



CITY OF LYNDEN

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Planning Process

The City of Lynden process for reviewing, updating, and adopting the 2021 Whatcom County Natural Hazard Mitigation Plan (NHMP) included a review by multiple city departments and formal adoption by the City Council. The staff attended regular, bi-weekly Whatcom County plan update meetings through February through May of 2021. Staff met with Dr. Rebekah Paci-Green in March to review the 2016 plan and understand new elements of 2021 community profile template. In February through June 2021, the Fire Chief attended coordination meetings hosted by the Whatcom County Sheriff's Office Division of Emergency Management (DEM) and received initial guidance from DEM. The City of Lynden Fire Chief and City Administrator reviewed the previous plan, confirmed the critical facilities list and that the existing mitigation strategies were appropriate, and then met with the Mayor, Public Works Director, Chief of Police, and other city departments to solicit input for additional revisions. They worked with Western Washington University to further revise the plan, based upon new elements of the 2021 plan.

The final draft revisions to the NHMP addressing the City of Lynden were submitted to DEM in May of 2021 to be incorporated into the county-wide plan. The Lynden City Council, in partnership with the county, held two duly advertised, virtual public meetings about the planning process on March 23, 2021 and April 13, 2021 and one public hearing on May 5, 2021 to review the draft NHMP dated June 1, 2021 and expects to formally adopted the Plan in the summer of 2021.



Key Contributor List

- Mike Martin, Lynden City Administrator
- Sarah Silvas, Lynden Fire Department

The information contained in the Natural Hazards Mitigation Plan update regarding hazards, risks, vulnerability and potential mitigation is based on the best available science and technology currently available. All City departments will utilize this information. This information and related data on natural hazards potentially impacting Lynden will be used as a tool when the City updates other plans and programs, such as the following:

Comprehensive Plan required by the Growth Management Act (GMA);

- Critical Areas Ordinance;
- Capital facilities planning;
- Water Resource Inventory Area planning
- Historic Preservation Ordinance No 1492
- Shoreline Management Plan (updated 2019)
- Pepin Creek Sub-Area Master Plan

As additional information becomes available from other planning sources that can enhance this Plan, that information will be incorporated through the periodic update process.

Plan Maintenance for Lynden

This plan will be updated periodically with public information and education programs deployed by the Fire, Police and Public Works departments, along with special, one-time events such as booths at public events.



Public Outreach and Education

Program	Yes/No, Year Adopted	Description
Nonprofit organizations or local residents groups focused on hazard mitigation, emergency preparedness, vulnerable populations, etc.	Yes, ongoing	The Mt. Baker Chapter of the Red Cross is active in promoting emergency preparedness. Through the WCDEM, Lynden residents participate in CERT training.
Ongoing public education or information programs	Yes, ongoing	Police and Fire departments routinely conduct public education for students in all age levels.
School-related programs for natural hazard safety	Yes	The Lynden School Board policy 3432 mandates fire, earthquake, lockdown, evacuation, and shelter-in-place drills. Ongoing programs with Police and Fire Departments.
StormReady certification	Yes, 2003	Whatcom County is one of 14 counties in Washington State to be certified StormReady. StormReady uses a grassroots approach to help communities develop plans to handle all types of extreme weather.
Firewise Community certification	No	



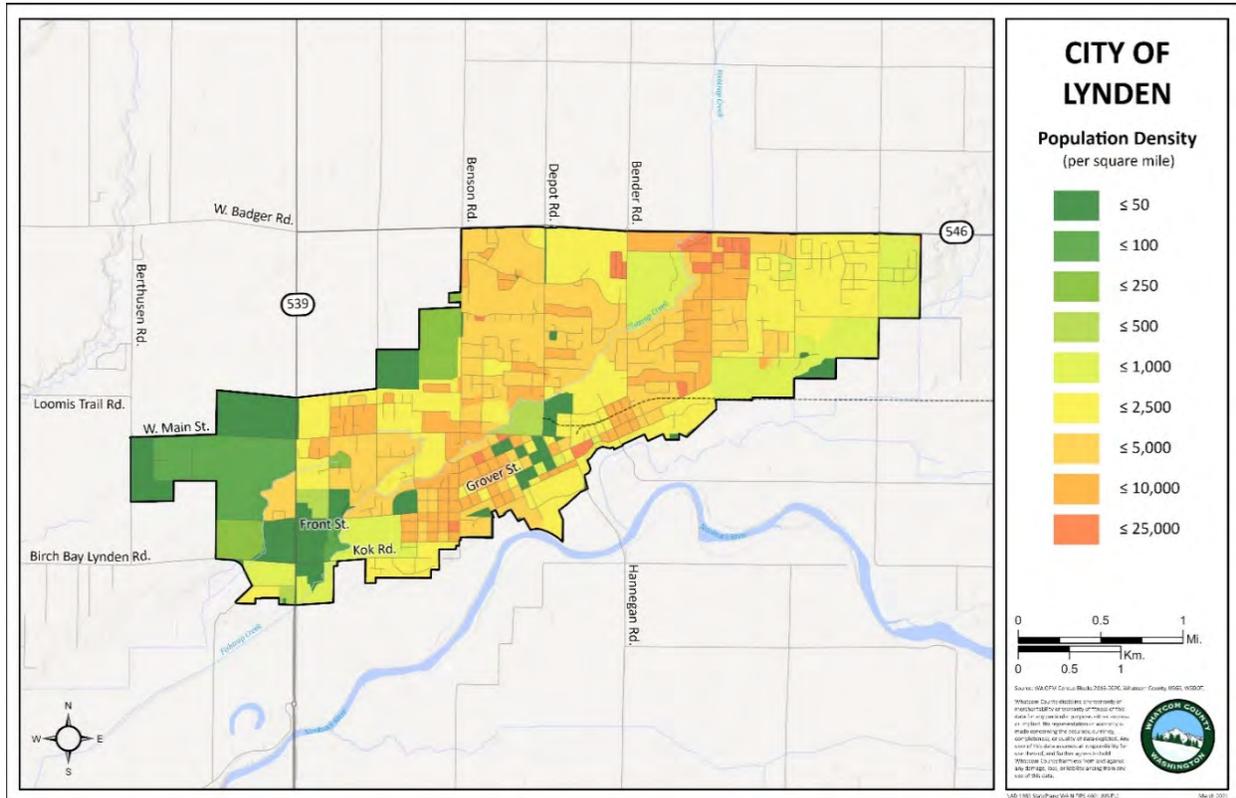
Public-Private Partnership initiatives addressing disaster-related issues	Yes, ongoing	City partners with the Lynden Chamber of Commerce to use its website for emergency notifications. Also, radio station KGMI 790 is a designated emergency communications asset that we use for the same purpose.
Other	No	



Overview of Lynden, Hazards, and Assets

Geography of Lynden

Lynden Population	14,800 (Apr 1, 2021 estimate)
Total area	6.5 mi (within city limits)

