



Winter 2012

# Proposed Yew Street UGA environmental impact assessment

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# Proposed Yew Street UGA Environmental Impact Assessment



Winter 2012  
Environmental Sciences 436 – Environmental Impact Assessment  
Huxley College of the Environment, Western Washington University

**Environmental Impact Assessment**

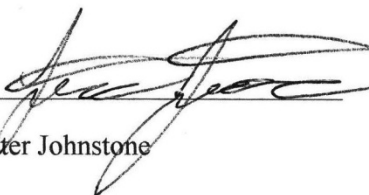

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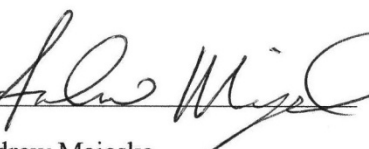

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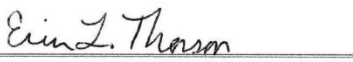
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Erin Thorson

Dear Concerned Citizens,

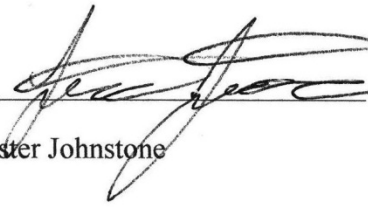
This document contains the findings from the Environmental Impact Assessment (EIA) that was completed to analyze the environmental impacts associated with the proposed rezoning of the Urban Growth Area Reserve located on the southern portion of Yew Street, north of Samish Way. The proposal at hand is rezoning the Urban Growth Reserve from its current development level of one house per ten acres (R10A) low density rural zoning into a higher density housing area that would allow 4 - 12 homes per acre. The proposal would change the current low density rural zoning into a medium density Urban Residential Mixed Use zoning. If rezoned to a higher density housing area, an estimated minimum of 1,365 – 2,369 homes are expected to be built in this area to accommodate the projected population growth of the City of Bellingham.


In compliance with the State Environmental Protection Act (SEPA WAC 197-11), the following report was generated by students from Western Washington University's Huxley College of the Environment, in the Environmental Impact Assessment Capstone Course (ESCI 436). This report is the result of the careful study and compilation of information gathered from governmental, private, and civil documents as well as credible scientific and technical sources.

The creation of the following document was completed by thorough consideration of both the natural and built environmental impacts that would be imposed on the site by the proposal. Two alternative options to the original proposal were analyzed by the environmental impact assessment team, the first being a no-action alternative and the second being an infill alternative. Based on the analysis performed on either option, it is recommended that a no-action alternative be enacted for the southern Urban Growth Area Reserve in order to preserve critical habitat for native flora and fauna and in order to maintain and preserve the water quality within the Lake Padden and Padden Creek Watersheds. In addition to this alternative, an infill alternative is proposed for the current northern Urban Growth Area and the area to the west of the Urban Growth Reserve within the boundaries of the Bellingham city limits. The recommendations are considered beneficial for both the projected growth of Bellingham's population in the coming years, and for the health and well-being of the watersheds that are encompassed by the southern Urban Growth Area Reserve.

A formal presentation of the findings of this EIA will be held at the Whatcom Educational Credit Union Building at 511 E. Holly Street at 8:00pm on Wednesday, March 7, 2012.

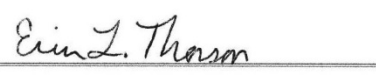
Sincerely,

Signature   
Lester Johnstone

Signature   
Leah Grassl

Signature   
Andrew Majeske

Signature   
Christian Shope

Signature   
Erin Thorson

## **Proposed Yew Street UGA**

### Authors:

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Leo Bodensteiner, Environmental Impact Assessment, ESCI 436

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### **DISCLAIMER**

This report represents a class project that was carried out by students of Western Washington University, Huxley College of the Environment. It has not been undertaken at the request of any persons representing local governments or private individuals, nor does it necessarily represent the opinion or position of individuals from government or the private sector.

## **Fact Sheet**

### **Project Title**

Proposed Yew Street UGA

### **Description of Project**

The proposal for this area is the rezoning of approximately 550 acres of land in the current Urban Growth Reserve Area that is located south of Prospect Street and extending south until reaching Samish Way. This area is located within the Lake Padden and Padden Creek watersheds, and is under consideration to be rezoned from a Rural Zone 10 (R10) zoning to a density ranging from 6 to 12 houses per acre. This zoning would then allow for a minimum of 1000 housing units to be built out on the proposal site, henceforth urbanizing the area.

### **Legal Description of Project**

The location of the proposal site is in Washington State, in Whatcom County, in the southeastern quarter of Section 05, Township 37N, Range 03E, W.M.

### **Project Proposer**

Yew Street Associates  
510 Lakeway Drive  
Bellingham, WA 98225

### **Lead Agency**

Whatcom County  
Planning and Development Services  
5280 Northwest Drive  
Bellingham, WA 98226-9013

### **Permit List**

#### City of Bellingham Permits

Water/Sewer Permits (BMC 2-5.02)

#### Whatcom County Permits

Building Permit Application – Residential and Attached Accessory Structures  
Conservation Easement/Compensatory Mitigation  
Endangered Species Act Checklist for Development within the ESA Potential Impact Area  
Final Subdivision Approval  
Land Disturbance and Clearing Application  
Major Project Permit  
Natural Resource Notice of Activity

Natural Resource Pre-Development Site Inspection  
Notice of Shoreline Critical Areas and Restriction on Use or Alteration  
Notice on Title of Critical Areas & Restriction on Use or Alteration  
Preliminary Subdivision Application  
Revocable Encroachment Permit  
Road Construction Permit  
Unopened and/or Unmaintained County Road Rights-of-Way Improvement Permit  
Water System Construction and Operation Approval  
Zoning Amendment Application

Washington State and Federal Permits

401 Water Quality Certification  
Endangered Species Act (ESA) Checklist for Development within the ESA Potential Impact Area  
NPDES Construction Stormwater General Permit and Coverage  
NPDES Sand & Gravel General Permit  
Water Quality Certification  
Wetlands Permit

**Contributors**

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Andrew Majeske  
Christian Shope  
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**Distribution List**

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**Acknowledgements**

Jeff Jewel, Whatcom Museum Photo Archives

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People for Lake Padden

Dan McShane, Former Whatcom County Council Member

Moshe' Quinn, City Planner, Bellingham, WA City Planning Commission

**Issue Date**

March 7, 2012

**Public Presentation Time and Date**

March 7, 2012 at 8:00pm at the Whatcom Educational Credit Union Building

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## Glossary of Terms

Arterial: Functional classification is the process by which streets and highways are grouped into classes, or systems, according to the character of service they are intended to provide. Basic to this process is the recognition that individual roads and streets do not serve travel independently in any major way. Rather, most travel involves movement through a network of roads. It becomes necessary then to determine how this travel can be channelized within the network in a logical and efficient manner. Functional classification defines the nature of this channelization process by defining the part that any particular road or street should play in serving the flow of trips through a highway network.

Base flow: Stream flow that is not influenced by storm events but is generated by groundwater

Biofiltration: The process through which pollutants are biologically degraded and processed out of runoff water by living material.

Buffer Zone: An area of a specified width that extends around a sensitive area such as a wetland or water body that is designed to mitigate some of the impacts of human encroachment on that site.

Carbonaceous: Consisting of, containing, relating to, or yielding carbon.

Dissolved oxygen : Oxygen content in water

Emissions: A substance discharged into the air, especially by an internal combustion engine.

Erosion: The wearing away of material

Eutrophication: Excessive richness of nutrients in a lake or other body of water, frequently due to runoff from the land, which causes a dense growth of plant life and death of animal life from lack of oxygen.

Fecal coliform: Bacteria generated by animal waste that is harmful to humans

Green built: Refers to a structure and using process that is environmentally responsible and resource-efficient throughout a building's life cycle: from siting to design, construction, operation, maintenance, renovation, and demolition.

Greenhouse gases: Any of the atmospheric gases that contribute to the greenhouse effect by absorbing infrared radiation produced by solar warming of the Earth's surface. They include carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (NO<sub>2</sub>), and water vapor. Although greenhouse gases occur naturally in the atmosphere, the elevated levels especially of carbon dioxide and methane that have been observed in recent decades are directly related, at least in part, to human activities such as the burning of fossil fuels and the deforestation of tropical forests.

Growth Management Act: Adopted in 1990-1991 to establish a framework for coordinated and comprehensive planning for managing local community growth.

Habitat Fragmentation: The division of large-scale habitats by the creation of infrastructure, i.e. roads, housing developments, or industrial sites.

Hazardous Material: Any substance that is ignitable, corrosive, reactive or toxic.

Hydrology: The study of water

Impervious : Not allowing fluid to pass through

Invasive Plant Species: Species of plants that are not native to the plant community of an area. These plants are often aggressive and very difficult to control once they have established a population in a new area.

LEED: Leadership in Energy and Environmental Design is an ecology-oriented building certification program run under the auspices of the U.S. Green Building Council (USGBC). LEED concentrates its efforts on improving performance across five key areas of environmental and human health: energy efficiency, indoor environmental quality, materials selection, sustainable site development and water savings.

Loam: A type of soil that is a mixture of sandy, silty, and clay-like properties

New Urbanism Principles: An urban design movement, which promotes walkable neighborhoods that contain a range of housing and job types.

Noise: Any unwanted or undesirable sound, characterized by intensity, duration and frequency.

Nutrient Loading: The movement of limiting nutrients (ex. phosphorus and nitrogen), from terrestrial environments into aquatic ecosystems via surface water runoff from homes or natural environments.

Nutrients: Chemicals that are essential for biologic functions

Palustrine Wetlands: Wetlands that include marshes or swamps, bogs, fens, tundra or floodplains. This type of wetland also includes any inland wetland that lacks flowing water, contains ocean-derived salts in concentrations less than 0.05%, and is non-tidal.

Particle pollution: Is a mixture of tiny particles and liquid droplets that, when inhaled, can cause damage to the lungs. Particle pollution is typically made up of components like nitrates, sulfates, organic chemicals, metals, and soil or dust particles.

Pathogens: A bacterium, virus, or other microorganism that can cause disease

PCB – polychlorinated biphenyl: A persistent, synthetic chemical that accumulates in tissue and adversely affects organisms

Peak flow: The highest height and volume of water in a creek, stream, or river following a storm event.

Phosphorus: An essential, often limiting nutrient in aquatic ecosystems

Pipeline Safety Ordinance: Adopted in 2010 to minimize the likelihood of accidental damage to pipelines and to ensure adequate protection of existing pipelines.

Priority Habitat/Species: A habitat or species that is sensitive to disturbances because of limited numbers and/or available space to survive.

Riparian: The interface area between a stream or river and the surrounding terrestrial environment.

Sediment controls: Capturing Sediment suspended in storm water runoff. Clearly this is much harder to accomplish than performing effective erosion control.

Surface runoff: Water that moves across a surface without infiltrating into the subsurface

Topography: The relief features or surface configuration of an area.

Transfer of Development Rights: A device by which the development potential of a site is severed from its title and made available for transfer to another location. The owner of a site within a transfer area retains property ownership, but not approval to develop. The owner of a site within a receiving area may purchase transferable development rights, allowing a receptor site to be developed at a greater density.

Tributary: Stream that flows into another stream or lake

UGA Reserve: Are areas that are not suitable at the time for Urban Growth, but may be considered in the distant future as growth occurs.

UGA: Urban Growth Areas may also be established in areas that are not contiguous to existing cities, and are already characterized by urban growth where adequate facilities and services can be provided and which are intended to meet needs not met by cities and their Urban Growth Areas.

Urban village: Urban Villages are activity centers that provide pleasant living, shopping, and working environments; strong pedestrian accessibility; adequate, well located open spaces; an alternative, well connected street system; and a balance of retail, office, residential and public spaces.

Walkability: The capability of being traveled, crossed, or covered by walking: a walkable road or a walkable distance.

Watershed: An area, delineated topographically, that influences a specific waterway

Wildlife corridors: Paths or trails that are used as dispersal routes for fauna in an ecosystem.

Zoning: Derived from the practice of designating permitted uses of land based on mapped zones which separate one set of land uses from another.

## Acronyms and Abbreviations

Air Quality Index – AQI  
City of Bellingham – COB  
Department of Ecology – DOE  
Department of Natural Resources – DNR  
Division of Emergency Management – DEM  
Environmental Impact Statement – EIS  
Environmental Protection Agency – EPA  
Federal Communications Commission – FCC  
Ground Level Ozone – O<sub>3</sub>  
Growth Management Act – GMA  
Growth Management Plan – GMP  
Level of Service – LOS  
Local Emergency Planning Committee – LEPC  
Low Density Residential – R10A  
Low Impact Development – LID  
Metric Tons of Carbon Dioxide Emission – CO<sub>2</sub>E  
National Ambient Air Quality Standards – NAAQS  
Nitrogen Dioxide – NO<sub>2</sub>  
North West Clean Air Agency – NWCAA  
Polychlorinated Biphenyl – PCB  
Recreational Open Space – ROS  
Residential Rural 2 – RR2  
Revised Washington Code – RWC  
Rural Residential 2 – RR2  
Sanitary Service Company – SSC  
Sulfur Dioxide – SO<sub>2</sub>  
Transfer of Development Rights – TDR  
Urban Growth Area – UGA  
Urban Residential 3 – UR3  
Urban Residential 4 – UR4  
Urban Residential Mixed Use – URMX  
Washington Administrative Code – WAC  
Washington Department of Fish and Wildlife – WDFW  
Washington Utilities and Transportation Commission – WUTC  
Water Use Efficiency Program – WUE  
Whatcom County Code – WCC  
Whatcom County Critical Areas Ordinance – CAO  
Whatcom Transit Authority – WTA





## **Chapter 1: Executive Summary**

The purpose of this Environmental Impact Assessment (EIA) is to analyze the probable significant environmental impacts associated with annexation and increased development of the Yew Street corridor. The proposal will encompass the northern Yew Street UGA and southern Yew Street UGA Reserve. This document evaluates the impacts on elements of the natural and built environment. The most significant impact in the natural environment would be the degradation of water quality due to an increase in impervious surfaces. Two alternatives are presented, as well as required and recommended measures to mitigate significant impacts to the natural and built environments.

### Proposed Action

Yew Street Associates have proposed a reinstatement of the UGA Reserve into UGA status and annexation of the UGAs into Bellingham city limits. Housing density within the entire UGA would increase from 800 dwelling units to 2169 – 3169 dwelling units. The City of Bellingham would need to provide proper utilities such as sewer, water and gas. Public services would also need to be provided, which include transportation, police, and fire services. All upgrades to services would have to be concurrent and satisfy the regulations set forth by the Growth Management Act and the City of Bellingham’s Comprehensive Plan.

### Summary of Significant Impacts

Annexation and increased development of the Yew Street corridor would have several significant environmental impacts. The proposed site influences two watersheds that offer important ecosystem services as well as recreational. The northern Yew Street UGA is within the Whatcom Creek watershed. The southern Yew Street UGA Reserve is within the Padden Creek and Lake Padden watershed. Increased development in the Yew Street corridor would affect all three water bodies. Increasing development will increase the amount of impervious surfaces. Impervious surfaces effectively generate increased surface flow after precipitation events. Increased surface flow carries with it sediments, nutrients and pathogens. These processes encourage adverse impacts on water quality. All of the influenced water bodies are currently affected by anthropogenic activity. Annexation of the two UGAs would significantly increase impervious surfaces, which would further degrade water quality and possibly inhibit their natural functions.

Mitigation measures may be sufficient to minimize adverse environmental impacts. Measures are required by the Whatcom County Code (WCC) within the Lake Padden watershed, which include Special Stormwater Districts, Water Resources Special Management Areas and Water Resource Protection Overlay District. These three designations recognize the sensitivity of Lake Padden and require special development techniques and stricter stormwater control. We recommend implementation of Low-Impact Development (LID), Leadership in Energy and Environmental Design (LEED) and Built Green Housing techniques. These mitigation measures aim to decrease impacts on the natural hydrologic cycle, reduce clearing of natural vegetation and promote the sustainability of development.

The proposed action, even after the above required and recommended mitigation measures are implemented, will have significant adverse environmental impacts on the natural and built environment. The ecological condition of the Lake Padden watershed is of the highest concern. We recommend that a no-action alternative be taken to ensure no further degradation of water quality in the affected watersheds. We understand that population growth will occur, but less sensitive alternative sites may be better candidates for development.

## **Chapter 2: Affected Environment**

### **Project Objective**

This proposal looks to satisfy the forecasted population growth of Bellingham by using smart growth principles. The environmental impact assessors will investigate at appropriate housing densities and mitigation of impacts on the environment. This analysis focuses on the current Yew Street Urban Growth Development (UGA) and UGA reserve that is located south of San Juan Blvd. extending to Samish Way. Currently the site does not fulfill the requirements necessary to be considered urban. In order for the site to become urban it would have to be annexed into the city of Bellingham. In order to maintain water quality in the Lake Padden Watershed, urban services would have to be extended to the entire area to accommodate for the increased runoff from impervious surfaces. The main concerns associated with this site consist of storm water management, public services and roadway improvements. The site is in two watersheds, with Whatcom Creek to the north and Lake Padden to the south. Currently Lake Padden has water quality issues due to pollution from runoff. Whatcom Creek has been recently restored to promote wildlife habitat. Both areas provide recreational activities servicing residents, and are considered important to the welfare of the community. The assessment team will take into consideration the economic, social and environmental impacts and weigh them against other potentially important sites that may also be suitable for urban growth.

## 2.1 Water

### Existing Conditions

The proposed Yew Street UGA occupies the Whatcom Creek and Lake Padden watersheds. Four major streams emanate from the north half of the area and drain northward into Whatcom Creek and ultimately into Bellingham Bay: Lincoln Creek, Cemetery Creek (East and West Forks) and Hannah Creek. The south half of the area drains southward via Gallagher Creek and a smaller unnamed stream to Lake Padden, which empties via Padden Creek to Bellingham Bay.

#### *Whatcom Creek*

Whatcom Creek flows west out of Lake Whatcom into Bellingham Bay. The 6.7-km creek includes four tributaries, three of which emanate from the proposed Yew Street UGA (Lincoln, Cemetery, and Hannah Creek), and drains an area of 23 square km (Hood et al., 2011). Whatcom Creek offers recreational opportunities to residents of Bellingham including fishing, swimming, and boating. Two fish hatcheries are positioned on the creek, one at the mouth and one at Whatcom Falls Park.

Whatcom Creek supports Chinook, Coho, Chum, and Pink salmon, as well as Steelhead and Cutthroat trout (Fish Studies, 2008).

Whatcom Creek is currently listed on the Washington State Department of Ecology (DOE) 303(d) list of impaired bodies of water for temperature, dissolved oxygen, and fecal coliform (Hood et al., 2011). For a water body to be added to the 303(d) list, it must surpasses state-set standards that qualify it as impaired and in need of public attention and regulation.

Whatcom Creek travels through the City of Bellingham and therefore is affected by impervious surfaces within the watershed and by channelization of the stream. These elements have increased peak flows during storm events, which have caused sedimentation and scouring of the stream bed, degrading fish habitat.

#### *Lake Padden*

Lake Padden lies on the south end of the proposed Yew Street UGA and receives surface runoff from the area via Gallagher Creek and a smaller unnamed tributary. The 150-acre lake and park is of important recreational value as it offers fishing, swimming, hiking, a golf course, and a dog park.

Lake Padden is stocked with rainbow trout, kokanee, and cutthroat trout (WDFW Fish Program, 2008), offering a popular trout fishery.

