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You can have your boat, and launch it too: an environmental impact assessment of the proposed boat launch at former Riverside Golf Course in Ferndale, Washington

Steve Anderson
Western Washington University

Paul Argites
Western Washington University

Christina Hersum
Western Washington University

Tracy Pennell
Western Washington University

Justin Sant
Western Washington University

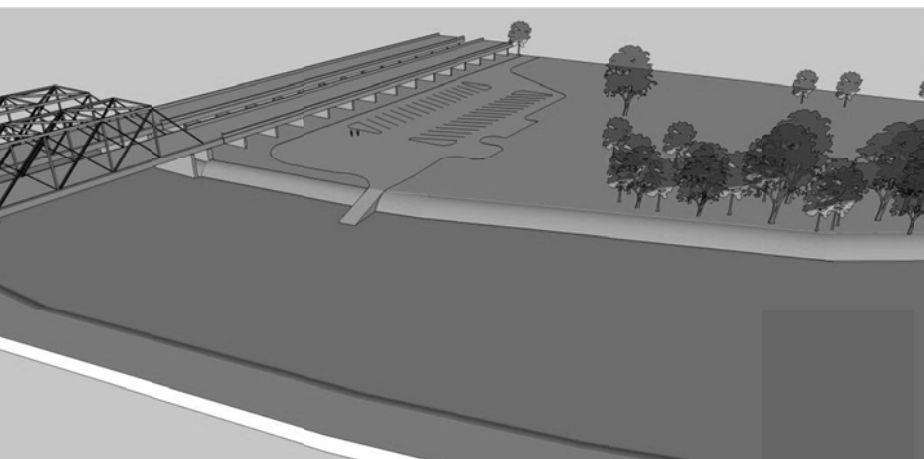
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You Can Have Your Boat, and Launch It Too

**An Environmental Impact Assessment of the
proposed boat launch at former Riverside
Golf Course in Ferndale, Washington**

Steve Anderson
Paul Argites
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Justin Sant

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You Can Have Your Boat and Launch It, Too

An Environmental Impact Assessment of the
proposed boat launch at former
Riverside Golf Course in Ferndale, Washington

Prepared For:

Professor Leo Bodensteiner
Huxley College of the Environment
Western Washington University
ESCI 436
Winter 2011

Prepared By:

Steve Anderson
Paul Argites
Christina Hersum
Tracy Pennell
Justin Sant

** This presentation 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 persons representing local governments or private individuals, nor does it necessarily represent the opinion or position of individuals from government or the private sector. **

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Signature _____

Stephen Anderson

Signature _____

Paul Argites

Signature _____

Christina Hersum

Signature _____

Tracy Pennell

Signature _____

Justin Sant



Date March 11, 2011

Riverplace Boat Launch Facility Construction
Environmental Impact Assessment
Western Washington University
Huxley College of the Environment
Bellingham, Washington

March 11th, 2011

Dear Concerned Citizens,

This Environmental Impact Assessment (EIA) is to investigate the possible environmental impacts of constructing a boat launch facility on a section of the Nooksack River located in Ferndale, Washington. This document complies with the guidelines presented by the State Environmental Policy Act (SEPA) and adheres to the rules specified by the Washington Administrative Code (WAC) 197-11.

This assessment report was prepared by a group of students from Western Washington University as part of a culminating undergraduate project for Huxley College of the Environment. The purpose of this project was to simulate the environmental review process outlined by SEPA and WAC 197-11 when a Determination of Significance (DS) has been established for a construction proposal. All aspects of this environmental review were supervised by Western Washington University Associate Professor, Dr. Leo Bodensteiner.

The proposed action for the construction of a boat launch and parking lot facility along the Nooksack River in Ferndale, Washington would offer suitable riverside access to local boating enthusiasts. It would act as an alternative to the failing Hovander Park boat launch located 1000 feet to the south of Main Street. The construction of the launch facility would be beneficial to the community as it would increase the opportunity for boaters, fishing enthusiasts, bird watchers, and tourists to have access to the Nooksack River.

We will outline two alternatives to the proposed action. The first alternative incorporates all of the proposed action objectives, resulting in less environmental impact. The second alternative is a no action proposal which will leave the area untouched in its current state. The preferred course of action recommended by our team is the first alternative. This option would incorporate a set of modified construction actions which would mitigate the environmental impact of the boat launch facility and still provide year-around riverside access to local citizens and visitors.

We hope that this Environmental Impact Assessment brings clarity and understanding of the project's impacts on both the natural and built environments.

Sincerely,

The Riverplace Boat Launch Facility EIA Team

Steve Anderson, Christina Hersum, Tracy Pennell, Justin Sant & Paul Argites

Fact Sheet

Title

You Can Have Your Boat, and Launch It Too:

An Environmental Impact Assessment of the proposed boat launch at former Riverside Golf Course in Ferndale, Washington

Project Description

The boat ramp and parking lot facility consists of the larger part of the Riverplace Civic Center redevelopment project in Ferndale, Washington. Construction of a ramp and a parking lot would serve recreational purposes for residents utilizing the Nooksack River. The proposed facility would also accommodate a moderate volume of recreationists on a daily basis during peak activity months. Located adjacent to Interstate-5, this facility aims to increase recreation activities, and to provide an alternative launch site onto the Nooksack River to the almost out of commissioned boat launch upriver. The alternative actions address flaws with the initial proposal and aim made to encourage environmentally conscious development; for example, a pervious concrete parking lot, as well as a vegetative filter strip is recommended as an alternative to a more impervious surfaced parking lot, in order to reduce run off from the site during high flow events. These are proposed in order to protect the quality of the conditions of the Nooksack River and developed site.

Location of Project Site

Ferndale, Washington
Approximately 5799 Riverside Drive
Nooksack River Shoreline

Permits Required

- 401 Water Quality Certification
- Aquatic Use Authorization (Aquatic Lease)
- Hydraulic Project Approval (HPA)
- Flood Plain Development Permit
- Permit for Work in Navigable Waters (Section 10 Permit)
- Reporting Requirements for a Spill or Release of a Hazardous Substance
- Shoreline Management Act
- Shoreline Variance Permit
- State Environmental Policy Act

Lead Agency

Dr. Leo Bodensteiner
Huxley Environmental Consultants, Inc.
ES 413 Western Washington University
Bellingham, Washington 98225

Responsible Official

Riverplace Boat Launch Group, Environmental Impact Assessment:
Western Washington University, Winter 2011

Authors with Respective Sections

- Steve Anderson —————> Signature Page, Glossary, Plants & Animals, Parks & Recreational Activities & Facilities
- Paul Argites —————> Letter to Citizens, Air, Toxic Releases & Risk of Explosion, Fire & Police
- Christina Hersum —————> Executive Summary, Decision Matrix, Earth, Maintenance, References, Senior Editor
- Tracy Pennell —————> Fact Sheet, Glossary, Permits, Executive Summary, Water, Noise, Light and Glare, Public Water and Electricity, Editor
- Justin Sant —————> Cover Page, Photo Credit Page, Title Page, Executive Summary, Historical Background, City Goals, Zoning & Buildings, History, Culture & Aesthetics, Transportation & Traffic, Appendices

Date of Issue

March 11, 2011

Place and Time of Public Presentation

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REI Community Room
Bellingham, Washington
400 36th St
Bellingham, Washington 98225

Acknowledgments

Dr. Leo Bodensteiner
*Associate Professor and Chair
Department of Environmental Sciences
Huxley College of the Environment
Western Washington University*

Kara Kuhlman
*Graduate Student, TA
Department of Environmental Sciences
Huxley College of the Environment
Western Washington University*

Dr. James Helfield
*Assistant Professor
Department of Environmental Sciences
Huxley College of the Environment
Western Washington University*

Stefan Freelan
*GIS Specialist
Huxley College of the Environment
Western Washington University*

Distribution List

Dr. Leo Bodensteiner
Associate Professor and Chair
Huxley College of the Environment
Western Washington University
Bellingham, Washington

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Glossary

Alluvial: Deposition of material by flowing water¹.

Best Management Practices (BMPs): Individual practices provided to achieve the best stormwater management possible by providing the best pollution control for the given circumstance.

Bulk Flow: The flow of substances driven by differences in pressure.²

Cofferdam: A waterproof enclosure from which water is pumped to expose the bed of a body of water enabling the construction of a pier or other hydraulic work.³

Cut-bank: The outside of a stream meander bend where erosion occurs most heavily.

