CITY OF SUMAS

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Memo

To: City of Sumas Planning Commission

From: Carson Cortez, City Planner

Date: May 13, 2025

Re: Excerpts from Whatcom County Draft EIS

For this month, the Planning Commission will be reviewing excerpts from the Draft Whatcom County Environmental Impact Statement (EIS) which is out for public comment. This 439-page document details the potential environmental impacts that the proposals coming out of the County-wide Comp Plan Update process has produced. This document is authored by the County and, thus, focuses mostly on the rural unincorporated areas. However, as Sumas is included in the county, some of the sections are related to Sumas.

The excerpts I have pulled out are what I believe to be the most relevant to Sumas. I took the 439-page document and cropped it down to 54 pages. The part that I want the planning commission to focus on are the first 6 pages of this document. This section contains specific comments given by the County regarding our UGA expansion plan. The rest of the document includes maps of Sumas as well as other more general environment-related information that has implications for Sumas.

The Planning Commission doesn't need to review this document very closely, as a lot of it doesn't necessarily pertain to Sumas. As I jump around to different sections to find the Sumas-related information, I labelled some jumps so it's easier to understand what the topic is about. After the Planning Commission has reviewed the document, we will spend the planning commission meeting discussing the document and seeing if they can find any edits related to Sumas that the County needs to make.

If anyone would like to read the rest of the EIS, the link to it on the Whatcom County is www.whatcomcounty.us/4219/Environmental-Impact-Statement.

3.2.10 Sumas UGA

Table 3-11 Study Areas: Sumas UGA

Areas being studied in and surrounding the Sumas UGA.

Area Number	Name	Consideration
1	Hwy 9 North	Retain UGA
2	Hovel Rd North	UGA Reserve areas to add to UGA
3	Hwy 9 South	Study Area
4	Hovel Rd South	Study Area
5	Hovel Rd East	Removal from UGA
6	Speedy Tire	Study Area
7	Barbo Rd	Study Area
8	May Rd	Study Area
9	Halverstick Rd	Study Area
10	Sumas West	Study Area

MAPPED ANALYSIS

Critical Areas: Sumas UGA

Parcels that contain wetlands, streams, steep slopes, floodways, and alluvial fans.

COMMENTS	OPTIONS
The majority of the UGA is in critical areas containing a stream and buffer area as well as floodways. There are also several small and large parcels containing over 75% critical areas. The Study Areas include some wetland and floodplain areas as well. Other critical areas include volcanic and seismic hazard areas.	Evaluate UGA reductions along the UGA boundary where critical area concentrations exist, if surplus land capacity is available. If the UGA Reserve is added to the UGA, evaluate designating the overlapping floodplain portion as open space within the UGA, consistent with RCW 36.70A.160. Protect parcels with high concentrations of critical areas within the UGA by applying critical area regulations and low-impact development standards.

Priority Habitats: Sumas UGA

Terrestrial and freshwater ecosystems identified as priority habitats and/or wildlife connectivity corridors.

COMMENTS	OPTIONS
Priority habitats include freshwater wetlands near the Sumas River and several creeks. The Sumas River is a known salmonid and trout habitat.	In areas with priority habitats and species, including water bodies and streams, apply critical areas ordinance requirements, minimize development intensity, and implement low-impact development standards.

Sensitive Watershed and Impaired Water Bodies: Sumas UGA	
Parcels located in watersheds that have been identified as sensitive to additional development.	
COMMENTS	**OPTIONS**
There are no sensitive watersheds or impaired water bodies in the UGA or Study Areas.	No options are needed.

Resource Lands/Rural Study Areas: Sumas UGA	
Parcels that are designated as agricultural, forestry, mineral, or County Rural Study Area lands.	
COMMENTS	**OPTIONS**
Sumas is surrounded by agriculture-designated resource lands. The Study Areas west of Sumas (7-10) are in agricultural lands as well as south of the UGA in 3 and 4. There are no resource lands in the current UGA or Study Area 2.	If a proposed Study Area is considered for UGA inclusion, the city should review agricultural designation criteria and modify the UGA if de-designation is justified. The city should also evaluate the current UGA Reserve against these criteria to determine if it qualifies as agricultural resource land of long-term significance or identify an alternative area for such classification if suitability analysis areas are added to the UGA or UGA Reserve.

Lot Patterns: Sumas UGA	
Parcel sizes: • less than 0.25 acres • 0.26 to 0.5 acres • 0.51 to 1 acre	 • 1 to 2 acres • 2.1 to 5 acres • More than 5 acres
COMMENTS	**OPTIONS**
Parcels are generally larger in the Study Area. The UGA area is one large parcel.	UGA boundaries should be determined by considering land capacity, efficient development patterns, and infrastructure, with lot size as one factor among others.

Water and Sewer Service Areas: Sumas UGA	
Parcels in current water service areas, existing and planned sewer service areas, and outside of UGA but in a service area.	
COMMENTS	**OPTIONS**
Sumas's 2011 Water System Plan details two well fields, booster pumps, a connected 1 million-gallon reservoir, and nearly 18 miles of water lines. Sumas wholesales water to the Sumas Rural, Nooksack Valley, and Nooksack water associations. The City of Sumas' water system has source capacity to meet the annual projected need over the 20-year planning period through the year 2030. According to the Capital Facilities Element of the 2016 update of the Sumas Comprehensive Plan, in the year 2036 the total system demand, including the city and all wholesale customers, will equal 3,569 gallons per minute and 3,383 acre-feet per year.	When service provider plans demonstrate the capacity to serve projected growth based on planned improvements, the County and District should actively monitor growth and plan implementation to guarantee adequate service levels. If additional capital plans are required, the County and District may consider the following UGA sizing and capital planning options: • Update system plans or provide supplemental information proving service capacity before June 30, 2016. • Maintain existing UGA but restrict urban growth until adequate capital facility planning is complete. • Before expanding or modifying UGA boundaries, Reserve a portion of growth allocations until more detailed planning and capital facility information becomes available. • Reduce UGA boundaries and designate urban Reserve areas as potential future UGA additions, contingent upon further planning.

Transportation: Sumas UGA	
Areas served by arterials and collectors that do/do not meet County LOS standards.	
COMMENTS	**OPTIONS**
All County arterials and SR 9 and SR 547 serving the Sumas UGA are expected to meet County and WSDOT vehicle roadway LOS standards between 2025 and 2045 under all growth alternatives. For MMLOS standards, several County arterials and SR 9 and SR 547 are identified for future ADA-Transit upgrades and multimodal safety improvements on the Active Transportation Network. See Table 3.1 for VMT under each alternative.	Whatcom County should continue to monitor MMLOS in the Annual Concurrency Report to help inform future transportation investments. The County and BPAC can update the 2011 Non-Motorized Plan, adopt a Complete Streets ordinance, implement low-cost designated bike routes on paved shoulders, and seek grant funding to construct more expensive active transportation improvements. Constructing ADA, active transportation, and transit-supportive improvements along the Active Transportation Network will support more trips made by walking, biking, rolling, and riding transit, and potentially less VMT.

FLOODING & CLIMATE IMPACTS

100-Year Floodplain: Sumas UGA	
Areas where high flood risk is present, within the 100-year floodplain. The analysis for this jurisdiction uses the 2023 draft flood maps for a more accurate Nooksack River flood risk representation.	
COMMENTS	**OPTIONS**
The current UGA and UGA Reserve contain high-risk floodplain areas. The expansion areas proposed to the west of the City limits(areas 7-10) largely avoid the latest FEMA floodplain, with minimal, low-risk overlap. Expansions 3 and 4 present lower risk than the current UGA but may hinder future berm construction.	The city can consider mitigating new construction in low-risk floodplain by elevating homes. However, development in these areas can potentially block the only identified mitigation for the larger floodplain issue, a ring dike or berm, which prevents risk transfer downstream.

Sea-Level Rise & Future Flood Risk: Sumas UGA	
Areas susceptible to climate change including projected sea level rise and flooding.	
COMMENTS	**OPTIONS**
The UGA is completely within an area at risk for increased flooding due to climate change. The Study Areas 8-10 are outside of the flooding areas.	To avoid recurring flooding, consider removing Study Areas 3 and 7 as proposed or modifying them. Also, consider modifying the current UGA to avoid these areas as well. Implement development regulations to significantly reduce impacts due to flooding.

Hazard Areas: Sumas UGA	
Areas susceptible to natural hazards created or aggravated by climate change including landslides, drought, tsunamis, wildfires, air quality, heat events, and changes in precipitation patterns.	
COMMENTS	**OPTIONS**
Scenario modeling shows that climate change will not significantly aggravate the listed hazard areas in the UGA or Study Areas.	No options are needed.

STATISTICAL ANALYSIS

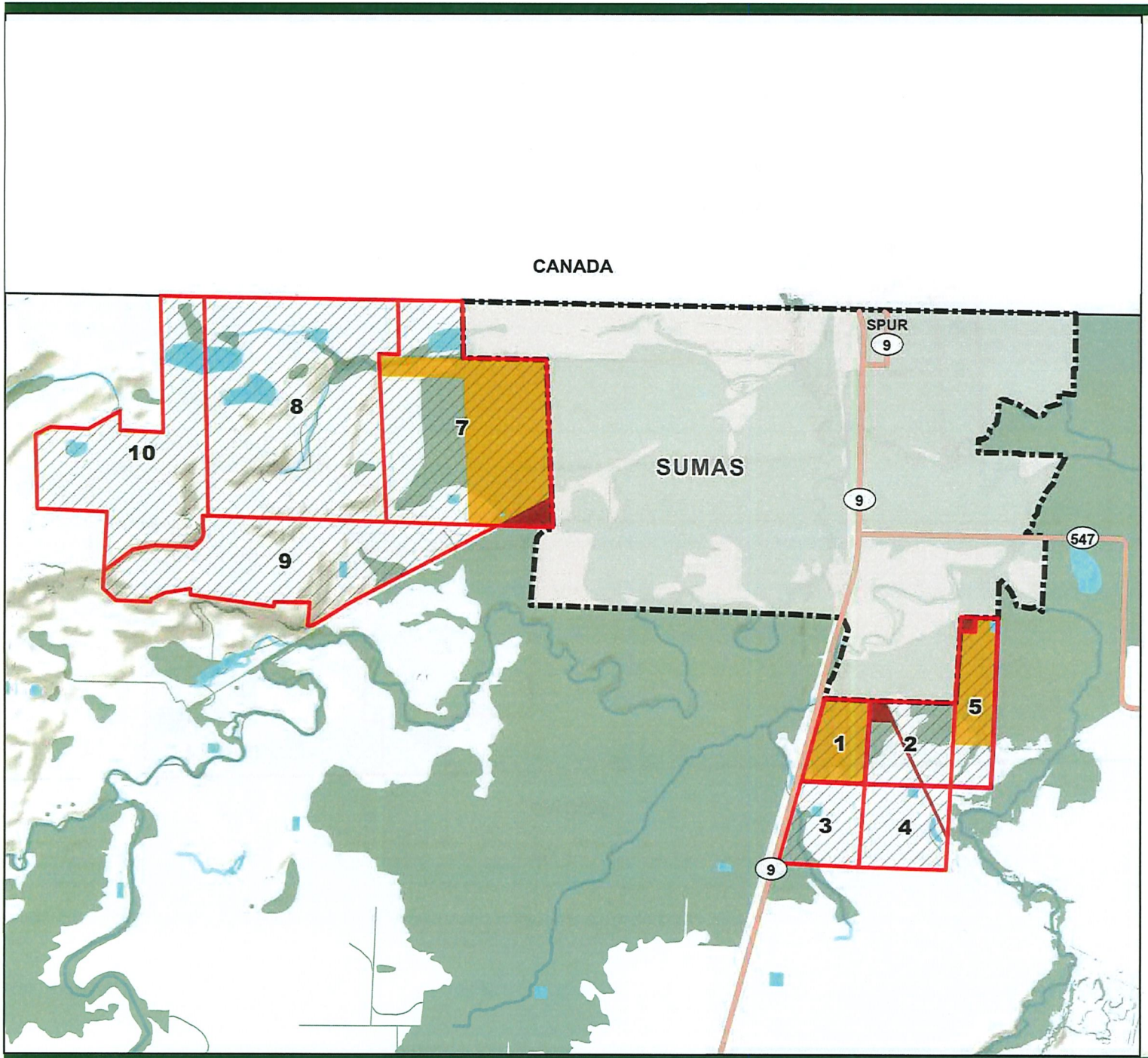
Land Capacity Analysis: Sumas UGA	
Land in UGA has capacity for growth consistent with approved land capacity analysis methods.	
COMMENTS	**OPTIONS**
The preliminary LCA results show that Sumas' current capacity for a new population is far less than the proposed population allocation of 1,000 new residents. This shows that Sumas is at a deficit in its developable residential land and supports the city's conclusion that more UGA will be required to accommodate this future growth. Population growth in Sumas for the planning period between 2023-2045 is shown below for the alternatives: • No Action Alternative – 498 • Alternative 1 – 697 • Alternative 2 – 1,000 • Alternative 3 – 1,052 The preliminary LCA results show that Sumas' current employment capacity exceeds the proposed allocation of 500 new jobs. This is most likely due to several large vacant parcels in Sumas' industrial District where the property owners have so far been unwilling to develop or sell to a developer. These large vacant parcels are artificially increasing capacity within the Industrial District.	The City will be looking to adjust the market factor percentages for the industrial zone in the LCA to account for the property owners' opposition to selling or developing this land.

POLICY CHOICES

County and City Interest: Sumas UGA	
UGA and areas that have been studied in prior County or city plans, EISs, or other documents.	
COMMENTS	**OPTIONS**
The City has taken a great interest in expanding Sumas to the west, specifically as it provides higher ground to protect future residents. To move Sumas in that direction, the city will have to expand its UGA into land both zoned for agriculture and designated floodplain. Normally, this would not be considered for UGA expansion, but the city's position is that expanding in this direction is necessary for the preservation of Sumas and its future residents from flooding.	The City will provide its proposals and local community input to the County for consideration in developing the Preferred Alternative for the Final EIS.

Alternative Objectives: Sumas UGA	
Identify approximate locations that: 1) Conserve designated resource lands; 2) Protect critical areas to enhance environmental quality and manage growth; 3) Are less susceptible to hazards caused or aggravated by climate change, and 4) Are suitable for UGA boundary adjustments and residential, commercial, or industrial designations to accommodate projected growth.	
COMMENTS	**OPTIONS**
There are resource lands surrounding Sumas including the proposed Study Areas. These areas are also less susceptible to climate impact hazards (Study Areas 8-10). Priority habitats are near the Sumas River.	The Preferred Alternative will be developed in 2025, incorporating city and County proposals and following public hearings.

Citizen Comments: Sumas UGA	
Public comments submitted in response to the proposed EIS Scope revised on February 20, 2024. The period for comment began on January 10, 2024, and ended on January 31, 2024.	
COMMENTS	**OPTIONS**
No citizen comments specific to Sumas.	Not applicable.



Whatcom County

Figure 3-11
Critical Areas
Sumas

Legend

- Suitability Study Area
- Urban Growth Area
- City Limits
- Streams
- Critical Areas

Parcels with >75% Critical Area

- Less than 5 acres
- 5 acres or greater

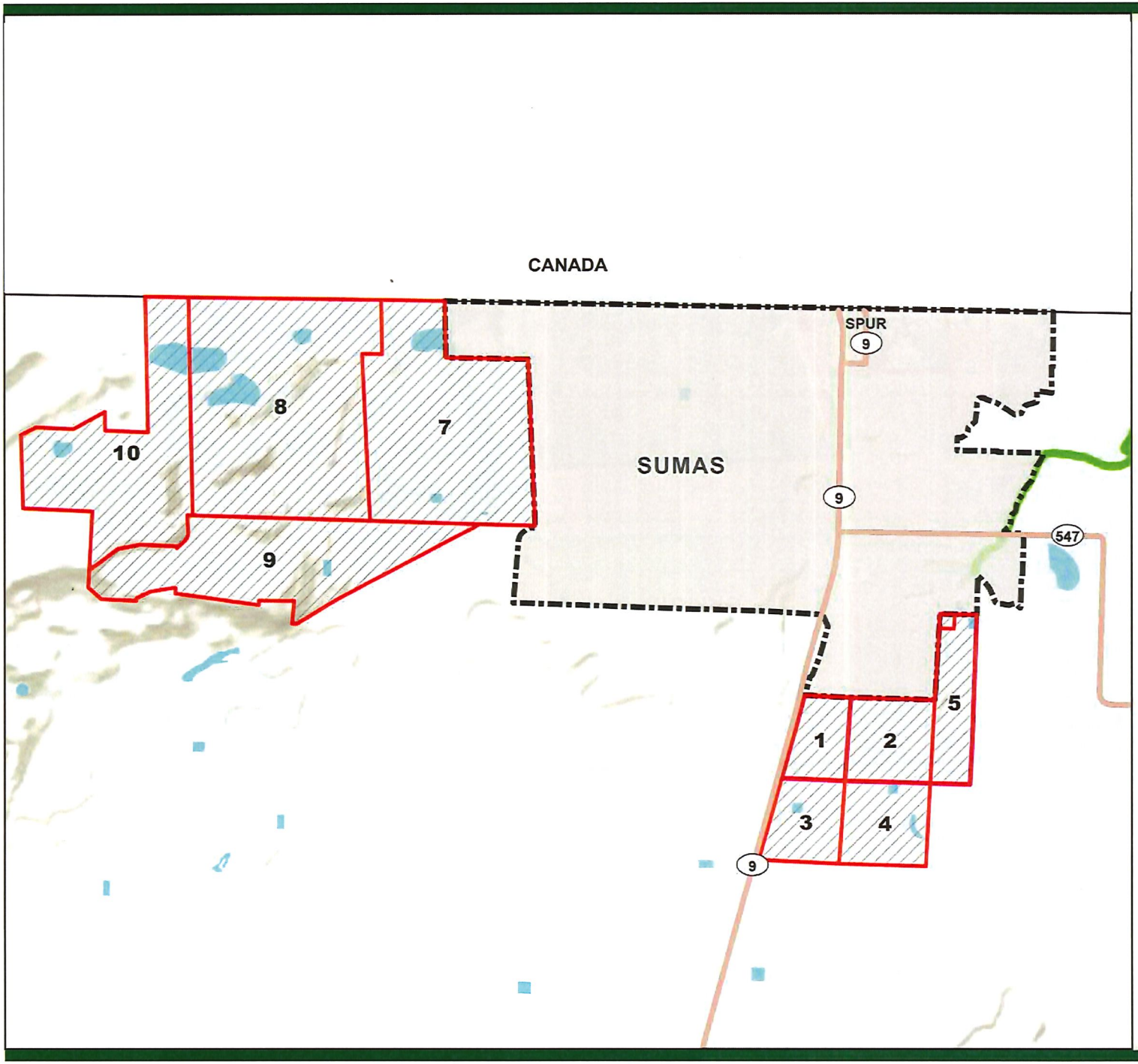
Critical areas shown on this map include wetlands, streams, steep slopes, floodways, and alluvial fans.