Lake Padden has recently aroused public concern due to its noticeably degrading water quality and increased algae blooms. A recent water quality study performed by People for Lake Padden indicates that the lake's total phosphorus concentrations surpassed the Washington State Surface Water Quality standard set “action level” in summer months (Majeske et al., 2012). Once a state-set “action level” is exceeded, the impaired water body qualifies for a more thorough investigation by DOE to examine to what level the water body is affected. Lake Padden is increasingly receiving public attention and has become a strong basis for resisting the development of the Yew Street area.

Lake Padden is on the DOE 303(d) list of impaired water bodies for polychlorinated biphenyls (PCBs). PCBs are persistent organic chemicals originally used as a fluid coolant in transformers but production of PCBs was banned by the United States Congress in 1979. Although banned, the persistent nature of PCBs has allowed them to linger in soils, water, and air for decades. PCBs have been found to cause cancer and other adverse health effects on the immune, reproductive, nervous, and endocrine systems in both terrestrial and aquatic biota, including humans.

#### *Padden Creek*

The Padden Creek watershed drains an area of 15.5 square km and is located within southern Bellingham city limits. Water draining through Padden Creek is generated from Lake Padden and its tributaries. The 4.7-km creek flows through forested, residential, and commercial areas (Hood et al., 2011).

Padden Creek supports several salmonid fish species including Coho, Chinook, and Chum salmon as well as Steelhead and resident and sea-run Cutthroat trout (Fish Studies, 2008).

Padden Creek is currently listed on the DOE 303(d) list of impaired bodies of water for temperature, dissolved oxygen, and fecal coliform.

#### *Wetlands*

Wetlands comprise significant areas of the Lake Padden watershed, many within the proposed Yew Street UGA (Figure 1). These wetlands provide essential ecosystem services including retention and infiltration of surface runoff, groundwater recharge, habitat for flora and fauna, water purification, and stream flow maintenance.

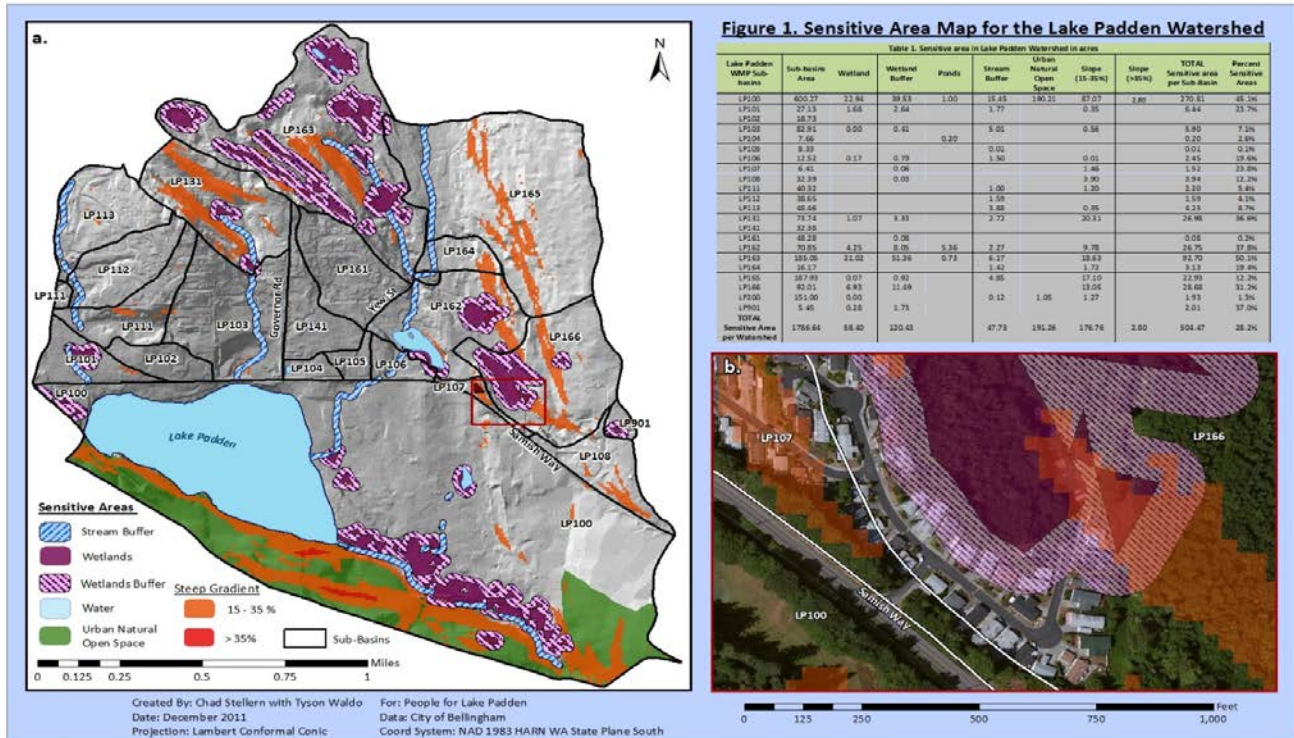


Figure 1. Taken from People for Lake Padden

Significant Impacts

The proposal is to change the zoning in the area which would increase the allowable housing density. Urban development alters the natural landscape by adding large amounts of impervious surfaces from roads and dwelling units. As the forest is cleared to make way for development, soils that would naturally promote infiltration of precipitation are transformed into pavement and rooftops which shed the water downhill as surface runoff (Booth et al. 2002). The effect of increased impervious surfaces is illustrated in Figure 2.

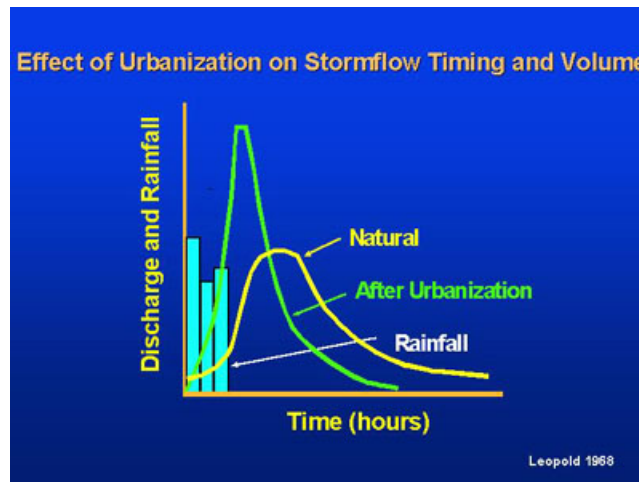


Figure 2. Behavior of storm events before and after impervious surfaces taken from EPA

Increasing impervious surfaces would cause increased surface runoff into both the Lake Padden and Whatcom Creek watersheds. Increased surface runoff would carry with it nutrients, pathogens, and suspended sediments. Increasing the nutrient and sediment loading of the two watersheds could worsen water quality. Higher peak flows, also associated with increased impervious surfaces, cause increased erosion rates which ultimately result in wider and straighter stream channels. Decreasing the stream channel complexity degrades fish habitat (Bain et al. 1999).

A lack of infiltration of precipitation also decreases groundwater recharge and lowers local water tables. These changes in the hydrology of the groundwater reduce water supplies as well as base flows contributed to streams during dry periods in summer months. Many resident fish species rely on base flows during dry periods.

Nutrient addition via increased runoff into Lake Padden would promote algal growth, which decreases dissolved oxygen when decomposition of dead algae occurs. Increased algal blooms are also a nuisance to users of the lake as they can emit foul odors, be unsightly, and in some cases produce toxins. Nutrients such as phosphorus may cause eutrophication of Lake Padden, the process in which the productivity of a lake becomes so high adverse effects begin to occur.

Fecal coliform bacteria and PCBs could also increase in Lake Padden with increased surface runoff. Solid particles in surface flow provide a surface for bacteria and PCBs to adhere to. Pet waste and leaky septic systems contribute potential pathogens that can be washed into Lake Padden during surface flow events. Disruption of soils and increased surface flows would also promote the transport of PCBs into Lake Padden, which is on the DOE 303(d) list for PCB concentrations. Whatcom and Padden Creeks are on the DOE 303(d) list for fecal coliform concentrations (Hood et al. 2011), and that problem could be worsened.

Sediment loading into all of the affected waterways would increase water temperatures. Increased turbidity of water more effectively absorbs solar radiation, heating up water more quickly. Increased water temperatures affect available habitat for fish, especially salmonids. Thus, sediment loading in Whatcom and Padden Creeks would further increase water temperatures for which the streams are already on the DOE 303(d) list for impaired water bodies (Hood et al. 2011).

Peak flows and sediment transport can be mitigated by wetlands as long as they have the capacity to store and purify the storm water. As wetlands are filled to make way for development and peak flows increase with impervious surfaces, local wetlands may not have the capacity to treat the surface runoff.

In conclusion, increased development in the Yew Street UGA will result in increased impervious surfaces. With impervious surfaces come erosion and degradation of available habitat as well as increased nutrient, pathogen, and sediment transport into local waterways (Booth et al. 2002).



Whatcom and Padden Creeks and Lake Padden may all likely be adversely affected by increased impervious surfaces.

Alternatives

*i.* Infill

Concentrating development to the northern Yew Street UGA and extending the UGA west at Palmer Road and north to the northern UGA boundary (Appendix B) would minimize hydrologic effects to Lake Padden and Padden Creek. As this would be a small increase in density in the northern Yew Street UGA, the effects on Whatcom Creek would likely be lessened. Sensitive water-bodies such as Lake Padden and Padden Creek would remain protected from increased impervious surfaces, which would reduce the effects of nutrient additions, increased water temperatures, degradation of fish habitat via stream erosion, and pathogen concentrations. The local wetlands would remain undisturbed and capable of providing their natural ecosystem services.

*ii.* No-Action

Maintaining the current urban density of the Yew Street UGA would prevent the additional impacts on water quality, water temperatures, fish habitat, and harmful bacteria in the Whatcom Creek and Padden Creek watersheds including Lake Padden. To accommodate anticipated population growth within the City of Bellingham, development would need to occur in other UGAs. Increased impervious surfaces would inevitably occur with development and have their own localized impacts on water.

Mitigation Measures

Required

According to Chapter 20.71 (Water Resource Protection Overlay District) of the Whatcom County Code (WCC), controls are imposed to preserve and protect unique and important water resources within Whatcom County, including Lake Padden. According to the code at least 80 percent of the parcel, under current zoning, should be pervious surfaces (Chapter 20.71, 2012). Construction of facilities such as gasoline stations and dry cleaners should also be avoided to maintain water quality in such sensitive watersheds. Regulations included in Chapter 20.71, including storm water management and land use, should be imposed on decisions governing development in the Southern Yew Street UGA reserve.

As described by WCC 20.80.635, Lake Padden is one of three special stormwater districts that require On-Site Stormwater Facilities and Protected Native Growth Areas. As described by WCC 20.80.735, Lake Padden requires Temporary Erosion and Sediment Control measures,

Phased Clearing, Soil Stabilization, Tree Retention, and Season Clearing Limitations (Planning and Development Services, 2012).

Recommended

Low-Impact Development (LID) practices, set by the City of Bellingham, should be implemented during construction so the effects of impervious surfaces are minimized. LID techniques include, but are not limited to, the use of pervious surfaces, retention of natural vegetation, and green roofs (Low-Impact Development, 2012). The most important outcome of the implementation of LID techniques should be the protection of the natural hydrologic cycle. The use of phosphorous-free fertilizers and banning the use of pesticides within the watershed will also help to protect water quality.

*Level of significance after mitigation*

If development occurs in the Southern Yew Street UGA reserve, an increase in impervious surfaces will occur. The adverse environmental impacts associated with impervious surfaces will likely be significant.

## 2.2 Air and Greenhouse Gasses

### Existing Conditions

The site is located in the Fraser Valley “airshed”, which is subject to air quality influences from Vancouver, British Columbia. Local, State and Federal regulations and agencies regulate air quality in Whatcom County. The Northwest Clean Air Agency (NWCAA) has five monitoring sites serving Whatcom, Skagit and Island counties. There are two monitoring stations in Bellingham, Washington, located on Alabama Street (NWCAA, 2012). The Clean Air Act requires that the Environmental Protection Agency (EPA) set National Ambient Air Quality Standards (NAAQS) for pollutants considered to cause health problems to humans and the environment. The monitoring sites calculate pollutants with a PM-10 (particulate matter less than 10 microns in size), which is integrated into in an Air Quality Index (AQI) (EPA, 2012). The Clean Air Act regulates five major air pollutants: ground-level ozone (O<sub>3</sub>), particle pollution (also known as particulate matter or PM), carbon monoxide (CO), sulfur dioxide (SO<sub>2</sub>), and nitrogen dioxide (NO<sub>2</sub>) (NWCAA, 2012). If particulate matter reaches unhealthy levels, a burn ban is required and enforced by the NWCAA or the Department of Ecology (DOE). The air quality along Yew Street is considered to be excellent with the consideration of some localized effects that may occur in lowlands or depressions in topography. Negative impacts to air are generally related to wood burning stoves in the colder months of the year and at night.

### Significant Impacts

The proposal will increase the amount of local air pollution but due to the air mixing qualities and medium density housing construction, it will have little impact on the local air quality. However, an increase in particulates will increase greenhouse gases, carbon monoxide, nitrogen dioxide, sulfur dioxide, ozone and lead. Particle pollution can be directly emitted or can be formed when emissions of nitric oxide, ammonia, organic compounds, and other gases react in the atmosphere (NWCAA, 2012). The EPA regulates pollution particles that have a diameter of 2.5 to 10 micrometers and smaller. The introduction of chemicals and particulate matter can have adverse effects on the health of sensitive populations such as people with asthma, children and the elderly (EPA, 2012). Greenhouse gases are made up primarily of carbon

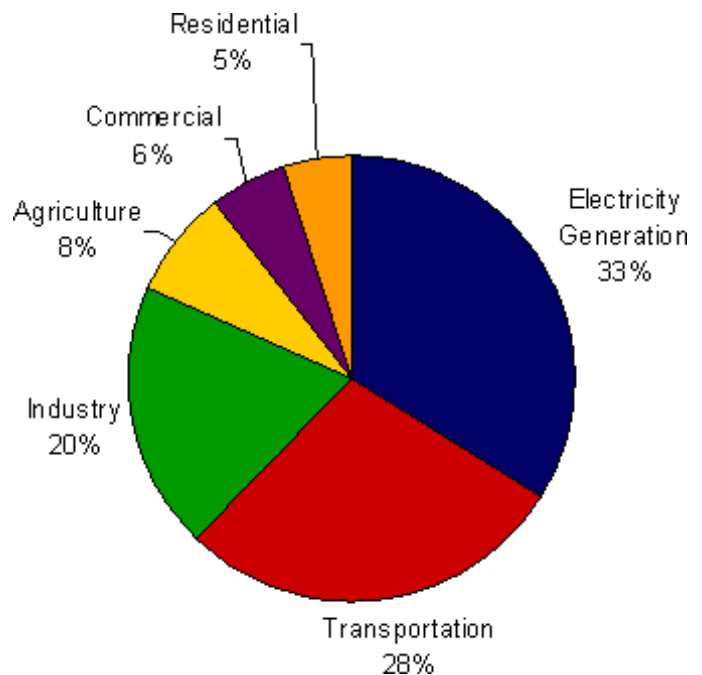


Figure 3. U.S. Department of Transportation

dioxide, methane, nitrous oxide, ozone and water vapor. Greenhouse gases affect the earth’s surface temperature, which in turn alters ecosystem dynamics, negatively affecting ecosystem services. Emissions from combustion of carbonaceous fuels are toxic and known to cause cancer. All emissions can have an adverse effect on early child development, people with heart disease and other respiratory illness (DOE, 2012).

*Construction:*

Construction of 1,365 – 2,369 houses will increase demand for materials, which will have an impact on local and non-local industries. Natural resources such as timber, oil and metals will be needed to produce building materials. If local industries cannot provide the materials needed, then they will have to be shipped or trucked in. As a result, a greater amount of carbon emissions will be released into the atmosphere. The Department of Ecology has identified that seventy percent of the cancer risk from airborne pollutants is from diesel emissions and this source is most harmful to the public’s health (DOE, 2012). Construction practices such as operating heavy machinery, grading and sand blasting will add to the particulate matter in the air. After construction is complete, air quality should return to its normal levels with the consideration for increased motor vehicle usage in the UGA.

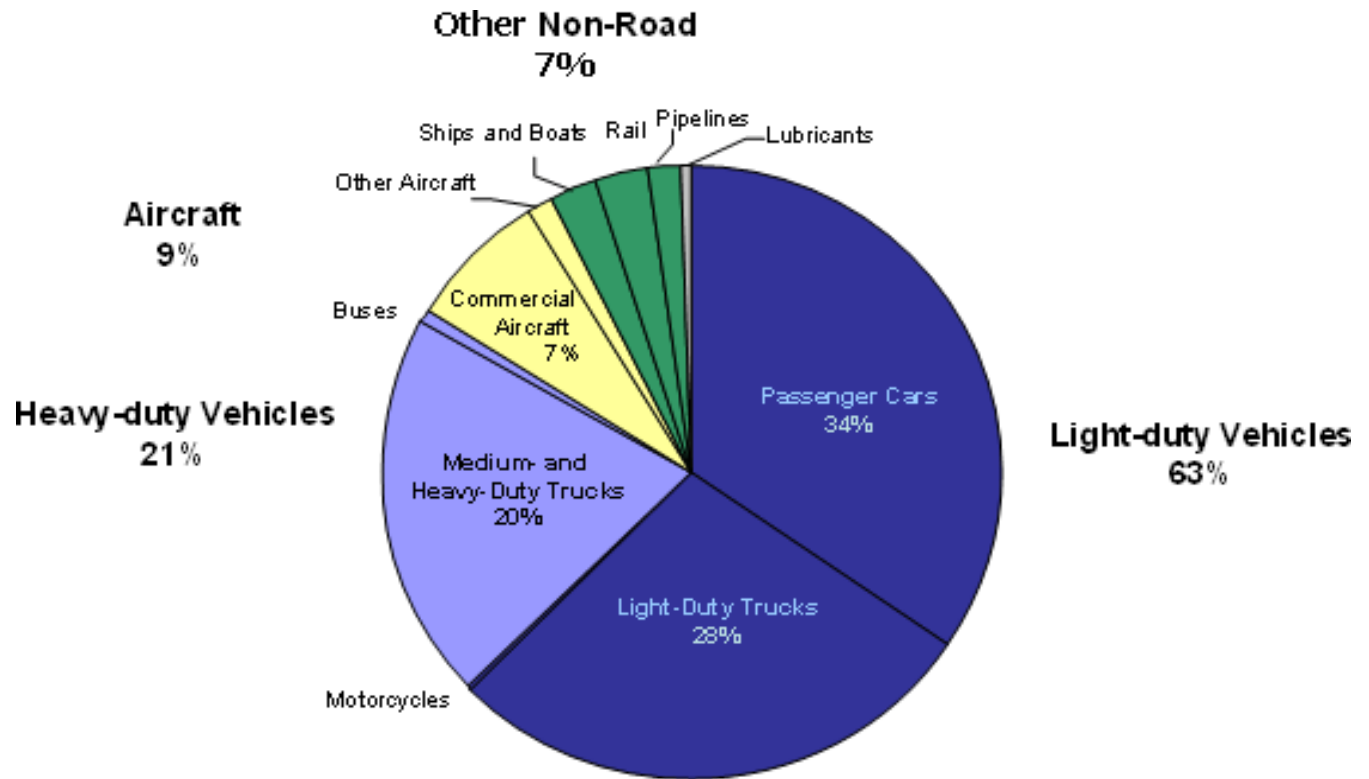


Figure 4. U.S. Department of Transportation

*Motor Vehicle:*

Road dust consists of deposition from vehicle exhausts and industrial exhausts, tire and brake wear, and dust from the degradation of paved roads. These particulates have the highest concentration near roadways and are known to cause cancer. They are also known to worsen symptoms of people with health problems such as asthma, heart disease and lung disease (EPA, 2012). In 2007 the EPA calculated the average miles traveled in a vehicle were 11,720 miles/year, releasing approximately 5.1 metric tons of carbon dioxide emission (CO<sub>2</sub>E) (EPA, 2012). Given the number of houses and assuming two cars per house, vehicles would add carbon emissions of 13,923 – 24,163 metric tons CO<sub>2</sub>E. As a result, these vehicles would also increase emissions of other greenhouse gases, carbon monoxide, nitrogen dioxide, sulfur dioxide and ozone.

