City of Kirkland Hazard Mitigation Annex

Introduction

The following is a summary of key information about the City of Kirkland and its history:

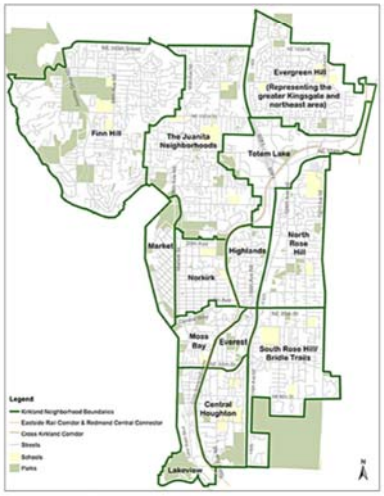
- **Date of Incorporation** – October 9, 1905
- **Current Population** – 89,000 as of 2018
- **Population Growth** – Since its incorporation in 1905, the population of the City of Kirkland has grown from 392 people to 89,000. Most of this growth can be attributed to numerous annexations and the consolidation of the cities of Kirkland and Houghton in 1968. The Rose Hill and South Juanita areas were annexed into the City in the 1980s. The 2011 annexation of Finn Hill, North Juanita, and Kingsgate also significantly increased the City's population and geographic area. Each of the large annexations/consolidations almost doubled the existing population of Kirkland causing it to reach its current state. It is the livability of Kirkland that is drawing major businesses, mostly technology focused, to establish large complexes within the city. Business growth includes residential growth adding to the need for secondary services such as schools, healthcare, shopping, personal and pet services, entertainment, and dining. This interdependent relationship has continued to fuel Kirkland's growth and development leading to such major projects as Kirkland Urban and The Village at Totem Lake.
- **Location and Description** – The City of Kirkland is in the Pacific Northwest Puget Sound Region on the east side of Lake Washington. Kirkland is located across Lake Washington from the City of Seattle. Nearby cities also include Hunts Point located southwest, Bellevue located on the south, Redmond, located on the east, Bothell and Woodinville located on the north. Interstate 405 runs north to south bisecting portions of the City and State Route 520 borders a small part of the City on the south.

Jurisdiction Profile

Located on the east shore of Lake Washington consisting of 18 square miles, the city of Kirkland was founded in 1888 and incorporated in 1905.

As of 2018 the population is reported as just over 89,000.

The government structure is Council – Manager.



- **Brief History** – Kirkland incorporated in 1905 with a population of 392 people and was primarily a logging and farming community. In the early 1900s, Kirkland was a transportation center for the eastside with ferries transporting commuters and goods to Seattle 18 hours a day. The opening of the Lake Washington Floating Bridge in 1940 signaled the end of the lake ferries. Kirkland's downtown is located on Lake Washington. The City has grown beyond a bedroom community and has become a commercial and employment center characterized by a mix of small businesses, corporate headquarters, light industrial and manufacturing, and high-tech business including Tableau and Google.
- **Climate** – Kirkland's climate is mild during the summer months when temperatures tend to be in the 70s and cool during winter when temperatures tend to be in the 40s. The warmest month of the year is August with an average maximum temperature of 75.8 degrees Fahrenheit. The coldest month of the year is January with an average minimum temperature of 35.2 degrees Fahrenheit. The annual average precipitation at Kirkland is 35.96 inches. More precipitation generally occurs in winter months rather than summer months. The wettest month of the year is December with an average rainfall of 5.45 inches.

- **Governing Body Format** – Kirkland operates under the council-manager form of government. The City Council is comprised of seven non-partisan members who are elected by the registered voters of Kirkland to serve at-large. Council Members are elected every two years to serve four-year terms. The Mayor and Deputy Mayor are elected among the members to serve two-year terms.
- The City consists of eleven departments:
  - City Manager's Office,
  - City Attorney's Office,
  - Finance & Administration,
  - Fire Department,
  - Planning & Building,
  - Police Department,
  - Public Works Department,
  - Human Resources,
  - Information Technology,
  - Parks and Community Services,
  - Municipal Court.

Development Trends

Between 2013 and 2015, the City engaged Kirkland residents, business owners, and boards and commissions in updating the Kirkland Comprehensive Plan. The City Council adopted the revised Comprehensive Plan in December 2015. The Comprehensive Plan, which serves as the guiding policy document for the City's vision for the future, includes City actions relating to zoning, subdivision, design review, redevelopment, and capital improvements.

In the City of Kirkland 2018 Biennial Residents Survey 82% of respondents rated Kirkland as a positive place to live. When asked what makes Kirkland a positive place to live descriptive words included:

Location	Water	Community	Close
Parks	Lake	Proximity	Schools
Safe	Quiet	Convenience	Downtown

Jurisdiction Point of Contact:

Name: Heather Kelly
Title: Emergency Manager
Entity: Office of Emergency Management
Phone: 425-587-3670
Email: Hkelly@kirklandwa.gov

Plan Prepared By:

Name: Heather Kelly et all

The consistent and ongoing engagement of the community through boards, commissions, public meetings, surveys, and daily interactions influence City leadership decisions about growth, development, and the future. The City's commitment to 'Whole Community' living is visible through purposeful and thoughtful actions to build and sustain a complementary working and living environment. Two major development projects demonstrating the City's approach to growth are: Kirkland Urban and The Village at Totem Lake.

These mixed-use structures include a blend of office space, entertainment, retail, dining, and residential areas. It is expected that mixed-use space will continue to be the development trend in the City of Kirkland.

Risk Trends

The City is committed to mitigating and reducing risk whenever possible. The greatest risk to City Government and the broader community is a major earthquake. Therefore, in addition to updating and changing building and planning codes and requirements, the City has and continues to invest in building resilience at City facilities. In 2016, the City Hall under went a major renovation that included the retrofitting of the structure and the establishment of a dedicated Emergency Operations Center (EOC) to mitigate Continuity of Operations/Continuity of Government disruptions during disasters. The City has migrated all critical Information Technology (IT) systems and servers to the 'cloud' building capability for a virtual City Hall environment mitigating the risk of infrastructure disrupting continuation of essential services. In 2018, the Fire Department renovated the first of five stations retrofitting the structure to increase survival during a major earthquake and is currently in the process of acquiring funding to provide seismic upgrades to three additional fire stations. These significant risk mitigation efforts are supported by routine City staff training and exercises in personal preparedness, continuity of operations, and virtual work environments.

Despite mitigation efforts the nature of growth in Kirkland also increases risk within the City. Dense populations where once stood retail space, adds to the volume and complexity of traffic flow, calls for emergency service, and demands on infrastructure systems. The economic benefits of developments tend to come before the ability to improve systems that support the community, which is one factor influencing Kirkland's integration of infrastructure improvements into development projects. The implementation of planning and building regulations and requirements has lessened the risk of catastrophic impacts to human life, but the response demands and long-term recovery implications from a dense community remain.

This commitment to risk reduction from a multi focused perspective builds capability for the City to respond to and recover from a major disaster, ultimately supporting the City's mission to care for the residents, businesses, and communities it serves. The strategies provided in this plan intend to enhance the City's capability and build a stronger more resilient Kirkland.

Jurisdiction Risk Summary

Hazard Risk and Vulnerability Summary

HAZARD	RISK SUMMARY	VULNERABILITY SUMMARY	IMPACT SUMMARY
Avalanche	The City has no risk of avalanche.	N/A	N/A
Earthquake	The City is at risk from two fault structures. The northern ridge of the Seattle Fault is a few miles south of Kirkland and the southernmost tip of South Whidbey Island Fault extends slightly into the most northern edge of the City. Significant movement of either fault could cause direct or secondary impacts to the City. The primary risk is for loss of life and injuries. The most likely risk is disruption of critical infrastructure services, including water, power, and communication. There	The City's water system is not hardened against a major earthquake which would result in limited or suspension of services, including at the major medical center within the City, that serves a broad community base beyond the City limits. The City performed an elevated roadway assessment in 2019 to assess transportation route disruptions and identified within the city there would be adequate lifeline routes, however the ability for resources to be brought into the City is extremely unlikely in a major incident. The City had limited construction of multi-story structures for many years resulting in a limited number of large unreinforced masonry	The impact of a significant earthquake on either fault line near Kirkland would include the potential for loss of life, injuries, communication disruptions, transportation challenges, basic infrastructure failure, suspension of commerce, and generally a negative situation for any and all persons found to be in Kirkland at the time of incident.

