



City of Mercer Island Jurisdiction Plan Annex

Introduction

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

- **Location and Description** - Mercer Island is just over five miles long and two miles wide and lies in the southern section of Lake Washington east of the City of Seattle and west of the City of Bellevue. The Island is 6.2 square miles of land area. There are several exits from I-90 to Mercer Island with four main roads on the island. Island Crest Way runs north/south down the middle of the island. West Mercer Way follows the shoreline from the north/south on the west side of the island with steep slopes, ravines and gullies. East Mercer Way follows the shoreline from the north/south on the east side of the island. North Mercer Way follows the shoreline from the east/west on the north side of the island. The Town Center (Central Business District) is centered on the north end of the island south of I-90, and a smaller business district is on the south end. The Town Center is a 76-acre bowl-shaped area that includes the Island’s main post office, the main Fire Station (Station 91), medical and dental offices, drug stores, restaurants and coffee shops, apartment houses and condos, service stations, a bookstore, several retirement homes, two supermarkets, office buildings, and banks. The South End Village is just across the road from Pioneer Park with 120 acres of woods and trails, including horse trails. The Village includes several businesses: a post office, gasoline station, retail and service businesses. It also includes a Park ‘n Ride for metro bus commuters. Abutting the Village is Mercer Island’s second fire station: Fire Station 92 (South Fire Station). Mercer Island boasts 467 acres of parklands and open spaces that feature ball fields, extensive bike trails and picnic areas. In addition, there are more than 150 miles of marked walking trails. The bridge linking Mercer Island to Seattle is the renowned multi-lane Mercer Island Floating Bridge. The East Channel Bridge links the island to Bellevue, the State’s third most populous city.

- **Brief History** - Settlement of the Island by non-Native Americans began in the late 1870s. The Island is named after one of the three pioneering Mercer brothers from Illinois, all of whom had great influence in the Seattle area. Although none of the brothers lived on Mercer Island, they would often hunt in and explore throughout the island’s secluded forests. The early settlers traveled by rowboats to the neighboring community of Seattle to pick up necessities. An occasional tramp steamer would drop off items that were too large to transport by rowboat. Because of the inconveniences of island living, settlement lagged until C.C. Calkins platted the town of East Seattle, having purchased 160 acres; nearly three percent (3%) of the island’s total acreage. In 1891 he built a luxurious resort on the western side of the island, which spurred the building of a ferry dock, and small steamers

Jurisdiction Profile

The city of Mercer Island...

- **Date of Incorporation**
July 5, 1960
- **Full-Service City**
Police, Fire, Parks & Recreation, Water, Sewer & Stormwater Utilities, & Youth & Family Services
- **Location**
Between Seattle and Bellevue in Lake Washington
- **Area**
Just over five miles long and two miles wide
- **Parks & Open Space**
Over 35 parks and open space areas boasting over 400 acres and trails in excess of 50 miles
- **Current Population**
25,261 as of 2017
- **Population Growth**
Population increased from 22,699 residents in 2010 to 25,261 in 2017.



began to make regular trips. This availability of transportation attracted more residents. Ferry travel continued until July 2, 1940 when the floating bridge from Mercer Island to Seattle was opened.

- **Climate** - Mercer Island enjoys the mild climate prominent in the Puget Sound Region. The average winter temperature is 40 degrees Fahrenheit and the average summer temperature is 70 degrees Fahrenheit. The average annual rainfall is 35 inches with half typically falling within the months of October and January.
- **Governing Body Format** - The City of Mercer Island has a Council-Manager form of government with seven City Councilmembers, who are all elected at large for staggered four-year terms. The Council elects the Mayor from its members. The City Manager is appointed by, reports directly to, and serves at the pleasure of the City Council. . The City Manager, who serves as the chief executive officer, is responsible for implementing the policies and goals of the City Council and provides leadership, coordination and development of 10 City departments: Police, Fire, Public Works, Human Resources, City Attorney’s Office, City Manager’s Office, Community Planning & Development, Youth and Family Services, Finance and Parks and Recreation. The City of Mercer Island City Council assumes responsibility for the adoption of this plan; the Emergency Manager will oversee its implementation.
- **Development Trends** – Population has changed minimally in the past two decades due mainly to the geographic limitations of the Island. The risks have also remained the same with science showing Mercer Island still situated on the Seattle Fault. Risks from earthquake damage, severe winter storms, volcano eruptions, landslides and wildfires are still a concern and planned for by the city. Anticipated development levels for Mercer Island include low to moderate development consisting primarily of residential units. The majority of recent development has been mixed-use, low rises with retail shops located on the ground level and residential units above. There has been minimal infill development. The City of Mercer Island’s City Emergency Management Plan was updated and approved by Washington State Emergency Management Division and FEMA March of 2018. City actions, such as those relating to land use allocations, zoning subdivision and design review, redevelopment, and capital improvements, must be consistent with such a plan.

Jurisdiction Point of Contact:

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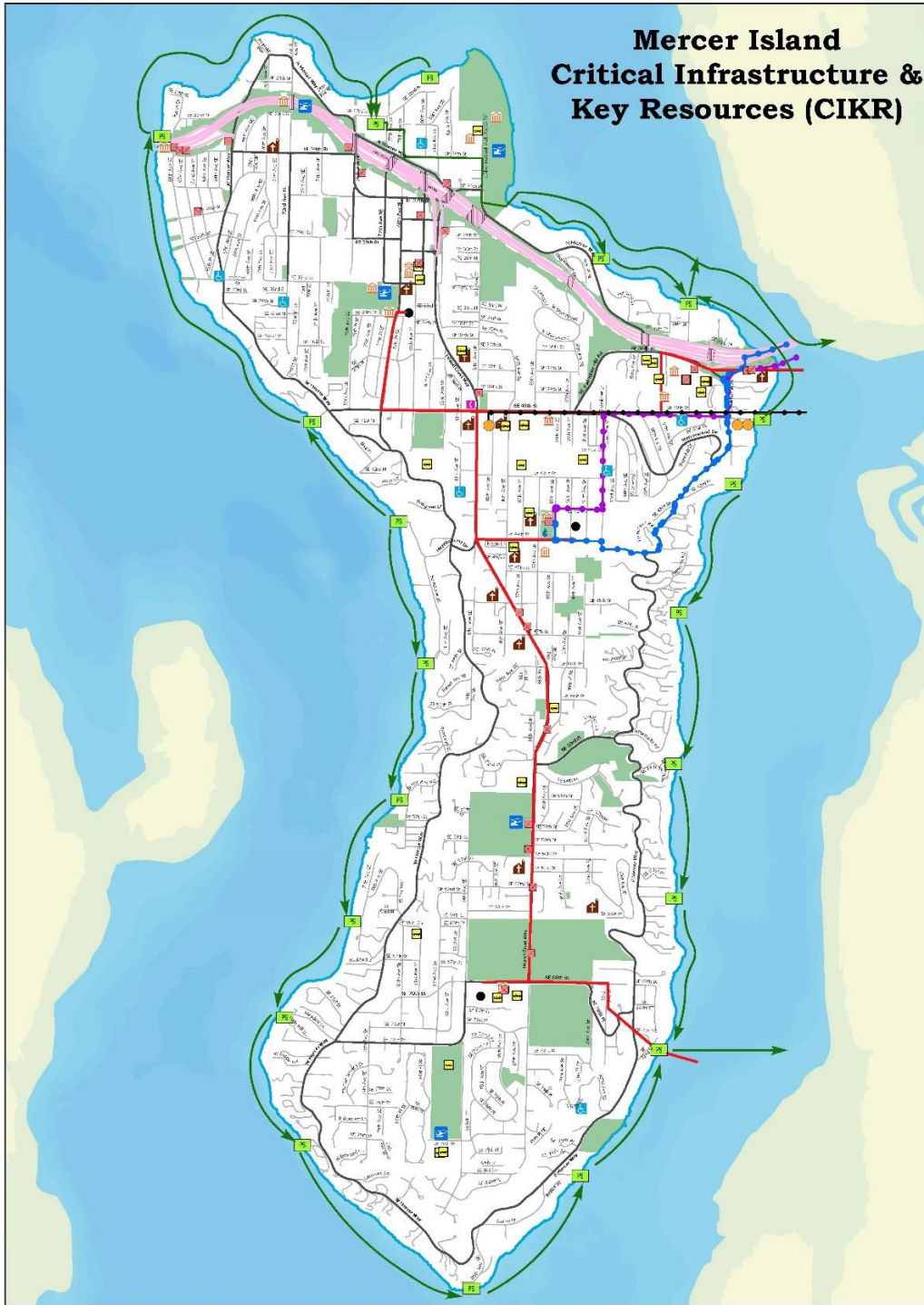
City of Mercer Island Risk Summary

