodplain boundary
	Floodway boundary
	Zone D boundary
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M1.5	River Mile

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4700 South Bragaw Street, Anchorage, Alaska 99507 (Maps available for reference only, not for distribution.)

INITIAL NFIP MAP DATE
September 5, 1979
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250 0 500 1000 FEET
150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0778D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 778 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0778	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
0200050778D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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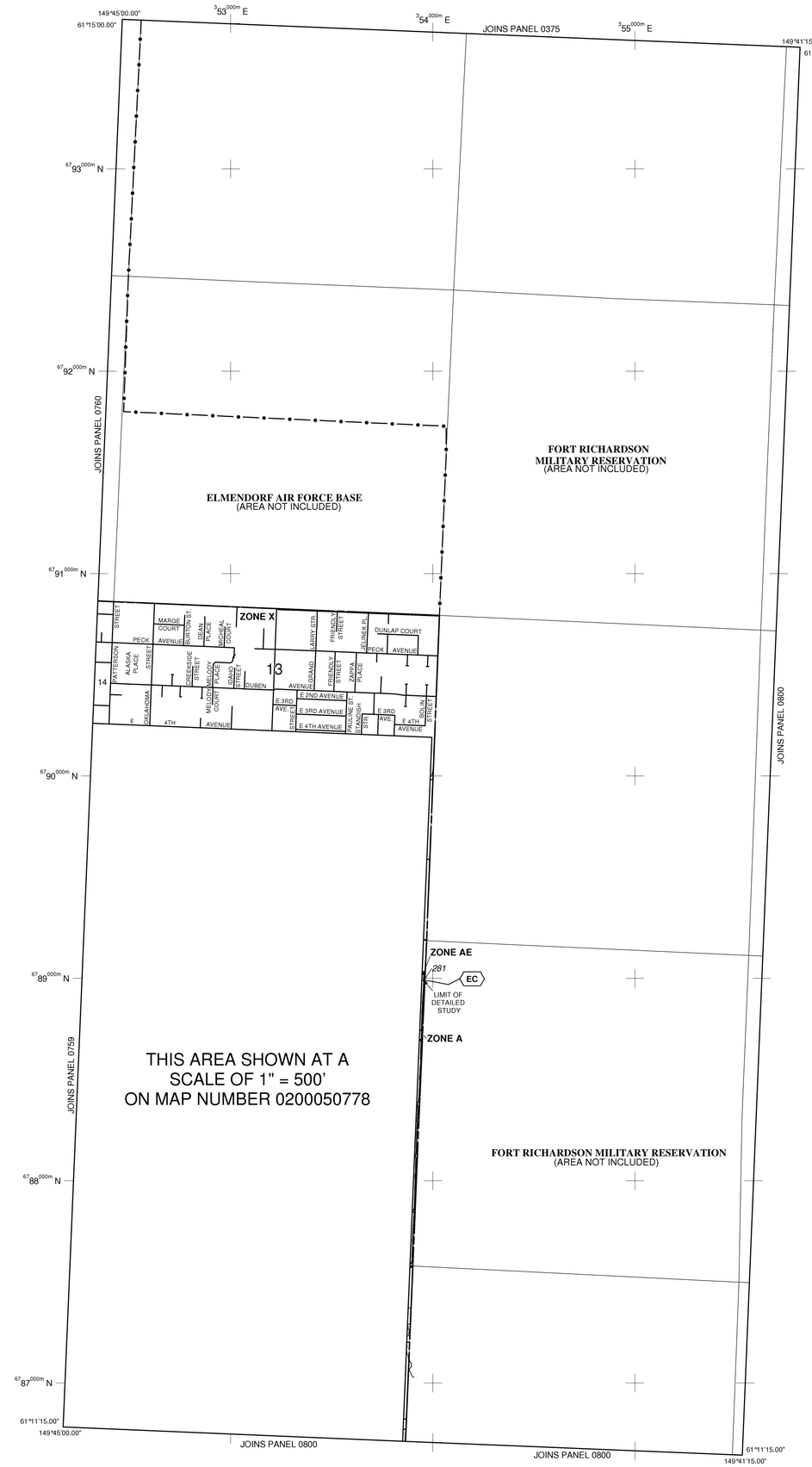
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ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	Floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the Mean Sea Level (MSL) Tidal Datum

A — A	Cross section line
23 — 23	Transect line
97°07'30", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4275 000m N	1000-meter Universal Transverse Mercator grid ticks, zone 6
6000000 M	5000-foot grid ticks: New York State Plane coordinate system, east zone (FIPSZONE 3101), Transverse Mercator
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile

MAP REPOSITORY
4700 South Bragaw Street, Anchorage, Alaska 99507 (Maps available for reference only, not for distribution.)

INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
September 5, 1979
FLOOD INSURANCE RATE MAP REVISIONS
September 18, 1978 –to update map format.
March 5, 1990 – to change Base Flood Elevations and Special Flood Hazard Areas, reflect updated topographic information and to incorporate previously issued Letters of Map Revision.
July 2, 2002 –to add Special Flood Hazard Areas and Base Flood Elevations.
September 25, 2009 –to update corporate limits, change zone designations and to incorporate previously issued Letters of Map Revision.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0780D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 780 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	0780	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
0200050780D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

NOTES TO USERS

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Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures.** Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 6. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

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NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, MD 20910-3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242,** or visit its website at http://www.ngs.noaa.gov/.

Base map digital files provided by Municipality of Anchorage DPW and AK DNR. Information compiled at scales of 1:1200 to 1:24000 during 2000-06. Streams and lake shorelines associated with FHAs digitized from Army Corp. of Engineers flood hazard workmaps from MOA DPW.

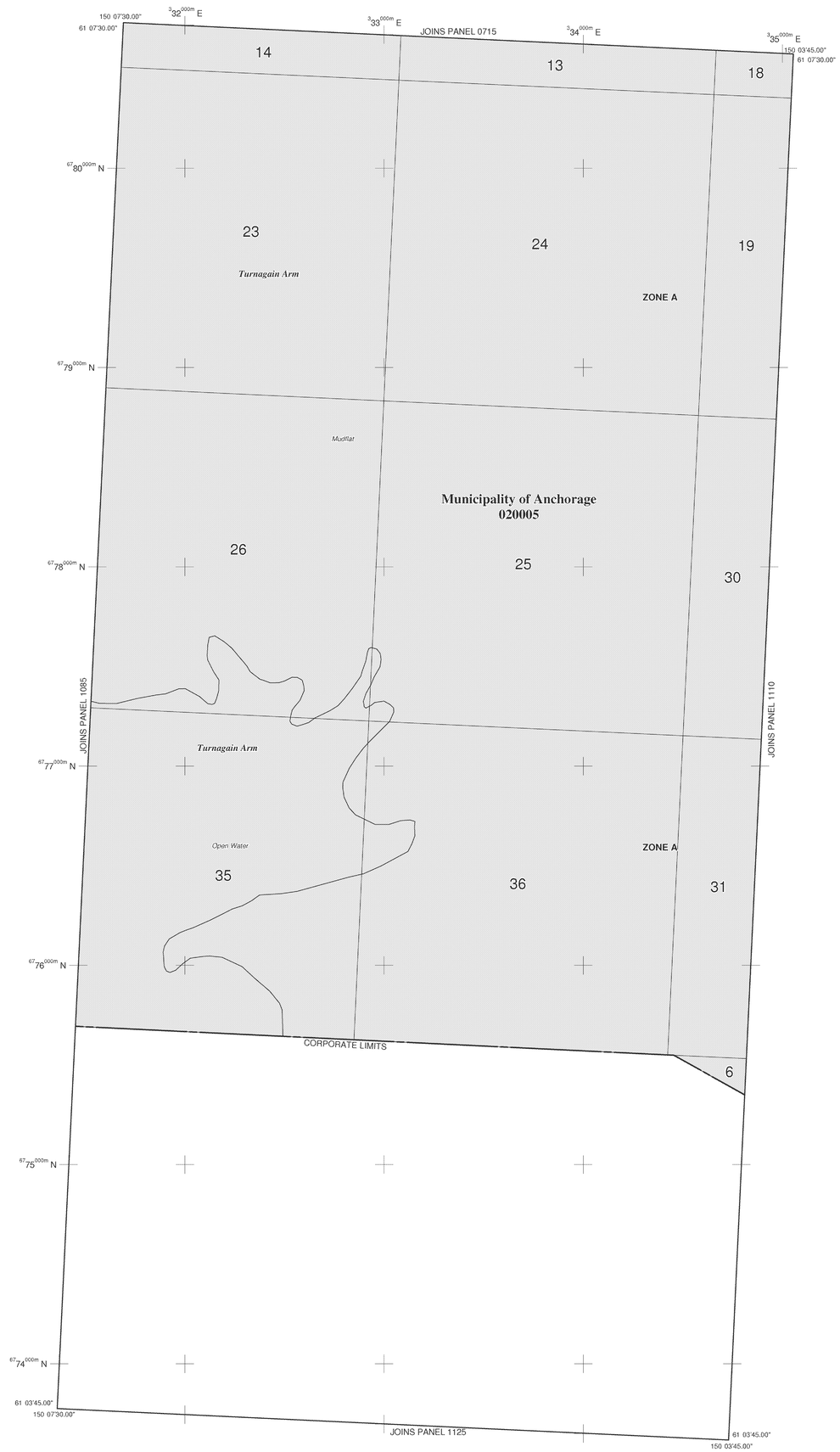
This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables *in the Flood Insurance Study report (which contains authoritative hydraulic data)* may reflect stream channel distances that differ from what is shown on this map.

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Please refer to the separately printed **Map Index** for an overview map showing the layout of map panels for this jurisdiction.

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LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

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	Floodplain boundary
	Floodway boundary
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	CBRS and OPA boundary
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513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the Mean Sea Level (MSL) Tidal Datum

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DX5510	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

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INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
September 5, 1979
FLOOD INSURANCE RATE MAP REVISIONS
September 18, 1987 - to update map format.
March 5, 1990 - to change Base Flood Elevations and Special Flood Hazard Areas, reflect updated topographic information and to incorporate previously issued Letters of Map Revision.
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MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

PANEL 1105D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 1105 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)
CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	1105	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
0200051105D
MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

NATIONAL FLOOD INSURANCE PROGRAM

NOTES TO USERS

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1315 East- West Highway
Silver Spring, MD 20910- 3282

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Base map digital files provided by Municipality of Anchorage DPW and AK DNR. Information compiled at scales of 1:1200 to 1:24000 during 2000-06. Streams and lake shorelines associated with FHAs digitized from Army Corp. of Engineers flood hazard workmaps from MOA DPW.

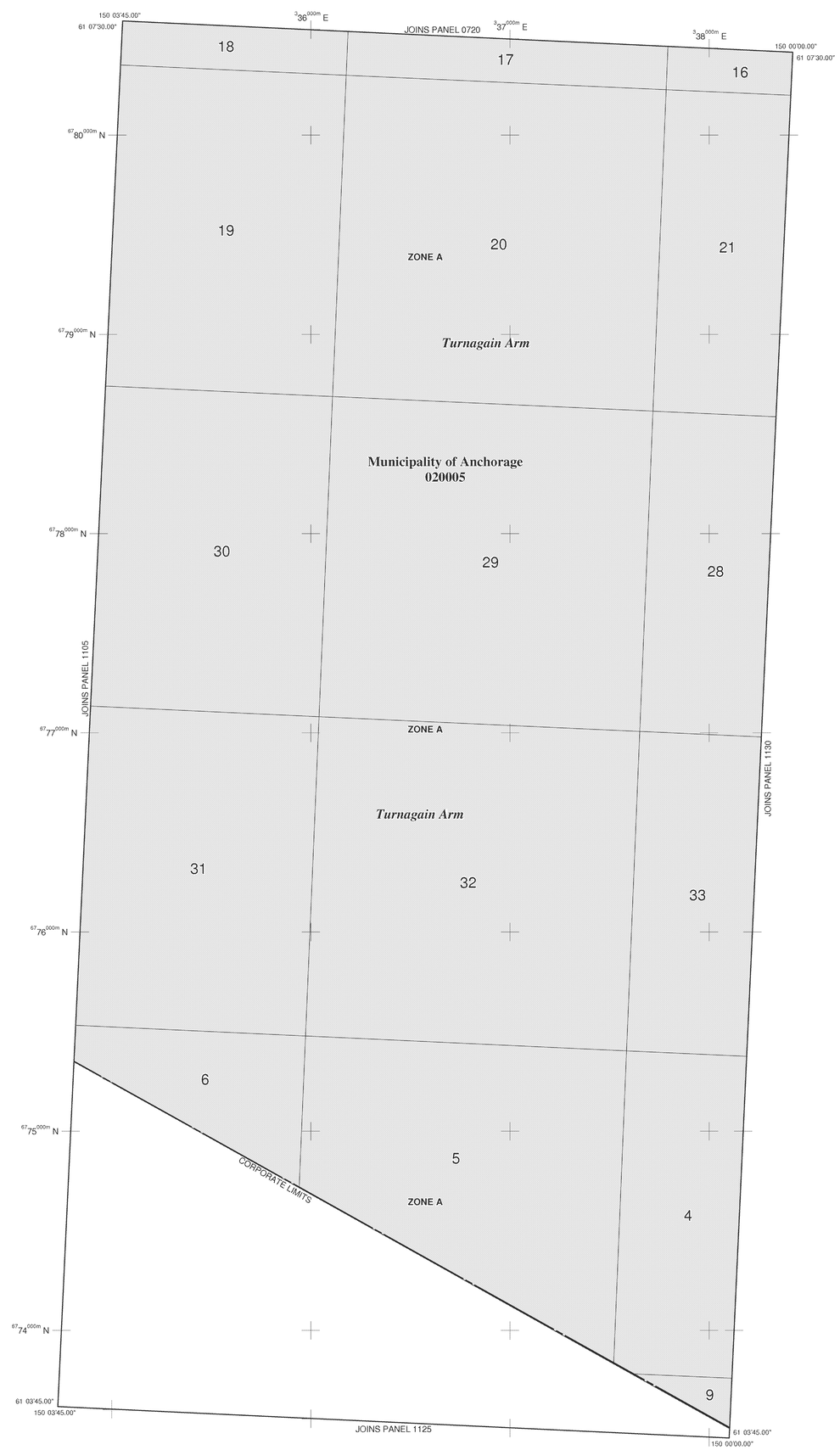
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LEGEND

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ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
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ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
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COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

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	Zone D boundary
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MAP REPOSITORY
4700 South Bragaw Street, Anchorage, Alaska 99507 (Maps available for reference only, not for distribution.)

INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

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500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1110D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 1110 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	1110	D

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MAP NUMBER
0200051110D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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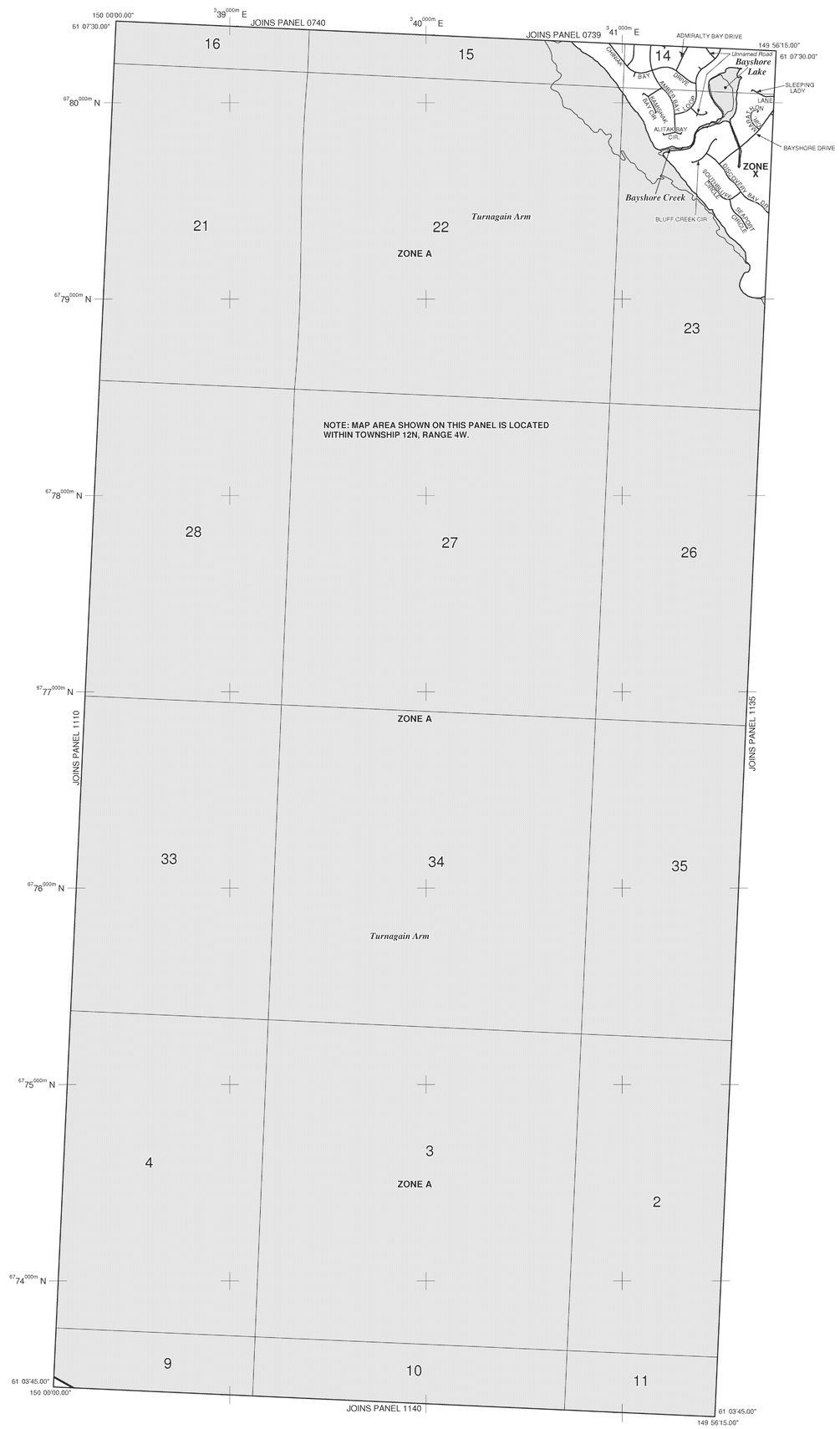
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FLOODWAY AREAS IN ZONE AE

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4700 South Bragaw Street, Anchorage, Alaska 99507 (Maps available for reference only, not for distribution.)

INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
September 5, 1979
FLOOD INSURANCE RATE MAP REVISIONS
September 18, 1987 - to update map format.
March 5, 1990 - to change Base Flood Elevations and Special Flood Hazard Areas, reflect updated topographic information and to incorporate previously issued Letters of Map Revision.
July 2, 2002 - to add Special Flood Hazard Areas and Base Flood Elevations.
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MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

PANEL 1130D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 1130 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)
CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	1130	D

NATIONAL FLOOD INSURANCE PROGRAM

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
0200051130D
MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

NOTES TO USERS

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Coastal Base Flood Elevations shown on this map apply only landward of 0.0' Mean Sea Level (MSL) Tidal Datum. Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

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NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC- 3, #9202
1315 East- West Highway
Silver Spring, MD 20910- 3282

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Base map digital files provided by Municipality of Anchorage DPW and AK DNR. Information compiled at scales of 1:1200 to 1:24000 during 2000-06. Streams and lake shorelines associated with FHAs digitized from Army Corp. of Engineers flood hazard workmaps from MOA DPW.

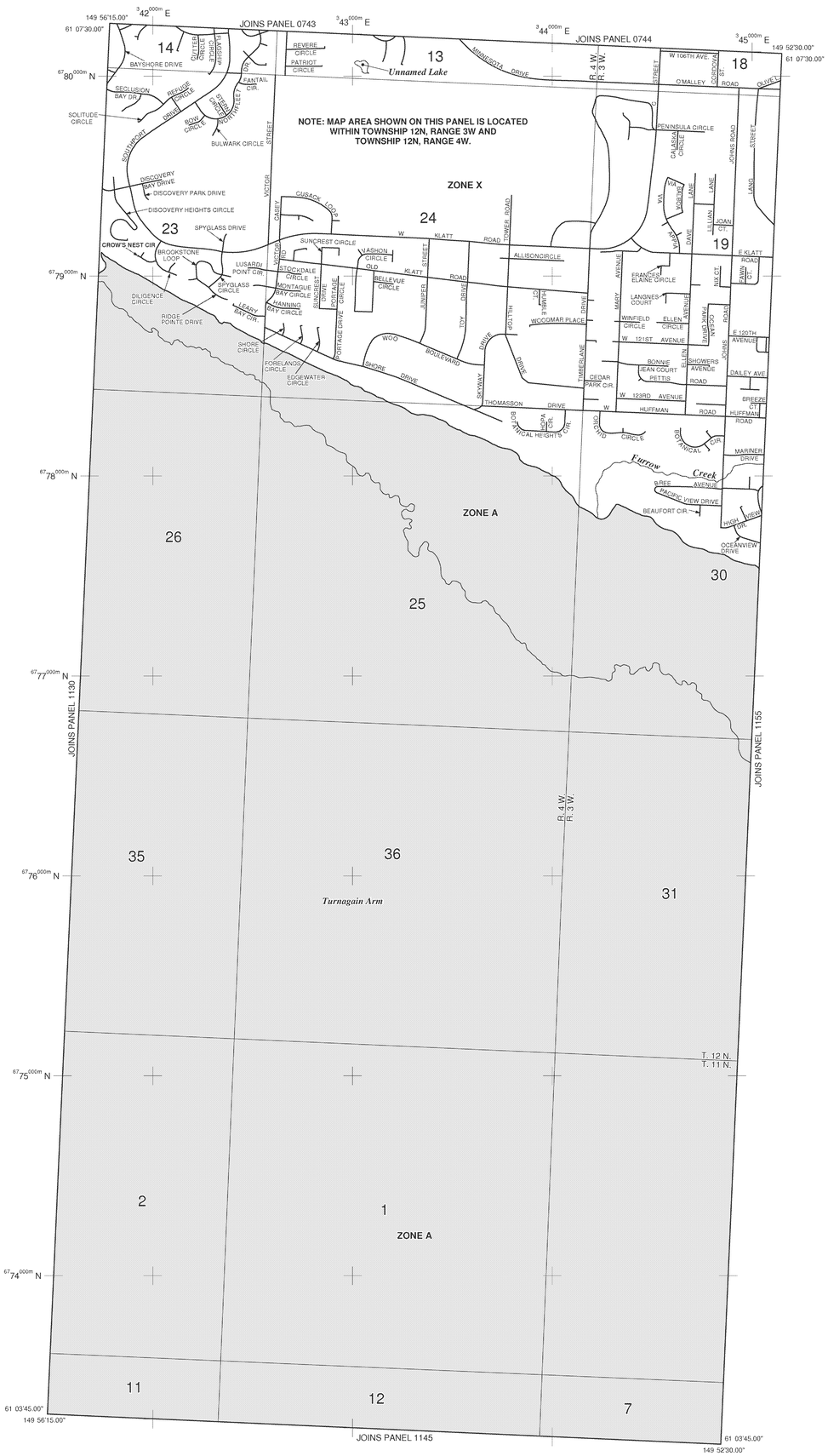
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LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- ZONE A — No Base Flood Elevations determined.
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- ZONE AH — Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
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- ZONE AR — Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE A99 — Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V — Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE — Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the Mean Sea Level (MSL) Tidal Datum

- A — A — Cross section line
- 23 — 23 — Transect line
- 97 07'30", 32 22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 4275000mN — 1000-meter Universal Transverse Mercator grid ticks, zone 6
- 6000000 M — 5000-foot grid ticks: New York State Plane coordinate system, east zone (FIPSZONE 3101), Transverse Mercator
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

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MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
300 0 300 600 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1135D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 1135 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	1135	D

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MAP NUMBER
0200051135D
MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, MD 20910-3282

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Base map digital files provided by Municipality of Anchorage DPW and AK DNR. Information compiled at scales of 1:1200 to 1:24000 during 2000-06. Streams and lake shorelines associated with FHAs digitized from Army Corp. of Engineers flood hazard workmaps from MOA DPW.

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LEGEND

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FLOODWAY AREAS IN ZONE AE

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OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

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	Floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the Mean Sea Level (MSL) Tidal Datum

A — A	Cross section line
23 — 23	Transect line
97°07'30", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
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DX5510	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORY
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INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

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500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1140D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 1140 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)
CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	1140	D

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MAP NUMBER
0200051140D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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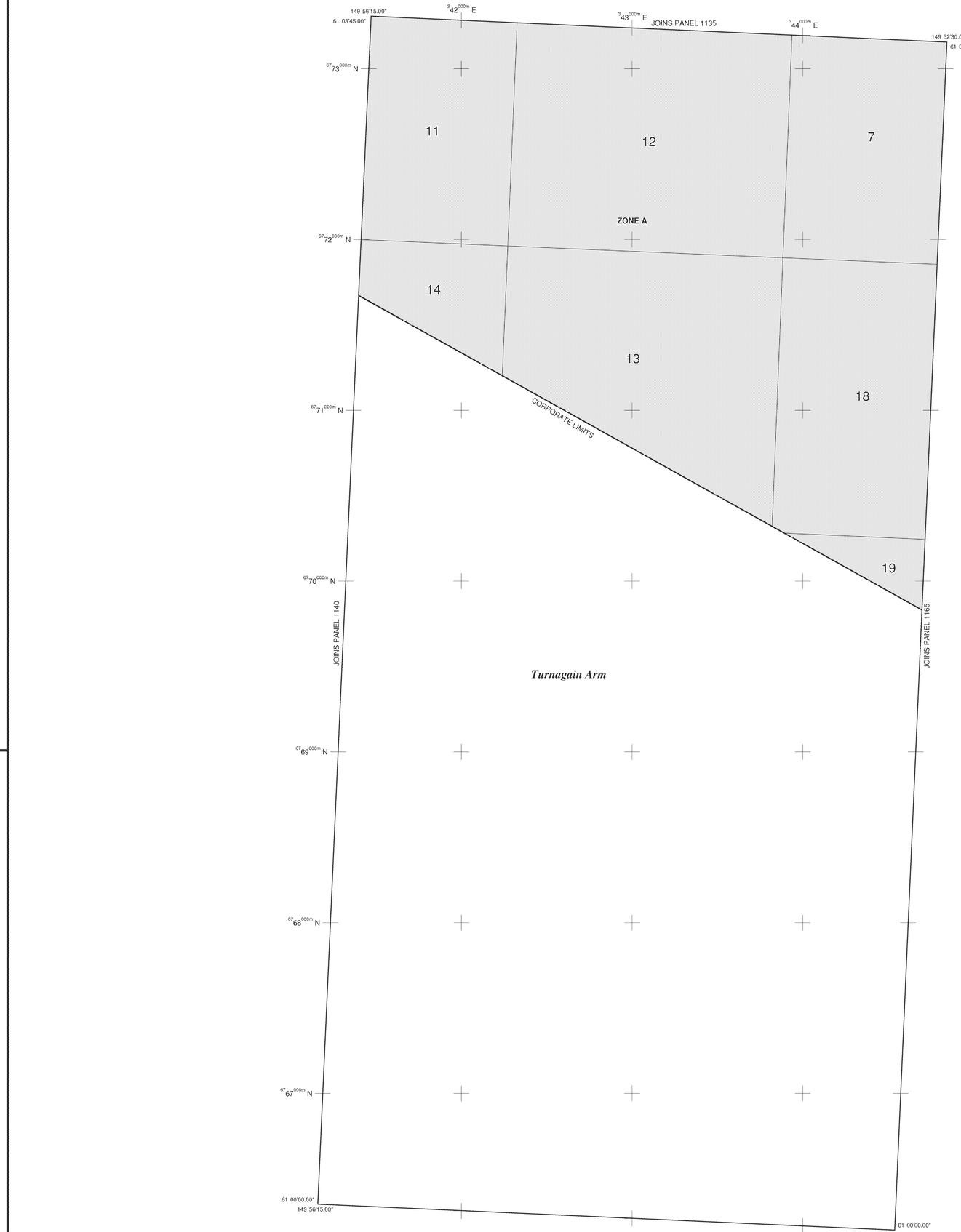
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NFIP

PANEL 1145D

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 1145 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

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MAP REVISED
SEPTEMBER 25, 2009

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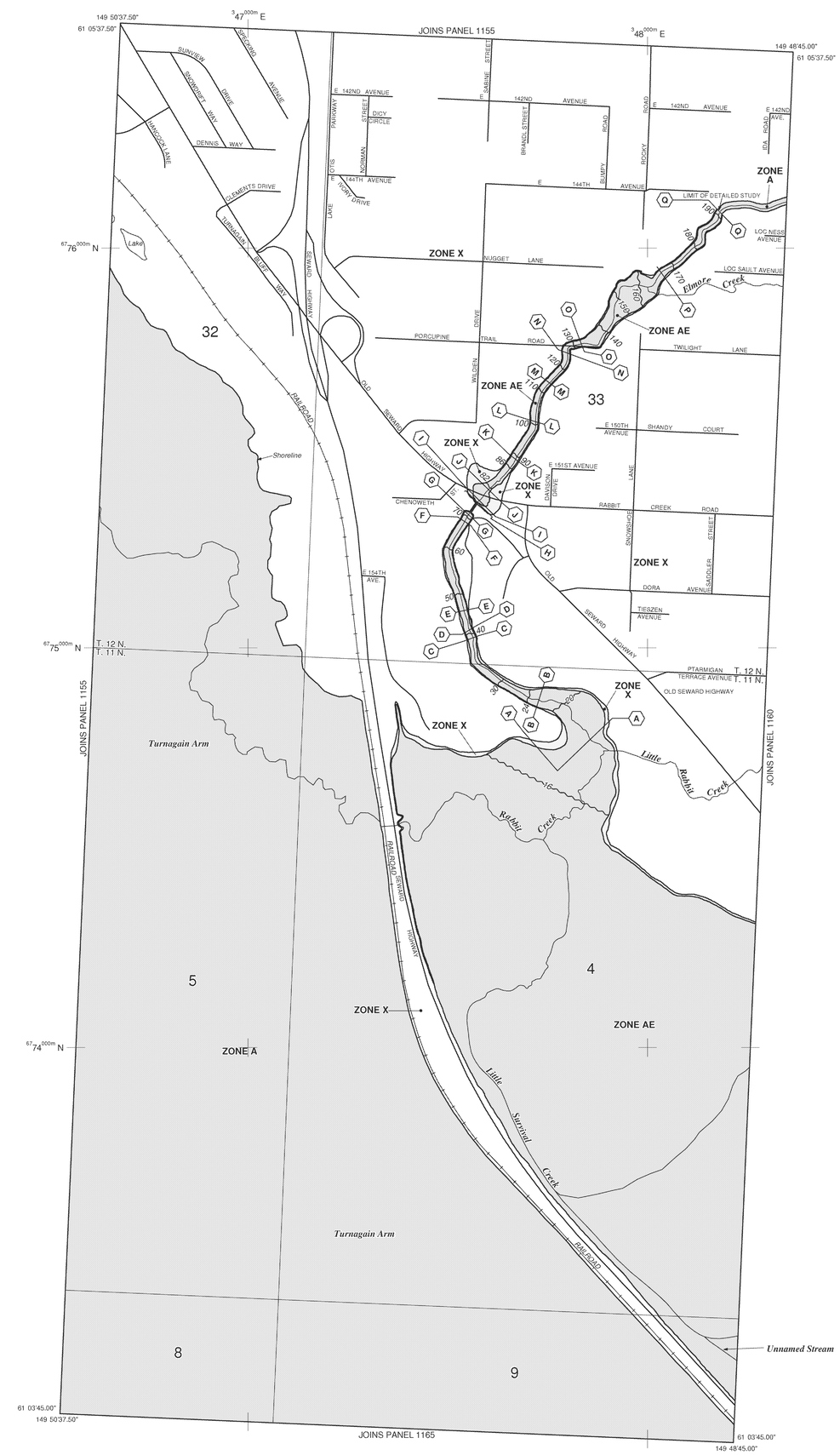
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LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

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OTHERWISE PROTECTED AREAS (OPAs)

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	Floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the Mean Sea Level (MSL) Tidal Datum

A — A	Cross section line
23 - - - - - 23	Transect line
97 07'30", 32 22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4275 000m N	1000-meter Universal Transverse Mercator grid ticks, zone 6
6000000 M	5000-foot grid ticks: New York State Plane coordinate system, east zone (FIPSZONE 3101), Transverse Mercator
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORY
4700 South Bragaw Street, Anchorage, Alaska 99507 (Maps available for reference only, not for distribution.)