N

0 0.25 0.5
Miles

Date: 04/14/2025
Sources: Whatcom County (2025), USFS National Wetlands Inventory (2024), FEMA (2024), and WA DNR (2024)

SCJ ALLIANCE
CONSULTING SERVICES



Whatcom County

Figure 3-21
Sensitive Watersheds & Impaired Water Bodies
Sumas

Legend

- Suitability Study Area
- Urban Growth Area
- City Limits
- Impaired Water Body

Sensitive Watersheds

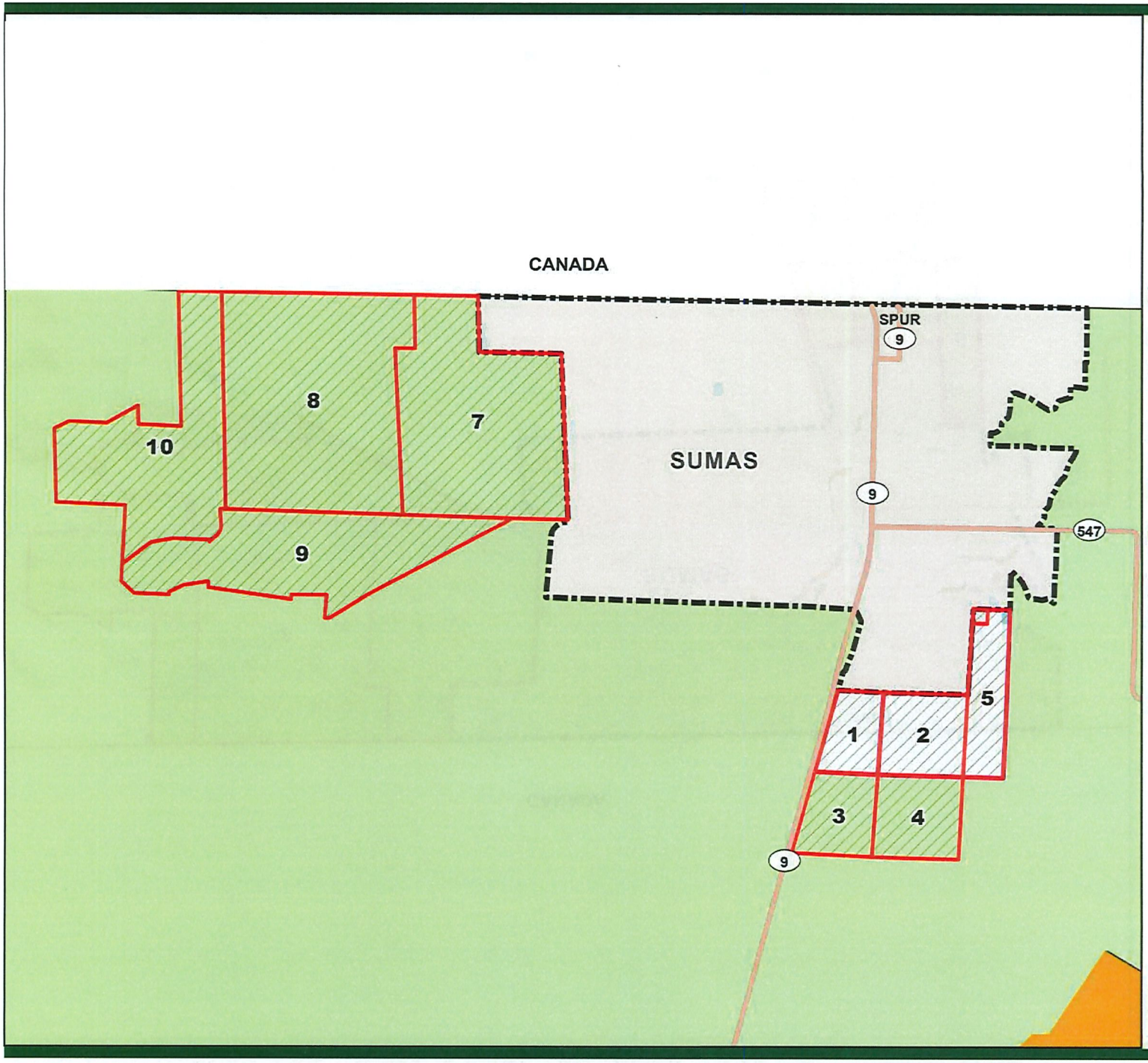
- Bellingham Bay (Padden)
- Birch Bay
- Drayton Harbor
- Lake Samish
- Lake Whatcom

N

0 0.25 0.5
Miles

Date: 04/14/2025
Sources: Whatcom County (2025) and Washington State Department of Ecology 303(d) Impaired Water Bodies (2022)

SCJ ALLIANCE
CONSULTING SERVICES



Whatcom County

Figure 3-31
Resource Lands
Sumas

Legend

- Suitability Study Area
- Urban Growth Area
- City Limits
- Rural Study Area

Resource Lands

- Agriculture
- Rural Forestry
- Commercial Forestry
- Mineral Resource Land

N

0 0.25 0.5
Miles

Date: 05/02/2025
Sources: Whatcom County (2025)

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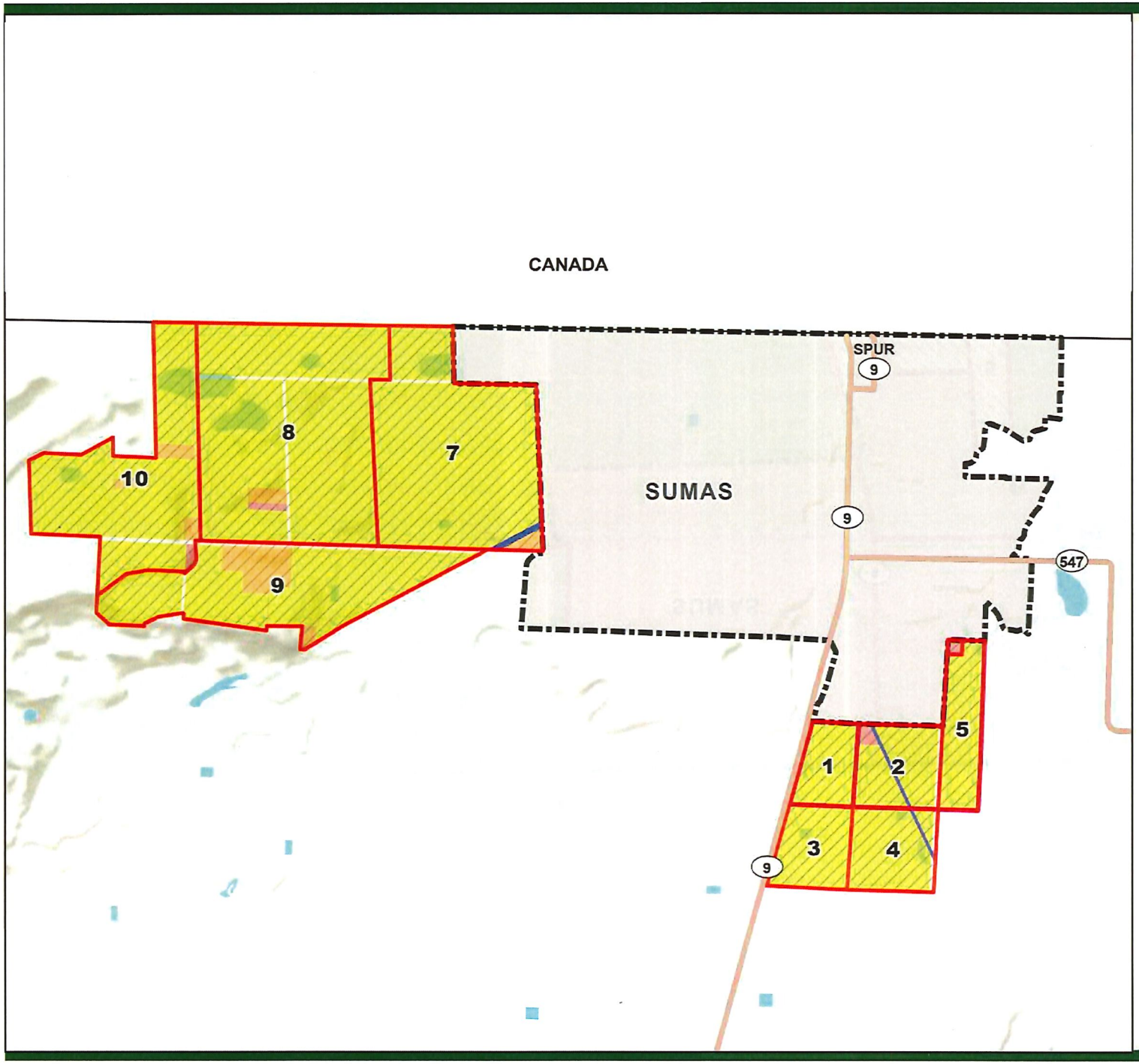

Whatcom County

Figure 3-41
Lot Pattern
Sumas

Legend

- Suitability Study Area
- Urban Growth Area
- City Limits

Lot Pattern (Parcel Size)

- 0.25 acres or less
- 0.26 - 0.50
- 0.51 - 1 acres
- 1.01 - 2.0 acres
- 2.01 - 5 acres
- Greater than 5 acres

N

0 0.25 0.5
Miles

Date: 04/14/2025
Sources: Whatcom County (2025)

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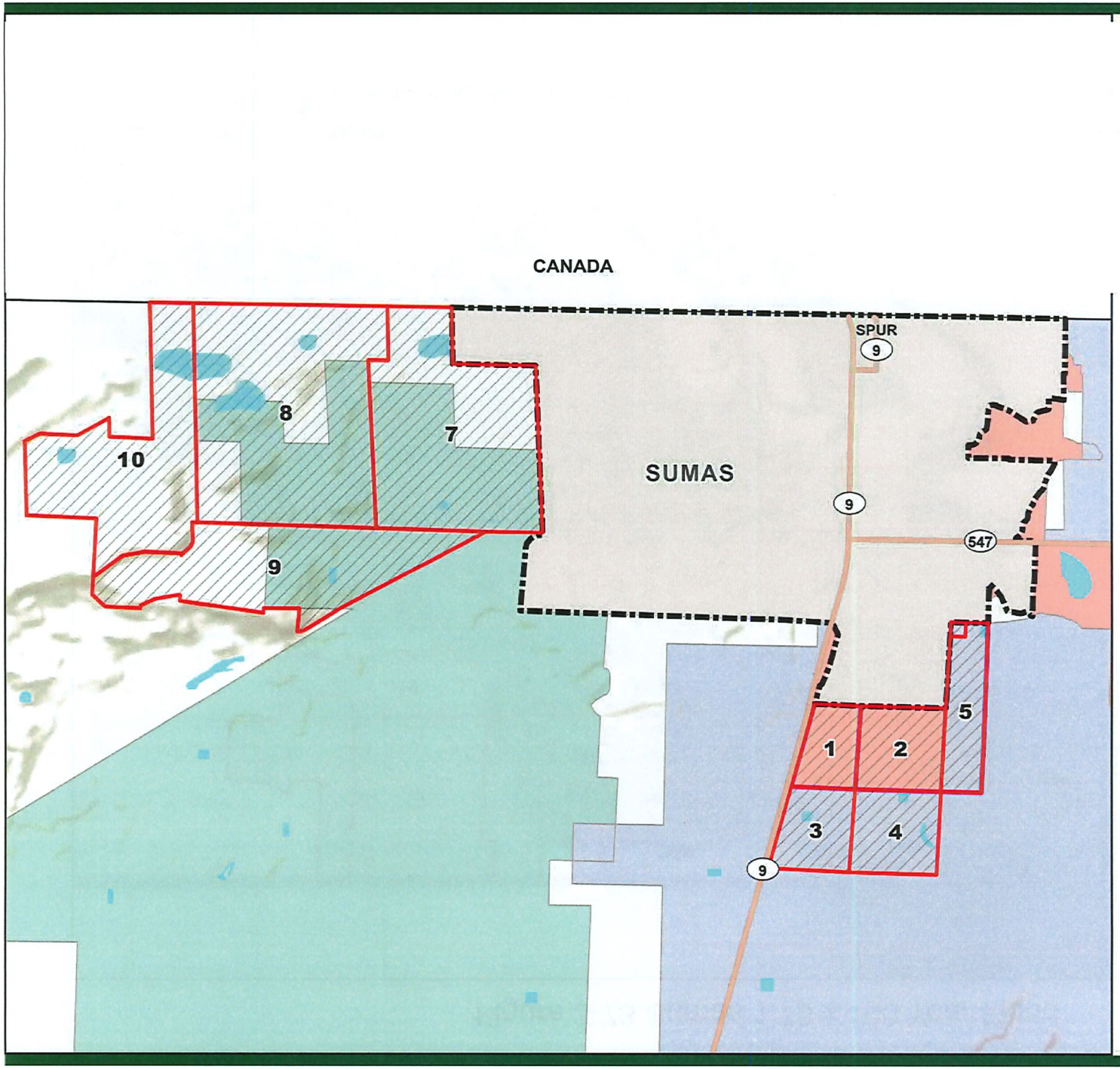
CONSULTING SERVICES



Whatcom County

Figure 3-51
Water and Sewer Service Areas
Sumas

Legend

- Suitability Study Area
- Urban Growth Area
- City Limits
- Sewer System Service Area

Water Service Area

- NOOKSACK VALLEY WATER ASSOC
- NOOKSACK WATER DEPARTMENT
- SUMAS RURAL WATER ASSOCIATION
- SUMAS WATER DEPARTMENT
- WHATCOM PUD #1