*Wood Smoke:*

Particles from wood smoke are small and can be inhaled deeply into one's lungs aggravating asthma, emphysema, irritated eyes, headaches and allergies. According to the NWCAA about half the homes in northwest Washington State have some form of wood heat (NWCAA). Eighty percent of pollution can be attributed to burning wood for heat and is associated with winter months, time of day and the weekend (NWCAA, 2012). Improper installment can allow seventy percent of what is outside to seep into buildings within an hour (NWCAA, 2012). The EPA and NWCAA both are responsible for monitoring unhealthy levels of air pollution and they both can enforce either a Stage 1 or 2 burn ban (NWCAA, 2012). During construction burning of debris will slightly degrade air quality, but further degradation of air quality may occur from the use of wood-burning stoves.

Alternatives

*i.* Infill

The current UGA to the north of Palmer Road is consistent with low-density housing and is located in the Whatcom Creek watershed. The neighborhood just north of the site is consistent with medium density single-family homes. In order to follow smart growth practices density in this area should be at least consistent with medium-density mixed-use housing and should consider increasing density. Mixed-use zoning allows for small neighborhood commercial areas that can be incorporated into the neighborhoods at a distance consistent within a one half-mile radius. This will promote alternate forms of transportation, lowering necessary carbon emission.

*ii.* No Action

No action alternative will result in very little construction because the site is not equipped with public services and facilities. However, the site could be built out in the UGA and UGA Reserve

that would be consistent with the current zoning. As is, the cost of approved facilities would be accrued by the owner, making it expensive to build. This will translate to a greater feasibility of new homes being built in other parts of Whatcom County.

### Mitigation Measures

#### Required:

This area has unusual regulation because it is considered to be in a special storm water district that is regulated by Whatcom County Planning and Development Services. Regulations consist of temporary erosion and sediment controls, phased clearing and soil stability (Whatcom County, 2012). All wood heating appliances and factory-built fireplaces sold or installed in Washington must meet EPA certification requirements (NWCAA, 2012). Washington State legislators adopted the Washington State Clean Air Act (RCW 70.94) in 1967. Outdoor burning restrictions have become increasingly more stringent through a progression of amendments and the adoption of the State outdoor burning rule (WAC 173-425) (NWCAA, 2012).

#### Recommended:

In order to reduce air pollution the site should apply new urban planning principles, which encompass alternate modes of transportation, densities high enough to support an urban village and walkability of the site. The frequency and number of transit stops will need to be increased to support the area and encourage ridership. Each neighborhood should have access to a commercial center that is within a one half-mile radius. All wood-burning stoves should either meet certification requirements set forth by the EPA and be installed by a professional or the city should ban them all together.

### Level of significance after mitigation

Local air quality will not be adversely affected. However, an increase in vehicle trips will have an impact on the overall contribution of greenhouse gases and other particulates to the atmosphere.

## 2.3 Earth

### Existing Conditions

The proposed Yew Street Urban Growth Area (UGA) reserve is currently mostly undeveloped. The major soil type in the area is Squalicum Gravelly Loam with slopes ranging from 5 to 60 percent (Poulson et al., 1953). The underling bedrock is mainly Chuckanut Sandstone (Hunting et al., 1997). There is little impervious surface. The current natural vegetation and soil promote the infiltration of surface flow which recharges groundwater and minimizes stream bed erosion leading to sediment loading in the Whatcom and Padden Creeks and Lake Padden watershed.

Fifteen to thirty percent slopes, accounting for about 40 percent of the area in the Yew Street UGA proposal, make the feasibility of construction of dwellings with basements, small commercial buildings, playgrounds, pond reservoir areas, and local roads and streets very limited (Web Soil Survey, 2012).

### Significant Impacts

The conversion of natural vegetation and soils into impervious surfaces will have significant impacts on the behavior of storm flow events. Storm flow events can be made more severe when infiltration is not allowed to occur and the precipitation instead flows as surface runoff. Intense surface runoff can carry contaminants, including nutrients, heavy metals, and pesticides, into nearby streams and ultimately into Lake Padden and Bellingham Bay. This can erode stream beds and carry suspended solids into Lake Padden and Bellingham Bay.

The installation of sewer and water by the City of Bellingham will disrupt the subsurface environment, especially if constructed on steep slopes that could be made unstable. Excavation during construction would also destabilize slopes and accelerate erosion. Construction will compact the soils, often to a degree which creates an impervious surface.

### Alternatives

#### *i.* Infill

Concentrating development into the northern Yew Street UGA and extending the UGA west at Palmer Road and north to the northern UGA boundary (Appendix B) would result in little or no alteration to the southern Yew Street UGA Reserve's geologic or soil environment. As a result, there would be no increased impervious surfaces, no alterations to the subsurface environment, and no destabilization of slopes in the southern Yew Street UGA reserve, which influences Lake Padden. Development in the existing urban areas will require little or no new infrastructure

which would not affect the geologic or soil environment of that area. Extending the UGA westward would have less impact as it is not in the vicinity of sensitive waterways including Whatcom and Padden Creeks and Lake Padden.

*ii.* No-action

If the Yew Street UGA zoning density remains the same, no further impacts would be made to the local geologic or soil environment. This alternative would minimize impervious surfaces, reducing nutrient, pathogen, and sediment transport to the affected watersheds. This would, however, put more pressure on current City of Bellingham UGAs and their affected local environments.

Mitigation Measures

Required

According to Chapter 20.71 (Water Resource Protection Overlay District) of the Whatcom County Code (WCC), additional controls are imposed to preserve and protect unique and important water resources within Whatcom County, including Lake Padden. According to the code at least 80 percent of the parcel, under current zoning, should be pervious surfaces (Chapter 20.71, 2012). Regulations included in Chapter 20.71, including storm water management and land use, should be imposed on decisions governing development in the southern Yew Street UGA reserve.

According to Chapter 16.16 (Critical Areas) of the WCC, development within geologically hazardous areas, including steep slopes present in the Yew Street UGA, needs to be constructed to minimize risk to health and safety. Such projects must be examined by a state-licensed professional to ensure proper design and construction (Chapter 16.16, 2012).

Recommended

Low-Impact Development (LID) practices, set by the City of Bellingham, should be implemented during construction so the effects of impervious surfaces and subsurface soil disruption are minimized. LID techniques include, but are not limited to, the use of pervious surfaces, retention of natural vegetation, and green roofs (Low-Impact Development, 2012). The most important outcome of the implementation of LID techniques should be the protection of the natural hydrologic cycle.

Level of significance after mitigation

The soil and slopes of the Yew Street UGA will be altered during construction of new development. The impacts will likely be significant, regardless of mitigation efforts, but such impacts should be minimized as much as practicably possible.



## 2.4 Transportation

### Existing Qualities

Yew Street is a designated Secondary Arterial and provides a major transportation link between Samish Way to the south and Lakeway Drive to the north. It provides connections to the Samish Way and the Lakeway Center commercial area. It also provides access to I-5 via Lakeway Drive and Samish Way. It is approximately 1.75 miles to the Lakeway commercial center and I-5 from the northern-most part of the UGA and approximately 2.5 miles from the southern-most point of the UGA Reserve at the intersection of Yew Street and Samish Way. There are several collector streets existing within the site. Entering Yew Street from the west are Woodbine Way, Bennett Road, East Douglas Avenue, Palmer Road, South Hills Drive and Timberlake Way. From the east are Kingsmill Street, Tacoma Avenue, South Avenue and Dumar Road, Bass Street, Democrat Street and Revelle Road intersect Yew Street on the East and West side vertically. The roads in the UGA are approximately 35 feet wide with 6-foot sidewalks. The sidewalks along Yew Street end near Tacoma Way in the region where the UGA Reserve begins, and Yew Street continues south with 22-foot wide roads and no sidewalks.



Figure 5. Whatcom County Transit Authority

### Public Transportation

Currently, Whatcom County Transit Authority (WTA) bus routes 43 and 44 have connections to the Downtown Bellingham Station. There are two bus stops, one located on either end of Yew St. These routes service the area hourly Monday-Friday beginning in the morning to the North (Lakeway Drive/Yew Street) from 6:35 AM to 5:41 PM and to the South (Samish Way/Yew Street) from 6:42 AM to 5:41 PM. On Saturdays both bus stops have a three-hour delay in the morning and no service Sundays. There are no transportation facilities in the area (WTA, 2012).

### Significant Impacts

With the addition of 1,365 – 2,369 units there will be an increase in automobile traffic, which will result in traffic congestion on secondary and principle artillery routes that connect to the business center

and I-5. In 2001 the traffic count was 20,400 vehicles per day on Yew Street. Given the increase in units the project will augment traffic by 13,000 – 38,000 vehicles/day, increasing the levels of airborne particulates that are harmful to humans and plants (COB, 2012). Road improvements on Yew Street are necessary to accommodate emergency services and alternate forms of transportation. Typically, secondary arterials have 60 – 80 foot wide right-of-ways with 40 – 60 feet being paved with impervious surface. These secondary arterials also include bike lanes on the outside of the curb and pedestrian facilities on the inside of the curb (COB, 2012). Neighborhood collector streets would be added to accommodate the flow of traffic through the site. Additionally, a proposed secondary arterial route would connect the site to 40<sup>th</sup> Street and the neighborhoods adjacent to the west with a future connection to Elwood and I-5. Each neighborhood-housing unit would have to provide parking for two cars. This would result in an additional 2,730 – 4,738 parking spots or approximately 300 square feet of parking per housing unit (COB, 2012).

The addition of bus stops and transportation facilities would be added to accommodate the influx of residents. Furthermore, greater frequency of WTA services will be needed to service the residents on the site.

*Alternative*

*i.* Infill

Using sustainable urban design concepts neighborhoods should be constructed in a grid form and be separated by natural transitions. This will reduce the impact of traffic on Yew Street allowing the distribution of traffic to be more broadly distributed, while mitigating stormwater. This grid pattern would allow connectivity from one neighborhood to the next and open up accessibility to I-5 and the central business district. The UGA already contains some urban qualities such as sidewalks. Additional bus stops should be added to support low-income residents and provide alternate forms of transportation (COB, 2012).

*ii.* No Action

This alternative will result in no change to the transportation facilities and services that are currently provided. The population growth of Bellingham will likely be dispersed throughout the count. This is generally consistent with low-density housing that is reliant on automobile transportation. As a result, this will increase greenhouse gases and airborne particulates that are known to cause cancer and other adverse effects to humans and environmental health.

Mitigation Measures

Required:

As outlined in the *Comprehensive Plan of Bellingham* the level of service must meet transportation services in a timely manner. According to the Bellingham comprehensive plan, “The Level of Service (LOS) standards provide measurable criteria to judge the adequacy of the multimodal transportation system by calculating person trips available for transportation concurrency evaluations. New development will be prohibited unless adequate person trips are available or multimodal improvements to the transportation system to accommodate the impacts are made concurrent with the development as specified under the concurrency provisions of the Growth Management Act and Bellingham’s Transportation Concurrency Management Ordinance (BMC 13.70)(COB, 2012)”.

The Growth Management act outlines improvements or strategies that should accommodate the impacts of development and be made concurrent with the development. Strategies can include increase in public transportation service, rideshare program, demand management, and other transportation strategies (GMA, 2012).

Recommended:

New Urbanism Principles will create connectivity, walkability, mixed use, diversity, mixed housing, quality architecture, traditional neighborhoods, increase density, green transportation, sustainability and quality of life. These guidelines help reduce the socioeconomic, environmental and species impacts that can occur in development sites.

Level of significance after mitigation

If development occurs in the southern section of the Yew Street UGA Reserve, an increase in impervious surfaces will occur. The adverse environmental impacts associated with impervious surfaces will be significant.

## 2.5 Housing

### Existing Qualities

Because there are two types of UGA's in this proposed site, there is a division in zoning. The history of the site also creates an atypical zoning pattern. Before the Comprehensive Plan of Bellingham was adopted in 2005, some of the area was accommodated with City of Bellingham infrastructures, such as water and sewer, but most of the area is not accommodated with City services. Currently, the area is zoned and operates under Whatcom County zoning regulations. To the north of



Figure 6. Housing on Yew Street

Palmer Road to San Juan Boulevard the UGA is zoned for a medium-density, which consists of Urban Residential Mixed Use (URMX) ranging from 6 to 12 units/acre and Recreational Open Space (ROS) (COB, 2012). To the south of Palmer Road is a UGA Reserve that consists of low-density Zoning R10A 1-unit/10 acres and an ROS. On the south end of the UGA Reserve existing zoning consists of Rural Residential 2 units/acre (RR2), Urban Residential 3 units/acre (UR3) and Urban Residential 4 units/acre (UR4) (Whatcom County, 2012). There are approximately 300 housing units in the UGA and 60 mobile homes. The UGA Reserve contains approximately 500 housing units and 30 mobile homes. Both areas consist of mainly single-family residential homes that range in value from 250,000 to 500,000 dollars (Zillow, 2012). The UGA to the north is mostly built out on the north end and the UGA Reserve to the south is mostly built out on the south end, giving the area in the middle a rural feel. There is an elementary school on the site as well as a volunteer fire station that is managed by Whatcom County.

### Significant Impacts

The UGA Reserve to the south of the site has special regulations limiting impervious surface due to watershed concerns. Impervious surface regulations are based on the zoning designation and the lot size. The allowable impervious surface area ranges between 10% and 20% of the total lot

area, or 2,500 square feet of impervious surface, whichever is greater (Whatcom County, 2012). Fully built out there would be approximately 2,165 – 3,165 units. In the UGA Reserve 800 – 1400 new units would be built at 6 to 12 units/acre. This would exceed the current limitations of allowable impervious surface and adversely affect the Lake Padden watershed (Whatcom County, 2012). This is considered a sensitive area because of its unstable slopes, critical habitat and stormwater limitations. In order to meet a level of efficiency consistent with the current regulations, a considerable amount of stormwater infrastructure would be needed. This would affect the socioeconomics of the site and would not meet the need for low-income development causing gentrification and lowering the likelihood of use of alternate forms of transportation, consequently raising carbon emissions.

There are three potential urban villages proposed: one each to the south, middle and north end of the site. The City of Bellingham recommends small 2 – 5 acre centers that would provide shopping opportunities and other services within walking distance. This would increase impervious surface by 1 parking space per 500 square feet of commercial space and the minimum of 1 parking space per residential unit (COB, 2012).

### Alternatives

#### *i.* Infill

The infill site can accommodate 600 – 800 housing units, which will satisfy some of the future population growth in Bellingham and Whatcom County area. The current UGA north of Palmer Road is zoned for URMX 6 – 12 units/acre and is more suitable for expansion due to moderate grades, stormwater retention, access to utilities, and less critical habitat. Also, the area adjacent to the west of the site is currently in the city limits, allowing another connection to utilities making it easier to expand. Other forms of housing such as town houses and small apartment complexes should be considered to meet low-income opportunities in the area and create diversity. Furthermore, mixed-use zoning allows for small neighborhood commercial areas that can be incorporated into the neighborhoods at a distance consistent within a one-half-mile radius.

#### *ii.* No Action

No action will result in very little construction because the site is not equipped with public services and facilities. Under the current zoning the UGA could be expanded by 6 – 12 units/acre and the UGA Reserve could increase density to 1-unit/10 acres. As is, the cost of facilities would be accrued by the owner making it expensive to build. This will encourage building in other parts of Whatcom County.

Mitigation Measures

Required

Goals and policies of Bellingham address the requirements for the Housing element as defined in RWC 36.70A.070(2) and WAC 365-195-060(6). Both citations address a need for existing and projected housing needed by all economic segments of the community (COB, 2012). The WAC citation states, “That a combination of appropriate zoning, regulator incentives, financial subsidies, and innovation planning techniques will be needed to address the house needs of low and moderate income people (WAC, 2012)”.

Recommended

In order to reduce the impact of timber for building supplies, programs such as Leadership in Energy and Environmental Design (LEED), Green Built Housing and Low Impact Development LID should be applied. This will help reduce the impact on the environment, which will promote conservation of habitat and reduce the production of greenhouse gases. The city should require the use of phosphorous-free fertilizers and banning the use of pesticides within the Lake Padden watershed in order to protect water quality.

Level of significance after mitigation

If development occurs in the southern Yew Street UGA Reserve, an increase in impervious surfaces will occur. The adverse environmental impacts associated with impervious surfaces will be significant.

## 2.6 Environmental Health

### Existing Conditions

#### *Exposure to Hazardous Materials*

A material is considered hazardous if it exhibits any of four characteristics: ignitability, corrosivity, reactivity, or toxicity. Hazardous materials can be found in residential, commercial and industrial areas, and include such common items as lead acid batteries, drain cleaner, paint thinner, pesticides, and antifreeze (EPA: “Household Hazardous Waste”, 2011). Many hazardous substances are available to the public via hardware, grocery, gardening and automotive stores. According to the Federal Emergency Planning and Community Right-to-Know Act, all commercial users of hazardous materials are required to provide a complete list of used substances (EPA: “EPCRA Overview”, 2011a). Up to 10,000 pounds of hazardous materials may be stored in one place at a given time. In the case of a contaminated site, the Department of Ecology is responsible for implementing cleanup (Washington Military Dept. Emergency Management Division, 2011).

#### *Risk of Fire and Explosion*

The storage, use and transport of hazardous materials in industrial and commercial areas pose the greatest threat of fire and explosion. This generally occurs along truck routes, rail corridors and pipelines. Pipelines are used to transport natural gas and petroleum, and run the risk of rupturing or leaking. The Federal Department of Transportation is responsible for regulating pipelines that are over 15 miles long and larger than a certain pipe diameter (Whatcom County Government, 2004).

### Significant Impacts

The development of the Yew Street urban growth area and urban growth area reserve will require the addition of pipelines, fire stations, industrial facilities, and urban villages. These activities, along with construction and increased housing density, will result in risks of fire, explosion and exposure to hazardous materials.

#### *Fire and Explosion*

As population density increases through infill and adjusted UGA, the risk of exposure to explosions increases. As pipelines are put in to fill the demand of contractors, more people may be exposed to leaks or explosions at any given time. Because the demand for hazardous materials

grows as the population grows, there will likely be an increasing threat of explosion or exposure to hazardous materials. (Whatcom County Government, 2004).

### *Hazardous materials*

As in the case of explosions, there may be a greater probability of exposure to hazardous materials as population density increases in the proposed project. As the Yew Street urban growth area undergoes development, the possibility of discovering a previously unknown contaminated site in the formerly rural areas increases. Pressure from development could act as an incentive to clean up these sites (Whatcom County Government, 2004).

### Alternatives

#### *i. Infill*

Under this alternative, risk of explosion and exposure to hazardous materials will increase in the Yew Street UGA as more housing units are built and population increases. In the Yew Street UGA Reserve, risk of explosion and exposure to hazardous materials will remain at the current level due to lack of development.