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MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NFIP

PANEL 1154D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 1154 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	1154	D

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MAP NUMBER
0200051154D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

NATIONAL FLOOD INSURANCE PROGRAM

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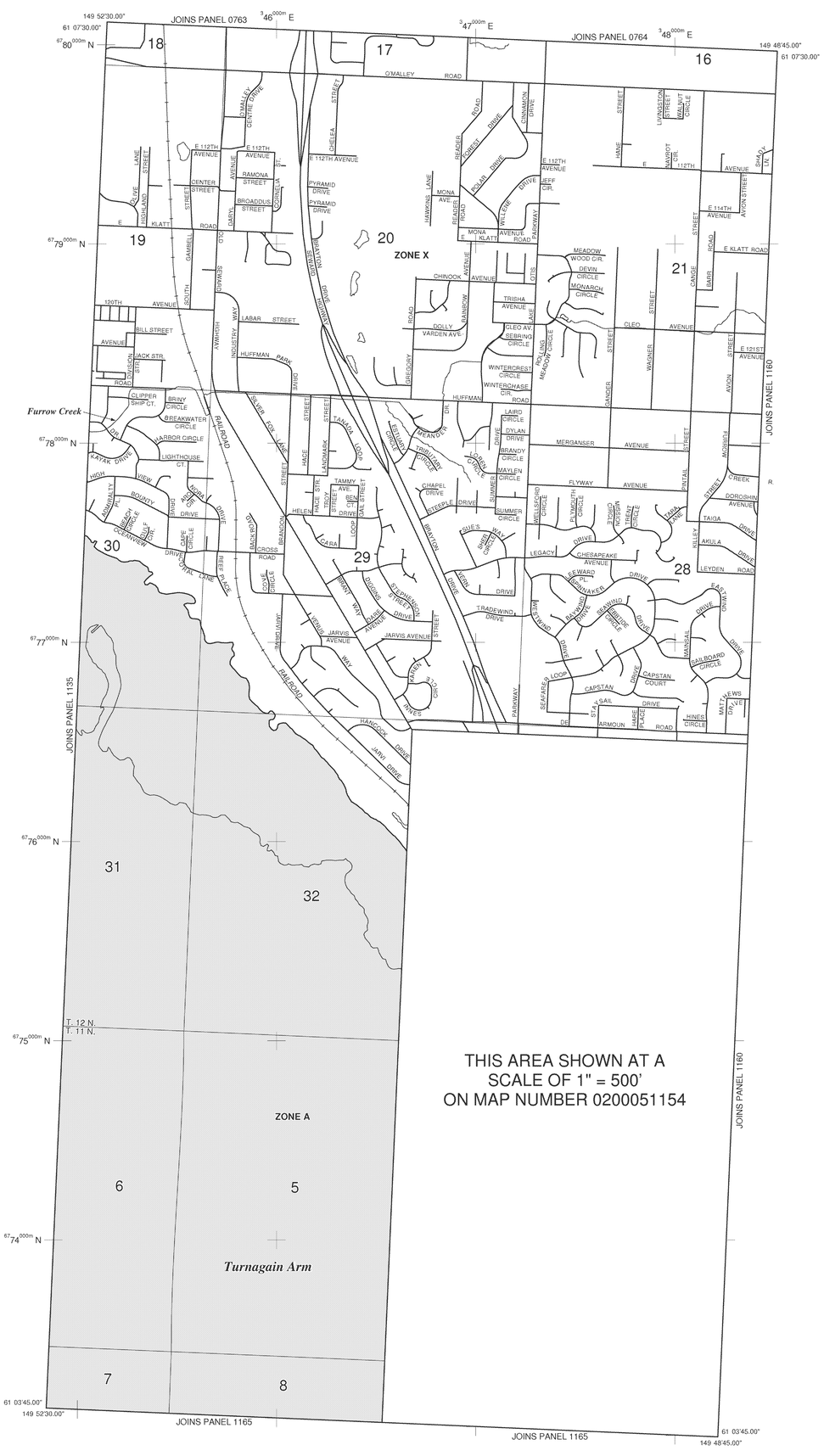
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149 52'30.00"
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3 47 000m E
JOINS PANEL 0764
3 48 000m E
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61 07'30.00"
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ZONE X
ZONE A
Furrow Creek
Turnagain Arm
O'MALLEY ROAD
E 112TH AVENUE
E KLATT ROAD
E 114TH AVENUE
E 121ST AVENUE
120TH AVENUE
LABAR STREET
HUFFMAN ROAD
MERGANSER AVENUE
FLYWAY AVENUE
LEGACY DRIVE
CHESAPEAKE AVENUE
TRADEWIND DRIVE
CAPSTAN DRIVE
CAPSTAN COURT
JARVIS AVENUE
LEYDEN ROAD
AKULA DRIVE
TAIGA DRIVE
DORCHIN AVENUE
CLEO AVENUE
MONA AVE.
TRISHA AVENUE
DOLLY VARDEN AVE.
WINTERCREST CIRCLE
WINTERCHASE CIR.
SEBRING CIRCLE
MEADOW WOOD CIR.
DEVIN CIRCLE
MONARCH CIRCLE
LAIRD CIRCLE
DYLAN DRIVE
BRANDY CIRCLE
MAYLEN CIRCLE
SUMMER CIRCLE
CHAPEL DRIVE
TAMMY AVE.
HELEN CIRCLE
CABA LOOP
CROSS ROAD
COVE CIRCLE
BRANDON ROAD
STEPHENSON STREET
DOUGLAS DRIVE
BRYANT WAY
DANE AVENUE
JARVIS AVENUE
HANCOCK DRIVE
JARVI DRIVE
DAMRON WAY
KANSON CIRCLE
HAYES CIRCLE
HAYES PARKWAY
SEAFARER LOOP
SAIL DRIVE
ARMOUR PLACE
HINES CIRCLE
MAST DRIVE
MANUAL DRIVE
MAINBOARD CIRCLE
EDWARD CIRCLE
BRADFORD CIRCLE
SEAWARD CIRCLE
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NORTHWARD DRIVE
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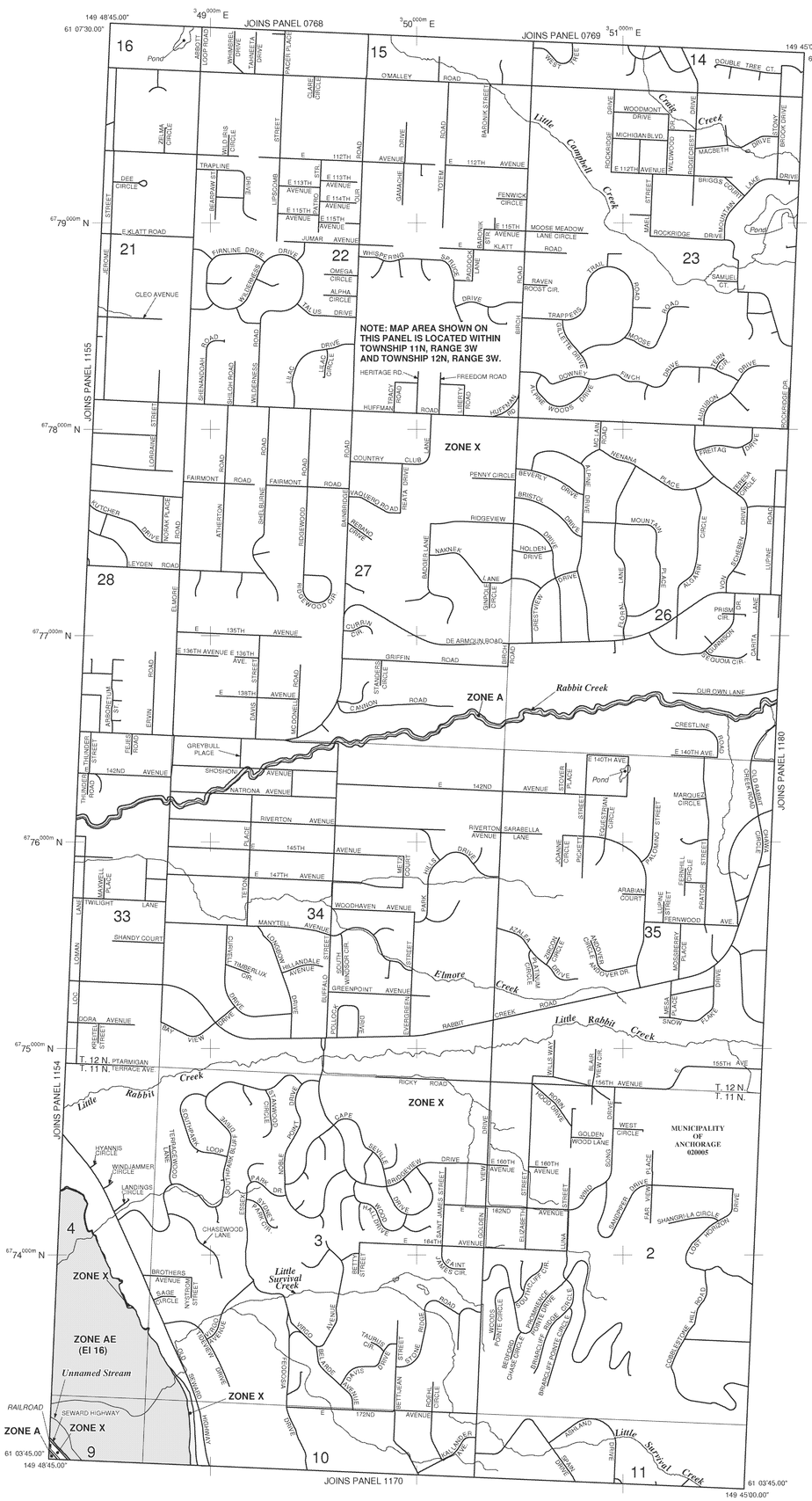
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NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1160D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 1160 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	1160	D

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0200051160D
MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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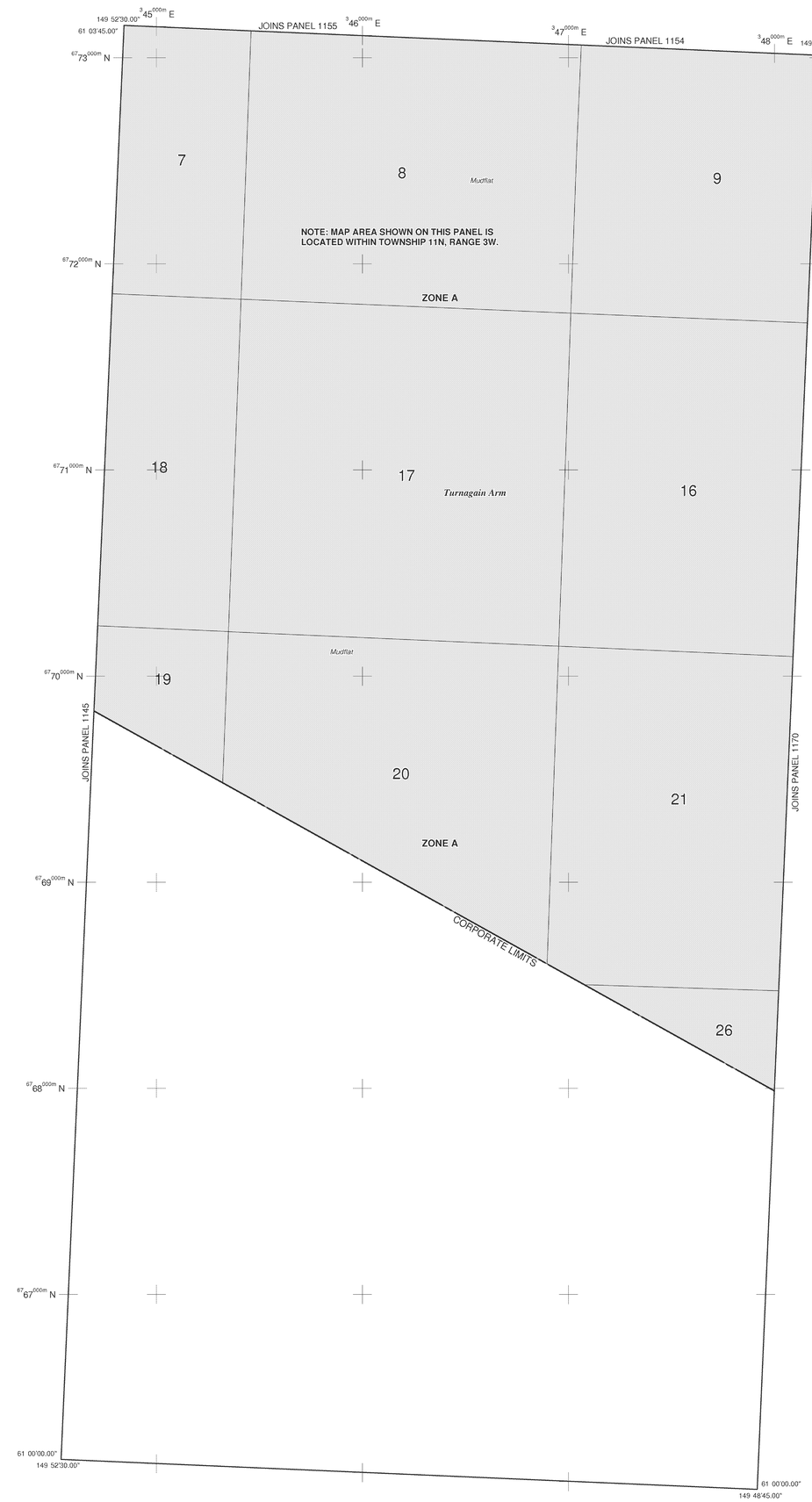
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LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	Floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the Mean Sea Level (MSL) Tidal Datum

A — A	Cross section line
23 - - - - - 23	Transect line
97 07'30", 32 22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4275 000m N	1000-meter Universal Transverse Mercator grid ticks, zone 6
6000000 M	5000-foot grid ticks: New York State Plane coordinate system, east zone (FIPSZONE 3101), Transverse Mercator
DX5510	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORY
4700 South Bragaw Street, Anchorage, Alaska 99507 (Maps available for reference only, not for distribution.)

INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
September 5, 1979
FLOOD INSURANCE RATE MAP REVISIONS
September 18, 1987 - to update map format.
March 5, 1990 - to change Base Flood Elevations and Special Flood Hazard Areas, reflect updated topographic information and to incorporate previously issued Letters of Map Revision.
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MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1165D

FIRM

FLOOD INSURANCE RATE MAP

MUNICIPALITY OF

ANCHORAGE, ALASKA

ANCHORAGE DIVISION COUNTY

PANEL 1165 OF 1975

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	1165	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
0200051165D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

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The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 6. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the Mean Sea Level tidal datum. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum.** For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

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NOAA, N/NGS12
National Geodetic Survey
SSMC- 3, #9202
1315 East- West Highway
Silver Spring, MD 20910- 3282

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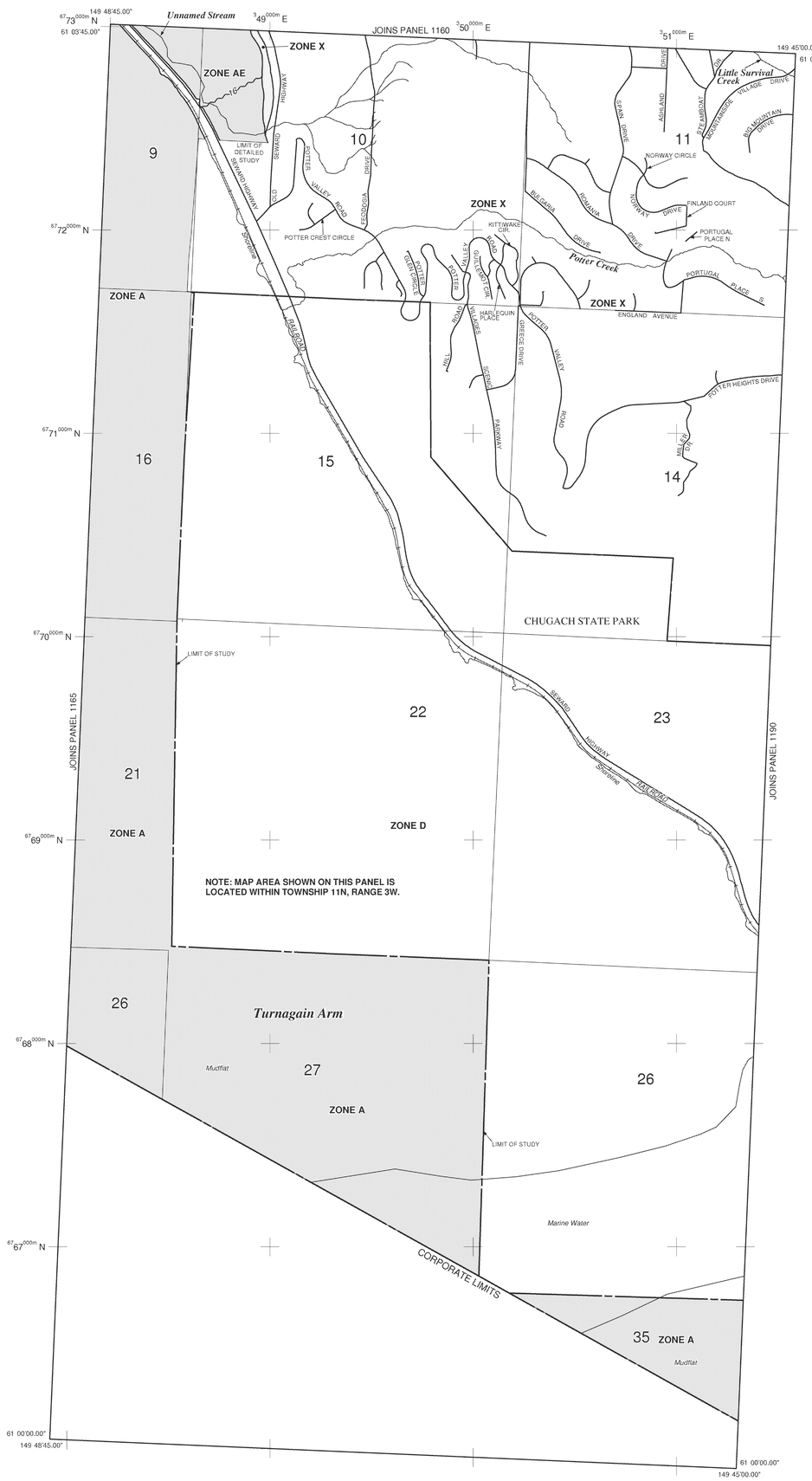
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ZONE A	No Base Flood Elevations determined.
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FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
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COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

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	Floodplain boundary
	Floodway boundary
	Zone D boundary
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A — A	Cross section line
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500 0 1000 2000 FEET
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NFIP

PANEL 1170D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 1170 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)
CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	1170	D

NATIONAL FLOOD INSURANCE PROGRAM

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MAP NUMBER
0200051170D
MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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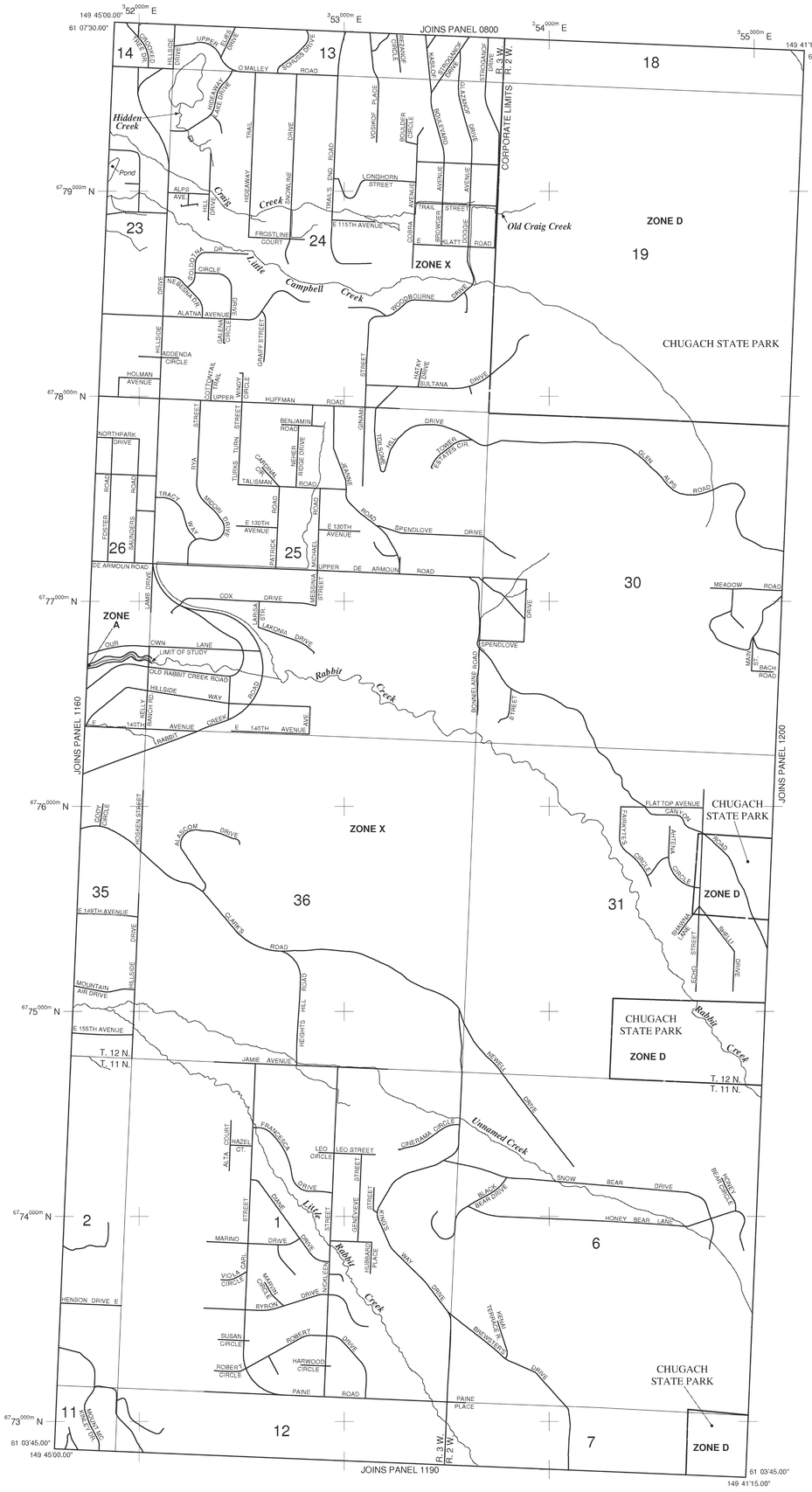
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LEGEND

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FLOODWAY AREAS IN ZONE AE

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OTHER FLOOD AREAS

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300 0 300 600 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1180D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 1180 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	1180	D

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MAP NUMBER
0200051180D
MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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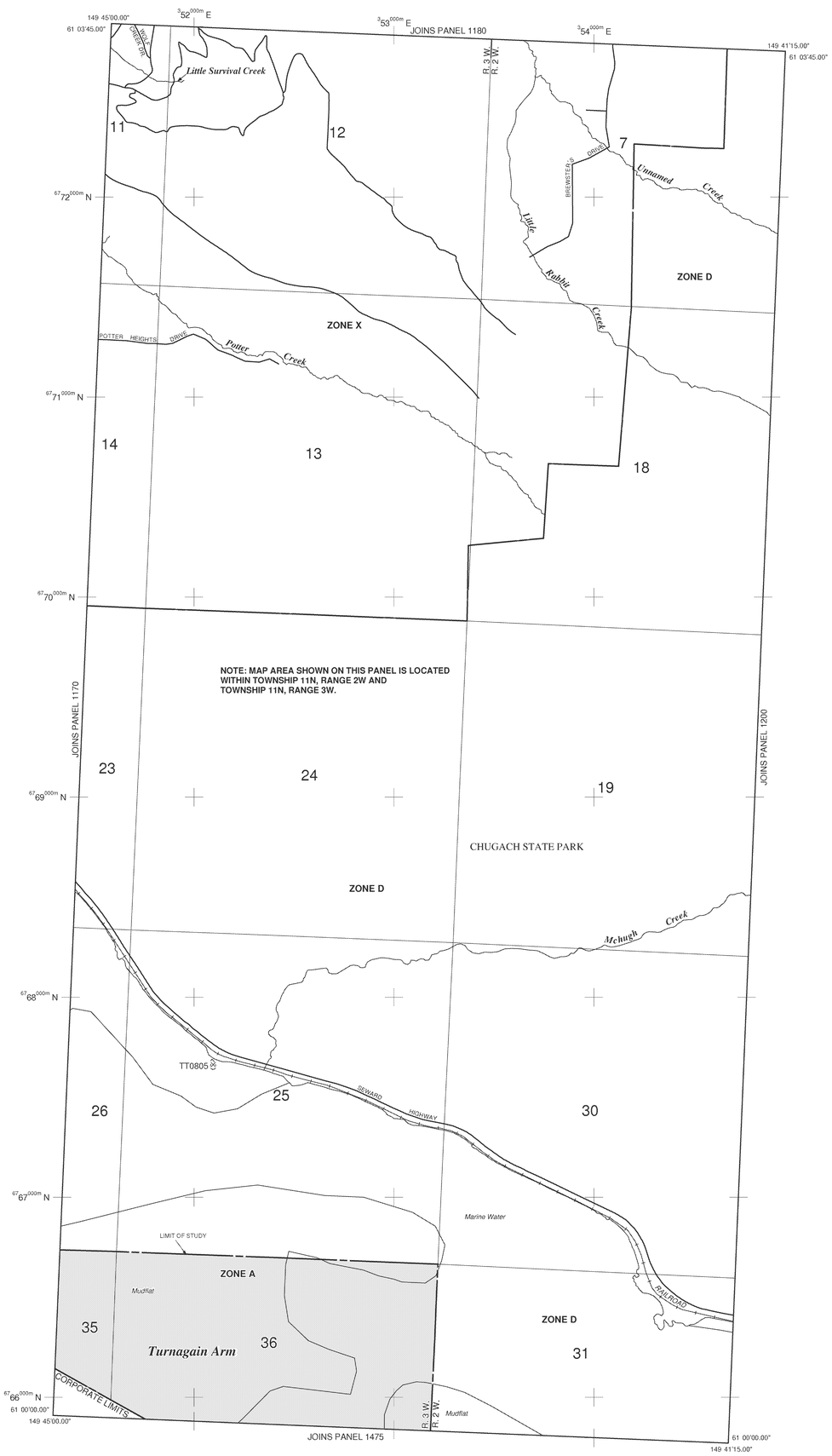
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LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	Floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the Mean Sea Level (MSL) Tidal Datum

A — A	Cross section line
23 - - - - - - - 23	Transect line
97 07'30", 32 22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4275 000m N	1000-meter Universal Transverse Mercator grid ticks, zone 6
6000000 M	5000-foot grid ticks: New York State Plane coordinate system, east zone (FIPSZONE 3101), Transverse Mercator
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORY
4700 South Bragaw Street, Anchorage, Alaska 99507 (Maps available for reference only, not for distribution.)

INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
September 5, 1979
FLOOD INSURANCE RATE MAP REVISIONS
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MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

PANEL 1190D

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 1190 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	1190	D

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MAP NUMBER 0200051190D

MAP REVISED SEPTEMBER 25, 2009

Federal Emergency Management Agency

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Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

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National Geodetic Survey
SSMC- 3, #9202
1315 East- West Highway
Silver Spring, MD 20910- 3282

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Base map digital files provided by Municipality of Anchorage DPW and AK DNR. Information compiled at scales of 1:1200 to 1:24000 during 2000-06. Streams and lake shorelines associated with FHAs digitized from Army Corp. of Engineers flood hazard workmaps from MOA DPW.

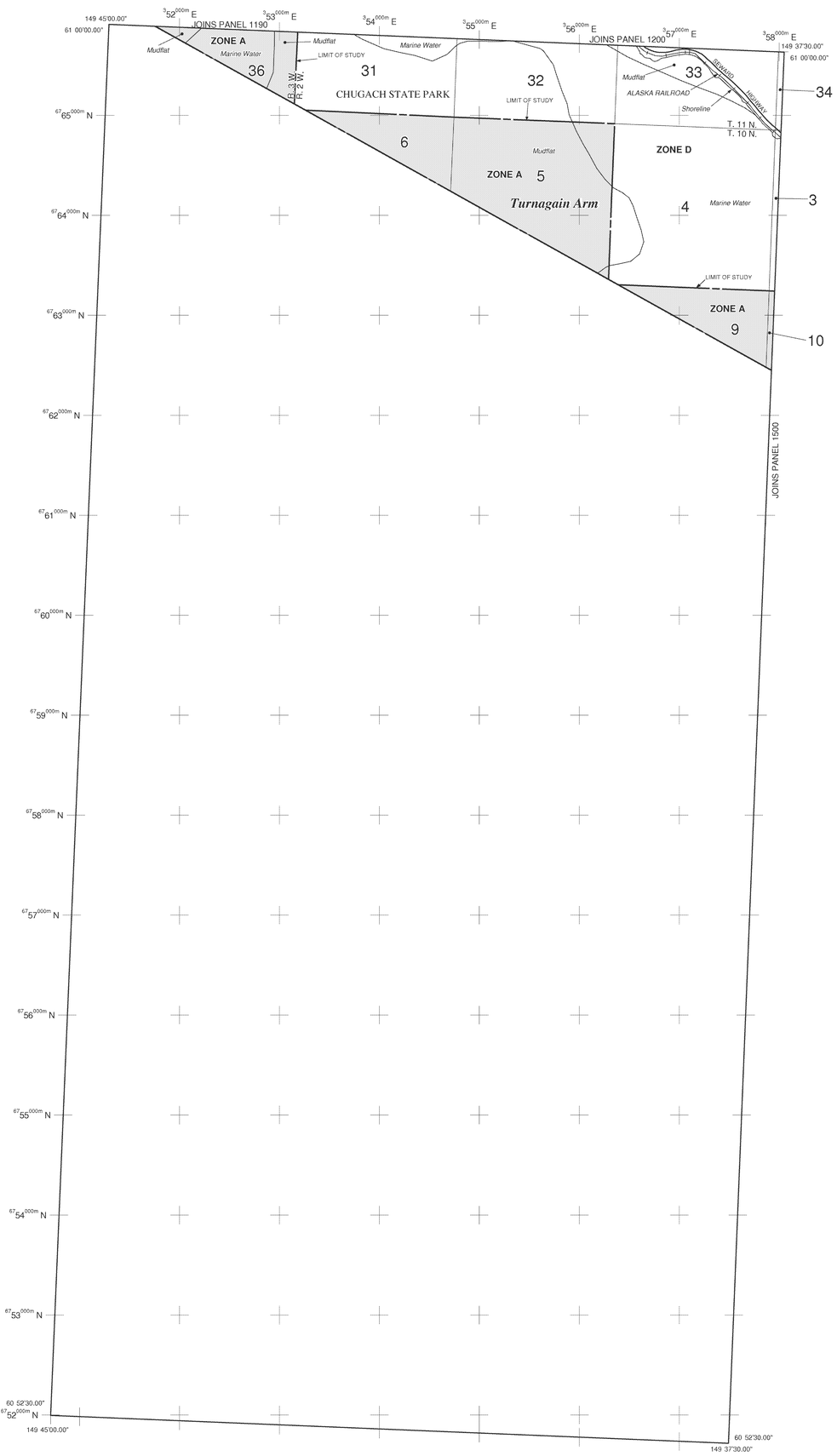
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FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
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COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

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	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

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DX5510	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

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INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
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MAP SCALE 1" = 2000'
1000 0 2000 4000 FEET
600 0 600 1200 METERS

