9 Climate Change and Resiliency Element

This chapter is a newly required element of a comprehensive plan that was added with the adoption of HB 1181 in 2023. The bill amends the GMA to require a climate change and resiliency element that focuses on strategies that will allow jurisdictions to increase their resiliency against future impacts of climate change. The element is required to include two sub-elements: greenhouse gas (GHG) emissions reduction and climate resiliency.

The GHG emissions reduction sub-element is only required for cities with a population of at least 6,000 as of April 1, 2021, and in a county which is required to plan under RCW 36.70A.040. As Sumas' population on April 1, 2021 was estimated to be 1,740 residents, the City is not required to include a GHG emissions reduction sub-element in this element.

To conduct a clear and sufficient assessment of Sumas' climate change resiliency, the City looked to the Department of Commerce's climate element planning guidance which adapted the U.S. Climate Resilience Toolkit's "Steps to Resilience" framework. The adapted framework provides a five-step process for organizing a climate change and resiliency element, as well as developing goals and policies related to climate resiliency. The five steps listed in the framework are as follows:

Step 1. Explore Climate Impacts (Required)

Step 2. Audit Plan and Policies (Required)

Step 3. Assess Vulnerability and Risk (Optional)

Step 4. Pursue Pathways (Required)

Step 5 Integrate Goals and Policies (Required)

One of the pathways specified in Step 4 of the framework allows jurisdictions the ability to adopt by reference their local Natural Hazard Mitigation Plan (NHMP) in lieu of drafting an entire climate resiliency sub-element. The local NHMP for Sumas is the Whatcom County NHMP, adopted in 2021. Although the Whatcom NHMP provides essential information to perform Step 3 of the framework, it was passed prior to the adoption of HB 1181 in 2023, meaning that several requirements from that legislation are missing from the plan. Although this sub-element will heavily reference the Whatcom County NHMP, it will not adopt it by reference.

9.1 Climate Impacts

The first step gives jurisdictions the opportunity to take inventory of the community's most essential assets and how they may be affected by a changing climate. This step also allows you to identify potential climate hazards that may affect these assets. In Step 3 of the framework, specific community assets will be compared against potential climate hazards and each asset will be ranked based on vulnerability and risk.

9.1.1 Ecological Assets

Below is a list of ecological assets found within the City of Sumas. Although this list may not be exhaustive, the assets provided are the most likely to be affected by a changing climate, and the effects of that change could have severe impacts on the community.

9.1.1.1 Urban Tree Canopy

Trees provide essential services that help a community build resiliency against the effects of climate change. Adding tree coverage to a community helps to reduce the "urban heat island" as increased shade blocks harmful UV rays from reflecting off nearby streets and other impervious surfaces, thereby lowering the surface temperature of the community and providing relief against the intensity of the sun. Trees also provide the essential benefit of filtering carbon dioxide and other pollutants, as well as absorbing nearby stormwater runoff.

In 2024, City staff used a program called i-Tree® Canopy to provide statistics on the amount of tree coverage in Sumas and the benefits that the amount of tree coverage provides. The preliminary results shows that Sumas has an average tree coverage of roughly 21.5%. The program estimates that the existing tree canopy provides roughly $1,200,000 in carbon benefits, as well as an additional $47,000 per year in pollution removed, runoff avoided, and carbon secured.

9.1.1.2 Rivers and Streams

The waterways of Sumas provide some of the most beneficial habitats for local wildlife. They also help to promote a diverse and plentiful ecosystem throughout Sumas. Below is an analysis of the current conditions of the waterways of Sumas.

Sumas River. The headwaters of the Sumas River begin in the foothills east of the City of Nooksack. From there, the Sumas River heads north, along Sumas' eastern boundary, and merges with the Chilliwack River before merging with the Fraser River east of Abbotsford, B.C.

The stretch of the river near Sumas was heavily inundated with debris during the November 2021 flood event. Although most of the dangerous debris, contaminating the water, has been removed, a large amount of sediment has built up along the banks of the river, constricting the flow and providing an inhospitable environment for local fish.