#### *ii. No Action*

If no action is taken, the health of the environment and people will not be put at risk, and the area will maintain its current status.

### Mitigation Measures

#### Required

Disposal of hazardous materials, including chemicals and waste, must be properly carried out. In addition, contractors must be in compliance with the Whatcom County Local Emergency Planning Committee (LEPC) and the Division of Emergency Management (DEM), agencies responsible for the clean-up and handling of hazardous materials. This will ensure that pipelines are installed properly, with appropriate notification to the community, and that spills or leaks are also reported and treated in a timely manner (Whatcom County Division of Emergency Management, 2007).

#### Recommended

In June, 2010, Whatcom County approved an amended Pipeline Safety Ordinance. Compliance with this ordinance will minimize the risk of accidental damage to pipelines and will reduce the risk of damaging land uses that have high populations or that serve emergency functions. In



addition, Whatcom County should create maps showing the locations of pipelines for reference during future development. (Goldthorp et al., 2010).

Other measures that can be taken include continuing and creating education programs regarding safe use, storage, disposal, and recycling of hazardous materials and waste. Information and notification systems should be implemented to alert the community of pipeline placement and safety considerations. (Whatcom County DEM).

#### Level of significance after mitigation

The impacts of the proposed action on environmental health will not be significant after mitigation. With proper mitigation measures, hazardous materials will not adversely affect the environment. If proper safety precautions are implemented, then spills and leaks from pipelines will not occur.

## Noise

#### Existing Conditions

Noise is defined as any unwanted or undesirable sound and is described by such qualities as intensity, duration and frequency. Noise and urbanization are directly related; as population size and density increase in an area, noise levels increase. Too much noise can cause adverse effects on the health of people, society and nature. Effects on people include sleep deprivation, inability to concentrate, high blood pressure, and hearing loss (World Health Organization, 1995). Impacts on society consist of economic loss and property devaluation. Effects on nature include disturbed wildlife (Whatcom County Government, 2004).

**Table 1. Typical Noise Levels**

<u>Sound Source</u>	<u>dBA</u>
Threshold of Hearing	0
Soft Whisper	30
Remote Park Area	35
Window Air Conditioner	55
Quiet Conversation at 3 Feet	60
Vacuum Cleaner at 10 Feet	70
Major Highway at 100 Feet	75
Busy Urban Street	80

Noise is measured in decibels (dBA) and weighted to account for frequency and pitch. According to the 1972 Federal Noise Control Act, an increase in noise level of 4 to 10 dBA is considered significant (EPA, 1972). The Washington State Department of Ecology has established maximum permissible noise levels for three zoning classes: Class A (residential areas, hospitals, resorts and parks) at 55 dBA; Class B (commercial uses) at 57 dBA; and Class C (industrial and agricultural uses) at 60 dBA (Department of Ecology, 2011).

### Sources

#### *Traffic*

Traffic noise is produced by engines, tires, exhaust, and air movement. Influencing factors include vehicle type, traffic volume, speed, inclines, and pavement surface. Distance, vegetation, terrain, natural and manmade obstacles also contribute to perception of automotive noise, along with other conditions. Noise will increase as development occurs and will impact a larger area and population (Whatcom County Government).

#### *Construction*

Construction results in short-term impacts to neighboring properties and is generally produced by heavy machinery. This is most likely to occur in the northern, mixed use zones as more housing developments and urban villages are put in. Noise from construction will impact the southern portion of the proposed Adjusted UGA as housing developments and urban villages are developed, and as roads, pipelines, and sewer systems are upgraded to city code (Whatcom County Government).

### Significant Impacts

As population increases, noise impacts from vehicles, commercial, construction, and other sources will increase. These sources produce similar impacts: increased urban noise levels to previously rural areas; concentrated noise levels in already impacted areas; increase in complaints; and short-term construction impacts. The portions of the proposed project nearest Samish Way and San Juan Blvd will experience the most impact due to location near main roads. As development expands, there will be more traffic on these main roads.

Alternatives

*i.* Infill

If development is concentrated north of Palmer Road and west to the UGA boundary, there will be a short-term impact from construction with an overall increase in noise levels. Development in the west side of the UGA will likely increase noise levels, which may adversely affect wildlife.

*ii.* No Action

There will be a gradual increase in noise levels as residential, industrial and commercial areas develop to full capacity to accommodate the growing population.

Mitigation Measures

Required

According to Chapter 173-60 WAC, noise levels must be no more than 55 dBA in residential areas. This level must be reduced by 10 dBA for properties impacted by noise between the hours of 10:00 p.m. and 7:00 a.m. To comply with these requirements, construction must occur during daytime hours only. Another option is to require noise attenuating construction materials for buildings near noise-producing areas. (Department of Ecology 2011).

Recommended

There are several options for mitigating noise impacts. The most effective method is to install traffic control devices and signing for time restrictions. The City could also prohibit certain vehicle types and exhaust brakes, either in the entire UGA or on specific smaller streets. Use of sound absorptive pavement in parking lots, urban villages or other highly paved areas would also be a good option.

Level of significance after mitigation

Noise impacts will be significant even with proper mitigation. Even with the recommended and required measures, development will still occur to a small extent, and noises from traffic and other factors will increase.

## 2.7 Animals

### Animals

#### Existing Conditions

The Yew Street corridor for consideration of rezoning to become a UGA for the City of Bellingham contains many different types of important habitat for diverse wildlife species. The Washington State Department of Fish and Wildlife (WDFW) designated a part of the southwest corner of the proposed UGA reserve as a Priority Habitat and Species HCA-2 area in 2004 as a way of protecting important habitats that support sensitive wildlife species. A small pond was also designated as an HCA 7+8 (Lakes and Ponds less than 20 acres) from the Department of Natural Resources (DNR) Hydrography 2001 as another site which supports sensitive or endangered species of wildlife. In addition to this designation, the DNR has

designated substantial swaths of this area as D1-4 Wetlands Class 1-4, which entail specific levels of protection and buffers as part of their designation. The DNR has also designated four sites that run parallel to Yew Street as Critical Areas Ordinance Wellhead Protection Areas of High Susceptibility (CARA C-2), which act as groundwater recharging sites for the surrounding area. Just south of the Yew Street proposal area, the DNR has identified salmon-bearing streams which flow from Yew Street streams into Lake Padden. This area is also within the Padden Creek watershed, which contains the largest contiguous open space within the City and is second in habitat and species diversity in the area only to the Chuckanut Watershed (COB, 1995).

Currently the Yew Street corridor contains fields and grasslands that have become a limited resource for wildlife in the region, and act as an important wildlife corridor in the presence of fragmented habitat and habitat loss caused by human development. According to the *Inventory of Habitat and Wildlife by Watershed* performed in 1995 for the City of Bellingham, historical

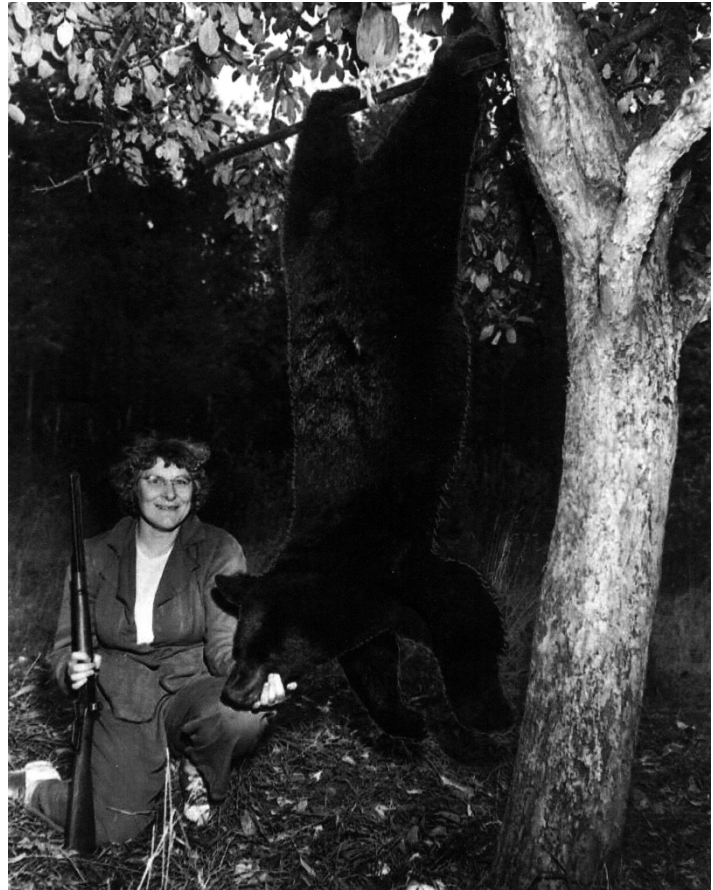


Figure 7. Mrs. Martin Olsen and the 325lb black bear she shot in her Yew Street Yard (Oct 25, 1950). Taken by Jack Carver, from Whatcom Museum Photo Archives

records of this area indicate the presence of large mammalian predators such as black bear and cougar, as well as native wild salmon runs in the creeks and streams. Currently, black bear, cougar, and native wild salmon have been all but eliminated from this system because of human development. Although no scientific studies have been formally performed, estimates of current species associated with this site put the total number of wildlife species at 178, with 4 known reptile species, 140 species of birds, an unknown number of fish species, and 30 species of mammals (COB, 1995). Of the fish species present, most are salmonid species such as trout, but few if any of the five Pacific salmon species now frequent the area because of habitat obstruction and degradation (J. Kamps, personal communication, January 30, 2012). Wildlife species which have been sighted or are suspected in this area is listed in Table 2.

Table 2. Animal Species Found in the Proposal Area

<u>Species Type</u>	<u>Scientific Names</u>	<u>Species Type</u>	<u>Scientific Names</u>
<b>Fish Species</b>		Black Bear**	<i>Ursus americanus</i>
<b>Cutthroat Trout</b>	<i>Oncorhynchus clarkii</i>	River Otter	<i>Lutra canadensis</i>
<b>Steelhead</b>	<i>Oncorhynchus mykiss</i>	Muskrat	<i>Ondatra zibethicus</i>
<b>Coho Salmon**</b>	<i>Oncorhynchus kisutch</i>	Common Beaver	<i>Castor canadensis</i>
<b>Chinook Salmon**</b>	<i>Oncorhynchus tshawytscha</i>	Mountain Beaver	<i>Apolodontia rufa</i>
<b>Chum Salmon**</b>	<i>Oncorhynchus keta</i>	<b>Avian Species</b>	
<b>Reptile/Amphibian Species</b>		Mallard	<i>Anas platyrhynchos</i>
Wandering Garter Snake	<i>Thamnophis elegans vagrans</i>	Red-winged Blackbird	<i>Agelaius phoeniceus</i>
Common Garter Snake	<i>Thamnophis sirtalis</i>	Pied-billed Grebe**	<i>Podilymbus podiceps</i>
Northwestern Garter Snake	<i>Thamnophis ordinoides</i>	Canada Goose	<i>Branta canadensis</i>
Terrestrial Garter Snake	<i>Thamnophis elegans</i>	American Widgeon	<i>Anas americana</i>
Northern Alligator Lizard	<i>Elgaria coerulea</i>	American Coot	<i>Fulica americana</i>
Pacific Chorus Frog	<i>Hyla regilla</i>	<b>Bald Eagle</b>	<i>Haliaeetus leucocephalus</i>
Red-legged Frog	<i>Rana aurora</i>	<b>Osprey</b>	<i>Pandion haliaetus</i>
<b>Western Toad</b>	<i>Bufo boreas</i>	<b>Red-tailed Hawk</b>	<i>Buteo jamaicensis</i>
<b>Tailed Frog</b>	<i>Ascaphus truei</i>	<b>Merlin</b>	<i>Falco columbarius</i>
Rough-skinned Newt	<i>Taricha granulosa</i>	<b>Pileated Woodpecker</b>	<i>Dryocopus pileatus</i>
Ensatina	<i>Ensatina eschscholtzi</i>	<b>Band-tailed Pidgeon</b>	<i>Columba fasciata</i>
<b>Mammalian Species</b>		<b>Ruffed Grouse</b>	<i>Bonasa umbellus</i>
Racoon	<i>Procyon lotor</i>	<b>Vaux's Swift</b>	<i>Chaetura vauxi</i>
Striped Skunk	<i>Mephitis mephitis</i>	<b>Black Swift</b>	<i>Cypseloides niger</i>
Mink	<i>Mustela vison</i>	<b>Common Nighthawk</b>	<i>Chordeiles minor</i>
Long-tailed Weasel	<i>Mustela frenata</i>	<b>Barred Owl</b>	<i>Strix varia</i>
Porcupine	<i>Erethizon dorsatum</i>	<b>Great Blue Heron</b>	<i>Ardea herodias</i>
Red Fox	<i>Vulpes vulpes</i>	<b>Green-backed Heron</b>	<i>Butorides striatus</i>
Coyote	<i>Canis latrans</i>	<b>Hooded Merganser</b>	<i>Lophodytes cucullatus</i>
Black-tailed Deer	<i>Odocoileus hemionus columbianus</i>	<b>Wood Duck</b>	<i>Aix sponsa</i>
Bobcat	<i>Lynx canadensis</i>	<b>Double-Crested Comorant</b>	<i>Phalacrocorax auritus</i>
Cougar**	<i>Felis concolor</i>	<b>Western Grebe</b>	<i>Aechmophorous occidentalis</i>

**Bold** indicates a priority species for local, state, or federal listings, \*\* indicates a species that was historically present in the proposal area, but no official sightings have been made for some time.

### Significant Impacts

The destruction of terrestrial habitat and wildlife corridors is the one of the largest impacts that would occur in the proposal site. Habitat fragmentation or elimination would likely cause the decline of both sensitive and non-sensitive wildlife species in the area. Whatcom County Code 16.16.710.C. lists the types of habitat conservation areas, such as continuous stretches of open forests and grasslands, riparian habitat, and state priority habitats and areas associated with state priority species (Table 2), that offer important sites for foraging, shelter, nesting/rearing, dispersal, and a water source for wildlife. Once fragmented, populations of wildlife species would be limited to much smaller areas for this important set of behaviors. For some species, the lack of contiguous habitat would reduce gene flow and population growth due to isolation.

Aquatic habitats would also likely be adversely affected by the proposed development of the Yew Street corridor. Increased sediment and nutrient loading into the creeks and streams would lead to further degradation of conditions for salmonids. Increased sediment and nutrient loads from removal of riparian vegetation from site development would lead to increased stream temperatures and cause the death of young or developing salmonids that use the stream for their initial stages of growth (Quinn, 2005). A lack of vegetation to slow water following a storm event would increase peak flows. An increase in peak flow amounts would lead to scouring of the stream bed, as well as flooding in the surrounding areas which would be detrimental to fish populations.

### Alternatives

#### *i.* Infill

The infill alternative would move the dwelling units proposed for this site to the adjacent northern UGA that is currently in the city of Bellingham’s Growth Management Plan (GMP), and/or increase the density of dwelling units in the area to the west of the proposal site of Bellingham. By increasing the density of dwelling units in already developed areas, the impact of developing new areas is greatly reduced or even eliminated because the net increase of impervious surface and habitat loss is reduced.

#### *ii.* No Action

No action would prevent habitat degradation for both terrestrial and aquatic animals. Habitat corridors and migration routes would remain intact, and stream sediment loading would not increase from the development of this area. Although this would be the least impactful choice for the resident wildlife population of the Yew Street proposal area, the projected growth for the city of Bellingham will still require the creation of dwelling units somewhere either within the city limits or in the current UGAs that the city has in reserve.

*Mitigation Measures*

Appropriate mitigation measures include leaving a buffer of existing riparian vegetation around water bodies that allows for the maximum retention of beneficial characteristics of a riparian zone according to state standards. Studies of the most commonly used migration and dispersal sites should be performed in order to determine the areas that are most important for terrestrial species found within the proposal area. Once determined, these corridors should be established and retained as such without developmental encroachment to these areas.

*Level of Significance after Mitigation*

Despite the best efforts of mitigation, the sheer amount of sensitive species found in the Yew Street proposal area would still be negatively affected by developing the area to the proposed amount. Habitat connectivity and patch size would diminish with the development of the site, which is irreplaceable through means of mitigation. Aquatic species would also still suffer from increased sediment and nutrient loading with the increase in impervious surfaces (construction runoff, asphalt, rooftops, etc.) that would result from the development of this area.



## 2.8 Plants

### Existing Conditions

The area south of San Juan Boulevard and north of Samish Way along Yew Street is the site of a variety of different land types. Stands of coniferous and mixed deciduous/coniferous forest cover the majority of the site; however, there are also patches of open grassland and scrubland as well as Palustrine wetlands. It is these wetlands that are the most sensitive types of land cover to development. They are not only a refuge for a large diversity of plant species, but according to Whatcom County Code (WCC), also perform important ecological functions not limited to biofiltration of runoff water, controlling water recharging and discharging rates as well as retention and transformation of nutrients, sediments, and toxicants (WCC, 16.16.600).

The Whatcom County Critical Areas Ordinance (CAO) map designates multiple areas in the proposal site as being “Forested and Non-forested Wetlands.” The Department of Natural Resources (DNR) has also classified swaths of wetlands in the southern Yew Street UGA Reserve area as D1-4 Class 1-4 wetlands (Appendix C). Although no formal wetland categorical designation has been determined to find the exact rating of each wetland (a rating scale of 1 to 4), wetlands in this class of protection are subject to standards that require buffers and mitigation methods to reduce the impact of development in their relative area (WCC 16.16.630). Wetlands found in the Yew Street area act as water filtration systems for runoff water that results from storm events, and slow down the flow of water flowing into streams and creeks. Wetlands also act as places where aquifers can be recharged, and are prime habitat for allowing a multitude of sensitive or habitat specific plant species thrive.

No actual inventories of plant species have been performed for the Yew Street area to catalog a complete list of species. A list of commonly occurring plant species for wetland and riparian areas like those found at the proposal site taken from *A Manual of Native Plant Communities for the Pacific Northwest* from the Washington State Native Plant Society are listed below in Table 3 (Anderson, 1997).

**Table 3. Possible Plant Species in the Proposal Area**

<b>Common Name</b>	<b>Scientific Name</b>
Alaska Yellow Cedar	<i>Chamaecyparis nootkatensis</i>
Bigleaf Maple	<i>Acer macrophyllum</i>
Bitter Cherry	<i>Prunus emarginata</i>
Bleeding Heart	<i>Dicentra formosa</i>
Camas	<i>Camassia quamash</i>
Cascara	<i>Rhamnus purshiana</i>
Coastal Strawberry	<i>Fragaria chiloensis</i>
Deer Fern	<i>Blechnum spicant</i>
Douglas Fir	<i>Pseudotsuga menziesii</i>
Douglas' Spirea	<i>Spirea douglasii</i>
Garry Oak	<i>Quercus garryana</i>
Lady Fern	<i>Athyrium felix-femina</i>
Madrone	<i>Arbutus menziesii</i>
Oceanspray	<i>Holodiscus discolor</i>
Pacific Dogwood	<i>Cornus nuttallii</i>
Pacific Rhododendron	<i>Rhododendron macrophyllum</i>
Pacific Willow	<i>Salix lucida</i>
Paper Birch	<i>Betula papyrifera</i>
Red Huckleberry	<i>Vaccinium parvifolium</i>
Salal	<i>Gaultheria shallon</i>
Salmonberry	<i>Rubus spectabilis</i>
Skunk Cabbage	<i>Lysichiton americanum</i>
Slough Sedge	<i>Carex obnupta</i>
Snowberry	<i>Symphoricarpos albus</i>
Sword Fern	<i>Polystichum munitum</i>
Trillium	<i>Trillium species</i>
Twinflower	<i>Linnaea borealis</i>
Vine Maple	<i>Acer circinatum</i>
Violet	<i>Viola adunca</i>
Water Plantain	<i>Alisma plantago-aquatica</i>
Western Red Cedar	<i>Thuja plicata</i>
Western Serviceberry	<i>Amelanchier alnifolia</i>

Significant Impacts

Potential impacts on plants caused by developing the Yew Street area include the alteration, fragmentation, and elimination of multiple types of habitats found in the area due to increasing the density of housing allowed through a change in zoning. Although no census of plants has been taken in the Yew Street area, the presence of grassland/fields, conifer and deciduous stands, scrubland, and wetlands implies that a multitude of potentially species-rich habitats can be found within the assessment area. Human development in these habitats may reduce species diversity by habitat fragmentation and have the potential to introduce harmful or invasive plant species into the area. The removal of native plants from riparian areas such as those found within the Yew Street area has also been shown to destabilize soil and sediment around water bodies and increase the speed at which water flows through an ecosystem (Quinn, 2005). Destabilized sediments and soil will increase bank erosion and nutrient loading into Lake Padden and Bellingham Bay, and during peak flows (following a storm event) water levels would be much higher and could cause an increase in flooding.