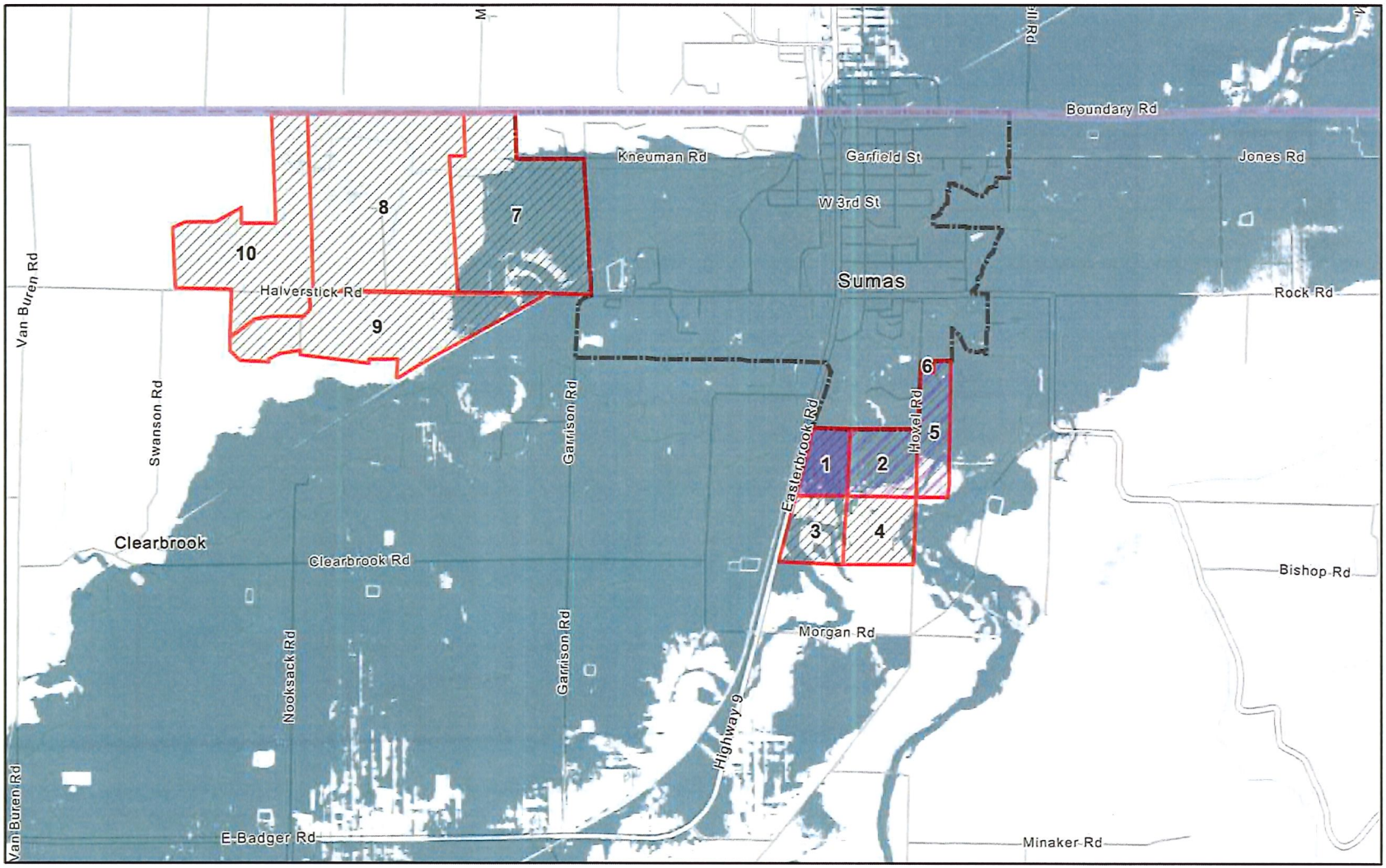
N

0 0.25 0.5
Miles

Date: 04/14/2025
Sources: Whatcom County (2025)

SCJ ALLIANCE
CONSULTING SERVICES

Figure 3-73 Sumas 1.75 x 100 Year Flood



3/25/2025

City Limits 2025

Whatcom County UGAs

UGA

UGAR

UpperNooksack_1.75x_100yr_Flood

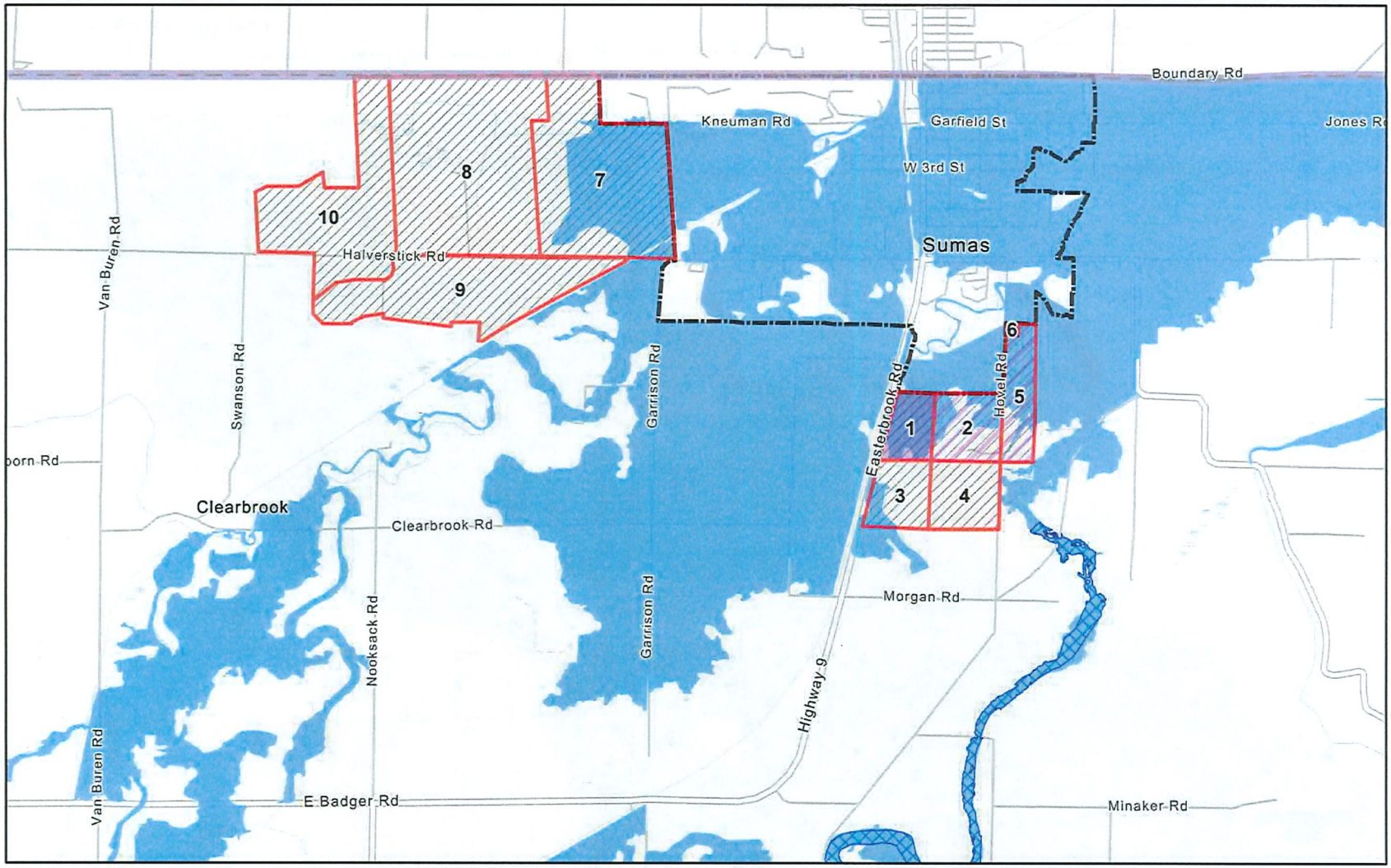
1:48,589

0 0.28 0.55 1.1 mi

0 0.42 0.85 1.7 km

NHC, FEMA, Esri, NASA, NGA, USGS, FEMA, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS

Figure 3-74 Sumas 100-Year Effective Floodplain & Floodway



3/25/2025

City Limits 2025

Whatcom County UGAs

UGA

UGAR

Floodway - Regulatory

FEMA Floodplain - Regulatory

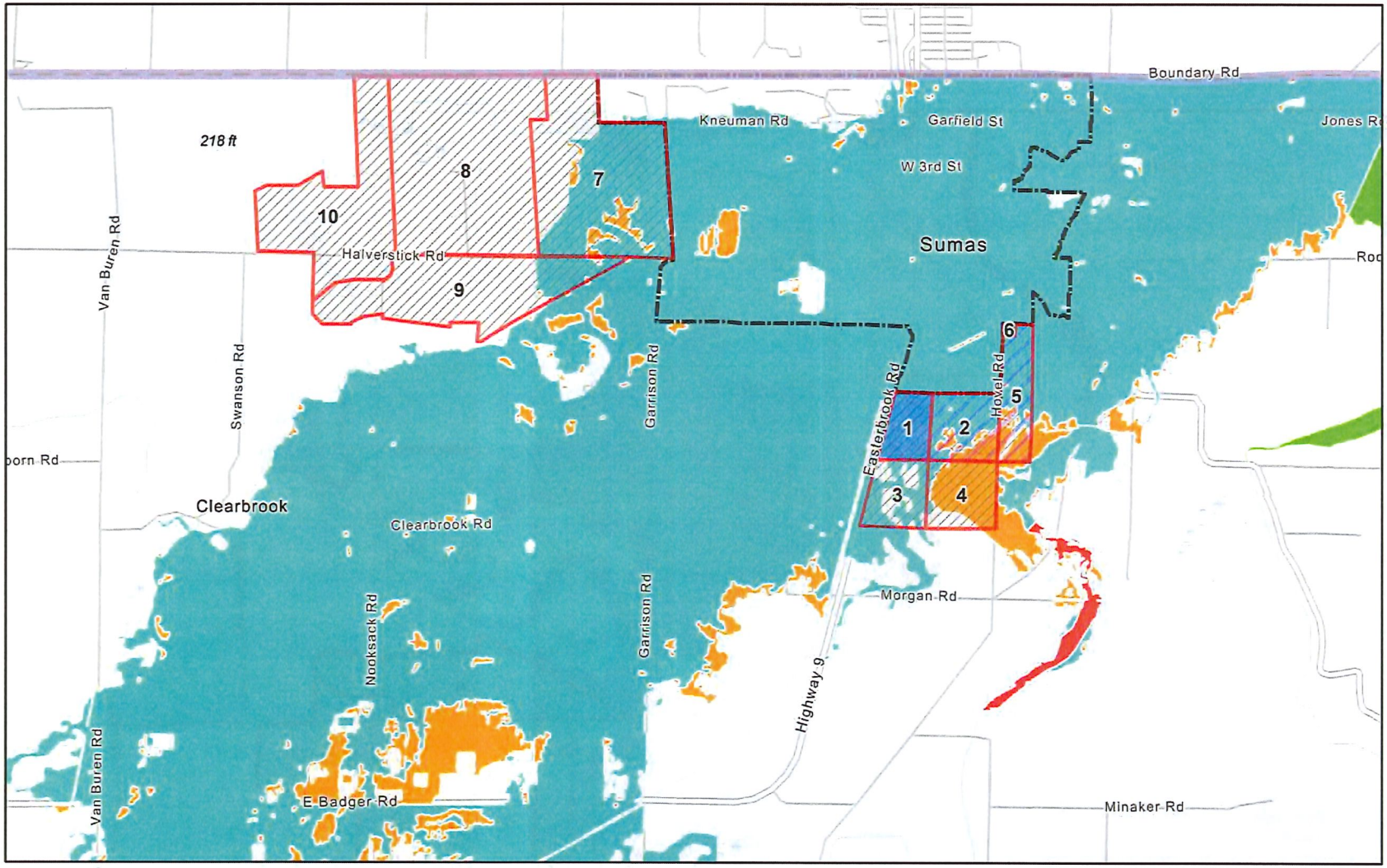
1:48,589

0 0.28 0.55 1.1 mi

0 0.42 0.85 1.7 km

Esri, NASA, NGA, USGS, FEMA, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User

Figure 3-75 Sumas Draft 2024 FEMA Floodplain & Floodway



3/25/2025

City Limits 2025

Whatcom County UGAs

UGA

UGAR

Draft Flood Hazard Area (as of December 19, 2024)

Zone A

Zone AE (Floodway)

Zone AE

Zone X (0.2% Annual Chance)

1:48,589

0 0.28 0.55 1.1 mi

0 0.42 0.85 1.7 km

Esri, NASA, NGA, USGS, FEMA, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User

Chapter 4 Existing Conditions, Potential Impacts, and Mitigation Strategies

Countywide Existing Environmental Conditions

4.1 Earth

Earth resources comprise geologic landforms, as well as geologic processes such as soil erosion, landslides, and seismic events. Geologic conditions limit development in some areas. Soil disturbance, changes to slope hydrology, and concentrated runoff caused by development can exacerbate geologic hazards; accordingly, development activities in or near geologically hazardous conditions may require measures to prevent increasing risk to property, structures, and human life and safety.

This section provides a brief overview of geologic conditions and geologically hazardous areas that exist in Whatcom County, potential impacts associated with the alternatives being considered, and the avoidance and mitigation measures that have been identified as the primary means to minimize those impacts.

4.1.1 Relevant Policies and Regulations

Existing County policies regulate land use activities in the vicinity of and within geologically hazardous areas. The County CAO (WCC 16.16, Article 3) addresses the geologic hazards that occur in the County and provides parameters for development in and near geologically hazardous areas through regulatory, review, and permitting processes. It also provides the designation and classification of geologically hazardous areas, as well as general standards (16.16.320) and hazard specific standards (16.16.325 through 16.16.370) for activities that occur in or near geologically hazardous areas.

The cities also have adopted their own critical areas regulations pursuant to the GMA addressing geologic hazard areas.

4.1.2 Existing Conditions

Whatcom County comprises 2,108.0 square miles of land in the northwest corner of Washington state (U.S. Census Bureau). The County is bordered by British Columbia, Canada to the north, Skagit County to the south, Okanogan County to the east, and the Salish Sea to the west. Elevations in Whatcom

County range from sea level to the summit of the active volcano of Mount Baker, also known as Koma Kulshan or Kulshan, at 10,781 feet (Whatcom County 2025b).

The topography of Whatcom County has been shaped by glacial scour, erosion, and deposition, and by post-glacial processes such as landslides, and by rivers and streams that have eroded and deposited sediment. The northwest portion of the County is relatively flat and includes the Nooksack River floodplain. Prominent coastal bluffs exist along the northwest coastline, while rocky hillsides and cliffs mark the shoreline south of Bellingham. In the south and east portions of the County, the North Cascades and their foothills are characterized by tectonically uplifted mountainous terrain and incised river valleys that are prone to flooding (Whatcom County 2017).

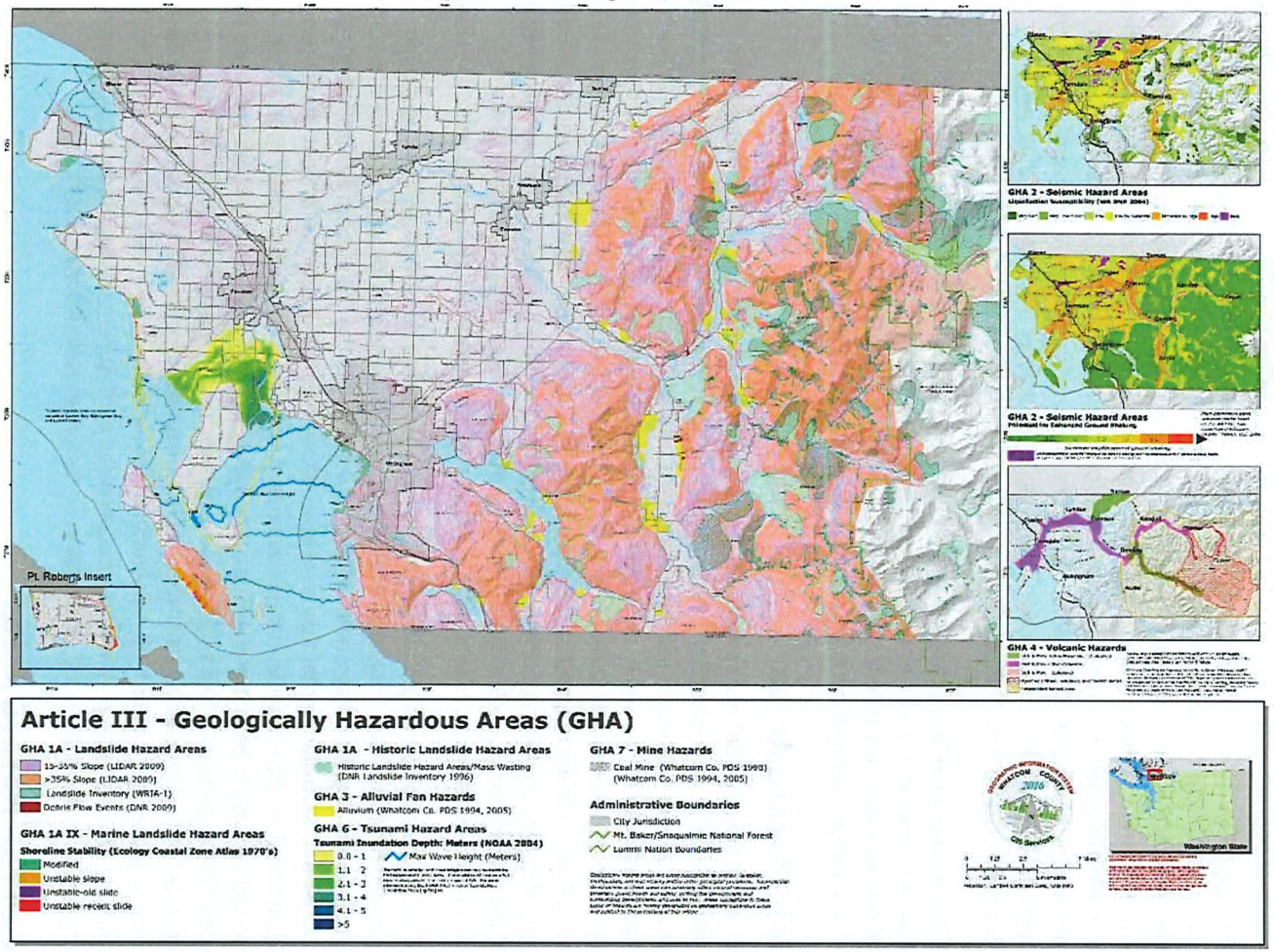
Natural Hazards

According to the Federal Emergency Management Agency (FEMA), natural hazards are defined as "environmental phenomena that have the potential to impact societies and the human environment" (FEMA 2025). Of the 18 natural hazards on the FEMA National Risk Index, eight are present in Whatcom County as represented in the County's Natural Hazards Explorer tool:

- Coastal flooding,
- Earthquake,
- Landslide,
- Riverine flooding,
- Tornado,
- Tsunami,
- Volcanic activity, and
- Wildfire (Whatcom County 2021a).