Hazard Risk and Vulnerability Summary

HAZARD	ASSET RISK	VULNERABILITY	IMPACT ON COMMUNITY
Earthquake	1. Station 91 Fire Door	Unable to open	Fire Apparatus cannot respond to emergencies
	2. MICEC generator	Not able to support shelter site and back up City Hall	Unable to shelter residents or maintain city operations
	3. Roadway damage	Roadways impassable	Emergency Vehicles unable to respond
	4. City Hall Columns	May collapse, cause damage to west wing of City Hall & EOC entrance to be blocked	City Hall function limited and EOC may be inaccessible
	5. Luther Burbank Boiler chimney	Chimney is not to code and may collapse	Risk to public from falling brick
	6. City-owned docks	May be unusable from damage	Marine Patrol limited in response/supplies unable to be offloaded
	7. City's fiber infrastructure	Unable to link critical facilities and provide failover communications	City operations affected
	8. Water and Sewer lines	May fail in earthquake – need redundant lines	Community water and sewer impacted
	9. Drinking water	No current Emergency Well on South end of Mercer Island	Drinking water availability for South Island residents limited
	10. Stormwater pipe	Damage may cause stormwater pipes to fail	Urban flooding for residents
Severe Winter Weather	2. MICEC generator	May not be able to support shelter site and back up City Hall	Unable to shelter residents or maintain city operations
	3. Roadway damage	Roadways impassable	Emergency Vehicles unable to respond
Landslide	3. Roadway damage	Roadways impassable	Emergency Vehicles unable to respond
Severe Weather (non-winter)	2. MICEC generator	May not be able to support shelter site and back up City Hall	Unable to shelter residents or maintain city operations
Wildfire			
Seiche	6. City-owned docks	May be unusable from damage	Marine Patrol limited in response/supplies unable to be offloaded
	8. Water and Sewer lines	May fail in earthquake – need redundant lines	Community water and sewer impacted
Volcano			



Hazard and Asset Overview Map(s)



Legend

Electric Transmission Line	City Water Well	Schools/Daycares	Places of Worship
Electric Distribution Substation	Sewer Direction of Flow	Government Buildings	Adult Home
PSE High Pressure Natural Gas Main	Pump Station	Helicopter Landing Zones	Parks
PSE District Pressure Regulating Station	I-90 Overpasses	Central Telephone Location	
SPU Primary Supply Line	I-90 Freeway	Wireless Facility Locations	
SPU Secondary Supply Line			

Map Date: 7/2/2019
2019CriticalInfrastructureKeyResources.mxd
Information & Geographic Services



City of Mercer Island Hazard Mitigation Plan

Key City Facilities with Previous Occurrence Hazard



LEGEND:

Documented Earthquake
Ground Effects:

- 2001
- 1965
- 1949

Previous Landslide

Key City Facilities

Schools

Water Pump Station

Marine Patrol Landings

Sewer Pump Stations

Cell Phone Towers

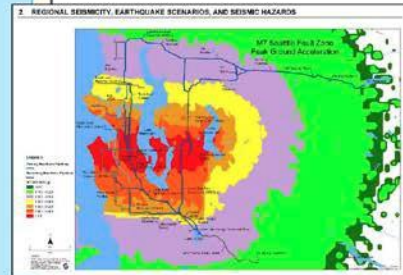
Helo Pads

Water Transmission Line

Water Supply Line

Puget Sound Energy:

- Cable Station
- Distribution Substation
- Puget Sound Energy 115kV Transmission



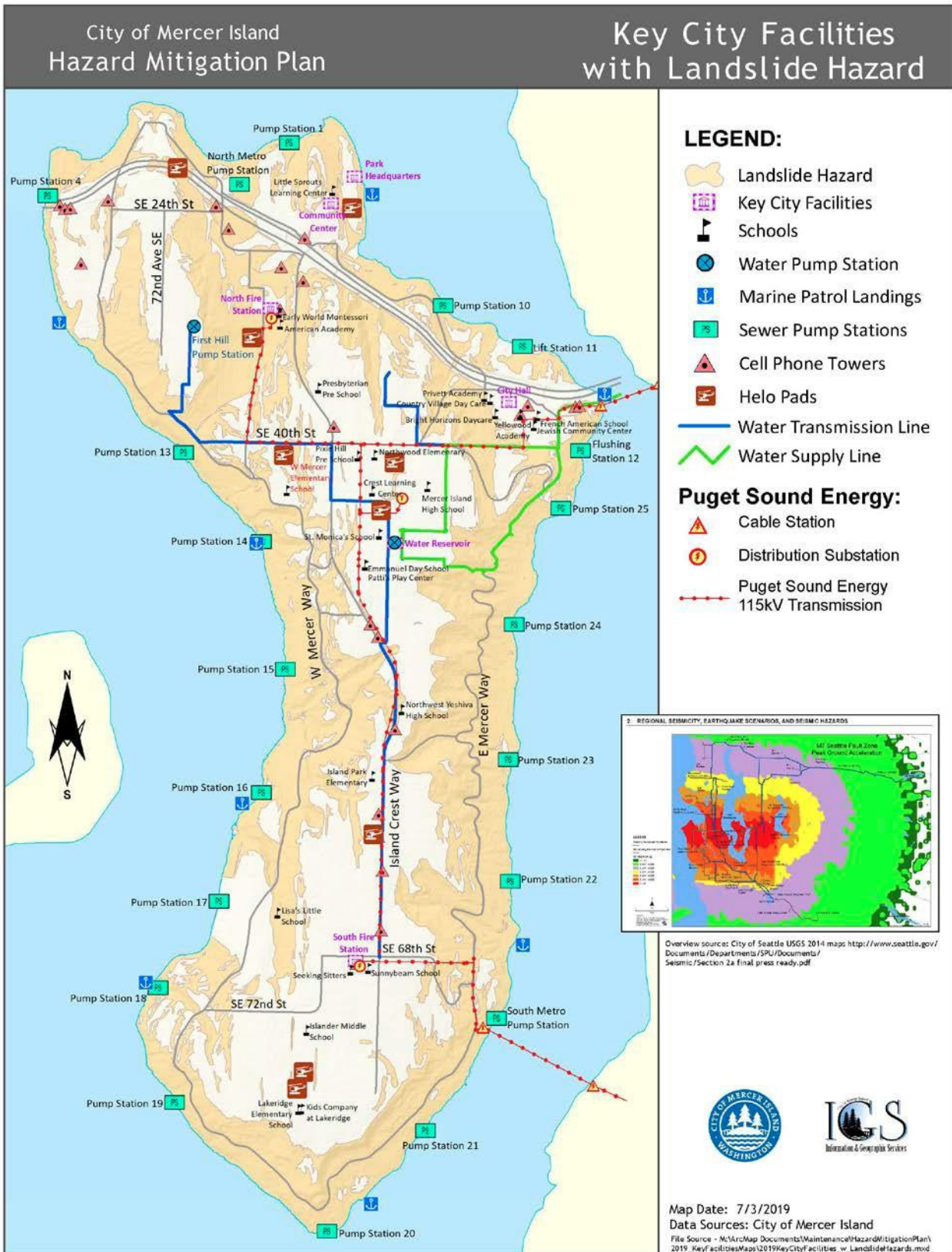
Overview source: City of Seattle USGS 2014 maps <http://www.seattle.gov/Documents/Departments/SPU/Documents/Seismic/Section 2a final press ready.pdf>



Map Date: 7/3/2019

Data Sources: City of Mercer Island

File Source: M:\ArcMap Documents\Maintenance\Hazard\MitigationPlan\2019_KeyFacilitiesMaps\2019KeyCityFacilities_PreviousOccurrenceHazards.mxd