The Sumas Water Improvement District (SWID) is a local group dedicated to preserving the Sumas River and its tributaries. They have been working closely with Whatcom County, the City of Sumas, and FEMA, to clear out the built up sediment in the river from Morgan Road north to the Canadian border. Debris removal is expected to take place in 2026.

Johnson Creek. Johnson Creek is a tributary of the Sumas River that begins west of Everson and travels northwest, through the center of Sumas, and merges with the river east of town. This creek bears the majority of the flood overflow from the Nooksack River. That means that this creek overtops its banks in Sumas during a flood, especially where constricted by the bridges at

Highway 9 and Sumas Avenue. Because of this, increased floodplain restrictions are enforced in surrounding neighborhoods. Replacement of both bridges to reduce flow restriction are being considered for the future.

Since Johnson Creek runs through the center of Sumas, it is highly shaped by the urban form around it, restricting its ability to adapt and redirect its flow over time. The urban surroundings also make Johnson Creek vulnerable to contamination from local litter.

Bone Creek. Bone Creek is a smaller tributary of the Sumas River that begins southeast of town and merges with the river near Sumas' southern boundary. This creek runs through Sumas' southern recreational campus which includes the rodeo grounds and ball fields. During the dryest months of the year, Bone Creek becomes completely dry, making it inhospitable for year-long use from fish.

During the 2021 flood event, a culvert going over Bone Creek at Hovel Road was completely clogged by debris, and floodwater building up behind it threatened to flood nearby neighborhoods that had so far managed to stay dry. To prevent the flooding of these homes, city crew were forced to use emergency measures to dismantle the culvert, allowing floodwater to flow through and on their way to the Sumas River, but also isolating the nearby neighborhood from the rest of Sumas. Shortly after the flood, a smaller temporary culvert was built in its place, restricting the roadway width of that section of Hovel Road to a single lane. Plans to build a larger more permanent culvert, or a full bridge, are currently in the works. Funds for the design and construction of the permanent facility will be paid for by FEMA as part of Sumas' recovery effort.

Sumas Creek. Sumas Creek is a tributary of Johnson Creek, beginning near the Sumas Wellfield in the northwest corner of town, and continuing east and then south before converging with Johnson Creek just upstream of the Burlington Northern Railroad bridge. Despite its status as a second-order tributary to the Sumas River, it has an unexpectedly high rate of flow for its size. It runs adjacent to the 24-acre wetland mitigation bank located at the southeast corner of Kneuman Road and Barbo Road, providing essential habitat for local wildlife. The creek is frequently obstructed by beaver dams, requiring city crew to remove the obstruction before the backup begins to flood neighboring facilities. Due to its vicinity to the wetland mitigation bank and its relatively forested surroundings, Sumas Creek provides the best habitat for local wildlife of all the streams, including anadromous fish which have been observed in the creek.

9.1.1.3 Groundwater

Sumas exists overtop of the Sumas-Abbotsford Aquifer, a large repository of groundwater that spans from the northern reaches of the City of Abbotsford, B.C., to the Nooksack River near Lynden. Sumas draws all of its potable and non-potable water from the aquifer. The water drawn from this repository is so clean that it goes through very minimal treatment before joining the Sumas drinking water system. The protection of this water source is incredibly important to the people of Sumas, and a large wellhead protection district has been established around the Sumas wellfield in the northwest corner of town. A map of the wellhead protection district can be found in the 1996 Sumas Wellhead Protection Plan adopted by reference in the Water System section of the Capital Facilities Element in this plan.

9.1.2 Social Assets

Below is a list of manmade assets that provide essential services to the community of Sumas and which would be greatly impacted by a changing climate.

9.1.2.1 Infrastructure

Water System. The Sumas municipal water system is vulnerable to very few hazards given that the majority of the system is underground. However, in the event of an earthquake, major breaks in the piping could lead to major leakage and water loss. As well, although no evidence of this exists, certain land-based hazards such as earthquakes or liquefaction could theoretically damage Sumas' well fields at the northwest corner of town. In that event, the City has backup wells located off May Road that can be reallocated to help keep the system pressurized in an emergency.