	exists a risk of Seiche on the shores of Lake Washington impacting the City shoreline from a Seattle Fault quake.	buildings. Current building codes require earthquake design consideration. The community is engaged in ongoing preparedness programs, but there are still less residents and business prepared than those that are prepared. Kirkland is extremely dependent on technology and networks for government, community, and private business operations.	
Flood	The City has limited 'traditional' flood risk with only a few small water ways at risk for moving beyond bank capacity. The City has 1 commercial structure within the Special Flood Hazard Area. The city implements floodplain management regulations and has limited development in the floodplain.	The City has limited floodplain areas, most of which are identified protected wetlands. Mitigation projects are reducing risk to transportation routes caused by creek and stream flooding.	The City has minimal impacts from flooding and continues to review and modify, as needed, building and land use regulations and implement agricultural projects to further reduce risk.
Landslide	The City has areas at risk for landslide due to topography and geological makeup of the region.	The City completed a Landslide and Liquefaction modeling project in 2018 resulting in Lidar mapping of vulnerable areas. Most the areas are along the shore of Lake Washington and in the area known as Finn Hill.	The impacts of a landslide could include loss of life, injuries, damage or destruction of public or personal property, disruption of transportation, commerce, communications, community services, and school operations among other area specific impacts. In addition to land-based impacts, there is acknowledgment that debris into waterways could create significant environmental concerns.
Severe Weather	The Seattle area is at risk for occasional severe weather to which Kirkland is not immune. High winds pose a risk for trees and green	Kirkland has numerous natural park areas with tall trees and open fields of live grass. These are both vulnerable to high winds, lightening, and extreme heat. Lake Washington and its	The impact of severe weather includes loss of life or injury, damage to public or private property, obstruction of

	spaces. Wind can also create risk along roadways and sidewalks from falling branches or trees used as landscape. Extreme heat increases the risk of brush fires and life safety on the beaches and waters of Lake Washington.	extended shoreline, docks, and beach parks creates vulnerability to damage in windstorms and loss of life or injury in extreme heat conditions.	transportation routes, and loss of natural resources and beauty.
Severe Winter Weather	The Seattle area is at risk for occasional severe winter weather to which Kirkland is not immune. The topography of Kirkland increases the risk of snow and ice on the Finn Hill area due to elevation gain. Dangerous driving conditions may occur due to steep and winding roadways in the City.	Vulnerability to winter storms can be split into people, things, and disruptions. Residentially challenged, elderly, and low-income residents of the City are personally most vulnerable during times of extreme cold as they may not have the resources to maintain a safe environment without access to government services such as public transportation. Structures, vehicles, and roadways are examples of things that are vulnerable to winter weather from an operational, safety, and capability perspective. Extreme cold can cause ruptured pipes damaging structures. Vehicle collisions and damage to roadways are other vulnerabilities related to weather.	Severe winter weather impacts include loss of life and injury from hypothermia, falls, collisions, or other methods of harm caused by temperature, ice, or snow. Transportation is a significant impact of winter weather as public transportation may not operate, some drivers are not experienced in snow conditions, and the public does not always follow the direction of leaders about staying off the roads. The weight of snow and ice on structures and landscape can also create dangerous or damaging situations resulting in life safety concerns, depletion of resources, and infrastructure failure.
Tsunami	The City has no risk of Tsunami.	N/A	N/A
Volcano	The City had limited risk from Volcano. Risk would be associated with volcanic ash if a catastrophic eruption of Mt Baker, Mt Pilchuck, or Mt. Rainier occurred and the wind direction is abnormal during the eruption.	The City would be vulnerable to ash fall causing issues for persons with respiratory conditions. In addition, City operations could be vulnerable to damage to vehicles and facilities from significant ash fall.	Impacts would include a surge in medical calls for care and transport, inability to use vehicles for City operations, a reduction in workforce if employees living near volcanoes could be directly impacted by an eruption.

Wildfire	The City has limited areas that would be considered at risk for Wildfire. The more accurate risk is for natural area/structure fire interface with the number of residential areas bordering heavily wooded open space.	The City has numerous community parks and greenbelts bordered by residential communities that could create a situation for extension of a fire into the open space or neighborhood depending on the ignition site.	Impact could include loss of life or injury, destruction of personal or public property, and loss of natural green space environments.
Civil Disturbance	The City of Kirkland is a welcoming and inclusive government and community; however, the City recognizes that civil disturbances can occur anywhere for any reason.	The City is vulnerable to a disturbance but not due to any specific legislation, business, or public entity currently known to be present in the City.	The impacts of Civil Disturbance aside from death or injury of participants, bystanders, or responders is a disruption to City government, loss of trust in City government, damages to City facilities or local landmarks, or in an extreme case permanent relocation of business or residents.
Cyber Attack	Any entity leveraging technology for operations is at risk for Cyberattack. The City recognizes government is at a greater risk than the average public.	The City implements ongoing cyber security measures and systems; however, attackers continue to find ways to infiltrate systems. One of the greatest vulnerabilities the City faces in technology risk is human actions, specifically those of City employees that do not adhere to strict cyber safety practices.	A Cyberattack could have impacts ranging from minor disruptions to City operations to catastrophic failure of critical city systems leading to major impacts to emergency operations, businesses, and community members.
Dam Failure	The City is not at risk for Dam Failure.	N/A	N/A
Hazardous Materials Incident	Although the City does not have a major manufacturing business base, there are some small operations and numerous service providers that maintain hazardous materials.	The greater risk is associated with the movement of hazardous materials on Interstate 405, which splits the City East and West. An incident on I 405 could cause carry over into the City placing it at risk of exposure. The City has a robust hazardous materials education and spill response and reporting program that has been successful reducing vulnerabilities.	Impacts of a hazardous materials incident include loss of life or injury, transportation disruptions, depletion of fire resources as specialized responders are pulled to address the incident, and environmental damage/risk due to type of product involved.

Public Health Emergency	The City is at no greater or less risk for a public health issue than a comparable city. Schools and numerous public spaces increase risk of communicable disease, but they also provide built in opportunities to deliver mass prophylaxis during outbreaks.	Vulnerabilities include locations of close residential occupants such as dense multi family housing, assisted living centers, shelters, schools, and large employers that allow for easy transmission of illness. The City could be vulnerable to exposure if the medical center experiences a major health issue. The extent of interaction with lake water and wildlife creates a vulnerability to human/animal/insect cross over.	Impacts could include loss of life, injury, or illness. Deterioration of quality of life, community safety, and economic impact based on mitigation tactics imposed in a health emergency.
Structure Fire	This is a daily risk and no more so than any other comparable community.	The presence of people create vulnerability to structure fire. The City does not have an increase vulnerability to fire based on building type or industry present.	The impacts of a structure fire include loss of life or injury, damage or destruction to personal, private, or public property, which in an extreme case could cause economic impact to the community.
Terrorism	Any jurisdiction is at risk for terrorism. The City recognizes government is at a greater risk than the average public, but also notes that Kirkland does not have high impact hard or soft targets in the city. The lack of largescale events and gathering points in the City also reduces risk.	Government is vulnerable in general; however, Kirkland's welcoming and inclusive philosophy of government can make it both less and more vulnerable to extremist activity.	The impact of terrorism directly related to the type of terrorist activity. However, some impacts would likely be loss of life or injury, damage to personal, private, or public property, disruption of government services, and loss of trust, security or safety in the community.

2015 – 2020 Risk Change Summary

Sector Risk Change	Explanation
Residents Increased risk	With significant population growth, that is not sufficiently personally prepared for a disaster due to means or lack of effort, risk to residents, in general, is estimated to have increased.
Property No change to risk	Development progress is reducing catastrophic risk in some areas as infrastructure is enhanced and building code compliance is met; however, some construction patterns, such as building homes close together, can increase the risk related to landslide or fire.
Economy No change to risk	The economy has grown but remains susceptible to impacts caused by a disaster that could permanently displace major industries that produce significant revenue such as auto sales. A disaster that destroys the region's infrastructure could devastate the local economy. Kirkland continues to focus on establishing a diverse economic base which increases the City's overall resiliency and ability to recover from an incident.
Environment Decreased risk	The City's focused efforts to bring awareness and action to climate change within City operations and in the community has reduced the risk of some impacts to the environment. The City's commitment to sustainability, such as acquisition of environmentally friendly vehicles, the addition of vehicle charging stations, the use of compostable materials, and leading green initiatives, has mitigated some controllable factors in the environment.