Diesel Particulate Matter (DPM): “Diesel exhaust is composed of two phases, either gas or particle and both phases contribute to the risk. The gas phase is composed of many of the urban hazardous air pollutants, such as acetaldehyde, acrolein, benzene, 1,3-butadiene, formaldehyde and polycyclic aromatic hydrocarbons. The particle phase also has many different types of particles that can be classified by size or composition. The size of diesel particulates that are of greatest health concern are those that are in the categories of fine, and ultra fine particles. The composition of these fine and ultra fine particles may be composed of elemental carbon with adsorbed compounds such as organic compounds, sulfate, nitrate, metals and other trace elements.”⁴

Dissolved Oxygen (DO): The oxygen freely available in water, vital to fish and other aquatic life and for the prevention of odors. DO levels are considered a most important indicator of a water body's ability to support desirable aquatic life. Secondary and advanced waste treatment are generally designed to ensure adequate DO in waste-receiving waters⁵.

Eddy: A “fluid current whose flow direction differs from that of the general flow.”⁶

Floodplain: “The flat or nearly flat land along a river or stream or in a tidal area that is covered by water during a flood”⁷. “Synonymous with one hundred-year flood plain and means that land area susceptible to inundation with a one percent chance of being equaled or exceeded in any

¹ <http://www.epa.gov/OCEPAterms/aterms.html>

² <http://sites.bio.indiana.edu/~hangarterlab/courses/b373/lecturenotes/water/waterintro.html>

³ cofferdam. (2011). In *Encyclopædia Britannica*. Retrieved from <http://www.britannica.com/EBchecked/topic/124392/cofferdam>

⁴ <http://www.epa.gov/NE/eco/airtox/diesel.html>

⁵ <http://www.epa.gov/OCEPAterms/dterms.html>

⁶ eddy. (2011). In *Encyclopædia Britannica*. Retrieved from <http://www.britannica.com/EBchecked/topic/178908/eddy>

⁷ <http://www.epa.gov/OCEPAterms/fterms.html>

given year”⁸.

Floodway: The river channel and surrounding lands that are set aside to discharge a flood.⁹

Infiltration: The penetration of water through the ground surface into sub-surface soil¹⁰.

Invasive Species: A living thing that is non-native to an ecosystem that threatens to harm the environment.¹¹

Mitigation: Mitigation has a variety of meanings and implications; including, avoiding or minimizing an impact by altering the approach and style of the development (often by using better technology), restoring an impacted environment, keeping a careful watch on detrimental impacts and correcting them as they occur, or by restoring an unrelated area in order to make up for the detriment caused through the project¹².

Pervious Concrete: “Also known as porous, gap-graded, or enhanced porosity concrete, is concrete with reduced sand or fines and allows water to drain through it. Pervious concrete over an aggregate storage bed reduces stormwater runoff volume, rate, and pollutants. The reduced fines leave stable air pockets in the concrete and a total void space of between 15 and 35 percent, with an average of 20 percent. The void space allows stormwater to flow through its surface, and enter a crushed stone aggregate bedding layer. The bedding layer and base help provide support, storage and runoff treatment. When properly constructed, pervious concrete is durable, low maintenance, and has a low life cycle cost”¹³.

Peak Flow: The highest rate of water flow in a water course.¹⁴

Riparian Zone: The zone of interaction between aquatic and terrestrial ecosystems.¹⁵

Runoff: Water that moves across the surface of soils without permeating into the soils.

Rutting: A groove or mark caused by the wheels of a vehicle.

Sediments: “Sediments are fragmented materials that originate from weathering and erosion of rocks or unconsolidated deposits and are transported by, suspended in, or deposited by water.”¹⁶

Sheet Flow: Precipitation that moves as a very shallow overland flow until it reaches a river or is absorbed into the soil.¹⁷

Soil Capacity: The ability of soil to absorb and contain water. When soil becomes saturated it has reached its capacity.

Terrestrial: Land based ecosystems such as forests, deserts, prairies, and mountains. “Terrestrial wildlife” are animals that utilize these systems to survive.¹⁸

Total Suspended Solids (TSS): A measure of the suspended solids in wastewater, effluent, or water bodies, determined by tests for “total suspended non-filterable solids.”¹⁹

Undercutting: To cut away at the underside of an object, such as a river bank.²⁰

⁸ http://www.ecy.wa.gov/programs/sea/sma/laws_rules/173-26/020_Definitions.html

⁹ <http://www.fema.gov/plan/prevent/floodplain/nfipkeywords/floodway.shtm>

¹⁰ <http://www.epa.gov/OCEPaterms/iterms.html>

¹¹ <http://www.invasivespeciesinfo.gov/whatis.shtml>

¹² Washington State Legislature. *WAC 197-11-768*

Mitigation., 1984. Web (<http://apps.leg.wa.gov/wac/default.aspx?cite=197-11-768>).

¹³ <http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=browse&Rbutton=detail&bmp=137&minmeasure=5>

¹⁴ <http://www.fcd.maricopa.gov/Education/Glossary.aspx?CHAR=P>

¹⁵ Dr. James Helfield, Jan. 24, 2011.

¹⁶ <http://water.epa.gov/polwaste/sediments/>

¹⁷ <http://www.wakegov.com/water/stormwater/taskforce/links/glossary.htm>

¹⁸ <http://www.epa.gov/ebtpages/ecosterrestrialecosystems.html>

¹⁹ <http://www.epa.gov/OCEPaterms/tterms.html>

²⁰ <http://www.merriam-webster.com/dictionary/undercutting>

List of Acronyms & Abbreviations

BMP	<i>Best Management Practices</i>
DPM	<i>Diesel Particulate Matter</i>
EPA	<i>Environmental Protection Agency</i>
FCP	<i>Ferndale Comprehensive Plan</i>
FEMA	<i>Federal Emergency Management Agency</i>
NPS	<i>National Park Service</i>
PCB	<i>Polychlorinated biphenyl</i>
RCW	<i>Revised Code of Washington</i>
SEPA	<i>State Environmental Policy Act</i>
TSS	<i>Total Suspended Solids</i>
VOC	<i>Volatile Organic Compound</i>
WAC	<i>Washington Administrative Code</i>

Executive Summary

An Environmental Impact Assessment was conducted for a proposed new boat launch facility in Ferndale, Washington. The facility includes the construction of a boat launch and parking lot, ultimately providing improved boating access for local citizens and visitors. Access to the Nooksack River has historically been provided by the boat ramp located at the northwesterly edge of Hovander Park, also within the City of Ferndale, Washington. However, due to its lack of accessibility and deteriorating structure from sediment accumulation, the boat ramp is underutilized by recreationists. The proposed new boat launch facility would serve to replace the failing Hovander boat launch downriver and offer greater opportunities for recreational activities such as fishing and watersports.

The assessment addresses the proposed action of SAS Consulting, Inc.'s boat launch facility construction; the alternative action, for construction of the boat launch facility using Best Management Practices (BMP); and the no action alternative. The impacts of these actions on the natural and built environment were analyzed to establish which action was the most suitable for the surrounding environment.

Based on the results from the assessment, the original proposal for a gravel parking lot would have a considerable impact on surface runoff volumes and composition. The gravel parking lot was considered an impervious surface, and would likely hinder infiltration of stormwater during high water events. As a result, surface runoff would increase and ultimately drain into the Nooksack River. Facets of the proposed action, besides surface runoff, were found to have moderate impacts on air pollution, erosion, habitat alteration, recreation, amongst other elements. The alternative action proposal would have similar impacts as the original proposal, however by implementing BMPs the alternative action would help negate the more detrimental environmental impacts of development. For example, pervious concrete and a vegetated filter strip would help counteract surface runoff from entering and possibly contaminating the Nooksack River. These practices would also have marginal impacts on the other elements of the environment.

The no action alternative would not have any substantial effects on the surrounding environment,

with the exception of recreation. Recreation opportunities, such as boating access, would be deficient without an alternative facility to the one at Hovander Park.

The results of the assessment led our group to conclude that the alternative action would be the most acceptable action for the development of the Riverplace boat launch facility.

Introduction

Existing Conditions

There is currently one boat ramp that serves recreationists in the area, it is located at the northwesterly edge of Hovander Park in Ferndale, Washington. However, due to its lack of accessibility and deterioration from sediment buildup, the boat ramp is underutilized by recreationists.