Sanitary and Storm Sewer Systems. The City of Sumas' sewer and stormwater systems are similar to the water system in that the majority of the infrastructure is underground. However, unlike the water system, the sewer and storm systems were damaged during the November 2021 flood event due to above-ground assets of the system being inundated with flood waters. This historical evidence adds flooding to the list of hazards which could prove significant to the sanitary and storm sewer systems.

Electrical System. Sumas is unique in that it owns its own electrical utility, whereas most other municipalities in Whatcom County contract through Puget Sound Energy. This ownership allows the City to make decisions regarding the electrical system that other municipalities would have to run by a third party first. During the November 2021 flood event, the City chose to turn off the electrical system hours into the event. This decision was made out of an abundance of caution, as it was unclear with this level of flooding how a live electrical system would endanger the lives of the residents that remained. Those who chose to stay in Sumas were left in the dark as the event carried on into the night.

9.1.2.2 Critical Facilities

For an inventory of the critical facilities in Sumas most affected by climate change, the City turns to those highlighted in the Whatcom County NHMP's Sumas profile. These facilities, summarized below, were identified as posing the highest risk of damage from various climate hazards.

American Legion Hall. The Sumas American Legion Hall is located at 134 Harrison Avenue. It provides a central location for community gatherings and the American Legions provides a solid volunteer base for the community. Plans for the upcoming Sumas LPOE Expansion project at the border crossing involve the acquisition and demolition of the Sumas American Legion Hall. There are currently no plans to relocate the local American Legion chapter to a different location in Sumas.

Sumas Elementary School. The Sumas Elementary School is located at 1024 Lawson Street. The school underwent a complete reconstruction from 2020 to 2022. This reconstruction allowed the school to have a foundation that is several feet higher than previously. This means that the school provides a solid evacuation center in the event of minor floods.

Nooksack Valley High School. The Nooksack Valley High School is located out in Whatcom County at 3326 E. Badger Road. During the 2021 flood event, the High School became the primary evacuation center for the people of Sumas. The facility is raised on fill and so is safe from flooding, despite its location in the direct path of flood waters.

May Road Wellfield. The May Road Wellfield is located at 9700 May Road. It is Sumas' secondary wellfield to the Sumas City Wellfield and mostly provides pressure support for the Sumas Water System and provides the non-potable water to the Puget Sound Energy facility. This site is higher in elevation that the rest of Sumas and is thus safe from the majority of the flooding.

Nooksack Valley Middle School. The Nooksack Valley Middle School is located in the City of Nooksack at 404 W. Columbia Street. The school is located near the Nooksack River but could be used as an evacuation center if the High School is unavailable.

Sumas City Hall. The Sumas City Hall is located at the municipal campus at 433 Cherry Street. The campus relatively low in elevation and is susceptible to flooding. During the 2021 flood event, water levels in City Hall were estimated to be roughly five feet in some areas.

Sumas City Reservoir. The Sumas City Water Reservoir consists of two water tanks near the eastern face of Moe Hill in the northern part of Sumas. The tanks are elevated high above the town below and are generally safe from flooding.

Sumas City Wellfield. The Sumas City Wellfield is located off Kneuman Road, near the western slope of Moe Hill. The access to the wellfield involves a small bridge over Sumas Creek. During the 2021 flood event, this access bridge was damaged. Repairs to the access bridge will be paid for by FEMA as part of our disaster recovery effort.

Puget Sound Energy. The Puget Sound Energy facility is located at 601-B W. Front Street. The facility is used as a steam co-generation plant, providing electricity for Puget Sound Energy.

Sumas Fire Station. The Sumas Fire Station is part of Whatcom County Fire District No. 14. The main station for the fire district is in Kendall, WA. The Sumas station is not occupied full-time and is generally operated by volunteers.

Sumas Police Department. The Sumas Police Department is located at the municipal campus at 433 Cherry Street. It suffered similar damage from the flood as City Hall, since the two are in the same building.

Sumas Senior Center. The Sumas Community Center is a jointly-owned facility that houses both the Sumas Senior Center and the Sumas Library. Although the City owns the building, the Senior Center is also partially funded by the Whatcom County Parks Department. The Sumas Library is operated by the Whatcom County Library System (WCLS).