Hazard Maps

Critical City Facilities

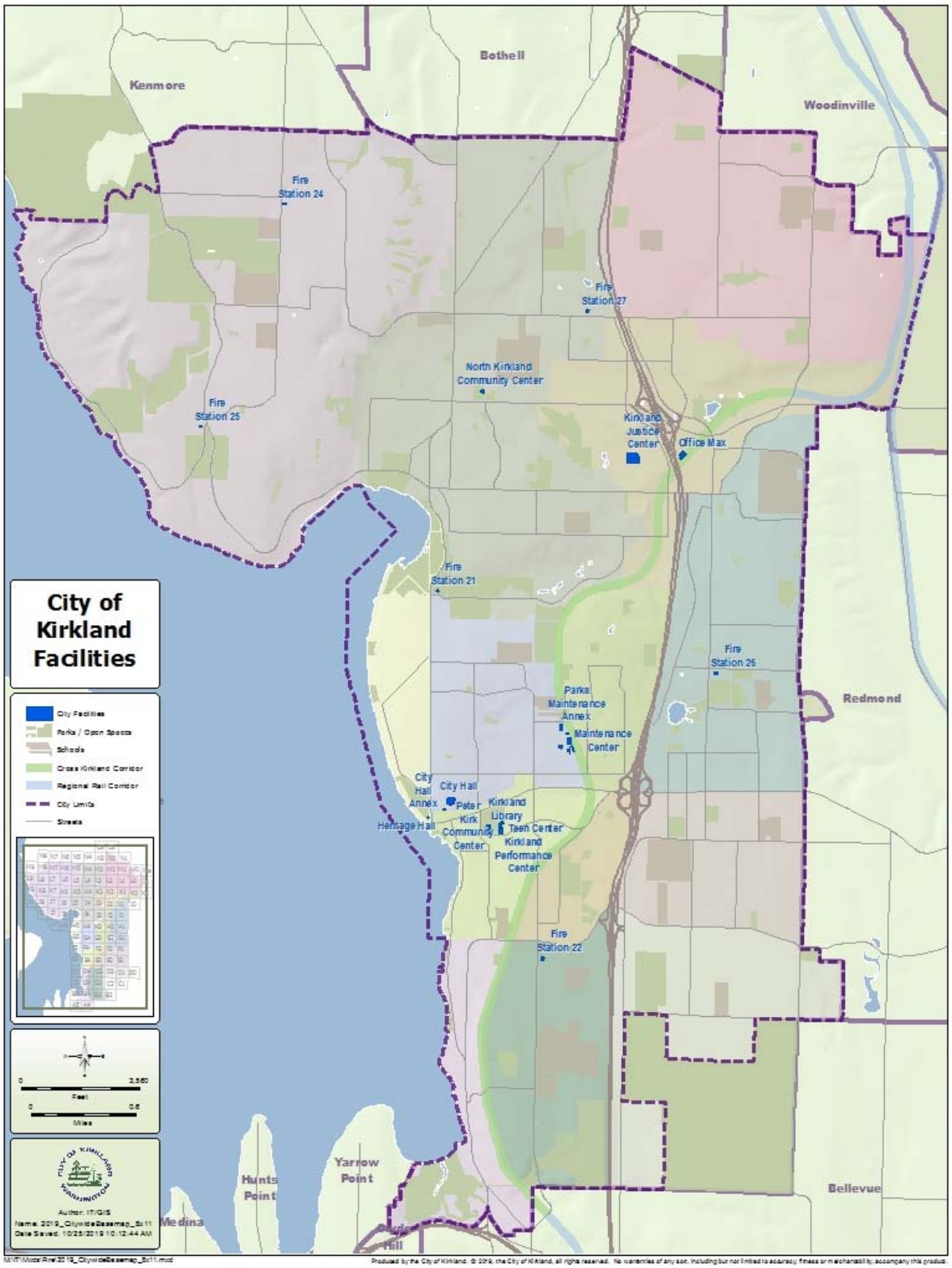


Figure 1: Critical City Facilities Map (2019)

Earthquake faults near Kirkland

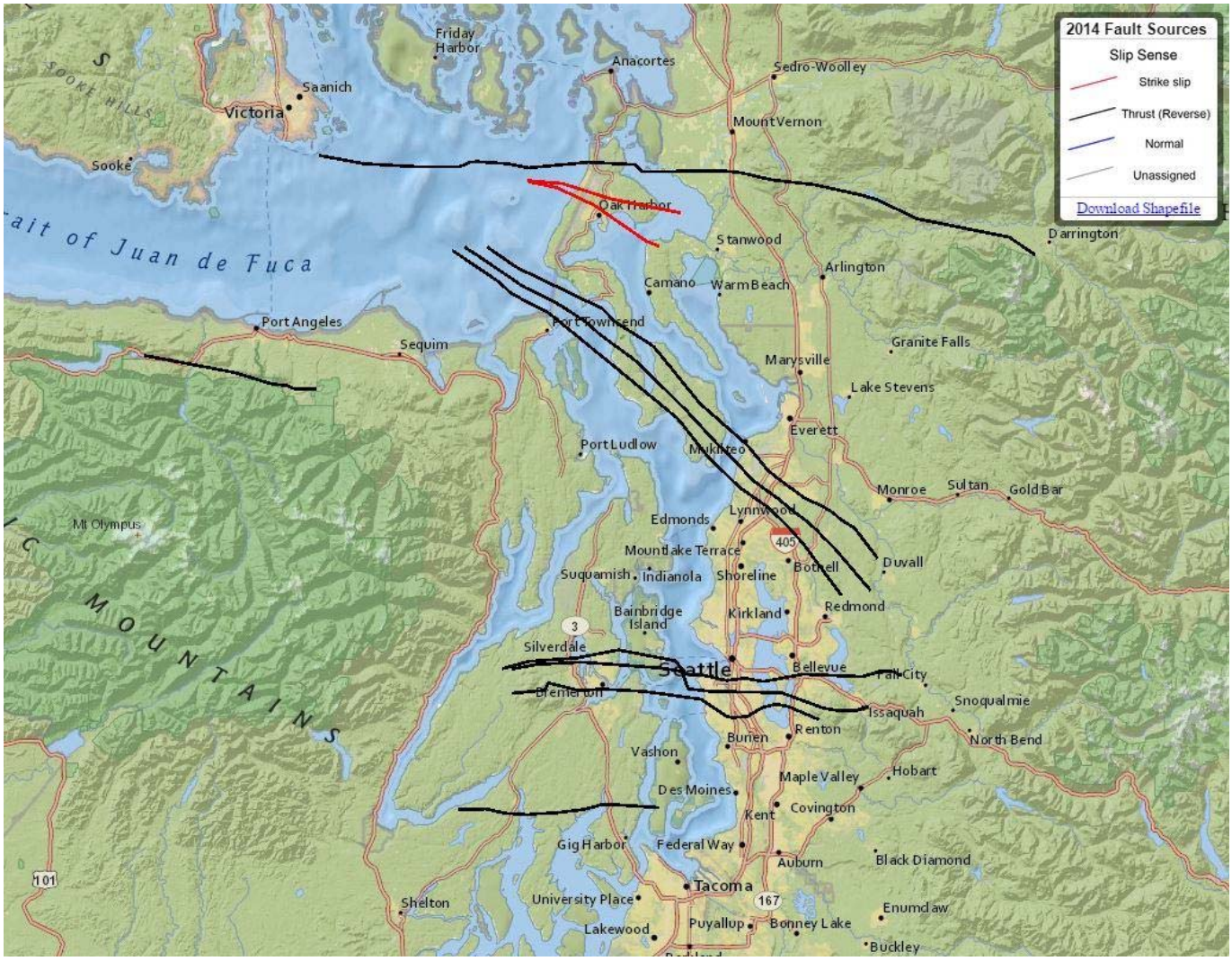


Figure 2: USGS Pacific Northwest Fault Map (2014)

Topography of Kirkland (2019)