NFIP

PANEL 1475D

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 1475 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)
CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	1475	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
0200051475D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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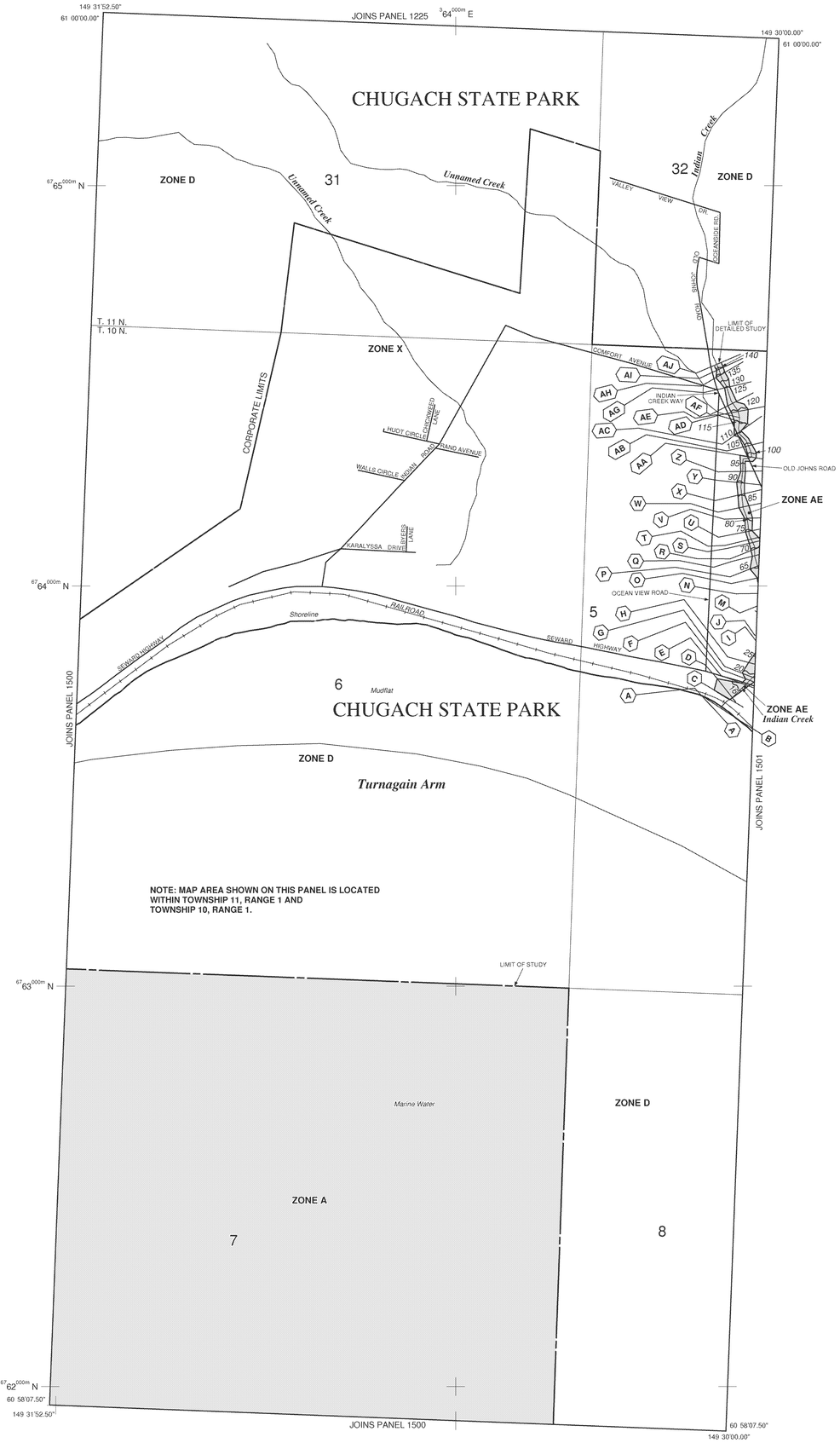
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LEGEND

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FLOODWAY AREAS IN ZONE AE

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MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NFIP

PANEL 1482D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 1482 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	1482	D

NATIONAL FLOOD INSURANCE PROGRAM

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MAP NUMBER
0200051482D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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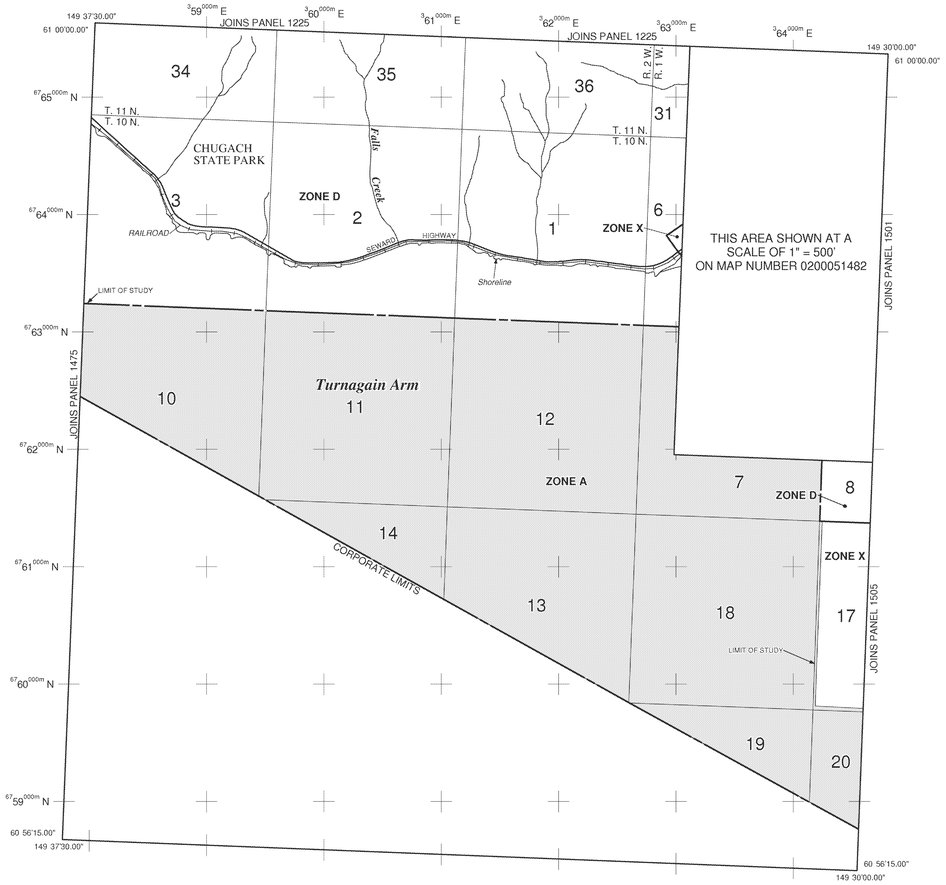
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LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	Floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the Mean Sea Level (MSL) Tidal Datum

A — A	Cross section line
23 — 23	Transect line
97°07'30", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
$^{42}75^{000m}$N	1000-meter Universal Transverse Mercator grid ticks, zone 6
6000000 M	5000-foot grid ticks: New York State Plane coordinate system, east zone (FIPSZONE 3101), Transverse Mercator
DX5510	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORY
4700 South Bragaw Street, Anchorage, Alaska 99507 (Maps available for reference only, not for distribution.)

INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
September 5, 1979
FLOOD INSURANCE RATE MAP REVISIONS
September 18, 1987 - to update map format.
March 5, 1990 - to change Base Flood Elevations and Special Flood Hazard Areas, reflect updated topographic information and to incorporate previously issued Letters of Map Revision.
July 2, 2002 - to add Special Flood Hazard Areas and Base Flood Elevations.
September 25, 2009 - to update corporate limits, change zone designations and to incorporate previously issued Letters of Map Revision.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1- 800- 638- 6620.

MAP SCALE 1" = 2000'
1000 0 2000 4000 FEET
600 0 600 1200 METERS

NFIP

PANEL 1500D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 1500 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)
CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	1500	D

NATIONAL FLOOD INSURANCE PROGRAM

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
0200051500D
MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

NOTES TO USERS

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Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures.** Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

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Flood elevations on this map are referenced to the Mean Sea Level tidal datum. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum.** For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, MD 20910-3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242,** or visit its website at http://www.ngs.noaa.gov/.

Base map digital files provided by Municipality of Anchorage DPW and AK DNR. Information compiled at scales of 1:1200 to 1:24000 during 2000-06. Streams and lake shorelines associated with FHAs digitized from Army Corp. of Engineers flood hazard workmaps from MOA DPW.

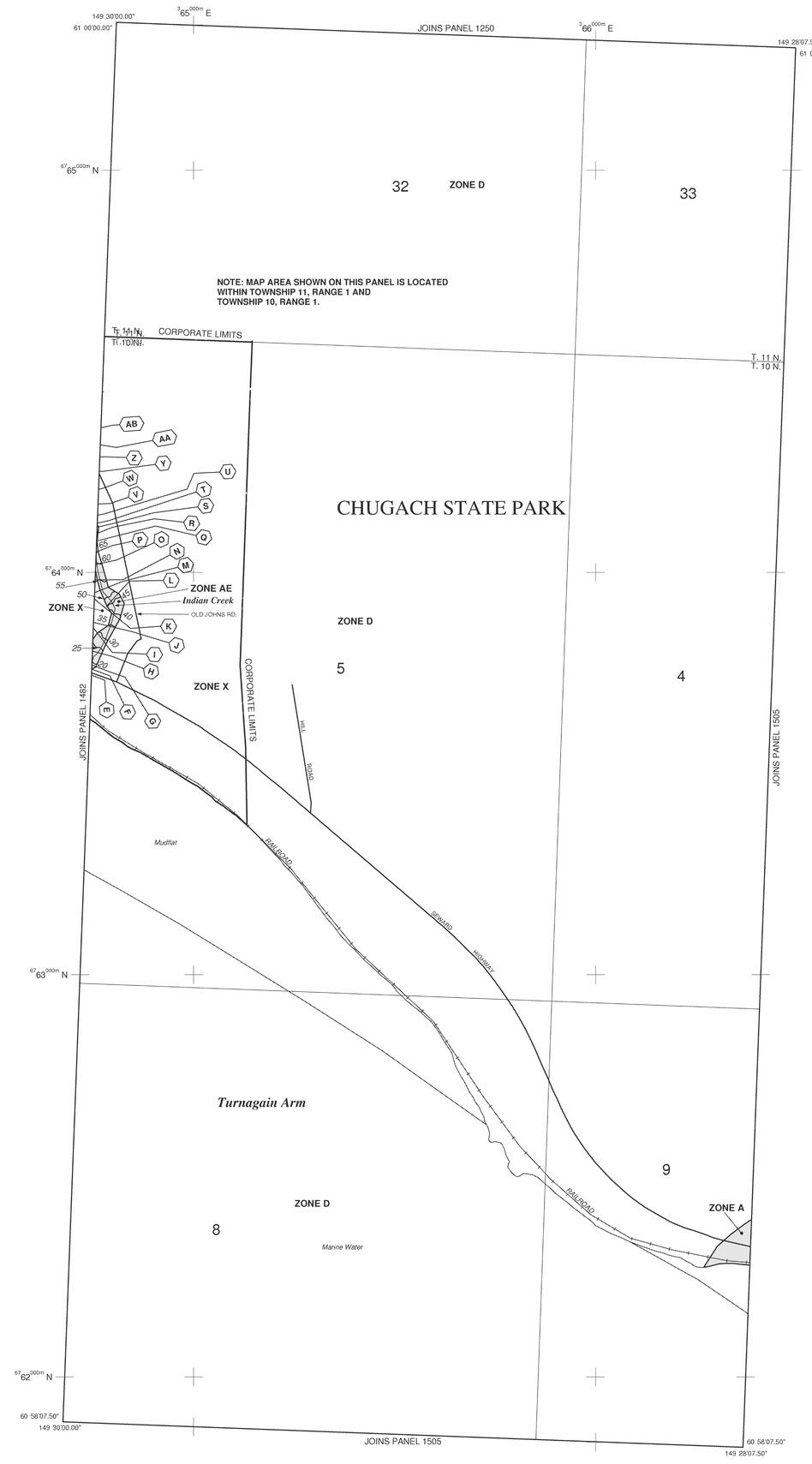
This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables *in the Flood Insurance Study report (which contains authoritative hydraulic data)* may reflect stream channel distances that differ from what is shown on this map.

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LEGEND

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ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
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ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
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COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

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	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the Mean Sea Level (MSL) Tidal Datum

A — A	Cross section line
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4275 000m N	1000-meter Universal Transverse Mercator grid ticks, zone 6
6000000 M	5000-foot grid ticks: New York State Plane coordinate system, east zone (FIPSZONE 3101), Transverse Mercator
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile

MAP REPOSITORY
4700 South Bragaw Street, Anchorage, Alaska 99507 (Maps available for reference only, not for distribution.)

INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
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MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NFIP

PANEL 1501D

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 1501 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	1501	D

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MAP NUMBER
0200051501D
MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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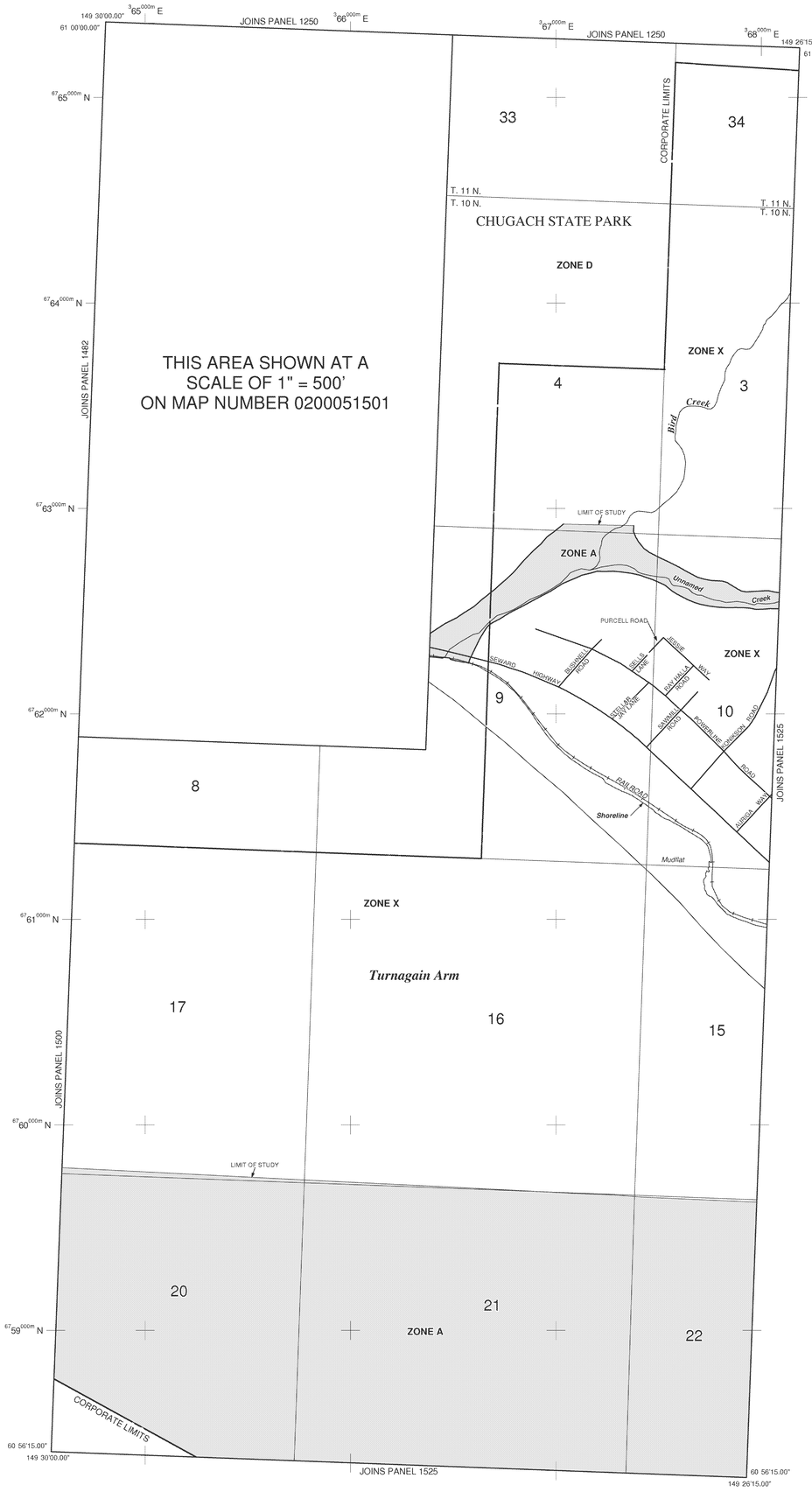
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LEGEND

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ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

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OTHER FLOOD AREAS

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OTHER AREAS

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INITIAL NFIP MAP DATE
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MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

PANEL 1505D

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 1505 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	1505	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
0200051505D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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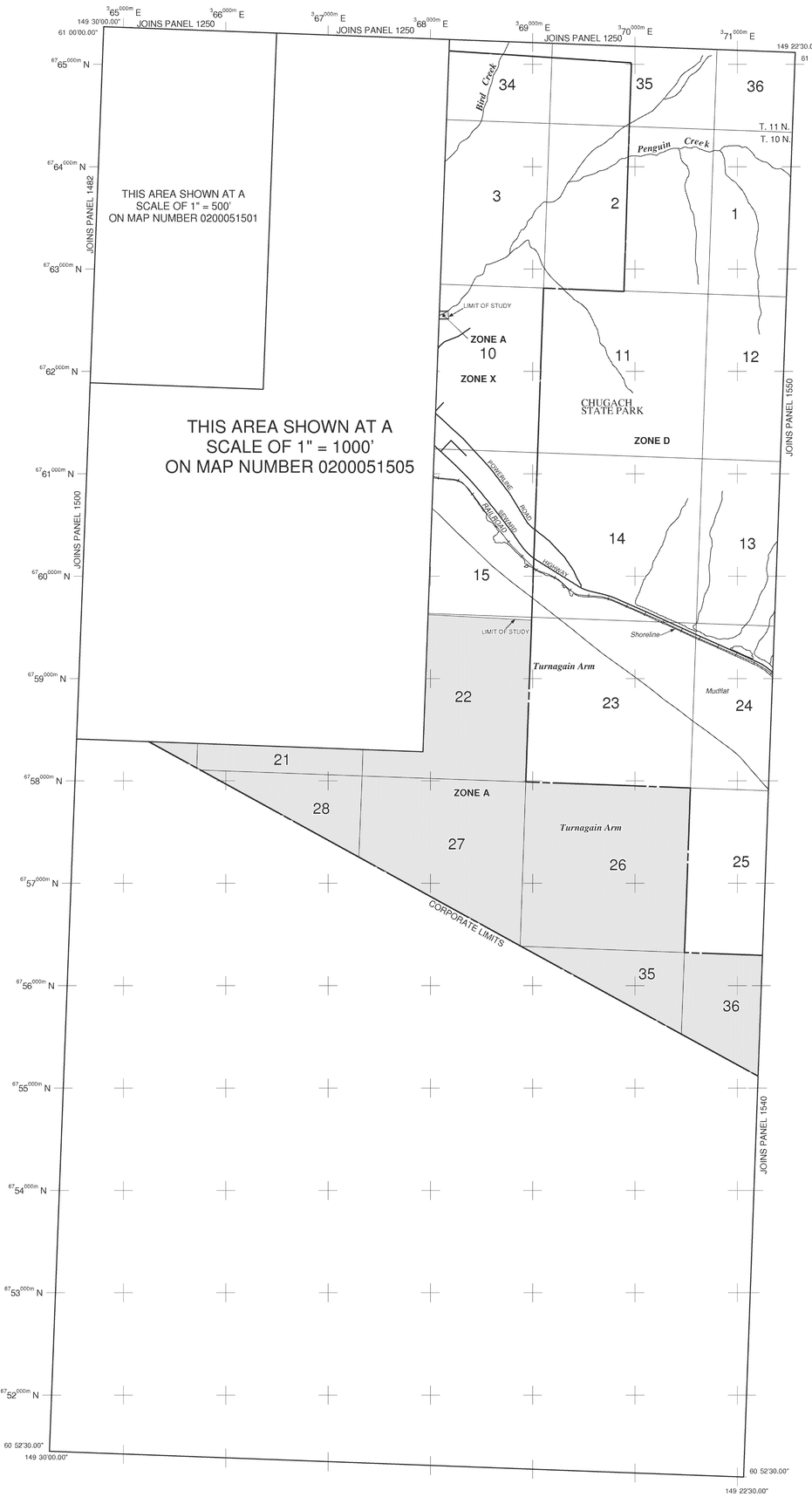
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LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	Floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the Mean Sea Level (MSL) Tidal Datum

A — A	Cross section line
23 — 23	Transect line
97 07'30", 32 22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4275000mN	1000-meter Universal Transverse Mercator grid ticks, zone 6
6000000 M	5000-foot grid ticks: New York State Plane coordinate system, east zone (FIPSZONE 3101), Transverse Mercator
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORY
4700 South Bragaw Street, Anchorage, Alaska 99507 (Maps available for reference only, not for distribution.)

INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
September 5, 1979
FLOOD INSURANCE RATE MAP REVISIONS
September 18, 1987 - to update map format.
March 5, 1990 - to change Base Flood Elevations and Special Flood Hazard Areas, reflect updated topographic information and to incorporate previously issued Letters of Map Revision.
July 2, 2002 - to add Special Flood Hazard Areas and Base Flood Elevations.
September 25, 2009 - to update corporate limits, change zone designations and to incorporate previously issued Letters of Map Revision.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1- 800- 638- 6620.

MAP SCALE 1" = 2000'
1000 0 2000 4000 FEET
600 0 600 1200 METERS

NFIP

PANEL 1525D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 1525 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)
CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	1525	D

NATIONAL FLOOD INSURANCE PROGRAM

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
0200051525D
MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

NOTES TO USERS

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Coastal Base Flood Elevations shown on this map apply only landward of 0.0' Mean Sea Level (MSL) Tidal Datum. Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures.** Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 6. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the Mean Sea Level tidal datum. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum.** For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC- 3, #9202
1315 East- West Highway
Silver Spring, MD 20910- 3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713- 3242,** or visit its website at http://www.ngs.noaa.gov/.

Base map digital files provided by Municipality of Anchorage DPW and AK DNR. Information compiled at scales of 1:1200 to 1:24000 during 2000-06. Streams and lake shorelines associated with FHAs digitized from Army Corp. of Engineers flood hazard workmaps from MOA DPW.

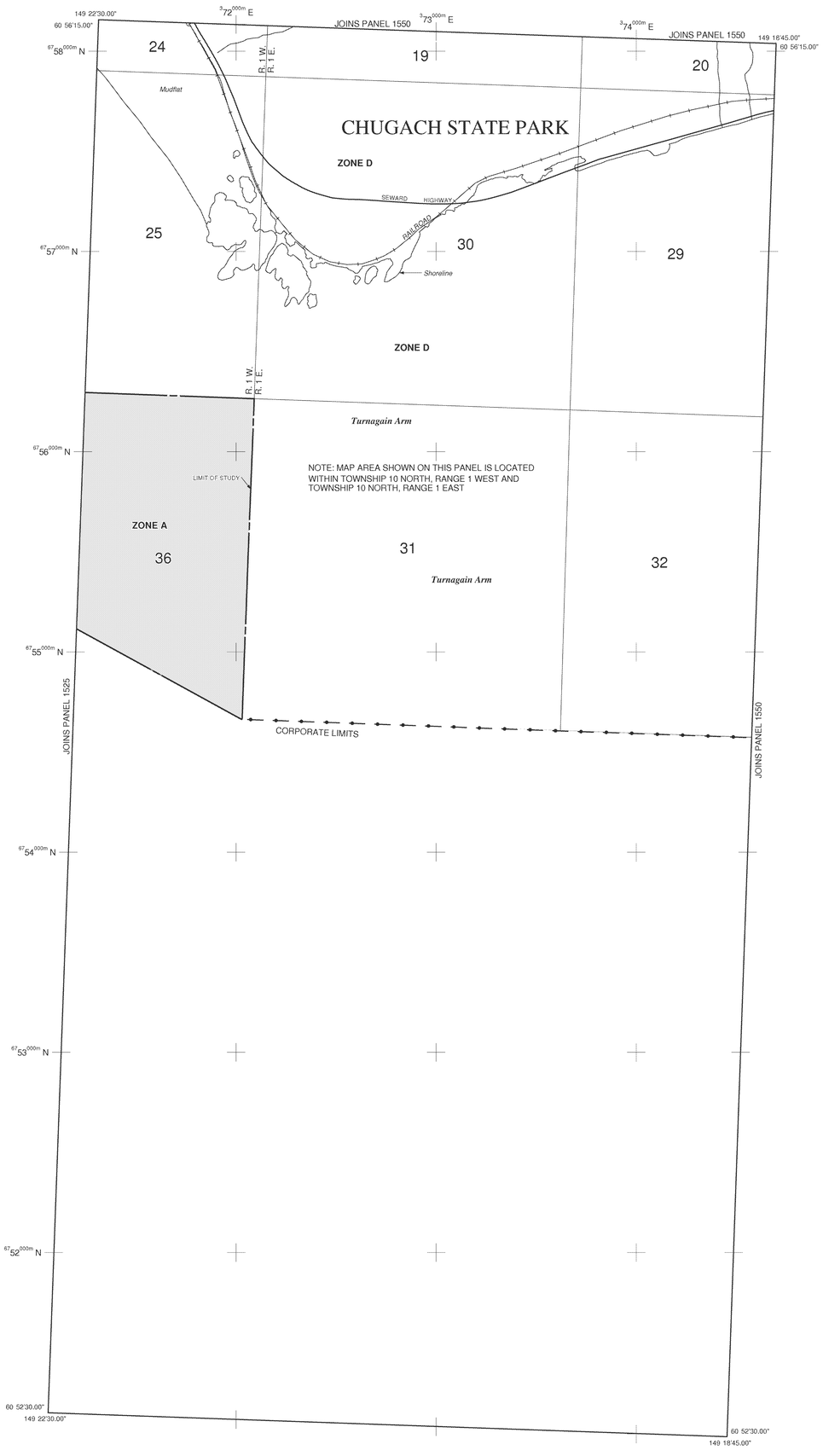
This map reflects more detailed and up- to- date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables *in the Flood Insurance Study report (which contains authoritative hydraulic data)* may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de- annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

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If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1- 677- FEMA MAP** (1- 877- 336- 2627) or visit the FEMA website at http://www.fema.gov/.



LEGEND

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ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
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ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
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COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the Mean Sea Level (MSL) Tidal Datum

- A — A — Cross section line
- 23 — 23 — Transect line
- 97 07'30", 32 22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 4275 000m N — 1000-meter Universal Transverse Mercator grid ticks, zone 6
- 6000000 M — 5000-foot grid ticks: New York State Plane coordinate system, east zone (FIPSZONE 3101), Transverse Mercator
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

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INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
September 5, 1979
FLOOD INSURANCE RATE MAP REVISIONS
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MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1540D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 1540 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	1540	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
0200051540D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

NOTES TO USERS

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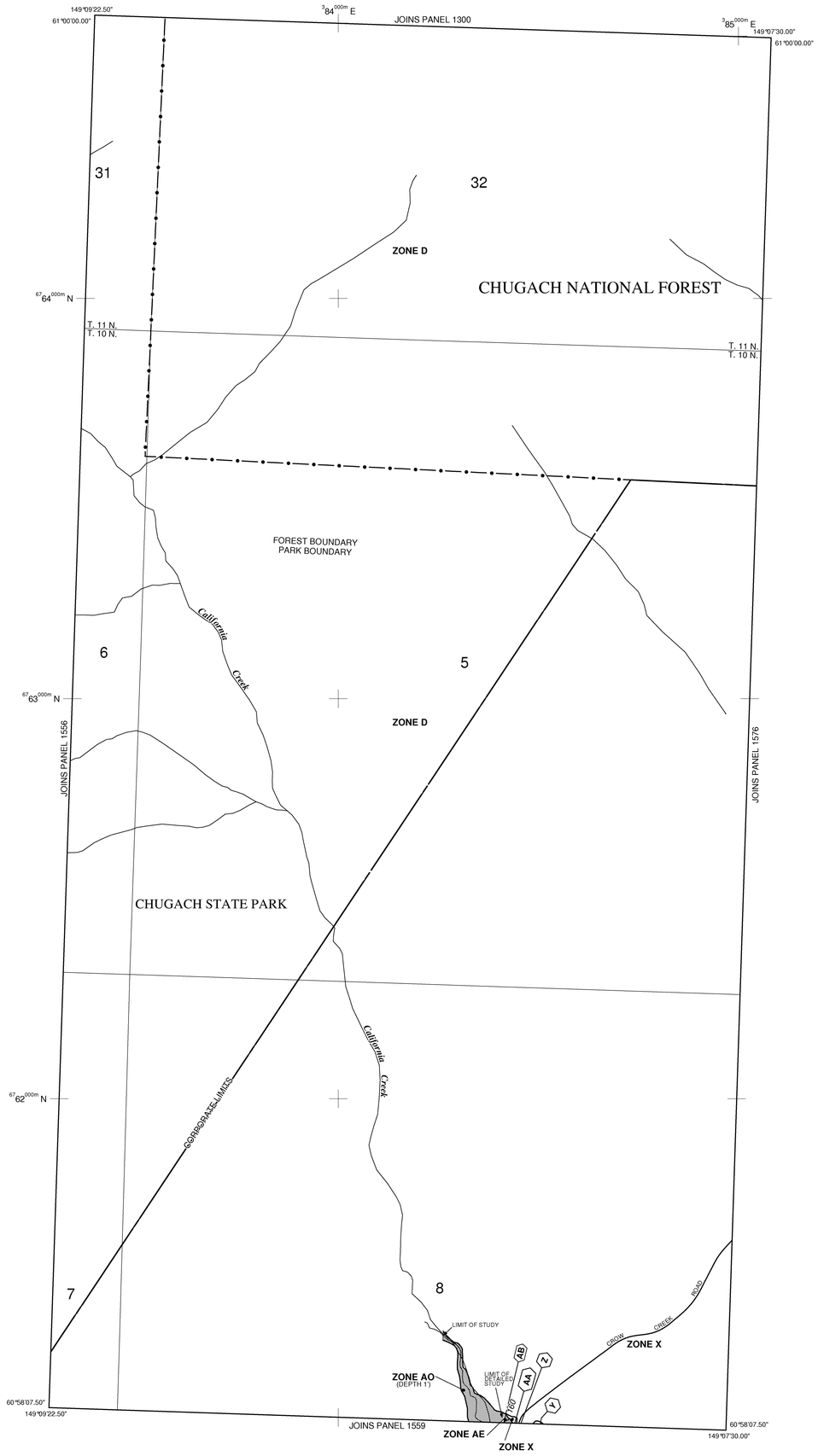
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LEGEND

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ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
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COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

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	Zone D boundary
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MAP REPOSITORY
4700 South Bragaw Street, Anchorage, Alaska 99507 (Maps available for reference only, not for distribution.)