The Whatcom County Natural Hazards Explorer provides definitions of the hazards, as well as a mapping tool to identify risks and intensities for specific locations within the County. Specific types of geologically hazardous areas are identified in the Whatcom County Critical Areas Ordinance and are described in corresponding subsections below.

Figure 4.1-1 Geologically Hazardous Areas



Landslide Hazard Areas

Landslide hazard areas include those regions that are susceptible to landslides because of any combination of bedrock or soil type and thickness, slope (gradient), slope aspect, elevation, structure, local drainage, subsurface hydrology, vegetation type and age, or other physical factors. Landslide hazard areas are further classified by certain geologic characteristics defined in the Whatcom County Critical Areas Ordinance (WCC Chapter 16.16.310(C.1.a)). Landslide hazard areas primarily occur in the southern and eastern portion of the study area and are largely associated with any upland area that has been over-steepened due to tectonic uplift and/or erosional processes, but also include over-steepened marine bluffs and glacial deposits. Marine bluff landslide areas are present in the Drayton Harbor area, Birch Bay Urban Growth Area (UGA), including most of Birch Point and from Point Whitehorn south, past Cherry Point to the Lummi Reservation boundary.

Much of this marine shoreline is characterized as unstable slope and has the potential to slide, as evident by several locations where recent and old slides are observed. Two areas with significantly modified marine shorelines include the northwest portion of Birch Bay (Birch Bay Village) and the Cherry Point area, including Birch Point and Point Whitehorn (oil refineries).

Seismic Hazard Areas

Seismic hazard areas are defined as areas subject to a severe risk of earthquake damage due to seismically-induced ground shaking, differential and cumulative ground settlement, lateral spreading, mass wasting, surface faulting, or soil liquefaction (WCC 16.16.340). Areas associated with streams—primarily the Nooksack River and its floodplain—or with unconsolidated, granular glacial deposits, are most susceptible to liquefaction. Areas of peat are also susceptible to liquefaction and differential settlement. Peat areas are mapped near Everson, Sumas, and Birch Bay. Very soft, glaciomarine drift, commonly observed underlying over-consolidated drift at the ground surface, has been observed in the lowlands of the County, including Bellingham proper, and frequently presents a hazard for excessive ground settlement under structural loading or during seismically-induced ground shaking.

Much of the northwest portion of the County is susceptible to liquefaction and enhanced ground shaking due to the presence of subsurface faults. Multiple datasets provide evidence that three faults (Sandy Point, Birch Bay, and Drayton Harbor faults) occur within the Bellingham basin south of the United States and Canadian border that have been active since the end of the last glaciation (Kelsey et al. 2012). In addition, the Vedder Mountain Fault near Sumas and the Boulder Creek Fault across Sumas Mountain have been mapped with some certainty. The Kendall Fault is a short fault trace that is expressed at the ground surface extending from approximately 0.6 miles south of Kendall Elementary School extending eastward about seven miles west, northwest toward the Glacier Springs development. Movement on this fault is documented to have occurred at least since glacial retreat approximately 12,000 years ago, with three documented earthquakes of magnitude 6.0 or greater occurring approximately 900, 3,000, and 7,700 years before present (Barnett 2007).

Alluvial Fan Hazard Areas

Alluvial fan hazards include areas where debris flows, debris floods, or clear water floods have the potential to significantly damage or harm the health or welfare of the community. These hazard areas

include the region generally corresponding to the path of potential flooding, channel changes, sediment and debris deposition, or debris flow paths as determined by analysis of watershed hydrology and slope conditions, topography, valley bottom and channel conditions, and surface and subsurface geology (WCC 16.16.345). Alluvial fan hazard areas commonly occur wherever a stream leaves a relatively steep, confined drainage and enters a broader, low-gradient valley where rapid sediment deposition can occur.

Whatcom County Public Works River and Flood Division works with Whatcom County Planning and Development Services and other partners to assess the risk of alluvial fan hazards to life and property in Whatcom County. Risk assessments consider both the likelihood that a hazard, such as a flood or landslide, will happen and the consequences if it does. Assessing risk for alluvial fans is challenging because it is difficult to determine the likelihood of an event, how large it will be, and how it will act on the alluvial fan. Studies of the alluvial fans has allowed for responsible planning and policy decisions in relation to proposed development activities, as well as possible options to mitigate existing risk. Alluvial Fan Risk Assessment Reports have been completed for Canyon Creek, Glacier and Gallup Creeks, Jones Creek, and Swift Creek, and are mapped by the County (Whatcom County 2024a). Furthermore, hazard mitigation projects have been successfully implemented at Jones and Canyon Creek, and continued planning and design efforts for an improved river crossing at Glacier Creek will help decrease alluvial fan hazards posed to the community of Glacier.

Volcanic Hazard Areas

Mount Baker is an active volcano located approximately 30 miles east of Bellingham in the south-central portion of Whatcom County. Mount Baker stands at 10,781 feet in elevation and drains to both the Nooksack River and the Skagit River basins. Evidence of numerous volcanic events are documented throughout the Holocene; with the last significant volcanic activity occurring in the mid-1800s. While relatively quiescent in the recent past, presently observed fumarolic activity at Sherman Crater is indicative of on-going, active volcanic activity. Volcanic hazards posed to the County, and identified by the Critical Areas Ordinance, include areas subject to lava flows, pyroclastic flows, pyroclastic surges, mud flows, lahars, debris flows, debris avalanche, ash (tephra) clouds or ash (tephra) fall, lateral blast, ballistic debris, or flooding resulting from volcanic activity (WCC 16.16.350).

Likely the greatest hazard posed to people and property in Whatcom County associated with an eruption of Mount Baker is the generation of a lahar, a volcanic flow made up of mud, rock, and water. Areas that could be affected by a large-scale lahar associated with a major eruption of Mount Baker include the regions that run along the north and middle forks of the Nooksack River and would impact UGAs in Everson, Lynden, Sumas, and Ferndale, as well as unincorporated communities such as Glacier, Kendall, Deming, Nooksack/Everson and Ferndale areas, and could reach Bellingham Bay (Pringle and Scott 2001). A significant lahar could potentially cause the Nooksack River to aggrade to the point where a significant volume—or a complete avulsion, in a worst-case scenario—of the Nooksack River could be redirected into the Sumas River Watershed. Lahars can also be triggered by intense rainfall, earthquakes, and gravitational pull on the soil and rocks on the flank of a volcano or adjacent hillslopes (Whatcom County 2021b).

County regulations indicate that critical facilities in volcanic hazard areas may be allowed by conditional use permit provided that the applicant develops a Volcanic Hazard Emergency Plan that is consistent with the community emergency management plan maintained by the Whatcom County Sheriff's Department of Emergency Management, and provided there is an emergency evacuation plan demonstrating an adjacent safety zone that is within walking distance and reachable prior to the estimated lahar travel time (WCC 16.16.350).

Erosion Hazard Areas

Erosion hazard areas include surface, coastal, and riverine erosion areas. Surface erosion areas include areas with slopes greater than 15% with soils identified by the Natural Resources Conservation Service (NRCS) as having a severe or very severe rill and inter-rill erosion hazard because of natural characteristics. Coastal and riverine erosion areas include areas subject to lateral erosion related to moving water, such as river channel migration zones and shoreline retreat (WCC 16.16.355).

Surface erosion areas typically occur with coastal bluffs and in the eastern and southern portion of the County associated with the Cascade foothills. Coastal and riverine erosion areas are generally associated with larger rivers, such as the Nooksack River, which migrated extensively within the active floodplain prior to the implementation of levees and other flood control devices. Coastal bluffs areas are eroded by ongoing wave and wind action, and by mass wasting of material as bluff areas become over-steepened, over-saturated and devoid of vegetation, which leads to decreased coastal bluff stability. Locations susceptible to erosion may include frequently flooded areas, including portions of Everson, Lynden, and Ferndale along the Nooksack River and portions of Sumas along the Sumas River. Levees were constructed along the rivers to protect agricultural land and residential and business development. The levees have disconnected floodplain habitat and severely limited potential migration of the channel within the floodplain. This has reduced the potential for erosion hazards associated with historical channel migration zones where levees are properly constructed and maintained, but the reduction in lateral erosion came at the expense of the quality and quantity of salmon habitat created and maintained by channel migration processes. Some locations, such as the Clay Bank landslide, may suffer increased bank erosion and associated slope failure due to redirection of flood flows by the opposing hardened bank. Consequently, channelized river systems commonly have negative impacts for aquatic and wildlife populations as they limit natural riverine habitat forming processes.

Tsunami and Seiche Hazard Areas

Tsunami and seiche hazard areas include coastal areas and lake shoreline areas susceptible to flooding, inundation, debris impact, or mass wasting as the result of coastal or inland wave action generated by local or regional seismic events (WCC 16.16.365-367). Tsunami and seiche hazard areas have been mapped along the entire Whatcom County coastline. Mapped tsunami hazard areas located to the south of the Ferndale UGA have the potential for a tsunami to cause water to flow upstream on both the Nooksack River and the Lummi River, inundating areas to the south of Ferndale. Tsunami hazard areas are also mapped for Sandy Point on both the Lummi Bay and Strait of Georgia shorelines, along the Bellingham waterfront, and across much of the lower-lying properties lining Birch Bay and Drayton Harbor. The larger lakes in the County may be susceptible to seiches (i.e., Lake

Whatcom and Lake Samish), but no modeling has been completed to identify the areas susceptible to inundation from a seiche (Parametrix et al. 2005; Whatcom County 2017).

Mine Hazard Areas

Coal mining began in Whatcom County in 1853. Many areas of the County have historical remnants of the extraction of this resource, including abandoned coal mines. The primary mine hazard areas occur west of Bellingham, in the Blue Canyon area of Lake Whatcom, and in the mountains south of the community of Glacier. Potential hazards include ground subsidence, contaminated ground or surface water, and noxious or toxic gas accumulations. The Whatcom County Critical Areas Ordinance indicates that "Mine hazard areas shall include those lands in proximity to abandoned mines and associated underground mine workings where mine workings are less than 200 feet below ground level. . ." (WCC 16.16.310.C.8). Standards for mine hazard areas are identified in WCC 16.16.370, which states that the general standards for geologically hazardous areas (WCC 16.16.320) and volcanic hazard areas (WCC 16.16.350) apply to mine hazard areas.

Naturally Occurring Asbestos

Naturally occurring asbestos can be found in ultramafic rock and can be released if that rock is broken or crushed. If released, naturally occurring asbestos can cause health issues to humans including mesothelioma, lung cancer, and asbestosis (Northwest Clean Air Agency, 2025). Rocks containing naturally occurring asbestos have been identified in Whatcom County on Sumas Mountain and in the Swift Creek drainage, which drains from Sumas Mountain to Sumas, Nooksack, and Everson. Naturally occurring asbestos can be released through erosion, landslides, flooding, dredging, and human disturbance (Whatcom County, undated). In the 2021 floods, asbestos in floodwaters from Swift Creek was a health concern (Pae, 2021).

Soils

In 2019, a Custom Soil Resource Report was created for Whatcom County by the National Cooperative Soil Survey in partnership with the U.S. Department of Agriculture, and state, federal, and local agencies (NRCS 2019). Seven soil types were listed in the report:

- Birchbay silt loam, 0 to 3 percent slopes
- Everett gravelly sandy loam, hard substratum, 2 to 8 percent slopes
- Everett complex, 2 to 8 percent slopes
    - A complex contains two or more soils that cannot be shown individually
- Sehome loam, 2 to 8 percent slopes
- Sehome gravelly loam, 15 to 30 percent slopes
- Sehome gravelly loam, 30 to 60 percent slopes
- Typic Psammaquents, tidal, 0 to 1 percent slopes

The allowable soil bearing capacity in the County is 1,500 pounds per square foot (Whatcom County 2025a). Soil reports are required for large structures and for development in areas that contain questionable soils.

4.3 Water Resources

Whatcom County has a complex system of water resources that provide natural beauty, recreation, habitat for fish and wildlife, water for drinking, agriculture, and industry, and other benefits essential to the quality of life and economic health of the community. There are a vast number of water resources including 16 major freshwater lakes, 3,012 miles of rivers and streams, over 37,000 acres of wetlands, 134 miles of marine shoreline, and aquifers containing an undetermined amount of groundwater.

Water resources refers to the entire water cycle, including not just water bodies but also factors such as drainage, stormwater runoff, flooding, snowpack, sea level rise, impervious surface, groundwater infiltration into the aquifers, and others.

4.3.1 Existing Conditions

Groundwater

Groundwater is a part of the natural water cycle, where water precipitates into the ground from surface water (lakes, streams, stormwater, etc.) into aquifer recharge areas. It is an important resource in the County, providing stream recharge during low-flow periods, irrigation for agriculture, and water supply for livestock, residential and other uses. Therefore, protecting groundwater quality and recharge areas is crucial to ensure sufficient supply for the future.

Groundwater in some parts of the County is subject to various problems including saltwater intrusion, poor water quality, chemical contamination, low yield, well-to-well competition, and allocation conflicts. Water rights are problematic in Water Resource Inventory Area 1 (WRIA 1 - the designation for the greater Nooksack River Watershed as one of 62 watershed planning areas identified in WAC 173-500-040) in that many users lack water rights and the seniority of the existing rights has not been established, administered, or enforced. Competition between farms, fish, and families for water persists without an approved mechanism to resolve conflicts. Farming requires water for crops during critical times of the year and especially for high-value crops. Fish, including threatened and endangered species, require good quality water (i.e., clean and cool) at sufficient flows to survive and spawn; the most vulnerable time for fish often corresponds to when irrigation demands are greatest. Groundwater contributes cool, clean water to streams during dry periods. Residents in non-UGA areas often use wells to supply their households with water for domestic uses, lawn and garden irrigation, and other uses. These uses are in competition with farming and aquatic life such as salmon.

Aquifers

The northwest portion of the County has both extensive unconfined shallow water table aquifers and deeper confined aquifers. Aquifers in the County generally occur in permeable glacial deposits and stream valleys in the western part of the County, and in fractured bedrock and localized narrow stream valleys in the mountainous eastern part of the County. The aquifers in the western portion of the County are most productive and are part of the Puget Sound Aquifer System described by Vaccaro et al. (1998). A portion of this aquifer system extends northward into Canada, as described by the Abbotsford-Sumas Aquifer International Task Force in 1994 (Parametrix et al. 2005).

Detailed work has been done to characterize and map surficial aquifers in the County; however, little is known about the size and water quality of confined aquifers that occur within Vashon and Pre-Vashon Stade glacial deposits. The majority of the work has occurred in the Nooksack River Basin, which covers the western half of the County. Groundwater resource studies have also occurred for cities and towns such as Blaine, Ferndale, Lynden, Sumas, Everson, and unincorporated Point Roberts. These studies have identified the horizontal and vertical extent of major aquifers and intervening aquitards (non-water-bearing formations), the occurrence and movement of groundwater in these aquifers (including areas of recharge, discharge, and interactions with surface water bodies), and aquifer yields (Parametrix et al. 2005).

The Abbotsford-Sumas Aquifer (also known as the Sumas-Blaine Aquifer) is the principal aquifer of the region, covering an area approximately 100 square miles in size, with a vertical depth ranging from 40 to 80 feet. Groundwater in the County typically flows from recharge areas in the uplands toward the Nooksack River and Sumas River, which are regional discharge areas. Groundwater contributes significantly to base flow (low-flow inputs) to streams, as well as discharging to marine waters of the County (Parametrix et al. 2005).

In Columbia Valley, a significant portion of runoff percolates into the subsurface as groundwater recharge. Soils in the Columbia Valley are highly permeable with high infiltration rates. Groundwater in the Columbia Valley Urban Growth Area (UGA) discharges to Kendall Lake, Sprague Lake, Kendall Creek, and likely the North Fork Nooksack River (Parametrix et al. 2005).