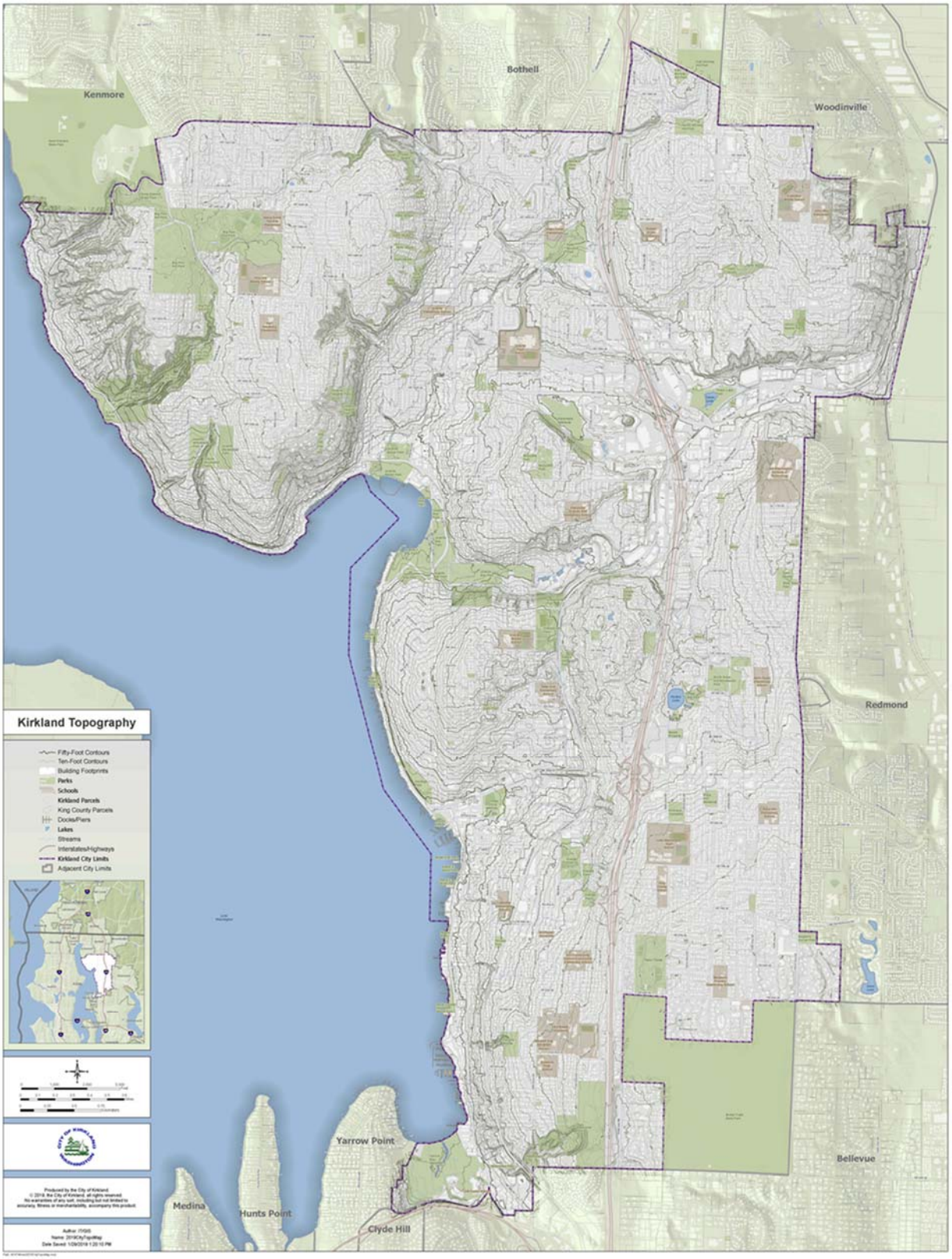


Figure 3: Topography Map

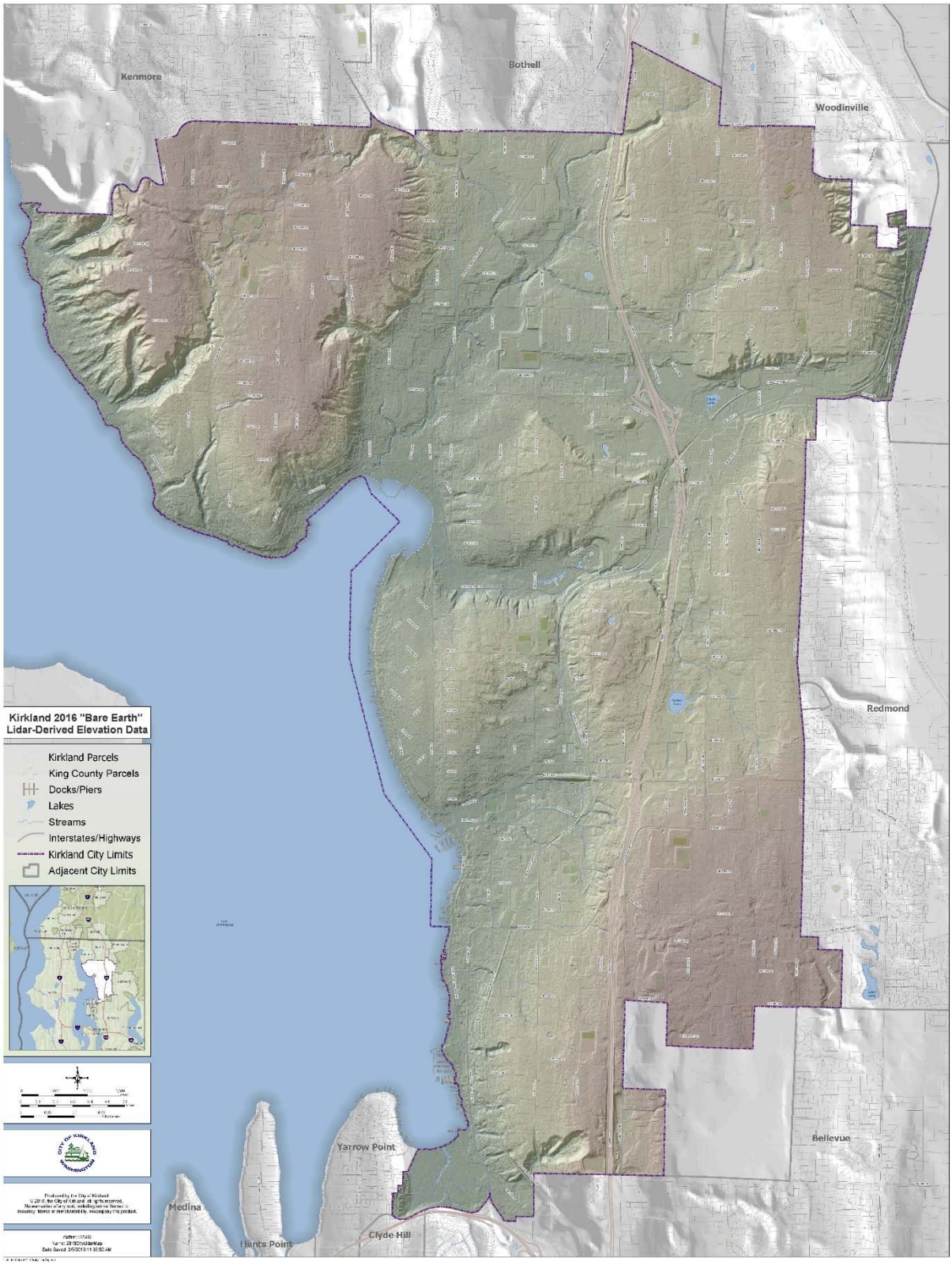


Figure 4: Lidar Map

Areas of liquifaction risk in Kirkland

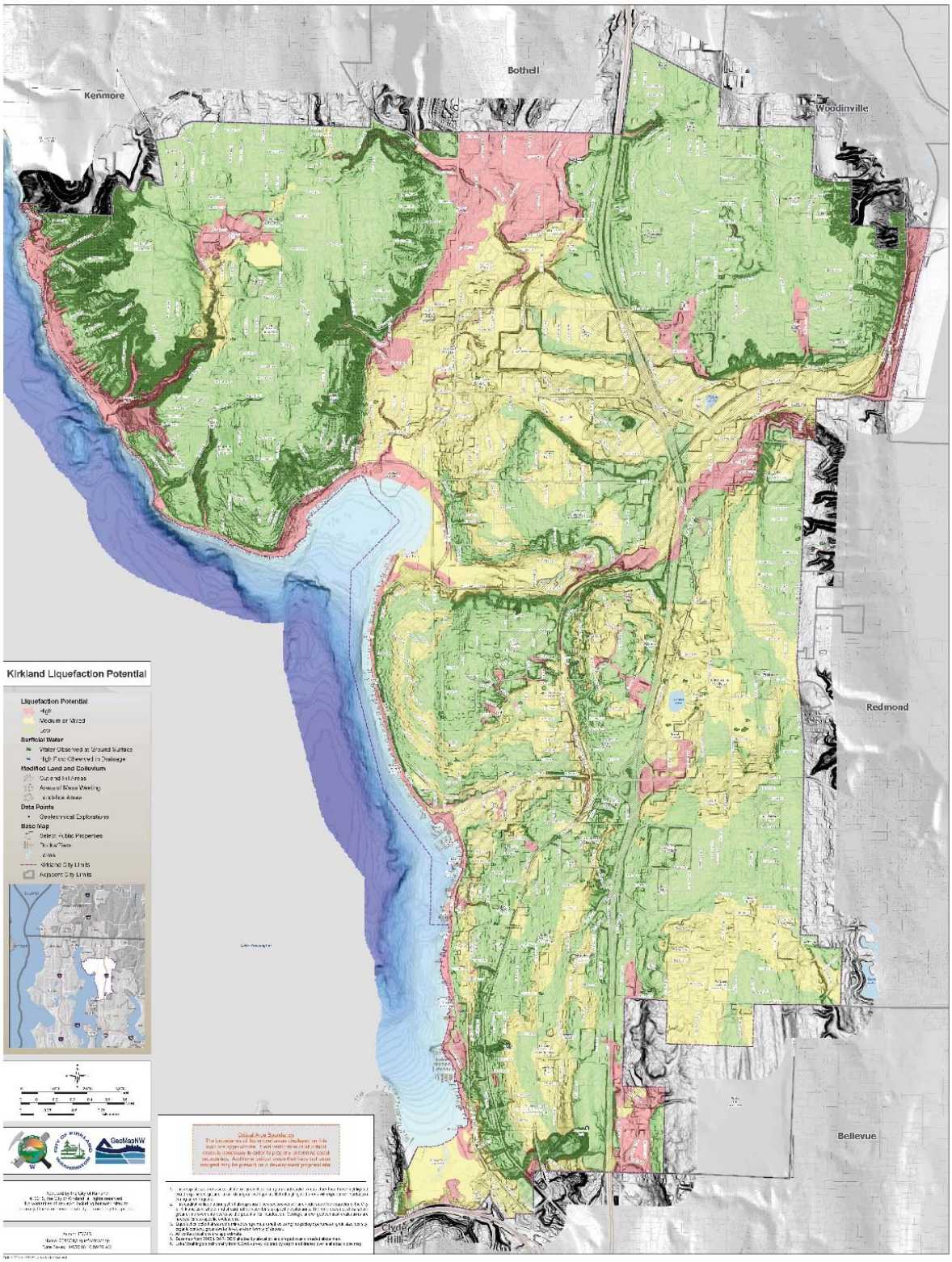


Figure 5: Liquifaction Risk Map

Areas of landslide risk in Kirkland

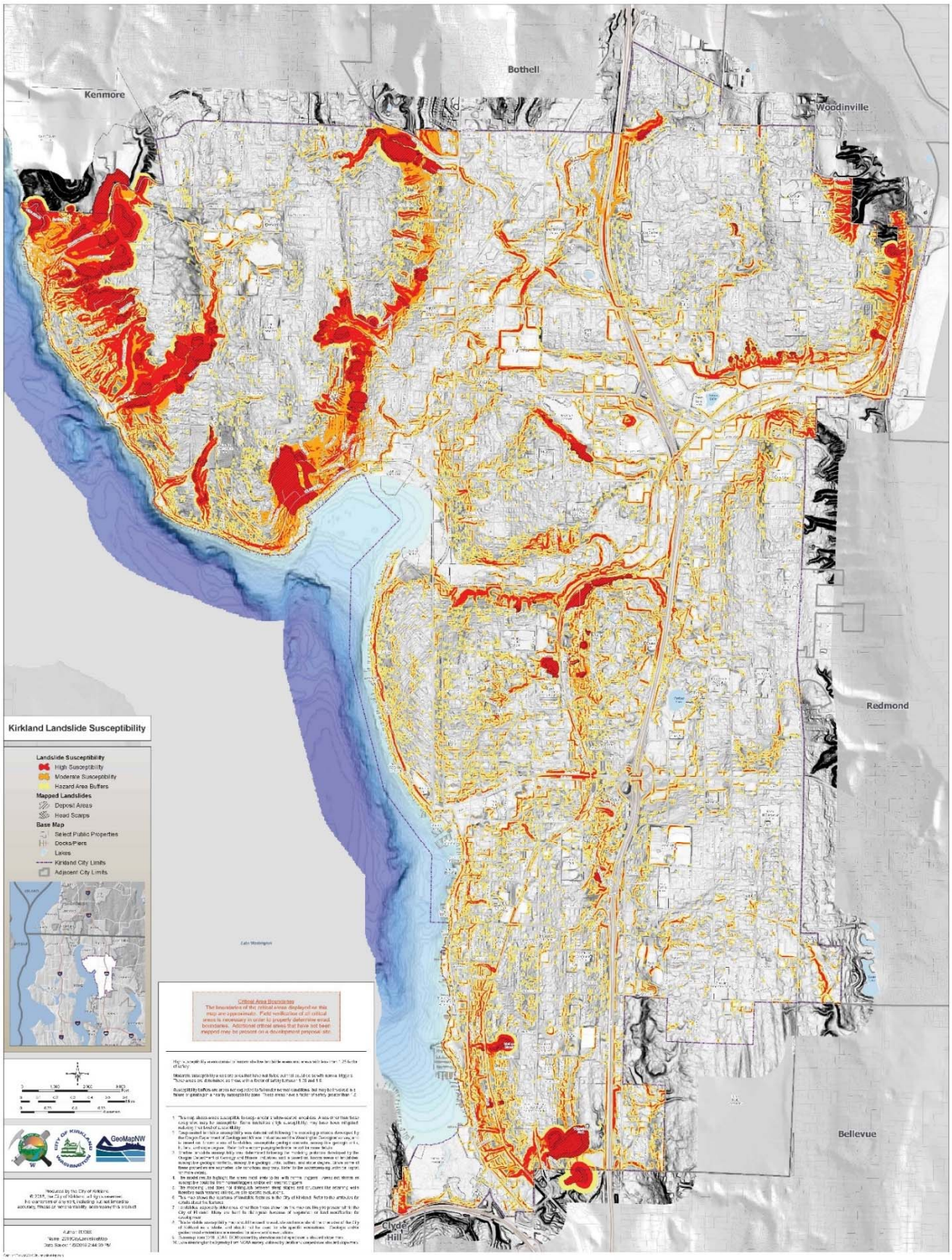


Figure 6: Landslide Risk Map

Annex Update Process

The City update process included engagement of City staff, partner agencies, and the public. The process began with attending King County lead mitigation planning meetings. A City planning team was identified and met to review inputs, outreach, and deliverables. Team members worked within their respective programs to develop content and perform outreach throughout the planning process. Emergency Management took lead on transitioning the county template into a complete annex to the county mitigation plan based on inputs from the planning team efforts.

The Emergency Management Action Team (EMAT), an existing group of department representatives engaged in emergency management at the City, was leveraged throughout the planning process for input and review to ensure a wholistic government approach to planning. The content for the annex was consolidated and coordinated by participants resulting in completion of the planning process. Team participant list and outreach events follow.

Jurisdiction Planning Team

NAME	TITLE	ORGANIZATION	CONTRIBUTION
Heather Kelly	Emergency Manager	Emergency Management	Lead Planner
Josh Pantzke	Utility Manager	Public Works	Content development
Jason Filan	Parks Operation Manager	Parks and Community Services	Content development
Floyd Bull	GIS Specialist	IT – GIS	Mapping support
David Barnes	Senior Planner	Planning and Building	Content development
Tim Day	Deputy Fire Chief	Fire Department	Content verification
Mark Jung	Fire Marshal	Fire Department	Content verification
Tim Carpenter	Lieutenant	Police Department	Content verification

Plan Update Timeline

PLANNING ACTIVITY	DATE	SUMMARY	ATTENDEES
County Kickoff meeting	11/28/2018	Review of plan update process, resources, and timeline	Heather Kelly
County Risk assessment workshop	12/13/2018	Review of FEMA hazus material to assist efforts	Heather Kelly
City Kickoff meeting	3/12/19	Explained update project, timeline, link to other plans, and staff tasks.	EMAT Heather Kelly, Kevin Raymond, Chris Hendrickson, Tim Day, Ryan Brown, Linda Murphy, Desiree Goble, Mike McGivern
County Planning Meeting	4/8/19	Reviewed planning process, deliverables, and timeline.	Heather Kelly, Derrick Heibert
Update Status Review	6/10/19	Reviewed status of plan, gathered additional content, confirmed review assignments.	EMAT Heather Kelly, Kevin Raymond, Chris Hendrickson, Tim Day, Ryan Brown, Linda Murphy, Desiree Goble, Mike McGivern, Rob Saloum