Alternatives

*i.* Infill

The infill alternative would relocate development from the southern Yew Street UGA Reserve area into the existing northern UGA south of San Juan Boulevard. By increasing density in the northern UGA, the infrastructure that is already in place can be utilized for storm water management at a lower cost to the city. Additional infill could be pursued to the west of the entire Yew Street corridor in the lesser developed areas within the Bellingham city limits. By utilizing the UGAs already available to the city, the adverse impacts on the Lake Padden watershed would be reduced and important environmental habitat and open space would be preserved.

*ii.* No Action

If no development occurs within the Yew Street proposal area, then the significant impacts of the project on native vegetation and habitats would not occur. However, the projected growth for the city of Bellingham would still need to be addressed. Areas within UGAs have been identified as appropriate for growth; however, any new construction on previously undeveloped native habitats in rural areas will be detrimental to the surrounding plant communities.

Mitigation Measures

According to Chapter 16.16.260 (General Mitigation Requirements) of the WCC, efforts should be made by the applicant to avoid all impact on the Critical Area's Ordinance (CAO) (wetlands) in question within the proposal area. If an impact is to be made, it must be minimized to the best of the applicant's ability, and any degradation of function to the site would need to be repaired, rehabilitated or restored to the affected environment. Based on an assessment of the type of CAOs found within the proposal area, mitigation strategies could vary. Mitigation measures to lessen the impact to development on CAOs are listed in WCC 16.16.680, with some examples of mitigation being the compensatory replacement, reestablishment, or restoration of wetlands and creating buffers around wetlands according to wetland categorical designation (WCC 16.16.630). An example of this could include native planting along nearby creeks and streams to increase soil stability and slow the flow of water through a system to reduce peak flows. Restoration efforts in other remaining wetland and riparian habitats on or near the site could also help to relieve the potential significance of the impact on the plants and their environments in the Yew Street annexation area.

Level of Significance after Mitigation

There would still likely be a significant level of impact to the plant communities in the Yew Street proposal site that would not be fully remediated by mitigation measures. The unknown plant and habitat diversity within such a large expanse of land would be difficult to sustain on site. Large expanses of impervious surface, as well as the disturbance associated with construction and habitat alteration would adversely affect the complex structure of plant communities in this area beyond mitigation measures.

## 2.9 Utilities

### Existing Conditions

#### *Water Supply*

The northern and southern portions of Yew Street are serviced by the Bellingham water system (City IQ, 2012). There are also private water supplies such as wells and ground water collection as well as water associations in the area of proposal. Community Water Associations are small rural cooperative water distribution organizations owned and operated by the association (COB, 2004). The three water associations in the Yew Street corridor are inside the current UGA and are listed below:

*Spring Valley Water System* is inside the UGA in the north half of the Yew Street Road area near Hannah Creek, east of Yew Street Road.

*Forest Park Mobile Home Park Water Association* is inside the UGA in the north half of the Yew Street Road area east of Yew Street Road.

*Yew Tree Acres Water Association* is inside the UGA in the south half of the Yew Street Road area adjacent to Yew Street Road (COB, 2004).

The water filtration plant fed by Lake Whatcom was constructed in the late 1960's and has the capacity of 48 million gallons per day. Water use is expected to reach 17 million gallons per day by 2015.

#### *Sanitary Sewer*

Bellingham municipal sanitary sewer reaches south to the edge of the current UGA boundary, serving 74 residential units, and resumes at the South Hills Drive development, serving 80 residential units (COB, 2006). Sewer treatment is provided by Post Point Pollution Control Plant. The capacity of the plant is 55 million gallons per day (peak). The plant uses incineration of dewatered waste and discharges disinfected water via deep water pipe and outfall into Bellingham Bay (COB, 2009).

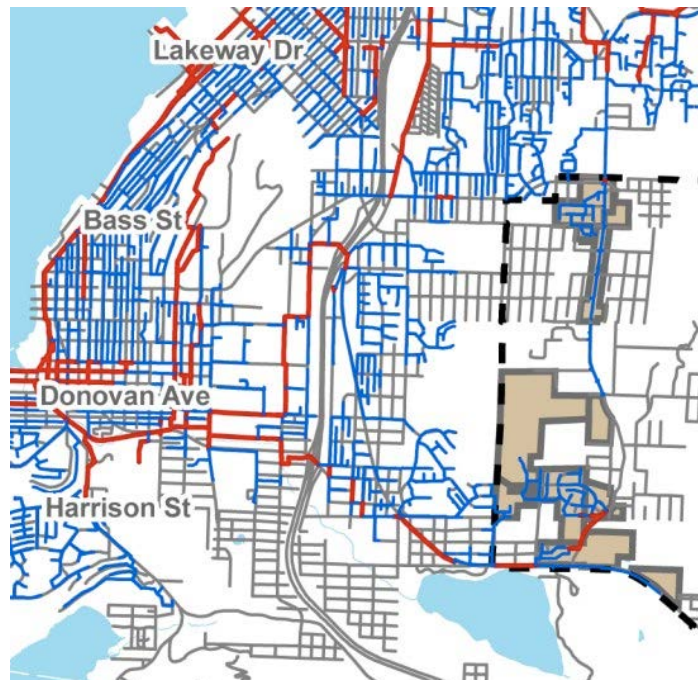


Figure 8. Sanitary Sewer Lines. Blue is 8" and red is 10" piping 52

The areas that are not serviced by city sewer are serviced by individual septic units (COB, 2006).

### *Communication Services*

Land line and cellular telephone services are provided by private companies and services are available in the Yew Street corridor. Land line service is a monopoly regulated by the Washington Utilities and Transportation Commission (WUTC). Whatcom County has adopted regulations for the placement, development, permitting and removal of personal wireless communications facilities (COB, 2004).

Cable television and internet services are provided by TCI Cablevision, Comcast, and AT&T. Cable service is provided in compliance with franchise provisions, local regulations, and Federal Communications Commission (FCC) regulations (COB, 2004).

### *Significant Impacts*

#### *Water Supply*

Under all alternatives population growth will necessitate the expansion or increased capacity of existing infrastructure including storage tanks, water mains, and pump stations. Both low density development and periphery development contribute to higher water use and higher need for infrastructure including water line, pumps, and holding tanks. Annexation of the UGA into the city would result in the incorporation of water associations into the city water supply (COB, 2004).

Geography contributes to the needs and impacts of water supply infrastructure. A pump station is required to move water to the top of Yew Street along a hydraulic grade line where a storage tank is needed (COB, 2004). Current structures such as Wade King Elementary have inadequate low pressure water systems because this infrastructure needs to be installed (Ralston, 2012). Under the proposal increased capacity may be necessary along main lines.

#### *Sanitary Sewer*

Extending the network of sanitary sewer into a low density area would increase the cost and impact while serving fewer residences than the alternatives. More line requires more maintenance (COB, 2009).

### *Communication Services*

Communication services are typically low impact utilizing existing city facilities underneath streets or with existing power poles. Communications lines laid in trenches near wetlands and open water are regulated but cause impacts during installation. Communication towers are placed where topography allows the optimal communications distance and presents the least impact to residential areas (COB, 2004).

Alternatives

*i.* Infill

Electrical lines will have less impact from new line being laid but existing structures that carry line may need to be rebuilt for higher capacity. These higher capacity structures are larger and will increase impact (COB, 2004). Higher capacity structures needed for higher density development are larger and will increase impact.

Less gas line would need to be installed under this alternative. To service high density infill areas higher capacity line may need to be installed. Future maintenance would increase under this alternative and the per capita cost and impact of maintenance are least under the highest development.

*ii.* No Action

No effects.

Mitigation Measures

Required

The Water Use Efficiency Program (WUE) was released in 2008. It requires municipal water suppliers to “collect data, forecast demand, evaluate WUE measure, calculate distribution leakage and implement a WUE program to meet their goals.” (COB, 2008)

A Water Conservation Program outlined in City of Bellingham 2009 Water System Plan contributes to public education and the distribution of water-saving devices, which reduce water use.

Bellingham has initiated an infiltration/infill abatement program. Such programs identify points where storm water or ground water enter the sanitary sewer system increasing the load on the system (COB, 2009).

The City and County Hearing Examiners conduct reviews of new electrical facility construction. Construction of facilities producing electromagnetic field radiation is not permitted near schools (COB, 2004).

Recommended

Mitigation measures currently implemented are satisfactory.

*Level of significance after mitigation*

After mitigation, the impact of increased utility use as a result of the proposed action would cause a strain on the utility that is higher per capita and more costly than the alternatives. The level of impact would not be significant.



## 2.10 Energy and Natural Resources

### Existing Conditions

#### *Natural Resources*

There are no known Mineral Resources. The only known natural resources available in the area are forested areas. The southeast UGA on either side of Yew St contains undeveloped stands of second or third growth trees. Washington State law allows for qualifying parcels to be taxed on their existing land use value rather than highest market use value. To qualify a parcel of timber must be over 5 acres. An area is likely to be developed once market rate for land reaches an amount to justify cost of back taxes required on the area. A large tract of unimproved city-owned land could be either committed to housing or preserved as a park or greenway.

### Significant Impacts

There is a large piece of city owned partially forested land that is unimproved in the proposed area. Converting forested areas to urban areas permanently removes wildlife habitat. The increase in impervious surfaces will result in an increase of storm water runoff with the possibility of erosion. The aesthetic value of the forest will be replaced by an urban environment.

### Alternatives

#### *i. Infill*

This includes the large tract of unimproved land owned by the city. If the proposed site is developed, the significant impacts above apply to this portion of the land in question. The effects would be reduced to parcel of land in the alternative adjusted UGA.

#### *ii. No Action*

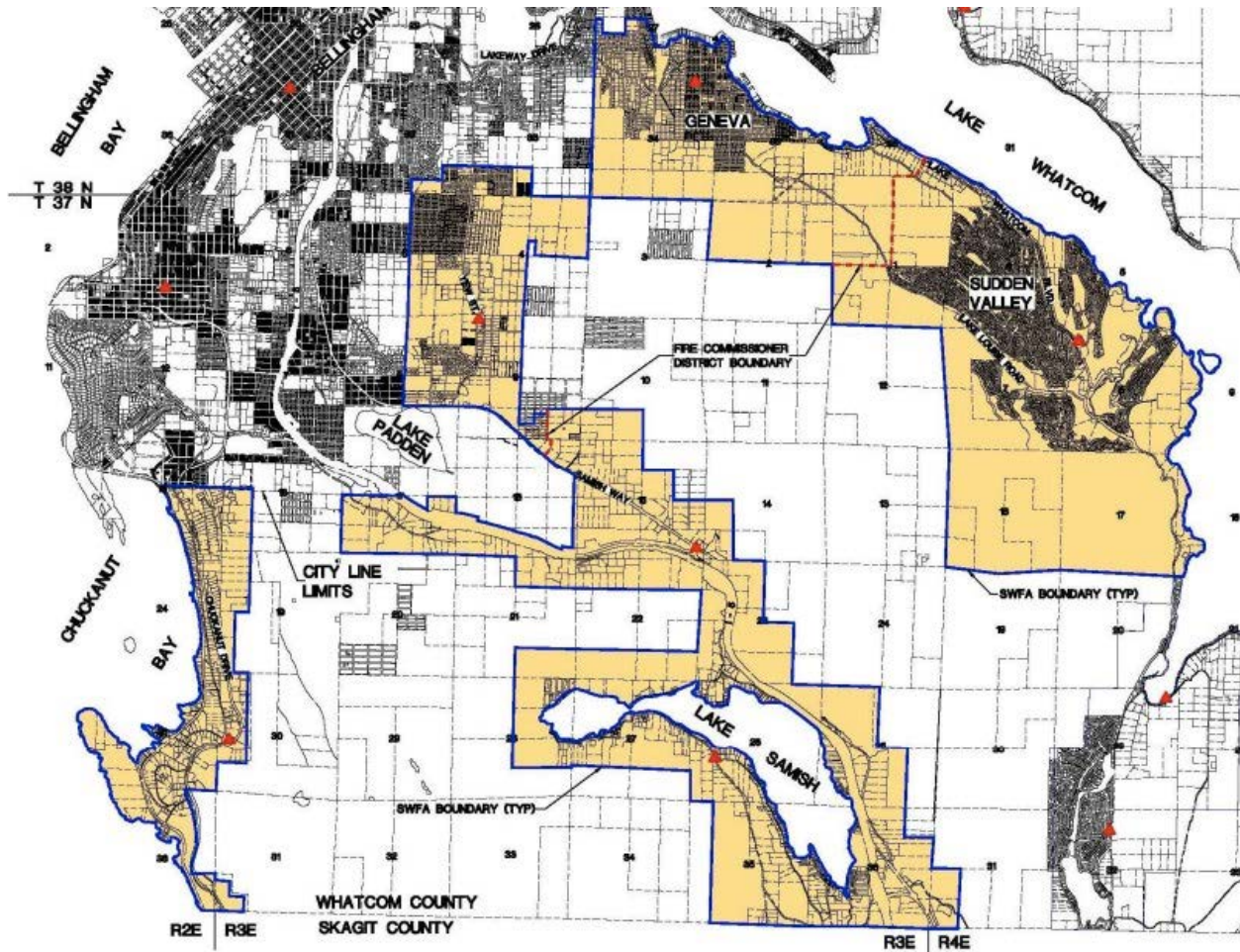
Population will be accommodated within existing UGAs using infill and development elsewhere. None of the impacts would result.

### Mitigation Measures

Parts of forested areas can be conserved as greenways and parks so that previously forested areas can still retain some of their services. Development sites can be selected in order to maximize preservation of forested areas. Policy decisions can be made that encourage the preservation and shared use of these areas as well.

## 2.11 Public Services

### *Fire protection and Emergency Medical Service (EMS)*



**Figure 9. Fire Service Areas in the Bellingham Area**

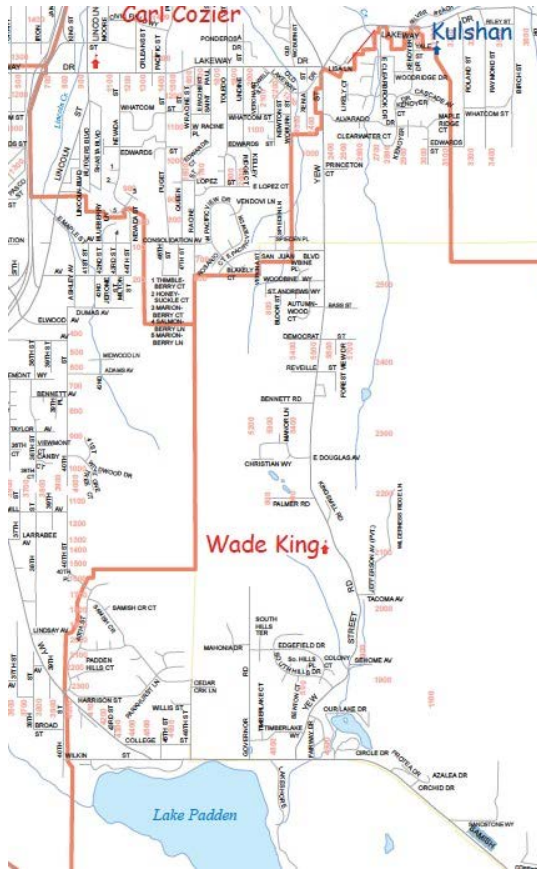
Currently the area serviced by Fire Station 16 is part of South Whatcom Fire Authority (formerly district 10) which contains 5 other stations, services 13,000 people, and has 26 fire units (such as ambulance and fire trucks). Fire Station 16 was built in the late 1980's, and is due for expansion or replacement. The current site cannot accommodate expansion. A new station would be expensive to build and operate in an area subject to future annexation so station 16 will likely undergo decommissioning without a replacement. Recently, the South Whatcom Fire Authority purchased a property East of Lake Padden on Samish Way. This property has been converted to a Fire Station and will service Yew Street in the future (Ralston, 2012).

### *Law Enforcement*

Law enforcement within the UGA is provided by the Whatcom County Sheriff's Office. The Sheriff's Office serves over 2,000 sq. miles and, in 2003, employed over 150 full time employees (COB, 2004).

*Public Libraries*

The City of Bellingham and Whatcom County work together to provide library services. The central Bellingham Public Library services Yew Street residents (COB, 2004).



**Figure 10. Public Schools in the Proposal Area**

*Public Schools*

Wade King Elementary School services the students living in the southern portion of Yew Street. The southern portion of the UGA above San Juan Blvd attends Fairhaven Middle school and the northern portion attends Kulshan Middle School. The entire area attends Sehome High School. The locations, size, and future need for new schools are determined by the Bellingham School District (Bellingham Schools, 2012).

*Garbage, Yard Waste, and Recycling*

Sanitary Services Company (SSC) is certified by Washington State, and contracted by the City of Bellingham to have the exclusive right to collect residential and commercial solid waste within Bellingham, the UGA and the urban fringe. SSC works with disposal service providers to transfer the waste to southeast Washington by rail. Recycled

materials are processed in Bellingham at Parberry Recycling. Parberry processes, sells, and transports Bellingham’s recyclable materials. Curbside recyclables include bottles, cans, cardboard, mixed paper, newspaper, scrap metal, used motor oil, and lead acid batteries.

Since 2003 two companies have offered subscription contract service to pick up grass clippings, garden trimmings, branches and leaves. Pick up is available every other week. Public Works operates the Clean Green Transfer Station at Lakeway and Woburn for yard waste.

A nationally recognized City of Bellingham Toxics Disposal program operates a Hazardous Waste Collection site on the north end of town. A drop-off site near Yew Street is located at 1010 Lakeview Street. Drop offs are no charge. The program does not accept latex paint, asbestos, biomedical waste, smoke detectors, ammunition and explosives, and radioactive materials.

Waste Collection in the UGA and the urban fringe is guided by Whatcom County’s *Solid Waste Management Plan*. Residents are required to recycle through curbside collection as well as waste collection or apply for exemptions if they agree to provide for safe handling of their own waste (COB, 2004).

Significant Impacts under proposal

*Fire and EMS*

The extension of the UGA and future annexation would mean that a number of career firefighters would need to be trained and hired and the station relocated. The possibility for UGA expansion and future annexation has already meant the eventual closure of Station 16. Yew St. will be serviced by other stations, and increased density will increase the need for service by those stations (Ralston, 2012).