City of Mercer Island Hazard Mitigation Plan

Key City Facilities with Seismic Hazard

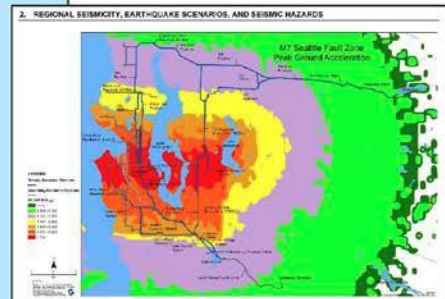


LEGEND:

- Seismic Hazard
- Key City Facilities
- Schools
- Water Pump Station
- Marine Patrol Landings
- Sewer Pump Stations
- Cell Phone Towers
- Helo Pads
- Water Transmission Line
- Water Supply Line

Puget Sound Energy:

- Cable Station
- Distribution Substation
- Puget Sound Energy 115kV Transmission



Overview source: City of Seattle USGS 2014 maps [http://www.seattle.gov/Documents/Departments/SPU/Documents/Seismic/Section 2a final press ready.pdf](http://www.seattle.gov/Documents/Departments/SPU/Documents/Seismic/Section%20Final%20press%20ready.pdf)



Map Date: 7/3/2019

Data Sources: City of Mercer Island

File Source - M:\ArcMap Documents\Maintenance\HazardMitigationPlan\2019_KeyFacilitiesMaps\2019KeyCityFacilities_w_SeismicHazards.mxd

Assets at Risk

ASSET	VALUE (\$)	RISK SUMMARY	VULNERABILITY SUMMARY	IMPACT - HISTORICAL
1. Station 91 Fire Doors	400K	Unable to open	Fire Apparatus cannot respond to emergencies	Public may not be served in emergency
2. MICEC generator	500K	May not be able to support city operations if needed as back up city hall – needed as shelter site as well	Unable to maintain city operations and shelter site	City government may be compromised
3. Roadway Damage	15M	Roadways impassable	Emergency Vehicles unable to respond	Public may not be served in emergency
4. City Hall Columns	30K	May collapse, cause damage to west wing of city hall and EOC entrance to be blocked	City hall function limited and EOC may be inaccessible	Unable to manage disasters
5. Luther Burbank Boiler chimney	250K	Chimney is not to code and may collapse	Risk to public from falling brick	Public may be injured
6. City owned docks	7M	May be unusable from damage	Marine Patrol limited in response/supplies unable to be offloaded	Limited water response
7. City's fiber infrastructure	1.4M	Unable to link critical facilities and provide failover communications	City operations affected	limited communications
8. Water and Sewer lines	15M	May fail in earthquake – need redundant lines	Community water and sewer impacted	Limited or no water/sewer
9. Drinking water	4.2M	No current Emergency Well on South end of Mercer Island	Drinking water availability for South Island residents limited	Limited water to south end of MI
10. Stormwater pipe	2.5M	Damage may cause stormwater pipes to fail	Urban flooding for residents	Homes/streets may see urban flooding

Plan Update Process

The City of Mercer Island participated in the multi-jurisdictional planning process led by King County by participating in the HMP steering committee that met monthly. Additionally, the MI planning team met in person, over email and phone the hazards, mitigation strategies and projects that could most benefit Mercer Island. Once this information was compiled it was presented to the public for comment. Two events listed below were used to capture public comment. Once that information was compiled it was incorporated into the Mercer Island HMP Annex. Each team member below provided a mitigation strategy to address a known hazard. This annex once compiled was review by city staff and King County for accuracy.

Jurisdiction Planning Team

NAME	TITLE	ORGANIZATION	CONTRIBUTION
Jennifer Franklin	Emergency Manager	MI Police	Write Plan
Jason Kintner	Public Works Director	MI Public Works	HM Strategy
Evan Maxim/Don Cole	CPD Director/Inspector	MI DSG	HM Strategy
Ali Spietz	Asst. to the City Mgr.	MI CM	HM Strategy
Steve Heitman	MI Fire Chief	MI Fire	HM Strategy
Ryan Daly	MI Parks Director	MI Parks	HM Strategy
Alfredo Moreno	MI Senior Systems Mgr.	MI IGS	HM Strategy
Marcy Olson	Facilities Manager	MI Finance	HM Strategy

Plan Update Timeline

PLANNING ACTIVITY	DATE	SUMMARY	ATTENDEES
Start Up meeting with KC	03/11/2019	KC and region met to discuss plan agenda and goals	EM's, King County and special purpose districts
Meeting with Leadership Team	04/03/2019	Went over Plan schedule and expectations with strategies and outreach	Jennifer Franklin, Jason Kintner, Ali Spietz, Mike Mandella, Alfredo Moreno, Jessi Bon, Ed Holmes
First public outreach	06/22/2019	June 22 at EM Fair, where strategies were presented for public comment	Jennifer Franklin, Ed Holmes, Emergency Volunteers, Public
Second Public outreach	07/08-8/26/2019	On line survey that reached 600 people	Anonymous – 36 comments
Strategy Forms Completed	08/19/2019	Key staff completed strategy forms	Staff listed in Planning Team
Draft Plan to Directors for review	09/09/2019	Draft Plan was sent to Ali, Jessi and Ed for review	Ali Spietz, Jessi Bon and Ed Holmes
Draft Plan Presented to City Council	09/17/2019	Presented draft plan to city council	Jennifer Franklin, City Council, Jessi Bon, Ed Holmes, Ali Spietz, Public
Draft Plan to King County for review	09/30/2019	Sent to King County for review	Derrick Hiebert
Final Plan Presented to City Council	April of 2020	Final Plan will be presented at City Council Meeting for approval	Jennifer Franklin, City Council, City Staff

Public Outreach Events

EVENT	DATE	SUMMARY	ATTENDEES
Booth at EM Prep Day	Sat. June 22, 2019	Public Input on most vulnerable hazards and effected assets	All
“Let’s Talk” community engagement	July 8-August 26	Input from community on prioritization of mitigation projects previously identified by staff to be focused on over the next 5 years	All

Two engagement opportunities for public comment on identified risks and mitigation projects.

- **June 22** - Emergency Preparedness Fair which asked for public to comment on the below document; identifying which “Factors” were supported by the proposed project idea and then rank the project based on the public’s view of its priority. (13 comments from public)
- **July 8 - August 26** - Online Survey that again asked the public to rank the mitigation project based on what they considered the highest priority. (36 comments from public) The HMP page is the second highest project on Let’s Talk for engaged participants. The HMP survey has the most contributors of all surveys on Let’s Talk.

Tool Used to Prioritize Mitigation Projects. For both events the public was asked using the factors below to prioritize the project from 1 (being highest) to 10 (being lowest) and only using a number once what project they believed should be addressed first.

MERCER ISLAND HAZARD MITIGATION PLAN 2020 UPDATE PUBLIC COMMENT TO PRIORITIZE MITIGATION PROJECTS				
MERCER ISLAND NATURAL HAZARDS:				
Earthquake Severe Winter Weather Severe Non-Winter Weather Landslide Wildfire Volcano Tsunami/Seiche				
FACTORS FOR CONSIDERATION:				
<ol style="list-style-type: none"> 1. Equity, Social Justice, and Vulnerability - to benefit, account for, and include vulnerable populations 2. Collaborative - supported by multiple jurisdictions or agencies 3. Multiple-Benefit - has benefits beyond hazard risk reduction, including environmental, social, or economic 4. Adaptation and Sustainability - helps people, property, and the environment become resilient to the effects of climate change, regional growth, and development 5. Effectiveness - best-possible benefit-cost ratio 6. Urgent - is urgently needed to reduce risk to lives and property 7. Shovel-ready - project is largely ready to go, with few remaining roadblocks that could derail it 				
PROJECT DESCRIPTION	COST (Approx.)	TIMELINE	FACTORS List factor number (above) attributed to project	PRIORITY RANK (1-10) 1 = highest priority
1. Fire Doors at Station 91 will not open after an earthquake.	\$400K	2 years	1,2,3,5,6	
2. Upgrading MICEC Generator for use as shelter site and back up for City Hall.	\$500K	Long-term	1,2,3,5,6,7	
3. Reinforce roadways to with stand landslide damage.	\$15M	Long-term	1,2,3,4,5,6	
4. City Hall columns need retrofitting.	\$30K	2 years	1,2,3,4,5,6,7	
5. Luther Burbank Boiler Building chimney needs to be replaced to code.	\$250K	2 years	4,5,7	
6. City owned docks need to be replaced and rebuilt to withstand seiches.	\$7M	Long-term	1,2,3,4,6,7	
7. Upgrade City's fiber infrastructure to link critical facilities and deliver failover communications.	\$1.4M	Long-term	1,2,3,4,5,6	
8. Water lines and sewer lines will fail in an earthquake; redundant lines are needed.	\$15M	Long-term	1,2,3,4,5,6	
9. Second Emergency Well for drinking water and fire flow.	\$4.2M	Long-term	1,2,3,5,6	
10. Stormwater pipe replacement to mitigate failures due to landslides.	\$2.5M	Long-term	1,2,3,4,5,6	