Strategy Development meeting	7/12/19	Identified participants for plan development	Heather Kelly, Jason Filan, Josh Pantzke, David Barnes, Karissa Smith
Coordination with City of Bothell	8/6/19	Confirmed consistent planning approach and strategies	Heather Kelly Jennifer Warmke
Update Status Review	9/11/19	Reviewed status of plan, gathered additional content, confirmed review assignments.	EMAT Heather Kelly, Kevin Raymond, Chris Hendrickson, Tim Day, Ryan Brown, Linda Murphy, Desiree Goble, Mike McGivern, Rob Saloum
Meeting with content lead	9/13/19	Review and finalize strategy	Heather Kelly, Josh Pantzke
Meeting with content lead	9/11/19	Review and finalize strategy	Heather Kelly, David Barnes

Public Outreach Events

EVENT	DATE	SUMMARY	ATTENDEES
Sustainment Forum	June 15, 2019	Opportunity for participants to share interests and concerns related to community sustainment and resiliency. Noted that earthquake risk reduction was a community topic of interest. Follow up at future forums to build greater understanding of interest.	Open to all public, 70 participants.
Sustainment focus group	July 23, 2019	Follow up to previous forum with smaller groups. Earthquake risk and resilience was again highlighted as an area of concern for the community.	Open to all public, 19 participants
Juanita Market Booth	August 16, 2019	Opportunity to engage public and discuss community resiliency. Staff shared information about training, programs, and listened to public input and interests.	Open to all public, approx. 50 visits to the table primarily from Juanita and Finn Hill neighborhoods.
Market Booth	August 28, 2019	Opportunity to engage public and discuss community resiliency. Staff shared information	Open to all public, approx. 100 visits to the table from businesses in downtown Kirkland and

		about training, programs, and listened to public input and interests.	the Market, Moss Bay, and Lakeview neighborhoods.
Survey to community	Sept. 18 – 30, 2019	An online survey was pushed to all residents and businesses in Kirkland asking them to report on their concerns and actions associate with natural disaster mitigation. The summary of results: 93% of respondents identified as residents. When asked how concerned they are about natural disasters in Kirkland 63% said very, 38% said somewhat. When asked what type of disaster is most concerning 92% reported earthquake. The second highest concern was equal as Wind and Snow storms at 50%. 69% of respondents reported having personally taken some form of mitigation or preparedness action. Action items ranged from retrofitting structures, to training, to emergency kits. Overall, the survey supports the City's position that the greatest risk and impact scenario for our community is a major earthquake.	Open to all public, 29 responses received.