*Law Enforcement*

Increased densities put strain on the Sheriff’s department, which serves a large low density area. This involves more travel for sheriff’s deputies than would be required by a city police department causing a significant transportation impact. The area under proposal has not been listed as a high crime area. When the UGA is annexed it will result in a shift of unusual demand on the county sheriff’s department to an increased service area to the city department (COB, 2004).

*Public Schools*

Increased population will increase demand on the school system. Higher density on the periphery would result in a higher transportation impact.

*Public Libraries*

Increased population will increase demand for services by the county and city library system. Higher population density in the urban fringe increases the need for satellite library locations and in the absence of satellite libraries contributes to transportation impacts (COB, 2004).

*Garbage, Yard Waste, and Recycling*

Collection routes would be expanded. Larger lot sizes resulting from low density development would contribute to larger volumes of yard waste.

Alternatives

*i. Infill*

By locating high density development closer to existing development the efficiency of most services is improved. There will be less impact, less cost, and higher effectiveness of service from each provider. Law enforcement, fire protection, and EMS would be capable of faster

response times once annexed (Ralston, 2012). Before annexation, high densities would impact county services for otherwise sparsely developed county land (COB, 2012).

By locating development closer to existing services there would be greater accessibility to existing public schools and libraries. Demand would decrease for new schools and satellite libraries. Garbage, Yard Waste, and Recycling would operate more efficiently by only adding a small high-density route expansion.

*ii. No Action*

By increasing density within the existing development impact will be minimal and current services available will reach higher efficiency. Law enforcement, fire protection, and EMS would be capable of faster response times after annexation. Law enforcement, fire protection, and EMS would not be affected by fringe development. While additional public service personnel will be necessary to serve the additional population, the impact and cost will be reduced (COB, 2004).

By locating development closer to services that already exist, existing public schools and libraries would be utilized and expanded eliminating the impact of new buildings. This would decrease demand for new schools and satellite libraries and increase the need for the improvement of existing services. The efficiency of Garbage, Yard Waste, and Recycling would be maximized (COB, 2004).

Mitigation Measures

Required

Continue waste educational programs including waste reduction, proper hazardous waste disposal, recycling and reuse(COB, 2004).

Recommended

Inter-governmental agreements have been made for adjacent fire districts to respond quickly to incidents. These inter-governmental agreements should be better coordinated between county and city districts, which have different levels of funding, to allow fastest response times (Ralston, 2012).

A recycling deposit fee on cans and bottles would increase the proportion of cans and bottles recycled and transfer some of the strain of public services to individual residents (COB, 2004).

Level of Significance after mitigation

The impact is higher than for the higher density alternatives, and decreases efficiency of services. The impact on public services by increasing the residential area is not significant.

## 2.12 Aesthetics

### Existing Conditions

The proposed site is naturally aesthetically pleasing. The southern portion of the proposed site provides a clear view of Lake Padden, with access to the lake and its trails. The northern portion of the proposed site is more urbanized, with houses, mobile home parks, busier streets, and an elementary school. As a whole, the Yew Street Road area is made up of low-density housing, providing the region with a rural community aspect and views of Galbraith Mountain and forests.

### Significant Impacts

The proposed action will result in the construction of approximately 1,000 to 2,000 single-family, residential homes and open recreation areas. This will result in new homes near the City of Bellingham, while keeping the recreational area around Lake Padden intact. (Whatcom County Planning & Development).

The scenery setting will change from natural wooded areas to a developed neighborhood. For visitors, the atmosphere may change from a natural landscape with a rural feel to a developed urban region. Housing units will replace the majority of trees and natural areas.

### Alternatives

*i.* Infill

Under this alternative, the aesthetic value of the Yew Street UGA will be impacted as housing units populate the area. Depending on the building materials and design implemented, this impact may be significant or moderate. The aesthetics of the Yew Street UGA Reserve will not be impacted.

*ii.* No Action

If no action is taken, then there will be no change to the aesthetics of the region.

Mitigation Measures

Recommended

Impacts to the aesthetics of the Yew Street area cannot be mitigated if development occurs. Aesthetics will change from a natural environment to a built environment. If development does not take place, then retaining woodlands and incorporating green space corridors will keep the area in its current condition. Building design and layout should be implemented in an attractive, modern manner.

Level of significance after mitigation

After mitigation has taken place, there will likely be moderate adverse effects on the aesthetics of the Yew Street area.

## 2.13 Light and Glare

### Existing Conditions

Sunlight and artificial light are necessary for health, safety, security, and livability. Sunlight can be blocked by tall buildings or reflected by glass, metal, wet pavement, and polished surfaces. Glare from sunlight is minimal in the proposed area due to lack of development in south of Palmer Road. Artificial lighting and glare are minimal, also due to the lack of extensive development. (Fritz et al., 2010).

### Significant Impacts

#### *Construction*

Construction of homes and roads will significantly increase sources of light and glare. Light sources might include nighttime security lighting, vehicle headlights, and construction equipment during morning and evening hours. Sources of glare might include reflections from windshields and plastic used to cover construction materials. Nighttime lighting from headlights or construction equipment could impact wildlife. (Fritz et al.).

#### *Development*

The proposed action would result in significant impacts from new sources of light and glare. These new inputs of light and glare could come from illumination from residences, street lamps, windows and windshields, and traffic signals.

### Alternatives

#### *i. Infill*

Under this alternative, light and glare would likely increase in the northern half of the proposed project area as housing developments are constructed, street lights are installed and urban villages established.

#### *ii. No Action*

This alternative will not change the existing levels of light and glare in the project area.



Mitigation Measures

Recommended

Light and glare can be mitigated through energy-efficient systems. Reflected glare can be minimized through selecting appropriate paints or other treatment for surfaces. “Green” buildings are another way to minimize light and glare. These utilize efficient heating systems, paints and building materials with minimal reflectivity, as well as environmentally-friendly building materials, such as concrete rather than brick. Gardens can be planted on rooftops to absorb sunlight and water, and reduce glare (Environmental Protection Agency, 2012). Compact Fluorescent Light (CFL) bulbs can also be used to reduce energy consumption and increase the lifetime of lighting. Light pollution from undirected light fixtures can adversely affect wildlife. This can be mitigated by installing “full cut-off” fixtures, which direct all light downward (Astronomical Society of South Australia, 2012). Finally, construction should be limited to daytime hours in order to reduce the amount of lighting needed.

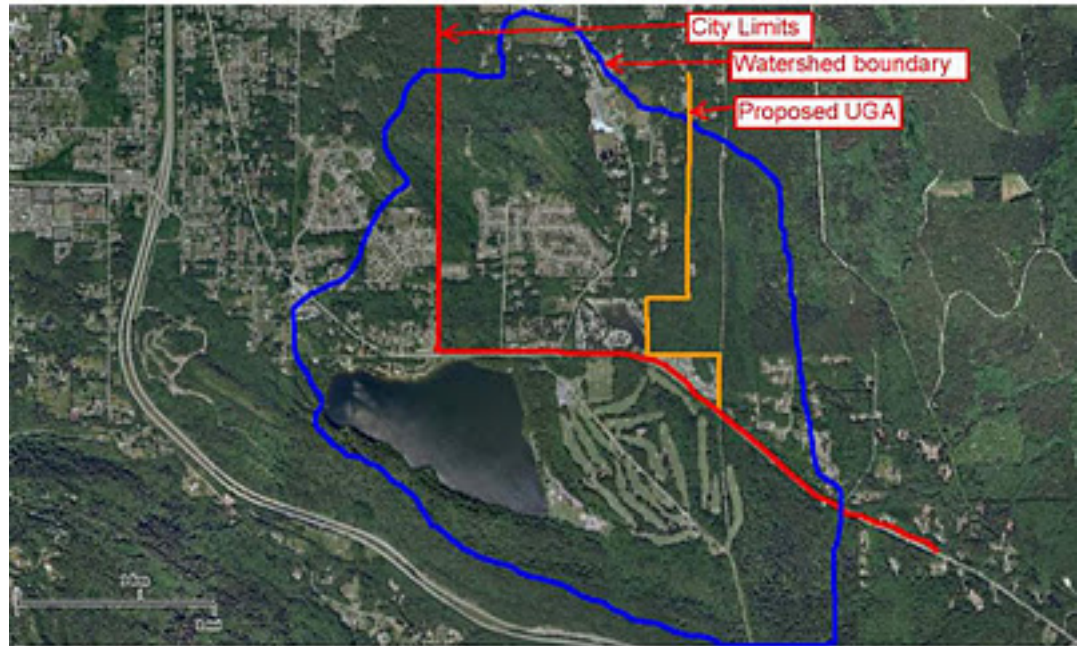
Level of significance after mitigation

If the recommended mitigation measures are implemented, then there will likely not be a significant impact from light and glare produced by increased traffic and construction. Development will likely have a smaller impact under the proposed mitigation measures.

## 2.14 Recreation

### Existing Qualities

Current onsite recreational space is the Recreational Open Space (ROS) located on the north end of the UGA and on the south end of the UGA Reserve. There are connections to



**Figure 11. Lake Padden Watershed and Recreation Area**

offsite

recreational areas

such as Whatcom Falls Park to the northwest of the site located off Lakeway Drive, which provides swimming, hiking trails, fields, tennis courts, basketball courts, covered picnic areas and a fish hatchery. To the south of the site Lake Padden provides an 18-hole golf course, an off-leash dog park, swimming, baseball, running, hiking, fishing and boating. A running trail circles the lake and is approximately 2.6 miles in circumference. Moderate rolling hills characterize this trail. The area also includes 10 miles of hiking trails. To the east is a connection to Galbraith Mountain, which is renowned for its extensive mountain bike trail system, hiking and climbing.

### Significant Impacts

This site will have to accommodate parks and recreation that are consistent with Bellingham regulations. Neighborhood parks development is on a local basis to provide both active and passive recreation for neighborhood residents (COB, 2012). Neighborhood parks should be located within walking distance of residential development with a maximum of a one-half mile radius. The standard size of a neighborhood park is 2 – 10 acres and may include picnic areas, sports facilities, playground and other amenities (COB, 2012). Neighborhood parks may be sited as independent properties or as portions of other sites that include trail corridors, community parks, multi-use centers or other public facilities. Neighborhood parks contain about 10 parking spaces per park and the site would call for four to six parks, adding approximately 40 – 60 parking spaces (COB, 2012). In addition to the demand for parks, the need for recreational space

and open space is estimated using the ratio of 3.1 acres of athletic fields per 1,000 residents, thus producing a need for 6.1 acres of the fields (COB, 2012).

### Alternatives

#### *i.* Infill

The alternative proposal would allow Transfer of Development Rights (TDR) to protect the environmentally sensitivity area to the south of the site. The UGA Reserve to the south can be used for athletic fields, trail systems and open space. This would mean people could relocate to the UGA and the adjacent greenway located in the Bellingham city limits. By doing so, this could prevent additional impact to the already adversely affected ecosystem in the Lake Padden watershed. Trail systems can be extended into the infill site promoting alternate forms of transportation and recreational activities. The trails could have continuity with all outlying recreational areas such as Galbraith Mountain, Lake Padden and Whatcom Falls Park. The plan could also provide connections to interurban trails systems, shopping centers and downtown.

#### *ii.* No Action

This will result in no additional impacts. If the growing population was to settle somewhere near Lake Padden then adverse effects may occur.

### Mitigation Measures

#### Required

The City of Bellingham uses a ratio of facilities to unit of population that is consistent of 3.1 acres to 1000 residents (COB, 2012). Land ratios for level of service are calculated by dividing the total City or UGA acres of land in each park classification by the respective population (COB, 2012).

#### Recommended

Parks, recreation and open space need to be provided in accordance with the City of Bellingham to reduce impacts on offsite parks. Parks will be easily accessible to the neighborhood residents and be located within a one half-mile radius of their home.

*Level of significance after mitigation*

If development occurs in the southern Yew Street UGA Reserve, an increase in impervious surfaces will occur. The adverse environmental impacts associated with impervious surfaces will be significant. Also, the impacts of fertilizers and pesticides can have a significant adverse effect on the Lake Padden watershed with a high level of significances.

## 2.15 Historic and Cultural Preservation

### Existing Conditions

Presently the cultural conditions found in the Yew Street area are somewhat limited. The area has been settled for some time. However, relatively little land use or clearing has occurred in the northern portion of the study area. Historically, the Pacific Northwest region has been home to multiple Native American tribes, which used forested and grassy areas as forage and hunting sites. It is unknown at this time whether or not this was the case with the Yew Street area specifically. However, it can be assumed that, since other areas like the study area were used for similar activities by Native Americans in other parts of the Pacific Northwest, this area could be subject to Native American cultural history from nearby tribes such as the Nooksack and Lummi nations. In addition to historical use of this area by Native Americans, there is also the present concern among tribal and governmental authorities regarding salmon habitat degradation by development within the watersheds of salmon-bearing creeks and streams (McLaughlin). Culturally, salmon have always been a significant part of Nooksack and Lummi culture, and in recent years these local tribes and others have invested considerable resources to protect wild salmon. Since the study area is within the watershed of Padden Creek, which was historically used by salmon, this plays a role in the cultural importance of the area.



Figure 12. "Once Upon a Fairyland" castle built by Cliff Elder in his Yew Street backyard. Taken by Jack Carver, July 5, 1973. Whatcom Museum Photo Archives

There have also been occurrences of less significant, albeit historical, sites of significance such as the "Once upon a Fairyland" amusement park that was built and owned by Cliff Elder in the 1970s. This park is no longer in operation, but small, regional culturally significant sites need to be taken into account when considering the development of an area.

Significant Impacts

Potential degradation of salmon habitat from loss of riparian vegetation and water pollution from development of the area may result in the decline of already diminished salmon runs in the area. Due to the cultural importance of salmon to the Salish people, including the Nooksack and Lummi peoples, the overall effect may be interpreted as a loss of a cultural resource.

Alternatives

*i.* Infill

The infill alternative would move the proposed housing units to the city limits of Bellingham that is west of the proposal site or to the current Bellingham UGA located north of the Yew Street UGA Reserve. This will accommodate the same number of dwelling units without disturbing salmon habitat in the Padden Creek Watershed. Infill in other areas of Bellingham and development of other UGAs may reduce the impact of impervious surface runoff into the Padden Creek watershed and into areas that are already developed enough to accommodate an increase in stormwater runoff. By moving housing to areas already developed areas there is no increase in impervious surface in the Yew Street UGA Reserve. Salmon streams in the Yew Street Reserve would be less likely to be negatively affected by new construction.

*ii.* No Action

The no action alternative would mean that all cultural impacts caused by development and construction, including the degradation of salmon runs, would be avoided because no development or construction would occur in the proposal area. This alternative, however, does not address the need to increase dwelling units in response to the increase in population that is projected for the Bellingham area. New development may impact any currently undeveloped natural habitat that is disturbed or removed as a result of building new structures and increasing impervious surface.

Mitigation Measures

Measures for mitigation of the significant impacts caused to salmon runs would need to address the conservation or restoration of riparian habitats and vegetation that are integral to the survival of salmon runs in this area. Buffer zones and restoration planting (WCC 16.16.630) using native plants may alleviate some of the effects of degrading salmon habitat and thereby reducing a cultural resource.

*Level of Significance after Mitigation*

There still may be a significant level of impact after mitigation. Because the area impacted by this project is hundreds of acres, conservation and mitigation measures would provide only a fraction of the current undisturbed terrestrial habitats left. This would disproportionately weight the effects of sedimentation and surface water runoff over the beneficial effects of small buffer zones and immature native plantings.

## 2.16 Land and Shoreline Use

### Existing Conditions

#### Urban Growth Area

The Yew Street corridor was added to the Bellingham Urban Growth Area (UGA) in 1997 (Planning Services Division, Whatcom County, 2007). The Yew Street UGA is divided into north and south sections, divided roughly by Palmer Road. The northern Yew Street UGA is currently in UGA status and is approaching full buildout. The southern Yew Street UGA is currently designated a reserve. A UGA reserve will be adopted into the City of Bellingham UGA if and when necessary. Currently, about 30 percent of the Lake Padden watershed area is developed and impervious (Figure 3).

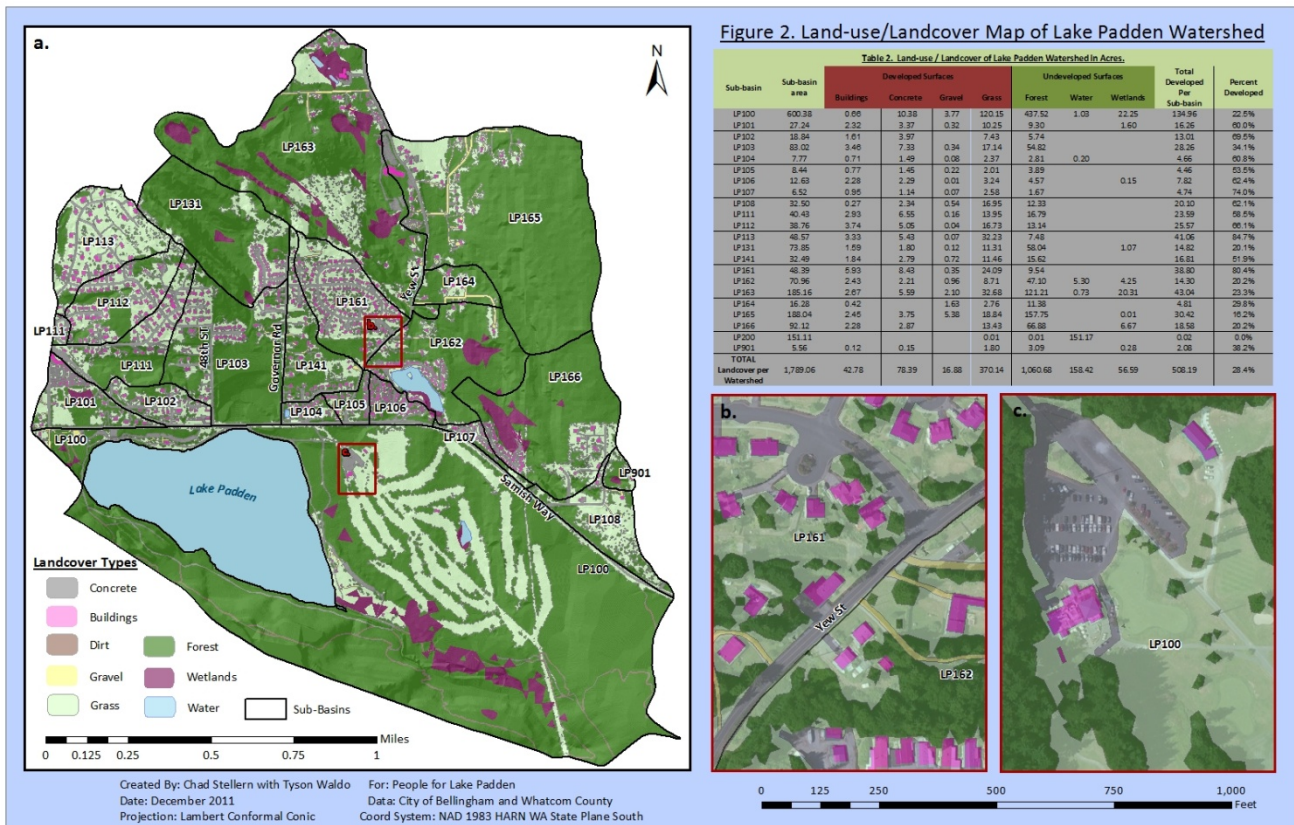


Figure 13. Land Use/Landcover Map of Lake Padden Watershed, People for Lake Padden



The Growth Management Act (GMA) requires that state and local governments manage Washington's growing population according to regulations that designate urban growth areas, ensure a quality of life and sufficient economic opportunities to residents, offer recreational opportunities, and protect critical areas of the environment (Planning Goals, RCW 36.70A.020, 2012). Actions performed by the City of Bellingham, including the development of Yew Street, must be in compliance with the GMA.