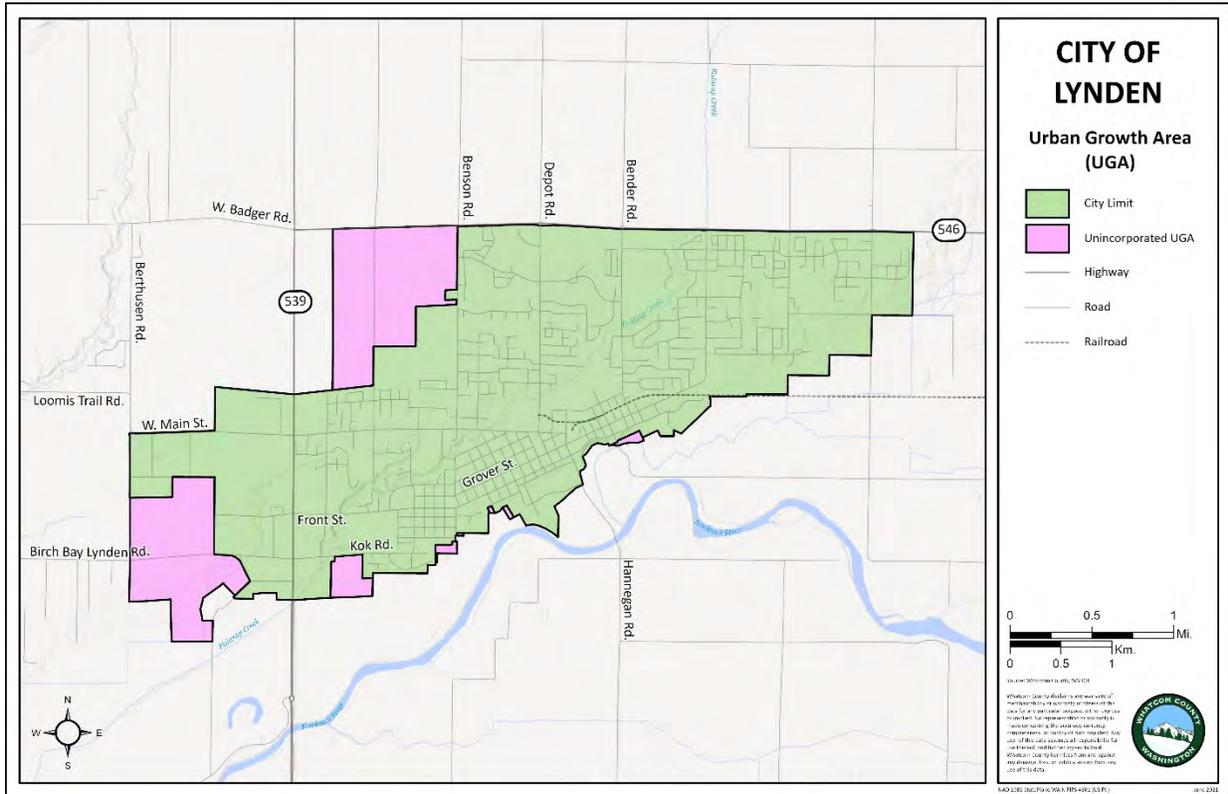


Washington State Office of Financial Management (OFM) 2020 population and housing estimates for 2010-2020 census block data. This map uses the 2016-2020 average population to show population density per square mile.



Growth Trends

This map displays the UGA for Lynden, as designated by the Whatcom County Comprehensive Plan.





Presence of Hazards and their Impacts in Lynden

Flooding, freezing and occasional high-wind events are the most consistent natural hazards affecting Lynden. Flooding occurs in several specific places. Winter flood waters in mainstem of the Nooksack River routinely breach dikes and levees, posing a particular threat to north-south roads, including State Highway 539 and the Hanigan Road – both critical travel assets to the City of Lynden. Flooding also occurs in the Pepin Creek sub-area. This is part of a drainage basin located mainly in Canada that empties into Lynden. Finally, severe, high winds from the Frazier River Valley sweep into North Whatcom County, including Lynden each winter, downing trees, transmission wires and causing other damage.

Since the adoption of the 2016 NHMP Lynden has grown by roughly 2000 people. There has been no change in hazardous areas. Steps are being taken to ensure less structures are at risk of flooding.

The City works closely with the Whatcom County Flood Control districts and other agencies to ensure structures intended to keep the Nooksack River in its channel are adequately maintained and repaired. Regarding the Pepin Creek drainage basin; the City is currently buying property, and designing infrastructure that will greatly reduce flooding in areas that are most at risk from this hazard. It has also rezoned property in this area to mitigate the effects of flooding on private property. Finally, the City consistently updates and improves its response to high wind, freezing and snow events. The manpower, equipment and resources needed to address these hazards is a priority reflected in the City's annual budget.

In the table below is a list of the major hazards that effect Whatcom County. The second column provides the percentage of Lynden's total area that is exposed to each hazard. The third column indicates the severity of anticipated impacts to community function, considering the credible worst-case hazard scenario. Severity of anticipated impacts considers effects on basic community function such as shelter, transportation, utilities, commerce, industry, agriculture, education, health, recreation, and cultural identity. Severity ranges from none to extreme, as shown in the key below the table. Finally, the last column of the table describes where the hazard impacts the community and which services the hazard would most significantly impact.

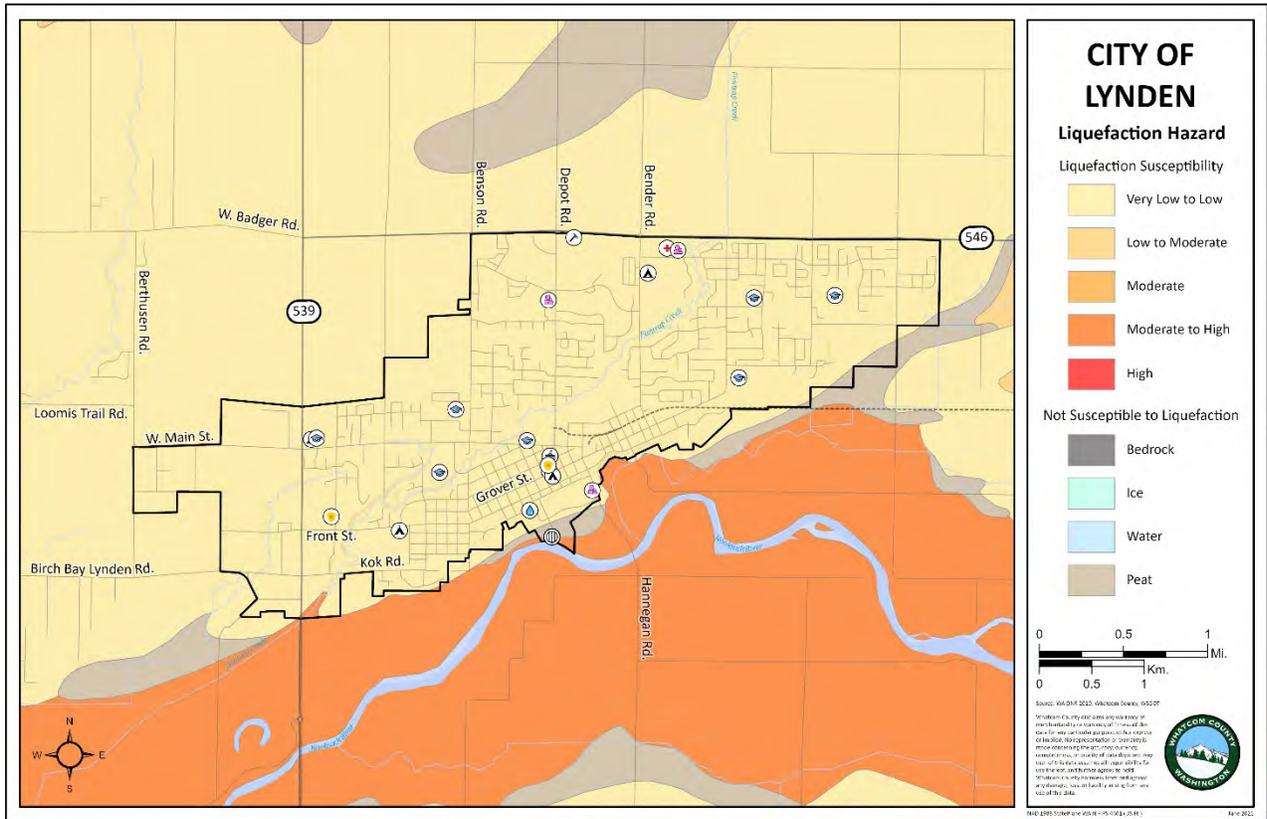


	Hazard	% area Exposed	Severity of Anticipated Impacts	Hazard Descriptions
Geological	Earthquake	100%	High	Strong shaking (MMI value 6) expected in Lynden during a Boulder Creek earthquake or Cascadia event. Such shaking is expected to cause low to moderate damage to infrastructure. Wastewater Treatment Plant, which is expected to experience very strong shaking (MMI value 7), may experience moderate damage. High impact to the North and South means that extensive and prolonged disruption of transportation and goods may occur.
	Liquefaction	98.9%	Mod	Seismically-sensitive soils present near the Nooksack River, a small portion of the downtown area, and the waste water treatment plant. Could also affect transportation route (Guide Meridian, Hampton Rd, Hannegan Rd) into and out of the community.
	Landslide	0.2%	None	NA
	Volcano	2.4%	Low	The southern portion of the city is at risk of a Mount Baker lahar. This would impact the Wastewater Treatment Plant.
	Tsunami	0%	Low	Portions of the City are exposed to the Nooksack River. During the raining season this stretch of the river could be prone to tsunami inundation, specifically the area around the Wastewater Treatment Plant.
	Mine Hazards	0%	None	NA
Hydro-logical	Flooding	4.3%	Low	Lynden is located above the floodplain. New construction has currently encroached on the floodplain. Fishtrap Creek, which bisects