The proposed location for the new Riverplace Civic Center boat ramp and parking lot is positioned at the northernmost section of the former Riverside Golf Course property in Ferndale, Washington. It lies alongside the southern bank of a meander bend in the Nooksack River and experiences frequent seasonal flooding. For this reason, particular sections of the property are designated as floodplain or floodway according to FEMA specifications [FEMA, 2004]. As a result of the property's former role as a golf course, much of the area has been landscaped with invasive grasses. The river bank riparian zone, which consists of 15-20 feet of Himalayan Blackberry bushes (*Rubus discolor*) and a sparse distribution of Cottonwood trees (*Populus balsamifera*) was left untouched (see Fig.1).

The property is also located in close proximity to Interstate-5 and its elevated steel truss bridge, which extends roughly 20-25 feet above the Nooksack River's average water level. The interstate is situated approximately 150 feet northeast of the proposed ramp location, and receives a nearly constant flow of traffic. Four small buildings, including a club house and storage facility, reside 900 feet southeast of the proposed boat ramp location. Across the Nooksack River from the property, private single family residences and public riparian zones have maintained 25-40 feet of riparian vegetation species such as Cottonwood trees (*Populus balsamifera*).

Proposed Action

This proposed project by SAS Consulting, Inc. aims to remedy deficiencies in recreation delivery of the inadequate boat launch facility at nearby Hovander Park, which may have exceeded its useful life. The project is also part of the Riverplace Civic Center's larger redevelopment plan, which includes shops, trails, playing fields, and an outdoor classroom. These developments remain outside the scope of our assessment and will not be addressed. The project proposes to build a boat ramp 150 feet west from the Interstate-5 Bridge, 12-16 feet wide, and extending 20 feet beyond the mean water level depth of the river channel (See Fig.2). The slope of the ramp will range between 12-15%; however, the alignment of the ramp remains undecided. SAS Consulting, Inc. is considering two options: an angled alignment downstream or an alignment perpendicular to the shoreline. Air-entrained concrete would be used as material for the boat ramp, and a 24-inch concrete edge will be poured along the perimeter.

There would be 30 total parking spots in the new proposed parking lot and the surface of the parking lot would be gravel. The edge of the parking lot is proposed to be located 15 feet from

Interstate-5, and 25 feet from the Nooksack River's shoreline. It would be connected to the boat ramp by a 40 foot-diameter turn-around between the ramp and the parking spaces for vehicles positioning their boat trailers. There would be two columns of parking; 37 feet in length and separated by a 24-foot travel lane. (SAS Consulting, Inc. 2010). The parking lot also includes a fish cleaning and tie-down area on the westerly side. (See Fig.2)

During the construction phase of the boat ramp, a cofferdam would be used to block water flow and provide a dry working environment. Temporary modifications of sediment, stream flow, and surrounding habitat would occur. More permanent modifications, such as bank protection methods, would also occur, but remain of minimum impact. Specific details for the construction phase of the parking lot were not fully disclosed prior to our assessment; however, we presume that modifications to the surrounding environment would remain marginal.

Additionally, the proposed project would lie within the designated floodway (see Fig.3), but the structure of the boat ramp itself would not be adversely affected by frequent flooding events. The facility would be inaccessible to the public until water levels returned to regular levels, and the gravel parking lot would also need to be frequently maintained and remediated, especially after large flooding events. If a perpendicular alignment was decided upon by SAS Consulting, Inc. then it would experience less undercutting by river flow. On the other hand, it would also accumulate more silt during periods of high water caused by flooding events.

Alternative Action

The alternative action was designed to have a smaller impact on the surrounding environment, while still accomplishing the intention of the Riverplace Civic Center's intentions. The alternative location would be located along the Nooksack River in Whatcom County, Washington and within the city limits of Ferndale. The location would occupy the same area as the proposed action which resides on the inner meander bend in the Nooksack River, 150 feet from the Interstate-5 Bridge. The proposed alternative would remain relatively consistent with the proposed project presented by SAS Consulting, Inc. with the exception of a few changes to the design.

In the original proposal, gravel was to be used for the surface of the parking lot; the alternative action proposes that pervious concrete be used instead. Pervious concrete has proven to be advantageous for surrounding environments by exhibiting increased infiltration, reduced siltation and peak surface water flow, along with several other benefits. As a result of faster drainage, the boat ramp would be accessible to recreationists more frequently. Some maintenance would be required, but no more than that required of a gravel surfaced parking lot.

Furthermore, the proposed alternative action will extend the buffer area between the Nooksack River's shoreline and the parking lot from 25 to 75 feet. This extension would allow for a vegetated filter strip to be constructed as a buffer and drainage system for untreated stormwater runoff. It would also help prevent further bank erosion, particularly during flooding events. Fig.4 depicts a residential filter strip, but is a comparative representation of what the alternative action proposes to construct.

At the ends of both rows of parking stalls, the alternative action proposes the use of parking lot islands. These four parking lot islands would be graded slightly below the parking lot and planted with robust, long rooted plants. During storm events, surface runoff would flow into these islands, slowly filtrate into the ground, and percolate through the vegetated filter strip

before returning to the river. This type of parking lot landscaping further decreases the effects of stormwater runoff, and would improve the aesthetics of the boat launch facility.

Lastly, the alternative action proposes a downstream, rather than a perpendicular alignment. Increased eddies and undercutting are expected with this alignment, however the accumulation of sediment would be minimal after a flooding event. This is due to a moderate degree of channelization in this section of the Nooksack River, which maintains water velocities rapid enough to reduce sediment deposition. The angled alignment would also decrease possible drag on recreationist's boats and trailers being placed in the river; therefore making boat launching an easier and less dangerous process for recreationists.

No Action Alternative

In the case where no action is taken, the property would remain in its current condition and continue to be seasonally flooded by the Nooksack River. The four existing buildings would also remain in their current location; however, deterioration of the buildings from flooding events and inclement weather is likely to transpire. Underutilization of Hovander Park boat ramp will carry on, as long as its accumulation of silt goes unmaintained.

Decision Matrix

Key		□	minor impacts during construction
∞	strong positive impacts	#	slight negative impacts
Δ	slight positive impacts	!	strong negative impacts
○	no impacts	◇	unknown impacts

ELEMENT	COMPONENT	PROPOSED ACTION	ALTERNATIVE ACTION	NO ACTION ALTERNATIVE
Earth	Soil	□	Δ □	◇
	Slope	□	Δ □	◇
	Impervious Surface	! □	Δ □	◇
Air		# □	# □	○
Water	Surface	# □	# □	◇
	Groundwater	# □	Δ □	◇
	Water runoff	! □	∞ □	◇
	Stream	! □	# □	◇
	Wetland	○	○	○
Plants	Terrestrial	#	Δ □	○
	Aquatic	! □	# □	○
Animals	Terrestrial	# □	Δ □	○
	Aquatic	! □	□	○
	Endangered species	◇	◇	◇
Environmental Health	Noise, Light, & Glare	# □	# □	○
	Toxic Releases & Risk of Explosions	# □	# □	○
Land & Shoreline Use	Land Use	#	□	○
	Shoreline Use	Δ	∞	○
	Recreation	Δ	Δ	○
	History/Aesthetics	#	Δ	#
	Transportation/Parking	#	#	○
	Police	Δ	Δ	○
	Fire	Δ	Δ	○
	Public Services	∞	∞	○
Maintenance	#	#	◇	

Natural Environment

Earth

Existing Conditions

Geology & Topography

The site under consideration for construction of the Riverplace Civic Center boat launch and parking area is located within the Nooksack River basin lowlands. The lowlands consist of Quaternary glacial sediments and alluvial deposits carried by the river (see Fig.5). They are characterized by low elevations (0-300 meters) and low relief²¹. Currently, the site's surface does not contain any impervious surfaces.

Soils

The site primarily consists of Mount Vernon fine sandy loam soils, followed by smaller percentages of Skipopa silt loam soils located on slightly more elevated slopes²² (see Fig.6). Mount Vernon fine sandy loam soils were formed by alluvium carried by the Nooksack River, and are moderately well-drained. In addition, Mount Vernon soils have a high available water capacity. Skipopa silt loam soils were created in loess and volcanic ash on top of glaciolucustrine sediments²³. Similar to Mount Vernon soils, Skipopa soils also have a high available water capacity, however they are poorly drained²⁴. Both soils are only marginally susceptible to erosion, due to their proximity to the Interstate-5 bridges and its resultant protection during river flow fluctuations²⁵.