### *Zoning*

The northern Yew Street UGA is currently zoned rural residential two units per acre (RR2) and urban residential four units per acre (UR4). The southern Yew Street UGA reserve is currently zoned RR2, urban residential three units per acre (UR3), and UR4.

### *Shoreline*

The southern Yew Street UGA reserve borders Lake Padden's northern shoreline. Lake Padden shoreline is designated natural and urban conservancy by the City of Bellingham. The term “natural” means the shoreline provides important ecological functions and educational opportunities. The term “urban conservancy” means the shoreline is sensitive, suitable for water-enjoyment, and retains important ecological functions (Shoreline Master Program, 2012).

The Lake Padden shoreline is currently minimally disturbed. Docks, a circumnavigating trail, and dense natural vegetation border the lake. The shoreline offers visual and physical access to the lake. Local and state policies, such as the Shoreline Master Program, protect the ecological and recreational value of the Lake Padden shoreline.

### Significant Impacts

The zoning would be most altered in the southern Yew Street UGA reserve. The zoning would increase from 3 – 4 units per acre to 6 – 12 units per acre. This change would likely have significant impacts on the land use and shoreline of the area. Increased density of residents would increase impervious surfaces via the construction of sidewalks, roads, and rooftops, affecting ecological functions of the Lake Padden shoreline. Increased vehicle and foot traffic may alter the natural and conserved Lake Padden shoreline.

### Alternatives

#### *i.* Infill

Infill would concentrate development to the northern Yew Street UGA and into the proposed extension of the UGA west at Palmer Road and north to the northern UGA boundary (Figure ?). This alternative would result in no increase in impervious surfaces in the southern Yew Street

UGA reserve resulting in no adverse effects on the Lake Padden shoreline. This alternative would include less of an increase in vehicle and foot traffic because development would be focused elsewhere.

*ii.* No Action

This alternative would result in no change to the Yew Street corridor zoning, leaving the land and shoreline use of the area unaffected.

Mitigation Measures

Required

According to the Shoreline Master Program, adopted by the City of Bellingham in compliance with Washington State Shoreline Management Act, shorelines are the most valuable and fragile of the state's natural resources and must be developed in a manner that protects ecological functions between water and land while promoting public uses (Shoreline Master Program, 2012).

Residential development should be performed in a manner that conforms to the City of Bellingham Low Impact Development (LID) techniques to the greatest extent that is practical (Low-Impact Development, 2012).

Recommended

Mitigation measures that would further reduce the impacts of increased zoning in the Yew Street UGA include lower density zoning such as rural zoning designations, significant use of LID techniques including the preservation of natural vegetation as rain gardens, retention and reuse of precipitation that runs off rooftops, the use of non-phosphorous fertilizers, and continued use of the City of Bellingham Park, Recreation and Open Space Plan which maintains that recreational parks ensure a natural environment among other values (Park, Recreation, and Open Space Plan, 2012).

Level of significance after mitigation

Suggested mitigation measures would likely result in no significant impacts to the Lake Padden shoreline but likely cause significant impacts on the land use of the southern Yew Street UGA reserve.



## Decision Matrix

<u>SEPA Elements</u>	<u>Proposal</u>	<u>After Mitigation</u>	<u>No Action</u>	<u>Infill</u>
Water	-	-	0	-
Air and Greenhouse Gasses	-	-	0	-
Earth	-	-	0	-
Transportation	-	-	0	-
Housing	-	-	0	-
Environmental Health	-	0	0	-
Animals	-	-	0	0
Plants	-	-	0	0
Utilities	-	-	0	-
Energy and Natural Resources	-	-	0	0
Public Services	-	-	0	-
Aesthetics	-	-	0	-
Light and Glare	-	0	0	-
Recreation	-	-	0	+
Historic and Cultural Preservation	-	0	0	0
Land and Shoreline Use	-	-	0	-
Noise	-	-	0	-

**Key: 0 means the impact not significant. - means negative impact. + means a positive impact.**

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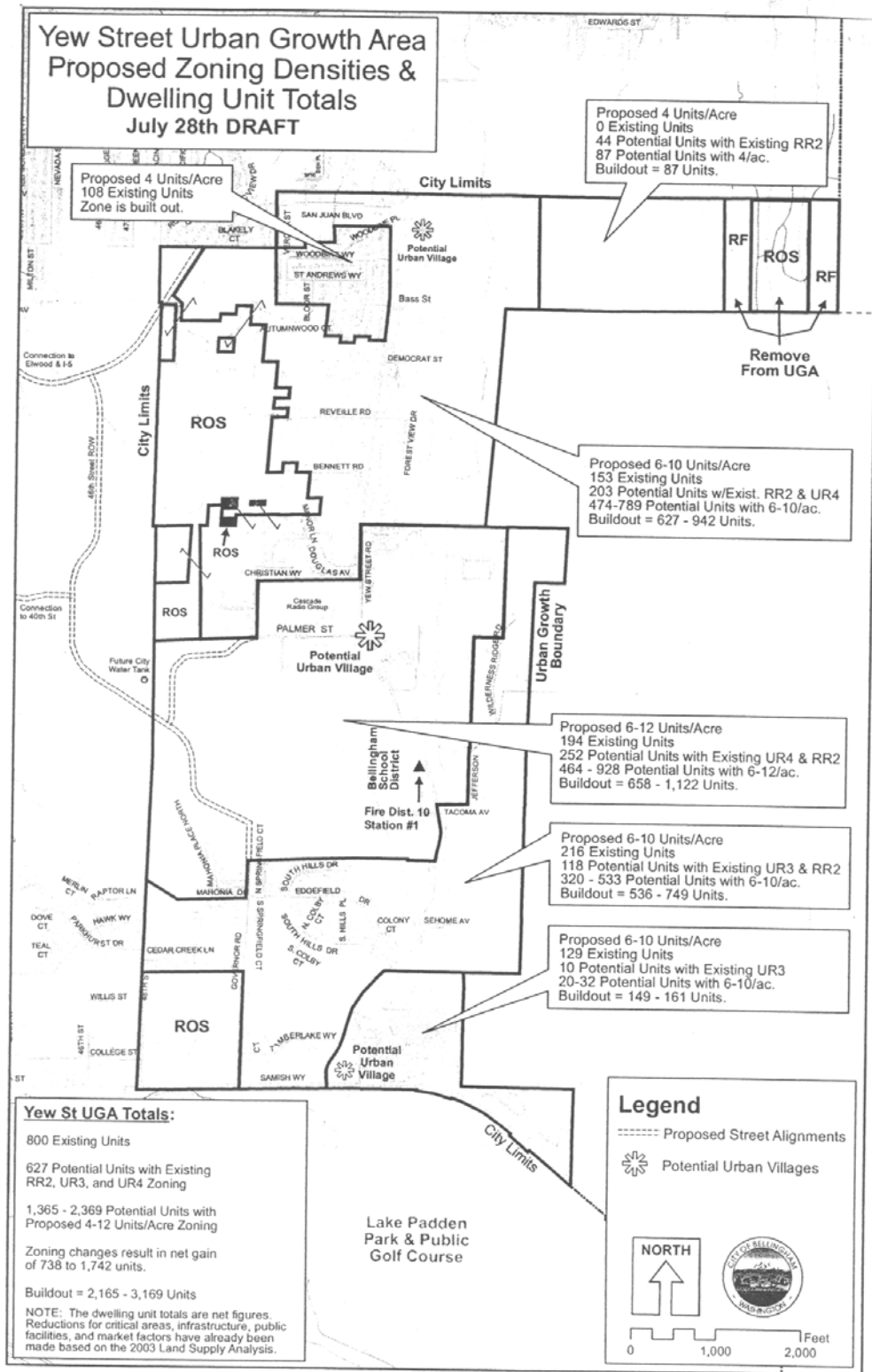
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Whatcom Unified Emergency Management. “Whatcom Unified Emergency Management.” Web. 26 Feb. 2012. <<http://www.whatcomready.org>>.

World Health Organization. 1995. “Guidelines for Community Noise.” Web. 29 Feb. 2012. <<http://www.who.int/docstore/peh/noise/guidelines2.html>>.

Appendix A – Site Maps, 2005 Whatcom County and Planning  
Development Staff Report

EXHIBIT 2



Approved by Whatcom County  
Planning Commission April 28, 2005.

EXHIBIT 3

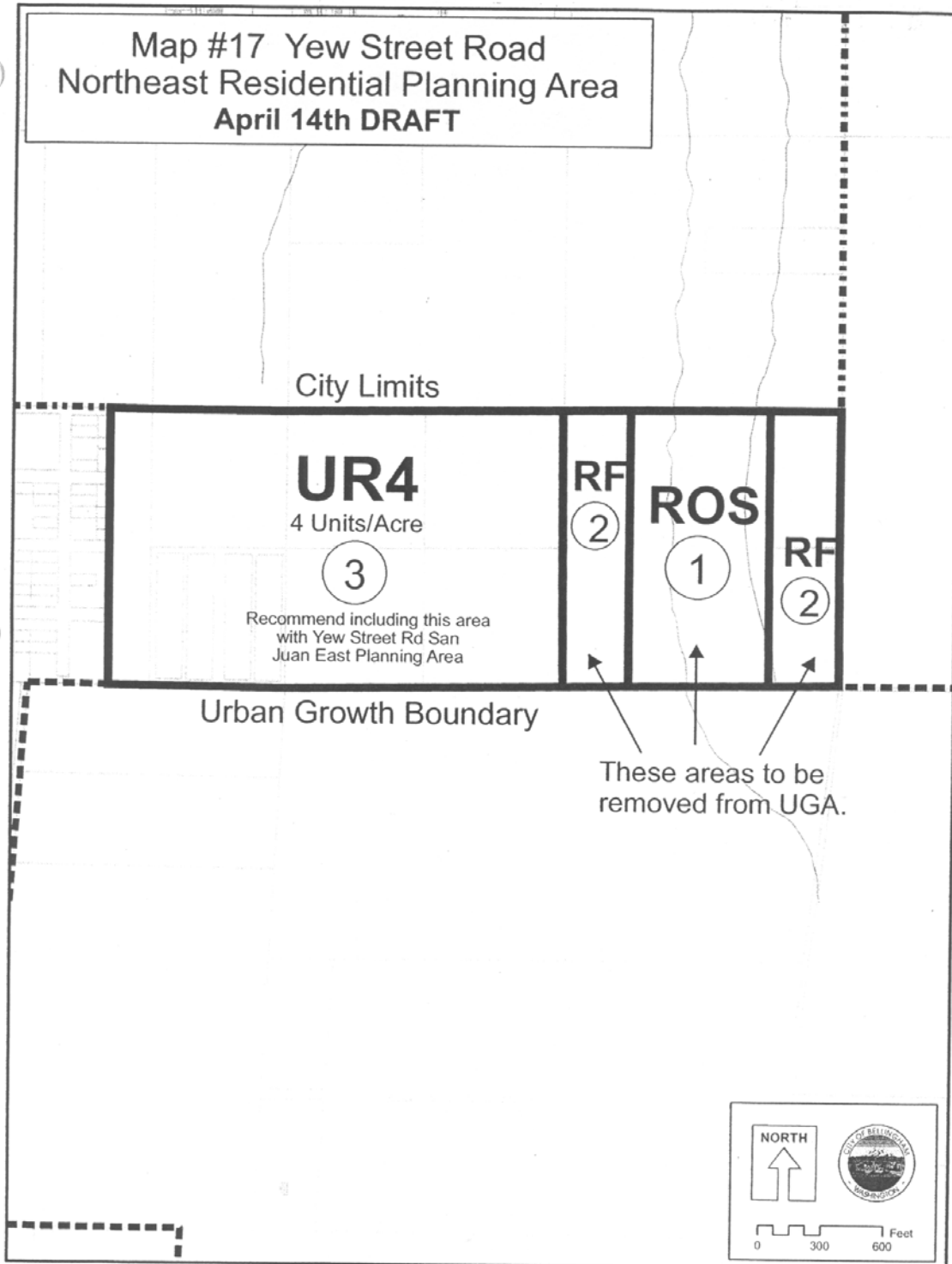


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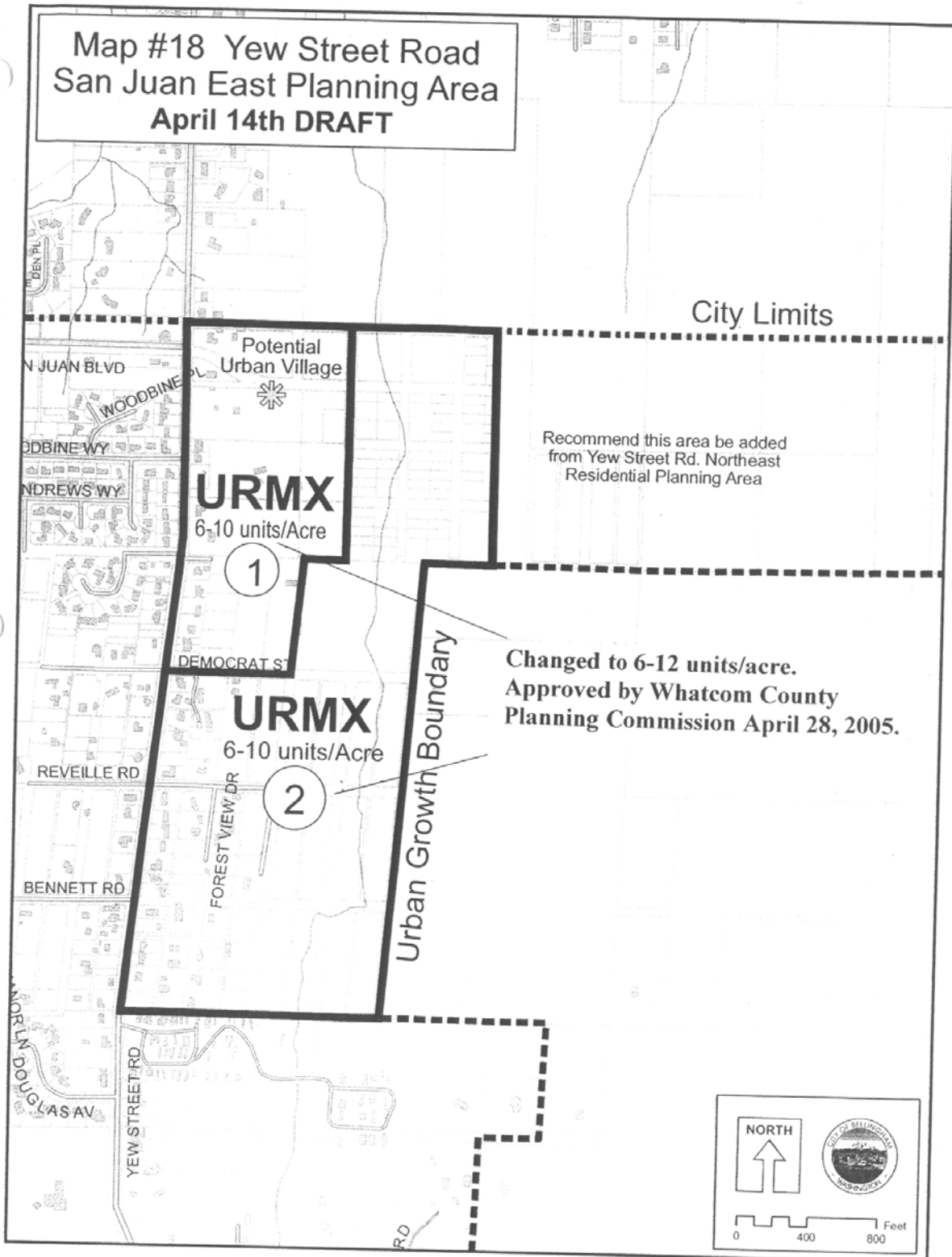


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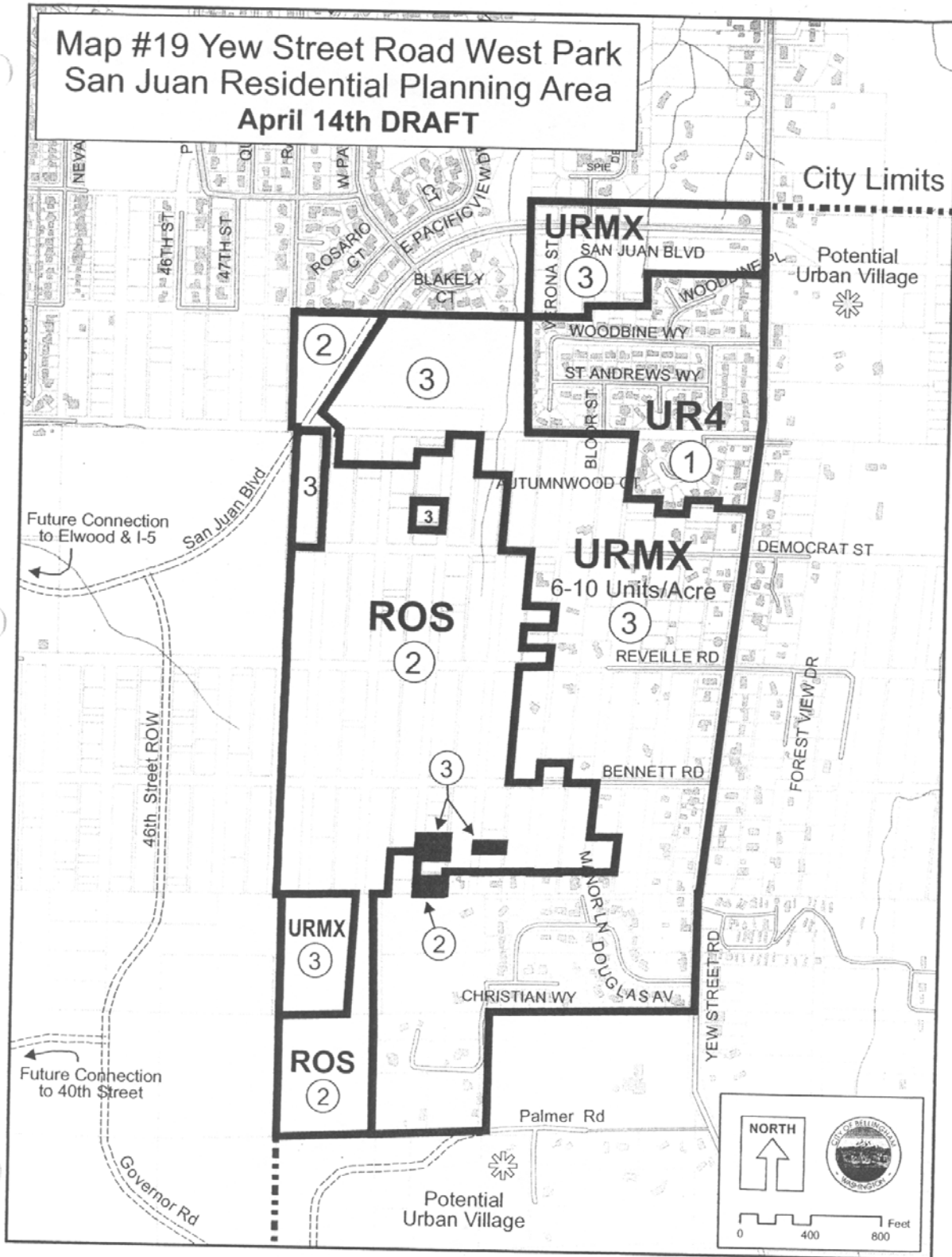