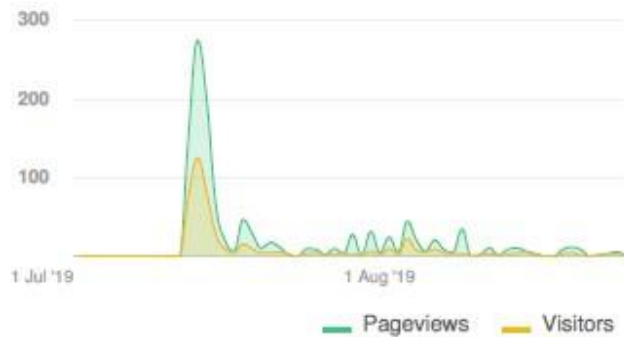
Project Report

03 August 2018 - 26 August 2019

Let's Talk Mercer Island Hazard Mitigation Plan Update



Visitors Summary



Highlights

TOTAL VISITS	600	MAX VISITORS PER DAY	124
NEW REGISTRATIONS	6	ENGAGED VISITORS	36
		INFORMED VISITORS	225
		AWARE VISITORS	404

Aware Participants		404		Engaged Participants			36		
Aware Actions Performed	Participants	Engaged Actions Performed			Registered	Unverified	Anonymous		
Visited a Project or Tool Page	404								
Informed Participants	225	Contributed on Forums	0	0	0				
Informed Actions Performed	Participants	Participated in Surveys	9	27	0				
Viewed a video	0	Contributed to Newsfeeds	0	0	0				
Viewed a photo	0	Participated in Quick Polls	0	0	0				
Downloaded a document	142	Posted on Guestbooks	0	0	0				
Visited the Key Dates page	0	Contributed to Stories	0	0	0				
Visited an FAQ list Page	0	Asked Questions	1	0	0				
Visited Instagram Page	0	Placed Pins on Places	0	0	0				
Visited Multiple Project Pages	122	Contributed to Ideas	1	0	0				
Contributed to a tool (engaged)	36								

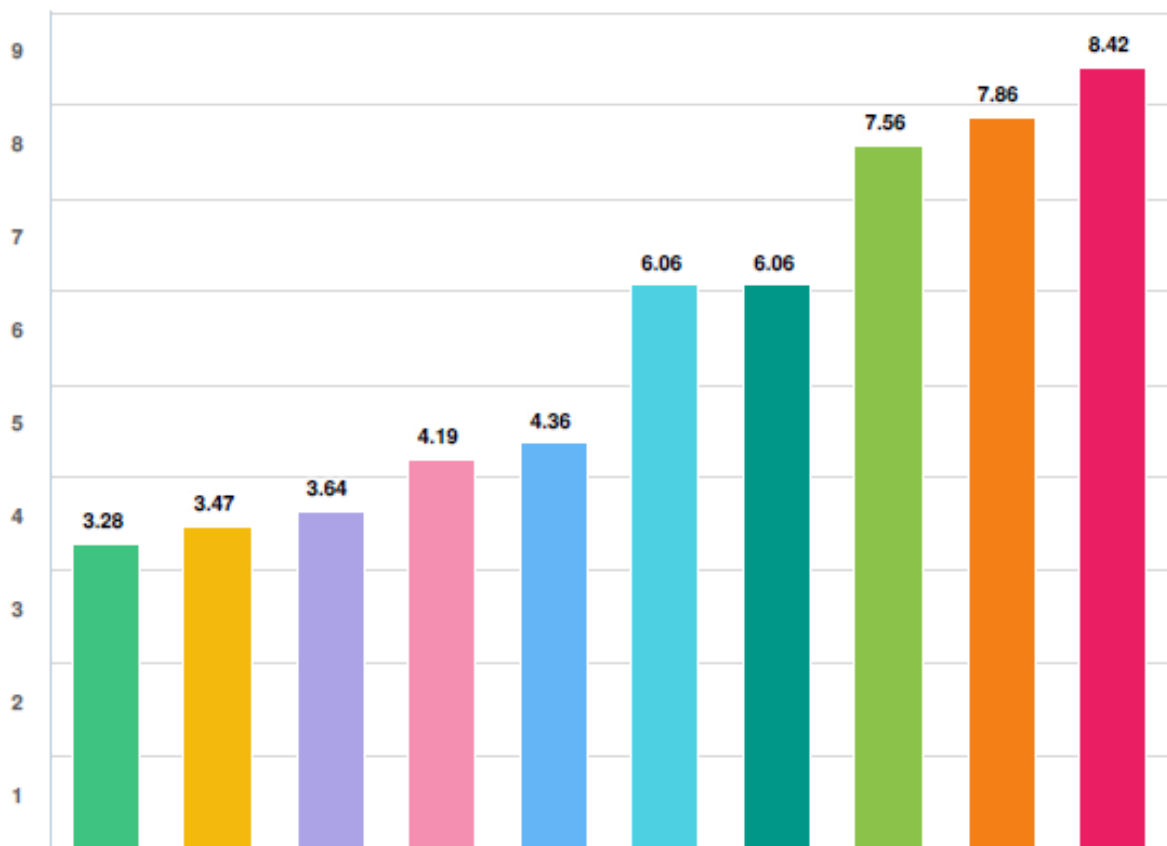


ENGAGEMENT TOOL: SURVEY TOOL

Prioritizing Hazard Mitigation Projects

VISITORS	232	CONTRIBUTORS	36	CONTRIBUTIONS	36
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Rank the following hazard mitigation projects from highest priority (1) to lowest (10).



Question options

- Build second Emergency Well for drinking water and fire flow (\$4M)
- Upgrade MICEC Generator - MICEC will serve as a community shelter and back up for City Hall (\$200k)
- Install secondary / backup water and sewer lines to mitigate failures caused by earthquakes (\$15M)
- Upgrade Station 91 Fire Doors - current doors will not open after an earthquake (\$400k)
- Upgrade City fiber infrastructure to link critical facilities and deliver failover communications (\$7.25M)
- Reinforce roadways to withstand landslide damage (\$15M)
- Replace stormwater pipe to mitigate failures caused by landslides (\$2.5M)
- Retrofit City Hall columns (\$30k)
- Rebuild City owned docks to withstand seiches / large tsunami-like waves caused by earthquakes (\$7M)
- Replace and bring Luther Burbank Boiler Building chimney up to code (\$250k)



Jurisdiction Hazard Mitigation Program

Every 5 years FEMA requires jurisdictions to update their Hazard Mitigation Plan (HMP). The HMP will reassess the risks and vulnerabilities of the jurisdiction's natural hazards and develop strategies to reduce the risk to those hazards. In the past jurisdictions have had to pay private consultants to update their Hazard Mitigation Plans. In 2015 King County was able to alleviate this burden for its jurisdictions and write a regional hazard mitigation plan that the represented cities could annex to. The plan is a requirement for receiving federal Hazard Mitigation Assistance grants.

Hazard mitigation strategies were developed through a two-step process. Each jurisdiction met with an internal planning team to identify a comprehensive range of mitigation strategies. These strategies were then prioritized using a process established at the county level and documented in the base 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.