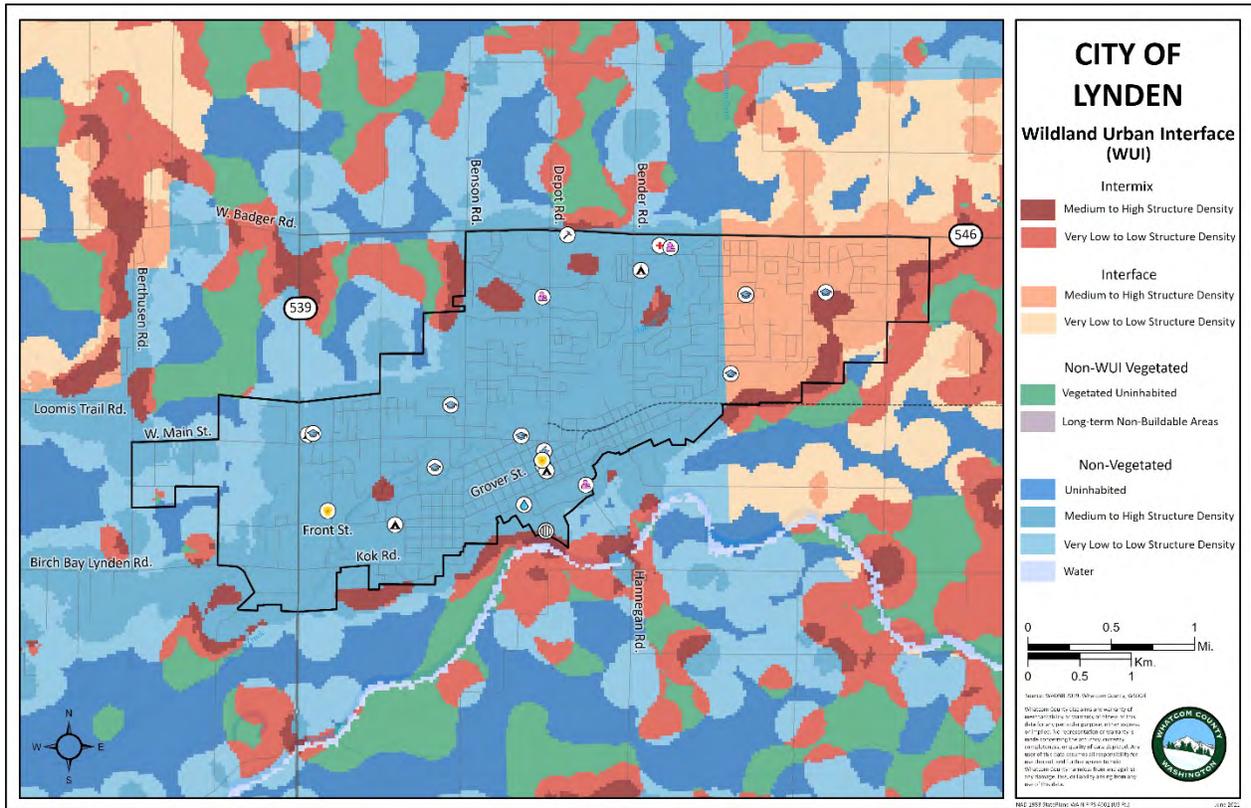


				the City, is subject to seasonal flooding, which could impact sanitary services at the Wastewater Treatment Plant, as well as transportation at crossing.
Meteorological	Wildfire	20.9%	Low	The Eastern portion of Lynden, called the Northwood area, is designated a Wildland Urban Interface area with moderate wildfire potential. However, the area has rapidly urbanized with new developments and is surrounded by open farmland. Forest cover is now minimal. It is unlikely to experience wildfire that could severely threaten these neighborhoods.

Severity Scale: **None** = no impact to community function
Low = minor degradation of community functions, not widespread
Moderate = moderate degradation over multiple weeks or widespread
High = degradation or loss over many weeks, widespread



Washington Department of Natural Resources (WA DNR) 2010 liquefaction susceptibility data. This feature class is part of a geodatabase that contains statewide ground response data for Washington State.



Washington Department of Natural Resources (WA DNR) 2019 mapped data of Washington’s Wildland Urban Interface (WUI). The WUI displays areas of WA where structures and wildland overlap with specific structure densities.



Lynden Critical Facility List

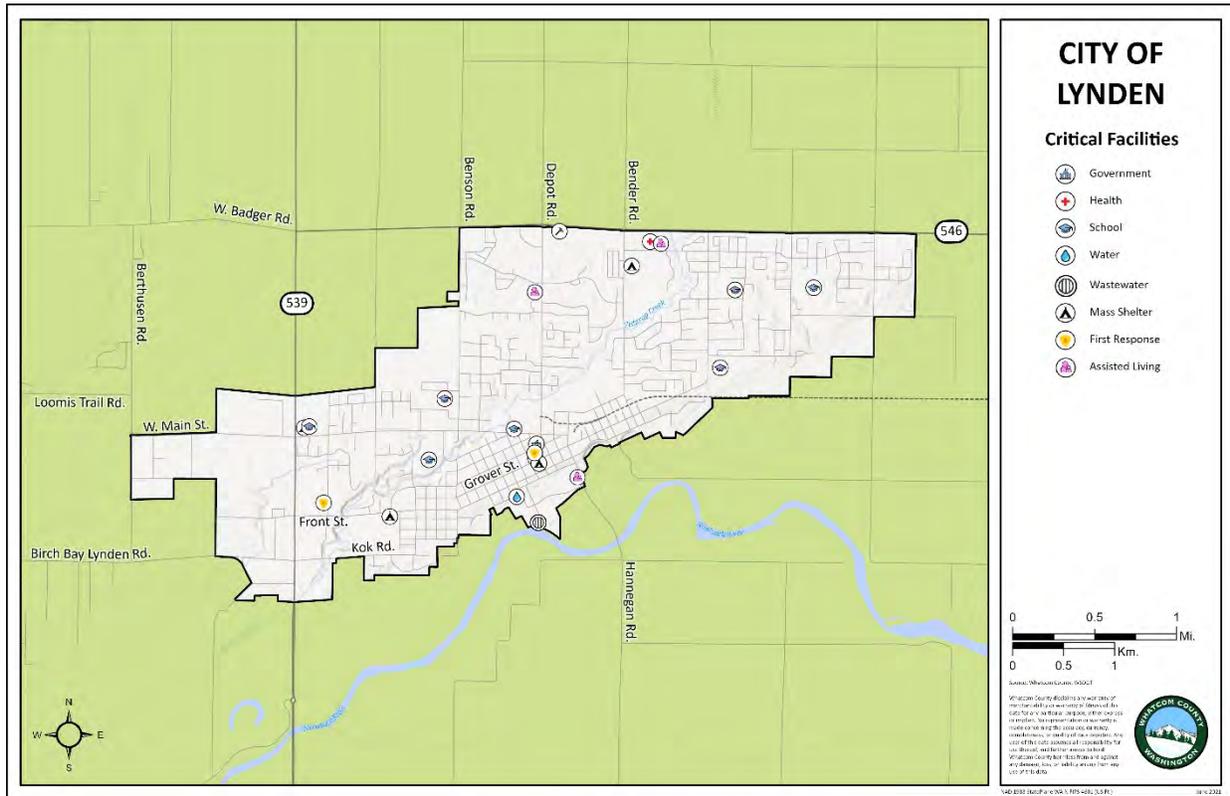
Facility Name	Facility Type	Significance	Location	Assessed Dollar Value	Notes
Christian Health Care Center	EF: Assisted Living	2	855 Aaron Drive, Lynden WA 98264	\$17 million	24/7 care for elderly, fragile population who are physically or mentally compromised. Large Elder Care, including skilled nursing.
Lynden City Hall	EF: Government	2	300 Fourth Street, Lynden WA 98264	\$12 million	Center for most City functions, including Public Works. EOC located here. City “headquarters.”
Lynden City Hall Annex	EF: Government	1	205 Fourth Street, Lynden WA 98264	\$3.5 million	Usually empty. Not a high risk. City Council and Municipal Court Chambers.
Lynden Community Center	EF: Assisted Living	1	401 Grover Street, Lynden WA 98264	\$4 million	Seniors use this for social gatherings, meals, and other services. Has kitchen. Senior Gathering place.
Lynden Fire Department	EF: Fire Station	2	215 Fourth Street, Lynden WA 98264	\$9 million	Includes all personnel and equipment for fire response. City’s only Fire Station.
Lynden Manor	EF: Assisted Living	2	905 Aaron Drive, Lynden WA 98264	\$20 million	24/7 care for elderly, fragile population who are physically or mentally compromised. Elder Care, including skilled nursing.
Lynden Police Department	EF: Law Enforcement	2	203 – 19th Street, Lynden WA 98264	\$8.5 million	Includes all personal and equipment for police response. City’s only Police Station.
Meadow Greens	EF: Assisted Living	2	301 W. Homestead Blvd. , Lynden WA 98264	\$20 million	24/7 care for elderly, fragile population who are physically or mentally compromised. Elder Care, including skilled nursing