Sumas Water & Lights. Sumas Water & Lights is part of the City of Sumas Public Works Department. It is located at the municipal campus at 433 Cherry Street, and includes a separate storage facility at 3798 Kneuman Road.

Sumas Customs & Border Patrol. The Sumas Land Port of Entry (Sumas LPOE) is a land crossing between the United States and Canada, serving both personal and commercial vehicles. The facility is located at 109 Cherry Street and is operated by the Customs and Border Protection (CBP) agency.

Williams Gas Pipeline. Williams is a natural gas pipeline with a facility located just east of Sumas City Limits at 4378 Jones Road. The facility oversees the passage of millions of gallons of natural gas per year between the Western United States and Western Canada. This gas pipeline facility is incredibly flammable and combustible, so protecting the facility is of utmost importance.

U.S. Border Patrol. The Sumas U.S. Border Patrol station is located in the southwest corner of town at 9648 Garrison Road. This facility is the local headquarters for the U.S. Border Patrol. It is a secure facility with berms built up around the perimeter of the property to keep the facility safe from flooding.

9.1.3 Climate Hazards

The Whatcom County NHMP highlights specific climate hazards that individual jurisdictions within the county are most impacted by. For Sumas, the NHMP highlighted flooding as a major hazard impacting the city, but also identified earthquakes, liquefaction, landslides, and volcano eruptions other hazards of concern.

9.1.3.1 Flooding

The NHMP identifies flooding as the only hazard with a high potential for impact. It describes the effect of the February 2020 flooding event, locally referred to as the "Super Bowl Flood" which saw water depths of one to three feet throughout the low-lying areas of Sumas. When flooding occurs in Sumas, the worst of it originates from the Nooksack River which, during a flood event, overtops its banks at Everson and flows northeast through Sumas and into British Columbia where it drains into the Fraser River and is sent to the Salish Sea. During large flood events, floodwater covers about 85% of Sumas' land cover with only homes atop Moe Hill being the only structure absolutely safe from flood damage.

The NHMP was adopted about 1.5 months before the November 2021 flood event, which was the largest in living memory in Sumas. Flood depths reached three to five feet during the peak of the event and about 85% of structures in Sumas were damaged. Flood recovery efforts are still underway and a few structures are still in the process of being repaired from the flood. The psychological impact that the November 2021 has had on the residents of Sumas is very prevalent during fall and winter months, when water levels rise of the Nooksack River rise in response to high accumulation snow melt from the Mount Baker.

The NHMP identifies flooding as providing a high risk to Sumas with an exposure area of 88.5%.

9.1.3.2 Earthquakes

Sumas exists near the Boulder Creek fault, which a part of a series of faults located near the confluence of the North American and Juan de Fuca tectonic plates. In 2017, the Washington State Department of Natural Resources (WA DNR) studied the effects of how a magnitude 6.8

earthquake along the Boulder Creek fault might impact surrounding communities. The study concluded that a majority of Sumas would experience severe/violent shaking intensity as rated using the Modified Mercalli Intensity (MMI) scale.

The NHMP identifies earthquakes as providing a moderate risk to Sumas, noting that risk is increased due to the high concentration of some of Whatcom County's oldest homes within the city. The identified exposure area for an earthquake is 99.9%.

9.1.3.3 Liquefaction

The NHMP references a study done by WA DNR which examined the susceptibility of Sumas to the effects of liquefaction. A majority of Sumas was identified as having a moderate to high susceptibility with Moe Hill having a very low to low susceptibility. The NHMP identifies liquefaction as providing a low risk to Sumas with an exposure area of 91.5%.

9.1.3.4 Landslides

The NHMP notes that there is a specific hazard of a landslide occurring along the steep slopes of Moe Hill. The City has identified a landslide along Moe Hill as a hazard of priority, especially around where Arthurs Way snakes up Moe Hill and provides the only access point to the homes at the top of the hill. The City has prioritized actions to stabilize the hillside near Arthurs Way. The NHMP identifies landslides as providing a low risk to Sumas with an exposure area of 0%.