Kirkland's Hazard Mitigation Program

In years past, the hazard mitigation strategies have been developed in a silo, with limited involvement of most City departments. The current approach to mitigation focuses on developing hazard mitigation strategies through review of current City plans including but not limited to the Comprehensive Plan, Sustainment draft document, Capital Improvement Plan, response plans, and the participation of City department planners. City mitigation projects, concepts for future mitigation efforts, and daily business activities related to mitigating hazards were integrated into the final mitigation strategy documents through this inclusive planning approach. Integration of existing plans and projects along with the vision for Kirkland, as documented in the Kirkland 2035 project, were leveraged as a foundation for the enhancement of the City's mitigation program.

Plan Goal

Integration and coordination of mitigation strategies into City initiatives, programs, and projects through a comprehensive process of review and department discussion and engagement in efforts.

Hazard mitigation strategies were developed through a multi-step process starting with an internal planning team to identify a comprehensive range of mitigation strategies, followed by partnership between Emergency Management and departments to document strategies. These strategies were then prioritized using a process established at the county level and finally documented in the plan.

Plan Monitoring, Implementation, and Future Updates

King County leads the mitigation plan monitoring and update process and schedules the annual plan check-ins and bi-annual mitigation strategy updates. Updates on mitigation projects are solicited by the county for inclusion in the countywide annual report. As part of participating in the 2020 update to the Regional Hazard Mitigation Plan, every jurisdiction agrees to convene their internal planning team at least annually to review their progress on hazard mitigation strategies and to update the plan based on new data or recent disasters.

The Kirkland Office of Emergency Management (OEM) in partnership with the City Emergency Management Action Team (EMAT), consisting of representatives from each City department, will identify, support, coordinate, and monitor the status of mitigation projects. The team will endeavor to identify opportunities to integrate mitigation into City initiatives, plans, and projects. Emergency Management will document the progress of City mitigation strategies presented in this plan and provide updates to King County as requested.

As part of leading a countywide planning effort, King County Emergency Management will send to planning partners any federal notices of funding opportunity for the Hazard Mitigation Assistance Grant Program. Proposals from partners will be assessed according the prioritization process identified in this plan and the county will, where possible, support those partners submitting grant proposals.

The next plan update is expected to be due in April 2025. All jurisdictions will submit letters of intent by 2023, at least two years prior to plan expiration. The county will lead the next regional planning effort, beginning at least 18 months before the expiration of the 2020 plan.

Continued Public Participation

King County and its partner cities already maintains substantial public outreach capabilities, focusing on personal preparedness and education. Information on ongoing progress in implementing the hazard mitigation plan will be integrated into public outreach efforts. This will provide King County residents, already engaged in personal preparedness efforts, with context and the opportunity to provide feedback on the county's progress and priorities in large-scale mitigation. In the vertical integration of risk-reduction activities from personal to local to state and

federal, it is important that the public understand how its activities support, and are supported by, larger-scale efforts.

The outreach and mitigation teams will also continue to work with media and other agency partners to publicize mitigation success stories and help explain how vulnerabilities are being fixed. When possible, public tours of mitigation projects will be organized to allow community members to see successful mitigation in action.

Hazard Mitigation Authorities, Responsibilities, and Capabilities

The City has prioritized mitigation of risk and hazards as demonstrated in the numerous City plans that include consideration for long range risk reduction/mitigation concepts. These documents include but are not limited to:

-Kirkland Comprehensive plan

-Comprehensive Emergency Management plan

-Continuity of Operations/Government plan

-Capital Improvement program

-Floodplain management program

-Personal preparedness outreach program

-Building codes and regulations

-City department operational plans and projects

-Annual budgets

Plans

Plan Title	Responsible Department	Point of Contact	Relationship to Hazard Mitigation Plan
Comprehensive Plan	Planning and Building	Department Director	Provides the framework for the long-range vison of the City, used to verify mitigation projects fit into the wholistic approach to growth, development, sustainment, and the community.
Comprehensive Emergency Management Plan	Emergency Management	Emergency Manager	Documents the mitigation expectations of City departments and staff in relation to disasters. Defines roles and responsibilities for response to short term recovery of disasters.
COOP/COG Plan	Emergency Management	Emergency Manager	Mitigates delays and confusion related to the ability of City departments and staff to maintain essential

			functions and quickly return to full operations related to disasters impacts.

Programs, Policies, and Processes

Program/Policy	Responsible Department	Point of Contact	Relationship to Hazard Mitigation Plan
Building Codes	Planning and Building	Building Official	Legislative direction.
Emergency Management Program	Office of Emergency Management	Emergency Manager	Oversight of public outreach and training associated with natural disasters.
Floodplain Management Program	Public Works	Floodplain Program Manager	Provides guidance for flood mitigation efforts.
Annual Budgets	Finance and Administration	Department Director	Confirms funding requests and appropriations are completed, tracked, and assigned to mitigation projects and programs.

Entities Responsible for Hazard Mitigation

Agency/Organization	Point of Contact	Responsibility(s)
Public Works	Department Director	Provide oversight and guidance to department efforts ensuring mitigation considerations are made and included in projects whenever appropriate and possible.
Planning and Building	Department Director	Provide oversight and guidance to department efforts ensuring mitigation considerations are made and included in projects whenever appropriate and possible.
Emergency Management	Emergency Manager	Provide oversight and guidance to department efforts ensuring mitigation considerations are made and included in projects whenever appropriate and possible.
Parks and Community Services	Department Director	Provide oversight and guidance to department efforts ensuring mitigation considerations are made and included in projects whenever appropriate and possible.

National Flood Insurance Program

National Flood Insurance Program Compliance

What department is responsible for floodplain management in your community?	Public Works

Who is your community's floodplain administrator? (title/position)	Planning & Building/Building Official
What is the date of adoption of your flood damage prevention ordinance?	August 7, 2012 amended October 2, 2012
When was the most recent Community Assistance Visit or Community Assistance Contact?	June 14, 2005
Does your community have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are?	No
Do your flood hazard maps adequately address the flood risk within your community? If no, please state why.	Yes
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of training/assistance is needed?	No
Does your community participate in the Community Rating System (CRS)? If so, what is your CRS Classification and are you seeing to improve your rating? If not, is your community interested in joining CRS?	No, not interested at this time.
How many Severe Repetitive Loss (SRL) and Repetitive Loss (RL) properties are located in your jurisdiction?	SRL: 0 RL: 0
Has your community ever conducted an elevation or buy out of a flood-prone property? If so, what fund source did you use? If not, are you interested in pursuing buyouts of flood prone properties?	No, not interested due to a lack of flood-prone properties.