INITIAL NFIP MAP DATE
September 5, 1979
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MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1557D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 1557 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	1557	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
0200051557D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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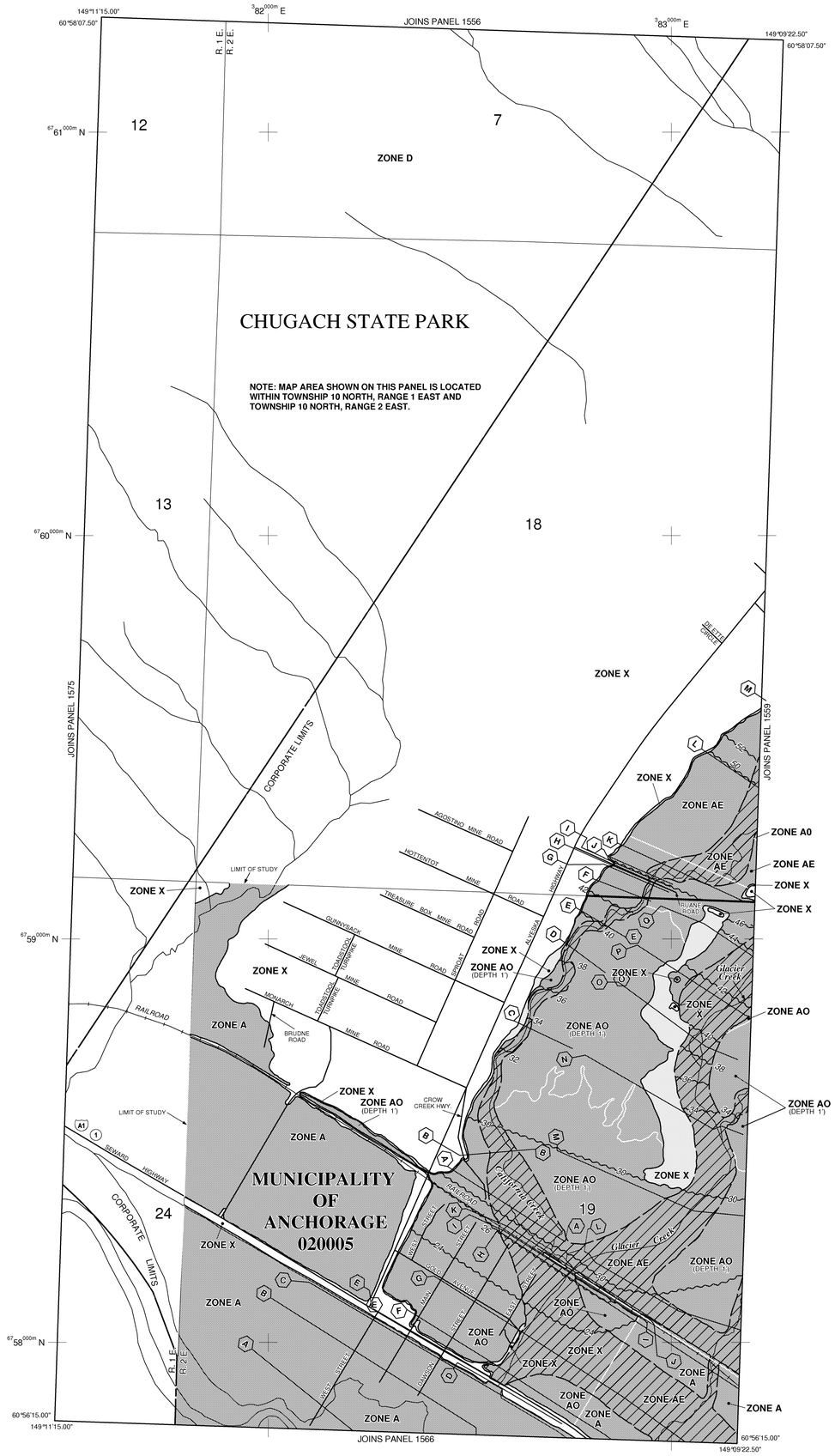
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149°11'15.00"
60°58'07.50"
3 82 000m E
JOINS PANEL 1556
3 83 000m E
149°09'22.50"
60°58'07.50"
R. 1 E.
R. 2 E.
67 61 000m N
12
7
ZONE D
CHUGACH STATE PARK
NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 10 NORTH, RANGE 1 EAST AND TOWNSHIP 10 NORTH, RANGE 2 EAST.
13
18
67 60 000m N
JOINS PANEL 1575
JOINS PANEL 1559
ZONE X
CORPORATE LIMITS
ZONE AE
ZONE A0
ZONE AE
ZONE X
ZONE X
ZONE AO
(DEPTH 1)
ZONE X
ZONE AO
(DEPTH 1')
ZONE X
ZONE AO
(DEPTH 1)
ZONE X
ZONE AO
(DEPTH 1')
ZONE A
ZONE X
ZONE AO
(DEPTH 1)
ZONE AO
(DEPTH 1')
ZONE X
ZONE AO
(DEPTH 1)
ZONE X
ZONE AO
(DEPTH 1')
ZONE A
MUNICIPALITY OF ANCHORAGE 020005
24
19
ZONE X
ZONE AE
ZONE AO
(DEPTH 1')
ZONE AO
ZONE X
ZONE A
ZONE AO
ZONE A
ZONE AE
ZONE A
67 58 000m N
60°56'15.00"
149°11'15.00"
JOINS PANEL 1566
60°56'15.00"
149°09'22.50"
LIMIT OF STUDY
LIMIT OF STUDY
CORPORATE LIMITS
R. 1 E.
R. 2 E.
AGOSTINO MINE ROAD
HOTTENTOT MINE ROAD
TREASURE BOX MINE ROAD
GUNNYSACK MINE ROAD
JEWEL TUNNEL MINE ROAD
MONARCH TUNNEL MINE ROAD
BRUDNE MINE ROAD
RAILROAD
SEWARD HIGHWAY
CROW CREEK HWY.
RAILROAD
ARLINGTON DRIVE
ALASKA
GLENN HIGHWAY
BLAINE ROAD
Glacier Creek
Campbell Creek
Glacier Creek
DRIVE
STREET
ROAD
AVENUE
PLACE
COURT
ZONE AO
(DEPTH 1')
ZONE X
ZONE AO
(DEPTH 1)
ZONE X

NOTES TO USERS

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Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

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NGS Information Services
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National Geodetic Survey
SSMC–3, #9202
1315 East–West Highway
Silver Spring, MD 20910–3282

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Base map digital files provided by Municipality of Anchorage DPW and AK DNR. Information compiled at scales of 1:1200 to 1:24000 during 2000-06. Streams and lake shorelines associated with FHAs digitized from Army Corp. of Engineers flood hazard workmaps from MOA DPW.

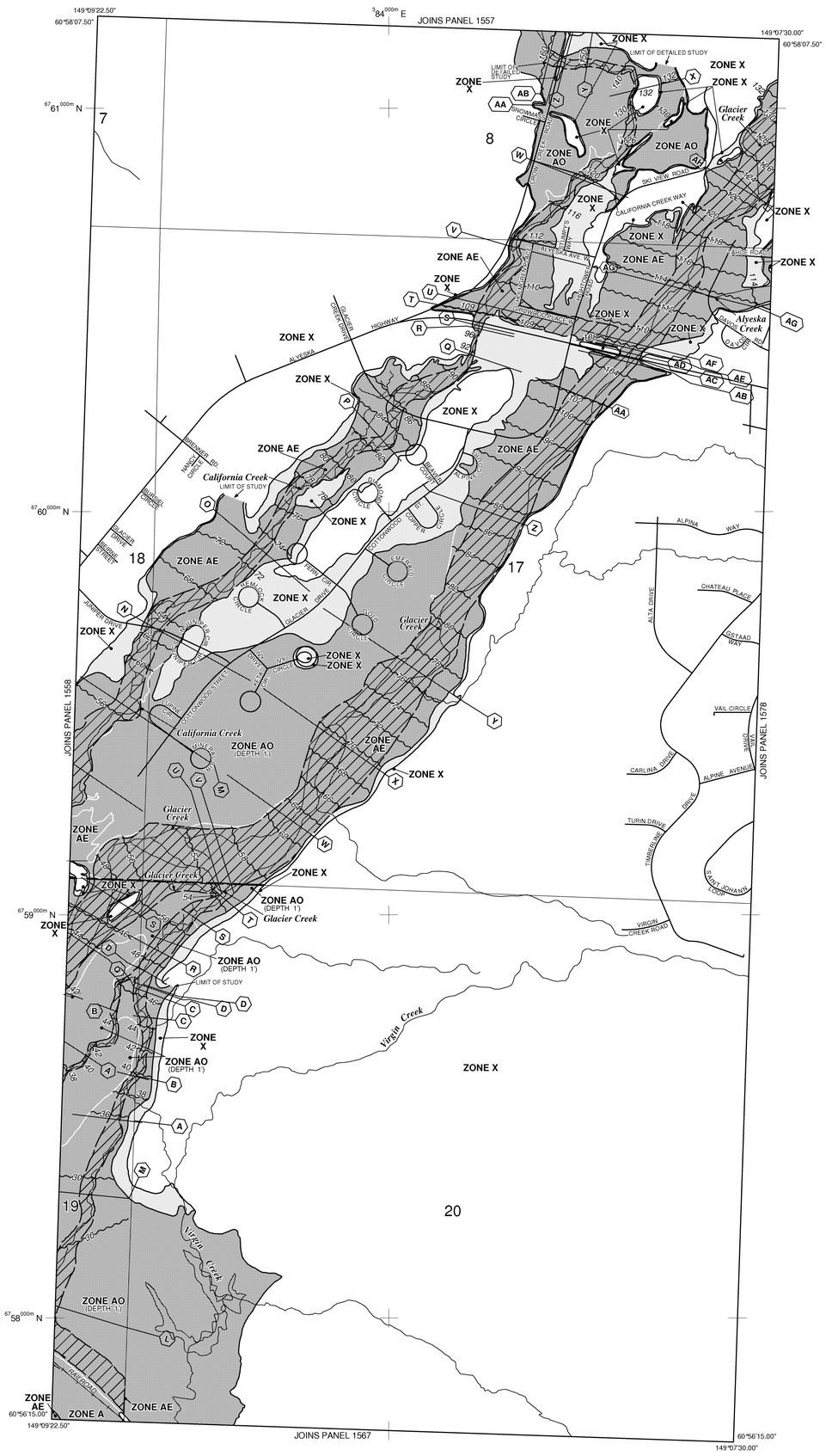
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LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	Floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the Mean Sea Level (MSL) Tidal Datum

A A	Cross section line
23 23	Transect line
97°07'30", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4275 000m N	1000-meter Universal Transverse Mercator grid ticks, zone 6
6000000 M	5000-foot grid ticks: New York State Plane coordinate system, east zone (FIPSZONE 3101), Transverse Mercator
DX5510	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORY
4700 South Bragaw Street, Anchorage, Alaska 99507 (Maps available for reference only, not for distribution.)

INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
September 5, 1979
FLOOD INSURANCE RATE MAP REVISIONS
September 18, 1978 –to update map format.
March 5, 1990 – to change Base Flood Elevations and Special Flood Hazard Areas, reflect updated topographic information and to incorporate previously issued Letters of Map Revision.
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MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1559D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE,
ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 1559 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	1559	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
0200051559D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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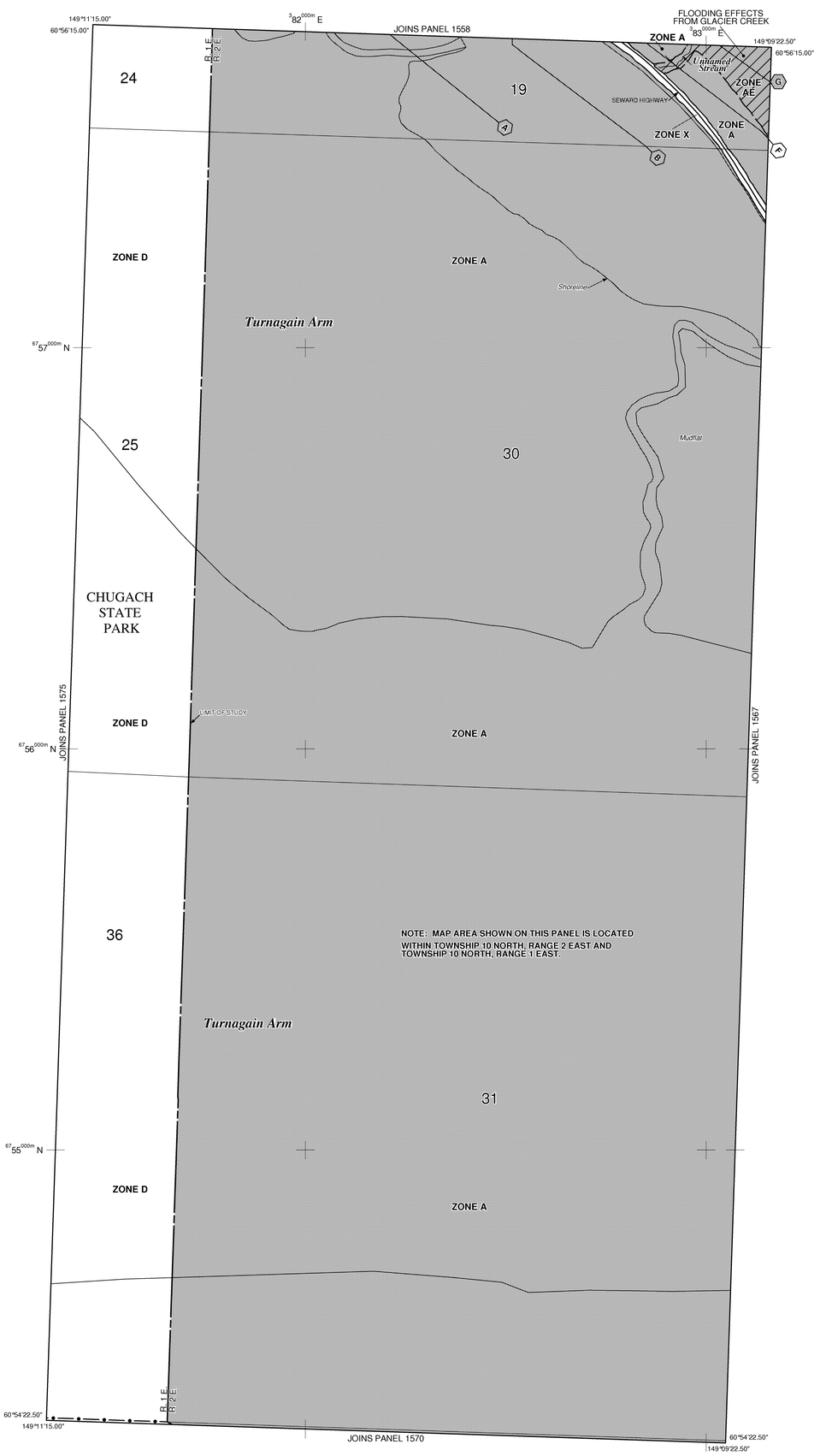
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FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.
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COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

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- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
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250 0 500 1000 FEET
150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1566D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 1566 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	1566	D

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MAP NUMBER
0200051566D

MAP REVISED
SEPTEMBER 2, 2009

Federal Emergency Management Agency

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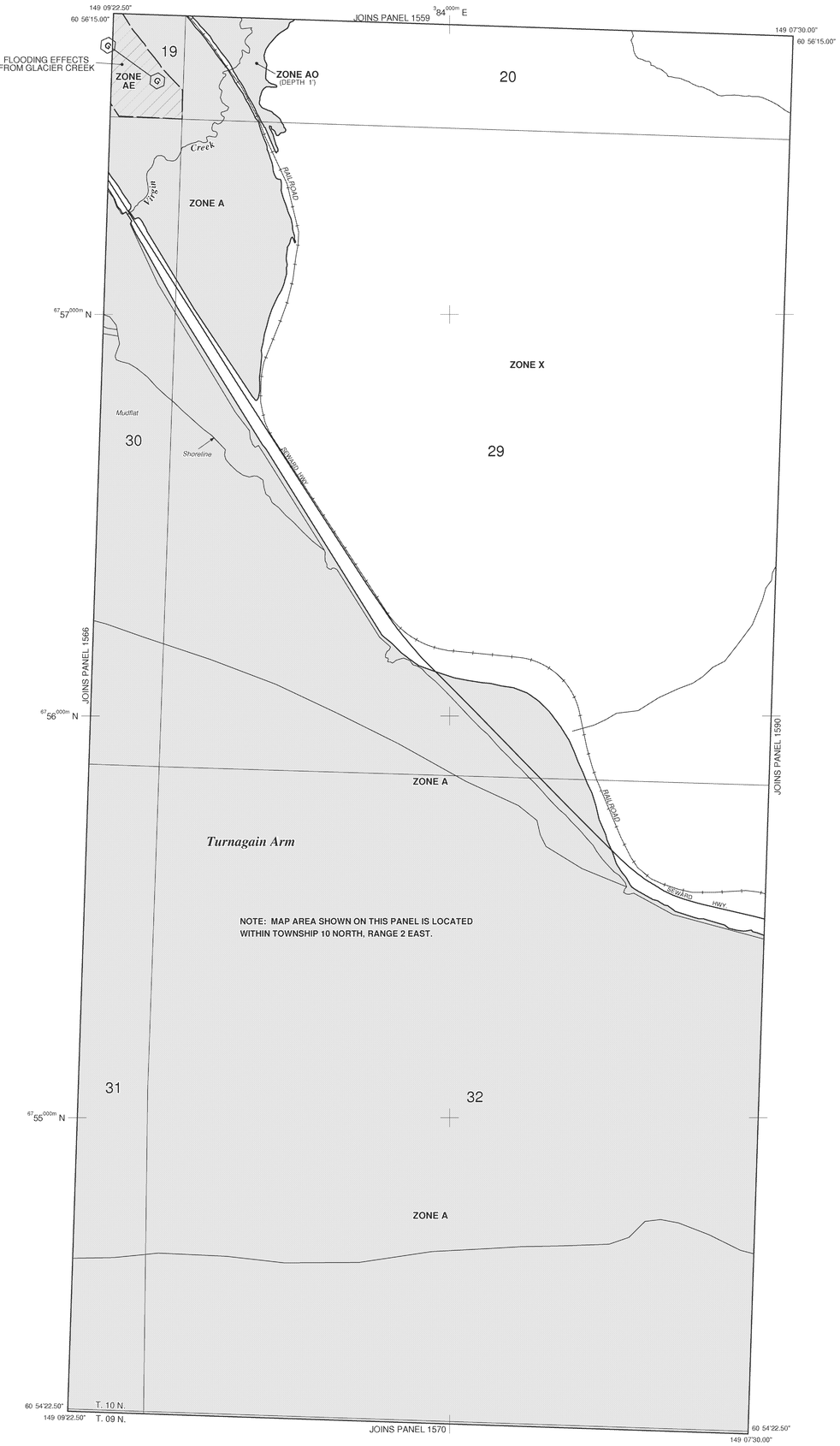
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250 0 500 1000 FEET
150 0 150 300 METERS

NFIP

PANEL 1567D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 1567 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	1567	D

NATIONAL FLOOD INSURANCE PROGRAM

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MAP NUMBER
0200051567D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

NOTES TO USERS

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National Geodetic Survey
SSMC- 3, #9202
1315 East- West Highway
Silver Spring, MD 20910- 3282

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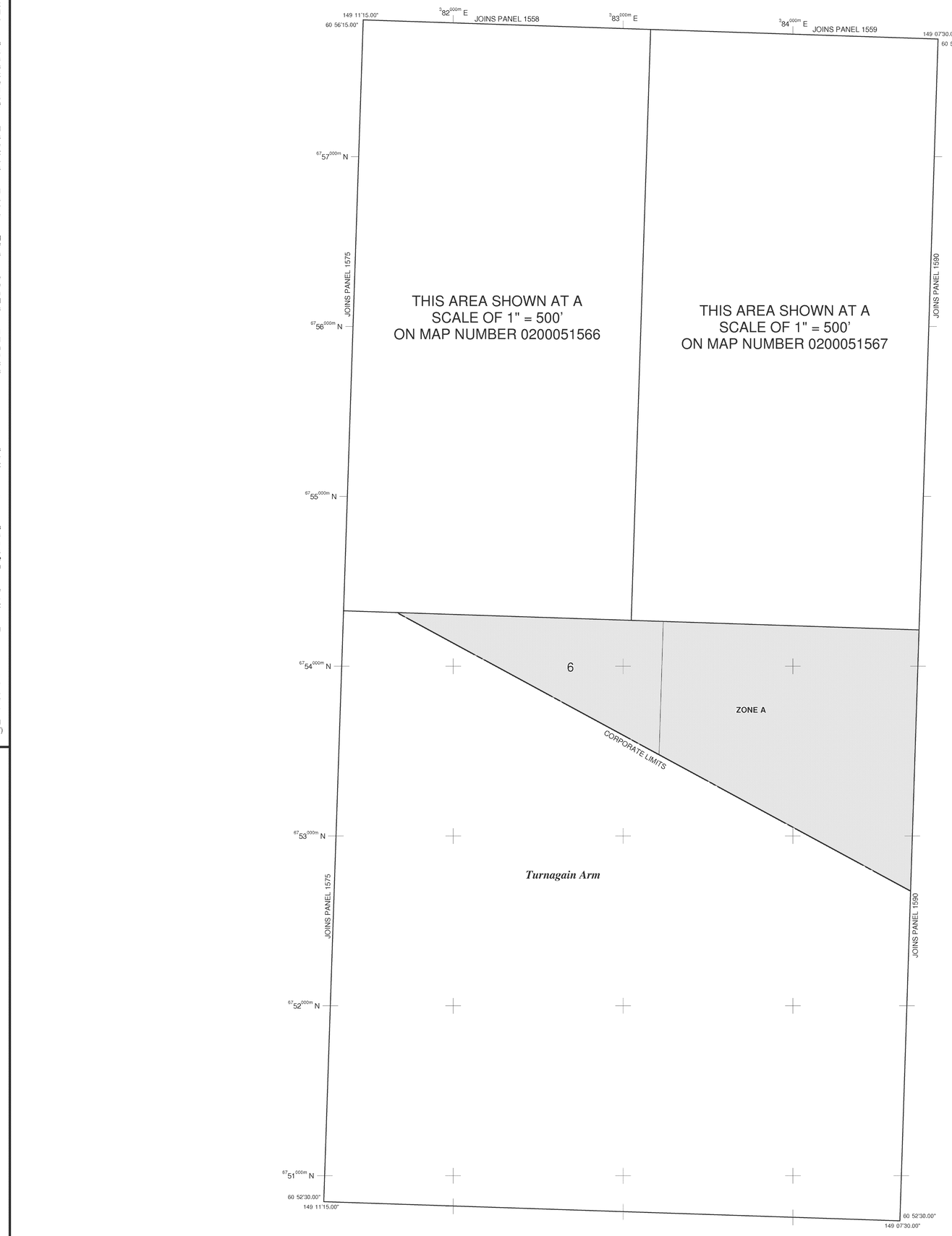
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LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	Floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the Mean Sea Level (MSL) Tidal Datum

A — A	Cross section line
23 — 23	Transect line
97 07'30", 32 22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4275 000m N	1000-meter Universal Transverse Mercator grid ticks, zone 6
6000000 M	5000-foot grid ticks: New York State Plane coordinate system, east zone (FIPSZONE 3101), Transverse Mercator
DX5510	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORY
4700 South Bragaw Street, Anchorage, Alaska 99507 (Maps available for reference only, not for distribution.)

INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
September 5, 1979
FLOOD INSURANCE RATE MAP REVISIONS
September 18, 1987 - to update map format.
March 5, 1990 - to change Base Flood Elevations and Special Flood Hazard Areas, reflect updated topographic information and to incorporate previously issued Letters of Map Revision.
July 2, 2002 - to add Special Flood Hazard Areas and Base Flood Elevations.
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MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1570D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 1570 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)
CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	1570	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
0200051570D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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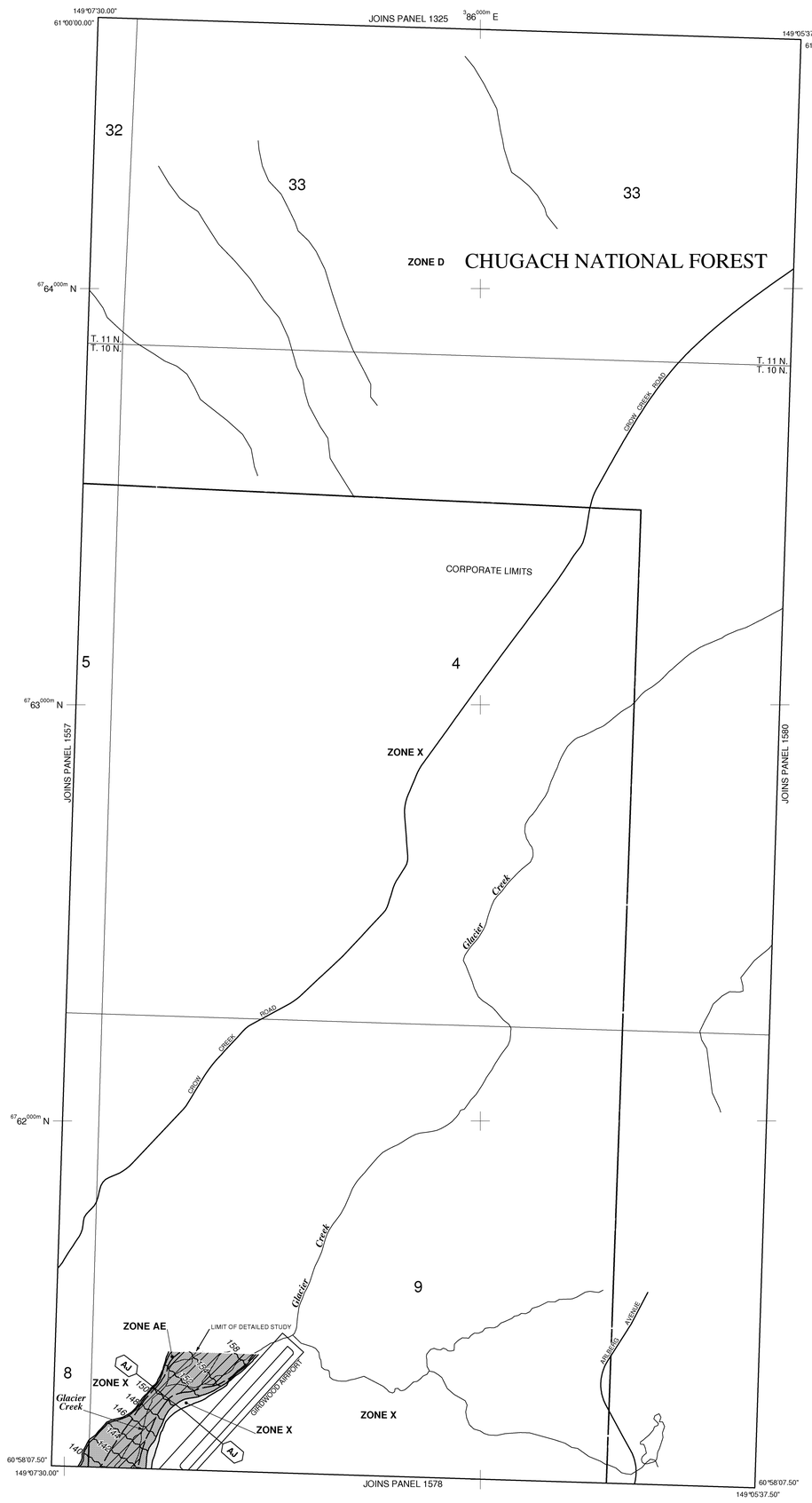
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NFIP

PANEL 1576D

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE,
ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 1576 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	1576	D

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0200051576D

MAP REVISED
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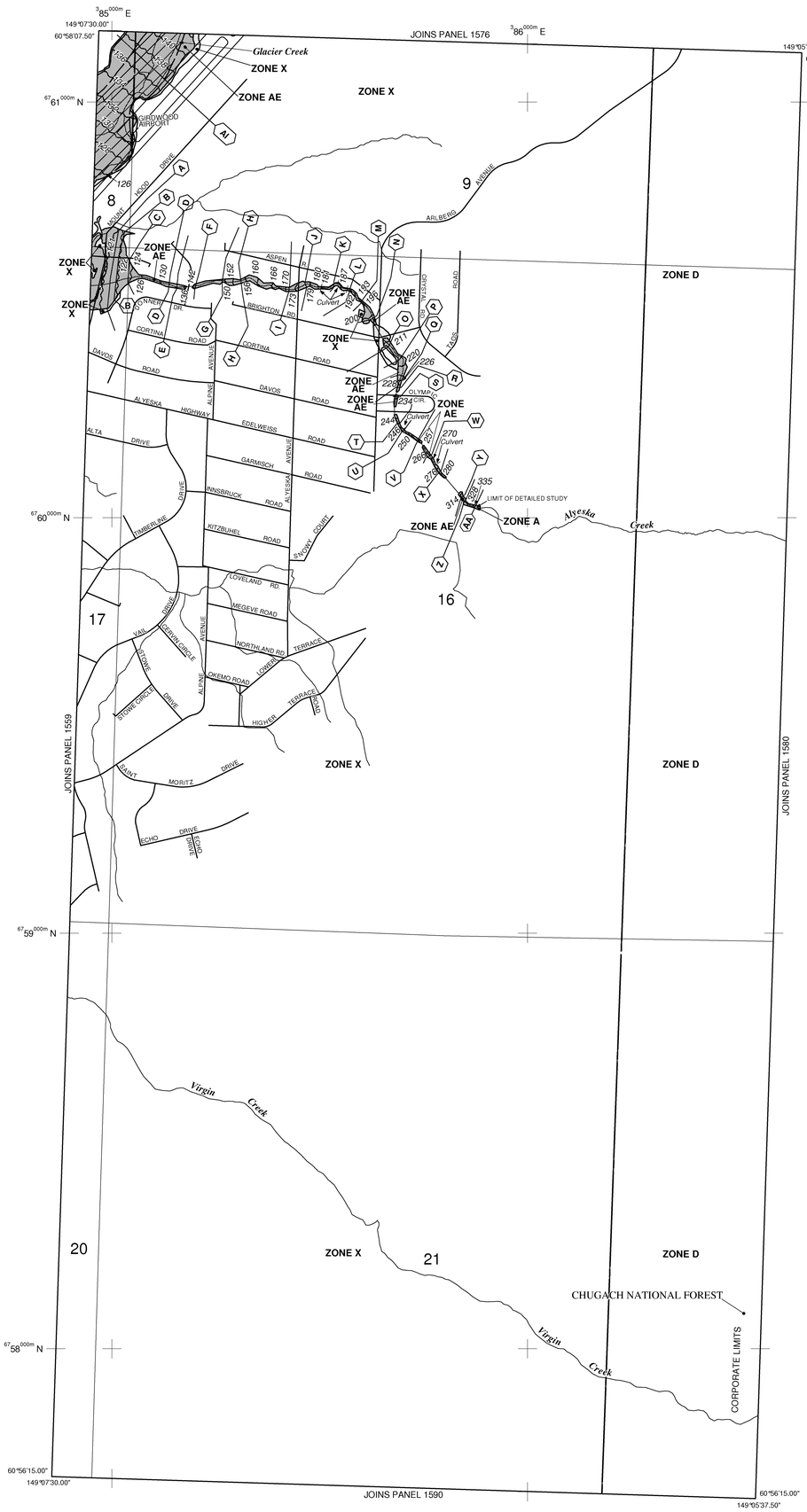
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PANEL 1578D

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FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 1578 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

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NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC- 3, #9202
1315 East- West Highway
Silver Spring, MD 20910- 3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713- 3242,** or visit its website at http://www.ngs.noaa.gov/.

Base map digital files provided by Municipality of Anchorage DPW and AK DNR. Information compiled at scales of 1:1200 to 1:24000 during 2000-06. Streams and lake shorelines associated with FHAs digitized from Army Corp. of Engineers flood hazard workmaps from MOA DPW.

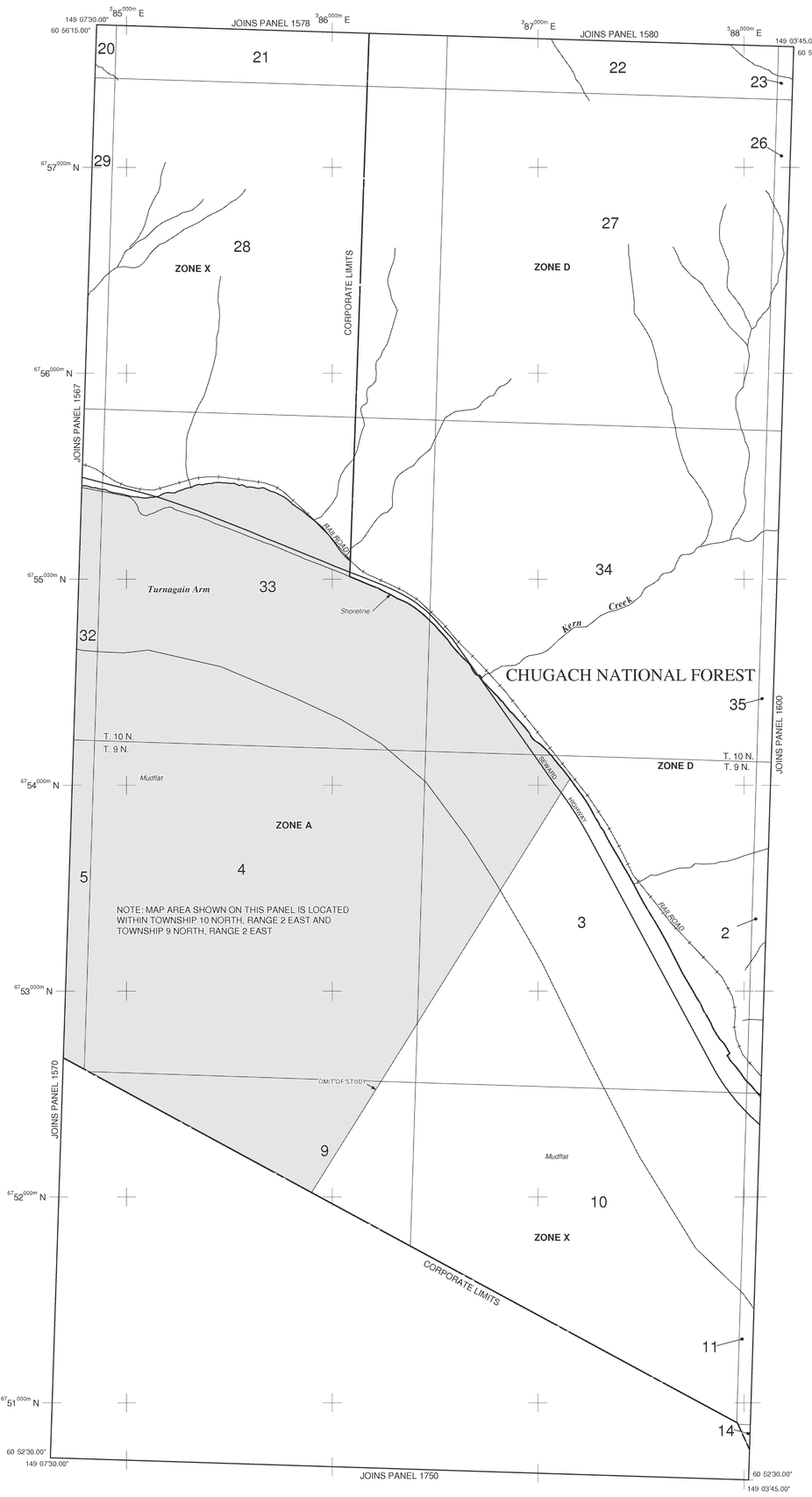
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LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	Floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the Mean Sea Level (MSL) Tidal Datum

A — A	Cross section line
23 — 23	Transect line
97 07'30", 32 22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
$^{42}75^{000m}$N	1000-meter Universal Transverse Mercator grid ticks, zone 6
6000000 M	5000-foot grid ticks: New York State Plane coordinate system, east zone (FIPSZONE 3101), Transverse Mercator
DX5510	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORY
4700 South Bragaw Street, Anchorage, Alaska 99507 (Maps available for reference only, not for distribution.)

INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
September 5, 1979
FLOOD INSURANCE RATE MAP REVISIONS
September 18, 1987 - to update map format.
March 5, 1990 - to change Base Flood Elevations and Special Flood Hazard Areas, reflect updated topographic information and to incorporate previously issued Letters of Map Revision.
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MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

PANEL 1590D

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 1590 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)
CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	1590	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
0200051590D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

NOTES TO USERS

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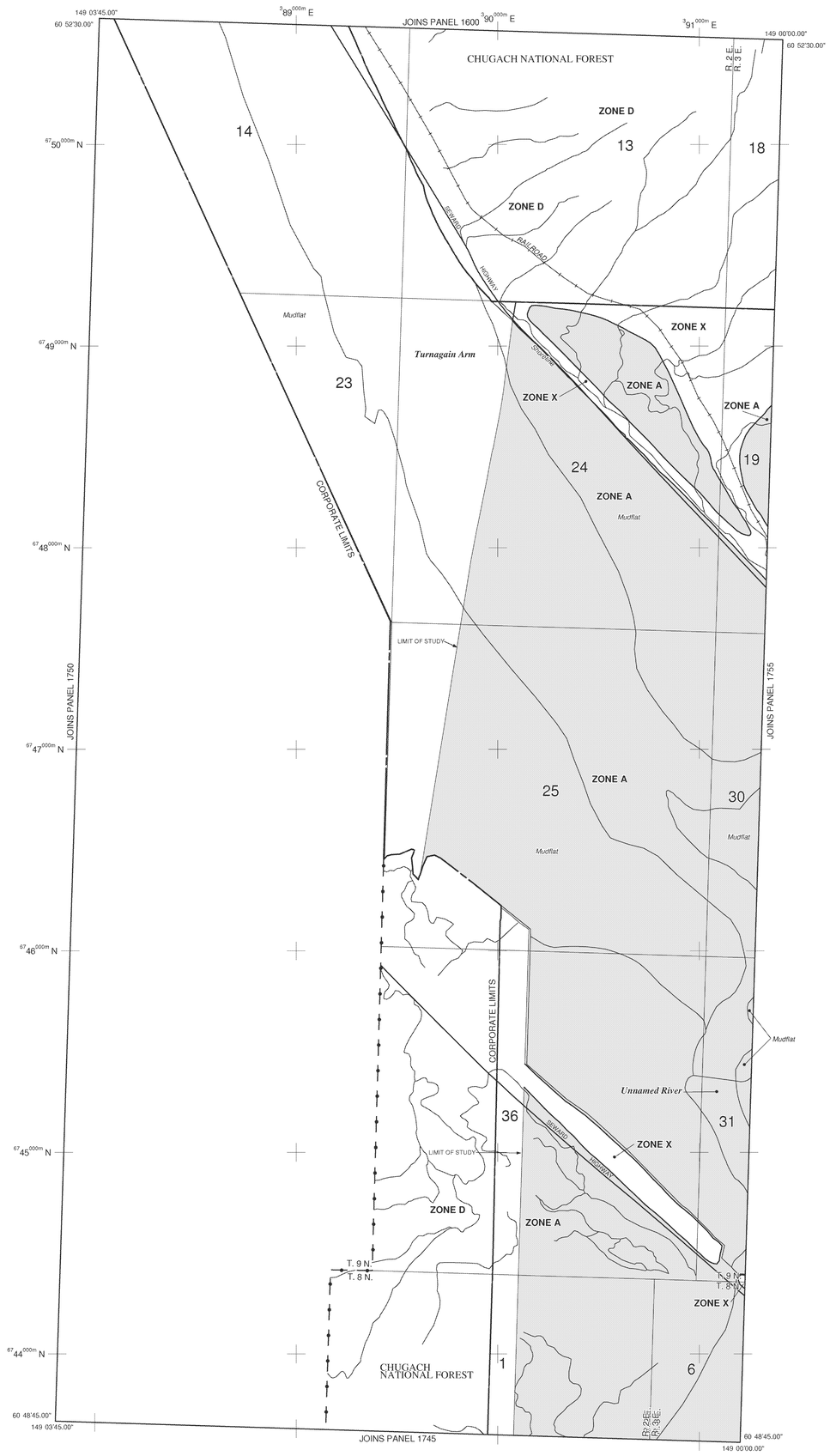
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LEGEND

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ZONE A	No Base Flood Elevations determined.
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FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
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COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

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	Floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
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513	Base Flood Elevation line and value; elevation in feet*
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* Referenced to the Mean Sea Level (MSL) Tidal Datum

A — A	Cross section line
23 - - - - - 23	Transect line
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DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile

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INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
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500 0 1000 2000 FEET
300 0 300 600 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1735D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 1735 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	1735	D

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MAP NUMBER
0200051735D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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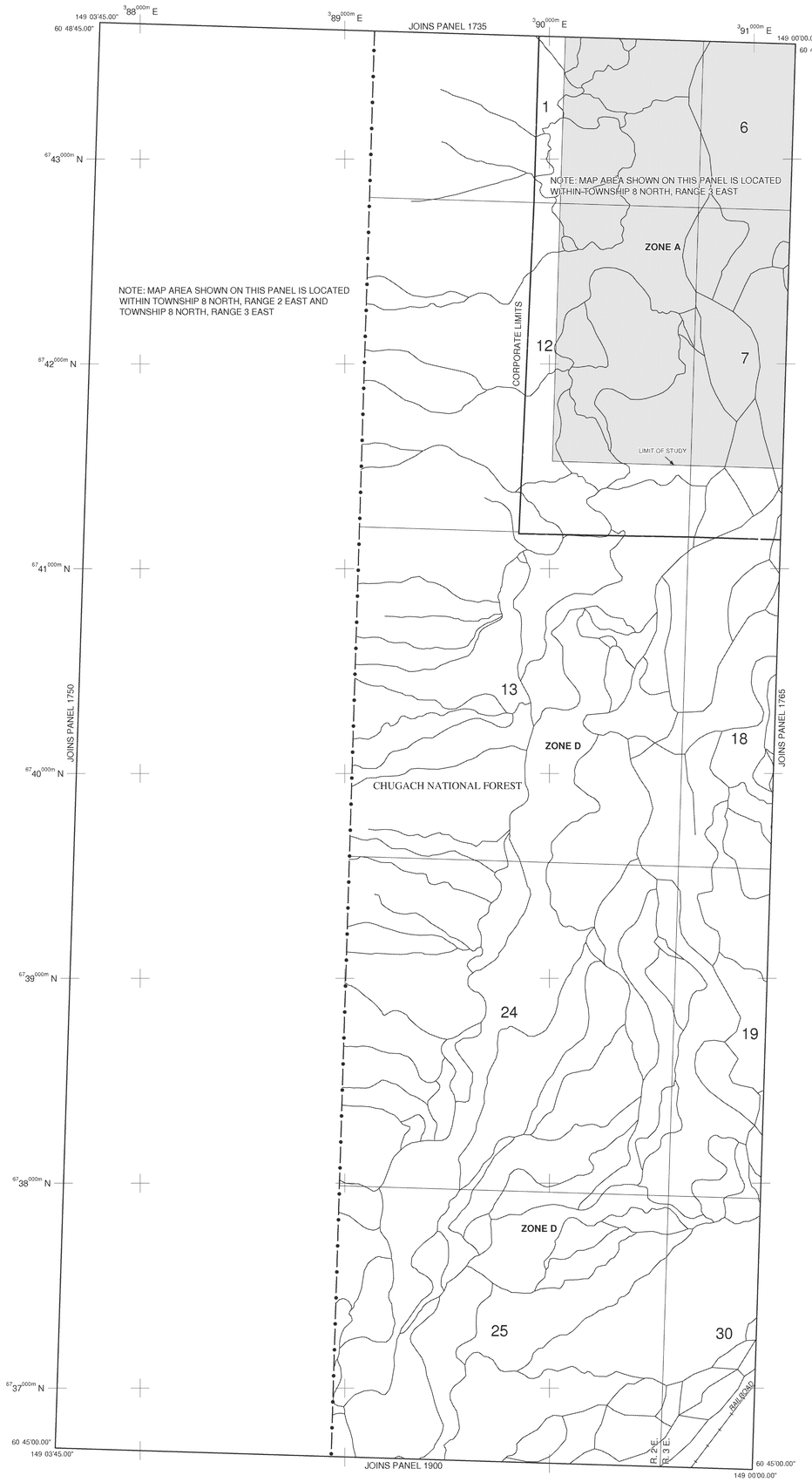
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500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1745D

FIRM

FLOOD INSURANCE RATE MAP

MUNICIPALITY OF

ANCHORAGE, ALASKA

ANCHORAGE DIVISION COUNTY

PANEL 1745 OF 1975

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	1745	D

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MAP NUMBER
0200051745D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, MD 20910-3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242,** or visit its website at http://www.ngs.noaa.gov/.

Base map digital files provided by Municipality of Anchorage DPW and AK DNR. Information compiled at scales of 1:1200 to 1:24000 during 2000-06. Streams and lake shorelines associated with FHAs digitized from Army Corp. of Engineers flood hazard workmaps from MOA DPW.

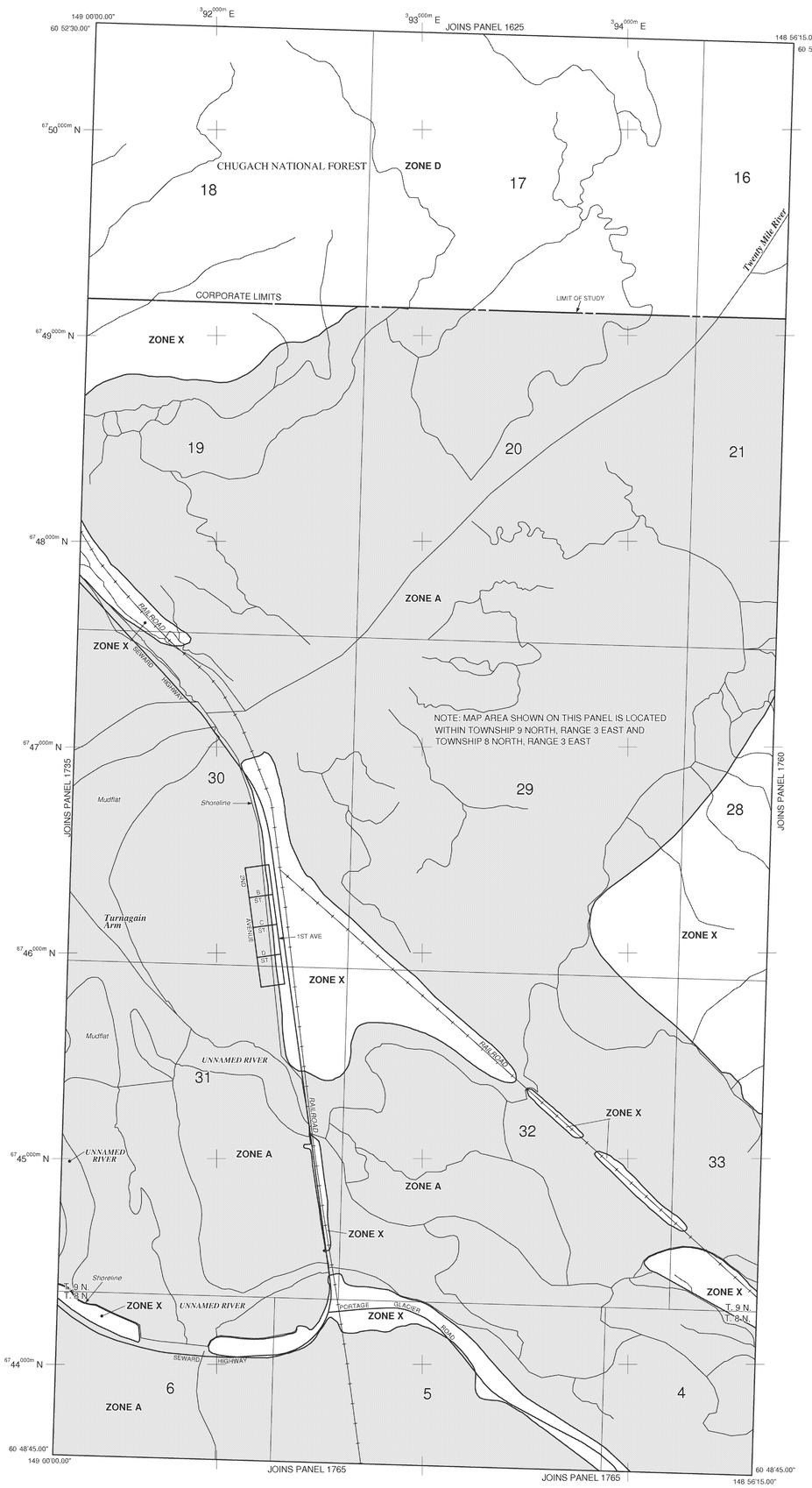
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LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	Floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the Mean Sea Level (MSL) Tidal Datum

A — A	Cross section line
23 - - - - - 23	Transect line
97 07'30", 32 22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4275 000m N	1000-meter Universal Transverse Mercator grid ticks, zone 6
6000000 M	5000-foot grid ticks: New York State Plane coordinate system, east zone (FIPSZONE 3101), Transverse Mercator
DX5510	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORY
4700 South Bragaw Street, Anchorage, Alaska 99507 (Maps available for reference only, not for distribution.)

INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
September 5, 1979
FLOOD INSURANCE RATE MAP REVISIONS
September 18, 1987 - to update map format.
March 5, 1990 - to change Base Flood Elevations and Special Flood Hazard Areas, reflect updated topographic information and to incorporate previously issued Letters of Map Revision.
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MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
300 0 300 600 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1755D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 1755 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	1755	D

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MAP NUMBER
0200051755D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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Base map digital files provided by Municipality of Anchorage DPW and AK DNR. Information compiled at scales of 1:1200 to 1:24000 during 2000-06. Streams and lake shorelines associated with FHAs digitized from Army Corp. of Engineers flood hazard workmaps from MOA DPW.

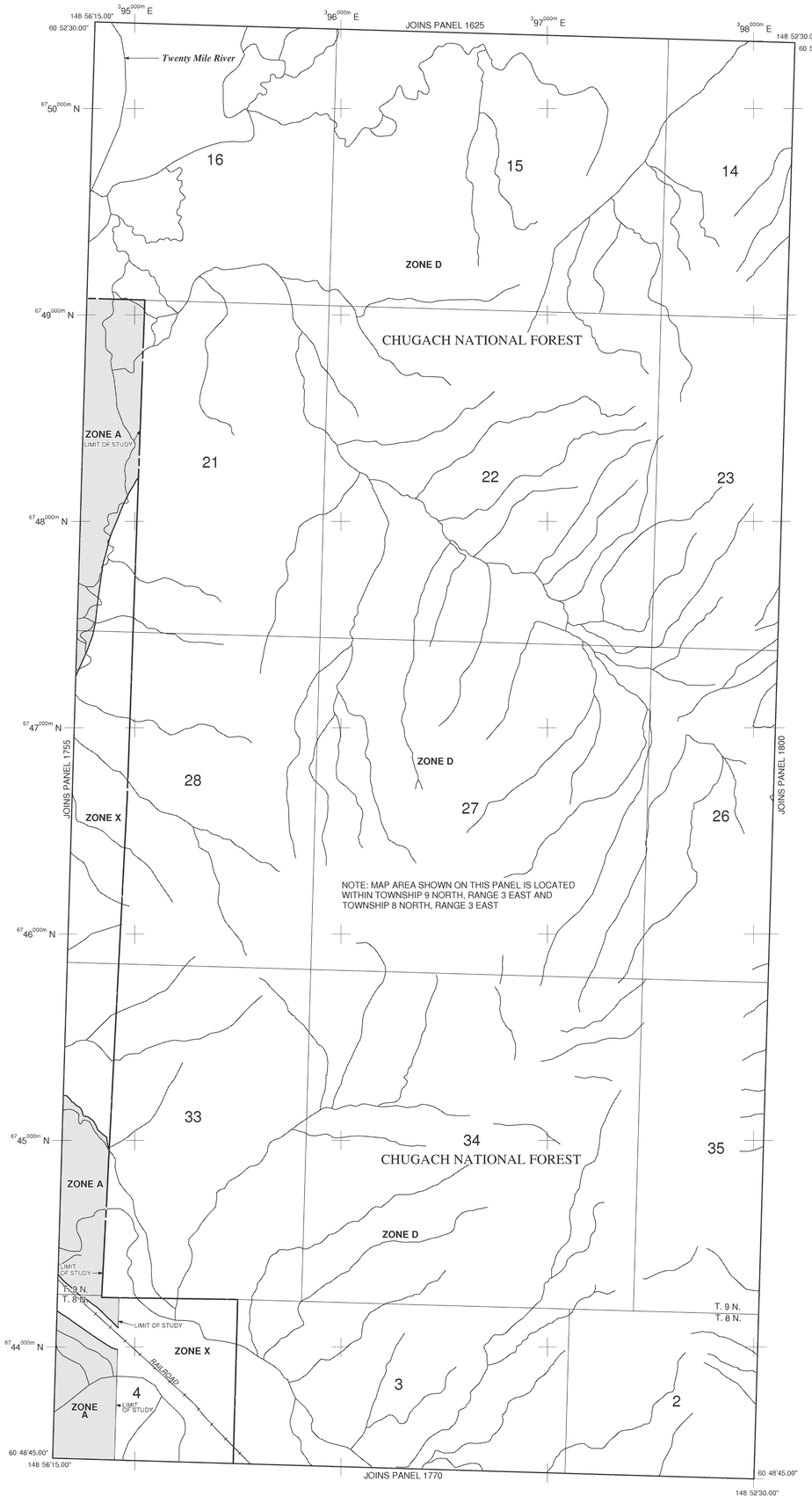
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LEGEND

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ZONE A	No Base Flood Elevations determined.
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FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

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	Floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the Mean Sea Level (MSL) Tidal Datum

A — A	Cross section line
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97 07'30", 32 22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4275 000m N	1000-meter Universal Transverse Mercator grid ticks, zone 6
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DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

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INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

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500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1760D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 1760 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	1760	D

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MAP NUMBER
0200051760D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

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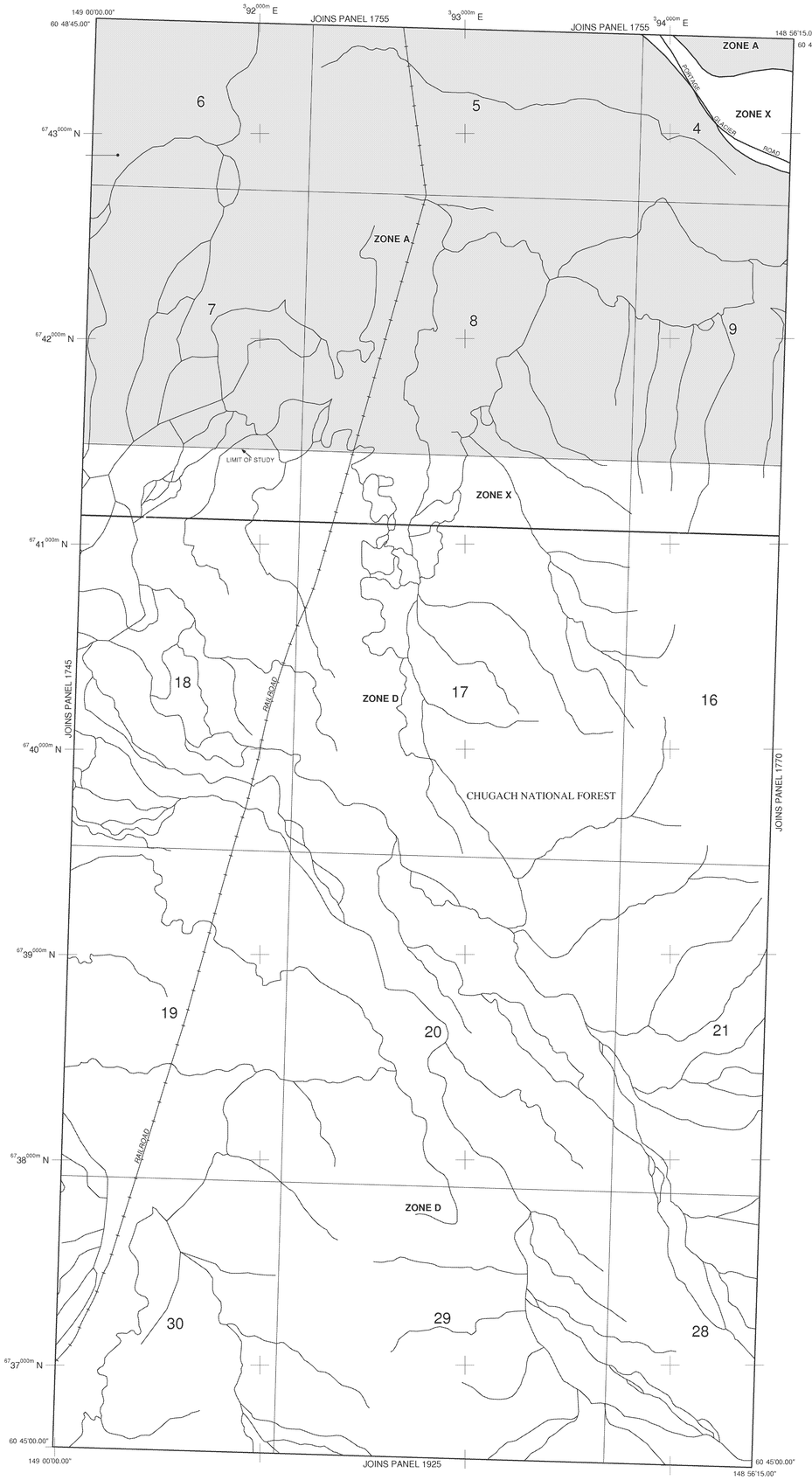
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LEGEND

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FLOODWAY AREAS IN ZONE AE

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OTHER FLOOD AREAS

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NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1765D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 1765 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	1765	D

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MAP NUMBER
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MAP REVISED
SEPTEMBER 25, 2009

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Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures.** Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 6. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the Mean Sea Level tidal datum. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum.** For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, MD 20910-3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242,** or visit its website at http://www.ngs.noaa.gov/.

Base map digital files provided by Municipality of Anchorage DPW and AK DNR. Information compiled at scales of 1:1200 to 1:24000 during 2000-06. Streams and lake shorelines associated with FHAs digitized from Army Corp. of Engineers flood hazard workmaps from MOA DPW.

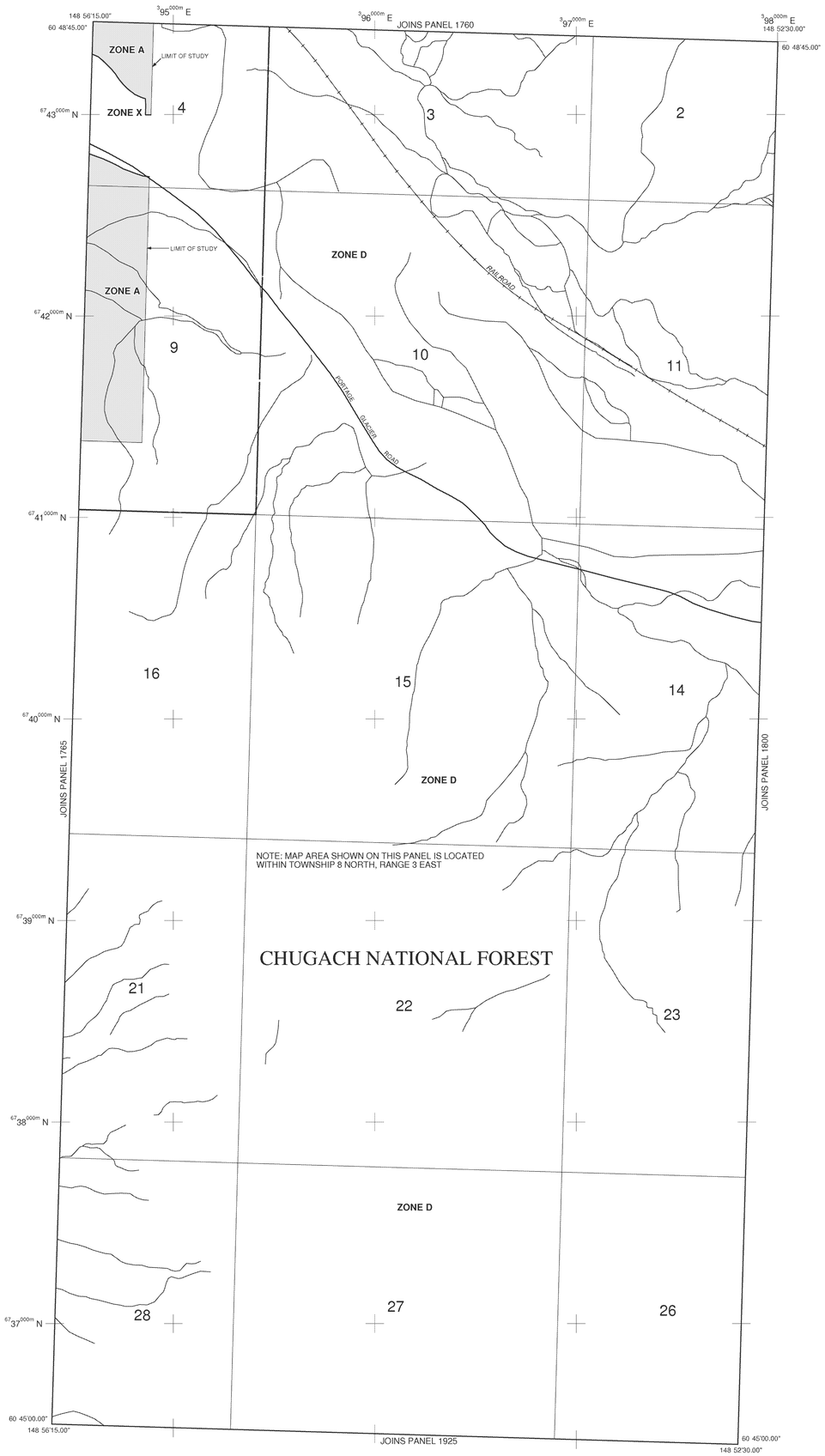
This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables *in the Flood Insurance Study report (which contains authoritative hydraulic data)* may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map showing the layout of map panels for this jurisdiction.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, *a Flood Insurance Study report,* and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://www.msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	Floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the Mean Sea Level (MSL) Tidal Datum

A — A	Cross section line
23 - - - - - - - 23	Transect line
97°07'30", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4275 000m N	1000-meter Universal Transverse Mercator grid ticks, zone 6
6000000 M	5000-foot grid ticks: New York State Plane coordinate system, east zone (FIPSZONE 3101), Transverse Mercator
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile

MAP REPOSITORY
4700 South Bragaw Street, Anchorage, Alaska 99507 (Maps available for reference only, not for distribution.)