Riverhouse Retirement	EF: Assisted Living	1	100 Riverview Rd. , Lynden WA 98264	\$12 million	Aging population but robust enough to live alone. Retirement Community.
Northwest Washington Fair	EF: Emergency Services	1	1775 Front Street, Lynden WA 98264	\$25 million	Large facility with capacity for staging and sheltering. Fairgrounds.
Schools – District 504	EF: Evacuation Center	3	7 Schools Total, Lynden WA 98264	\$200 million	2,000 children attend. Facilities have capacity for sheltering. Grades K through 12.
Sonlight Church	EF: Evacuation Center	1	8800 Bender Road, Lynden WA 98264	\$6 million	Large congregation. Used as latchkey facility for school kids. Large Church.
Waste Water Treatment Plant	LUS: Sewer	3	800 S. 6th Street, Lynden WA 98264	\$22 million	All City sewage treated here. Has outfall to Nooksack River. Tertiary sewage treatment.
Water Treatment Plant	LUS: Water	3	525 Judson Street, Lynden WA 98264	\$32 million	Water source for entire City and its residents. Produces City water.
City Bible Church	EF: Evacuation Center	1	1986 Main Street, Lynden WA 98264	\$11 million	Large congregation, transitioning to sports facility. Also “socializing” facility for homeschoolers. Large Church and Gym.
Public Works Street Shop	EF: Snow/Ice removal, various	2	745 Badger Road, Lynden, WA	\$3 million	This facility houses the City’s men and equipment that respond to all natural disasters (flood, snow, ice road washouts etc.). Shop and storage on 5 acres.

Facility Type: **EF** = Essential Facility; **HMF** = Hazardous Materials Facility; **HPL** = High Potential Loss; **LUS** = Lifeline Utility System

Significance to community function: **1**=Moderate; **2**= High; **3** =Very High



Map of critical facilities identified by the City of Lynden. Across Whatcom County, critical facilities fell into 15 categories. Unique categories developed for this plan update include mass shelter, assisted living, and recovery resources. Mass shelter includes facilities such as fairgrounds and community centers. Recovery resources are facilities that are required post-hazard event, for example public works and private construction companies. Not all jurisdictions identified or included critical facilities in each category.



Critical Facility Rankings for the Lynden

The table below indicates whether each critical facility falls within known hazard zones for earthquake, liquefaction, landslide, tsunami, volcano, riverine flooding, coastal flooding and wildfire zones. A rank assessment in the last column indicates how the relative risk of community impact. This ranking considers the significance of the facility to the community and the number of hazard zones the facility is within. The frequency of each hazard is also considered, such that being in a low frequency hazard zone would receive a lower ranking than that same facility being in a high frequency hazard zone. Ranking is on a scale of 1 to 10, with 1 being the facility with the highest-ranking score, and 10 being a facility with the lowest ranking score in the jurisdiction.

$$\text{Rank} = \text{Significance} * \left[\frac{\text{EQ_Zone}}{\text{EQ_Freq}} + \frac{\text{LQ_Zone}}{\text{LQ_Freq}} + \frac{\text{LS_Zone}}{\text{LS_Freq}} + \dots + \frac{\text{WF_Zone}}{\text{WF_Freq}} \right]$$

Ranking value will be from 0.0 to 1.0, scaled to the highest ranking in the jurisdiction.

Significance: 1=moderate; 2=high; 3=very high, as assessed in the critical facilities list in the previous section

Zone: 0=facility not in hazard zone; 1 = facility in the hazard zone

Frequency (e.g. EQ_Freq, LQ_Freq) is the most difficult variable to which to assign a value. Frequency varies based upon the magnitude of a hazard event and varies from one place to another. It was not possible within the time constraints to assess frequency of hazard at each critical facility location. Instead, a qualitative assessment of the hazard frequency across the entire county was made, as shown in the chart below.

Description	Freq Value used in formula	Hazards
Frequent, occurring on the order of decades	3	Riverine flooding (FL); Coastal flooding (COA)
Rare, occurring on the order of centuries	2	Earthquake (EQ); Liquefaction (LQ); Landslide (LS); Wildfire (WF)
Very rare, occurring on the order of millennia	1	Tsunami (TSU); Volcano (VOL)

Note: Severe storm, a very frequent hazard, was omitted because it is ubiquitous and because no hazard map of storm severity was available.



Critical Facilities Ranking Table

Facility Name	Facility Type	Significance	EQ	LQ	LS	TSU	VOL	FL	COA	WF	Rank Assessment
Christian Health Care Center	Assisted Living	2	1	1	0	0	0	0	0	0	0.26
Lynden City Hall	Government	2	1	1	0	0	0	0	0	0	0.26
Lynden City Hall Annex	Government	1	1	1	0	0	0	0	0	0	0.14
Lynden Community Center	Assisted Living	1	1	1	0	0	0	0	0	0	0.14
Lynden Fire Department	Fire Station	2	1	1	0	0	0	0	0	0	0.29
Lynden Manor	Assisted Living	2	1	1	0	0	0	0	0	0	0.29
Lynden Police Department	Law Enforcement	2	1	1	0	0	0	0	0	0	0.29
Meadow Greens	Assisted Living	2	1	1	0	0	0	0	0	0	0.29
Riverhouse Retirement	Assisted Living	1	1	1	0	0	0	1	0	0	0.19
Northwest Washington Fair	Emergency Services	1	1	1	0	0	0	0	0	0	0.14
Schools – District 504	Evacuation Center	3	1	1	0	0	0	0	0	1	0.64
Sonlight Church	Evacuation Center	1	1	1	0	0	0	0	0	0	0.14
Waste Water Treatment Plant	Utility: Sewer	3	1	0	0	0	1	1	0	1	1



Water Treatment Plant	Utility: Water	3	1	1	0	0	0	0	0	0	0.42
City Bible Church	Evacuation Center	1	1	1	0	0	0	0	0	0	0.14
Public Works Street Shop	EF: Snow/Ice removal, various	2	1	1	0	0	0	0	0	0	0.28

Notes: **EQ** = Earthquake; **LQ** =Liquefaction; **LS** = Landslide; **TSUN** = Tsunami; **VOL** = Volcano; **FL** = Riverine Flooding; **COA** = Coastal Flooding; **WF** = Wildland Fire