Hazard Mitigation Strategies

2015 Hazard Mitigation Strategy Status

STRATEGY	DESCRIPTION	PRIORITY	STATUS
Maintain NFIP	Remain compliant with NFIP requirements	High	Compliant and program in place to maintain.
Assistance with maps and modeling	Updates to floodplain maps.	Medium	Completed
Public Education	Implement education campaign related to earthquake mitigation.	Medium	Completed
Recovery Framework	Develop a recovery framework for disasters	Low	Base document completed, ongoing enhancements
Cochran Spring/LK WA BLVD	Improve fish passage and culvert	Medium	Completed
Totem Lake BLVD	Assess options for flood control	Medium	Completed

Neighborhood Drainage assistance program	Create a process for project review	High	Completed
Deice/brine storage	Increase storage capability	Medium	Completed
CRS participation	Apply for participation	High	Did not apply.
Integrate HMP into land use documents	Consider HMP for land use decisions	High	Completed
Hazard Prone properties	Support retrofit, purchase, or relocation of repetitive loss structures.	Medium	Completed
Support County mitigation	Support County wide initiatives	High	On going
Maintain Plan	Participate in plan maintenance	High	On going

2020 Hazard Mitigation Strategies

STRATEGY	LEAD AGENCY/POC	TIMELINE	PRIORITY
Backup Power Capability	City Manager's Office/Facilities Manager	2 years with ongoing sustainment	High
Community Earthquake Resilience	Emergency Management/Emergency Manager	Ongoing effort	Medium
All Hazard Operational Readiness	Emergency Management/Emergency Manager	Ongoing effort	High
Water Reservoir Stability	Public Works/Utility Manager	5 years with ongoing sustainment	High
Erosion, Landslide, Flood Risk Reduction	Parks and Community Services/Parks Operation Manager	2 years with ongoing sustainment	Medium
Climate Change Mitigation and Adaptation	Planning and Building/Senior Planner	5 years with long term application and sustainment	Medium
Shake Resilient Water Mainlines	Public Works/Utility Manager	5 years with ongoing sustainment	High

CITY OF KIRKLAND HAZARD MITIGATION 2020

PROPOSED MITIGATION STRATEGIES AND PROJECTS

CITY OF KIRKLAND POTENTIAL HAZARDS:

Earthquake | Flood | Landslide | Severe Weather | Wildfire | Cyber Attack |
Civil Disturbance/Terrorism | Hazardous Materials Incident | Structure Fire | Public Health Emergency

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STRATEGY: Backup Power Capability for Critical Facilities

PROJECTS:

1) Evaluate infrastructure and logistical requirements for implementation of emergency power at City facilities currently lacking the capability.
2) Continue maintenance and capability of mobile generators at Northwest University and Inglewood Presbyterian Church identified as possible community shelter locations.
3) Identify and secure options for generated alternate fueling locations.
4) Expand UPS sites for transportation signalized intersections to assist traffic flow and emergency vehicle response.

STRATEGY: Community Earthquake Resilience

PROJECTS:

1) Conduct Community Emergency Response Team (CERT) training annually.
2) Build capability and membership of the Kirkland Emergency Communications Team (KECT) Ham radio program.
3) Deliver Map Your Neighborhood and public education campaigns to promote emergency preparedness.

STRATEGY: All Hazard Operational Response

PROJECTS:

1) Maintain Emergency Operations Center (EOC) ready state through planning, resources, training, and exercise.
2) Educate City Staff on roles and responsibilities during emergencies.
3) Update City Emergency plans including but not limited to the Comprehensive Emergency Management Plan (CEMP), Continuity of Operations/Continuity of Government Plan (COOP/COG), Hazard Mitigation Plan, and Recovery Framework.

STRATEGY: Water Infrastructure Stability

PROJECTS:

1) Shake resilient water mainlines
2) Water reservoir earthquake risk reduction

STRATEGY: Erosion, Landslide, and Flood Risk Reduction

PROJECTS:

1) Forest and Natural Areas Restoration Plan
2) Climate Change mitigation and adaptation

Kirkland Backup Power Capability for Critical Facilities

Lead POC	Partner Points of Contact	Hazards Mitigated / Goals Addressed	Funding Sources / Estimated Costs
Emergency Manager	• Public Works – Fleet & Transportation • City Manager's Office – Facilities • Finance and Administration – Procurement • Northwest University • Inglewood Presbyterian Church • Puget Sound Energy	All Hazard Continuity of Operations and Government Response and Recovery Housing and Human Services needs	General City Budget Potential community development grants $200,000 to multi millions

Strategy Vision/Objective

Vision - Build City of Kirkland Government's capability to mitigation, prepare for, respond to and recovery from emergencies and disasters.

Objectives

- Provide critical facilities with consistent uninterrupted power supply (UPS) either through generators, battery units, or solar capable supply systems.
- Increase capability to provide for the safety and sheltering needs of the community.

Mitigation Strategy

- Evaluate infrastructure and logistical requirements for implementation of emergency power at City facilities currently lacking the capability.
  - Contract electrical expertise for evaluation of key facilities to determine capability to retrofit generation power to site.
  - Identify priorities and funding to support increased continuity of operations and potential shelter operations capability.

- Continue maintenance and capability of mobile generators at Northwest University and Inglewood Presbyterian church.
  - Facilities will continue to service the generators and test operation capability.
  - Emergency Management will maintain relationships with partner agencies to sustain operational capability.

- Identify and secure options for generated alternate fueling locations.
  - Fleet will identify options for generated fueling facilities in and near the city for city fleet vehicles.
  - Finance will facilitate necessary contracting, purchasing, or service agreements needed to secure resources.

- Expand UPS sites for transportation signalized intersections to assist traffic flow and emergency vehicle response.
  - Transportation planners will continue to transition replacement signals to UPS supported units.
  - New intersections will continue to install UPS support signaling units.

2-Year Objectives	5-Year Objective	Long-Term Objective
• Determine requirements to increase capability • Secure funding for capability enhancement	• Implement, test, and validate increased sustainment of services capability at critical facilities.	• A City able to respond to and recover from a catastrophic disaster.

Implementation Plan/Actions

Perform a needs assessment to determine requirements for increasing capability.
Meet with key partners to facilitate enhancements and relationships.
Determine cost and funding options for increased capability or expedited completion of efforts.

Procure and install appropriate equipment for capability.
Performance Measures • Increase the number of City facilities with backup power capability. • Increase number of signaling systems on UPS. • Secure signed agreements for generated fuel options.

Kirkland Community Earthquake Resilience

Lead POC	Partner Points of Contact	Hazards Mitigated / Goals Addressed	Funding Sources / Estimated Costs
Emergency Manager	• All City Departments	All Hazard Community self-reliance	General City Budget Federal Emergency Management Performance Grant (EMPG) $100,000

Strategy Vision/Objective

Vision - Build community capability to respond to and recovery from emergencies and disasters.

Objectives

- Provide education and training opportunities.
- Engage additional community and business members in preparedness efforts

Mitigation Strategy

- Community Emergency Response Team (CERT)
  - Plan and deliver at least one initial CERT training annually.
  - Offer continuing education and training opportunities.
  - Engage CERT trained community members in community activities, exercises, and tasks as appropriate.
- Kirkland Emergency Communications Team (KECT)
  - Recruit and train additional members of the team
  - Support training and exercise opportunities for team participants.
  - Maintain radio equipment at City facilities for KECT.
- Map Your Neighborhood (MYN)
  - Plan and deliver at least one MYN facilitator training annually.
  - Provide neighborhood delivery materials to facilitate training.
  - Maintain contact information for neighborhood facilitators for new resident inquiries.

2-Year Objectives	5-Year Objective	Long-Term Objective
• Establish sustainable standardized program. • Increase participation opportunities.	• Expand program to meet the development and population growth of the City.	• A self-reliant community able to respond to and recover from a catastrophic disaster.

Implementation Plan/Actions

Establish and document program oversight guidance and participant tracking procedures.
Obtain training materials and supplies; create and implement schedule of delivery.
Justify and secure ongoing funding source.
Expand paid and volunteer staff to support programs.

Performance Measures

- Number of CERTs trained.
- Roster of KECT participants.
- Number of neighborhoods participating in MYN program.

Kirkland All Hazard Operational Readiness

Lead POC	Partner Points of Contact	Hazards Mitigated / Goals Addressed	Funding Sources / Estimated Costs
Emergency Manager	• All City Departments • King County Office of Emergency Management • WA. State Emergency Management Division • FEMA Region X • Local jurisdictions, special purpose districts, profit and non-profit partners	All Hazard Continuity of Operations and Government Response and Recovery	General City Budget Federal Emergency Management Performance Grant (EMPG) $200,000

Strategy Vision/Objective

Vision - Build City of Kirkland Government's capability to mitigation, prepare for, respond to and recovery from emergencies and disasters.

Objectives

- Provide training and exercise opportunities to City staff.
- Develop and enhance City resources for disaster management

Mitigation Strategy

- Emergency Operations Center (EOC)
  - Maintain technology and infrastructure of "hot" EOC site at City Hall and alternate EOC location at the Kirkland Justice Center.
  - Plan and deliver annual EOC position training; exercise functional EOC at least annually.
- City Staff Preparedness
  - Educate staff on roles and responsibilities during and following emergencies.
  - Build awareness and actions related to personal preparedness at work, home, and during commute to increase availability of staff during emergencies.
- Planning
  - Maintain, update, and develop emergency management plans to support City efforts before, during, and after disasters and emergencies.
  - Consider capability for alternate, off site, or remote City operations to support Continuity of Operations and Government.

2-Year Objectives	5-Year Objective	Long-Term Objective
• Establish an informed workforce capable of responding and recovering from emergencies and disasters. • Enhance EOC long term activation capability through equipment and staff resources.	• Develop a culture of emergency preparedness and ability to act within in the City workforce.	• A City able to respond to and recover from a catastrophic disaster.