Critical Aquifer Recharge Areas

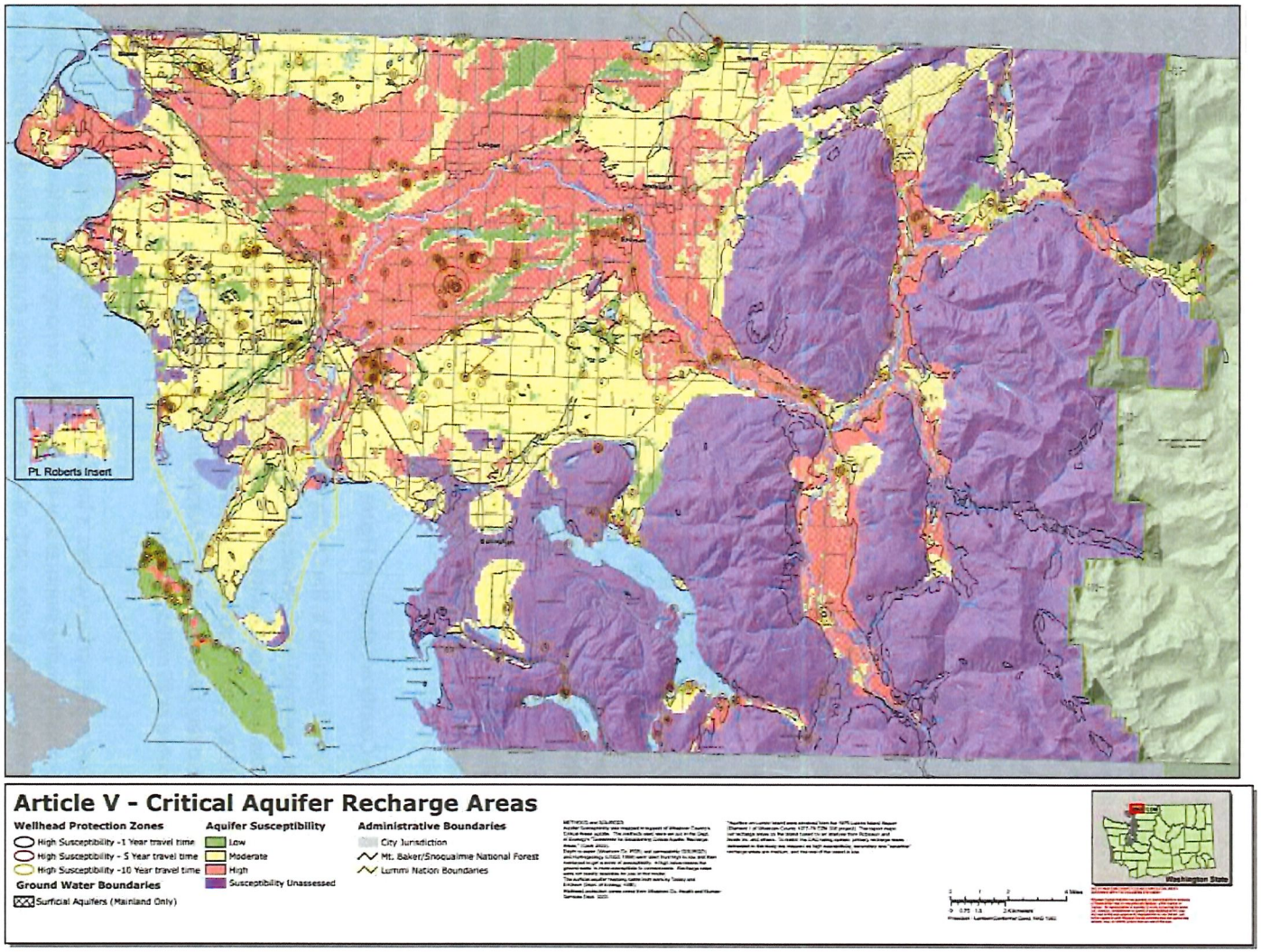
Critical aquifer recharge areas have geologic conditions that allow high infiltration rates of surface water, which contribute significantly to the replenishment of ground water in an aquifer. These areas have a crucial effect on aquifers used to supply potable water and they can be highly susceptible to potential groundwater contamination. It is important to appropriately plan for and manage land use and development activities occurring in these areas to protect needed groundwater supplies.

Groundwater provides more than 65% of the drinking water for Washington State through private wells and public water systems (Groundwater Protection Council 2004 in Parametrix et al. 2005). The majority of the County's drinking water supply capacity is provided by surface water from Lake Whatcom or the Nooksack River, providing approximately 100,000 people with drinking water, primarily in Bellingham. Critical aquifer recharge areas in Whatcom County are shown in Figure 4.3-1.

However, nearly all public water systems in the County rely on groundwater, and approximately 20,000 homes obtain water from domestic (exempt) wells (Whatcom County Water Team 1999 in Parametrix et al. 2005). The largest purveyors of groundwater in the County are the cities of Blaine, Ferndale, Sumas, and Everson (Whatcom County Water Utility Coordinating Committee 1993 in Parametrix et al. 2005). Agriculture and dairy industries in the County also rely heavily on groundwater for irrigation and process water. Groundwater use in the County has been estimated at 45 million gallons per day (Utah State University 2002 in Parametrix et al. 2005).

The interaction of groundwater and surface waters is important in providing base flow to streams during certain parts of the year, primarily during summer low-flow periods, recharging of wetlands, and recharging of groundwater from surface waters during other parts of the year, primarily during fall flood and spring runoff

Figure 4.3-1 Critical Aquifer Recharge Areas



events (Parametrix et al. 2005). A number of studies indicate that shallow aquifers of the County are responsible for approximately 70% of stream base flow (Ground Water Protection Council 2004 in Parametrix et al. 2005). Whatcom County completed developed a groundwater model for a large portion of lowland Whatcom County and is currently implementing a study to determine what effect groundwater withdrawal has on adjacent stream flow (WRIA 1 Groundwater Model).

Aquifers can also provide temporary storage of precipitation that infiltrates into the ground. This storage can function to attenuate stormwater runoff and moderate flood conditions by delaying discharge to streams and lakes.

Aquifer recharge areas located within the Columbia Valley UGA are highly susceptible to degradation and have been identified on the County's critical areas map as a highly susceptible critical aquifer recharge area (Whatcom County Planning and Development Services 2016).

Wellhead Protection Zones

Wellhead protection zones have been established to protect the quality and quantity of groundwater well supplies. In an effort to focus on groundwater protection, the Washington State Department of Health (WSDOH) established the wellhead protection program in compliance with the Safe Drinking Water Act of 1996, as amended.

Potable water-supply purveyors in Washington State using groundwater must develop and implement wellhead protection programs that include the delineation of protection areas around each well, inventory of contamination sources within wellhead protection areas, and development and implementation of water supply contingency and spill response plans to address contamination incidents that could cause loss of use or contamination of a well.

The Whatcom County Health and Community Services delineated several wellhead protection areas throughout the County. These areas are "defined by the boundaries of the 10-year time of groundwater travel…" and shown on Figure 1. Washington State wellhead protection regulations exclude individual domestic wells and well systems that do not meet the definition of public water supplies. WAC 173-160 includes requirements to locate water wells a minimum distance from potential contamination sources such as feedlots and landfills.

Surface Water

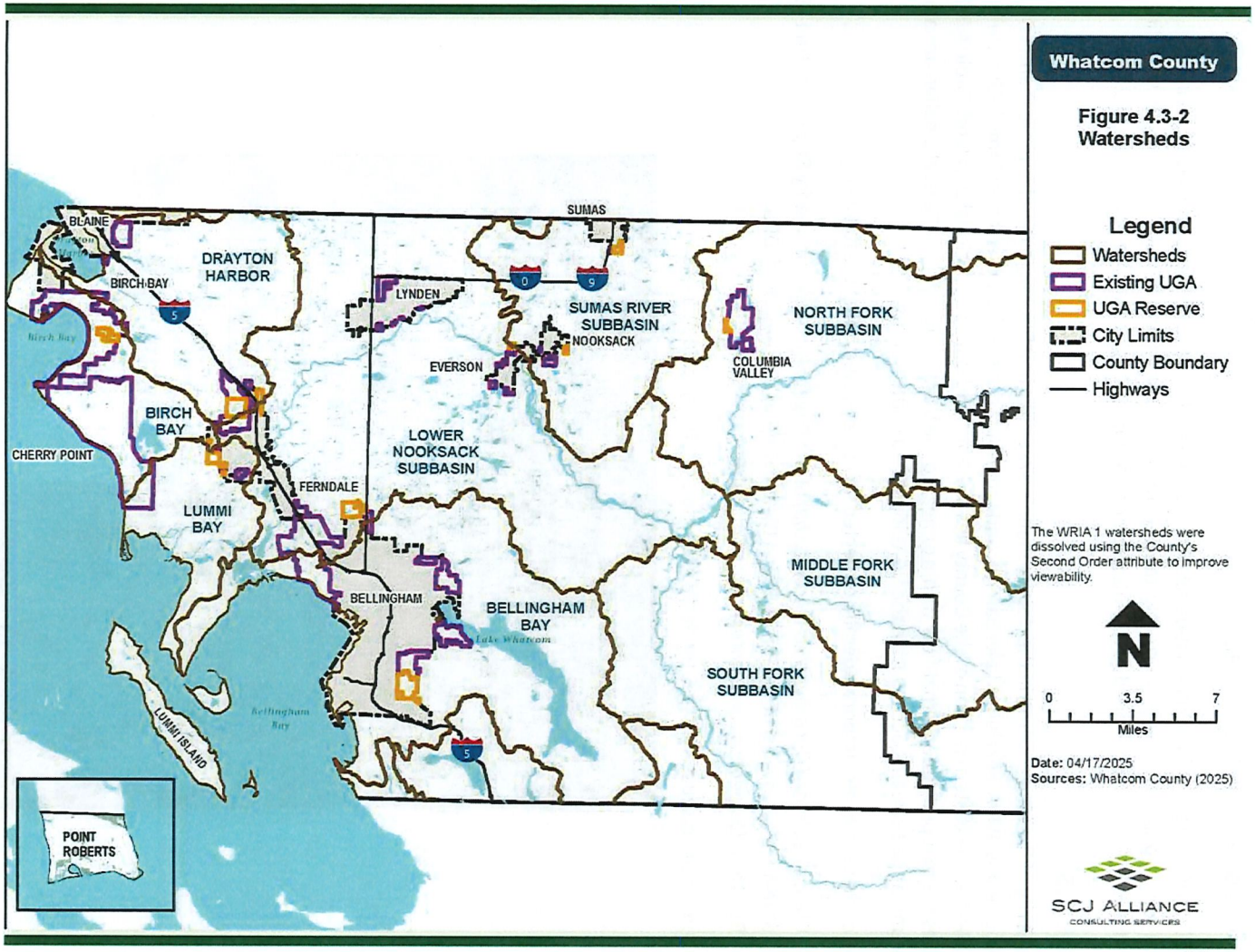
The County has surface water resources in the form of freshwater streams, lakes, ponds, and wetlands, as well as estuarine and marine/nearshore. Much of the County is located within the WRIA 1, which encompasses approximately 1,400 square miles, including a portion of the lower mainland of British Columbia, as well as portions those parts of the upper South Fork Nooksack River that lie in northern Skagit County. Cities located within WRIA 1 include Bellingham, Ferndale, Lynden, Blaine, Sumas, Everson, and Nooksack. WRIA 1 has approximately 3,814 miles of water courses within 14 subbasins in three general regions: the Nooksack region, including the Nooksack and Lummi River watersheds; the Coastal region, which includes independent coastal tributary watersheds; and the Fraser region, including tributaries that flow north into the Fraser River in British Columbia, Canada, but are located south of the United States-Canada border (Parametrix et al. 2005). WRIA 1 contains approximately 140 miles of marine shoreline, including the shorelines around Point Roberts, Lummi,

Eliza, Portage, and Chuckanut islands, and along Drayton Harbor, Birch Bay, Strait of Georgia, Lummi Bay, Portage Bay, Bellingham Bay, Chuckanut Bay, and Samish Bay (Parametrix et al. 2005).

The portions of Whatcom County within the jurisdiction of the County also contains portions of WRIA 3 (Samish River watershed) that drains into the Puget Sound in Skagit County and smaller watersheds such as the Little Campbell Watershed that flow north into Canada. These watersheds contain similar yet different surface water resources to WRIA 1.

This analysis focuses on watersheds located within Whatcom County. A map of major watersheds in the County is provided in Figure 4.3-2. This section describes those surface water resources that occur in the northwest portion of the County.

Figure 4.3-2 Watersheds



downgrades a shellfish growing area due to a degradation of water quality. There are three Shellfish Protection Districts in Whatcom County: Birch Bay (established in 2009), Drayton Harbor (established in 1995), and Portage Bay (established in 1998).

The WSDOH website provides information related to shellfish closures and the reasons for the closures. This information is updated regularly. Currently, the majority of beaches along the Whatcom County shoreline are either closed or have an advisory due to biotoxins or pollution, though some are open (WSDOH 2025).

Streams

The majority of the land covered in the County Planning Area lies in WRIA 1 and includes more than 3,000 miles of streams. WRIA 1 excludes Lake Samish, and the tributaries to Friday Creek and Samish River, which are in WRIA 3. The eastern portion of the County lies in WRIA 4 and is mostly national parkland. Table 4.3-1 identifies the mapped streams that flow within or near to the UGAs in the County. Several smaller, unnamed, and/or unmapped streams occur within the UGAs identified in the County.

Several of these streams support federally protected fish species, including the following:

- Chinook salmon (*Oncorhynchus tshawytscha*) of the Puget Sound Evolutionarily Significant Unit (ESU)
- Steelhead (*O. mykiss*) of the Puget Sound Distinct Population Segment (DPS)
- Bull trout (*Salvelinus confluentus*) of the Coastal/Puget Sound DPS

These species are discussed in greater detail in Section 4.4, Plants and Animals.

Table 4.3-1 Mapped Streams Within or Adjacent to Urban Growth Areas (UGAs) in Whatcom County

UGA	Streams
Bellingham	Squalicum Creek Whatcom Creek Padden Creek Chuckanut Creek Silver Creek Toad Creek
Birch Bay	Terrell Creek
Blaine	Dakota Creek
Cherry Point	Terrell Creek
Columbia Valley	Kendall Creek
Everson	Nooksack River Sumas River Johnson Creek Breckenridge Creek
Ferndale	Nooksack River Terrell Creek Fourmile Creek

Table 4.3-1 Mapped Streams Within or Adjacent to Urban Growth Areas (UGAs) in Whatcom County	
UGA	Streams
	Deer Creek Tenmile Creek Schell Creek Silver Creek Red River
Nooksack	Sumas River Breckenridge Creek
Lynden	Fishtrap Creek Nooksack River Pepin Creek/Double Ditch (Fishtrap) Kamm Creek Bertrand Creek
Sumas	Sumas River Johnson Creek

Source: WDFW 2024

Lakes

The County has numerous lakes and ponds, with the primary lakes in the western portion of the County being Lake Whatcom, Lake Samish, Lake Padden, Lake Terrell, and Wiser Lake. Baker Lake and Ross Lake are reservoirs located in the eastern portion of the County, in the Cascade Mountains. Both reservoirs drain to the Skagit River system.

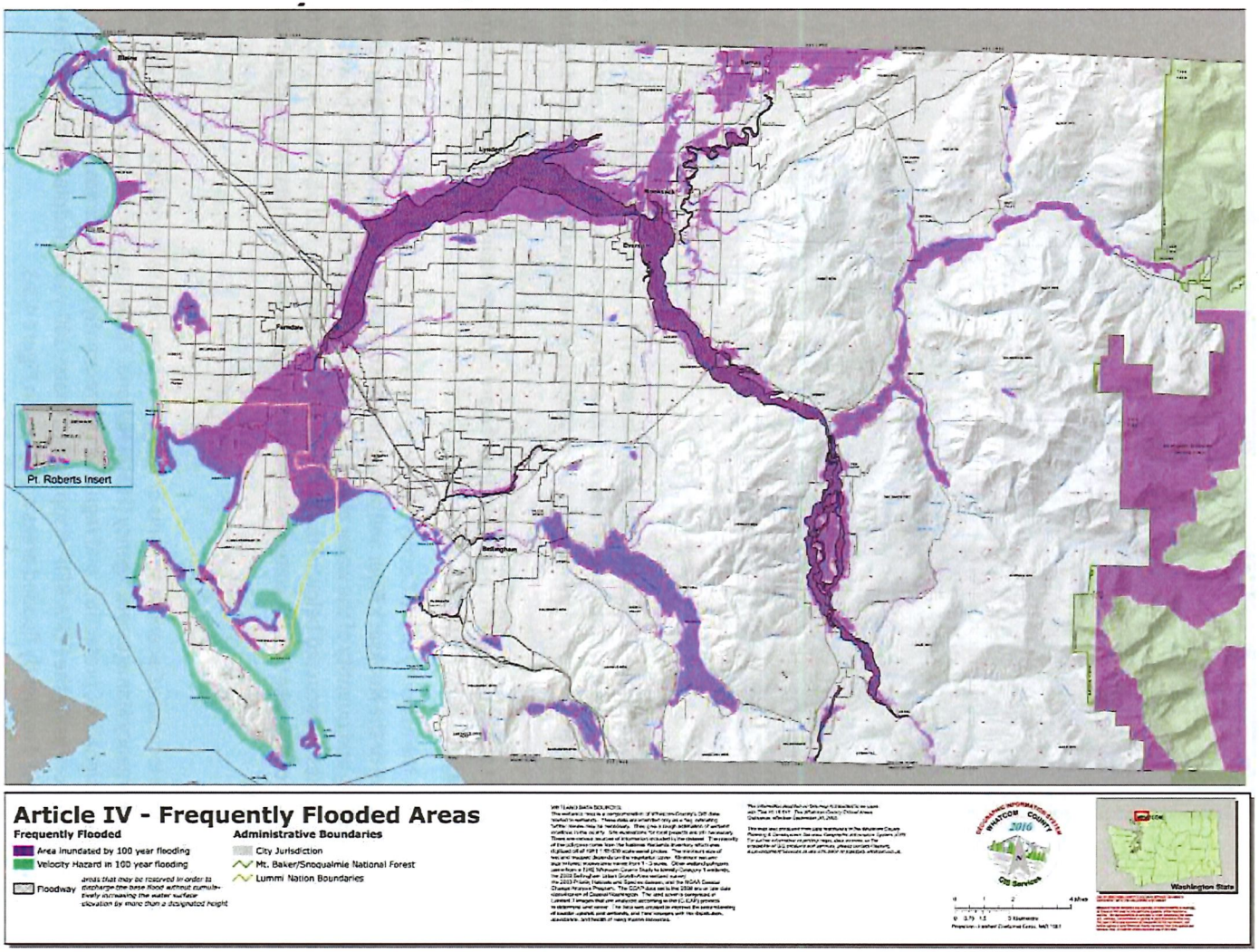
The northwest portion of Lake Whatcom and all of Lake Padden are located within the City of Bellingham. Lake Terrell is adjacent to the Cherry Point UGA.