Areas and Assets Exposed, Per Hazard

City of Lynden Exposure to Natural Hazards						
	Hazard Susceptibility	Asset County (% of Total)			Critical Facilities Appraised Value (Million)	
		Area (sq.mi.)	Population	Parcels		Critical Facilities
Geological Hazards	Earthquake, Shaking Intensity					
	<i>MMI V</i>	-	-	-	-	
	<i>MMI VI</i>	93.9%	95.8%	96.5%	86.4%	\$145 ²
	<i>MMI VII</i>	6.1%	4.2%	3.5%	13.6%	\$38 ²
	<i>MMI VIII - IX</i>	-	-	-	-	-
	TOTAL	100%	100%	100%	100%	\$183
	Liquefaction					
	<i>Very Low to Low</i>	98.5%	99.1%	99.8%	95.5%	\$197 ¹
	<i>Low to Moderate</i>	-	-	-	-	-
	<i>Moderate</i>	-	0.2%	-	-	-
	<i>Moderate to High</i>	0.4%	-	0.1%	-	-
	<i>High</i>	-	-	-	-	-
	TOTAL	98.9%	99.3%	99.9%	95.5%	\$197
	Landslide					
	<i>Landslide Low</i>	-	-	-	-	-
	<i>Landslide Moderate</i>	-	-	-	-	-
	<i>Landslide High</i>	-	-	-	-	-
	<i>Fan Low</i>	0.2%	0.02%	0.1%	-	-
	<i>Fan Moderate</i>	-	-	-	-	-
	<i>Fan High</i>	-	-	-	-	-



	<i>Mine Hazard</i>	-	-	-	-	-
	TOTAL	0.2%	0.02%	0.1%	-	-
	Volcanic Eruption					
	<i>Case 1 Debris Flows</i>	-	-	-	-	-
	<i>Case 2 Debris Flows</i>	-	-	-	-	-
	<i>Case M Flows</i>	2.4%	2.4%	1.9%	4.5%	\$22 ²
	<i>Pyroclastic Flows, Lava Flows, and Ballistic Debris</i>	-	-	-	-	-
	<i>Lateral Blast Hazard Zone</i>	-	-	-	-	-
	TOTAL	2.4%	2.4%	1.9%	4.5%	\$22
	Tsunami, Inundation Zone					
	<i>Low to Moderate Inundation Potential</i>	-	-	-	-	-
	<i>Moderate to High Inundation Potential</i>	-	-	-	-	-
	<i>High Inundation Potential</i>	-	-	-	-	-
	TOTAL	-	-	-	-	-
Hydrological	Flooding					
	<i>100-year Flood</i>	1.9%	0.7%	0.5%	-	-
	<i>500-year Flood</i>	0.1%	0.1%	-	-	-
	<i>Floodway</i>	2.3%	2.1%	0.5%	9.1%	\$34 ²
	<i>Undetermined (Zone D)</i>	-	-	-	-	-
	TOTAL	4.3%	3%	1%	9.1%	\$34
Meteor	Wildfire Zones					
	<i>Interface Very Low-Low Structure Density</i>	0.3%	0.1%	0.02%	-	-



	<i>Interface Medium-High Structure Density</i>	14.8%	15.1%	17.8%	9.1%	\$19
	<i>Intermix Very Low-Low Structure Density</i>	0.9%	0.2%	0.5%	-	-
	<i>Intermix Medium-High Structure Density</i>	4.9%	2.8%	2.3%	9.1%	\$26 ¹
	TOTAL	20.9%	18.2%	20.62	18.2%	\$45

¹This value shows the total of 2020 Whatcom County parcel data appraised total value and community's critical facility assessed dollar value (found in the community's critical facilities list). The critical facility's assessed dollar value was used instead of the appraised total value when available.

²Shows the assessed dollar value provided by the community in their critical facilities list. Does not include the appraised total value.



Status of Lynden’s 2016-2020 and Ongoing Hazard Mitigation Actions

This section describes the status of mitigation actions that were proposed in the 2016 Mitigation Plan and are now 1) currently being implemented and are ongoing, 2) are now completed, or 3) are now discontinued because they are no longer needed. The actions are organized by hazard and indicate the lead agency, funding source, and status.

Lead Agency	May be more than one lead agency indicating shared responsibility and coordination
Funding Source	Local; State; FEMA; Private; Other
Current Status	Action Discontinued / Action Completed / Action ongoing and expected completion date, if applicable

General: All Hazards

G-a. Provide for an increased level of safety to the citizens of Lynden. The City regularly undertakes public works projects to prevent or mitigate the effects of natural hazards, particularly flooding, freezing and high-wind events. Particular attention paid to “sheet flooding” which can occur when flat fields freeze solid, followed by heavy rain.

Responsible Entity:	Lynden City Council
Funding Source:	Local sources, and state and federal grants
Timeline:	Current and ongoing
2016-2020 Status	On-Going

G-b. Provide for an increased level of protection for public infrastructure. The City since 2015 has spent an estimated \$600,000 developing the Pepin Creek project which will include \$103,000,000 in infrastructure projects to alleviate flooding in the north-central part of the City. This project is currently underway, with the installation of a boxed-bridge culvert under West Main Street. The project is expected to take 12-15 years, and will be funded mainly through development fees.

Responsible Entity:	Lynden City Council
Funding Source:	Local sources, and state and federal grants
Timeline:	Current and ongoing
2016-2020 Status	On-Going

G-c. Work with neighboring jurisdictions to add additional flow capacity to the Nooksack River in order to minimize catastrophic flooding losses. The City works closely with the Whatcom County flood district to anticipate and mitigate flooding from the Nooksack. The City is also working with the State Department of Ecology to monitor flows on the north, south and mainstem of the Nooksack River.

Responsible Entity:	Lynden City Council
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Funding Source:	Local sources, and state and federal grants
Timeline:	Current and ongoing
2016-2020 Status	On-Going

Education and Outreach

EO-a. Ongoing Community-wide Education and Awareness Activities. Lynden, through the fire department and emergency management, continues to engage in a range of public awareness activities at public events, in the schools and through media channels.

Action Item	Lead Responsibility	Funding	Estimated Cost
Emergency preparedness education programs for schools.	Lynden Fire Department (LFD)	Local	10,000
Drills, exercises in homes, workplaces, classrooms, etc.	LFD	Local	5,000
Public service announcements.	LFD	Local	500
Hazard "safety fairs."	DEM / LFD	Local	1,000
Hazard conferences, seminars.	DEM / LFD	Local	1,000
Hazard awareness weeks.	DEM / LFD	Local	500
Preparedness handbooks, brochures. Distribution of severe weather guides, homeowner's retrofit guide, etc.	DEM / LFD	Local	2,000
Regular newspaper articles.	LFD	Local	200
Annual correspondence with residents reminding them of the need to be hazard prepared.	LFD	Local	200

Drought/heat wave

D-a. Monitor Water Supply. The City has increased its recognized annual water right from 1,792 acre-feet in 2015 to more than 2,000 acre-feet currently. It will increase by another 300-400 acre-feet when the Industrial Condensate Project is complete at the end of 2021. The City is also working on a Managed Aquifer Recharge (MAR) Project that has the potential of providing a surfeit of water to the City's water right. Lynden recently received a \$4.7 million grant to develop the project.

Responsible Entity:	Public Works
Funding Source:	Local
Timeline:	Current and ongoing
2016-2020 Status	On-Going



D-b. Require Water Conservation During Drought Conditions. The City informally discourages unnecessary summertime water use, such as pressure washing sidewalks etc. It also schedules “watering days” for all residences that have an alternating schedule.

Responsible Entity:	Public Works
Funding Source:	Local
Timeline:	Current and ongoing
2016-2020 Status	On-Going

Earthquake

EQ-a Conduct Inspections of Building Safety. The Fire Department does annual Life-Safety inspections of all business.

Responsible Entity:	Lynden Fire Department
Funding Source:	Local
Timeline:	Current and ongoing
2016-2020 Status	On-Going

EQ-b Protect Critical Facilities and Infrastructure. This is an ongoing activity that is part of the City’s regular facility maintenance cycle.

Responsible Entity:	Public Works and Lynden Fire Department
Funding Source:	Local
Timeline:	Current and ongoing
2016-2020 Status	On-Going

EQ-c Conduct Outreach to Builders, Architects, Engineers, and Inspectors. The City has a close working relationship with the Building Development Community. This relationship was strengthened during the recent COVID crisis due to the precautions that needed to be taken and monitored to build safely.

Responsible Entity:	Planning
Funding Source:	Local
Timeline:	Current and ongoing
2016-2020 Status	On-Going

Extreme Temp



ET-a Assist Vulnerable Populations. Lynden has a number of assisted living care facilities. They are all equipped with generators that are tested regularly. There is a strong community-based network in all neighborhoods that check on vulnerable individuals who many need care. Likewise, there are many faith-based assets that reach out to vulnerable individuals to ensure their safety, especially in times of natural hazard events.