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

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 Mercer Island residents, already engaged in personal preparedness efforts, with context and the opportunity to provide feedback on the city's progress and priorities in

Plan Goals

1. Identify Mercer Island Hazards. (Natural)
2. Update Mercer Island Hazard Maps.
3. Identify Mercer Island assets that could be at risk from these identified hazards.
4. Establish mitigation strategies (projects) that address the asset risk.
5. Integrate equity and social justice into understanding of risk, vulnerability, and development of mitigation strategies.
6. Prioritize the mitigation projects using public feedback.
7. Discuss funding options, knowing that Mercer Island currently cannot use grant match funding.
8. Mitigation projects may have to wait until a funding source can be identified.



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.

Hazard Mitigation Authorities, Responsibilities, and Capabilities

Plan Integration

Hazard mitigation is most effective when implemented through a systematic program that establishes priorities and understands that resilience requires system-wide investments in mitigation. Cohesive, comprehensive strategies and the establishment of partnerships are the core elements of a program.

When plans and planning processes are more integrated, it is possible to achieve greater impact through clearer definition, smarter investment, partnerships, and innovation. Successful integration requires coordination between planning efforts and, especially, cross-participation in planning processes. The goals of plan integration are to:

- Ensure consistency within all department priorities and across all planning processes
- Leverage opportunities to further multi-benefit initiatives that are supported by multiple planning processes
- Achieve common measures of success for outcomes
- The hazard mitigation plan can benefit from integration with planning processes that:
 - Prioritize and invest in infrastructure
 - Regulate development
 - Set strategic direction for programs

To other planning processes, the hazard mitigation plan brings risk and vulnerability information to help prioritize projects and set development standards or regulations. The mitigation plan also comes with potential funding for investments in cost-effective risk-reduction projects. On the other hand, the mitigation plan depends on other plans and processes to implement many strategies. Since the mitigation plan is not itself a regulatory or budgetary document, strategies identified in the mitigation plan are often best implemented through those processes or programs.

There are various plans and planning processes within the City of Mercer Island that impact hazard risk. These include strategic plans, long-range plans, resource plans, and capital plans listed in the table below. These have not been integrated in the past.



Plans

PLAN TITLE	RESPONSIBLE AGENCY	POINT OF CONTACT	RELATIONSHIP TO HAZARD MITIGATION PLAN
Comprehensive Emergency Management Plan: to include Continuity of Operation Plans, Pandemic Plan, Terrorism response Plan and Threat and Hazard Identification and Risk Assessment, Debris Management Plan, Volunteer Operations Plan, Shelter Plan	City of Mercer Island – Emergency Management	Jennifer Franklin	Guides planning, operations and recovery efforts
Comprehensive Plan	City of Mercer Island – Community Planning Development	Evan Maxim	Provides policies for Land Use, Housing, Transportation, Utilities, Capital Facilities, and designated Environments.
Capital Improvement Plan	City of Mercer Island – City Manager’s Office	Ali Spietz	City Facilities, Pedestrian and Bicycle Facilities, Parks, Streets and Right of Way, Storm and Surface Water Drainage, Water System, Sanitary Sewer System and Schools
Shoreline Management Plan	City of Mercer Island – Community Planning Development	Evan Maxim	Provides development regulations generally within 200 feet of the shoreline of Lake Washington.
Transportation Improvement Plan	City of Mercer Island – Public Works	Jason Kintner	Guides future planning for roadway, pedestrian and bicycle projects.
Pedestrian and Bicycle Facilities Plan	City of Mercer Island – Public Works	Jason Kintner	Guides investments and other actions relating to pedestrian and bicycle facilities such as trails, crosswalks, bike lanes, and sidewalks.
Floodplain or Basin Plan	City of Mercer Island – Public Works	Jason Kintner	Assists with urban flood control
Stormwater Plan	City of Mercer Island – Public Works	Jason Kintner	Conforms to Puget Sound Water Quality Plan



Programs, Policies, and Processes

PROGRAM/POLICY	RESPONSIBLE AGENCY	POINT OF CONTACT	RELATIONSHIP TO HAZARD MITIGATION PLAN
<p>Construction Codes Including: site plan review,</p>	<p>City of Mercer Island – Community Planning Development</p>	<p>Evan Maxim</p>	<p>Hazards and mitigation opportunities are reviewed when new versions of construction codes are adopted. All construction work conducted under a hazard mitigation project is subject to the current or vested construction codes at the time of permit application.</p>
<p>Development Code Including: zoning, critical areas, watercourses, wetlands, subdivisions, trees, Town Center development, and design standards.</p>	<p>City of Mercer Island – Community Planning Development</p>	<p>Evan Maxim</p>	<p>Hazards and mitigation opportunities are reviewed when extensive code amendments are made to the development code. Development for a hazard mitigation project is subject to the current or vested development regulations at the time of permit application.</p>
<p>Stormwater Management Program</p>	<p>City of Mercer Island – Public Works</p>	<p>Jason Kintner</p>	<p>Hazards and mitigation opportunities are reviewed when changes are made to the Stormwater Management Program.</p>
<p>Growth Management</p>	<p>City of Mercer Island – Community Planning Development</p>	<p>Evan Maxim</p>	<p>New policies adopted for growth management are reviewed for hazards or mitigation opportunities to protect the people and property on Mercer Island.</p>
<p>Public Health and Safety</p>	<p>Police and Fire Departments Seattle-King County Public Health</p>	<p>Steve Heitman</p>	<p>Hazards and mitigation opportunities are reviewed when changes to public health and</p>



			safety policies and procedures occur
Emergency Management Program Including Personal Preparedness Outreach	City of Mercer Island – Emergency Management	Jennifer Franklin	Hazards and mitigation opportunities are routinely reviewed as part of the Emergency Management Program including informing the public of the hazards.

Entities Responsible for Hazard Mitigation

AGENCY/ORGANIZATION	POINT OF CONTACT	RESPONSIBILITY(S)
Public Works Department	Jason Kintner	Director
Community Planning and Development Department	Evan Maxim	Director
City Manager’s Office	Ali Spietz	Assistant to the City Manager



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)	Public Works Director
What is the date of adoption of your flood damage prevention ordinance?	June 30, 1997 FEMA classified Mercer Island as a Zone C (minimal Flood Hazard) However, Mercer Island Participates in the NFIP
When was the most recent Community Assistance Visit or Community Assistance Contact?	None
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 so, 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
How many Severe Repetitive Loss (SRL) and Repetitive Loss (RL) properties are located in your jurisdiction?	SRL: None RL: None
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



2015 HAZARD MITIGATION ACTION PLAN MATRIX
CURRENT PROGRESS ON ACTION INITIATIVES
all projects are still ongoing as of Sept. 2019

Action Taken	Timeline	Priority Change	Comment (Describe progress)	Status
City of Mercer Island Annex Update				
MI-1 —Continue to maintain compliance and good standing under the National Flood Insurance Program. This will be accomplished through the implementation of floodplain management programs, at a minimum, will meet the minimum requirements of the NFIP, which include the following: <ul style="list-style-type: none"> • Participating in floodplain identification and mapping updates. • Providing public assistance and information on floodplain requirements and impacts 				
No	Long-term	Has the priority changed?	___No___	Ongoing
MI-2 —Rehabilitate Damage Storm Culverts.				
No	Long-term	Has the priority changed?	___No___	Ongoing
MI-3 —Small ravine watercourse projects.				
No	Long-term	Has the priority changed?	___No___	Ongoing
MI-4 —Replacing aging water mains.				
No	Long-term	Has the priority changed?	___No___	Ongoing
MI-5 —Sewer generator replacement program.				
No	Long-term	Has the priority changed?	___No___	Ongoing
MI-6 —Sewer rehab/replace.				
No	Long-term	Has the priority changed?	___No___	Ongoing
MI-7 —Emergency Program.				
Yes	Long-term	Has the priority changed?	___No___	Ongoing



MI-8—IT System Continuity.				
No	Long-term	Has the priority changed?	<input type="checkbox"/> No <input type="checkbox"/>	Ongoing
MI-9—Firewise.				
No	Long-term	Has the priority changed?	<input type="checkbox"/> No <input type="checkbox"/>	Ongoing
MI-10—Where appropriate, support retrofitting, purchase, or relocation of structures located in hazard-prone areas to protect structures from future damage, with properties with exposure to repetitive losses as a priority.				
No	Long-term	Has the priority changed?	<input type="checkbox"/> No <input type="checkbox"/>	Ongoing
MI-11-Continue to support the county-wide initiatives identified in this plan.				
No	Long-term	Has the priority changed?	<input type="checkbox"/> No <input type="checkbox"/>	Ongoing
MI-12—Actively participate in the maintenance strategy identified in this plan.				
No	Long-term	Has the priority changed?	<input type="checkbox"/> No <input type="checkbox"/>	Ongoing

The above 2015



2020 Hazard Mitigation Strategies

Developmental Changes have both increased and decreased our hazard risk and vulnerability, which is stated below in our identified projects.