9.1.3.5 Volcano

The City of Sumas, along with the rest of Whatcom County, exists at the western base of Mt. Baker, an active stratovolcano in the Cascades Mountain Range. The latest confirmed volcanic activity from Mt. Baker occurred around 6,600 years ago. It is estimated that magma from Mt. Baker formed a lahar and travelled down the Middle Fork of the Nooksack River before flowing north and into the Fraser River. If volcanic activity of this magnitude were to occur again, the NHMP indicates that Sumas might be at risk of a similar lahar from Mt. Baker. The plan identifies volcanic activity as providing a low risk to Sumas with an exposure area of 88.9%.

9.1.3.6 Hazards of No Risk

The NHMP identifies tsunami, mine hazards, and wildfire as hazards of no significance to Sumas, although does identify wildfire as having an exposure area of 17.5%.

9.1.4 Cliamte Hazard Priorities

Sumas' history of flooding highlights how much of a priority that hazard takes over the others listed. The overland flow of water from the Nooksack Water has done more damage to Sumas than all of the other hazards combined. Finding ways to mitigate and prevent the amount of loss from flooding is one of Sumas' top priorities, and one that will not be resolved quickly. Differences in priorities between various jurisdictions make finding one single solution to the overland flooding issue essentially impossible. Although work on finding the best solution will continue, Sumas continues to look for opportunities within city limits to mitigate the impacts.

Of the remaining hazards, earthquakes continue to be the hazard of next highest priority. Although this hazard has a significantly lower frequency rate, Sumas' location near the Boulder Creek fault line, as well as the Cascadia fault line, make damage from earthquakes likely. To mitigate the potential impacts of earthquakes, all structures are built using construction and

engineering practices that will hopefully limit the amount of damage that takes place as a result of earthquakes.

Landslides and liquefaction are more likely to occur than earthquakes but would be less damaging were they to happen. Moe Hill, in the northwest corner of town along the north side of Kneuman Road, is where these hazards are likely to occur. Since the heavy rains that provided the 2021 flood event, a decrease in integrity of some of the slopes along Moe Hill have been observed, and the City is working alongside FEMA to perform some preventative measures to prevent any further sliding.

The remaining hazards are those categorized as posing no significant risk to Sumas, and volcano. The risk of a volcanic eruption is quite low considering Mount Baker's relative dormancy compared to other volcanoes in the same range. However, if Mount Baker were to erupt, there is a risk of a lahar following the middle branch of the Nooksack River and then up the Sumas River to town. The remaining hazards that pose no significant risk to Sumas are wildfire, mine hazards, and tsunamis. There are no mines in and around Sumas and the town is too far inland to be affected by tsunamis. Although the risk is very low, wildfire could reach Sumas. Most wildfires start up in the forested foothills of Mount Baker and make their way to more urban areas. Sumas' location amongst several miles of agriculture makes the wildfires reaching the town very unlikely, which is why there is no significant risk from the hazard, but can still happen given the perfect circumstances. Either way, the City continues to build new construction to fire code to avoid a manmade fire in town turning into a wildfire.

9.2 Existing Plan Review

9.2.1 2016 Comprehensive Plan

The 2016 update to the Sumas Comprehensive Plan is the most recent of the periodic major updates that have been going since the plan was initially adopted in 1995. During that time, many changes have been made to the GMA and the requirements of what must be included in the Comprehensive Plans. Washington State House Bill 1181 (HB 1181), adopted in 2023, was the legislation which required the inclusion of this chapter into all cities' Comprehensive Plans. Despite the fact that this legislation was adopted after the existing Comprehensive Plan was adopted, there are still aspects of the existing Comprehensive Plan that foster environmental resiliency. Listed below are a few areas where the existing Comprehensive Plan and development regulations already meet the requirements of HB 1181.

9.2.1.1 Existing Goals and Policies

Land Use Element. The 2016 Comprehensive Plan's Land Use goals and policies reflect the growing movement to protect against the expansion of urban development into what can be considered green spaces. This is done by encouraging the construction of more dense forms of development and focusing on filling in the buildable lands that have already been annexed into the city. The element's goals and policies relating to industrial development serve a similar purpose by encouraging the establishment of businesses that provide job opportunities for local residents, thereby reducing the amount of greenhouse gas emissions caused by Sumas' residents driving to work. This element also has several goals and policies related to the protection of the natural environment and to create inviting park and trail spaces for people to enjoy the natural beauty of Sumas.