Proposed Action

Erosion is the largest concern of the proposed action for constructing a boat launch and parking area in this location. Inevitably there would be some loss of upper soil layers and soil capacity, as well as an increase in impervious surfaces²⁶. However, we predict it would be minimal due to planned construction practices that would be incorporated throughout the process. Prior to construction, the boat ramp area would be cofferdamed, which requires minimal and temporary excavation.

During construction, the developer would be utilizing construction methods for the prevention of undercutting and the stabilization of the river's banks²⁷. This may include a twenty-four inch

²¹ Dickerson, Susan E. *Modeling the effects of climate change forecasts on streamflow in the nooksack river basin*. WWU Geo Dept. Masters. 2009.

²² U.S. Department of Agriculture [USDA]. (1992, May). *Soil Survey for Whatcom County Area, Washington*. Portland, OR: Natural Resource Conservation Service.

²³ *Ibid.*

²⁴ *Ibid.*

²⁵ National Park Service Rivers, Trails, and Conservation Assistance Program (2004). *Logical Lasting Launches*.

²⁶ Hinman, Curtis. (2005). *Low Impact Development: Technical Guidance Manual for Puget Sound*. Olympia, WA: Puget Sound Action Team.

²⁷ SAS Consulting (2010). *Riverplace Sports, Recreation, and Leisure Facilities: Boat Launch*. Bellingham, WA.

concrete edge along the perimeter of the ramp, and other practices to avoid the cutbanks from caving in.²⁸

Although the construction start date or season has not been provided for this assessment, rutting remains of concern for the proposed action in this location due to seasonal wetness and resultant muddiness. If construction occurred during the winter and/or spring when the soil was wet, then the use of wheeled and track equipment would result in excessive rutting. To reduce soil impact in the wet season, light, low-pressure ground equipment should be used. Appropriate timing and low-impact equipment throughout construction would be necessary to avoid soil compaction and displacement²⁹.

Alternative Action

Erosion remains a concern of the alternative action, but we expect it to be negligible due to the implementation of BMPs. Similar to the proposed action, we predict some loss of upper soil layers and soil capacity during the construction of the parking area, boat launch, and vegetated filter strip. On the other hand, we would not expect a similar increase in impervious surfaces with the utilization of pervious concrete. Impervious surfaces would be kept to a minimum, as the only remaining impervious surface for the alternative action would be the boat ramp itself.

We expect that the construction of a flat top and toe for the vegetated filter strip would help prevent erosion of soil layers (see Fig.4). The vegetation planted in the strip would also help secure surrounding soils, preventing possible soil degradation. Furthermore, the filter strip would support bank stabilization during high water events³⁰. Rutting continues to be of concern during construction plans for the alternative action. To avoid soil compaction and displacement related to rutting, proper timing and low-impact equipment would need to be applied throughout construction³¹.

No Action Alternative

If no action is taken to construct the boat ramp and parking area, then the soils, surface, and topography would remain unchanged. Similarly, the chance of soil erosion would remain low.

Air

Existing Conditions

The proposed site for the Riverplace boat launch facility is located in a region that receives heavy rainfall and mild temperatures due to its maritime climate. This wet and mild climate, combined with minimal local air pollution, creates good air quality conditions in the area. The

²⁸ *Ibid.*

²⁹ U.S. Department of Agriculture [USDA]. (1992, May). *Soil Survey for Whatcom County Area, Washington*. Portland, OR: Natural Resource Conservation Service.

³⁰ U.S. Environmental Protection Agency [US EPA]. (November, 2005). *National Management Measures to Control Nonpoint Source Pollution from Urban Areas: Management Measure 5: New Development Runoff Treatment*. (Publication No. EPA-841-B-05-004). Washington D.C.: Office of Water.

³¹ U.S. Department of Agriculture [USDA]. (May, 1992). *Soil Survey for Whatcom County Area, Washington*. Portland, OR: Natural Resource Conservation Service.

only current source of notable air pollution and odor is automobile traffic from the Interstate-5 corridor which lies 150 feet to the west of the proposed building site.

Proposed Action

The construction phase of the proposed action would require the use of heavy construction equipment. Most construction vehicles and heavy equipment are outfitted with diesel engines that emit exhaust containing diesel particulate matter (DPM), carbon monoxide, hydrocarbons and nitrogen oxides to the atmosphere³². In addition to air pollution from diesel combustion, construction sites generate high volumes of dust. Concrete dust and dust stirred up from unpaved roads on the construction site can introduce microscopic particulate matter into the atmosphere, degrading local air quality³³.

Once construction was complete, the main sources of local air pollution would be fossil fuel emissions and dust particles stirred up by boat and automobile traffic.

Alternative Action

In order to mitigate the air pollution created by the gravel parking lot we suggest in our alternative action that pervious concrete be considered instead of traditional gravel. Pervious concrete does not contain dust particles and poses no threat to air quality³⁴.

During the summer months when boat ramp usage is at its highest it is possible that long lines of vehicles waiting to use the launch ramp could form. Vehicle back-ups could create unnecessary engine idling in the parking lot. Excessive idling combined with poor summer air quality conditions caused by dry weather and stagnation events increases the impact of air pollution on public health³⁵. The installation of “No-Idle Zone” signs in the parking lot would help reduce emissions from vehicle idling and preserve local air quality³⁶.

No Action Alternative

If no action is taken the site would remain a natural riparian environment with the major contributor of air pollution and odor being the Interstate-5 corridor located to the west.

³² U.S. Environmental Protection Agency [US EPA]. (April, 2003). *Regulatory Announcement: Summary of EPA’s Proposed Program for Low Emission Nonroad Diesel Engines and Fuel*. (EPA420-F-03-008). Washington D.C.: Office of Transportation and Air Quality.

³³ Washington State Department of Ecology. August, 2005. *Focus on Air Quality and Construction Projects*. www.ecy.wa.gov/pubs/951004.pdf.

³⁴ U.S. Environmental Protection Agency [US EPA]. (October, 2000). *Field Evaluation of Permeable Pavements for Stormwater Management*. (EPA-841-B-00-005B). Washington, DC: Office of Water.

³⁵ U.S. Environmental Protection Agency [US EPA]. (August, 2010). *Climate Impact on Regional Air Quality (CIRAQ)*. www.epa.gov/AMD/Climate/ciraq.html. Washington D.C.: Atmospheric Modeling and Analysis Division.

³⁶ Northwest Clean Air Agency. February, 2007. *Clean Air Zone Program: No Idle Zone*. Online PDF pamphlet. www.nwcleanair.org/pdf/resources/nwcaaPubs/Idling_brochure_2-07.pdf.

Water

Existing Conditions

This reach of the Nooksack River experiences frequent seasonal flooding, in addition to other high flow events³⁷. These frequently flooded areas have a greater than one percent chance of flooding in any given year, which is observed seasonally at this location³⁸. The site lies along an inside bend of a meander in the Nooksack River, a location which yields higher sediment deposition than the outside of a meander bend due to decreased stream velocity. The proposed boat launch and parking lot reside in both the floodplain and the floodway according to FEMA designations (see Fig.3). Both of these designations warrant regulated construction, with permits required. No construction is permitted in the lower Nooksack River floodway due to high water velocities in storm events. The upper area floodplain areas warrant limited construction within an allowed set of parameters (developments must not be prone to be impacted substantially by frequent flooding). Overall, the area floods frequently in storm events, and is often visually saturated. These site characteristics lead development planners to support a construction plan which proposes a relatively weather tolerant boat launch facility³⁹.

Proposed Action

Sedimentation and channel disruption are the largest concerns of the proposed action during the beginning phases of construction. The installation of a cofferdam to provide a dry environment throughout this time could potentially increase sediment deposition and disrupt river channel flow. In addition to these effects, the alignment of the constructed ramp would also influence the river channel. A downstream angle could possibly lead to the formation of eddies, and subsequent undercutting. If undercutting were to persist, ramp support would likely degrade⁴⁰. Furthermore, sedimentation would occur despite the alignment of the boat ramp due its location along the inner meander bend of the river. This location features slower water velocities than the outer cutbanks of the river, and subsequently lead to increased sediment deposition.