Responsible Entity:	Care facilities
Funding Source:	Local
Timeline:	Current and ongoing
2016-2020 Status	On-Going

Flooding

F-a. Incorporate Flood Mitigation in Local Planning. Lynden, like most jurisdictions, has strict requirements intended to anticipate and mitigate local flooding events.

Responsible Entity:	Public Works/Panning
Funding Source:	Local
Timeline:	Current and ongoing
2016-2020 Status	On-Going

F-b. Limit or Restrict Development in Floodplain Areas. Lynden does not allow development in floodplains except in very rare cases. In those cases, significant mitigation is required.

Responsible Entity:	Planning
Funding Source:	Local
Timeline:	Current and ongoing
2016-2020 Status	On-Going

F-c. Improve Stormwater Management Planning. The City is continually improving its stormwater system and collects impact fees to support that activity. The City recently began physically removing snow that collects in north-south drainage ditches, improving their effectiveness.

Responsible Entity:	Public Works
Funding Source:	Local
Timeline:	Current and ongoing
2016-2020 Status	On-Going



F-d. Improve Stormwater Drainage System Capacity. See F-c above.

Responsible Entity:	Public Works
Funding Source:	Local
Timeline:	Current and ongoing
2016-2020 Status	On-Going

F-e. Conduct Regular Maintenance for Drainage Systems and Flood Control Structures.

Lynden regularly maintains and repairs its entire stormwater drainage system, including the use of vacators to extract debris washed into the system.

Responsible Entity:	Public Works
Funding Source:	Local
Timeline:	Current and ongoing
2016-2020 Status	On-Going

F-f. Protect Infrastructure

Responsible Entity:	Public Works
Funding Source:	Local
Timeline:	Current and ongoing
2016-2020 Status	On-Going

F-g. Preserve Floodplains as Open Space. This is generally required by law, and Lynden complies.

Responsible Entity:	Public Works
Funding Source:	Local
Timeline:	Current and ongoing
2016-2020 Status	On-Going

Landslide/erosion



No actions ongoing, discontinued, or completed for this hazard

Landslide Subsidence

No actions ongoing, discontinued, or completed for this hazard

Lightening

No actions ongoing, discontinued, or completed for this hazard

Severe Storm

No actions ongoing, discontinued, or completed for this hazard

Severe Wind

No actions ongoing, discontinued, or completed for this hazard

Tornadoes

No actions ongoing, discontinued, or completed for this hazard

Tsunami

Not Applicable

Wildfire

No actions ongoing, discontinued, or completed for this hazard

Winter storms/Freezes

WW-a Protect Power Lines. This is generally not a City function. Puget Sound Energy regularly prunes trees and vegetation to reduce the possibility of damage to power lines.

Responsible Entity:	Power Company and Public Works
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Funding Source:	Local
Timeline:	Current and ongoing
2016-2020 Status	On-Going

Multi-Hazard

MU-a. Prevent Development in Hazard Areas. Like all Cities, Lynden is subject to state and local laws that prohibit development in hazard areas where flooding or other events that might endanger residents might occur.

Responsible Entity:	Planning
Funding Source:	Local
Timeline:	Current and ongoing
2016-2020 Status	On-Going

MU-b. Adopt and Enforce Building Codes. Lynden adopted the International Building Code, the International Residential Code and the International Fire Code in 2004, and the International Existing Building Code in 2009, among other building codes. It further adopts any future amendments to these codes, effective upon their adoption by the State Building Code Council. The Planning department and fire department support enforcement.

Responsible Entity:	Public Works and Lynden Fire Department
Funding Source:	Local
Timeline:	Current and ongoing
2016-2020 Status	On-Going

MU-c. Monitor Mitigation Plan Implementation. Lynden does regular annual monitoring of the Mitigation Plan as required by law.

Responsible Entity:	Planning
Funding Source:	Local
Timeline:	Current and ongoing
2016-2020 Status	On-Going



Lynden 2021-2025 Hazard Mitigation Strategy

Whatcom County Hazard Mitigation Goals

Whatcom County has identified five overarching hazard mitigation goals, which represent what a community seeks to achieve through mitigation actions.

- Goal 1.** Protect Life, Property and Public Welfare
- Goal 2.** Increase Public Awareness
- Goal 3.** Preserve and Enhance Natural Systems
- Goal 4.** Encourage Partnership for Implementation
- Goal 5.** Ensure Continuity of Emergency Services

These countywide goals help guide any prioritization and implementation of mitigation actions, ensuring that the actions contribute to a community's vision for the future.

Lynden-Specific Hazard Mitigation Goals

Lynden supports the county-wide planning goals. No additional community-specific mitigation planning goals have been identified at this time.

Mitigation Action Options

Appendix E of the Whatcom County Natural Hazard Mitigation Plan provides a list of mitigation options. Lynden considered mitigation options related to drought, earthquake, extreme temperature, flooding, landslides, subsidence, lightening, severe storms, severe wind, wildfires, winter storms, and actions that addressed multiple hazards or all hazards. Lynden especially considered actions related to flooding, earthquakes, severe winter storms, and drought because of the jurisdiction's high exposure to these hazards and/or their potential to cause the greatest loss and damage. Not all mitigation options in Appendix E were relevant or a strong priority for Lynden. Some options have already been implemented or are ongoing in Lynden, as documented in the section above on the status of 2016-2020 and ongoing hazard mitigation actions.

Mitigation Action Prioritization

The mitigation actions in this section are new actions that Lynden has prioritized for the 2021-2025 planning period and beyond. Mitigation options were prioritized based upon review of the following two criteria: 1) The action's Overall Feasibility based on engineering, environmental, financial and political considerations, 2) The Criticality of the action, based upon a consideration



of which actions had the greatest potential to protect life, property and public welfare. Lynden is working in cooperation with the County and other participating communities and special districts to develop a systematic methodology that would use multiple evaluation criteria to determine mitigation action prioritization. This new methodology will be used in future updates of this Plan.

In the following Identified Mitigation Actions 2021-2025 table, each priority action is listed by hazard. Each action is followed by planning goals, lead agency, the priority evaluation, timeline, funding source and estimated cost, where such information is available. This information can be used by local decision makers in pursuing strategies for implementation.

1	Goals	Indicates the hazard mitigation planning goal or goals this action addresses; countywide and/or community-specific
2	Lead Agency	May be more than one lead agency indicating shared responsibility and coordination
3	Priority	H (High); M (Medium); L (Low)
4	Timeline	Short-Range (less than 2 years); Mid-Range (2-5 years); Long-Range (more than 5 years)
5	Funding Source	Local; State; FEMA; Private; Other
6	Estimated Cost	Actual; Estimated



Lynden Identified Mitigation Actions 2021-2025

IDENTIFIED MITIGATION ACTIONS 2021-2025, LYNDEN							
MITIGATION ACTIONS		(1) Goals	(2) Lead Responsibility	(3) Priority	(4) Timeline	(5) Funding Source	(6) Estimated Cost
Hazard	Action Items						
GENERAL: ALL HAZARDS Education and Awareness Actions	These are actions that inform and educate citizens, elected officials, and property owners about hazards and ways to mitigate them.						
	<i>G-a. Ongoing: Provide for an increased level of safety to the citizens of Lynden.</i>	1, 5	Lynden City Council	H	O	Local sources, and state and federal grants	
	<i>G-b. Ongoing: Provide for an increased level of protection for public infrastructure.</i>	1, 5	Lynden City Council	M	O	Local sources, and state and federal grants	
	<i>G-c. Ongoing: Work with neighboring jurisdictions to add additional flow capacity to the Nooksack River in order to minimize catastrophic flooding losses.</i>	1, 3	Lynden City Council	M	O	Local sources, and state and federal grants	
Education and Outreach	<i>EO-a. Ongoing: Ongoing Community-wide Education and Awareness Activities.</i>	1, 2	Lynden Fire Department and Department of Emergency Management	L	O	Local	
Hazard Specific (Reference:	Actions communities is considering to reducing risk to natural hazards and disasters.						