Capital Facilities Element. The goals and policies of the Capital Facilities Element of the 2016 Comprehensive Plan have a more indirect approach which promotes resiliency. This Element encourages the use and construction of capital facilities which allocates the cost fairly among the population, while also promoting efficiency in the placement and construction practices of Capital Facilities.

Housing Element. Similar to the Land Use Element, while this chapter does not focus as much on promoting sustainability through indirect means, the goals and policies do encourage higher density development which reduces the amount of open space taken up by urban development.

Transportation Element. The Transportation Element of the 2016 Comprehensive Plan provides certain goals and policies which promote the use of pedestrian infrastructure and bus transit as alternative forms of transportation to single-occupancy vehicles (SOV). They do promote certain road construction practices meant to reduce the impacts to groundwater, greenhouse gas emission, and noise levels within the community. The goals and policies do not, however, promote bicycle infrastructure in town.

Utilities and Economic Development Elements. The goals and policies of these two elements have significantly less to do with promoting environmental resiliency in Sumas. The Utilities Element goals and policies promote retaining the same levels of service for our utilities that the town currently has, and the Economic Development goals and policies promote the preservation and expansion of economic opportunities in Sumas. Similar to the Land Use Element, this does indirectly benefit climate resilience in Sumas by promoting businesses that keep jobs in Sumas, reducing greenhouse gas emissions.

9.2.1.2 Critical Areas and Resource Lands

The City's Critical Areas Ordinance (CAO) is codified as Chapter 15.20 of the Sumas Municipal Code (SMC). This chapter of the SMC outlines restrictions designed to protect critical environmental resources in the city from the negative effects of development. The Critical Areas and Resource Lands section of the Land Use Element chapter of the 2016 Sumas Comprehensive Plan outlines the regulations of the CAO as well as other climate-conscious development regulations such as Chapter 14.30 *Flood Damage Prevention* and Chapter 15.04 *Shoreline Management*. Chapter 15.04 is supported by the goals and policies outlined in the *Sumas Shoreline Master Program,* most recently updated in 2023. The Critical Areas and Resource Lands section of the Land Use Element chapter has been carried forward to this update to the Sumas Comprehensive, including changes that have been made to the above development regulations since the adoption of the 2016 Plan.

9.3 Vulnerability and Risk Assessment

9.3.1 Critical Facilities

The table below, provided by the Whatcom County Natural Hazard Mitigation Plan, lists critical facilities pertaining to Sumas and identifies which hazards the facilities may be subject to.

Table 9-1: Critical Facilities Ranking Table

Facility Name	Facility Type	Significance	EQ	LQ	LS	TSU	VOL	FL	COA	WF	Rank Assessment
American Legion Hall	EF	1	1	1	0	0	1	1	0	0	0.33
Elementary School - Dist. 506	EF	2	1	1	0	0	1	1	0	0	0.66
High School - District 506	EF	2	1	1	0	0	1	1	0	0	0.66
May Road Wellfield	LUS	3	1	1	0	0	1	1	0	0	1
Middle School - District 506	EF	1	1	1	0	0	1	1	0	0	0.33
Sumas City Hall	EF	3	1	1	0	0	1	1	0	0	1
Sumas City Reservoir	LUS	3	1	1	0	0	1	0	0	0	0.86
Sumas City Wellfield	LUS	3	1	0	0	0	1	0	0	1	0.86
Puget Sound Energy	LUS	1	1	1	0	0	1	1	0	0	0.33
Sumas Fire Station	EF	3	1	1	0	0	1	1	0	0	1
Sumas Police Dept.	EF	3	1	1	0	0	1	1	0	0	1
Sumas Senior Center	EF	2	1	1	0	0	1	1	0	0	0.66
Sumas Water & Lights	EF	3	1	1	0	0	1	1	0	0	1
Sumas - CBP	EF	2	1	1	0	0	1	1	0	0	0.66
Williams Gas Pipeline	HMF	2	1	1	0	0	1	1	0	0	0.66
U.S. Border Patrol	EF	3	1	1	0	0	1	1	0	0	1

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

The ranking of the facilities is based on the following formula:

$$\textbf{Rank} = \text{Significance}^* \left[\frac{\text{EQ Zone}}{\text{EQ Freq.}} + \frac{\text{LQ Zone}}{\text{LQ Freq.}} + \frac{\text{LS Zone}}{\text{LS Freq.}} + \ldots \frac{\text{WF Zone}}{\text{WF Freq.}} \right]$$

Ranking value was scaled from 0 to 1, scaled to the highest ranking in the jurisdiction.