During the construction phase of the parking lot, infiltration and runoff volumes would be of the greatest concern after storm events. The proposed use of gravel as the parking lot surface would result in increased, rapid bulk runoff throughout these events. As a consequence, greater concentrations of total suspended solids (TSS) and peak flows could ultimately affect the Nooksack River. If this were to occur, an increase in the river's temperature and reduction in dissolved oxygen levels would be observed. Dissolved oxygen levels are correlated with temperature, therefore as temperature increases, dissolved oxygen levels decrease⁴¹.

³⁷Bach, A. (2002). *SNOWSHED CONTRIBUTIONS TO THE NOOKSACK RIVER WATERSHED, NORTH CASCADES RANGE, WASHINGTON*. *Geographical Review*, 92(2), 192. Retrieved from EBSCOhost.

³⁸ Washington State Legislature. *WAC 365-190-030 Definitions.*, 1984. Web. 13 Feb 2011.

³⁹ Collison, C. (2010, October 13). Recreation destination planned for former Riverside Golf Course. *Ferndale Record Journal*. Retrieved from <http://ferndalerecord.com/recreation-destination-planned-for-former-riverside-golf-course-p1189-1.htm>.

⁴⁰ SAS Consulting (2010). *Riverplace Sports, Recreation, and Leisure Facilities: Boat Launch*. Bellingham, WA.

⁴¹ Love, Brook. Spring 2009. Water Quality Lecture Series. Western Washington University.

In addition to the local effects of sedimentation during and after the proposed construction, down river effects are likely to occur. For example, a negative influence on the salinity and nearshore hydraulics, of the Nooksack River delta in Bellingham Bay caused by carried sediment, has been observed⁴². Consequently, increased sedimentation from the proposed action could contribute to greater sediment loads seen in the downstream reach of the Nooksack River.

Alternative Action

Sedimentation and channel disruption remain of concern for the alternative action during the beginning phases of construction. The installation of a cofferdam, to provide a dry environment throughout this time, could potentially increase sediment deposition and disrupt river channel flow. However, we predict these effects would be minimal and temporary.

Later phases of construction include BMPs, as opposed to the proposed plan, which would also influence the surrounding aquatic environment. For instance, pervious concrete would be used instead of gravel for the surface of the parking lot. This material would improve infiltration rates during storm events and capture sediment from runoff, thereby reducing stormwater runoff and encouraging infiltration of underlying soil layers^{43, 44}. The implementation of parking islands planted with deep, rooted vegetation species, would also increase infiltration of stormwater and subsequently reduce total runoff.

Another BMP the alternative action proposes that would aim to maximize infiltration, while minimizing the effects of TSS, is the construction of a 75 foot vegetative filter strip. The filter strip would help distribute the amount of water, or bulk flow, which did not infiltrate the pervious concrete parking lot. This includes any sediment or pollutants contained by bulk flow.

The vegetative filter strip would not reduce the temperature of the storm water being treated and would therefore not be detrimental to the temperature of dissolved oxygen levels in the Nooksack River, a cold water stream^{45, 46}. More specifically, the top layer of the filter strip would

⁴² Parametrix, and Adolfson Associates, Inc. (2006) Shoreline Inventory and Characterization Report (Parts I-IV) & Map Folio. *Whatcom County Shoreline Master Program Update Background Information- Volume I*. 74. (558-1687-004) Retrieved from https://www.whatcomcounty.us/pds/naturalresources/shorelines/updates/download/pdf/smp_background_vol_1-inventory_characterization.pdf.

⁴³ U.S. Environmental Protection Agency [US EPA]. (2009). *Pervious Concrete Pavement- Stormwater Menu of BMPs*. National Pollutant Discharge Elimination System (NPDES). Retrieved from: <http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=browse&Rbutton=detail&bmp=137&minmeasure=5>.

⁴⁴ U.S. Environmental Protection Agency [US EPA]. (November, 2005). *National Management Measures to Control Nonpoint Source Pollution from Urban Areas: Management Measure 5: New Development Runoff Treatment*. (Publication No. EPA-841-B-05-004). Washington D.C.: Office of Water.

⁴⁵ U.S. Environmental Protection Agency [US EPA]. (2006). *Vegetative Filter Strip- Stormwater Menu of BMPs*. National Pollutant Discharge Elimination System (NPDES). Retrieved from: <http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=browse&Rbutton=detail&bmp=76&minmeasure=5>

⁴⁶ U.S. Environmental Protection Agency [US EPA]. (2006). *Riparian/Forested Buffer- Stormwater Menu of BMPs*. National Pollutant Discharge Elimination System (NPDES). Retrieved from: http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=factsheet_results&view=specific&bmp=82.

consist of pea gravel, which helps settle out the greatest amount of sediment from runoff and retain sheet flow (see Fig.4)⁴⁷.

No Action Alternative

If no action is taken, infiltration and moderate runoff of stormwater during flooding and high water events would remain unchanged.

Plants & Animals

Existing Conditions

There are currently two separate zones of habitat present at the proposed boat launch site, the interior riparian zone and the riparian zone. The interior riparian zone features short, domestic grass leftover from past landscaping practices associated with the golf course. In contrast, the riparian zone of the Nooksack River features several black cottonwood trees (*Populus balsamifera*), invasive Himalayan blackberry (*Rubus discolor*) and several other herbaceous plants. These vegetative species represent a thin strip, roughly twenty-five feet in width, from the banks of the river to the golf course's edge (see Fig. 7).

The Nooksack River hosts nine different salmonid species in the main trunk and tributary rivers, they include: chum salmon (*Oncorhynchus keta*), pink salmon (*Oncorhynchus gorbuscha*), coho salmon (*Oncorhynchus kisutch*), Chinook salmon (*Oncorhynchus tshawytscha*), sockeye salmon (*Oncorhynchus nerka*), steelhead (*Oncorhynchus mykiss*), cutthroat trout (*Oncorhynchus clarki*), Native Char (*Salvelinus spp*), and Mountain Whitefish (*Prosopium williamsoni*)⁴⁸. It is unlikely that these species would use the area surrounding the proposed boat ramp heavily; however, this section of the river is important for migrations upstream. In addition, certain species are listed as endangered, therefore precautions should be taken accordingly to ensure no harm would result from construction.

Habitat, refuge, and food for avian species are supported by the Nooksack River and its surrounding vegetation. Other terrestrial wildlife species, on the other hand, are isolated from habitat fragments and as a result are less supported in this area.

Proposed Action

The proposed boat ramp and parking lot facility would have the largest impact on aquatic species in the Nooksack River. During the beginning phases of construction, sedimentation remains of low impact for aquatic species. Impacts would elevate, however, in later phases of construction when vegetation is removed. Increased runoff, sediment, and nutrients are likely to occur as a result of vegetation removal and ultimately enter the Nooksack River. As a consequence of increased sediment, fish respiration may become limited and spawning grounds downstream buried. In addition, increased nutrient levels entering the river may contribute to a rise in aquatic plant and algae growth, which can be detrimental to some fish species.

⁴⁷ U.S. Environmental Protection Agency [US EPA]. (November, 2005). *National Management Measures to Control Nonpoint Source Pollution from Urban Areas: Management Measure 5: New Development Runoff Treatment*. (Publication No. EPA-841-B-05-004). Washington D.C.: Office of Water.

⁴⁸ Green, D (2003). *Nooksack River Salmonids*. Retrieved from Western Washington University: http://faculty.wwu.edu/jmcl/NatHist/salmon_NR_green.pdf.

Avian species would also be impacted by noise and light pollution related to the proposed action, potentially disturbing feeding regimes. However, we expect these impacts to be minimal for avian species as well as terrestrial wildlife species. This is mainly due to the small terrestrial wildlife population and poor quality habitat present in the proposed building site. Furthermore, what little habitat is presently available in the riparian zone would likely be compromised by the construction of the boat launch facility.

The composition of plant species featured at the proposed site is unlikely to change during all phases of construction. This is mainly due to Himalayan blackberry (*R. discolor*), which dominates lower layers of vegetation, offering little chance for new species to establish. Similarly, black cottonwoods (*P. balsamifera*) are also unlikely to produce seedlings, as they require freshly flooded bare soil for seedlings to establish.