INITIAL NFIP MAP DATE
September 5, 1979
FLOOD HAZARD BOUNDARY MAP REVISIONS

FLOOD INSURANCE RATE MAP EFFECTIVE
September 5, 1979
FLOOD INSURANCE RATE MAP REVISIONS
September 18, 1987 - to update map format.
March 5, 1990 - to change Base Flood Elevations and Special Flood Hazard Areas, reflect updated topographic information and to incorporate previously issued Letters of Map Revision.
July 2, 2002 - to add Special Flood Hazard Areas and Base Flood Elevations.
September 25, 2009 - to update corporate limits, change zone designations and to incorporate previously issued Letters of Map Revision.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1770D

FIRM
FLOOD INSURANCE RATE MAP

MUNICIPALITY OF
ANCHORAGE, ALASKA
ANCHORAGE DIVISION COUNTY

PANEL 1770 OF 1975
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

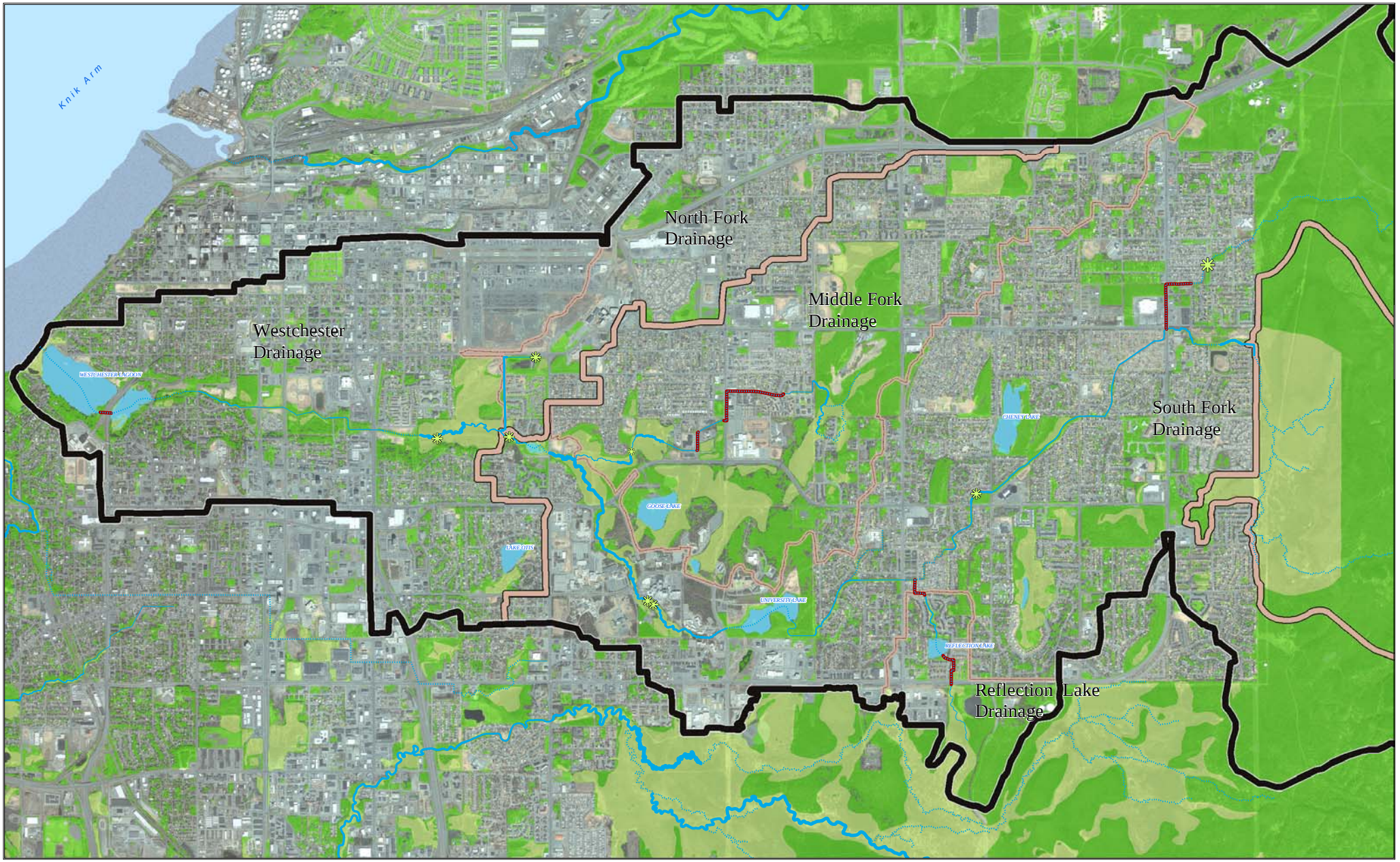
COMMUNITY	NUMBER	PANEL	SUFFIX
ANCHORAGE, MUNICIPALITY OF	020005	1770	D

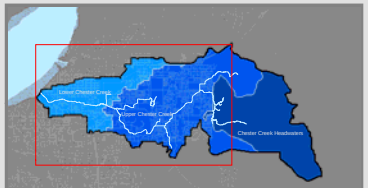
Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
0200051770D

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency





Legend

Watershed Series
- Watershed
- Subwatershed
- Drainage

Hydrography
- Stream
- Lake
- Marine Water
- Mudflat

Landcover Type
- Forest/Upland
- Wetland/Lowland

Habitat Quality
- Limited Habitat
- Good Habitat
- No MOA Habitat Data
- Piped Stream Reach

ASCI Score
- Very Poor
- Poor
- Fair
- Good
- Excellent

N W E S

Biotic Quality

Chester Creek

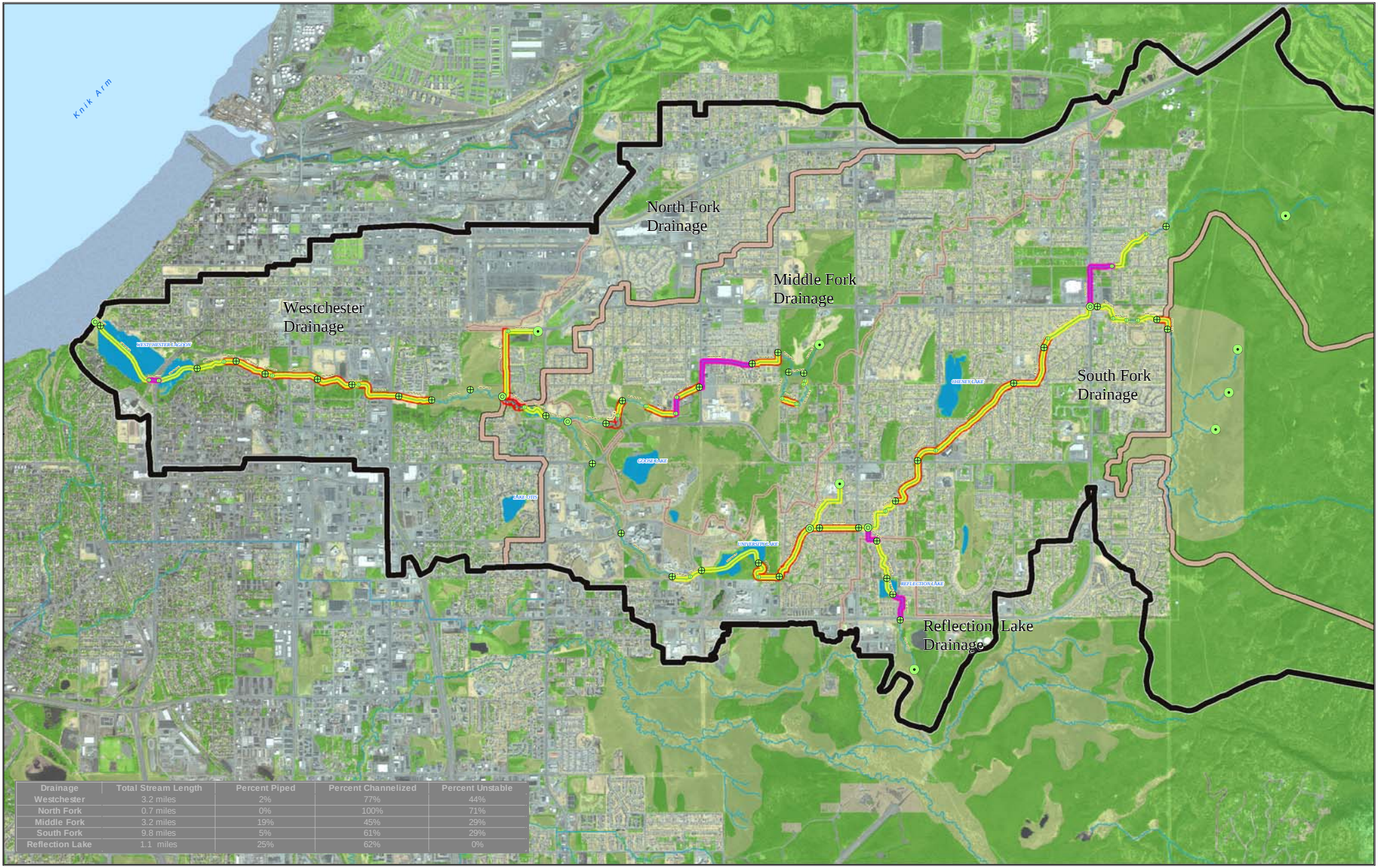
Watershed Management Services

Anchorage, Alaska

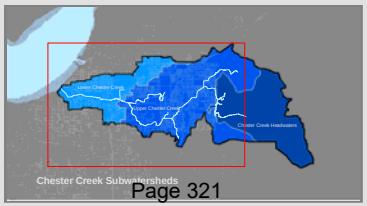
Scale In Feet 0 1,000 2,000

DRAFT

May, 2003



Drainage	Total Stream Length	Percent Piped	Percent Channelized	Percent Unstable
Westchester	3.2 miles	2%	77%	44%
North Fork	0.7 miles	0%	100%	71%
Middle Fork	3.2 miles	19%	45%	29%
South Fork	9.8 miles	5%	61%	29%
Reflection Lake	1.1 miles	25%	62%	0%



Legend

Watershed Series
- Watershed
- Subwatershed
- Drainage

Hydrography
- Stream
- Marine Water
- Mudflat

Land Cover Type
- Forest/Upland
- Wetland/Lowland
- Lawn/Landscape

Channel Quality
- Piped
- Channelized
- Unstable

Stream Nodes
- Source
- Outlet
- Reach
- Subreach

N W E S

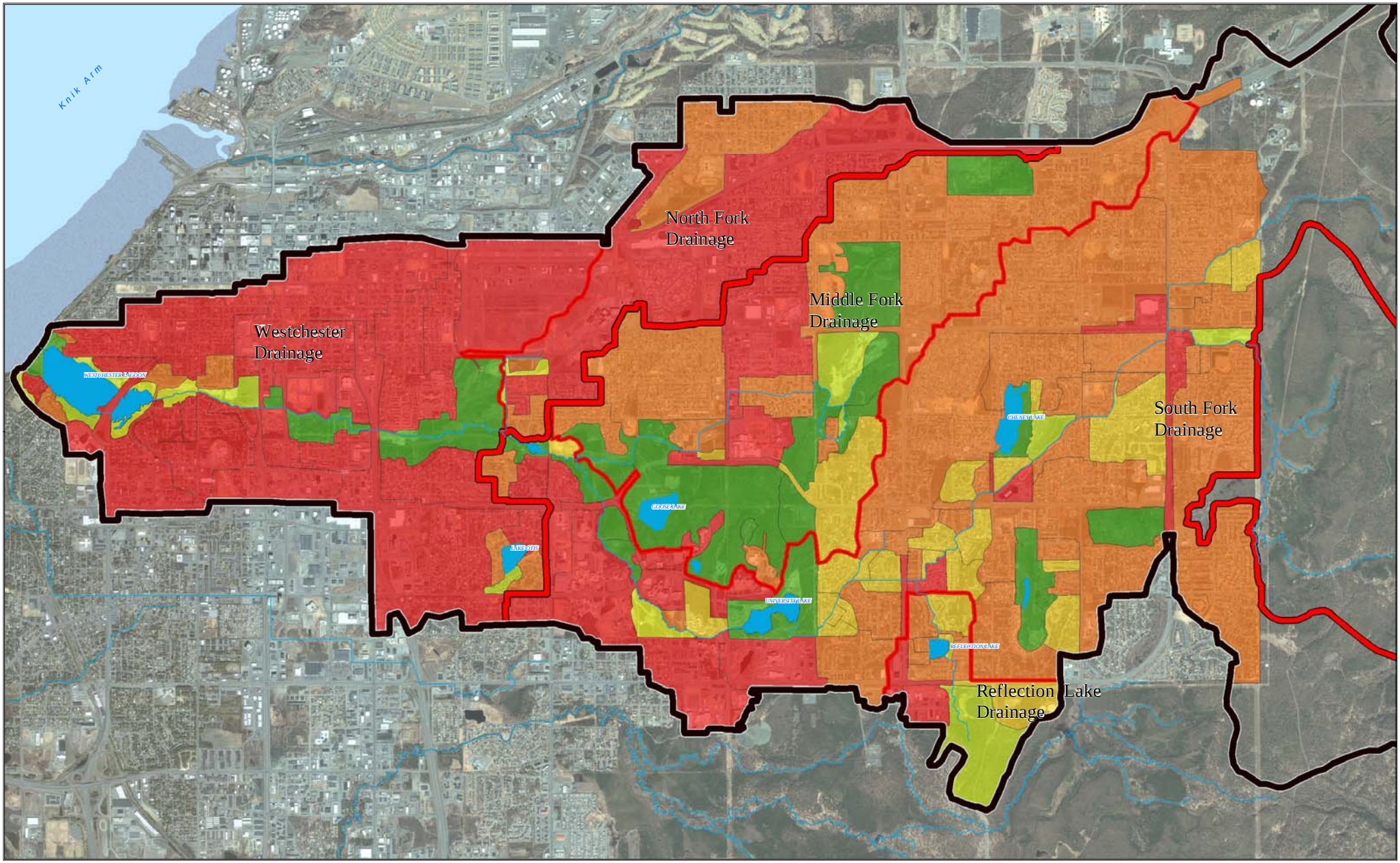
Channel Quality
Chester Creek
Anchorage, Alaska

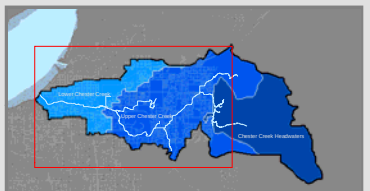
Watershed Management Services

Scale In Feet 0 1,000 2,000

DRAFT
May, 2003

Compiled By MWH





Chester Creek Subwatersheds

Legend

Watershed Series
- Watershed
- Subwatershed
- Drainage

Hydrography
- Stream
- Lake
- Marine Water
- Mudflat

Percent Impervious
- 0-5%
- 5-10%
- 10-15%
- 15-30%
- 30-50%
- >50%

N W E S

Impervious Surfaces

Watershed Management Services

Chester Creek

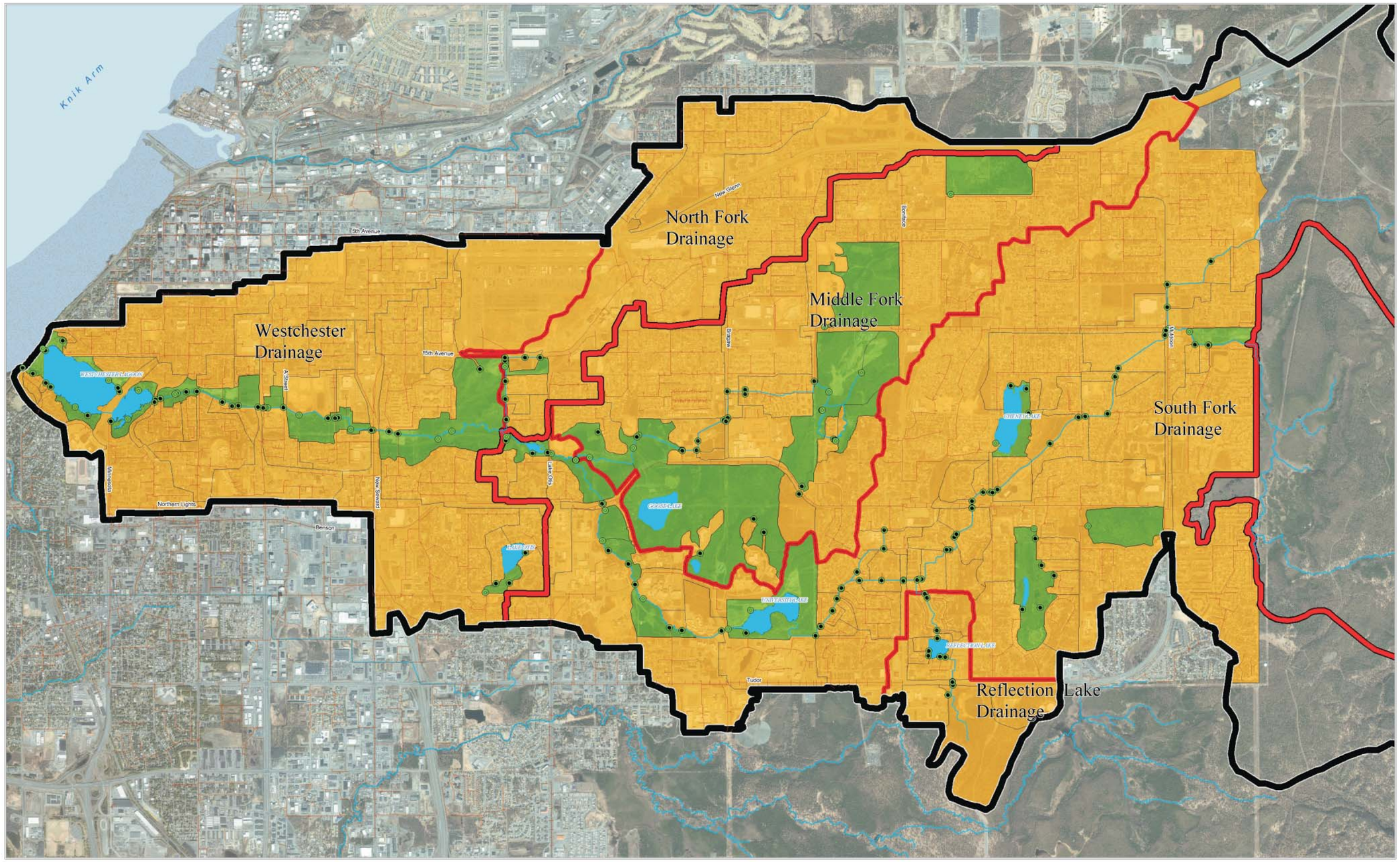
Anchorage, Alaska

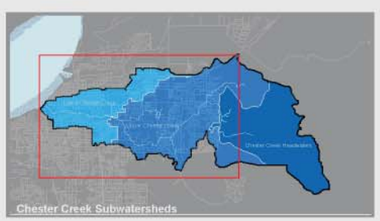
Scale In Feet 0 1,000 2,000

DRAFT

May, 2003

Compiled by MWH





Legend

Watershed Series
- Watershed
- Subwatershed
- Drainage

Hydrography
- Stream
- Lake
- Marine Water
- Mudflat

Subdraiange Basin Type
- Natural Basin
- Outfall Basin

Basin Discharge
- Natural Outlet
- Constructed Outfall

Drainageway
- Storm Water Pipe

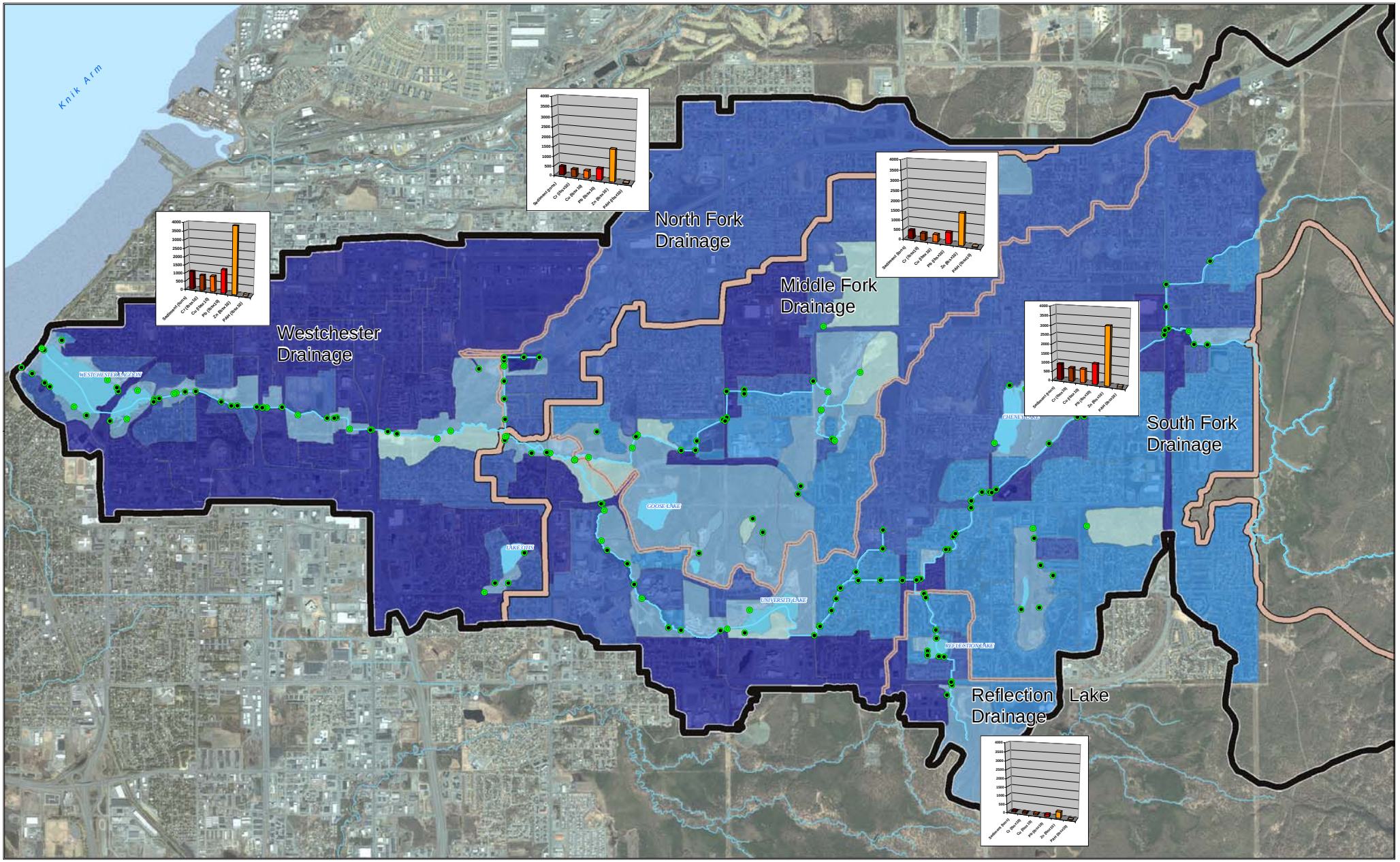
N W E S

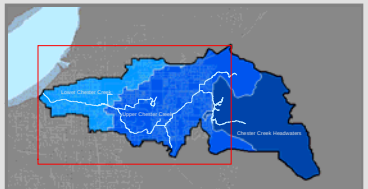
Outfall Basins
Chester Creek
Anchorage, Alaska

Watershed Management Services

Scale In Feet 0 1,000 2,000

DRAFT
May, 2003





Legend

- Watershed
- Subwatershed
- Drainage

Hydrography
- Stream
- Lake
- Marine Water
- Mudflat

Total Runoff per unit Area
- 0 cu. ft per acre
- 0 - 0.1
- 0.1 - 0.2
- 0.2 - 0.3
- > 0.3 cu. ft per acre

Discharge Points
- Natural Outlet
- Constructed Outfall

N W E S

Pollutant Washoff

Watershed Management Services

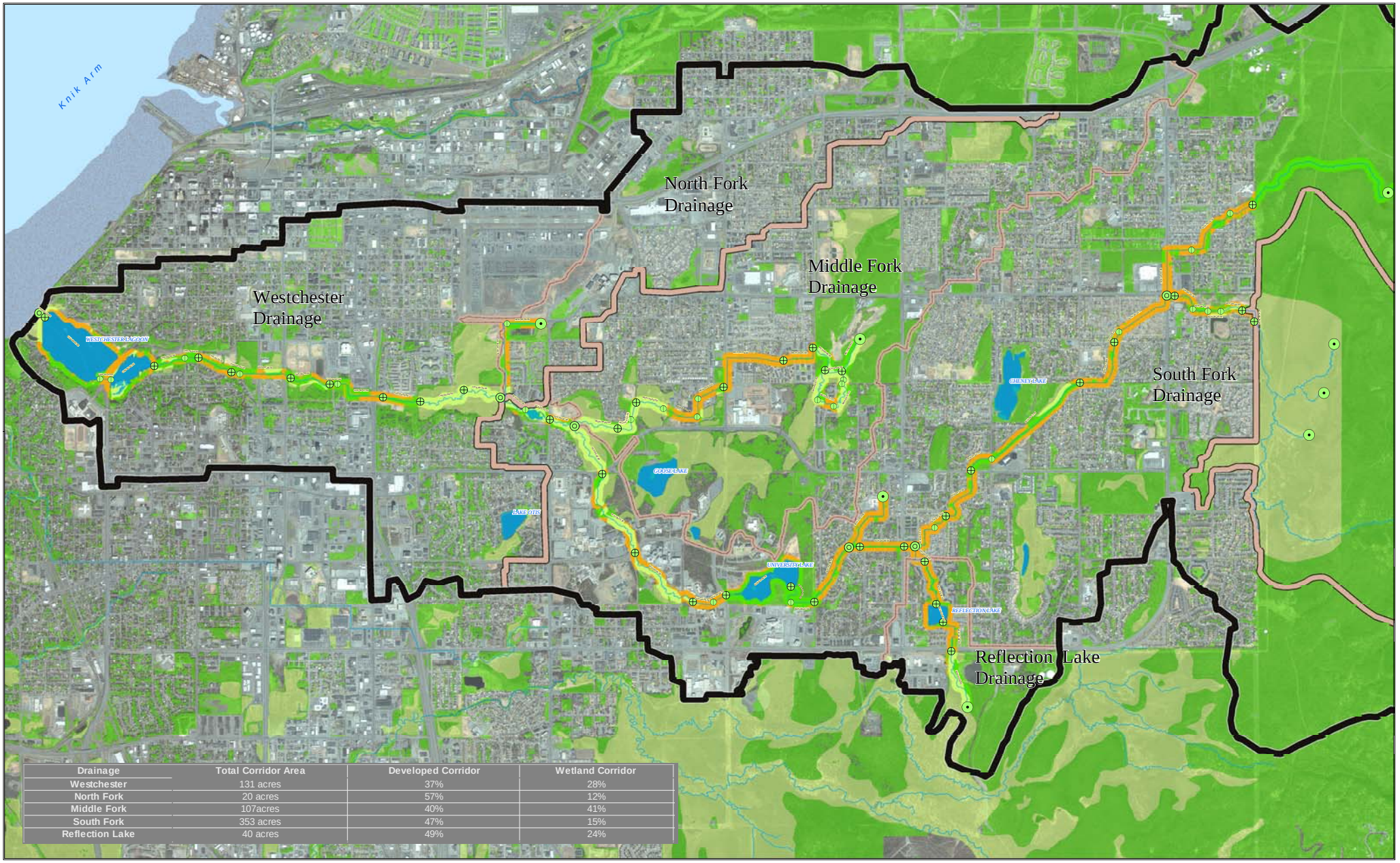
Chester Creek

Anchorage, Alaska

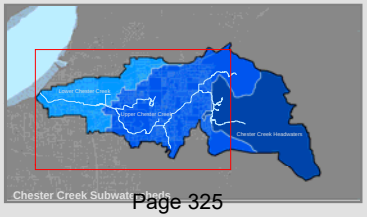
Scale In Feet 0 1,000 2,000

DRAFT

May, 2003



Drainage	Total Corridor Area	Developed Corridor	Wetland Corridor
Westchester	131 acres	37%	28%
North Fork	20 acres	57%	12%
Middle Fork	107acres	40%	41%
South Fork	353 acres	47%	15%
Reflection Lake	40 acres	49%	24%



Chester Creek Subwatersheds

Legend

Watershed Features
- Watershed
- Subwatershed
- Drainage

Hydrography
- Stream
- Lake
- Marine Water
- Mudflat

Riparian Quality
- Developed Corridor
- Forest Corridor
- Wetland Corridor

Land Cover Type
- Forest/Upland
- Wetland/Lowland

Stream Nodes
- Source
- Outlet
- Reach
- Subreach

N W E S

Riparian Quality

Chester Creek

Anchorage, Alaska

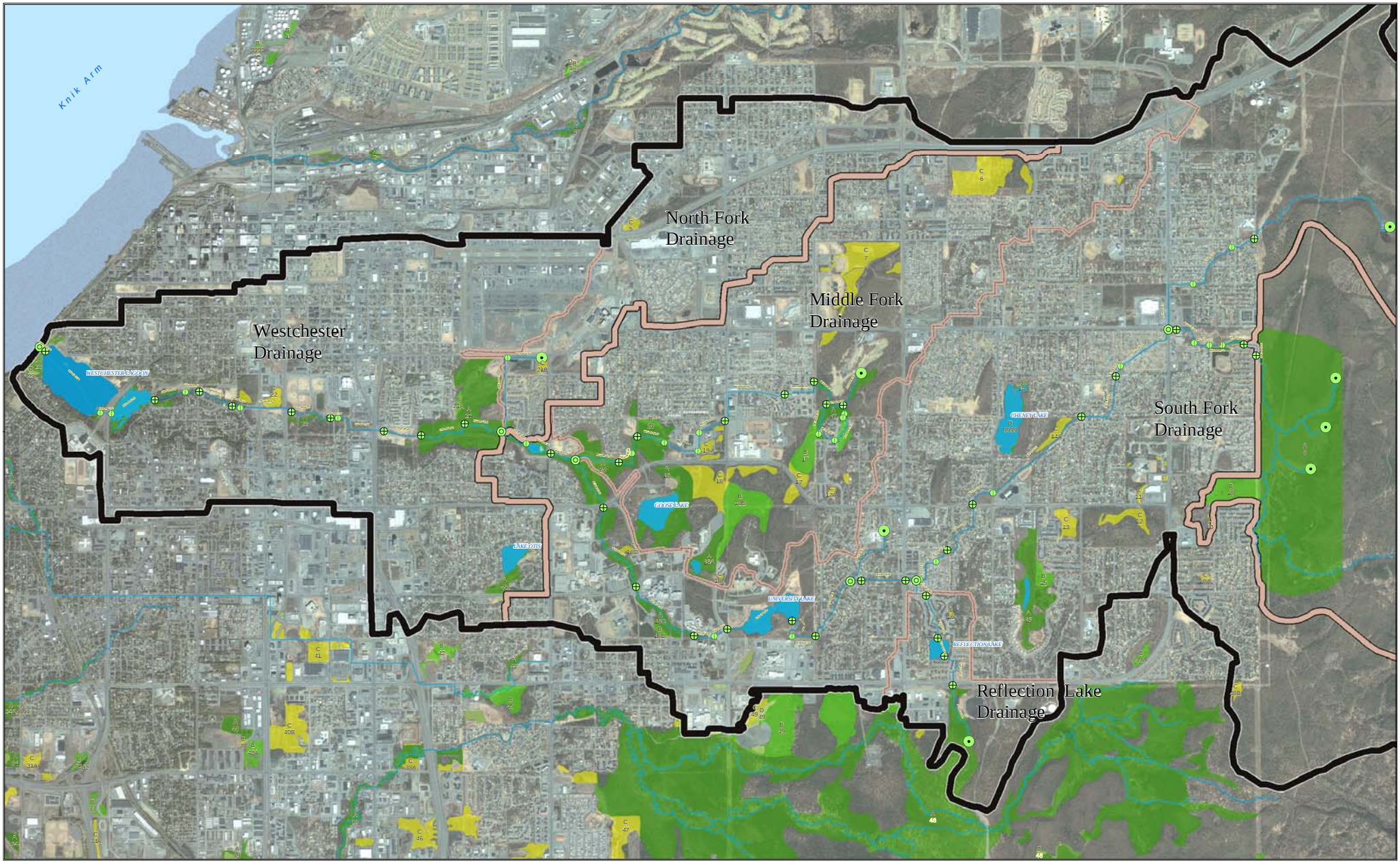
Watershed Management Services

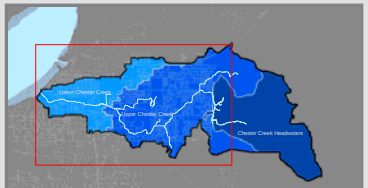
Scale In Feet 0 1,000 2,000

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May, 2003

Compiled By MWH





Chester Creek Subwatersheds

Legend

Watershed Series
- Watershed
- Subwatershed
- Drainage

Hydrography
- Stream
- Lake
- Marine Water
- Mudflat

Wetland Designation
- A
- B
- C
- No Designation
- A Designation
- 20 96 AWMP ID

Stream Nodes
- Source
- Outlet
- Reach
- Subreach

N
W E
S

Chester Creek Watershed

Watershed Management Services

Chester Creek

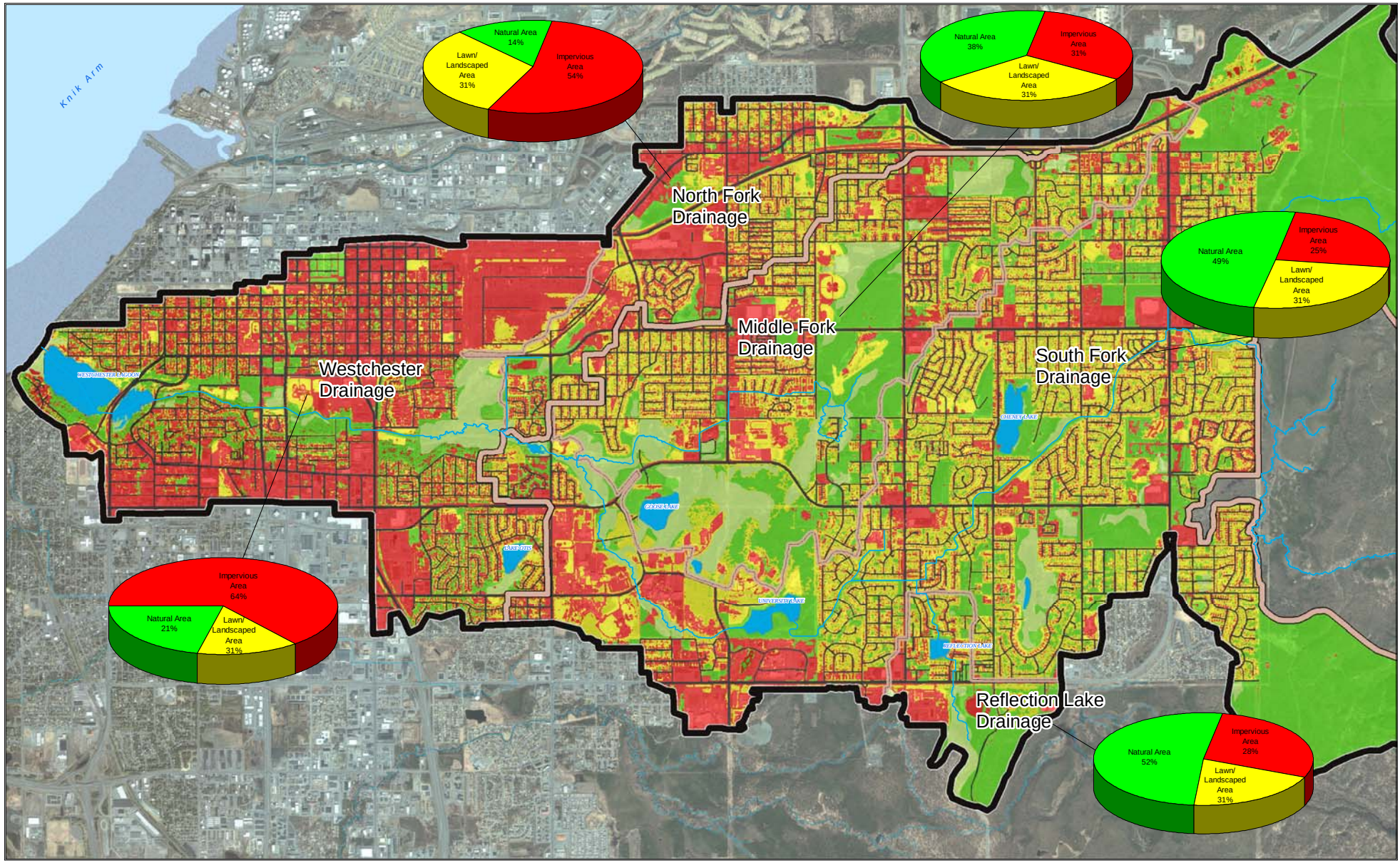
Anchorage, Alaska

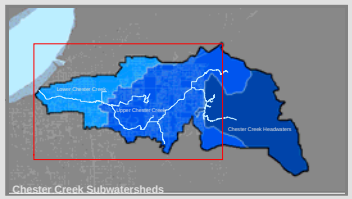
Scale In Feet 0 1,000 2,000

DRAFT

May, 2003

Compiled By MWH, Americas Inc.