Project 1. Fire Doors

Lead Points of Contact MIFD DC Mike Mandella	Partner Points of Contact MI Finance-Chip Corder MI Facilities-Marcy Olson	Hazards Mitigated / Goals Addressed Earthquake	Funding Sources and Estimated Costs ~400K/Grants or Capital Budget
Strategy Vision/Objective Station 91 has 5 bays with electric roll-up doors that need to be replaced with doors similar to those at Station 92. Station 92 has bi-fold doors which are fast opening and manually operable if damaged by an earthquake shifting the building.			
Mitigation Strategy An earthquake impacting the ability to move fire apparatus out of the station will hinder emergency life-saving response following an earthquake. Bi-fold doors with the ability to manually open will assist with emergency response. The current fire doors at Station 91 have the potential for structural damage which may not allow the doors to be manually opened thus necessitating the need to drive the fire apparatus through the doors, damaging the vehicle as well as destroying the doors, and causing a security risk at station 91.			
2-Year Objectives <ul style="list-style-type: none"> • Secure the funding source/s • Structural review for bi-fold doors • Publish RFP • Select vendor • Make changes required to install bi-fold doors • Install doors 	5-Year Objectives	Long-Term Objectives	
Implementation Plan/Actions <ul style="list-style-type: none"> • Secure the funding source/s – Apply for FEMA Hazard Mitigation Assistance grant – if that is not an option include in study in 2021 to 2026 CIP – Allocate capital funding to design and implement projects • Structural review for bi-fold doors • Publish RFP • Select vendor • Make changes required to install bi-fold doors • Install doors 			
Performance Measures Research has shown that bi-fold doors withstand earthquake damage better than overhead opening doors. Structural damage from the necessity of driving through the doors could prevent a return to the apparatus bay by apparatus preventing the apparatus from hooking up to air and battery chargers that keep them in service.			



Project 2. MICEC Generator

Lead Points of Contact Ryan Daly	Partner Points of Contact Zach Houvener Marcy Olson	Hazards Mitigated / Goals Addressed Earthquake/Loss of Power to Critical Facilities	Funding Sources and Estimated Costs 500K Capital / Grant
<p>Strategy Vision/Objective Provide continuous power to MICEC to operate as an Emergency Shelter as well as back up operations for City Hall</p>			
<p>Mitigation Strategy The MICEC has a diesel generator on site that powers critical areas of the building (full use of kitchen, restrooms, gymnasium (dormitory), and emergency lighting that enables it to operate as a Red Cross Emergency Shelter. The current generator however is not able to provide enough power should the facility be necessary as a back-up City Hall.</p> <p>To mitigate this risk a larger 400K generator would need to be installed close to the existing electrical panel which is located on the east side of the community center. This would involve mitigating issues with hill slide sloping concerns, new wiring, ground excavation.</p>			
<p>2-Year Objectives:</p> <ul style="list-style-type: none"> • Begin outreach to public on critical facilities and capabilities • Research sloping concerns and costs 	<p>5-Year Objectives:</p> <ul style="list-style-type: none"> • Determine funding amount and implementation timetable • Provide funding outline for system implementation 	<p>Long-Term Objectives:</p> <ul style="list-style-type: none"> • Continue to use the MICEC as an Emergency Shelter with the potential for being a backup city hall even with limited power 	
<p>Implementation Plan/Actions:</p> <ul style="list-style-type: none"> • Begin outreach to public on critical facilities and capabilities • Research sloping concerns and costs • Determine funding amount and implementation timetable • Secure the funding source/s – Apply for FEMA Hazard Mitigation Assistance grant – if that is not an option include in study in 2021 to 2026 CIP – Allocate capital funding to design and implement projects • RFP for project • Select vendors • Install generator/wiring 			
<p>Performance Measures Quarterly tests with generators to confirm capabilities. Annual drills on shelter plan as well as back up city hall operations.</p>			



Project 3. Road Damage

Lead Points of Contact Public Works Jason Kintner	Partner Points of Contact <ul style="list-style-type: none"> • Dept of Fish and Wildlife • Army Corp of Engineers • Department of Transportation 	Hazards Mitigated / Goals Addressed <ul style="list-style-type: none"> • Mitigate roadway failures due to landslides • Stabilize arterials and city roads • Protect infrastructure/private property. • Provide for public safety access • Environmental protection 	Funding Sources and Estimated Costs \$15M Design Construction Monitor
<p>Strategy Vision/Objective</p> <p>Historically, the Residential Street Preservation program has consisted of hot mix asphalt (HMA) overlays on an average of 1.0 to 1.5 miles of residential streets annually. The Residential Street Preservation Program improves about one substandard street per biennium, as the need arises.</p> <p>The City’s pavement condition data is an integral part of determining the locations and schedule of future residential street asphalt overlays and chip seal work. Pavement Condition Index (PCI) data was collected in 2013 and 2016 and will be collected again in 2019. When PCI falls below a score of 70, staff considers a roadway for resurfacing. For roadways with resurfacing needs that also have pending utility work (storm drainage, new water main, etc.), these roadways are typically scheduled for paving in the years following completion of that major utility work. The timing and limits of residential street resurfacing work in future TIPs may change, as determined by updated pavement condition information.</p> <p>In a catastrophic event, roads will fail. Identifying risks for failure will improve accessibility. Maintaining critical infrastructure is essential to providing routes for essential public safety.</p>			
<p>Mitigation Strategy</p> <p>The City must ensure that access is maintained for public safety. Located in Lake Washington, Mercer Island is a largely residential community bisected by I90. As such, during a catastrophic event, transportation to and from mercer Island may be significantly impacted. Maintaining access for public safety is critical.</p> <p>During a catastrophic event, the City’s road network will most likely be severely damaged and access will likely be significantly impacted. Identifying ageing infrastructure and replacing critical infrastructure will mitigate future risk. Completing the PCI study and identifying future street improvement projects will help the City prioritize replacement. Other considerations in identifying mitigation/prioritization of projects include:</p> <ul style="list-style-type: none"> • Stormwater conveyance and existing infrastructure condition • Topography and soil composition issues • Cut/fill roadway construction (East/West Mercer Ways) • Identify primary public safety routes 			
<p>2-Year Objectives:</p> <ul style="list-style-type: none"> • Complete stormwater conveyance assessment • Complete Pavement Condition Inventory • Identify primary public safety routes • Identify proximity to slopes 	<p>5-Year Objectives:</p> <ul style="list-style-type: none"> • Identify projects for inclusion of ongoing tip. • Allocate funding in the capital budget/street for construction 	<p>Long-Term Objectives:</p> <ul style="list-style-type: none"> • Stabilize all slopes 	



Implementation Plan/Actions:

- Complete stormwater assessment of which may be improved to prevent future slides.
 - Apply for an Advanced Assistance grant from FEMA Hazard Mitigation Assistance through DR 4418 in 2019 and PDM 2019 (only if city can match funds 75/25 match)
- If FEMA grant applications are unsuccessful, include study in 2021 to 2026 CIP
- Allocate capital funding to design and implement the projects

Performance Measures

Successfully identify an option to reduce impacted roadways and limit access for public safety to provide efficient services.