Implementation Plan/Actions

Offer EOC training and exercise opportunities annually.
Activate the EOC for major planned events and identified incidents with a proactive stance.
Provide at least two City staff education opportunities annually.
Engage City staff in local and national preparedness campaigns and activities.

Performance Measures

- Number of EOC trainings, exercises, and activations.
- On time updates of emergency plans.

Kirkland Forest and Natural Areas Restoration

Lead POC	Partner Points of Contact	Hazards Mitigated / Goals Addressed	Funding Sources / Estimated Costs
Greenland Kirkland Partnership Supervisor	• Parks and Community Services • City of Kirkland Park Board • Parks Maintenance Division • Planning and Community Development Department • Public Works Department • City of Kirkland's Green Team • City of Kirkland's interdepartmental Environmental Communication and Outreach (ECO) Team • Interdepartmental Volunteer Service Team • GIS User Group	Protect life and structures from Erosion, Landslide and Flood hazards	General Budget Grants Donations $10M

Strategy Vision/Objective

The Green Kirkland Partnership's mission is to restore and maintain healthy forested and natural parklands by building a supportive community that works together to protect Kirkland's valuable natural resources for current and future generations. The Partnership will continue to serve as a leader in natural area restoration and community-based stewardship for the City of Kirkland and collaborate with other city and county departments, nonprofit conservation organizations, educational institutions, and Kirkland's community and businesses to realize its vision of a city with healthy forested and natural area parklands. Sustainable natural areas, specifically forests, will contain a multi-age canopy of trees, where invasive plants pose a low threat and a forest floor with a diverse assemblage of native plants that provide habitat for native wildlife.

Mitigation Strategy

- Evaluate conditions and prioritize sites for restoration using tree-iage model
  - Annual work plan completed identifying specific restoration to be implemented at each active park
- Develop annual work plan for each active park
  - Annual work plan completed identifying specific restoration to be implemented at each active park
- Implement restoration projects optimizing ecological function, using the four-phase approach
  - # of acres entered into restoration and maintenance
  - Best practices evaluated annually and updated as needed
- Establish monitoring program Monitor and maintain sites over the long term
  - Annual monitoring report
  - # of acres entered into Phase-4 work
  - Maintenance is performed as indicated

2-Year Objectives	5-Year Objectives	Long-Term Objectives
• Enroll 23 to 31 new acres in initial restoration per year • 23 parklands with acres enrolled • in restoration • Develop park-level stewardship plans • Continue restoration and maintenance on all previously enrolled acres • Update habitat assessment to include new land acquisitions	• Continue adding approximately 31 new acres in initial restoration per year • 28 parklands with acres enrolled in • restoration • Revise park-level stewardship plans as needed • Continue restoration and maintenance on all previously enrolled acres • Update habitat assessment	• Enroll remaining 56 acres. All acres in restoration by 2034 • 34 parklands with acres enrolled in restoration • Revise park-level stewardship plans as needed • Continue restoration, maintenance on all.

Implementation Plan/Actions

- An active Green Kirkland Steward group working in approximately 50% of project areas by end of 2024
- Recruit and manage 14,253 to 22,188 volunteer hours (~3,563 to 5,547 volunteers) per year by 2024
- An active Green Kirkland Steward group working in 80% of project areas by end of 2029
- Recruit and manage 22,712 to 24,309 volunteer hours (~5,678 to 6,077 volunteers) per year by 2029
- Continue program with active Green Kirkland Stewards in 100% of project areas
- Recruit and manage 12,751to 22,500 volunteer hours (~3,188 -5,625 volunteers) through 2034
- Hours needed to support restoration efforts decrease as all acres are entered into restoration

Performance Measures

- Two types of information will help in analyzing the Green Kirkland Partnership's effectiveness: program monitoring and field monitoring. Monitoring allows for improvement in the Partnership programs' design and performance by measuring the effectiveness of strategies and techniques used. The results of monitoring are fed back into Partnership planning and methodology to increase effectiveness. Monitoring and evaluation will also provide accountability to funding sources and supporters and help ensure that goals and benchmarks are met.
- At the close of each year, Green Kirkland Partnership staff will continue to collect data on Balanced Scorecard measures and track progress toward the annual work plan goals and benchmarks. Data management systems have been developed to record information pertinent to these measurements throughout the year so that progress can easily be summarized at year's end. Green Kirkland currently tracks the number of participants and hours they work each year and will continue to do so throughout the life of the program.

Climate Change Mitigation and Adaptation

Lead POC	Partner Points of Contact	Hazards Mitigated / Goals Addressed	Funding Sources / Estimated Costs
Sustainability Manager Planning and Building	• Neighborhood Associations • Kirkland Chamber of Commerce • Kirkland Downtown Association • Puget Sound Energy • Puget Sound Clean Air Agency • Environmental Protection Agency • Environmental and non-profit groups	Weather and Health issue/ Mitigation of risk and increase in community resilience and health.	• General Fund • Grants • Community donations

Strategy Vision/Objective

Update city's climate protection action plan to include climate change mitigation for impacts from greenhouse gas emissions and other impacts related to rise in temperatures. In addition to mitigation, also adaptation strategies will be addressed for permanent changes in conditions.

Mitigation Strategy

Complete a comprehensive planning process initiating with community engagement, followed by documentation of inputs. The inputs will be used for a feasibility study to determine recommendations to elected, community, and business leaders on development of a plan. Based on leadership direction develop a climate change mitigation and adaptation plan or annex to the City Sustainability plan.

2-Year Objectives	5-Year Objectives	Long-Term Objectives
• Host community engagement sessions • Complete feasibility report	• Develop plan • Initiate implementation of plan.	• A sustainable healthy viable community

Implementation Plan/Actions

- Update CPAP by 2022 and implement priority actions soon thereafter with the help of regional partners such as King County cities climate collaborative (K4C), Puget Sound Energy, all city operations and Sate of Washington, King County and Puget Sound clean air agency.

Performance Measures

- Reduce greenhouse gas emissions, as reported by Puget Sound Regional Council and Puget Sound Energy data, in the following time frame:
  - 25% by 2020
  - 50% by 2030
  - 80% by 2050

Shake Resilient Water Mainlines

Lead POC	Partner Points of Contact	Hazards Mitigated / Goals Addressed	Funding Sources / Estimated Costs
Public Works Superintendent Utility Manager	• City of Bellevue • City of Redmond • Northshore Utility District • Cascade Water Alliance • King County Government • State of Washington	Earthquake/Shake Resilient Water Mainlines	• Public Works Reserves • Grants • $50,000 to multi-million

Strategy Vision/Objective

- Use updated earthquake/slide hazard mapping to pinpoint risk areas within water distribution system
- Increased seismic resilience of water distribution system to mitigate public health and safety risks.

Mitigation Strategy

- Update construction standards to include earthquake resilient joints
- Update Capital Improvement Plan (CIP) project list based on assessment of risk
- Construct/replace earthquake resilient water lines

2-Year Objectives	5-Year Objectives	Long-Term Objectives
• Plan assessment complete	• CIP updated • Projects identified • Projects in construction	• Projects in construction • Survive

Implementation Plan/Actions

- Update CPAP by 2022 and implement priority actions soon thereafter with the help of regional partners such as King County cities climate collaborative (K4C), Puget Sound Energy, State of Washington, King County, and Puget Sound clean air agency.

Performance Measures

- Completion of Assessment – 2019-2020
- 2021 and beyond – affect CIP

Water Reservoir Earthquake Risk Reduction

Lead POC	Partner Points of Contact	Hazards Mitigated / Goals Addressed	Funding Sources / Estimated Costs
CIP Manager Utility Manager Public Works Superintendent	• City of Bellevue • City of Redmond • Cascade Water Alliance	Earthquake/ Public Health and Safety	$4.5M • CIP Dollars • Grants

Strategy Vision/Objective

- Prevent failure/collapse of south reservoir
- Post-earthquake drinking water retention and distribution of safe product

Mitigation Strategy

The strategy is to retrofit the structural integrity of the water system by adding earthquake resilient equipment including earthquake valves and dedicated fire hydrants.

2-Year Objectives	5-Year Objectives	Long-Term Objectives
• Complete inspection report • Initiate construction/placement of upgraded equipment	• Complete equipment installation • Test system through simulated failures	• Harden critical infrastructure water system to increase community resilience and survival.

Implementation Plan/Actions

- 2019 - Reservoir cleaning and inspection with consultant report.
- 2020/2021 – Construction Planning/Design with reservoir retrofit.
    - Add earthquake resilient structural attachments
    - Add earthquake activated values
    - Add dedicated fire hydrant/distribution points

Performance Measures

- Monitor equipment installation for consistent progress towards completion
- Complete installation
- Perform system test and address adjustments as needed