Priority: H (High); M (Medium); L (Low)	Timeline: Short-Range (less than 2 years); Mid-Range (2-5 years); Long-Range (more than 5 years); Ongoing	Funding Source: Local; State; FEMA; Private; Other	Estimated Cost: Actual; Estimated
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Exhibit A



IDENTIFIED MITIGATION ACTIONS 2021-2025, LYNDEN							
MITIGATION ACTIONS		(1) Goals	(2) Lead Responsibility	(3) Priorit y	(4) Timeline	(5) Funding Source	(6) Estimated Cost
Hazard	Action Items						
<u>Whatcom County Mitigation Ideas</u>							
Dam/Levee Failures (See: Flooding)							
Droughts/Heat Waves	<i>D-a Ongoing: Monitor Water Supply</i>	1,3	PW	H	O	Local	2,000
	<i>D-b Ongoing: Require Water Conservation During Drought Conditions</i>	1,3	PW	H	O	Local	1,000
Earthquakes	<i>EQ-a Ongoing: Conduct Inspections of Building Safety</i>	1	LFD	M	O	Local	10,000
	<i>EQ-b Ongoing: Protect Critical Facilities and Infrastructure</i>	1,5	PW / LFD	M	O	Local	2,000
	<i>EQ-c Ongoing: Conduct Outreach to Builders, Architects, Engineers, and Inspectors</i>	2	PW	M	O	Local	1,000
Extreme Temperatures	<i>ET-a Ongoing: Assist Vulnerable Populations</i>	1	LFD	H	O	Local	1,000
	<i>F-a Ongoing: Incorporate Flood</i>	1	PW	M	O	Local	2,000

Priority: H (High); M (Medium); L (Low)	Timeline: Short-Range (less than 2 years); Mid-Range (2-5 years); Long-Range (more than 5 years); Ongoing	Funding Source: Local; State; FEMA; Private; Other	Estimated Cost: Actual; Estimated
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Exhibit A



IDENTIFIED MITIGATION ACTIONS 2021-2025, LYNDEN							
MITIGATION ACTIONS		(1) Goals	(2) Lead Responsibility	(3) Priorit y	(4) Timeline	(5) Funding Source	(6) Estimated Cost
Hazard	Action Items						
Flooding	<i>Mitigation in Local Planning</i>						
	<i>F-b Ongoing: Limit or Restrict Development in Floodplain Areas</i>	1,3	PLANNING	M	O	Local	1,000
	<i>F-c Ongoing: Improve Stormwater Management Planning</i>	1,5	PW	M	O	Local	1,000
	<i>F-d Ongoing: Improve Stormwater Drainage System Capacity</i>	1,5	PW	M	O	Local	1,000
	<i>F-e Ongoing: Conduct Regular Maintenance for Drainage Systems and Flood Control Structures</i>	1.5	PW	M	O	Local	2,000
	<i>F-f Ongoing: Protect Infrastructure</i>	1	PW	M	O	Local	1,000
	<i>F-g Ongoing: Preserve Floodplains as Open Space</i>	3	PW	M	O	Local	500
	<i>F-h Ongoing: Increase Awareness of Flood Risk and Safety</i>	2	PW / LFD	M	O	Local	1,000
	F-1 Elevate or Retrofit Structures and Utilities Sewer outfall on Nooksack River in need	5	PW	H	S	Local	

Priority:
H (High); M (Medium); L (Low)

Timeline:
Short-Range (less than 2 years); Mid-Range (2-5 years); Long-Range (more than 5 years); Ongoing

Funding Source:
Local; State; FEMA; Private; Other

Estimated Cost:
Actual; Estimated

Exhibit A



IDENTIFIED MITIGATION ACTIONS 2021-2025, LYNDEN							
MITIGATION ACTIONS		(1) Goals	(2) Lead Responsibility	(3) Priority	(4) Timeline	(5) Funding Source	(6) Estimated Cost
Hazard	Action Items						
	of retrofit.						
	<p>F-2 Protect Wastewater Treatment Plant Construct a ring dike, flood wall, or otherwise mitigate the wastewater treatment plant against a 75-year flood event or volcanic lahars.</p>	5	PW	L	S	Local, State, and Federal	
	<p>F-3 Relocate Wastewater Shops and Offices The Wastewater Treatment shops and offices are located in the floodplain. These should be mitigated in place or moved out of the floodplain.</p>	1,5	PW	L	L	Local, State, and Federal	
	<p>F-4 Fishtrap Creek Flood Storage and Fish Enhancement Fishtrap Creek has had a significant amount of its floodwater storage capacity eliminated due to development. With very little storage capacity left, any discharges into the stream system immediately surge downstream. Increasing this storage</p>	3	PW	M	S	Local, State, and Federal	
<p>Priority: H (High); M (Medium); L (Low)</p>		<p>Timeline: Short-Range (less than 2 years); Mid-Range (2-5 years); Long-Range (more than 5 years); Ongoing</p>			<p>Funding Source: Local; State; FEMA; Private; Other</p>		<p>Estimated Cost: Actual; Estimated</p>

Exhibit A



IDENTIFIED MITIGATION ACTIONS 2021-2025, LYNDEN							
MITIGATION ACTIONS		(1) Goals	(2) Lead Responsibility	(3) Priorit y	(4) Timeline	(5) Funding Source	(6) Estimated Cost
Hazard	Action Items						
	capacity would mitigate to attenuate stream discharges.						
Landslide/ Erosion	No actions currently ongoing or planned						
Land Subsidence	No actions currently ongoing or planned						
Lightning	No actions currently ongoing or planned						
Severe Storms	No actions currently ongoing or planned						
Severe Wind	No actions currently ongoing or planned						
Tornadoes	No actions currently ongoing or planned						
Wildfires	No actions currently ongoing or planned						
Winter Storms/ Freezes (Severe Winter Weather)	<i>WW-a. Ongoing: Protect Power Lines</i>	5	POWER COMPANY / PW	H	O	Local	10,000

Priority: H (High); M (Medium); L (Low)	Timeline: Short-Range (less than 2 years); Mid-Range (2-5 years); Long-Range (more than 5 years); Ongoing	Funding Source: Local; State; FEMA; Private; Other	Estimated Cost: Actual; Estimated
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Exhibit A



IDENTIFIED MITIGATION ACTIONS 2021-2025, LYNDEN							
MITIGATION ACTIONS		(1) Goals	(2) Lead Responsibility	(3) Priorit y	(4) Timeline	(5) Funding Source	(6) Estimated Cost
Hazard	Action Items						
Multi-Hazard	<i>MU-a. Ongoing: Prevent Development in Hazard Areas</i>	1	PLANNING	M	O	Local	500
	<i>MU-b. Ongoing: Adopt and Enforce Building Codes</i>	1	PW / LFD	M	O	Local	4,000
	<i>MU-c. Ongoing: Monitor Mitigation Plan Implementation</i>	1	PLANNING	M	O	Local	500
Advanced Mitigation Projects (Dream List)	Lahar Early Warning System – The US Geological Survey has designed a number of systems that automatically detect lahars as they descend neighboring valleys. These systems automatically trigger various types of early warning systems, such as sirens or telephone-based warning systems, such as the reserve 911 telephone-based warning system the city secured.	1,2	WCDEM/LFD	L	L	Local sources, and state and federal grants	
	Community Early Warning System - A community-wide warning system could be	1,2	WCDEM/LFD	L	L	Local sources, and state and federal grants	

Priority: H (High); M (Medium); L (Low)	Timeline: Short-Range (less than 2 years); Mid-Range (2-5 years); Long-Range (more than 5 years); Ongoing	Funding Source: Local; State; FEMA; Private; Other	Estimated Cost: Actual; Estimated
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IDENTIFIED MITIGATION ACTIONS 2021-2025, LYNDEN							
MITIGATION ACTIONS		(1) Goals	(2) Lead Responsibility	(3) Priorit y	(4) Timeline	(5) Funding Source	(6) Estimated Cost
Hazard	Action Items						
	built to help provide broad community notice for evacuation in the event of flooding, lahars, dam failures, etc. Such an early warning system would typically be a series of sirens that could be triggered in the event the City needed to be evacuated.						
	Cell Phone-Based Early Warning System. A computerized early warning system that automatically dials each landline telephone number within a specified area, and play a recorded message when the phone is answered is currently provided to the City by the Whatcom County Sheriff's Office Division of Emergency Management. A larger capacity system that can also contact cell phones through the use of a federally licensed COG would help to address a variety of natural and manmade problems.	1,2	WCDEM/LFD	L	L	Local sources, and state and federal grants	