Project 4. City Hall Columns

Lead Points of Contact Don Cole Building Inspector	Partner Points of Contact Marcy Olson Facilities Manager	Hazards Mitigated / Goals Addressed Earthquake	Funding Sources and Estimated Costs 30K Capital/Grant
Strategy Vision/Objective Reinforce columns under City Planning Department to ensure integrity of the west wing of city hall and the entrance/ egress into and out of the Emergency Operation Center.			
Mitigation Strategy Most city owned buildings were constructed to recent codes. The City Hall facility was constructed to older codes, but its construction techniques do not hinder effective mitigation except for two columns beneath the CPD wing (near the EOC entry doors) that should be retrofitted at a cost of approximately \$30,000.			
2-Year Objectives: <ul style="list-style-type: none"> • Design/Construction • Fund through capital program • Construction • Complete operation plan 	5-Year Objectives:	Long-Term Objectives:	
Implementation Plan/Actions: <ul style="list-style-type: none"> • Apply for an Advanced Assistance grant for design and construction from FEMA Hazard Mitigation Assistance through DR 4418 in 2019 and PDM 2019 <ul style="list-style-type: none"> ○ If FEMA grant applications are unsuccessful, include in 2021-2026 CIP • Construct & complete operation plan 			
Performance Measures Successful design and construction			



Project 5. Luther Burbank Boiler Chimney

Lead Points of Contact Don Cole Building Inspector	Partner Points of Contact Marcy Olson Facilities Manager	Hazards Mitigated / Goals Addressed Earthquake	Funding Sources and Estimated Costs 250K Capital / Grant
Strategy Vision/Objective The chimney structure at the Luther Burbank Boiler (near the dock) appears to be under-reinforced when compared to today's codes and should be assessed/mitigated or potentially removed due to risk of falling debris during an earthquake.			
Mitigation Strategy Dismantle unstable Chimney to prevent risk to public.			
2-Year Objectives <ul style="list-style-type: none"> Design/Construction Fund through capital program Construction Complete operation plan 	5-Year Objectives	Long-Term Objectives	
Implementation Plan/Actions <ul style="list-style-type: none"> Apply for an Advanced Assistance grant for design and construction from FEMA Hazard Mitigation Assistance through DR 4418 in 2019 and PDM 2019 <ul style="list-style-type: none"> If FEMA grant applications are unsuccessful, include in 2021-2026 CIP Construct & complete operation plan 			
Performance Measures If it doesn't fall down in an earthquake			



Project 6. City Docks

Lead Points of Contact Don Cole – City Inspector	Partner Points of Contact <ul style="list-style-type: none"> • Seattle Public Utilities • Department of Health • Department of Ecology • Department of Fish and Wildlife • Army Corp of Engineers 	Hazards Mitigated / Goals Addressed Earthquake/Seiche	Funding Sources and Estimated Costs Approx. 7M Capital/Grant
Strategy Vision/Objective The city-owned docks at Luther Burbank Park, Groveland Park, Clarke Beach and the Boat Launch are susceptible to damage from seiches. Without these docks our Marine Patrol will be limited in function. Additionally, supplies arriving by boat may not be able to be offloaded without the use of these docks. Several of these structures are nearing the end of their useful life and are in need of either substantial repairs or complete replacement.			
Mitigation Strategy <ul style="list-style-type: none"> • Identify repair/replacement needed for each dock. • Contact partners for permitting • Determine actual cost for repair/replacement • Find Funding source for repair/replacement • Begin design and construction • Complete design and construction 			
2-Year Objectives	5-Year Objectives	Long-Term Objectives <ul style="list-style-type: none"> • Design/Construction • Fund through capital program • Construction • Complete operation plan 	
Implementation Plan/Actions <ul style="list-style-type: none"> • Apply for an Advanced Assistance grant for design and construction from FEMA Hazard Mitigation Assistance through DR 4418 in 2019 and PDM 2019 <ul style="list-style-type: none"> ○ If FEMA grant applications are unsuccessful, include in 2021-2026 CIP • Construct & complete operation plan 			
Performance Measures –			



Project 7. City’s Fiber Infrastructure

Lead Points of Contact (Title) Alfredo Moreno Sr. Systems Administrator	Partner Points of Contact (Title) Chip Corder Finance Director	Hazards Mitigated / Goals Addressed 1,2,3,4,5,6	Funding Sources and Estimated Costs 1.4M
Strategy Vision/Objective: <ul style="list-style-type: none"> • City network is critical infrastructure, supporting all departments, functions, and services. • Buildings, devices, vehicles, sensors, employees, other government agencies, Internet, telephony, 911, etc. all connect via fiber, copper, satellite, and cellular connections owned or leased by the City. • The City’s continuous improvement goal has been to design and maintain a network that is: <ul style="list-style-type: none"> ○ Responsive – Fast and adequate bandwidth for City service delivery. ○ Resilient – Capable of both automated disaster recovery and enables business continuity ○ Cost Effective – Achieve the first two within reason, best practices, and available resources. 			
Mitigation Strategy: <ul style="list-style-type: none"> • Continued long-term investments in City’s fiber infrastructure to link Critical Facilities: <ul style="list-style-type: none"> ○ City Hall ○ Mercer Island Community and Event Center ○ Mercer Island Fire Department Station 91 and Station 92 ○ Public Works (Main Facility, Reservoir, 1st Hill Booster Station, Pump Stations) • Redundant Fiber Ring <ul style="list-style-type: none"> ○ Opportunistic ○ Cost Effective ○ City Owned • Failover Communications <ul style="list-style-type: none"> ○ Fiber Ring ○ Cellular 			
2-Year Objectives Ingress/egress primary communications failover/hot standby on secondary disaster recovery site. Critical City facilities have failover/hot standby connection at the <i>site</i> level.	5-Year Objectives All City facilities have at least one failover/hot standby connection at the <i>site</i> level.	Long-Term Objectives Fiber ring deployed, allowing default redundancy to all City facilities.	
Implementation Plan/Actions: <ul style="list-style-type: none"> • Continue to develop, improve, and act on the City’s communication strategy. • Submit funding requests – Through FEMA grants and/or CIP • Conduct education, training, and outreach to decision makers • Continue to seek out opportunities to partner/liason with other agencies where long-term goals align. 			
Performance Measures Completion of project objectives.			



Project 8. Redundant Water and Sewer Service

Lead Points of Contact (Title)	Partner Points of Contact (Title)	Hazards Mitigated / Goals Addressed	Funding Sources and Estimated Costs
Utility Engineer City engineer	<ul style="list-style-type: none"> • Seattle Public Utilities • Department of Health • Department of Ecology • Department of Fish and Wildlife • Army Corp of Engineers 	<ul style="list-style-type: none"> • Environmental Safety • Provide water as a resource • Fire suppression • Ensuring utility service in an emergency • Protect infrastructure & private property 	\$15M <ul style="list-style-type: none"> • Feasibility • Permitting • Design • Construction • Operations

Strategy Vision/Objective:

In an earthquake, waterlines and sewer lines will fail. Identifying aging infrastructure and replacing pipes with a greater risk of failure will mitigate future risk of failure.

Mitigation Strategy

During a catastrophic event, the City’s water system will most likely be severely damaged and the water supply delivery to the customers will be disrupted. The City’s sanitary sewer system will also likely be severely damaged. The City is also continuing public education to emphasize the importance of water conservation during normal and unusual situations and identify aging infrastructure that is at greater risk of failure and prioritize replacements.

The sanitary collection system consists of approximately 2,400 manholes and 105 miles of pipe. The majority of the system was originally constructed by the Mercer Island Sewer District through three Utility Local Improvement Districts (ULIDs) in the late 1950s and early 1960s. In the coming decades, the City will need to make decisions between continuing maintenance, repairing, or replacing its aging infrastructure. The Remaining Useful Life analyses found that approximately 500,000 ft (95 miles) of pipe will reach the end of its useable life by 2029. This would require R&R of approximately 39,000 ft (7.3 miles) of pipe per year through 2029.