Alternative Action

The alternative action proposes the parking lot be placed 75 feet away from the edge of the Nooksack River, compared to twenty-five feet in the proposed action. This extended distance offers numerous benefits for the surrounding wildlife habitat; such as, decreased noise and light pollution; and farther transportation of sediment laden runoff. The proposed installation of pervious concrete as the parking lot surface would help aquatic species by reducing the amount of sediment, nutrients, and contaminants in stormwater runoff. The vegetated filter strip would also intercept runoff, which has not infiltrated the pervious concrete, so that suspended solids may be collected before reaching the Nooksack River.

No Action Alternative

If no action is taken the habitat quality for fish, wildlife, and plants present in the site would remain unchanged. The thin strip of riparian vegetation would remain untouched, and continue to offer marginal habitat for local fauna, especially in lower levels where Himalayan blackberry (*R. discolor*) dominates the flora.

Built Environment

Environmental Health

Noise, Light and Glare

Existing Conditions

There is currently little access to the site under consideration for the Riverplace boat launch facility. Presumably, only the contractor/developer, and related employees have access to the proposed site until further development requirements were met (i.e. permits). Due to its proximity to Interstate-5, noise and light pollution from traffic occurs on a daily basis.

Proposed Action

During construction, there would be some degree of light and noise pollution from the proposed site. There are no residences directly nearby, and the adjacent commercial tenants are far enough away that they would be minimally impacted, if at all. There would be negligible environmental

harm from noise and light once construction is complete, aside from a new light source of overhead lighting in the public parking lot.

Alternative Action

The alternative action would yield similar results of environmental impact as the proposed action. For instance, the utilization of flood lights (depending upon time of day and year) and heavy construction equipment during construction, would contribute to greater noise and light pollution. Light pollution would also increase once construction is complete and lights are installed in the parking lot. One positive difference between the alternative and proposed action is the implementation of a pervious concrete surfaced parking lot in the alternative action. The brighter surface of the material could reduce the need for overhead lighting, while increasing nighttime safety⁴⁹.

No Action Alternative

If no action were to take place then no measureable environmental damage is likely to occur. The current amounts of noise and light pollution from the adjacent Interstate-5 would continue to persist.

Toxic Releases & Risk of Explosion

Existing Conditions

Currently, the proposed location for the boat launch and parking lot is a riparian environment with no known toxic or hazardous contamination existing at the site. However, until 2007, this area was the property of the Wayne Olsen Riverside Golf Course. To maintain aesthetics, many golf course maintenance programs apply large quantities of nutrient-based fertilizers as well as many different pesticides, insecticides, and herbicides. These chemicals can contain contaminants including, but not limited to, trace metals, organophosphates, organochlorines and phosphorus based fertilizer compounds⁵⁰. These chemical compounds can become trapped in sediment material after they are applied and persist for many years. It is possible that the sediment layers underlying the proposed boat launch and parking lot are contaminated with toxic materials.

If soil samples were taken at the proposed boat launch facility site and tested positive for toxic contaminants, indicated in the Existing Conditions, careful excavation and disposal procedures of these sediment materials should be undertaken. Unearthed, contaminated sediment left at the construction site could potentially contaminate the Nooksack waterway if not handled and stored properly.

Proposed Action

Stormwater runoff that flows through a construction site presents many ecological

⁴⁹ U.S. Environmental Protection Agency [US EPA]. (2009). *Pervious Concrete Pavement- Stormwater Menu of BMPs*. National Pollutant Discharge Elimination System (NPDES). Retrieved from: <http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=browse&Rbutton=detail&bmp=137&minmeasure=5>

⁵⁰ Lewis, Michael A., et al. *Sediment Chemical Contamination and Toxicity Associated With A Coastal Golf Course Complex*. Environmental Toxicology and Chemistry 20, no. 7 (2001): 1390-1398.

problems. Runoff water can pick up large volumes of sediment, debris, and chemicals including volatile organic compounds (VOC's), oils, fuels or cement from the construction site and deposit them directly into the Nooksack River. This runoff could endanger fish or other aquatic wildlife, and degrade habitat. It is advised that the construction company follow the Best Management Practices outlined by the EPA for creating their own Stormwater Pollution Prevention Plan⁵¹.

The possibility of chemical spills presents an additional problem during the construction phase. A large volume spill of oil or other chemical in close proximity to the Nooksack could be disastrous for aquatic wildlife. For spill prevention and response, construction sites must follow the EPA's Spill Prevention Control and Countermeasures Plan⁵².

Given the nature of the construction being performed and the materials and equipment to be used, the possibility of fire and the risk of explosion are minimal.

After the completion of the boat ramp and parking lot, the issue of untreated runoff entering the river could affect environmental health. A distance of twenty-five feet separates the parking lot and the banks of the river. This limited natural buffering area would not offer adequate runoff treatment, resulting in the possibility of contaminants reaching the Nooksack waterway.

Alternative Action

In order to control the amount of untreated runoff entering the Nooksack River it is advised that a 75-foot vegetative filter strip be constructed between the parking lot and river bank, opposed to the proposed twenty-five foot buffer. The additional natural buffer area would allow for proper biological treatment of runoff water from the parking lot.

No Action Alternative

The proposed no action plan allows the former Riverside Golf Course to grow over with vegetation and the release of toxic or hazardous materials to the environment would be minimal. The only source of contamination would be the remnants of the Riverside Golf Course pro shop and clubhouse. The golf course was built in 1932 and the likelihood that lead-based paints were applied to the buildings is high. If the buildings remain standing and are subjected to repeat flooding events and weathering, lead leaching into runoff water and flood waters is likely highly.

⁵¹ U.S. Environmental Protection Agency [US EPA]. (May, 2007). *Developing your Stormwater Pollution Prevention Plan: A Guide for Construction Sites*. (EPA-833-R-06-004).
http://www.epa.gov/npdes/pubs/sw_swppp_guide.pdf

⁵² U.S. Environmental Protection Agency [US EPA]. (April, 2005). *Managing Your Environmental Responsibilities: A Planning Guide for Construction and Development*. (EPA-305-B-04-003).
www.epa.gov/compliance/resources/publications/assistance/sectors/constructmyer/myerguide.pdf

Land & Shoreline Use

City Goals, Zoning & Buildings

Existing Conditions

There are a number of state goals reflected in the Whatcom County and City of Ferndale Comprehensive Plan that apply to this site and the proposed actions:

- i. *Washington State Planning Goals (RCW 36.70A.020)*⁵³

Open space and Recreation: Retain open space, enhance recreational opportunities, conserve fish and wildlife habitat, increase access to natural resource lands and water, and develop parks and recreation facilities.

Environment: Protect the environment and enhance the state's high quality of life, including air and water quality, and the availability of water.

Historic Preservation: Identify and encourage the preservation of lands, sites, and structures that have historical or archaeological significance.

Transportation: Encourage efficient multi-modal transportation systems that are based on regional priorities and coordinated with county and city comprehensive plans. (FCP)

- ii. *City of Ferndale's Specific Growth Management Act Actions*⁵⁴

“Provide incentives to developers that are willing to dedicate lands for public trails and/or open space corridors”

“Develop a specific plan that considers the constraints created by physical features, such as steep slopes, wetlands, stream corridors, etc.”

“Identify procedures (through SEPA) to preserve sites of archaeological significance when such sites are discovered.”

“Maintain the character of the community, preserving those elements that make Ferndale a desirable place to live: quiet residential neighborhoods, quality schools and parks, beautiful vistas and a small town atmosphere.”

- iii. *Washington State's Shoreline Management Goals (RCW 90.58.020)*⁵⁵

1. Recognize and protect the statewide interest over local interest;
2. Preserve the natural character of the shoreline;
3. Result in long term over short term benefit;
4. Protect the resources and ecology of the shoreline;
5. Increase public access to publicly owned areas of the shorelines;
6. Increase recreational opportunities for the public in the shoreline;

⁵³ City of Ferndale (2007) City of Ferndale Comprehensive Plan (Update).

<http://www.cityofferndale.org/cdd/Planning/plansAndDocuments/comprehensivePlan/comprehensivePlan.pdf>.