Legend

Watershed Series
- Watershed
- Subwatershed
- Drainage

Hydrography
- Stream
- Lake
- MARINE WATER
- MUDFLAT

Developed Areas
- Impervious (Streets)
- Impervious (Other)
- Lawn/Landscaped

Undeveloped Areas
- Forest/Upland
- Wetland/Lowland

N W E S

Storm Water Runoff Surfaces

Watershed Management Services

Chester Creek

Anchorage, Alaska

Scale In Feet 0 1,000 2,000

DRAFT May, 2003

Compiled By MWH

EDMONDS CREEK
MIRROR CREEK
FIRE CREEK
KNIK RIVER
EKLUTNA RIVER
PETERS CREEK
Knik Arm
SHIP CREEK
EAGLE RIVER
HOOD CREEK
CHESTER CREEK
FISH CREEK
Fire Is.
CAMPBELL CREEK
FURROW CREEK
Cook Inlet
RABBIT CREEK
POTTER CREEK
BIRD CREEK
INDIAN CREEK
MCHUGH CREEK
GLACIER CREEK
RAINBOW CREEK
FALLS CREEK
Turnagain Arm
KERN CREEK
TWENTY MILE RIVER
PETERSON CREEK
PORTAGE CREEK
PLACER RIVER

Alaska Locator Map

N
W
E
S

1:350,000

Watersheds

Upper Cook Inlet

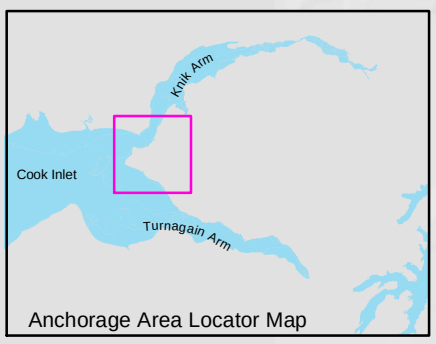
0 1 2 3 4 5 Miles

Municipality of Anchorage
Office of Planning, Development & Public Works

Map compiled by GeoNorth LLC
October 2001

Office of Planning, Development & Public Works

Anchorage Watershed Management



Anchorage Area Locator Map

EAGLE RIVER

Knik Arm

SHIP CREEK

CHESTER CREEK

HOOD CREEK

FISH CREEK

CAMPBELL CREEK

FURROW CREEK

RABBIT CREEK

POTTER CREEK

MCHUGH CREEK

Turnagain Arm

Watersheds

Anchorage Bowl

N
W E
S

1:120,000

0 1 2 Miles

Municipality of Anchorage
Office of Planning, Development
& Public Works

Map compiled by GeoNorth LLC
October 2001

Legend

Watersheds

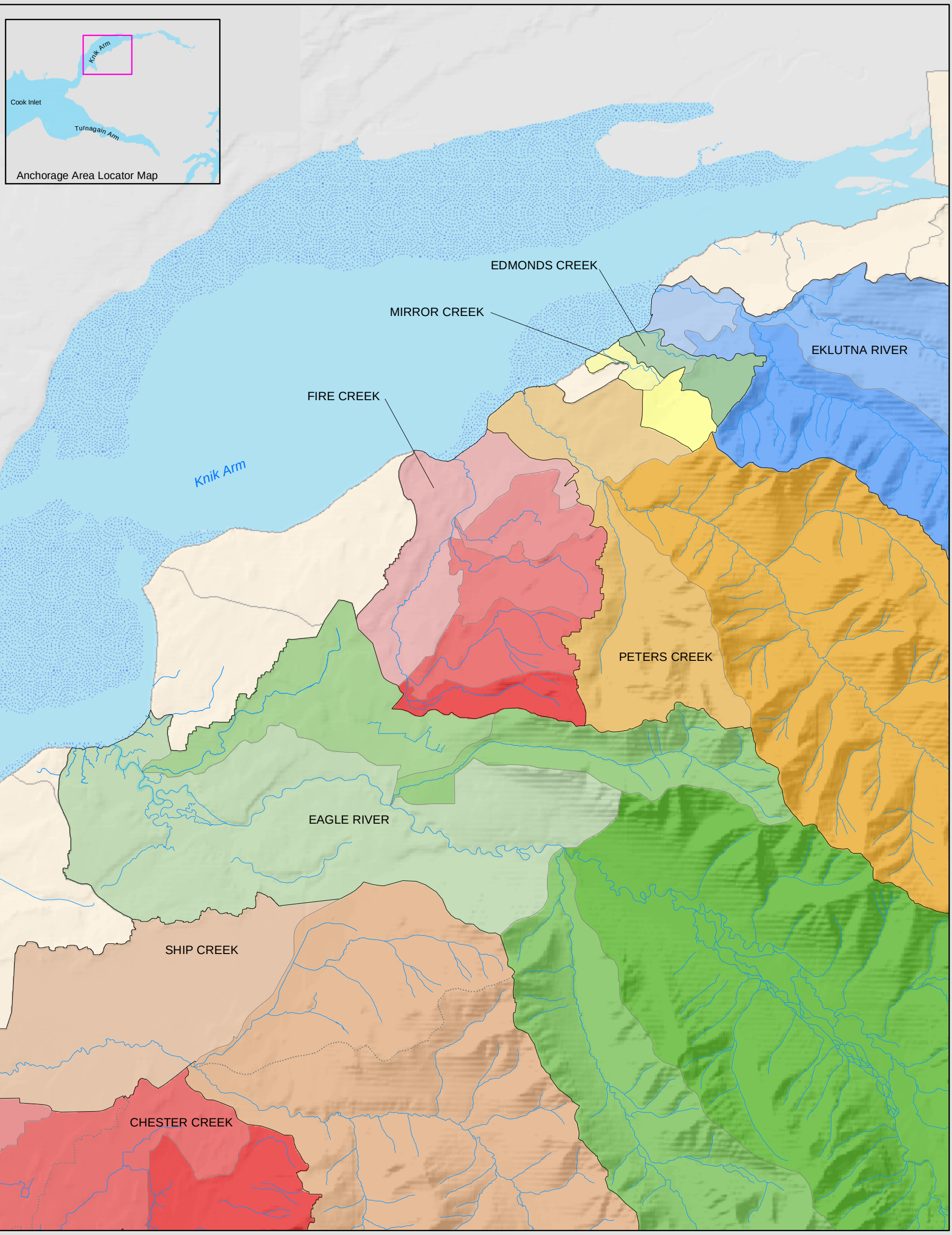
Subwatersheds

Drainages

Remnant Watershed

Office of Planning, Development & Public Works

Anchorage Watershed Management



Watersheds

Knik Arm

N
W E
S

1:120,000

0 1 2 Miles

Municipality of Anchorage
Office of Planning, Development
& Public Works

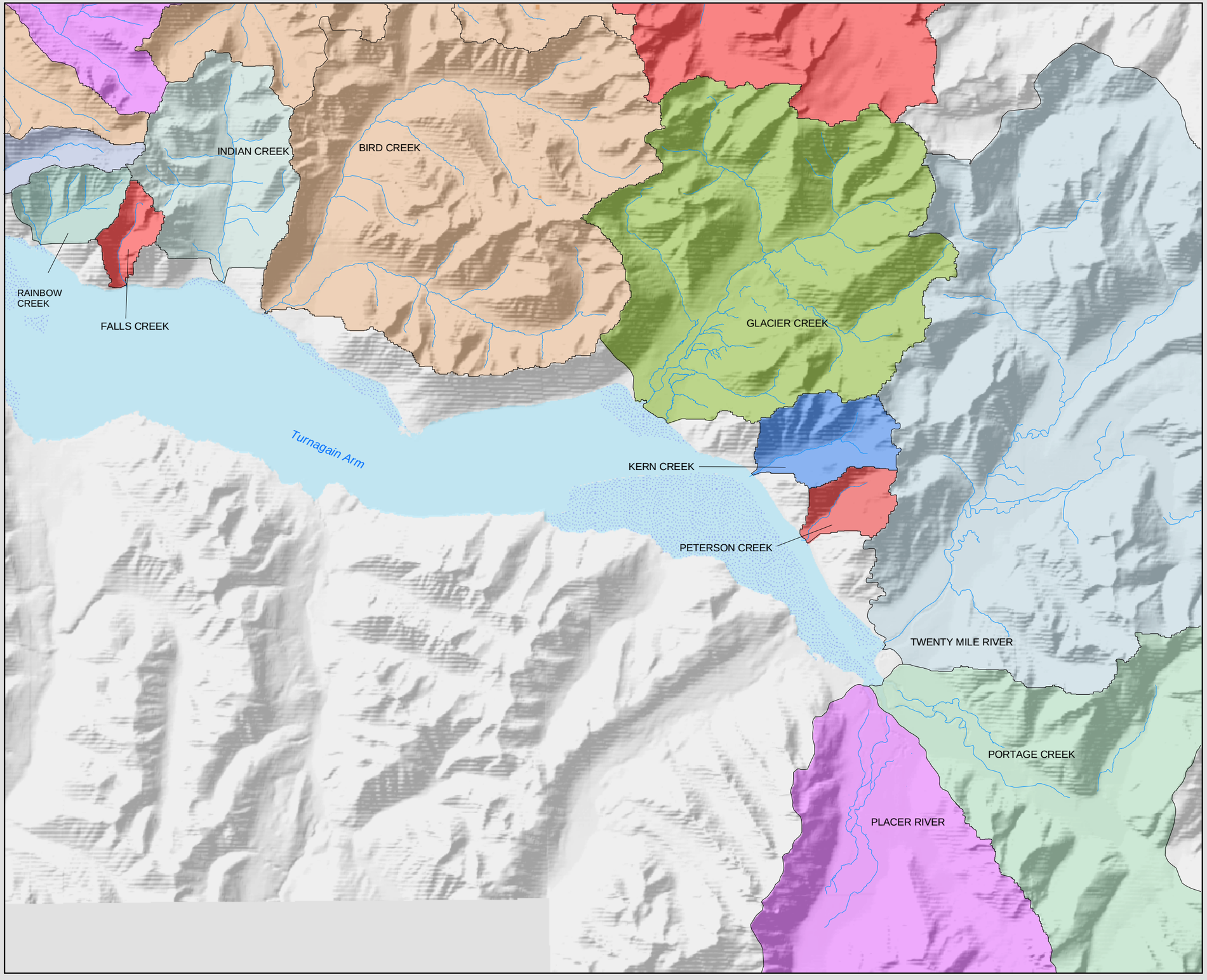
Map compiled by GeoNorth LLC
October 2001

Legend

- Watersheds
- Subwatersheds
- Drainages
- Remnant Watershed

Office of Planning, Development & Public Works

Anchorage Watershed Management



N
W E
S

1:160,000

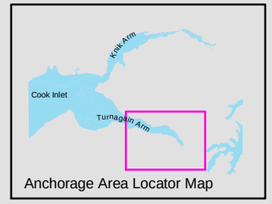
0 1 2 Miles

Municipality of Anchorage
Office of Planning, Development
& Public Works

Map compiled by GeoNorth LLC
October 2001

Office of Planning, Development & Public Works

Anchorage Watershed Management



Anchorage Area Locator Map

Watersheds

Turnagain Arm

Appendix E
Dam Inundation Areas

Note: Topographical contours are in meters

conversion: feet = meters x 3.2808

Cross Section 6 3.7 Miles D/S of Eklutna Dam	Eklutna Sunny Day	Eklutna PMF
Arrival Time (min)	10.2	7.7
Time to Peak (min)	50.0	40.0
Peak Elevation ft. (m)	609 (186)	618 (189)
Peak Flow (cfs)	38,800	95,900
Normal Elevation ft. (m)	591 (180)	591 (180)
W.S. Elevation Increase ft. (m)	18 (6)	27 (9)

Cross Section 4 1.9 Miles D/S of Eklutna Dam	Eklutna Sunny Day	Eklutna PMF
Arrival Time (min)	5.5	4.2
Time to Peak (min)	30.0	30.0
Peak Elevation ft. (m)	738 (225)	746 (227)
Peak Flow (cfs)	39,500	97,600
Normal Elevation ft.(m)	722 (220)	722 (220)
W.S. Elevation Increase ft. (m)	16 (5)	24 (7)

Cross Section 1 1.1 Miles D/S of Eklutna Dam	Eklutna Sunny Day	Eklutna PMF
Arrival Time (min)	0.0	0.0
Time to Peak (min)	0.0	0.0
Peak Elevation ft. (m)	866 (264)	877 (267)
Peak Flow (cfs)	41,100	102,200
Normal Elevation ft. (m)	828 (252)	828 (252)
W.S. Elevation Increase ft. (m)	38 (12)	49 (15)

Legend:

O Inundation boundary for a Probable Maximum Flood (PMF) failure.

CD Cross-Section locations where flood data provided.

Notes:

1. Because of the method, procedures and assumptions used to develop the flooded areas, limits of flooding shown and flood wave travel times are approximate and should be used only as a guideline for establishing evacuation zones. Actual areas inundated will depend on actual failure conditions and may differ from areas shown on the maps.

2. Flood inundation boundaries are interpreted from USGS 20 meter contour intervals and data is provided in meters and feet.

3. Due to the accuracy of the difference between the PMF and Sunny Day failure lines therefore shown as the same line.

SCALE: 1" = 2000'

2000 0 2000 FEET

N

FIGURE 7-1

ANCHORAGE MUNICIPAL LIGHT & POWER

DAM FAILURE INUNDATION MAP FOR

EKLUTNA DAM

MAP NO. 1

Note: Topographical contours are in meters
conversion: feet = meters x 3.2808

Legend:

Inundation boundary for a Probable Maximum Flood (PMF) failure.

Cross-Section locations where flood data provided.

Notes:

1. Because of the method, procedures and assumptions used to develop the flooded areas, limits of flooding shown and flood wave travel times are approximate and should be used only as a guideline for establishing evacuation zones. Actual areas inundated will depend on actual failure conditions and may differ from areas shown on the maps.
2. Flood inundation boundaries are interpreted from USGS 20 meter contour intervals and data is provided in meters and feet.
3. Due to the accuracy of the USGS base maps used the difference between the PMF and Sunny Day failure lines could not be shown and are therefore shown as the same line.

Cross Section 11 7.4 Miles D/S of Eklutna Dam	Eklutna Sunny Day	Eklutna PMF
Arrival Time (min)	18.9	14.3
Time to Peak (min)	70	60
Peak Elevation ft.(m)	289 (88)	305 (93)
Peak Flow (cfs)	38,700	95,200
Normal Elevation ft (m)	262 (80)	262 (80)
W.S. Elevation Increase ft (m)	27 (8)	43 (13)

Cross Section 9 5.9 Miles D/S of Eklutna Dam	Eklutna Sunny Day	Eklutna PMF
Arrival Time (min)	15.3	11.5
Time to Peak (min)	70.0	50.0
Peak Elevation ft.(m)	409 (125)	417 (127)
Peak Flow (cfs)	38,700	95,500
Normal Elevation ft (m)	394 (120)	394 (120)
W.S. Elevation Increase ft (m)	15 (5)	23 (7)

Cross Section 14 9.4 Miles D/S of Eklutna Dam	Eklutna Sunny Day	Eklutna PMF
Arrival Time (min)	23.0	17.4
Time to Peak (min)	110.0	90.0
Peak Elevation ft.(m)	111 (34)	139 (42)
Peak Flow (cfs)	37,300	90,600
Normal Elevation ft (m)	84 (26)	84 (26)
W.S. Elevation Increase ft. (m)	27 (8)	55 (16)

2000 0 2000 FEET

SCALE: 1" = 2000'

MATCH MAP 1

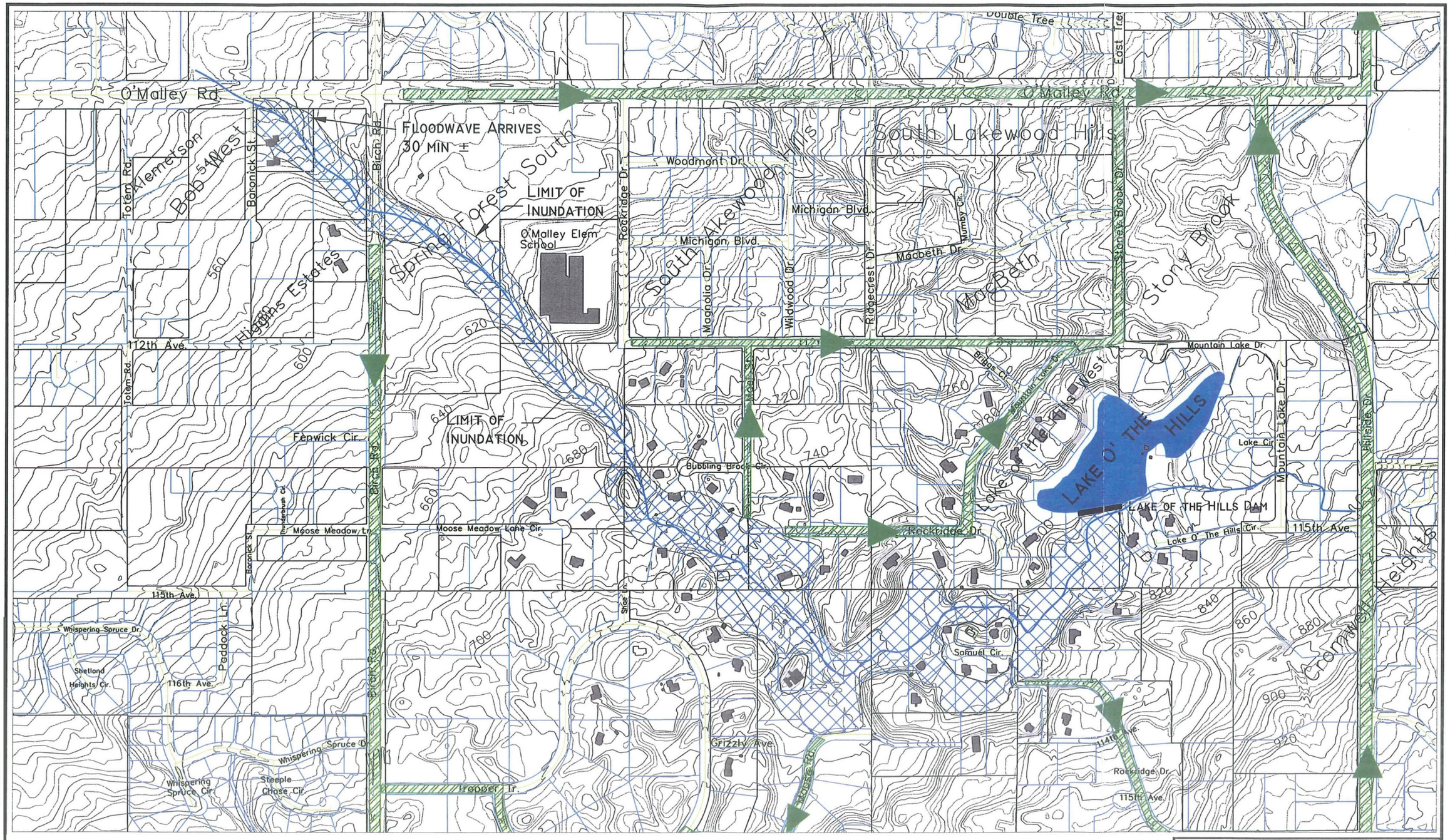
FIGURE 7-2

ANCHORAGE MUNICIPAL LIGHT & POWER

DAM FAILURE INUNDATION MAP FOR

EKLUTNA DAM

MAP NO. 2



LEGEND

Approximate Inundation 20 acres

Evacuation Routes

NOTES

Peak Flood 2.000 cfs
Peak Depth 12 ft above stream bottom
In Flow Design Flood 250 cfs (1/2 PMF)

0 250 500 1000

APPROXIMATE SCALE IN FEET

N

Lake O' The Hills Inundation Study
Anchorage, Alaska

INUNDATION MAP

Stevens & Wilson, Inc

Version 1.0

LEGEND

Approximate Inundation 20 acres

IP£2??] Evacuation Routes

NPo EFood -2,000 do
Peak Depth 12 ft above stream bottom
In Flow Design Flood 256 cfs (1/2 PMF)

Lake O' The Hills Inundation Study

Anchorage, Alas.kc

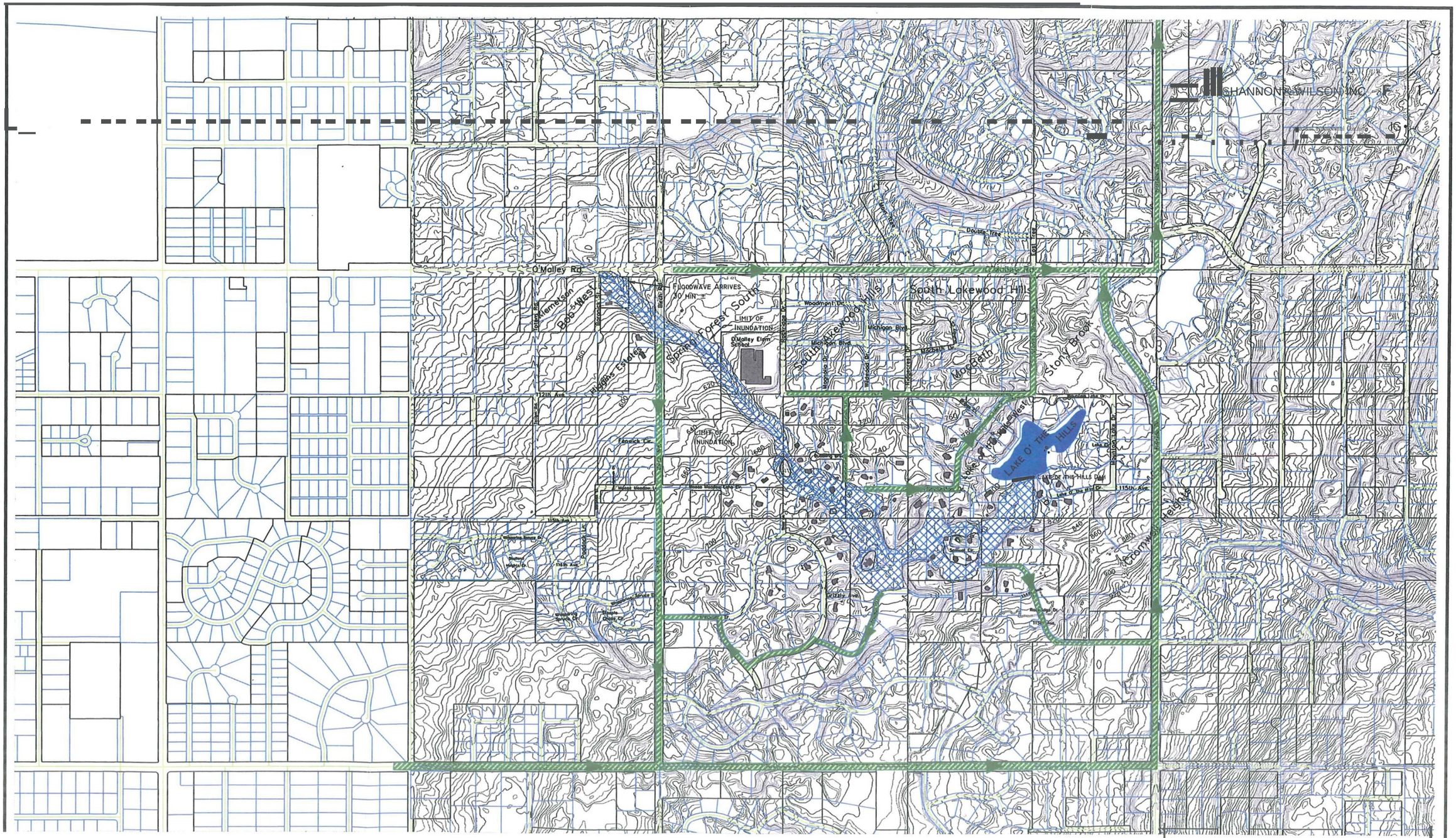
0 250 500 1000

APPROXIMATE SCALE IN FEET

August 2001

32-1-01349

INUNDATION MAP


SHANNON & WILSON, INC.
O'Malley Rd
Bob-West
Stream
FLOODWAVE ARRIVES 30 MIN ±
LIMIT OF INUNDATION
O'Malley Elem. School
Sprague Forest South
South Lakewood Hills
Woodmont Dr.
Michigan Blvd
Magnolia Dr.
Redwood Dr.
Locust Dr.
Mossett Dr.
Story Brook
LAKE O' THE HILLS
LAKE O' THE HILLS DAM
Lake O' The Hills Dr.
Lake O' The Hills Blvd
Double Tree
112th Ave
115th Ave
Fennick Cir.
Fillmore Ct.
Tolken Rd.
Baron Rd.
Woodridge Dr.
Roosevelt Rd.
Jefferson Ct.
Lincoln Ct.
Kennedy Ct.
Reagan Ct.
Bush Ct.
Clinton Ct.
Carter Ct.
Ford Ct.
Nixon Ct.
Johnson Ct.
Truman Ct.
Eisenhower Ct.
Hoover Ct.
Coolidge Ct.
Harding Ct.
Wilson Ct.
Taft Ct.
Roosevelt Ct.
Jefferson Ct.
Lincoln Ct.
Kennedy Ct.
Reagan Ct.
Bush Ct.
Clinton Ct.
Carter Ct.
Ford Ct.
Nixon Ct.
Johnson Ct.
Truman Ct.
Eisenhower Ct.
Hoover Ct.
Coolidge Ct.
Harding Ct.
Wilson Ct.
Taft Ct.

Appendix F

Prioritization

PRIORITIZATION

It is acknowledged that there will be many projects that should be undertaken but there is a limited amount of resources available. Given that, projects must be prioritized to determine how to allocate resources.

The prioritization will be done by the committee and will be based on several criteria including:

- Life safety
- Compliance with an existing program/regulation
- Cost Benefit Analysis
- Co-ordination with existing documents/programs

Life safety
Activities that protect human lives will have priority over those that solely protect of property.

Compliance
The failure to comply with existing requirements could have wide ranging consequences such the ineligibility to participate in funding programs.

Cost Benefit Analysis
When possible, FEMA's cost-benefit analysis tools will be used to determine a project's cost-benefit ration. Those projects with a higher cost benefit ratio will be given a higher priority.

A cost benefit analysis provides a common basis that can be used to compare projects. When calculating a cost benefit ratio, the cost amount includes funds spent by FEMA, state, local, tribal, private and other dollars. It should include administrative and maintenance costs as well as indirect costs. Examples of costs include:

- Direct expenditures of construction materials

How to Determine Cost-Effectiveness of Mitigation Projects

As the well-publicized devastation of floods, earthquakes, and hurricanes attests, disasters are random and inevitable events that we can't control. But how we reduce or mitigate, damage from disasters is something that we *can* control.

That is why FEMA funds hazard mitigation projects: to reduce future damages, losses, casualties, and other devastating impacts from disasters. Some examples of flood mitigation projects include elevating buildings or upgrading culverts. Projects in earthquake-prone areas might focus on retrofitting buildings to lower future damages and casualties. So instead of continuously picking up the pieces after disasters, states and communities can identify and carry out hazard mitigation measures that will reduce damage and hardship (the "loss") due to future disasters.

A key criterion for mitigation projects to be eligible for funding is that they must be cost-effective. If the project benefits are higher than the project costs, then the project is cost-effective. Benefit-cost analysis is used for all cost-effectiveness determinations, for flood and earthquake mitigation projects alike. At its most basic level, benefit-cost analysis determines whether the cost of investing in a mitigation project today (the "cost") will result in sufficiently reduced damages in the future (the "benefits") to justify spending money on the project. If the benefit is greater than the cost, then the project *is* cost-effective; if the benefit is less than the cost, then the project *is not* cost-effective.

- Costs to develop and administer a new overlay zone
- Increased business operation costs to comply with mitigation requirement

The benefits have to be estimated. The calculation includes direct and indirect benefits. Examples of benefits include the losses avoided due to mitigation activities, avoided loss of life, injury, property damage, environmental damage, community disruption and response costs avoided.

Calculating the Benefit-Cost Ratio

Cost-effectiveness is determined by comparing the project cost, to the value of damages prevented *after* the mitigation measure. Because the dollar-value of benefits exceeds the costs of funding the project, the project is cost-effective. This relationship is depicted numerically by dividing the benefits by the costs, resulting in a benefit-cost ratio (BCR). The BCR is simply a way of stating whether benefits exceed project costs, and by how much. To derive the BCR, divide the benefits by the cost. If the result is 1.0 or greater, then the project is cost-effective.

By conducting a benefit-cost analysis, you determine one of two things: either the project is cost-effective (BCR > 1.0) or it is not (BCR < 1.0). If the project is cost-effective, then no further work or analysis needs to be done; there is no third step other than to move the project to the next phase in the approval process. If, however, the project is not cost-effective, then it is not eligible for funding.

FEMA utilizes a computer software program to calculate a project's cost-effectiveness. The following is a technical illustration of how benefit-cost analysis works. There are four key elements to all benefit-cost analyses of hazard mitigation projects:

1. an estimate of damages and losses *before* mitigation
2. an estimate of damages and losses *after* mitigation
3. an estimate of the frequency and severity of the hazard causing damages (e.g. floods), and
4. the economic factors of the analysis (i.e. discount rate and mitigation project useful lifetime)

These four key elements and their relationships to one another are detailed in the following example.

EXAMPLE: Consider a 1500 square foot, one-story, single family residence located in the Acorn Park subdivision along Squirrel Creek. A proposed mitigation project will elevate the structure four feet at a cost of $20,000. Whether this project is cost-effective depends on the damages and losses from flooding without the mitigation project; the effectiveness of the mitigation project in reducing those damages and losses; the frequency that the house is flooded and the depth of the flood water; and, the mitigation project's useful lifetime.

If the pre-mitigation damages are frequent and/or severe, then the project is more likely to be cost-effective. Even minor damage that occurs frequently can exceed, over the life of a project, the up-front costs of implementing a mitigation measure. On the other hand, if the building in the example above only flooded once, then it may not be cost-effective to elevate, unless the damages were significant in relation to the value of the structure and its contents.

FEMA is trying to maximize its investment in damage reduction by focusing mitigation resources on those projects that have the best chance of making an impact on losses in property and life. Determining cost-effectiveness of mitigation projects is of critical importance, therefore, to ensure that FEMA is fulfilling its mission of not just responding to disasters, but also in reducing the economic loss and suffering that they bring.

Coordination

A project that is integrated into several plans, has gone through the public involvement process, etc. will have a higher priority as they reflect the desires of multiple departments and the public. Projects that have been contained within a single plan, or has no public involvement may not reflect the wider viewpoint.

Table F.1 shows how the criteria will be considered using a point system to give each project a score. This score will then be used to rank the projects. The department responsible for the project will initially develop the score for the project. The scores will then be evaluated by the Hazard Mitigation Planning Team to ensure that the projects are being consistently scored. For the purposes of this plan, action items will be given a prioritization of high, medium or low. A high value represents a score above 72 while a medium is between 37 and 72 and low is 36 or below. For each project, additional factors to be considered can be listed. At their discretion, the Hazard Mitigation Planning Team can evaluate these factors and alter the project's priority.

Once the priority has been determined, the Table F.2 lists the action items in order of their priority.

Table F.1 Prioritization of Projects

	Criteria	Weighting	Score			Total Points (weight x score)
			Low (1-3 Possible)	Medium (4-6 Possible)	High (7-9 Possible)	
1.	Life Safety	4	No people at risk	Fewer than 10 people affected	More than 10 people affected	
2.	Compliance with existing programs/regulations	3	Not needed	Encouraged	Required	
3.	Cost-benefit	3	No cost-benefit analysis performed or results less than 1	Cost-benefit between 1 and 2	Cost-benefit greater than 2	
4.	Coordination with existing documents	2	No ties to existing plans	Mentioned in one or two plans. Plans without public involvement	Well integrated into plans. Plans have gone through public input process	
TOTAL POINTS						

Additional factors to consider (please note special reasons why this project should be funded (legal liability, social and environmental impacts, high visibility, etc.)

Table F.2 Prioritized list of action items:

Ranking	Action Item	Hazard	Score
1.	1. Identify department responsible for coordinating hazard mitigation activities.	All	N/A
2.	2. Review composition of departments represented on the hazard mitigation planning committee.	All	N/A

Note: upon completion of these two items, the remaining action items should be prioritized.