The City obtains all of its water supply from SPU. The City purchases and distributes all of the water consumed on the Island under a long-term contract that guarantees an adequate supply through the year 2062. The majority of the water supplied by SPU to the City originates in the Cedar River Watershed, although occasionally the City is supplied from the Tolt River supply system. The water is delivered through the Cedar East Side Supply Line (CESSL) to the 30-inch Mercer Island supply line at Factoria. The 30-inch supply line along I-90 reduces to a 20-inch line at the Bellevue side of the Lake Washington East Channel and then crosses beneath the Lake to the island. A second 16-inch supply line parallels the 20-inch line and is attached to the I-90 Freeway East Channel Bridge structure. The SPU supply lines feed directly into the reservoirs with no service connections along the way. The existing system is comprised of the following elements: Two 4 million-gallon storage tanks for a total of 8 million gallons of water storage; Two independent transmission line routes to fill the reservoirs; Two pump stations; 115 miles of watermains, ranging in size from 2-inch to 30-inch; 85 pressure reducing valves.

The majority of the distribution system was constructed between 1956 and 1960 by utility local improvement districts (ULID). There were major improvements made at the north end of the system around 1984 in conjunction with the I-90 freeway construction. The majority of the distribution system consists of 6- and 8-



inch mains, which account for about 67% of the total pipe linear-footage in the system, however many 4-inch mains still remain. Larger diameter pipes ranging in size from 10 to 30 inches serve as major feed lines or transmission mains to various parts of the system.

Implementation of the recommendations from the General Sewer Plan, the City’s Water System Plan, and the 2004 Seismic Vulnerability Assessment Study, including: isolation valves, structural stabilization of the reservoir tank anchors, non-structural stabilization of building and components, flexible hoses, and continued public education. Grants and other public funding sources will be pursued to supplement funding

2-Year Objectives	5-Year Objectives	Long-Term Objectives
Identify and prioritize critical projects	<ul style="list-style-type: none"> • Fund through capital program • Design/construct 	<ul style="list-style-type: none"> • Continue • Updated water/sewer system plans

- Implementation Plan/Actions:**
- Identify and prioritize critical projects and timing strategy for implementation
 - Apply for an Advanced Assistance grant from FEMA Hazard Mitigation Assistance through DR 4418 in 2019 and PDM 2019
 - If FEMA grant applications are unsuccessful,
 - Include project design and construction of future Capital Improvement Program
 - Identify funding mechanism through water utility
 - Construct & complete operation plan.
 - Include in future updates to Water System Plan & General Sewer System Plan

Performance Measures
 Successful design, construction and operation of water & sewer lines



Project 9. Second Emergency Well / South End

Lead POC Utility Engineer City engineer	Partner Points of Contact: <ul style="list-style-type: none"> • Seattle Public Utilities (SPU) • Department of Health • King County • Department of Ecology • Department of Fish and Wildlife • Army Corp of Engineers 	Hazards Mitigated / Goals Addressed: <ul style="list-style-type: none"> • Environmental Safety • Provide water as a resource • Fire suppression • Ensuring utility service in an emergency • Protect infrastructure both public and private property 	Funding Sources / Estimated Costs \$4.2M: <ul style="list-style-type: none"> • Feasibility • Design • Permitting • Construction • Operations
Strategy Vision/Objective The City must ensure adequate water is secured for existing and future needs. The North Emergency Well can supply 1 gallon of potable water a day per resident during emergency events. The City also plans to construct a second emergency source well by 2022 on the south end of the island.			
Mitigation Strategy The City must ensure adequate water is secured for existing and future needs. In 2006 the City filed a water right application with the Washington State Department of Ecology to permit and develop two stand-alone emergency source supply wells one located in the north, and one located in the south of the Island. That would be installed on a phased basis. The City’s decision to pursue the emergency supply wells was based on its assessment that the City’s water system, as well as its water supply from SPU, was at significant risk of damage and disruption in the event of a major seismic event. The City proposed that the emergency supply wells be accessible on a temporary, walk-up basis by residents and requested a combined instantaneous quantity (Qi) of 400 gpm and annual quantity (Qa) of 66.3 aft. The purpose of requesting the (above) amounts was to ensure an emergency supply capable of providing up to 1 gallon per day (gpd) for City residents and visitors over a period of 7 to 90 days. A permit to install and operate the two emergency wells for “Standby-Reserve use only” was issued by Department of Ecology in December 2009. The permit authorized the requested quantities and a well development. Subsequently in March 2015, Department of Ecology granted its approval to the City to extend the timeline for construction of the second well to July 2022. A second well will provide a redundancy to ensure residents have access to water. The second well will be in a different location, providing two sources of emergency water should roads and access be significantly restricted.			
2-Year Objectives: <ul style="list-style-type: none"> • Complete feasibility 	5-Year Objectives: <ul style="list-style-type: none"> • Design/Construction • Fund through capital program 	Long-Term Objectives: <ul style="list-style-type: none"> • Secure Funding • Construction • Complete operation plan 	

**Implementation Plan/Actions:**

- Fund feasibility study to evaluate options to assess location.
- Apply for an Advanced Assistance grant for design and construction from FEMA Hazard Mitigation Assistance through DR 4418 in 2019 and PDM 2019
 - If FEMA grant applications are unsuccessful
- Include project design /construction in future City Capital Improvement Plan (CIP)
- Identify funding mechanism through water utility
- Construct & complete operation plan
- Include in future updates to Water System Plan

Performance Measures

- Successful design, construction and operation of second emergency well on the south end of the Island.



Project 10. Stormwater Pipe

Lead Points of Contact (Title) Utility Engineer City engineer	Partner Points of Contact (Title) <ul style="list-style-type: none"> Department of Fish and Wildlife Army Corp of Engineers 	Hazards Mitigated / Goals Addressed <ul style="list-style-type: none"> Mitigate failures due to landslides Stabilize hillside Protect infrastructure/private property Environmental protection Ensuring utility service in an emergency 	Funding Sources and Estimated Costs \$2.5M: <ul style="list-style-type: none"> Design Construction Monitor
<p>Strategy Vision/Objective:</p> <p>Mercer Island’s stormwater system serves a complex network of 87 drainage basins. The system relies heavily on “natural” conveyances. There are more than 13 miles of ravine watercourses that carry stormwater and 20 miles of open drainage ditches. 40 percent of the ravine watercourses are privately owned, while roughly 70 percent of the drainage ditches are on public property. Mercer Island has no known locations where stormwater recharges an aquifer or feeds any other source used for drinking water.</p> <p>The artificial components of the system include 117 miles of stormwater pipes and more than 5300 catch basins. These components function to convey stormwater into Lake Washington and help prevent localized flooding and landslides. System inspections and timely repairs are required to maintain the integrity of the stormwater utility and prevent landslides.</p> <p>The overall objective is to ensure the City complies with all applicable federal and state stormwater requirements, Western Washington Phase II Municipal (NPDES) Permit issued by the Washington State Department of Ecology. Mercer Island is urban/residential in nature and all the Island’s stormwater eventually flows into Lake Washington. The prevention of nonpoint pollution is a major priority.</p>			
<p>Mitigation Strategy</p> <p>The City must ensure the stormwater is collected and discharged properly. Mercer Island’s stormwater system services a complex network and relies heavily on “natural” conveyances. During a catastrophic event, the City’s stormwater system will most likely be severely damaged and the conveyance of stormwater will likely be significantly impacted.</p> <p>Identifying ageing infrastructure and replacing infrastructure with a higher risk of failure will mitigate future risk. Completing a comprehensive stormwater conveyance system assessment that includes known topography and soil composition issues, and identification of future stormwater reinvestment needs will help the City prioritize replacement to minimize risk and unintended landslides.</p>			
<p>2-Year Objectives Complete stormwater conveyance assessment</p>	<p>5-Year Objectives</p> <ul style="list-style-type: none"> Identify and select alternatives for stormwater improvements. Allocate funding in the capital budget to fund 	<p>Long-Term Objectives Identify and repair critical infrastructure to prevent future unintended landslides</p>	

**Implementation Plan/Actions:**

- Complete stormwater assessment of which may be improved to prevent future slides.
 - Apply for an Advanced Assistance grant from FEMA Hazard Mitigation Assistance through DR 4418 in 2019 and PDM 2019 (Only if city can match grant funds 75/25)
- If FEMA grant applications are unsuccessful, include study in 2021 to 2026 CIP
- Allocate capital funding to design and implement the projects

Performance Measures

Successfully identify, design, and construct (repair or replace) stormwater improvements that will prevent localized flooding and landslides.