Hazard frequency is based on a qualitative assessment of hazard frequency across the entire county. Riverine and coastal flooding were given a frequency value of 3. Earthquake,

liquefaction, landslide, and wildfire were given a frequency value of 2. Tsunami and Volcano were given a frequency value of 1.

This table ranks the May Road Wellfield, Sumas City Hall, Sumas Fire Station, Sumas Police Department, Sumas Water & Lights, and the U.S. Border Patrol as having the highest risk from the listed potential hazards.

9.3.1.1 Sumas City Hall, Police Department, and Water & Lights

Each of these facilities is located on the same campus at 433 Cherry St. In the November 2021 flooding event, flood depths in the City Hall and Police Department were said to peak at around five feet. Similar flood depths were recorded in the Water & Lights garage and multiple city vehicles were damaged in the event. The building is also quite old, having previously been used as a fire station before the new one was constructed at 143 Columbia Street. This means that the building is at a higher risk of damage from earthquakes and liquefaction.

9.3.1.2 May Road Wellfield

The May Road wells sit on the side of a hill east of the city limits. These wells help to provide the potable and non-potable water for Sumas. A small creek runs through the site, providing some risk of riverine flooding. The wells themselves are artesian wells, pumping water from a large aquifer, so they are at large risk of damage in the event of earthquakes or liquefaction.

9.3.1.3 Sumas Fire Station

The Sumas fire station sits at a similar elevation to Sumas City Hall and thus has the same hazards and risks.

9.3.1.4 U.S. Border Patrol

The U.S. Border Patrol station on Garrison Road is located in the path of the flood waters as they leave Everson and make their way to Sumas. However, the facility is built up on several feet of fill, making it generally safe from flooding. It does, however, have the same earthquake, liquefaction, and volcano hazards as the others on this list.

9.4 Goals and Policies

In consideration of the risks identified within this chapter, the City of Sumas adopts the following goals and policies:

Goal 9.1: Create building design standards that help to reduce the impacts of climate change and increase resilience for all buildings in the city.

> Policy 9.1.1: Ensure that the City's energy infrastructure is built in such a way that allows it to withstand and recover quickly from natural hazard events such as flooding.
>
> Policy 9.1.2: Install renewable energy generation and battery infrastructure at public facilities to store renewable electricity generated on site and provide emergency power that ensures continuity of operations.
>
> Policy 9.1.3: Design buildings for passive survivability to ensure that they will stay at a safe temperature for occupants if the power goes out.

Goal 9.2: Ensure environmental justice by providing residents with an equitable opportunity to learn about climate impacts, influence policy decision, and take actions to enhance community resilience.

Policy 9.2.1: Create and implement culturally contextualized outreach and education initiatives and materials that will inform the community about near-term and longer-term climate change threats and build resilience.

Policy 9.2.2: Build and support partnerships with community-based organizations with the capacity and relationships to convene diverse coalitions of residents and to educate and empower them to implement climate resilience actions.

Goal 9.3: Ensure that the local economy is resilient to disruption based on climate change and natural hazards.

Policy 9.3.1: Support local businesses' efforts to bolster climate preparedness and continuity of operations.

Goal 9.4: Enhance emergency preparedness, response, and recovery efforts to mitigate risks and impacts associated with natural hazard events such as flooding.

Policy 9.4.1: Create and maintain evacuation plans and outreach materials to help residents plan and practice actions that make evacuation quicker and safer.

Policy 9.4.2: Map transportation infrastructure that is vulnerable to repeated floods, landslides, and other natural hazards, and designate alternate travel routes for critical transportation corridors when roads must be closed.

Policy 9.4.3: Develop resilience hubs – community-serving facilities that are designed to support residents, coordinate communication, and distribute resources.