Priority: H (High); M (Medium); L (Low)	Timeline: Short-Range (less than 2 years); Mid-Range (2-5 years); Long-Range (more than 5 years); Ongoing	Funding Source: Local; State; FEMA; Private; Other	Estimated Cost: Actual; Estimated
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Exhibit A



IDENTIFIED MITIGATION ACTIONS 2021-2025, LYNDEN							
MITIGATION ACTIONS		(1) Goals	(2) Lead Responsibility	(3) Priorit y	(4) Timeline	(5) Funding Source	(6) Estimated Cost
Hazard	Action Items						
	<p>Tone Radio Based Early Warning System - Tone Radios turn on when triggered by a central transmitter, and then information or instructions are announced over the radio. Such a system is currently used for various types of weather radios, for tornados and severe storms hazard areas. A similar system could be put into place for warnings of flooding, lahars, and other related natural hazards.</p>	1,2	WCDEM/LFD	L	O	Local sources, and state and federal grants	
	<p>Earthquake Early Warning System -Such a system could warn residence of an impending earthquake. Technology doesn't currently exist for such a system, but will likely be possible in the future.</p>	1,2	WCDEM/LFD	L	O	Local sources, and state and federal grants	

Priority: H (High); M (Medium); L (Low)	Timeline: Short-Range (less than 2 years); Mid-Range (2-5 years); Long-Range (more than 5 years); Ongoing	Funding Source: Local; State; FEMA; Private; Other	Estimated Cost: Actual; Estimated
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Lynden Annual Review and Progress for Hazard-Specific Mitigation Actions 2021-2025

Progress monitoring means tracking the implementation of the hazard specific mitigation actions over time. Each jurisdiction must identify how, when, and by whom action items will be monitored. The responsible agency assigned to each mitigation action is responsible for tracking and reporting on each of their actions.

Annual review and progress reporting includes the following:

- Step One:** Identify mitigation actions that your planning team has identified for the annual review. The planning team has the option to address ALL action items, or only those that should be acted on during each review cycle.
- Step Two:** Use the table below to track annual progress. For each action item selected for annual review insert the appropriate letter that indicates the status of that action item.
- Step Three:** Complete a progress report form as illustrated in Appendix G for each mitigation action item selected for annual review
- Step Four:** Submit the completed form(s) to the Whatcom County DEM.



City of Lynden Hazard-Specific Action Items 2021-2025 – Annual Review and Progress						
Action Items	Status (Choose One & Enter Letter): A. Completed; B. In Progress (on schedule); C. In Progress (delayed); D. Delayed Until Funding Available; E. Canceled					Notes on yearly progress
	2021	2022	2023	2024	2025	
GENERAL: ALL HAZARDS						
<i>G-a. Ongoing: Provide for an increased level of safety to the citizens of Lynden.</i>	B					This is baked into our annual budget process.
<i>G-b. Ongoing: Provide for an increased level of protection for public infrastructure.</i>	B					As above.
<i>G-c. Ongoing: Work with neighboring jurisdictions to add additional flow capacity to the Nooksack River in order to minimize catastrophic flooding losses.</i>	B					Consistent work with Whatcom County on strategies to maintain and improve levies and diking systems.
Add New Action Items if Applicable						
EDUCATION AND OUTREACH						
<i>EO-a. Ongoing: Ongoing Community-wide Education and Awareness Activities.</i>	B					Launched “Lynden Watch” website to keep public apprised of Awareness Activities.
Add New Action Items if Applicable						
DROUGHTS/HEAT WAVES						
<i>D-a Ongoing: Monitor Water Supply</i>	B					Completing Industrial Condensate Project Q3 2021.
<i>D-b Ongoing: Require Water Conservation During Drought Conditions</i>	B					Built into City Code
Add New Action Items if Applicable						
EARTHQUAKES						
<i>EQ-a Ongoing: Conduct Inspections of Building Safety</i>	B					FD performs annual inspections of all commercial structures.
<i>EQ-b Ongoing: Protect Critical Facilities and</i>	B					



City of Lynden Hazard-Specific Action Items 2021-2025 – Annual Review and Progress						
Action Items	Status (Choose One & Enter Letter): A. Completed; B. In Progress (on schedule); C. In Progress (delayed); D. Delayed Until Funding Available; E. Canceled					Notes on yearly progress
	2021	2022	2023	2024	2025	
Infrastructure						
<i>EQ-c Ongoing: Conduct Outreach to Builders, Architects, Engineers, and Inspectors</i>	B					Regular and close contact with building community, particularly during COVID emergency.
<i>Add New Action Items if Applicable</i>						
FLOODING						
<i>F-a Ongoing: Incorporate Flood Mitigation in Local Planning</i>	B					Required by code.
<i>F-b Ongoing: Limit or Restrict Development in Floodplain Areas</i>	B					This is required by state and local law.
<i>F-c Ongoing: Improve Stormwater Management Planning</i>	B					Undertaking major project to control stormwater runoff in north-central part of City (Pepin Creek).
<i>F-d Ongoing: Improve Stormwater Drainage System Capacity</i>	B					Improving drainage on Pepin Creek.
<i>F-e Ongoing: Conduct Regular Maintenance for Drainage Systems and Flood Control Structures</i>	B					This is part of normal City activity.
<i>F-f Ongoing: Protect Infrastructure</i>	B					This is part of normal City activity.
<i>F-g Ongoing: Preserve Floodplains as Open Space</i>	B					
<i>F-h Ongoing: Increase Awareness of Flood Risk and Safety</i>	B					
F-1 Elevate or Retrofit Structures and Utilities	B					Retrofitted sewer outfall into Nooksack River, completed Q1 2021.
F-2 Wastewater Treatment Plant	D					Low priority
F-3 Relocate Wastewater Shops and Offices	D					Low priority
F-4 Fishtrap Creek Flood Storage and Fish	B					Always ongoing



City of Lynden Hazard-Specific Action Items 2021-2025 – Annual Review and Progress						
Action Items	Status (Choose One & Enter Letter): A. Completed; B. In Progress (on schedule); C. In Progress (delayed); D. Delayed Until Funding Available; E. Canceled					Notes on yearly progress
	2021	2022	2023	2024	2025	
Enhancement						
<i>Add New Action Items if Applicable</i>						
LANDSLIDES/EROSION						
<i>Add New Action Items if Applicable</i>	E					
LAND SUBSIDENCE						
<i>Add New Action Items if Applicable</i>	E					
TORNADOES						
<i>Add New Action Items if Applicable</i>	E					
TSUNAMI						
<i>Add New Action Items if Applicable</i>	E					
WILDFIRES						
<i>Add New Action Items if Applicable</i>	E					
WINTER STORMS/FREEZES (SEVERE WINTER WEATHER)						
<i>WW-a. Ongoing: Protect Power Lines</i>	B					
<i>Add New Action Items if Applicable</i>						
EXTREME TEMPERATURES						
<i>ET-a Ongoing: Assist Vulnerable Populations</i>	B					Will remain a high priority for this City.
<i>ET-b Ongoing: Educate Property Owners About Freezing Pipes</i>	B					Community is largely self-sufficient but City engages on this when appropriate.
<i>Add New Action Items if Applicable</i>						



City of Lynden Hazard-Specific Action Items 2021-2025 – Annual Review and Progress						
Action Items	Status (Choose One & Enter Letter): A. Completed; B. In Progress (on schedule); C. In Progress (delayed); D. Delayed Until Funding Available; E. Canceled					Notes on yearly progress
	2021	2022	2023	2024	2025	
LANDSLIDE						
<i>Add New Action Items if Applicable</i>	E					
LIGHTNING						
<i>Add New Action Items if Applicable</i>	E					
SEVERE WIND						
<i>Add New Action Items if Applicable</i>						
MULTIPLE HAZARDS						
<i>MU-a. Ongoing. Prevent Development in Hazard Areas</i>						
<i>MU-b. Ongoing: Adopt and Enforce Building Codes</i>						
<i>MU-c. Ongoing: Monitor Mitigation Plan Implementation</i>						
<i>Add New Action Items if Applicable</i>						



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