As mentioned previously, the majority of the County's drinking water supply capacity is provided by surface water from Lake Whatcom or the Nooksack River and serves most of the County's population (Parametrix et al. 2005); thus, the quality and quantity of the water of both systems is important to maintain. The water quality of both waterbodies is discussed below in the Water Quality section. It should also be noted that the majority of the residents of the Lake Samish watershed draw water directly from the lake and that no public water system is available.

Floodplains

The floodplain is the area located adjacent to streams or rivers that is subject to inundation during high flow events. The Federal Emergency Management Agency (FEMA) National Flood Insurance Program (NFIP) provides the basis for designation, protection, and regulation of frequently flooded areas. The Whatcom County floodplain inventory using the FEMA NFIP mapping designates 100-year floodplains and base flood elevations (WCC 16.16.140). Frequently flooded areas are shown in Figure 4.3-3.

Figure 4.3-3 Frequently Flooded Areas



Floodplains are valuable resources for water storage, flow velocity and erosion reduction, sediment settling, large woody debris (LWD) recruitment, groundwater discharge or recharge, and riparian habitat areas (Parametrix et al. 2005). The most common disturbance to floodplains from human development includes filling, channelization, creation or alteration of barriers, and alteration of land cover (Parametrix et al. 2005). These development types have the potential to reduce floodplain storage, create constrictions that increase flood heights, increase stormwater runoff from adjacent areas, and reduce infiltration. Stream or river channelization can similarly result in higher flow velocities, increased sediment transport, bank instability, loss of channel capacity, increased flood heights in downstream areas, and draining of nearby wetlands (Parametrix et al. 2005).

Changes in channel geometry in the Nooksack River can reduce flood conveyance capacity and so increase local flood hazards. Near Everson, WA, sand and gravel accumulations have increased the likelihood that major floods will spill overbank, sending water north over a low drainage divide where it may cause substantial damage to communities in both Washington and British Columbia. Major floods in 2021 have re-ignited a cross-border discussion of sediment and flood hazard management (USGS 2024). The County and FEMA currently are studying the geomorphology of the river to better understand the current state and trends in channel elevations, with particular emphasis on the reaches near Everson, WA.

The FEMA NFIP is intended to protect and regulate development within the floodplain. Additionally, Washington has more stringent standards that must be adhered to as described in Revised Code of Washington (RCW) 86.16. The County's Flood Damage Prevention regulations in WCC Title 17 contain flood hazard reduction standards for development within the County floodplains and coastal high hazard areas.

The County's River and Flood division has worked with the UW Climate Impacts Group to determine projected future riverine flood events may be up to 75% greater in volume than current 100 year floods. This projected increase in flood magnitude and its corresponding increase in exposure area requires consideration and updates to County regulations and land use plans.

Nearshore Marine and Estuarine Waters

The western portion of the County borders the Salish Sea, with 134 miles of shoreline and nearshore habitat. Nearshore marine and estuarine habitats extend from the top of shoreline bluffs to a point offshore where the depth of water is such that light penetrating the water will not support plant growth and also extends upstream in estuaries to the head of tidal influence.

Marine nearshore and estuarine areas in the County are highly prized and provide rich habitat for a wide variety of organisms, including fish and shellfish. The marine nearshore encompasses the interface between subtidal marine habitats and the upland portion of the watershed. Among the factors that shape the nearshore are the "longshore" processes that affect sediment transport and aquatic species movement patterns. These shoreline processes must continue to function appropriately across the entire landscape for shoreline habitats and ecological functions to continue in a self-sustaining condition over the long term.

- **Samish Bay.** The Samish Bay delta has been diked to support pastureland, and this land now supports migratory birds. Shoreline type is predominantly (48%) mud flat, followed by rock with gravel or sand beach (18%), estuarine wetland (10%), rock cliffs (9%), and the remaining (15%) comprising sand and/or gravel beaches and flats. Oyster Creek and Colony Creek estuaries are part of Samish Bay (Whatcom County Public Works et al. 2005).

Wetlands

Wetlands are defined in WAC 365-190-030 as "areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas." Wetlands are prevalent throughout the northwest portion of the County and perform important functions, including fish and wildlife habitat, improvements to water quality, water storage, and protection from shoreline erosion. Not all wetlands perform all of these functions.

The County currently contains an estimated 82,000 acres of wetlands ranging in type from forested swamps in freshwater settings including floodplains and uplands to estuarine marshes along the coast (Parametrix et al. 2005). Past glacial deposits and scouring created the landforms and landscape conditions that sustain the numerous types of wetlands in the County. Peat deposits cover approximately 10% of the County, a greater acreage than any other county in Washington State. Most of the large wetland systems are associated with the floodplains of major rivers and streams, or with large lakes. The County has more than 3,000 miles of rivers and streams and their estuaries, 16 major lakes and dozens of smaller ones, and 134 miles of marine shoreline. The greatest wetland acreage is located in the west portion of the County from sea level to 600 feet in elevation in flat to rolling terrain, known as the Whatcom Basin. (Parametrix et al. 2005).

According to the National Wetland Inventory (NWI), four classes of wetlands are prevalent in the County including (with approximate acreage): palustrine (25,910 acres); riverine (3,321 acres); open water/lacustrine (6,951 acres); and estuarine/marine (186 acres) (Parametrix et al. 2005). Vegetation types in palustrine and riverine wetlands include forested, scrub-shrub, and emergent (Parametrix et al. 2005).

Water Quality

A number of surface water bodies in the County UGAs have been listed as Category 5 under Section 303(d) of the Clean Water Act (Table 4.3-2). Waterbodies listed as Category 5 waters on the 303(d) list are those that have been designated as *impaired by pollution* under Clean Water Act standards. Pollution parameters listed are not necessarily found in all reaches of the waterbody. See the Washington State Department of Ecology's full database for current details about where pollution parameters have been measured: https://apps.ecology.wa.gov/ApprovedWQA/ApprovedPages/ApprovedSearch.aspx.

Waterbodies designated as Category 5 require that a Total Maximum Daily Load (TMDL) study be conducted by the Department of Ecology. The TMDL study identifies the amount of pollutant load that can be allowed without compromising water quality standards.

- Bellingham Bay (Toxics),
- Johnosn Creek (Dissolved Oxygen and Fecal Coliform),
- Lake Whatcom (Multi-parameter),
- Nooksack River (Fecal Coliform),
- Sumas River (Ammonia-N, BOD, and Chlorine),
- Whatcom Creek (Fecal Coliform), and
- Whatcom, Squalicum, and Padden Creeks (Temperature) (Ecology 2024a).

The other four Section 303(d) water quality assessment categories include the following:

- **Category 4.** Polluted waters that do not require a TMDL because of one of the following:
  - **Category 4a** has an approved TMDL in place and it is actively being implemented.
  - **Category 4b** has a pollution control program (similar to but not a TMDL) in place that is expected to solve the pollution problems.
  - **Category 4c** is impaired by a non-pollutant that cannot be addressed through a TMDL.
- **Category 3.** Insufficient data exists for waterbodies that have not been tested. If a waterbody is not identified in one of the other categories, it is assumed that there is insufficient data.
- **Category 2.** Waters of concern where there is some evidence of a water quality problem but not enough to require production of a TMDL at this time.
- **Category 1.** Waters that meet tested standards for clean waters, but placement in this category does not necessarily mean that a waterbody is free of all pollutants.

Table 4.3-2 303(d) Category 5 Listed Waters

Name of Waterbody	Pollution Parameter*	TMDL
LAKES		
Fazon Lake	MM	
Padden Lake	PCBs	
Whatcom Lake	PCBs; Dieldrin; M; MM; DO; Temp	Lake Whatcom Watershed Phosphorus and Bacteria TMDL
RIVERS/STREAMS		
Anderson Creek	FS; Temp; FC	Lake Whatcom Watershed Phosphorus and Bacteria TMDL
Anderson Ditch	DO	
Austin Creek	FC	Lake Whatcom Watershed Phosphorus and Bacteria TMDL
Baker Creek	DO; FC	
Bear Creek	DO; FC	
Bells Creek	Temp	
Bender Road Ditch	DO	

Floodplains

All alternatives have the potential to exacerbate flooding in mapped flood hazard areas due to changes in peak stream flow.

Whatcom County Critical Area Ordinance (CAO) regulations (WCC Title 16 Article 4) designate special flood hazard areas and establish permit requirements to protect the public health, safety, and welfare from harm caused by flooding. According to the CAO, development within a floodplain can present a risk to human health and property. Additionally, floodplain development poses risks to aquatic habitats and species including Endangered Species Act (ESA)-listed species, described in Section 4.4—Plants and Animals. Additional mitigation is discussed in the Mitigation Measures section. All alternatives could cause an increase in flooding along the smaller streams in the County, by increasing the amount of impervious surface area in the County and changing runoff patterns.

Coastal marine areas must also be considered when addressing frequently flooded areas. Potential effects of tsunamis, high tides with strong winds, sea level rise, and extreme weather events resulting from global climate change are important considerations. Tsunami hazard areas have been mapped in the Bellingham Bay and Lummi Bay areas, whereas other areas in the County have not been mapped. Other coastal marine areas in the northwestern portion of the County may be susceptible to tsunamis. Areas susceptible to impacts from tsunamis would also be susceptible to impacts from sea level rise and extreme weather events resulting from global climate change.

Any expansion of UGAs into the special flood hazard area would need to comply with the requirements of RCW 36.70A.110 (Comprehensive plans – Urban growth areas), which states that expansion of a UGA into a floodplain is prohibited except under specific circumstances (such as the urban growth area being fully contained within a floodplain where no adjacent buildable area outside of the floodplain is available, or the land to be added to the UGA is owned by the planning jurisdiction and would limit use of the land to recreation, environmentally beneficial projects, or flood control facilities).

Marine Estuarine Areas

Marine/estuarine areas in the County most susceptible to impacts from all of the alternatives include Drayton Harbor, Birch Bay, Strait of Georgia, Bellingham Bay, and Chuckanut Bay because these areas border completely or partially one or more of the UGAs.

Impacts on marine/estuarine areas could include potential increased input of pollution from stormwater runoff of impervious surface area, and fertilizers and herbicides associated with managed lawns. Other potential impacts include the conversion of natural shorelines to armored shorelines as a measure of property protection or to increase the size of useable property. Armored shorelines include shorelines protected with bulkheads or other hardened structures. The effect of shoreline armoring includes a decrease in sediment input to the beach, and over time, a narrowing of the beach as the beach is eroded by tidal and wave action. Shoreline armoring is regulated under WAC 173-26-231. All of the alternatives have the potential to increase the density along shorelines in Drayton Harbor, Birch Bay, and Cherry Point/Strait of Georgia, which could increase the occurrence of shoreline armoring.

No Action Alternative

Impacts of the No Action Alternative would be the same as described above for all action alternatives. Because the No Action Alternative has the lowest projected growth, there would be less development and therefore many of the impacts of development would be lesser than the other alternatives.

Unlike the Action Alternatives, the Comprehensive Plan and development regulations would not be amended to address current County-led initiatives for the protection of critical areas (such as wetlands) and responses to natural hazards (such as flooding). Therefore, impacts to water resources from new development would be greater than impacts under the Action Alternatives.

Alternative 1 – Medium Growth

Alternative 1 would have a medium level of population growth, which would lead to levels of development that would be higher than the No Action Alternative. Under this alternative, the Comprehensive Plan and development regulations would be amended to address County-led initiatives for the protection of critical areas (such as wetlands) and responses to natural hazards (such as flooding), including those exacerbated by climate change. These changes in regulations would help reduce the impacts of new development. However, there would continue to be impacts from the greater development that would occur pursuant to higher population growth.

Under this alternative, zoning regulations would be changed to allow greater density through middle housing in the Birch Bay UGA. Sea level rise is anticipated to substantially impact portions of the Birch Bay UGA, particularly near the shoreline and areas prone to flooding from California Creek. New housing units allowed under the changed zoning would, in many cases, be located within flood hazard areas. Therefore, future flood impacts would be higher as more housing units would be impacted by flooding.

Alternative 2 – Multi-jurisdictional Resolution

Alternative 2 would have a higher level of population growth than the No Action Alternative or Alternative 1, so impacts to water resources (as described above under Impacts Common to All Action Alternatives) from development would be greater. Alternative 2 would result in changes to UGA boundaries, which could lead to impacts to future flood risk in some areas as described below:

- **Bellingham**: While sea level and flood risk exists in some areas of the existing Bellingham UGA, the areas proposed for addition to the UGA do not have any mapped flood risk.
- **Everson**: Much of Everson and its UGA are located within the floodplain of the Nooksack River. Several UGA areas with high levels of flood risk (West and North Everson) are proposed for removal from the UGA and change to reserve status, which could reduce future flood impacts by reducing the amount of future urban-level development in those areas. Of the areas proposed for addition to the UGA, most are out of the floodplain, with the exception of the Postma and Fekkes Farm study areas. Adding these areas to the UGA could increase future flood impacts by encouraging development in areas at risk of flooding.
- **Nooksack**: While much of Nooksack and its UGA are located in the floodplain, only a very small portion of the area proposed to be added to the UGA is at risk of flooding. Adding this

area to the UGA could reduce future flood impacts by providing new areas outside of the floodplain for urban-level development.

- **Sumas**: The majority of Sumas and its UGA are located with the floodplain. Under this alternative, one area (Hovel East) would be removed from the UGA and another area (Maarhuis North) would be added to the UGA. Both are within the floodplain, so this change would encourage development in one area at risk of flooding and discourage development in another area at risk of flooding.

Alternative 2 would have the lowest amount of growth in the rural areas of the three Action Alternatives. Given that areas outside of UGAs include many areas with streams, lakes, wetlands, and other water resources, impacts to water resources could potentially be lower under this alternative by allocating more growth to already developed cities and UGAs.

Alternative 3 – High Growth

Impacts to water resources would be highest under this alternative due to the higher level of growth and therefore development. The allocation of growth would be the same as Alternative 1 but the total amount of growth would be higher, so density would increase within UGAs but growth in rural areas would also be highest under this alternative than any other alternative. All UGA changes described in Alternative 2 would also apply to Alternative 3.

4.3.3 Mitigation Strategies

The current Whatcom County Comprehensive Plan, updated June 2023, provides goals and policies related to natural resources, including water resources. Likewise, each City has goals and policies related to water resource protection. Comprehensive Plan Appendix C provides Countywide Planning Policies related to Water Quality and Quantity (Part N), as follows:

1. The Cities, and the County, in cooperation with other municipal corporations, tribal governments, federal and state agencies, and public and private utilities shall cooperate in the protection of water resources and in drawing upon said water to support growth.
2. The Cities and the County in cooperation with other municipal corporations and tribal governments shall adopt zoning regulations and development standards to protect water resources. Where there are potential conflicts with designations required by the Growth Management Act, such as natural resource lands and critical areas, water resource protection shall generally have priority.
3. Jurisdictions shall cooperate to protect and restore water resources and fish habitat within UGA's and across jurisdictional boundaries to maintain quality of life and economic health in Whatcom County.
4. Jurisdictions involved in the development of ground and/or surface water management plans shall pursue the adoption and implementation of the plans, as well as coordination and integration of the plans into local comprehensive plans as appropriate. Examples of such plans include the Lake Whatcom Management Plan, WRIA 1 Watershed Management Plan, Shellfish Protection District Plans and drinking water source protection plans.

5. All jurisdictions should participate in the process to establish a countywide water resource management body in accordance with the Watershed Management Act and other applicable federal, state and local regulations to inform GMA planning efforts.
6. All jurisdictions shall maximize reduction of water pollutants from stormwater runoff and combined sewer overflows.

Existing federal, state, and county policies regulate land use activities in the vicinity of, as well as within, surface waters and other sensitive habitats, including aquifer recharge areas. The Whatcom County CAO (WCC 16.6) addresses and provides protections for water resources and provides parameters for development in and near these resources through regulatory, review, and permitting processes.