⁵⁴ Washington State Legislature (1971) Legislative findings, state policy enunciated, use preference. *Shoreline Management Act, RCW 90.58.020*. Retrieved from: <http://apps.leg.wa.gov/rcw/default.aspx?cite=90.58.020>

⁵⁵ *Ibid.*

iv. City of Ferndale Zoning

FEMA includes the proposed project site and land 500 feet to the south of it in the Nooksack River's designated floodway⁵⁶. Floodways are defined by FEMA as "lands subject to periodic inundation by flooding [...] and warrant protection from habitable development⁵⁷." Formerly zoned as commercial by the City of Ferndale⁵⁸, the project site and the Riverside Golf Course property are now zoned as 'floodway' in the official zoning of the Comprehensive Plan as well⁵⁹. Ferndale's Shoreline Master Plan further designates the remaining area of the Riverside Golf Course as within the 100-year floodplain⁶⁰. Additionally, a large wetland located 800 feet south of the project site is also designated as within the floodway by the City of Ferndale⁶¹. Across the river from the proposed project site is a small zone of proposed floodway near the Interstate-5 bridge. The zone mainly consists of single family homes extending to the river's edge, and is proposed as future floodway in the Comprehensive Plan⁶². Located further downstream is Vanderyacht Park, which is frequently flooded. A wooded wetland, and small commercial area with a furniture store and an old office building are also found downstream from the project site. Upstream from the project site are mostly frequently flooded agricultural fields⁶³.

v. Existing Buildings

Four small single-story buildings, including a club house and a storage facility, are located 900 feet to the southeast of the proposed project site within the floodway zone⁶⁴. These buildings were built in the 1930's and 60's, and were once part of golf course operations⁶⁵. Following the abandonment of the business, the buildings deteriorated and are currently vacant.

⁵⁶ Federal Emergency Management Agency (FEMA) (2004) FEMA Flood Insurance Map. Retrieved from: <http://www.cityofferndale.org/GIS/FEMAFIRMMMapDowntown.pdf>

⁵⁷ City of Ferndale (2007) City of Ferndale Comprehensive Plan (Update). <http://www.cityofferndale.org/cdd/Planning/plansAndDocuments/comprehensivePlan/comprehensivePlan.pdf>

⁵⁸ USGS (1948) Aerial Photograph. Huxley Map Library, Western Washington University.

⁵⁹ City of Ferndale (2005) Comprehensive Plan Map. Retrieved from: <http://www.cityofferndale.org/GIS/CompPlanJan312011.pdf>

⁶⁰ City of Ferndale (2006) Shoreline Land Use Designation Map. Retrieved from: <http://www.cityofferndale.org/GIS/ShorelineLandUseDesignations2006.pdf>

⁶¹ City of Ferndale (2011) Critical Areas Map. Retrieved from: <http://www.cityofferndale.org/GIS/CriticalAreasMap.pdf>

⁶² City of Ferndale (2005) Comprehensive Plan Map. Retrieved from: <http://www.cityofferndale.org/GIS/CompPlanJan312011.pdf>

⁶³ City of Ferndale (2011) Zoning Map. Retrieved from: <http://www.cityofferndale.org/GIS/ZoningJan312011.pdf>

⁶⁴ Google - Imagery. (2011) "Ferndale, WA" Google Maps. Retrieved from: http://maps.google.com/maps?q=google+maps+ferndale+wa&um=1&ie=UTF-8&hq=&hnear=Ferndale,+WA&gl=us&ei=RBB0Ta2xCYj6tgPV_bSdAw&sa=X&oi=geocode_result&ct=image&resnum=1&ved=0CB8Q8gEwAA

⁶⁵ U.S. Geological Survey [USGS]. (1948). Aerial Photograph. Huxley Map Library, Western Washington University.

Proposed Action

The proposed action proposes to clear the existing abandoned buildings adjacent to the southern edge of the proposed parking lot. This would result in the redevelopment of the floodway for more acceptable development like the proposed parking lot. Although, this redevelopment does not maximize all of the aforementioned goals of the State of Washington and the City of Ferndale. While the boat ramp facility increases and improves public access to the shoreline for Washington State residents, the boat ramp facility modifies the natural character of the shoreline and may negatively affect the habitat and ecology of the river environment.

Alternative Action

Similar to the proposed action, the alternative action would also provide an acceptable floodway development and replace the existing abandoned buildings. In addition, the alternative action would continue to provide greater boating access and recreational opportunities to Washington State residents. However, the alternative action recognizes the physical and ecological constraints of the surrounding environment, through stormwater mitigation and increased buffering. Therefore, it accomplishes more of the goals of the state and the city than the proposed action.

No Action Alternative

If no action is taken then the goals of the state or the city would not advance and the site would continue to act as a formerly landscaped floodway. Boating access for recreationists would continue to be hindered by the limitations of the Hovander Park boat ramp, inhibiting the ability of citizens to depend on facilities and recreate consistently during the fishing season.

Recreation

Existing Conditions

The primary purpose of the boat ramp is to increase access to the Nooksack River at all times of the year. The lack of fishers utilizing motorized boats is likely due to the restricted access they have to the Nooksack River. The closest boat ramp, located at Hovander Park in Ferndale, is often blocked by sandbars that prevent boat launches, as well as deteriorating conditions which increase safety risks to the boat launch users. The fishing season on the Nooksack coincides with the lowest flows of the year, often making the boat ramp inaccessible. Sediment build up creates a need for dredging at the site, which has significant negative impacts on fish habitat. There is also limited parking space at the Hovander Park boat launch, which limits the number of users who are able to utilize that particular launch point. The proposed boat launch would substantially increase access to the Nooksack River. Access to the site would be via Riverside Drive which currently extends only a partial distance to the proposed boat launch site.

Proposed Action

The proposed site for the new boat launch has several advantages when compared to the current boat launch at Hovander Park. The proposed site is on the inside of a meander bend, where the current is slower, making boat launches easier, but not too slow as to deposit large amounts of sediments. This is consistent with recommendations for boat launch locations provided by the

National Park Service⁶⁶. Climate change is expected to have an impact on the Nooksack River, both the sediment load and total discharge throughout the year and as such the proposed design takes into account changing conditions⁶⁷.

The launching area would be able to accommodate 80 boat launches per day, and have parking available for thirty-five cars with trailers⁶⁸. It is difficult to predict the level of daily demand for the new site, since the current one is inaccessible and unable to be used by the public much of the time. If demand for use at the new site exceeds capacity, there is room to install a larger parking area and a second boat launch lane⁶⁹. The site would be functional year round, including the low flow months that coincide with peak fishing season. The launch ramp would be twelve to sixteen feet wide, able to accommodate most small craft (both motorized and non-motorized). The ramp would have a slope of 12-15% and would extend twenty feet beyond mean water level to ensure that a water depth of three to four feet at all times. This would ensure adequate conditions for launching motorized craft throughout the year.

The parking area would be twenty feet from the river shoreline with a gravel base and remain unpaved. The design calls for extra space for tying down boats, a small area for fish cleaning, and a turnaround zone near the boat ramp. The boat ramp would be constructed of air entrained concrete that would be poured in place and would be six to eight inches thick. The ramp would utilize a V-groove design to improve traction; a one inch wide ridge would be between two inch wide gaps which would be one inch deep.

Alternative Action

The proposed alternative would have no impact on the volume of traffic that the proposed site would be able to accommodate.

No Action Alternative

If no action is taken the site would remain in its current state. River users would have to continue to rely on other boat launches.

History, Culture & Aesthetics

Existing Conditions

History

Ferndale was first occupied and traversed by a wide variety of indigenous American tribes, including the Central Coast Salish and Lummi⁷⁰. The city was eventually settled by a group of pioneers in 1872 and officially incorporated on March 19, 1907.

⁶⁶ National Park Service Rivers, Trails, and Conservation Assistance Program (2004). *Logical Lasting Launches*.

⁶⁷ Bach, A. (2002). *SNOWSHED CONTRIBUTIONS TO THE NOOKSACK RIVER WATERSHED, NORTH CASCADES RANGE, WASHINGTON*. *Geographical Review*, 92(2), 192. Retrieved from EBSCOhost.

⁶⁸ SAS Consulting (2010). *Riverplace Sports, Recreation, and Leisure Facilities: Boat Launch*. Bellingham, WA.

⁶⁹ *Ibid*.

⁷⁰ Majors, H. M. (1975). *Exploring Washington*. Van Winkle Publishing Co, Seattle. p. 20.