APPENDIX G

PLANNING TEAM MEETINGS

MOA Mitigation Champion Meeting Notes
5/19/21

Attendees:
AFD (Hettrick/Monfore), Planning (McNulty), Solid Waste Services (Kilcoyne), OEM (Loach), Contractors (Dotson, Wheeler, Maddox)

Unavailable:
Building Development (Doehl), Port of Alaska (Walsh)

Meeting Agenda:

- Amanda and team to provide update on where they are with plan.
    - Introduction of NDRS Staff as contractor. Shared timeline with key milestones.
    - Goals/Issues
        - FEMA Earthquake Risk Analysis
        - Issue of Vertical Datum in Anchorage (PM&E). White paper available
        - Anchorage Climate Action Plan Incorporated
        - Add integration of HMP in the MOA Comprehensive Plan
        - Add more descript scoring of projects
    - Ensure focus on planning process and working with stakeholders
        - State and FEMA
        - UAA Dr. Schmidt
        - DOF Wildland Fire Risk Analysis

- Project reports/updates from all attendees
    - Wildland Fire: Parks and Rec Beetle Kill Project, $3 million CARES
    - Wildland Fire: Parks and Rec, Beetle Kill Project, $3 Million ARPA
    - Earthquake/Climate: SWS Leachate Overhaul Project
    - Earthquake/Climate: Port Gas Infrastructure Protection Project
    - Climate/Energy Renewable Energy Projects
    - Wildland/Earthquake: Roads Ingress/Egress
        - Public Safety Access Road Resolution for Secondary Access (2019)
        - Secondary Access Evaluation Study, Planning (CDBG-DR 2018 EQ)
    - Climate
        - Clean Energy Amendments to State Statute, SWS

- Funding Opportunities – come prepared to discuss any opportunities on your radar

    -CDBG-DR (2018 Earthquake), Earthquake, Lead is OECD. Plan needs to be approved by HUD and have Public Comment.

    -CDBG- Mitigation (2018 Earthquake) - $1.7 million All-Hazard. Recommend use the HMGP applications with recommendations from the HMAC.

    -UAA – $40K, Wildland Fire/Rain in Winter/Permafrost- Offer Firewise, Exercise, Evac Routes

Hazard Mitigation Committee Meeting

7/30/2019, 10:00am

Update on local Hazard Mitigation Plan

- Plan has been approved by FEMA
- Last updated in 2017, as a 5-year plan
- Actions is mitigation term for how objectives are implemented. Need to have an approved plan in order to apply for funding
- Due for an update post-disaster. There are sections that for sure need updating (critical facilities like schools identified more solidly for example)

Department/Agency Updates (by goal and action item):

Goal 1 (A 1-3): OEM

- Update local Hazard Mitigation Plan. Looking into potentially doing this with grant funds

Goal 2:

All Depts (A4) – public information and outreach of hazards ongoing

GIS (A5) - Working on updating critical facilities database. Also NEED vegetation data!

Goal 3:

SWS (A6) – Already working through process to replace one (or more) building(s)

GIS (A7) – working on updating database of critical facilities

APD (A8) – Seismic retrofitting still needed in some APD facilities to be brought up to code

Port (A9, 10) – First stage of the petroleum/cement dock rebuild. Also pursuing $22million for other projects. Have already jacketed many piles that are damaged/corroded. Continuing to jacket more piles. Two Port projects have already been approved to receive annual mitigation funding

M&O (A11) – a few more gas valve shut off devices going to be installed soon (funding in-house). Pursuing other grant-dependent projects

School District (A12, 13)

- Half buildings have had Tier 1 seismic analysis completed
- 5 projects identified for mitigation application. Projects being scoped currently. Ceiling stabilization, lighting stabilization. Mechanical/electrical bracing. Walls have been identified to be made more stable and up to code.

- Came up with a 1-10 scale with FEMA for rating buildings. Wanting to bring all ASD buildings up to a 6.5 level (most currently at 3-5 range)
- 404 and 406
- Also working on pipe strapping as an on-going effort

Goal 4:

Dev Services (A14) – work with private sector to meet code standards. No additional costs associated with code enforcement outside normal costs

Goal 5:

A15 – stick with 2020 plan so far. Working toward 2040 plan

A17 – avalanche mapping needs updating, as do seismic and wind zone maps.

Goal 6: (All PM&E)

PM&E (A18 - 22) –

Goal 7:

OEM (A26, 27) – looking into IPAWS

COOP Guidelines published

Goal 8:

AFD (A28) – NEEDED to update existing zoning ordinance for wildfire mitigation! Want to do, lack of funding. Eligible for mitigation funding

AFD (A29) – Fire Wise home assessments an ongoing project. Just received some more grant funding that will fund inspections for the next 2-3 years. Will be applying for additional funding. Working with UA system to make university's campuses Fire Wise. APU needs a lot of inspection and Fire Wise mitigation.

AFD (A30) – AFEM (Anchorage Fire Exposure Model) has changed. Vegetation and spruce bark beetle data missing and NEEDED (GIS).

AFD (A31) –

AFD/AWWU (A32) – Looking into expanding water service up to Hillside remote areas. Also looking into developing urban water sources. Will be applying for funding for both.

Community Wildfire Protection Plan – needs updating SOON!!! How Anchorage competes with other cities for Urban/Wildland Interface mitigation money

Risk Map Project:

- Assistance from FEMA to develop a resource identifying local hazards and analyses associated

- Published in September 2018, very accurate in terms of earthquake scenario and subsequent effects
- Working to complete the analysis with FEMA. Will be able to determine what the analysis means/shows
- One final meeting required

Funding:

- Applications due for mitigation on October 31st
- Funding paid 75% Federal, 25% State
- May take at least a year, up to two in order to get funding, once project is approved
- Well-written projects get approved quicker, cost effective, environmentally/historically friendly, etc.
- OEM available for mitigation consulting
- OEM considering bringing in contractors to assist Muni/Muni departments to put together scopes of work, applications, etc.
- Mitigation funding becomes available ANY time there is a disaster declaration (decs happening on average every 90 days in Alaska). Can be applied for outside of affected areas, for mitigation not necessarily related to declared disaster
- Pre-Disaster Mitigation (PDM) annual funding source for mitigation grant money
-

Municipality of Anchorage (MOA)

Hazard Mitigation Advisory Committee Meeting

11/19/2019

In Person Attendance:

Amanda Loach – MOA Office of Emergency Management

Andrew Preis – MOA Office of Emergency Management

Audrey Gray - MOA Office of Emergency Management

Shelley Rowton – MOA Real Estate

Jodie Hettrick – MOA Fire Dept

Josh Durand – MOA Parks and Recreation

Bill Kays – MOA Health Department

Renee Aguilar – MOA Health Department

Steve Ribuffo – MOA Port of Alaska

Bob Doehl – MOA Development Services

Sharen Walsh – MOA Port of Alaska

George Vakalis – Anchorage School District

Alan Czajkowski – MOA Maintenance & Operations

Maury Robinson – MOA Public Works

Michelle McNulty – MOA Planning Department

Shaina Kilcoyne – MOA Solid Waste Services

JT Maddox - National Disaster Recovery Services (MOA Emergency Management Contractor)

On phone:

Anneliese Roberts – MOA Safety Officer

Alyssa Farrar, et. Al. – Anchorage Waste Water Utility

Cheryl Evans – MOA Human Resources

Sioux-z Marshall – MOA Internet and Technology Department

Alex Slivka – MOA Chief Financial Officer

Tina Miller - MOA Geospatial Data and Information

Darrell Dotson - National Disaster Recovery Services (MOA Emergency Management Contractor)

Meeting called to order at 9:00am

Agenda: Plan Maintenance: Post Disaster/Annual Review

1) **Potential funding coordination**
2) **New mitigation needs identified**
3) **Recommended changes in committee membership**

1.) Funding: $9.8million currently available from EQ recovery estimates. Could go up to 20-40million once estimates are finalized and documented

Categories of eligible mitigation projects:

1.) Projects – basic construction, "bricks and sticks"
2.) Planning – updating plans. No FEMA Cost Benefit Analysis (CBA) Required.
3.) Initiative – most widely sought after, vast variety of eligible projects. No CBA required. Only get 5% of available funding

Priorities discussed based on Risk identified in the MOA All Hazard Mitigation Plan. CBA results not yet available. All reminded, that **OEM has contractor services available to help with application process.**

Proposed CONSTRUCTION project priorities: first 8 labeled as medium priority

1.) Port fenders (Port)
2.) Seismic retrofits for critical. facilities Fire and police stations, construction can potentially happen in 2020 if funded(M&O)
3.) Seismic shut off valves (M&O)
4.) Wildfire vegetation project for critical facilities (AFD)
5.) 2 culverts being widened (140th and Buffalo, and Chester Creek)

6.) 2 generators (OEM, AFD facility)
7.) Generator at SWS (SWS)
8.) AWWU submitting potentially up to 8 other projects (More details on proposed projects coming.

Proposed PLANNING project priorities:

1.) Hazard Mitigation Plan update (OEM) high, medium, high
2.) Wildfire Urban Initiative Code update (AFD) medium
3.) Wildfire Planning update (AFD) medium
4.) Building analysis of all ASD facilities, mostly for seismic upgrades (Anchorage School District)

Proposed INITIATIVE project priorities:

1.) Outreach project, translations (OEM) medium
2.) Seismic Risk project, assessing risk data, new seismic zone information, GIS overlay (GDIC)
3.) Flood Risk project, (GDIC)
(Possibly combine the two above)
4.) Wildfire Risk project, (GDIC)
5.) Avalanche Risk project, (GDIC)
6.) RiskMAP project

Note that Anchorage School District has 5 projects proposed right now, going through CBA process. All include life safety considerations.

Discussion on prioritization, building codes should be part of life safety as far as scoring goes.

2.) Plan Maintenance: Mitigation needs

Improvement items identified by FEMA review team were shared as updates to the planning process, Hazard identification and risk, mitigation strategy, plan updates and integration of resources, and critical facility list updates. Additional documents to be shared electronically with committee by Director Loach.

3.) Plan Maintenance: Committee

Currently, participation is open for the group. Discussion on meeting location and accessibility via phone. Discussion on formalization of meetings and strategy and project prioritization process, especially when talking about and making decisions on resource allocation and funding.

Suggest having "working group" committee meetings more often, and then having public meetings less often to invite all participants for outreach and feedback.

Director Loach reviewed of last 3 years of Hazard Mitigation Committee history, actions, meetings, and process with 9 main documented points of action since the plan was last updated in 2017.

Next meeting – Tuesday December 10th

Meeting adjourned 10:00am

All-Hazards Mitigation Advisory Committee

Scheduled meeting

12/13/2019

Meeting start 9:00am

Attendance

In Person:

Amanda Loach – Office of Emergency Management

Andrew Preis - Office of Emergency Management

Audrey Gray - Office of Emergency Management

Bill Kays – Anchorage Health Dept

Renee Aguilar – Anchorage Health Dept

Maury Robinson – Public Works

Daryl Dodson - National Disaster Recovery Services

Ashley Lally – Anchorage School District

Steven Ellis – Watershed Mgt

Deborah Engles – Anchorage School District

Mike Chadwick – Internal Audit

Sharen Walsh – Port of Alaska

On phone:

Bill Falsey – Muni Manager

Alan Czajkowski – M&O

Agenda items:

1. "Lessons Learned"/follow-up mitigation items from after-action from the Point Mackenzie Earthquake

2. Integration of mitigation in Point Mackenzie Earthquake recovery

3. Potential funding coordination

* HMGP Project updates from Point Mackenzie Earthquake (applications due to state 1/31/20)

* Pre-Disaster Mitigation 2020 Grants proposed prioritization (Applications Due to FEMA in E Grants 1/31/20)

Mitigation Project list update:

Chester Creek bridge project – Has been added to the spring 2020 bond package to the voters (watershed mgt)

Chester Creek culvert at Arctic blvd project – Undecided how to fund yet, may add to the bond package, may not (watershed mgt)

Seismic bracing for critical facilities – Numerous buildings were identified in dated surveys from 5+ years ago, needing seismic bracing upgrades/updates. #2 priority for Anchorage (M&O)

Port fenders – Pre disaster grant money received in January, enough to retrofit 50 fenders. Needing assistance for application for HMGP to do remaining 37 fenders. (Port)

Shut off valves – Completed 3 installs since EQ. Done some replacements since EQ as well. Rest of the installs are ready to go, no concerns at this time about project. (M&O)

Wildfire vegetation around critical facilities (and several other fire projects) – No one present to speak to fire mitigation (AFD)

140th and Buffalo culvert – Project still a GO for M&O. This area causes significant flooding issues, but is outside of service area so mitigation is the only way to get it funded and completed (M&O)

Generators at EOC and Fire station – Moving forward (EOC had a site visit recently for placement) (OEM, AFD)

Generator install at SWS – Going to be conducting a BCA for this project (SWS)

AWWU – Not present to speak to their projects (AWWU)

Hazard Mitigation Plan update – This plan update project is still moving forward (OEM)

Building analysis (ASD) – An ongoing process(ASD)

Outreach project – Proposal/application written, needs adjustment based on translation quotes from AIJ (OEM)

GDIC – 5 projects moving forward with applications from GIS Dept. (Seismic, wildfire, avalanche, flood risks) (GDIC)

Additional coordination discussion:

Darrell provided clarification on difference between 404 and 406 mitigation.

OEM has contractor standing by to assist, as does DHS&EM. Must request assistance!

Lessons learned in EQ / Mitigation:

Anniversary of EQ has passed, moving forward with making community better and more resilient for the future.

Long term recovery – years, possibly decade to fully recover, finish mitigation project process, and make community more resilient.

Discussion on recovery phases; Muni has fully entered into long term recovery phase.

Recovery functions: 6 sectors, please see handout for additional info

Community planning, capacity building:

- Recommended to have one person locally steering the recovery process for the whole Muni (currently being done with OEM director and contractor)
- Currently MOA doesn't have that one person, full time, focused on Muni Recovery
- Also necessary to set up a recovery structure, future planning for recovery
- Need a plan for responding with structural inspectors and building officials after a disaster
- COOP planning and coordination needed, as well as Muni-wide policy for employee expectations and responsibilities during/post disaster. One idea to build capacity, charge one person to be the Muni COOP coordinator to help with departmental COOP plans as well as an overall Muni COOP plan.
- Data updates!!! (Seismic, avalanche, flood, etc). Complete Risk MAP project, move forward with risk-based planning. Incorporate Climate Action Plan
- Building codes, enforcement and updating

Further discussion:

Discussion on grant programs and how there's been a shift in the Muni toward wanting to utilize grant programs more and more.

Suggested that Muni could benefit from having a central grant manager!

Alan mentioned that a $2million mitigation project on Ben Boeke ice arena likely saved that $15million facility during the EQ, emphasizing the importance of mitigation projects

Need for planning and standardization around wildfire mitigation, heat index, smoke/air quality, what it means for Anchorage.

Potential Funding Coordination:

EDA money to be put to work on the Port of Alaska for port modernization project, as well as small business COOP development

HUD announced that CDBG-DR money has been allocated, and Alaska is eligible to receive $35million. Process for application, receiving, and spending in the works with SOA DCRA, OEM, AHD.

Municipality of Anchorage (MOA)

Hazard Mitigation Advisory Committee Public Meeting

9/27/2021

Contact Information:

Amanda Loach
Director
Office of Emergency Management
Emergency Operations Center
Municipality of Anchorage
1305 E Street, Anchorage, Alaska 99501
W: (907) 343-1406
C: (907) 250-4953

Location of the plan for review: http://www.muni.org/Departments/OEM/Plans/Pages/default.aspx
Send requested Information to: OEM: Amanda.loach@anchorageak.gov

Meeting called to order at 5:30pm

1. Roll Call

2. Opening Remarks
   - Amanda Loach

3. Public comments
   - Please provide:
     - Name
     - Address
     - Contact Information

4. Introductions
   - Municipality of Anchorage - All Hazards Mitigation Plan Team
     - Amanda Loach
     - Andrew Preis
     - Darrell Dotson
     - Jason Wheeler

5. Quick review of current mitigation activities
   - Plan has been approved by FEMA
   - Last updated in 2017, as a 5-year plan
   - Need to have an approved plan to apply for future mitigation funding

6. Project Timeline
   - 9-20-21: MOA OEM hazard mitigation advisory group hazard identification
   - 9-27-21: MOA OEM public meeting to update on progress
   - 10-12-21:
     - Complete review of asset inventory to determine if there are any changes to be made to the list of critical facilities.
     - Updating the natural hazard section and the technological hazard section drafted based on a review of current data

- 10-19-21: Review the existing goals, objectives, and action items to identify any changes that might be necessary
- 10-22-21: MOA OEM hazard mitigation advisory group risk assessment and action item prioritization.
- 11-26-21: Make updated draft available for review by the public and other stakeholders
- 12-17-21: Submit revised plan to State of Alaska DHS&EM and FEMA for approval

8. Types of Public Feedback

- Ideas to help mitigate events have you or your communities experienced since the last update.
  - Earthquake damages
  - Flooding events have occurred in your community.
  - Fire events that have occurred.
  - Losses to extreme cold temperatures in your community.
  - Damages caused by flooding.
  - Damages to roads including washout of roads.
  - Damages to water control structures like culverts, ditches, dams, dikes, etc.

9. Questions and closing comments

10. Adjournment

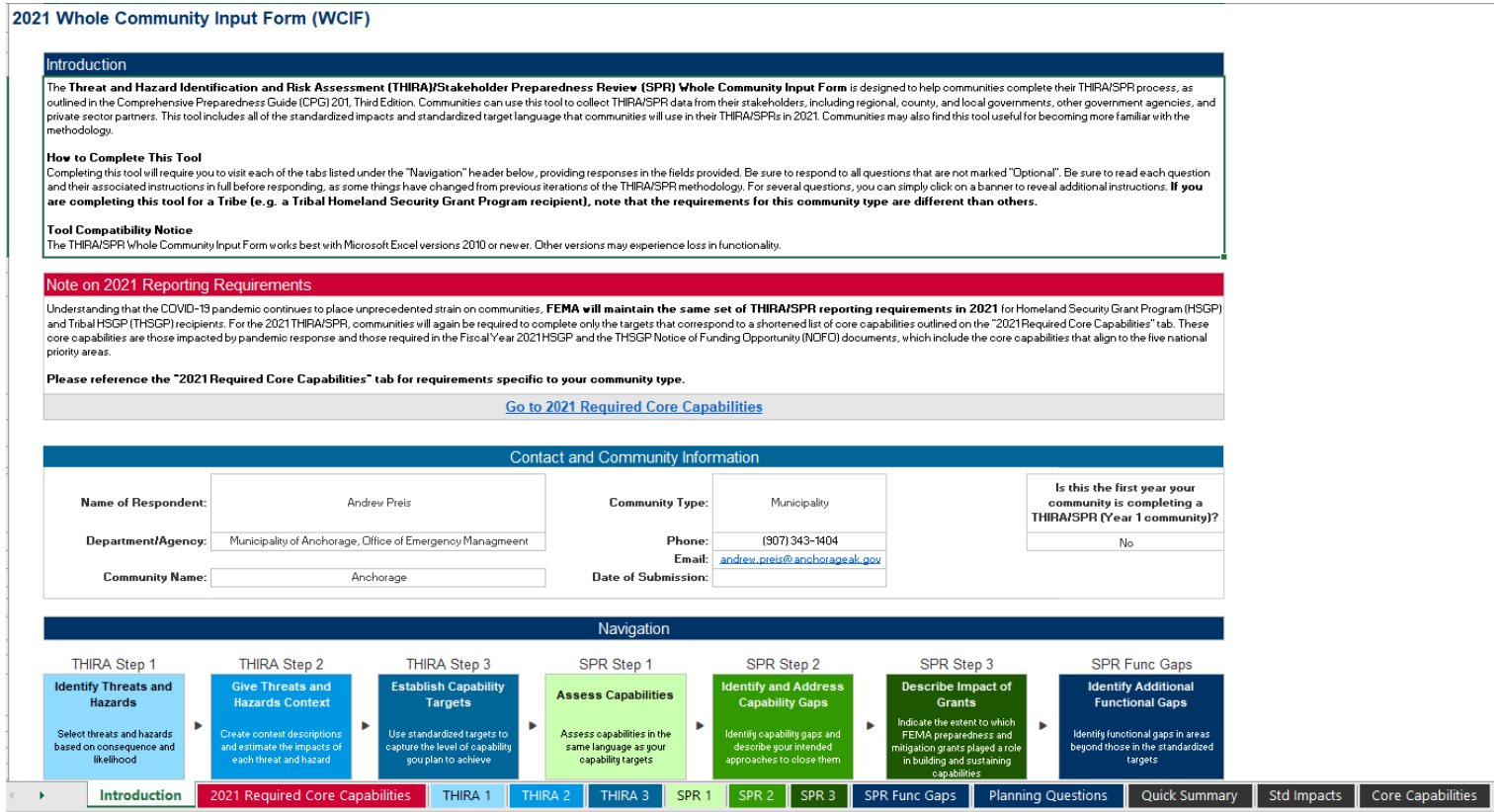
Meeting adjourned 7:30pm

WHOLE COMMUNITY INFORMATION FORM

WHOLE COMMUNITY INPUT FORM

- Designed to help communities complete their THIRA/SPR process.
- Use this tool to collect THIRA/SPR data from their stakeholders.
- Includes all the standardized impacts and standardized target language.
- Useful for becoming more familiar with the methodology.

CURRENT UPDATED FORM



2021 Whole Community Input Form (WCIF)

Introduction

The **Threat and Hazard Identification and Risk Assessment (THIRA)/Stakeholder Preparedness Review (SPR) Whole Community Input Form** is designed to help communities complete their THIRA/SPR process, as outlined in the Comprehensive Preparedness Guide (CPG) 201, Third Edition. Communities can use this tool to collect THIRA/SPR data from their stakeholders, including regional, county, and local governments, other government agencies, and private sector partners. This tool includes all of the standardized impacts and standardized target language that communities will use in their THIRA/SPRs in 2021. Communities may also find this tool useful for becoming more familiar with the methodology.

How to Complete This Tool

Completing this tool will require you to visit each of the tabs listed under the "Navigation" header below, providing responses in the fields provided. Be sure to respond to all questions that are not marked "Optional". Be sure to read each question and their associated instructions in full before responding, as some things have changed from previous iterations of the THIRA/SPR methodology. For several questions, you can simply click on a banner to reveal additional instructions. **If you are completing this tool for a Tribe (e.g. a Tribal Homeland Security Grant Program recipient), note that the requirements for this community type are different than others.**

Tool Compatibility Notice

The THIRA/SPR Whole Community Input Form works best with Microsoft Excel versions 2010 or newer. Other versions may experience loss in functionality.

Note on 2021 Reporting Requirements

Understanding that the COVID-19 pandemic continues to place unprecedented strain on communities, **FEMA will maintain the same set of THIRA/SPR reporting requirements in 2021** for Homeland Security Grant Program (HSGP) and Tribal HSGP (THSGP) recipients. For the 2021 THIRA/SPR, communities will again be required to complete only the targets that correspond to a shortened list of core capabilities outlined on the "2021 Required Core Capabilities" tab. These core capabilities are those impacted by pandemic response and those required in the Fiscal Year 2021 HSGP and the THSGP Notice of Funding Opportunity (NOFO) documents, which include the core capabilities that align to the five national priority areas.

Please reference the "2021 Required Core Capabilities" tab for requirements specific to your community type.

Go to 2021 Required Core Capabilities

Contact and Community Information

Name of Respondent:	Andrew Preis	**Community Type:**	Municipality	**Is this the first year your community is completing a THIRA/SPR (Year 1 community)?**	
Department/Agency:	Municipality of Anchorage, Office of Emergency Managment	**Phone:**	(907) 343-1404		No
		Email:	andrew.preis@anchorageak.gov		
Community Name:	Anchorage	**Date of Submission:**			

Navigation

THIRA Step 1	THIRA Step 2	THIRA Step 3	SPR Step 1	SPR Step 2	SPR Step 3	SPR Func Gaps
Identify Threats and Hazards	**Give Threats and Hazards Context**	**Establish Capability Targets**	**Assess Capabilities**	**Identify and Address Capability Gaps**	**Describe Impact of Grants**	**Identify Additional Functional Gaps**
Select threats and hazards based on consequence and likelihood	Create context descriptions and estimate the impacts of each threat and hazard	Use standardized targets to capture the level of capability you plan to achieve	Assess capabilities in the same language as your capability targets	Identify capability gaps and describe your intended approaches to close them	Indicate the extent to which FEMA preparedness and mitigation grants played a role in building and sustaining capabilities	Identify functional gaps in areas beyond those in the standardized targets

Introduction | 2021 Required Core Capabilities | THIRA 1 | THIRA 2 | THIRA 3 | SPR 1 | SPR 2 | SPR 3 | SPR Func Gaps | Planning Questions | Quick Summary | Std Impacts | Core Capabilities

WHOLE COMMUNITY INPUT FORM

- Allows for identification of core capabilities specific to MOA threats
- Identify and address capability gaps
- Describes the impact of FEMA grants on capabilities

PROJECT PRIORITIES

- While identified, external to the AHMP

MOA PROJECT Priorities

Project #	Location	Primary Name	Deficiencies
001	Artic Blvd at Chester Creek Flood Project	J. W. Hansen	Culvert-- More specific-Area Effected-name what you are wanting to do. **CONCERNS:** Project cost is 3.2 Million. No information on past damages except structures have been flooded in the past. Priority would be to get documentation of all past damages, to structures and road to determine if project is feasible. If road was closed what is nearest detour, number of cars in a day and any other potential benefits we can apply. **NOTES:** Clear to Apply
002	Seismic Bracing-Police Dept, Elmore Rd Multiple Fire Stations Loussac Library	Jon Clark	More Specific No Signature- Eligibility- No EIN# Is Applicant Delinquent on any Federal debt? NOT ANSWERED. Is the community a small & impoverished community as defined by the State Hazard Mitigation Plan (Appendix 9)? NOT ANSWERED. Does your community participate in NFIP? NOT ANSWERED Does your community have a Local Hazard Mitigation Plan? NOT ANSWERED. Is the recipient participating in the Community Rating System (CRS)? NOT ANSWERED. Is the recipient a Firewise Community? NOT ANSWERED. * Has the recipient adopted building codes consistent with the International Codes? NOT ANSWERED.

1

PROJECT PRIORITIES

Current Project Prioritization

Table F.1 Prioritization of Projects

	Criteria	Weighting	Score			Total Points (weight x score)
			Low (1-3 Possible)	Medium (4-6 Possible)	High (7-9 Possible)	
1.	Life Safety	4	No people at risk	Fewer than 10 people affected	More than 10 people affected	
2.	Compliance with existing programs/regulations	3	Not needed	Encouraged	Required	
3.	Cost-benefit	3	No cost-benefit analysis performed or results less than 1	Cost-benefit between 1 and 2	Cost-benefit greater than 2	
4.	Coordination with existing documents	2	No ties to existing plans	Mentioned in one or two plans. Plans without public involvement	Well integrated into plans. Plans have gone through public input process	
TOTAL POINTS						

Additional factors to consider (please note special reasons why this project should be funded (legal liability, social and environmental impacts, high visibility, etc.)

PROJECT PRIORITIES

Current Action Item Prioritization

Table F.2 Prioritized list of action items:

Ranking	Action Item	Hazard	Score
1.	1. Identify department	All	N/A
2.	2. Review composition of	All	N/A
Ranking	Action Item	Hazard	Score
1.	1. Identify department responsible for coordinating hazard mitigation activities.	All	N/A
2.	2. Review composition of departments represented on the hazard mitigation planning committee.	All	N/A

Note: upon completion of these two items, the remaining action items should be prioritized.

PROJECT PRIORITIES

Scoring Example

STAPLEE Criteria		S (Social)		T (Technical)			A Adminis'tive			P (Political)			L (Legal)			E (Economic)				E (Environmental)					Total Score
Considerations (0-10 Ranking) → / Prioritized Projects # ↓		Community Acceptance	Effects on Segment of Population	Technical Feasibility	Long-Term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance / Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HazMat/ Waste Sites	Consistent with Community Envir. goals	Consistent with Federal Laws	
2015 Rank	Project	SCOPE 0-10 (0 is lowest, 10 is highest in each block below)																							Total Score
1	All hazards Public Outreach mitigation project	10	10	10	8	7	5	5	10	10	10	10	10	10	10	10	10	8	8	10	0	10	10	10	201
2	Countywide stormwater study & drainage improvements	10	10	10	8	7	5	5	10	10	10	10	10	10	10	10	5	8	5	10	5	10	10	10	198
3	Create Firewise Communities in all cities and county	10	8	10	8	7	5	1	8	10	10	8	10	10	10	10	10	8	7	10	5	10	10	10	196
4	Wildfire Fuel Reduction – Construct fire lanes	10	8	10	8	7	5	1	8	10	10	8	10	10	10	10	10	8	7	10	5	10	10	10	196
5	Wildfire Fuel Reduction – Prescribed burn	10	8	10	8	7	5	1	8	10	10	8	10	10	10	10	10	8	7	10	5	10	10	10	196
6	Wildfire Fuel Reduction – Public Information Campaign	10	8	10	8	7	5	1	8	10	10	8	10	10	10	10	10	8	7	10	5	10	10	10	196
7	Drainage Improvement at 5th St and South Blvd	10	3	10	10	5	5	3	8	10	10	8	10	10	10	9	5	9	5	10	5	10	10	10	195
8	Relocate ditches along Joe Neel Rd. Install new culverts	10	8	10	10	7	5	3	8	10	10	10	10	10	10	9	5	9	5	10	5	10	10	10	194
9	Installation of new dry fire hydrants for fire suppression	10	8	10	10	5	5	3	8	10	10	10	10	10	10	10	5	6	5	10	5	10	10	10	190
10	Mitigate Fire/EMS facility and install generator.	10	8	10	10	5	5	3	8	10	10	10	10	10	10	10	5	6	5	10	5	10	10	10	189
11	Drainage improvements at Old Bonifay Rd and 5th, Peach St	10	6	10	10	7	5	3	8	10	10	8	10	10	10	9	5	9	5	10	5	10	10	10	187

PROJECT PRIORITIES

- Proposed Combined Project listing included in plan

Appendix F: Mitigation Project List

SAMPLE Municipality Mitigation Initiatives Priority List

KEY CATEGORIES	
Project kept - with no changes	
Project kept - with changes	
Project completed	
Project deleted - no longer viable as is	

Key: Hazards: *H=Hurricanes; F=Flooding; DF=Dam Failure; SE=Soil Erosion; SH=Sinkhole; T=Tornado; TH=Thunderstorms; WS=Winter Storm; WF=Wildfire; D=Drought/Heat Wave*

Key: Funding Source: *EMPG – Emergency Management Performance Grant; EMPA – Emergency Management Assistance Trust Fund; HMGP – Hazard Mitigation Grant Program; PDM – Pre-Disaster Mitigation Program; FMA – Flood Mitigation Assistance; CDBG – Community Development Block Grant; LCO-Local Capital Outlay*

Priority	Responsible Agency	Hazard Addressed	Impact New Or Existing Infrastructure	Project Description	Estimated Cost and Funding Source		Time Frame
1	MOA Emergency Management	All Hazards	N, E	All Hazards Mitigation Education – Public Outreach Program for MOA.	$10,000	EMPA, HMGP, LCO	Ongoing
2018 Status: This is an ongoing project. WC EM provides all hazards information at various yearly venues. Additional funding will allow similar efforts in the future.							
2	Health Department	H, F, TH, WS	E	Generator for Health Department	TBD	HMGP	2019
2018 Status: Pursuing HMGP Tier 3 Funding (Matthew & Hermine) Project added to the Priority List at the April 18, 2017 Meeting							
3	WC BOCC	H, DF, TH, WS	N, E	Develop a countywide storm water management plan. Improve existing and new countywide Drainage Program – Develop storm water management plan	$500,000	EMPA, FMA, PDM, LCO	Ongoing
2018 Status: Continued pursuit of information and funding. Applied for Restore funding. Had discussions with NWFWMD about project and funding							
4	MOA Emergency Management	WF	N, E	Create Fire Wise Communities in MOA	$5,000	EMPA, HMGP, LCO	Ongoing
2018 Status: Working with Florida Forest Service to create Fire Wise Communities. Pursing opportunities and venues to educate residents about Fire Wise							
5	Forest Service in WC	WF	N, E	Construction of fire lanes in wildfire high risk areas. Will mitigate natural and manmade causes of wildfires	$20,000	HMPG, EMPA	1 year
2018 Status: This project was added at the conclusion of the September 22, 2015 LMS Committee meeting at suggestion of FFS Mitigation Specialist							
6	Forest Service in WC	WF	N, E	Wildfire Fuel Reduction – Prescribed burning in targeted areas to reduce wildfire fuel.	$4,500	HMPG, EMPA	1 year

NEXT MEETING

TBD