Goal 9.5: Protect community health and well-being from the impacts of climate-exacerbated hazards and ensure that the most vulnerable residents do not bear disproportionate health impacts.

Policy 9.5.1: Address the social and mental health needs of displaced populations following disasters.

Policy 9.5.2: Protect the health and well-being of outdoor workers exposed to extreme heath and other climate-exacerbated hazards.

Policy 9.5.3: Ensure that all community members have equitable access to green space within a half mile.

Policy 9.5.4: Review land use maps and identify opportunities or barriers to responding to rapid population growth or decline, rebuilding housing and services after disasters, and other extreme climate impact scenarios.

Goal 9.6: Ensure the protection and restoration of streams, riparian zones, estuaries, wetlands, and floodplains to achieve healthy watersheds that are resilient to climate change.

Policy 9.6.1: Implement actions identified in restoration and salmon recovery plans to improve the climate resilience of streams and watersheds.

Policy 9.6.2: Protect and restore riparian vegetation to reduce erosion, provide shade, and support other functions that improve the climate resilience of streams.

Policy 9.6.3: Protect and restore wetlands and corridors between wetlands to provide biological and hydrological connectivity that fosters resilience to climate impacts

Policy 9.6.4: Identify opportunities to expand habitat protection and improve habitat quality and connectivity to foster climate resilience using conservation area designations, buffers, and open space corridors.

Policy 9.6.5: Manage tree canopy and forests (including parks and open spaces) to decrease climate-exacerbated risks from severe wildfires, protect residents, and improve ecosystem health and habitat functions.

Goal 9.7: Ensure that the local transportation system – including infrastructure, routes, and travel modes – is able to withstand and recover quickly from the impacts of extreme weather events and other hazards exacerbated by climate change.

Policy 9.7.1: Incorporate hydrologic climate impacts into the design of water-crossing structures (i.e., climate-smart culverts and bridges).

Policy 9.7.2: Improve street connectivity and walkability, including sidewalks and street crossings, to serve as potential evacuation routes.

Policy 9.7.3: Reduce stormwater impacts from transportation and development through watershed planning, redevelopment and retrofit projects, and low-impact development.

Policy 9.7.4: Enhance the resilience of parks and recreational trails by assessing and addressing climate hazards and impacts.

Goal 9.8: Protect and preserve water quality and quantity from drought, extreme heat, and other hazards exacerbated by climate change.

Policy 9.8.1: Utilize water conservation methods and technologies in development of irrigation infrastructure within parks and recreation areas so as to foster climate resilience.

Policy 9.8.2: Evaluate the long-term adequacy of water delivery infrastructure to ensure that changes in hydrological patterns (i.e., increases in flooding frequency or reduction of late-summer water availability associated with climate change) can be anticipated and managed effectively.

Policy 9.8.3: Manage water resources sustainably in the face of climate change through smart irrigation, stormwater management, preventative maintenance, water conservation, and wastewater reuse, plant selection, and landscape management.

Goal 9.9: Establish land use patterns that increase the resilience of the built environment, ecosystems, and communities to climate change.

Policy 9.9.1: Establish overlays, special zoning districts, design standards, or other strategies to increase resilience to climate hazards.

Policy 9.9.2: Direct new development into areas where exposure to climate hazards is low.

Policy 9.9.3: Maintain and update a critical areas ordinance that incorporates climate change considerations.

Policy 9.9.4: Identify and protect agricultural and forested lands that provide climate resilience benefits from conversion to more developed intensive land use types.

Policy 9.9.5: Establish development regulations that incorporate best practices for reducing the risk of wildfire, extreme heat, flooding, and other climate-exacerbated hazards.

Policy 9.9.6: Acquire properties or easements on properties that are vulnerable to climate-exacerbated hazards and that are or will become unsuitable for development.

Policy 9.9.7: Facilitate and support long-term community visioning including consideration of managed retreat from high-hazard areas.

Policy 9.9.8: Consider future climate conditions during siting and design of capital facilities to help ensure they function as intended over their planned life cycle.

Policy 9.9.9: Identify and plan for climate impacts to valued community assets such as parks and recreation facilities, including relocation or replacement.