The following regulations and commitments are relevant to the protection of surface water and groundwater resources:

- Federal NPDES regulations, as well as County stormwater regulations require stormwater quantity and quality controls. The County has adopted the Ecology Stormwater Manual for Western Washington (Ecology 2024b).
- Low impact development requirements that set maximum limits on the percentage of impervious area allowed and increase the infiltration of surface water per the Ecology Stormwater Manual for Western Washington (Ecology 2024b).
- Title 16 WCC, Environment, contains requirements and standards for Critical Areas to protect surface water resources from the potential impacts of development activities, among other resources.
    - Title 16 WCC, Environment, contains the Whatcom CAO, which defines stream, flood hazard area, and other critical area protections and applies regulations to adjacent development.
    - Title 16 WCC, Environment, Chapter 16.20 Whatcom County Shellfish Protection Districts, establishes the Drayton Harbor, Birch Bay, and Portage Bay shellfish protection districts due to shellfish closures caused by poor water quality.
    - WCC 16.16 Article 6 Wetlands, applies to all regulated uses within or adjacent to areas designated as wetlands, as defined therein.
- Each city applies similar critical areas regulations as Whatcom County, addressing streams, flood hazard areas, and wetlands.
- Title 20 WCC, Zoning, Chapter 20.71 Water Resource Protection Overlay District, WCC 20.80.635, and WCC 20.80.735 Water Resource Special Management Areas are intended to impose additional controls to preserve and protect unique and important water resources within the County.
- Cities apply zoning standards limiting building coverage, and stormwater management policies and regulations consistent with federal and state requirements.
- Title 24 WCC, Chapter 24.05, provides the County regulations that apply to on-site sewage systems. The intent of this chapter is to protect public health by minimizing the following:
    - The potential for public exposure to sewage from on-site sewage systems; and

    - Adverse effects to public health that discharges from on-site sewage systems may have on groundwater and surface water.
- The County and cities use their State Environmental Policy Act (SEPA) authority, as well as other County and city codes, to require mitigation for impacts on drainage, habitat, and water quality and ensure mitigation is appropriate and sufficient.
- The U.S. Army Corps of Engineers (Corps) promotes wetland avoidance and regulates the filling of wetlands via Section 404 of the Clean Water Act of 1972.
- Regulatory authority for the protection, remediation, and management of groundwater resources lies primarily with the state. In Washington State, these authorities are contained within statutes— RCW Chapter 70.105D Hazardous Waste Cleanup, Model Toxics Control Act; RCW 90.44, Regulation of Public Ground Waters; RCW 90.48, Water Pollution Control; and accompanying regulations in WAC Chapters 173-150, 173-200, and 173-340.
- Limited federal authority for groundwater-related issues can be found in some sections of the federal Safe Drinking Water Act of 1971; the Resource Conservation and Recovery Act (RCRA); and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). However, these authorities by themselves generally protect larger drinking water systems and do not apply to groundwater issues commonly experienced at the county level (e.g., issues involving citizens' private drinking water wells in non-UGA areas).
- The County protects groundwater under Whatcom County CAO Title 16, Article 5, Critical Aquifer Recharge Areas (Whatcom County Planning and Development).
- Cities have developed critical areas regulations addressing wellhead protection areas and aquifer protection regulations.

In addition to the above measures to address the impacts of the alternatives, the County could consider additional optional measures to further protect water resources. Potential plan or regulatory amendments could include the following measures:

- Reconnect and restore floodplains and floodplain wetlands.
- Implement natural storage projects throughout the County.
- Encourage use of stormwater treatment systems that mimic and complement natural drainage systems, such as vegetated swales, wet ponds, and created wetlands.
- Implement all adopted Whatcom County and WRIA 1 watershed management and salmon recovery plans.
- Adopt more protective stormwater detention standards that would require new development to infiltrate and/or detain larger volumes of stormwater runoff on their sites and in such a way as to better mimic the pre-development stormwater patterns. This would help to reduce downstream channel erosion, which would improve water quality. Detention standards could also encourage infiltration of smaller storm events.
- Reduce the potential for additional impervious surfaces by increasing urban densities, promoting infill development in urban areas, and reducing densities in important watershed areas.
- Provide drainage/treatment systems on a subbasin level that optimize treatment and manage existing and future stormwater flows.

- Encourage retrofits of existing detention facilities to improve water quality treatment. Even though these existing facilities typically collect stormwater only from existing development, retrofitting these facilities to treat existing runoff would help to reduce the cumulative impacts of future development on water quality. At the same time, retrofits could increase their storage capacity as well.
- Construct improvements that would correct existing erosion problems and reduce the potential for increased erosion in the future. This could consist of constructing salmonid/habitat friendly channel stabilization improvements or bypass pipelines to divert high flows around sections of erosive channels.
- Implement stormwater quality monitoring to evaluate the effectiveness of stormwater practices and standards.
- Reclaim water from wastewater treatment plants to augment wetlands, streams, and aquifers and to decrease demand for potable groundwater.
- Provide additional interties to enhance the reliability and efficiency of the water distribution system.

The *Whatcom County Natural Hazards Mitigation Plan* (2021) includes information on natural hazards, including flooding, for Cities and the County. The plan includes lists of identified mitigation actions, along with identified leads, priorities, timelines, and funding sources.

Mitigation measures can help to protect wetlands by offsetting or minimizing the impacts associated with an increase in development intensity in the UGAs. Mitigation measures potentially applicable to future development under any of the proposed alternatives include the following:

- Promote the preservation of on-site native vegetation, particularly mature trees (i.e., tree retention ordinance) and naturally diverse scrub-shrub communities.
- Publicize and encourage the preservation of native soils and protect the natural processes of soil maintenance and on-site hydrology. Leaving areas/tracts ("belts") of native vegetation undisturbed in both commercial and residential developments can be shown to provide long-term benefits to stormwater management, on-site landscape maintenance, microclimate, and general aesthetics/sense of well-being in a developed landscape.
- Consider larger wetland buffers for particularly complex or sensitive wetland areas.
- Consider placing water quality improvement projects immediately upstream from wetlands (e.g., provide compost filter in the last catch basin upstream from a wetland).
- Provide for ongoing care and preservation of natural areas either by placing them into public ownership or by providing technical assistance and materials to property owners to enhance native vegetation benefits.
- Encourage maintaining existing working forests by purchasing development rights from willing foresters to maintain forested landscapes.
- Develop mitigation banks, in lieu fees, or advanced mitigation to provide before-the-fact mitigation for anticipated impacts on wetlands, streams, and habitat in each UGA.

Additional measures could potentially be implemented to further mitigate the impacts of the three alternatives on groundwater resources. Potential plan or regulatory amendments could include the following measures:

- Consider conservation measures for domestic water uses, such as limits on house size, lawn size, and fixtures—to help ensure that sufficient water is available to protect endangered fisheries and for agricultural needs.
- Establish a groundwater monitoring program to provide the groundwater information necessary to assess the ability of the resource to be managed to sustain fisheries, farming, and current and planned levels of growth.
- Expand intergovernmental cooperation to coordinate groundwater impacts across political boundaries.
- Create and implement a groundwater education and resource program.
- Consider prohibitions on use of septic systems in UGAs at densities of greater than one system per one acre and restricting septic systems within UGAs that are located within sensitive watersheds.

4.3.4 Significant Unavoidable Adverse Impacts

All alternatives have the potential to affect the quantity and quality of water resources over time as development occurs. Impacts to groundwater and surface water from development would also increase as more development occurs in rural areas. Development within flood hazard areas could put public health, safety, and welfare at risk. Growth under any of the alternatives would be required to comply with existing local, state and federal regulations for the protection of people and the natural environment. With implementation of the above mitigation measures, as appropriate, none of the alternatives would have significant unavoidable adverse impacts to water resources.

These designations include three broad land use categories: Urban Growth Areas, Resource Lands, and Rural areas as described below.

Urban Growth Areas (UGAs)

Under GMA, counties were required to designate UGAs—areas already characterized by urban development or adjacent to areas characterized by urban development—in consultation with cities. Whatcom County has 10 UGAs. Seven of the 10 UGAs are associated with cities. UGAs are to be revised, if necessary, to accommodate the urban growth projected to occur in the County for the succeeding 20-year period. Designated UGAs should have public services and facilities available or planned to support future urban growth. All cities must be within UGAs; unincorporated land within UGAs must be urban in character or adjacent to such lands. Lands outside of UGAs are to be designated as resource lands or rural areas. In general, urban development is not to be permitted on these lands, and all development must be resource-related or rural in character.

Resource Lands

The GMA requires protection of agricultural, forest, and mineral lands of long-term commercial significance. As described above, one GMA goal states, "Maintain and enhance natural resource-based industries, including productive timber, agricultural, and fisheries industries. Encourage the conservation of productive forest lands and productive agricultural lands, and discourage incompatible uses." The GMA provides guidelines for classification of resource lands in RCW 36.70A.050 and the Washington State Department of Commerce further defines them in Chapter 365-190 WAC.

There are approximately 223,300 acres of designated forest land (Commercial Forestry and Rural Forestry), 85,800 acres of designated Agricultural land, and 5,500 acres of designated Mineral Resource Lands in Whatcom County. Whatcom County Comprehensive Plan Policy 8A-2 (Chapter 8) includes maintaining 100,000 acres of agricultural land, though just over 85,000 acres have formal designation as Agriculture lands of long-term commercial significance. The Agricultural Advisory Committee requested that the County Council provide additional protection for 28,449 acres identified in the Whatcom County Rural Land Study Update (2019).

Designated forest or mineral resource lands are identified on the Whatcom County Comprehensive Plan land use map, and lie adjacent to some UGAs, UGA Reserves, and Suitability Analysis Area. Designated forest lands lie adjacent to the Columbia Valley and Bellingham UGAs. Designated mineral lands lie adjacent to the UGAs of Blaine, Columbia Valley, Everson, and Nooksack.

Designated Agricultural lands are located adjacent to the Everson, Ferndale, Lynden, Nooksack, and Sumas UGAs. Agricultural lands are located inside the Everson, Lynden, Nooksack, and Sumas Suitability Analysis Areas. One of Ferndale's UGA Reserves includes a Rural Study Area. Designated Agricultural resource lands and Rural Study Areas, which are rural lands under study for designation as Agriculture, are identified in relation to the study areas in Chapter 3.

Since the Everson, Lynden, Nooksack, and Sumas Suitability Analysis Areas include designated agricultural lands of long-term commercial significance and may be the location for possible UGA or UGA Reserve expansion, this section focuses on agricultural lands designation. The agricultural

classification guidelines required by GMA are provided in detail in the implementing rules of WAC 365-190-050 prepared by the State Department of Commerce and excerpted below.

> (1) In classifying, designating and de-designating agricultural resource lands, counties must conduct a comprehensive countywide analysis consistent with WAC 365-190-040(10). Counties and cities should not review resource lands designations solely on a parcel-by-parcel basis. Counties and cities must have a program for the transfer or purchase of development rights prior to designating agricultural resource lands in urban growth areas. Cities are encouraged to coordinate their agricultural resource lands designations with their county and any adjacent jurisdictions.
>
> (2) Once lands are designated, counties and cities planning under the act must adopt development regulations that assure the conservation of agricultural resource lands. Recommendations for those regulations are found in WAC 365-196-815.
>
> (3) Lands should be considered for designation as agricultural resource lands based on three factors:
>
> (a) The land is not already characterized by urban growth. To evaluate this factor, counties and cities should use the criteria contained in WAC 365-196-310.
>
> (b) The land is used or capable of being used for agricultural production. This factor evaluates whether lands are well suited to agricultural use based primarily on their physical and geographic characteristics. Some agricultural operations are less dependent on soil quality than others, including some livestock production operations.
>
> (i) Lands that are currently used for agricultural production and lands that are capable of such use must be evaluated for designation. The intent of a landowner to use land for agriculture or to cease such use is not the controlling factor in determining if land is used or capable of being used for agricultural production. Land enrolled in federal conservation reserve programs is recommended for designation based on previous agricultural use, management requirements, and potential for reuse as agricultural land.
>
> (ii) In determining whether lands are used or capable of being used for agricultural production, counties and cities shall use the land-capability classification system of the United States Department of Agriculture Natural Resources Conservation Service as defined in relevant Field Office Technical Guides. These eight classes are incorporated by the United States Department of Agriculture into map units described in published soil surveys, and are based on the growing capacity, productivity and soil composition of the land.
>
> (c) The land has long-term commercial significance for agriculture. In determining this factor, counties and cities should consider the following nonexclusive criteria, as applicable:

(i) The classification of prime and unique farmland soils, and farmlands of statewide importance, as mapped by the Natural Resources Conservation Service;

(ii) The availability of public facilities, including roads used in transporting agricultural products;

(iii) Tax status, including whether lands are enrolled under the current use tax assessment under chapter 84.34 RCW and whether the optional public benefit rating system is used locally, and whether there is the ability to purchase or transfer land development rights;

(iv) The availability of public services;

(v) Relationship or proximity to urban growth areas;

(vi) Predominant parcel size, which may include smaller parcels if contiguous with other agricultural resource lands;

(vii) Land use settlement patterns and their compatibility with agricultural practices;

(viii) Intensity of nearby land uses;

(ix) History of land development permits issued nearby;

(x) Land values under alternative uses; and

(xi) Proximity to markets.

(4) When designating agricultural resource lands, counties and cities may consider food security issues, which may include providing local food supplies for food banks, schools and institutions, vocational training opportunities in agricultural operations, and preserving heritage or artisanal foods.

(5) When applying the criteria in subsection (3)(c) of this section, the process should result in designating an amount of agricultural resource lands sufficient to maintain and enhance the economic viability of the agricultural industry in the County over the long term; and to retain supporting agricultural businesses, such as processors, farm suppliers, and equipment maintenance and repair facilities.

(6) Counties and cities may further classify additional agricultural lands of local importance. Classifying additional agricultural lands of local importance should include, in addition to general public involvement, consultation with the board of the local conservation district and the local committee of the farm service agency. It may also be useful to consult with any existing local organizations marketing or using local produce, including the boards of local farmers markets, school districts, other large institutions, such as hospitals, correctional facilities, or existing food cooperatives.

These additional lands may include designated critical areas, such as bogs used to grow cranberries or farmed wetlands. Where these lands are also designated critical

> areas, counties and cities planning under the act must weigh the compatibility of adjacent land uses and development with the continuing need to protect the functions and values of critical areas and ecosystems.

Whatcom County Comprehensive Plan Policies 8A-3 and 8A-6 contain criteria specific to Whatcom County for designating or de-designating Agriculture areas on the Comprehensive Plan map, which are agricultural lands of long-term commercial significance under the GMA.

Rural Areas

Rural Whatcom County is the portion of the County not planned for either urban growth or resource land use and its character differs from that of the County's urban growth areas and resource lands. While agriculture and forestry are practiced in the rural areas, it is generally on a smaller scale than in the resource lands that are set aside specifically for those purposes. The rural areas provide an important buffer between urban growth areas and resource lands, and the character of the rural areas is differentiated from the urban areas by less intensive uses and densities, and greater predominance of vegetation, wildlife habitat, and open space.

GMA allows counties to designate "limited areas of more intensive rural development" (LAMIRDs) where more intensive uses have been established within their rural areas. Counties making such designations must adopt measures to minimize and contain the existing areas of more intensive rural development (RCW 36.70A.070(5)(d)(iv)).

Rural lands, outside the County's urban growth areas and resource lands, include a variety of uses and densities. Traditionally, Whatcom County's rural areas have been characterized by a spectrum of uses ranging from farms and large-lot residential areas to recreational communities and small towns. The more intensive uses in that spectrum (commercial/industrial areas and residential areas with densities greater than one unit per five acres) are contained within the boundaries of Rural Community, Rural Tourism, or Rural Business designations (LAMIRDs) and Rural Neighborhood designations. The remainder of the rural areas are designated Rural on the Comprehensive Plan map and contain traditional rural residential land uses, farms, wooded areas as well as small home-based and conditionally permitted businesses.

Plan Consistency

A central concept of the GMA is that comprehensive plans must be internally and externally consistent. The Whatcom County Comprehensive Plan must demonstrate internal consistency between the land use element, capital facilities element, and other elements.

If funding is not available to support the proposed land use pattern at the adopted level of service (LOS), the jurisdiction is required to reassess the land use pattern and/or the LOS until balance is reached. Externally, local comprehensive plans are required to be consistent with the comprehensive plans of other jurisdictions with common borders or related regional issues. Standards for transportation LOS should be regionally coordinated. Commerce rules (WAC 365-196-510) indicate that inter-jurisdictional (external) consistency is accomplished by consistency with Countywide Planning Policies (CWPPs) which are discussed below.

Jobs-Housing Balance

Jobs/housing balance is a measure of the degree of equilibrium between employment and dwelling units in a specific area. It is typically calculated based on the number of jobs in a community divided by the number of housing units in that community. A low jobs/housing ratio indicates a housing-rich "bedroom community," while a high jobs/housing ratio indicates an employment center. Jobs/dwelling unit balance ratios give information relevant to likely home-work travel patterns. Countywide, the jobs-housing ratio is 1.1. When considering jobs-households ratios, each alternative is at or above 1.0 (see Table 4.7-4).