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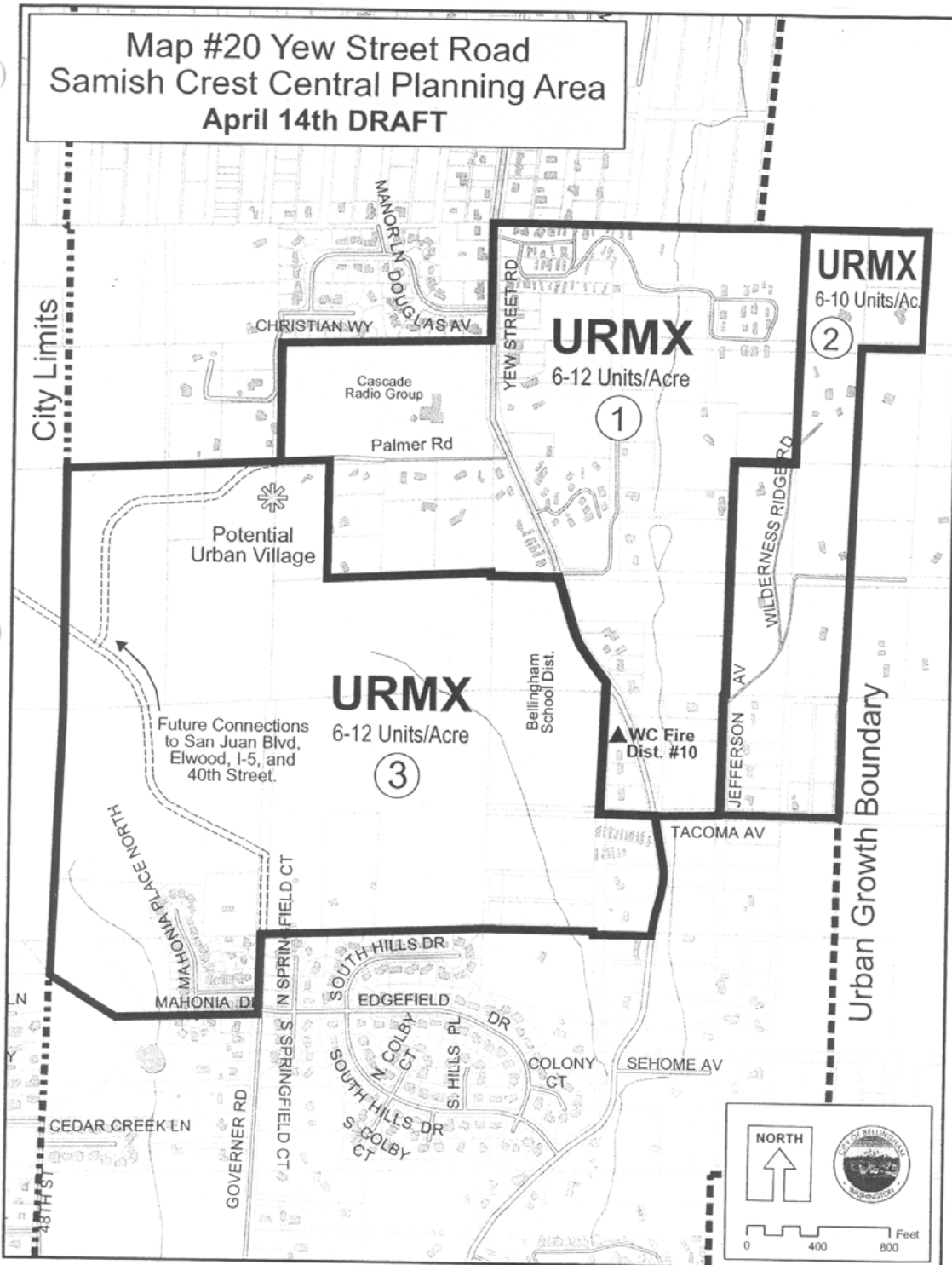
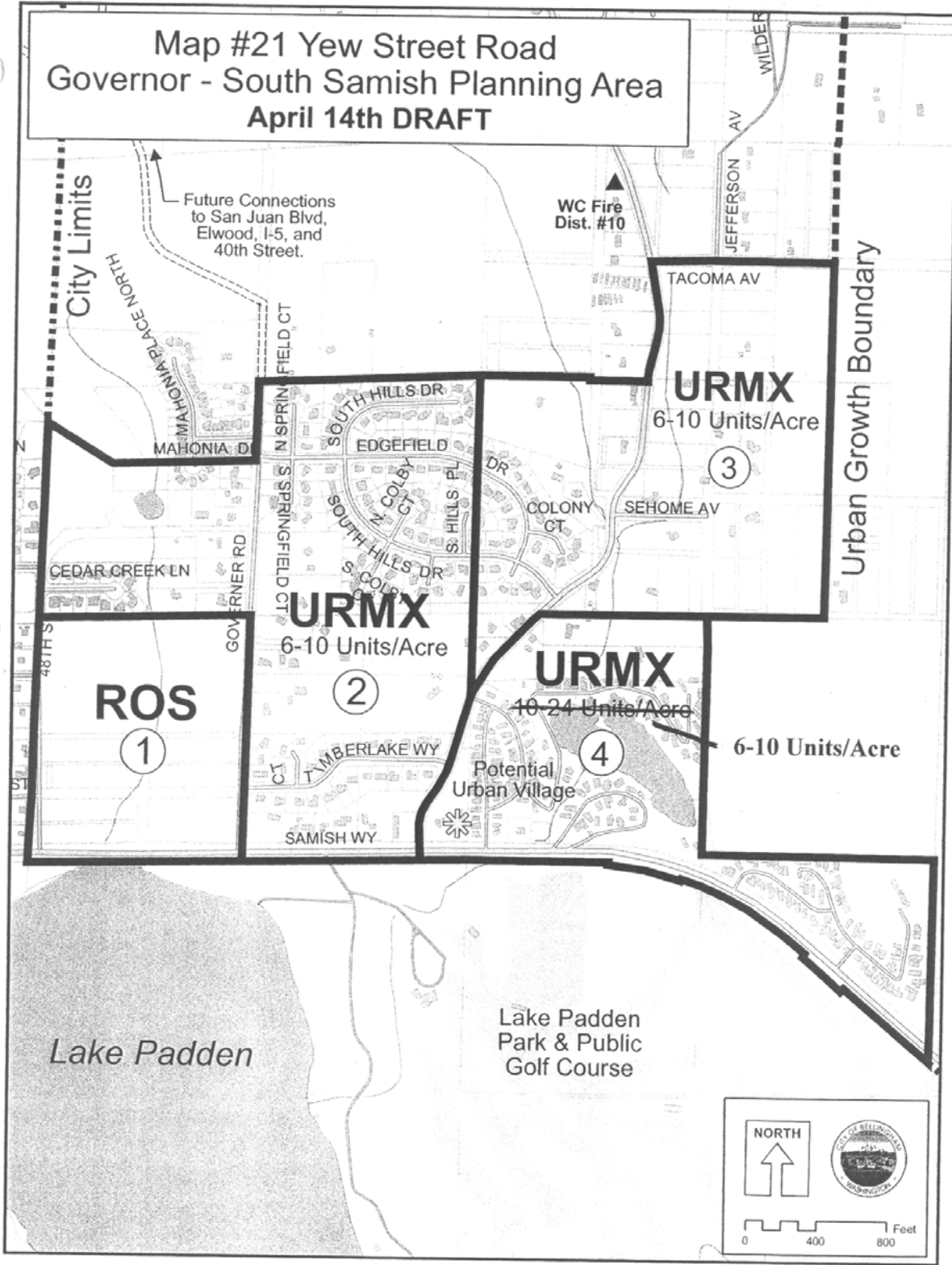
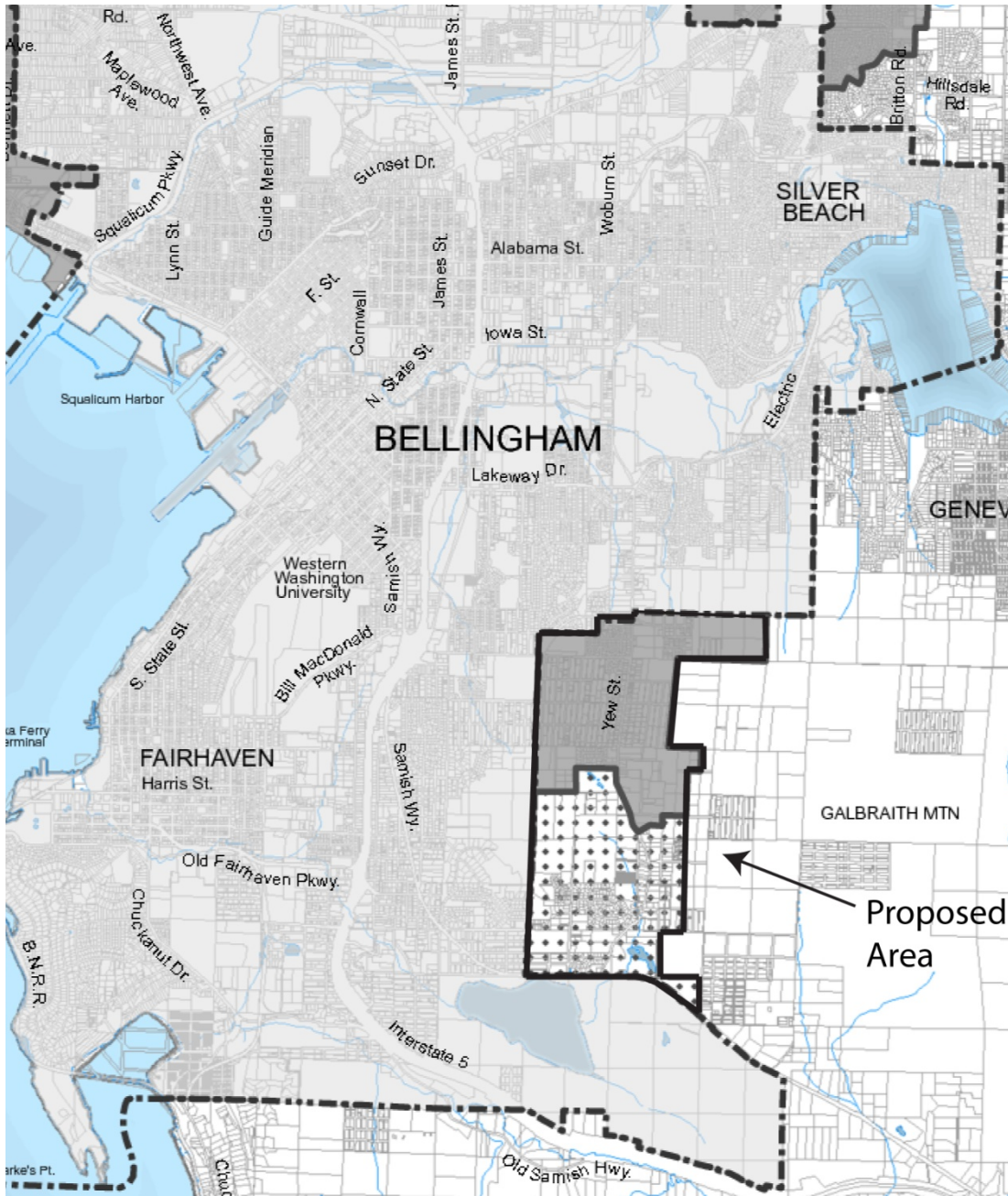


EXHIBIT 7

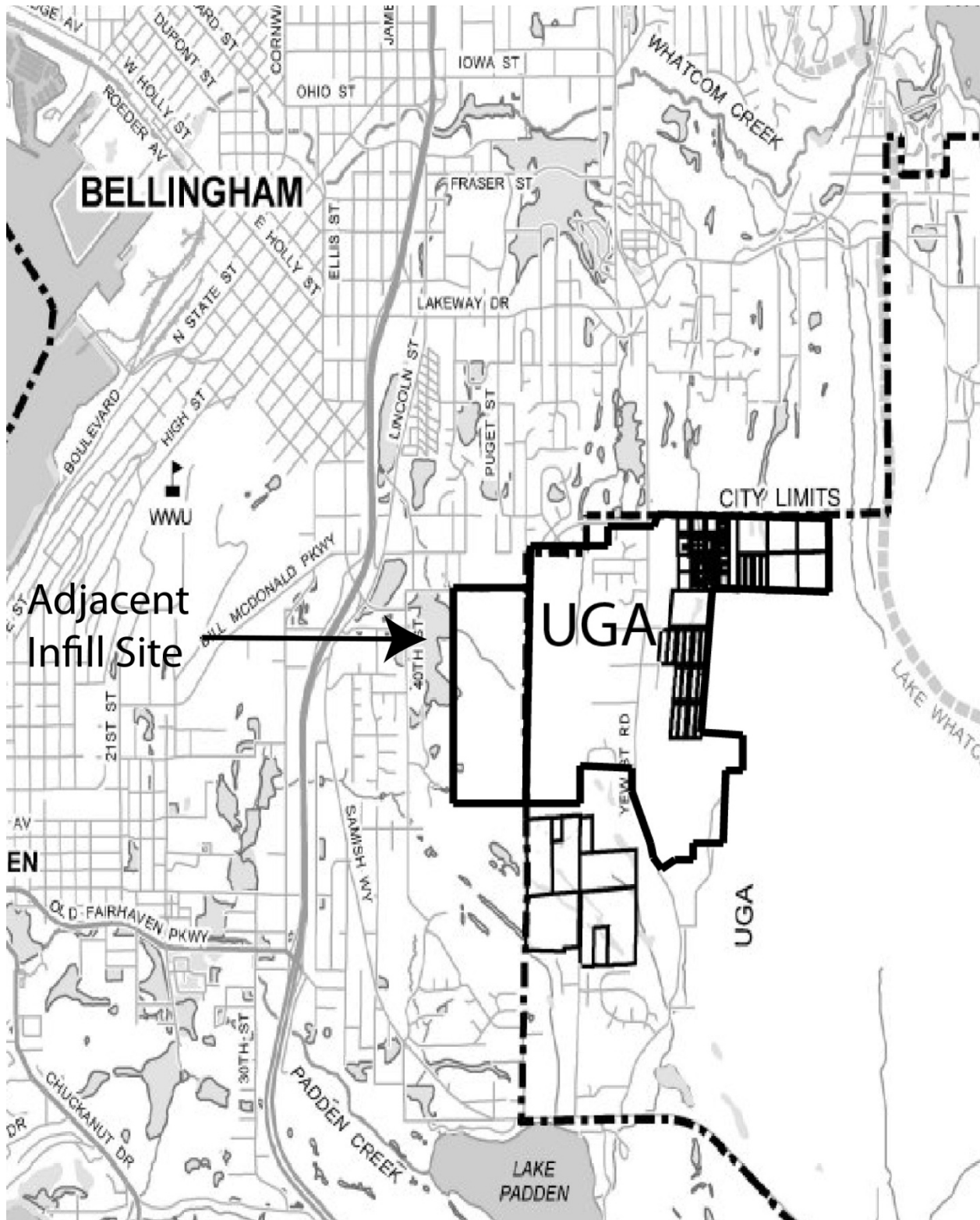




## Appendix B – Site Area Maps: Proposed and Alternative

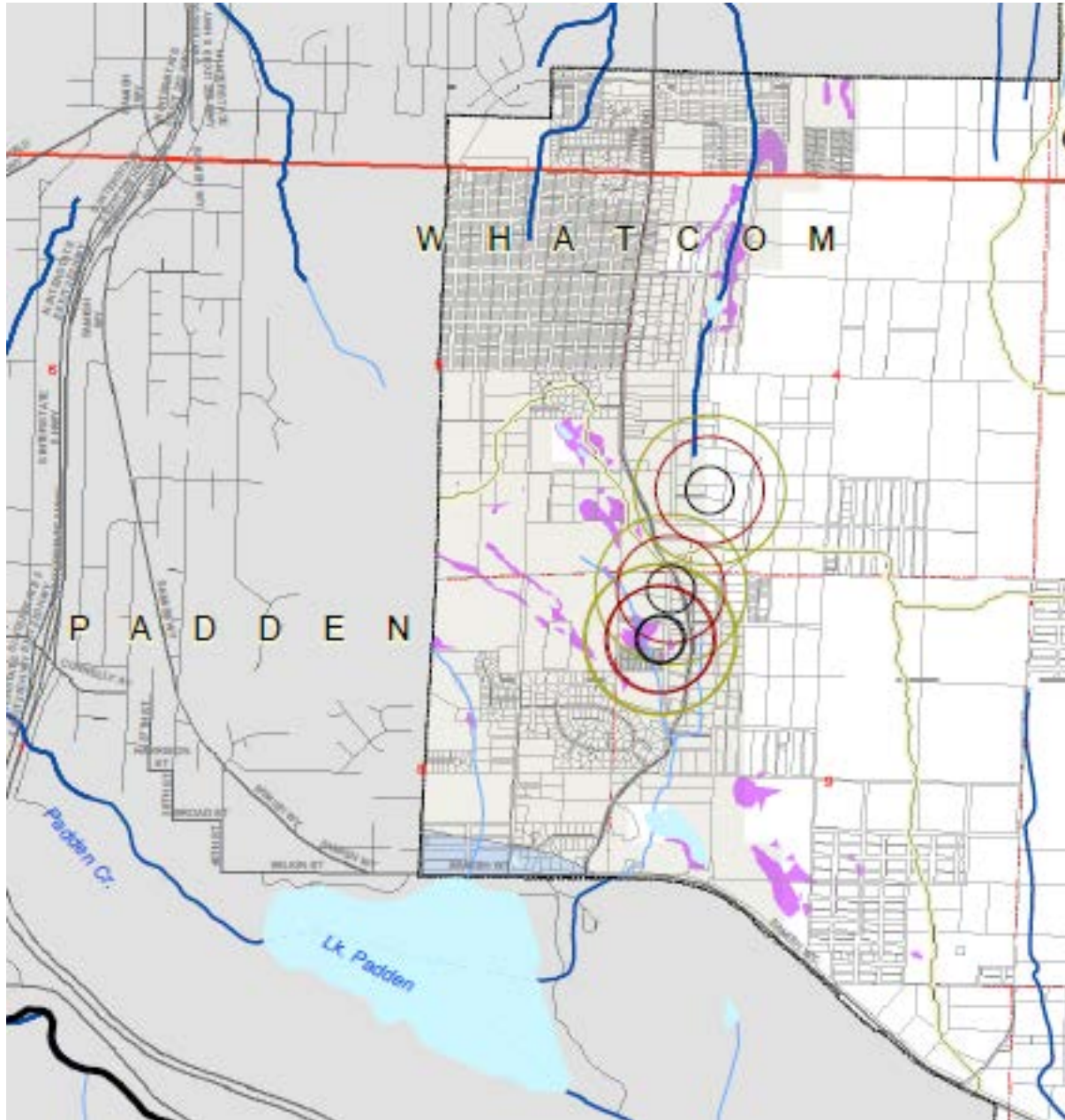


**Location of Site Map. City of Bellingham**



Alternative Site Map. City of Bellingham

Appendix C – Whatcom County Planning and Development  
Critical Areas Ordinance Map



**Whatcom County Critical Areas Ordinance, Environmentally and Biologically Sensitive Areas.** Areas in purple are D1-4, Article IV Wetlands. Bullseye markers show Wellhead Protection Areas of High Susceptibility. Whatcom County Planning and Development Natural Resource Management.