Table 4.7-4 Jobs-Housing Balance Estimates

	2023	No Action Alternative	Alternative 1	Alternative 2	Alternative 3
Total Jobs	112,633	120,284	136,912	144,982	150,467
Total Population	235,800	275,450	292,715	303,438	321,702
Total Housing Units	100,394	124,013	131,614	136,407	144,575
Jobs-Housing Units Balance	1.1	1.0	1.0	1.1	1.0

4.7.3 Potential Impacts

Impacts Common to all Action Alternatives

The following impacts are common to all action alternatives:

- Population would grow under each alternative. All alternatives project growth within the OFM range of low, medium, and high projections.
- All alternatives would provide opportunities for growth in housing. Housing would grow in relation to population projections and based on the capacity of both single family and multifamily/mixed use zones in each jurisdiction.
- Each alternative would provide opportunities for increased employment growth.

Table 4.7-5 shows the projected population, housing, and employment growth for each alternative.

Table 4.7-5 Projected Population, Housing Unit, and Employment Growth 2023-2045

	Population	Housing Units	Employment
No Action Alternative	39,650	23,619	7,651
Alternative 1 – Medium Growth	56,915	31,220	24,279
Alternative 2 – Multi-jurisdictional Resolution	67,638	36,013	32,349
Alternative 3 – High Growth	85,902	44,181	37,834

Source: Leland Consulting Group 2024, Leland Consulting Group 2025

No Action Alternative

The No Action Alternative would have the lowest population growth of all alternatives (39,650 people), including both total UGA (33,264 people) and non-UGA (6,386 people) growth. The No Action Alternative would also have the lowest increase in housing units (23,619 units) and by far the lowest increase in employment (7,651 jobs). Table 4.7-6 shows the projected population, housing unit, and employment growth for each UGA as well as rural and resource lands under the No Action Alternative.

Table 4.7-6 Projected Population, Housing Unit, and Employment Growth 2023-2045, No Action Alternative

	Population 2023	Population Growth by 2045	Housing Unit Growth by 2045	Employment Growth by 2045
Bellingham UGA	105,529	17,676	10,529	4,675
Birch Bay UGA	8,908	3,007	1,791	113
Blaine UGA	6,728	2,513	1,497	433
Cherry Point UGA	61	0	0	184
Columbia Valley UGA	3,577	766	456	74
Everson UGA	3,171	707	421	124
Ferndale UGA	16,762	3,890	2,317	826
Lynden UGA	16,696	3,645	2,171	445
Nooksack UGA	1,573	564	336	24
Sumas USA	1,810	498	296	92
Area outside UGAs	70,985	6,386	3,804	661
Totals	235,800	39,650	23,619	7,651

Source: Leland Consulting Group 2024, Leland Consulting Group 2025a, Leland Consulting Group 2025b

Alternative 1 – Medium Growth

Alternative 1 would have a higher population growth (56,915 people) than the No Action Alternative, but lower than the other two action alternatives. Population growth in the UGA would be 46,142 people and outside of the UGA would be 10,773 people. The increase in housing units (31,220 units) and in employment (24,279 jobs) would both be higher than the No Action Alternative. Table 4.7-7 shows the projected population, housing unit, and employment growth for each UGA as well as rural and resource lands under Alternative 1.

Table 4.7-7 Projected Population, Housing Unit, and Employment Growth 2023-2045, Alternative 1				
	Population 2023	Population Growth by 2045	Housing Unit Growth by 2045	Employment Growth by 2045
Bellingham UGA	105,529	24,158	15,219	15,172
Birch Bay UGA	8,908	2,313	936	124
Blaine UGA	6,728	2,774	1,461	701
Cherry Point UGA	61	0	0	493
Columbia Valley UGA	3,577	988	447	13
Everson UGA	3,171	933	433	203
Ferndale UGA	16,762	7,262	3,308	2,141
Lynden UGA	16,696	6,665	3,552	1,799
Nooksack UGA	1,573	352	190	79
Sumas USA	1,810	697	476	150
Area outside UGAs	70,985	10,773	5,198	3,403
Totals	235,800	56,915	31,220	24,279

Source: Leland Consulting Group 2024, Leland Consulting Group 2025

Alternative 2 – Multi-jurisdictional Resolution

Alternative 2 would have a higher population growth (67,638 people) than the No Action Alternative or Alternative 1. Population growth in the UGA would be 58,638 people and outside of the UGA would be 9,000 people – lower than for Alternative 1, which allocates a higher percentage of its growth to rural areas. The increase in housing units (36,013 units) and in employment (32,349 jobs) would both be higher than the No Action Alternative and Alternative 1. Table 4.7-8 shows the projected population, housing unit, and employment growth for each UGA as well as rural and resource lands under Alternative 2.

Table 4.7-8 Projected Population, Housing Unit, and Employment Growth 2023-2045, Alternative 2				
	Population 2023	Population Growth by 2045	Housing Unit Growth by 2045	Employment Growth by 2045
Bellingham UGA	105,529	30,310	18,390	19,384
Birch Bay UGA	8,908	2,662	1,051	450
Blaine UGA	6,728	3,500	1,774	1,092
Cherry Point UGA	61	0	0	1,200
Columbia Valley UGA	3,577	1,137	502	350
Everson UGA	3,171	1,408	610	602
Ferndale UGA	16,762	10,961	4,659	3,337
Lynden UGA	16,696	6,665	3,535	1,799
Nooksack UGA	1,573	995	433	232
Sumas USA	1,810	1,000	643	500
Area outside UGAs	70,985	9,000	4,416	3,403
Totals	235,800	67,638	36,013	32,349

Source: Leland Consulting Group 2024, Leland Consulting Group 2025a, Leland Consulting Group 2025b

Alternative 3 – High Growth

Alternative 3 would have the highest population growth (85,902 people) of all four alternatives. Population growth in the UGA would be 69,642 people and outside of the UGA would be 16,260 people. The increase in housing units (44,181 units) and in employment (37,834 jobs) would both be higher than all other alternatives. Table 4.7-9 shows the projected population, housing unit, and employment growth for each UGA as well as rural and resource lands under Alternative 3.

Table 4.7-9 Projected Population, Housing Unit, and Employment Growth 2023-2045, Alternative 3				
	Population 2023	Population Growth by 2045	Housing Unit Growth by 2045	Employment Growth by 2045
Bellingham UGA	105,529	36,462	21,537	23,642
Birch Bay UGA	8,908	3,490	1,324	194
Blaine UGA	6,728	4,186	2,068	1,092
Cherry Point UGA	61	0	0	769
Columbia Valley UGA	3,577	1,492	632	21
Everson UGA	3,171	1,408	613	317
Ferndale UGA	16,762	10,961	4,682	3,337
Lynden UGA	16,696	10,060	5,027	2,803
Nooksack UGA	1,573	531	269	124
Sumas USA	1,810	1,052	674	233
Area outside UGAs	70,985	16,260	7,356	5,302
Totals	235,800	85,902	44,181	37,834

Source: Leland Consulting Group 2024, Leland Consulting Group 2025a, Leland Consulting Group 2025b

4.7.4 Mitigation Strategies

The GMA requires that the County allocate population growth to the cities and county lands. The County participates in joint County-City forums to discuss and make recommendations on population and employment forecasts and allocations by jurisdiction. The County maintains and updates policies on housing and employment as part of required comprehensive plan updates.

The County and cities would comply with House Bill (HB) 1220 and HB 1337. HB 1220, enacted in 2021, amends the GMA to require jurisdictions to plan for and accommodate affordable housing. It requires comprehensive plans to include an inventory and analysis of housing needs for various income levels, including emergency shelters and permanent supportive housing. HB 1337, enacted in 2023, aims to expand housing options by reducing barriers to the construction and use of ADUs. The legislation requires cities and counties planning under the GMA to permit ADUs within their UGAs.

If UGA capacities do not match population targets, the County could consider implementing the following mitigation measures:

- For UGAs that show population capacities below population targets:
    - Consider measures to increase the development capacity within city limits and existing UGAs such as applying incentives and/or upzones (e.g., greater densities) and mixed use zoning.
    - Consider limited UGA expansions into UGA Reserve and Suitability Analysis Areas where infill measures are not feasible within the UGA boundaries.
    - Reallocating population within the range of the population allocations of the Draft EIS. This would shift population from UGAs that lack capacity to UGAs that have existing potential to accommodate population. This could be done in consultation with communities that want to reduce their share to those communities that want to increase their share of the growth allocation.
- For UGAs that show capacities significantly greater than the population targets, UGA boundaries could be decreased. Areas should be removed that are more costly to provide public services or that have significant concentrations of critical areas or constraints or that are considered lower priorities by the associated cities or communities. Alternatively or in combination, a different mix of densities or land uses may also assist the achievement of allocations, provided the densities are still urban in nature and can be served with public services.
- UGAs that are undersupplied with employment capacity could be modified to change the balance of land uses that have different land demand requirements (e.g., industrial versus retail), or to change UGA boundaries (e.g., expansions). Deficits in employment could be offset with a rezone of residential land to employment land if there is an oversupply of residential land in that UGA.
- To avoid an oversupply of employment land that is unused during the 20-year planning period, the County in consultation with cities could reduce the proposed amount of land designated for commercial and industrial employment use or alter the mix of employment

zones in the unincorporated portions of UGAs to reach a corresponding level of jobs as the employment forecast.

- The County could consider if there is an acceptable margin of error regarding land capacity analysis to recognize its use as a predictive planning tool rather than as a precise method. For example, Kitsap County has established a margin of error of 5% and UGA land capacity results within +/-5% of the growth allocation are considered in balance.
- Rural land protection measures, and incentives to make UGAs more attractive for urban development (e.g., densities, infrastructure investment), could be applied to direct growth to urban areas under all alternatives.

4.7.5 Significant Unavoidable Adverse Impacts

Population would grow under each alternative within the OFM range of low, medium, and high projections. All alternatives would provide opportunities for growth in housing. Housing would grow in relation to population projections and based on the capacity of both single family and multifamily/mixed use zones in each jurisdiction. Each alternative would provide opportunities for increased employment growth. All the action alternatives would comply with GMA requirements and recent housing legislation. No significant unavoidable adverse impacts to population, housing, and employment are anticipated with implementation of any of the action alternatives.

Table 4.11-15 Mount Baker School District Enrollment and Capacity			
School	2024 Enrollment	Total Enrollment Capacity	Total Capacity Surplus/Deficit
Elementary	773	1,255	482
Middle	246	428	182
High	513	944	431
K-12 TOTAL	**1,532**	**2,627**	**1,095**

Source: Office of Superintendent of Public Instruction, 2025.

The Mount Baker School District has adequate space to accommodate the current and projected future enrollment; therefore, the District is not planning any new or expanded facilities. All planned capital projects will be for maintenance and improvements to existing facilities (Mount Baker School District 2024).

Nooksack Valley School District

The Nooksack Valley School District serves the cities of Nooksack, Everson, and Sumas and the surrounding rural areas. The District has 3 elementary schools, 1 middle school, and 1 high school (Table 4.11-16).

Table 4.11-16 Nooksack Valley School District Schools		
Elementary Schools	Middle Schools	High Schools
Everson	Nooksack Valley Middle	Nooksack Valley High
Nooksack		
Sumas		

Source: Nooksack Valley School District, https://www.nv.k12.wa.us/.

Table 4.11-17 shows the current enrollment and capacity of the Nooksack Valley School District. Total enrollment capacity includes school buildings and portable classrooms.

Table 4.11-17 Nooksack Valley School District Enrollment and Capacity			
School	2024 Enrollment	Total Enrollment Capacity	Total Capacity Surplus/Deficit
Elementary	1,001	1,300	299
Middle	472	580	108
High	531	600	69
K-12 TOTAL	2,004	2,480	476

Source: Office of Superintendent of Public Instruction, 2025.

While the District is not planning to add additional classroom space, a process to renovate or build a new high school could be considered as current bonds expire in 2039. The District will continue to invest in facility improvements and upgrades as needed.

Table 4.11-22 Projected Growth by School District in 2023 - 2045									
School District	2023 Baseline Dwelling Units	No Action Alternative		Alternative 1 - Medium Growth		Alternative 2 – Multi-jurisdictional Resolution		Alternative 3 – High Growth	
		Dwelling Units	Population	Dwelling Units	Population	Dwelling Units	Population	Dwelling Units	Population
Bellingham	53,100	10,954	17,345	15,667	23,768	17,668	27,691	20,840	33,728
Blaine	12,915	3,742	6,281	3,028	6,392	3,343	7,212	4,234	9,530
Ferndale	14,572	3,229	5,417	4,541	9,780	6,741	14,660	7,616	16,654
Lynden	8,095	2,545	4,273	4,033	7,662	3,940	7,491	5,714	11,578
Meridian	4,065	417	688	599	1,150	631	1,165	960	1,944
Mount Baker	8,580	1,358	2,279	1,751	3,690	1,591	3,357	2,514	5,652
Nooksack Valley	3,557	1,358	2,280	1,585	2,986	2,081	4,205	2,255	4,534

Notes: Dwelling units are inclusive of all housing units (occupied and unoccupied) as well as group quarters such as elder care facilities and student housing.
Source: Draft Whatcom County Comprehensive Plan Allocations for Special Districts, by Growth Alternative (Leland Consulting Group, February 2025).

Most school districts in Whatcom County have capital facility plans that inventory existing school facilities, project future enrollment levels, and identify capital projects needed to support student enrollment growth in their respective districts. Future enrollment is affected by demographic trends (such as an aging population) and trends in alternative school methods including home schooling, Running Start program, and online schooling. Therefore, school districts routinely monitor enrollment growth trends and may adjust their plans accordingly.

Each school district has calculated their projected 2045 student enrollment based on their individual growth patterns and long-range plans. For all school districts, the 2045 projected student enrollment under the action alternatives is calculated by applying the same students to households ratio as is shown for the No Action Alternative. Those ratios are shown in Table 4.11-23.

Table 4.11-23 School District Enrollment Generation Rates

School District	Student/Household Ratio
Bellingham	0.20
Blaine	0.12
Ferndale	0.31
Lynden	0.38
Meridian	0.62
Mount Baker	0.12
Nooksack Valley	0.43

The following impact analysis describes whether existing classroom capacity will be adequate to serve the projected student enrollment in 2045 under each of the Comprehensive Plan alternatives.

Bellingham School District

Table 4.11-24 Bellingham School District Capacity Assessment

	No Action Alternative	Alternative 1 – Medium Growth	Alternative 2 – Multi-jurisdictional Resolution	Alternative 3 – High Growth
2045 Enrollment Projection	12,930	13,881	14,285	14,926
Existing District Capacity	10,174	10,174	10,174	10,174
District Capacity Surplus/Deficit	-2,756	-3,707	-4,111	-4,752

Note: These projected enrollment numbers assume that each school will have the same percentage of student age groups as it had in the base year (2023).

The Bellingham School District is currently engaged in the initial planning stages for three replacement elementary schools. These capital projects are needed to address the current capacity shortage. The District would not have enough capacity with the existing facilities to accommodate the projected student enrollment under any of the alternatives. The planned facilities would likely address most of the capacity needs under the No Action Alternative; however, there would still be shortfalls under all action alternatives. The collection of

Table 4.12-1 Projected Growth for Water Purveyors 2023-45								
	No Action		Alternative 1 – Medium Growth		Alternative 2 – Multi-jurisdictional Resolution		Alternative 3 – High Growth	
District	Dwelling Units	Popula-tion	Dwelling Units	Popula-tion	Dwelling Units	Popula-tion	Dwelling Units	Popula-tion
Birch Bay Water & Sewer District	1,961	3,292	1,204	2,868	1,274	3,116	1,717	4,354
City of Bellingham-Water Div.	9,932	15,675	14,387	21,489	16,218	25,142	18,995	30,263
City of Blaine	1,538	2,581	1,533	2,923	1,822	3,599	2,158	4,390
City of Everson	305	512	315	678	448	1,034	452	1,037
City of Ferndale	1,509	2,534	2,097	4,602	2,890	6,796	2,911	6,813
Lynden Water Department	1,586	2,662	2,495	4,682	2,483	4,682	3,817	7,639
Nooksack Water Department	330	554	189	351	425	977	268	530
Sumas Water Department	298	500	479	702	645	1,004	678	1,061
Columbia Valley Water District	115	192	81	175	92	200	103	236
Lake Whatcom Water & Sewer District - South Shore Water System	327	548	300	621	308	626	369	814
Whatcom Pud #1	0	1	1	1	1	1	1	2
Whatcom Co.Water Dist #13	389	653	410	906	456	1,031	583	1,374
Whatcom Co. Water Dist #2	41	67	60	111	53	97	80	160
Whatcom Co. Water Dist #7	130	215	159	308	147	283	222	466
Total Non-UGA Water Purveyors	3,065	5,138	4,379	8,943	5,867	11,759	7,285	15,167
Total	21,525	35,124	28,089	49,361	33,130	60,346	39,639	74,308

Wastewater

Demand for sewer service would increase under any of the alternatives. Expansions and upgrades of existing treatment plants and/or conveyance systems would be required to handle increased volumes and pollutant loads generated by new residential, commercial and industrial development.

Expanding existing and constructing new wastewater treatment plants is a difficult and expensive process due to planning lead time and siting issues. Therefore, treatment capacity needs to be monitored continually, and plans and fees need to be updated regularly to ensure adequate treatment facilities are in place to meet