The Riverside Golf Course was built in the 1930's during the Great Depression and opened to the public in 1938. As one of the first tourist oriented recreations, besides fishing, the course offered nine holes, five of which with water hazards and small wetlands that attracted local avian species. The course was owned and operated by Wayne and Jean Olsen until it was closed down between 2006 and 2007⁷¹.

Culture

Although Ferndale has gone through a dramatic growth spurt in the past two decades, the city still occupies numerous cultural aspects. For instance, the new Centennial Riverwalk Park celebrates the local heritage with Lummi totems and a promenade along the Nooksack River. In addition, the Nooksack River hosts the canoe leg of the county-wide Ski to Sea Race in the spring.

Aesthetics

The current boat ramp offering local access to the Nooksack River, Hovander Park, extends into the water along a bank overgrown with invasive Himalayan blackberry bushes (*R. discolor*). It is also frequently inundated with silt accumulated from flooding events⁷².

The Riverside Golf Course property, where the proposed boat facility location is, features overgrown grasses and deteriorating abandoned buildings. The property's landscaping, trees, and wetlands could potentially act as aesthetically pleasing natural areas, but pedestrian access is limited due to frequently wet and muddy grass fairways

Proposed Action

A cultural resource survey and archaeological survey should be conducted to find culturally and historically significant artifacts⁷³. If no historical or cultural objects are found, there would be no historical or cultural impacts from the proposed action. If any artifact or site should be discovered during the construction of the proposed action, activity would discontinue and the State Parks' archaeologist would be notified and appropriate action taken⁷⁴.

The proposed plan plans to utilize herringbone-pattern v-groove traction on the boat ramp, an aesthetically pleasing pattern that also increases the functionality of the ramp. The new large gravel parking lot would undoubtedly detract from the aesthetic quality of the site, especially from the vantage point of the Interstate-5 bridge.

⁷¹ GolfLink. (2011). Golf course directory: Riverside golf course overview. Retrieved from: <http://www.golfink.com/golf-courses/course.aspx?course=1168756>.

⁷² Google - Imagery. (2011). "Ferndale, WA" Google Maps. Retrieved from: http://maps.google.com/maps?q=google+maps+ferndale+wa&um=1&ie=UTF-8&hq=&hnear=Ferndale,+WA&gl=us&ei=RBB0Ta2xCYj6tgPV_bSdAw&sa=X&oi=geocode_result&ct=image&resnum=1&ved=0CB8Q8gEwAA.

⁷³ SAS Consulting (2010). *Riverplace Sports, Recreation, and Leisure Facilities: Boat Launch*. Bellingham, WA.

⁷⁴ EWU Archaeological and Historical Services (2011) Cultural resource survey. *Archaeological and Historical Services, Eastern Washington University*. Retrieved from: <http://access.ewu.edu/AHS/AHS-Services/Cultural-Resource-Survey.xml> and EWU Archaeological and Historical Services (2011) Site testing. *Archaeological and Historical Services, Eastern Washington University*. Retrieved from: <http://access.ewu.edu/AHS/AHS-Services/Site-Testing.xml>.

Alternative Action

Analogous to numerous facets of the proposed action, the alternative action would also require cultural and archaeological surveys; and have similar effects on history and culture.

Aesthetics would improve with the construction of a vegetated filter strip and landscaped parking lot. These elements would break up the gray monotony of the gravel and concrete facility, while contributing greater environmental functionality to the site. Recreationists and automobile drivers passing by on Interstate-5 would enjoy the benefits of these greater aesthetics.

No Action Alternative

If no action is taken then the aesthetics of the site would likely remain in their current state, however they are likely deteriorate without intervention. Invasive Himalayan blackberry bushes (*R. discolor*) would out-compete native vegetation species and likely dominate the composition of vegetation present in the riparian zone.

Transportation & Parking

Existing Conditions

The Nooksack River has three major public access points for fishing and two large public boat ramps. The boat ramps are located at nearby Hovander Park in Ferndale and Nugent's Corner, twenty-three miles upstream near Deming, Washington. Nugent's Corner provides operable boat ramp access during the June-December fishing season, when the height of the river is too low and Hovander Park's ramp is too shallow⁷⁵.

Motorized boat traffic within the Nooksack River is relatively minimal throughout the year. Non-motorized traffic, such as kayaks and canoes, frequent the river more in the spring, summer, and fall seasons of the year. Although they do not pose many congestion problems, the river is heaviest with boating traffic during the Ski to Sea race, held on Sunday of Memorial Day weekend.

The Hovander boat ramp is accessed via a gravel road that originates at Hovander Road and offers a 170 foot long and 50 foot wide gravel parking lot. The parking lot also features a 100 foot long and 80 foot wide turn-around area. The boat ramp itself is fourteen feet wide and angled downstream with a concrete surface⁷⁶. Due to high silt accumulation at this ramp, the concrete surfaced planks rapidly fill with silt and do not provide ample traction needed by vehicles to haul boats out of the water⁷⁷. The Hovander parking lot allows space for fifteen to twenty 40-foot long vehicles and trailers, but lacks designation for parking spaces. In addition, traffic issues, such as lines or wait times, have not been a major issue for this boat ramp facility.

The proposed site is currently accessed by vehicular traffic via Riverside Drive, an unimproved road west of the Interstate-5 (see Fig.1). The road parallels Interstate-5 until it comes to a gravel turnaround in front of the former Riverside Golf Course's clubhouse⁷⁸. Lastly, during high water

⁷⁵ SAS Consulting (2010). *Riverplace Sports, Recreation, and Leisure Facilities: Boat Launch*. Bellingham, WA.

⁷⁶ *Ibid.*

⁷⁷ *Ibid.*

⁷⁸ US Geological Survey [USGS]. (1948). Aerial Photograph. Huxley Map Library, Western Washington University.

events when the Riverside Golf Course becomes flooded, water seeps over onto the main street of Ferndale. This results in large traffic jams and causes concern for the City of Ferndale. They have addressed this concern in an excerpt from Ferndale's Comprehensive Plan⁷⁹:

Access to Ferndale when Floods Occur

The Nooksack River floodplain is a major factor in planning for growth in the Ferndale area. The Main Street crossing is the dominant access corridor, but could be closed by a severe flood [from the Riverside Floodplain]. Slater Road, which provides another limited access from southern portions of Ferndale to the I-5 corridor, is frequently inundated by flood events. However, the Lummi Tribe has recently entered into an agreement with the federal government to reconstruct portions of Slater Road to raise it above the floodway elevation. Upon completion, and with improved connections to Main Street and Mountainview Road, this roadway may provide relief to the overcrowded Main Street corridor. Although Slater Road will provide some relief, an additional flood-proof access route to/from I-5 is needed.

Proposed Action

The proposed location of the boat launch facility would be accessed by Riverside Drive, and a 'perimeter road', which extends behind businesses serviced by Riverside Drive. The perimeter road would reconnect with Riverside Drive north of the Scottish Lodge motel before continuing to the proposed boat ramp and parking lot. Significant increases in traffic congestion, for commercial businesses using Riverside Drive, would not result from the perimeter road. However it would increase the amount of traffic raveling through the Main Street and Labounty Drive intersection. Official traffic calculations have not been calculated by the prospective developer and traffic engineers, but would be completed before the project is approved and traffic impact fees imposed.

The proposed new gravel parking lot features two rows of fifteen, 40-foot parking spots for vehicles and trailers and is expected to accommodate up to 80 boat launches a day. Connected to the parking lot is a 40-foot wide and 40-foot long turn-around area; a 16 foot long and 60-foot wide tie-down area, and a 30-foot wide and 30-foot long fish cleaning area. Circulation around the parking spots is counter clockwise on single fourteen foot travel lanes. There is a twenty-four foot pull-out space between parking rows and four triangular areas of unused space located at the ends of each parking row.

The traffic effects of the proposed boat launch facility would be greater than those of the Hovander boat launch. This is mainly due to the proposed facility's access road extension to Ferndale's main access road, whereby increased time between traffic light exchanges at the Labounty and Main Street intersection would occur. However, the proposed facility would accommodate a higher capacity of recreationists than Hovander, therefore keeping traffic effects marginal. Lastly, during times of flooding, the boat ramp would be unusable and inaccessible by vehicles.

⁷⁹ EWU Archaeological and Historical Services (2011) Cultural resource survey. *Archaeological and Historical Services, Eastern Washington University*. Retrieved from: <http://access.ewu.edu/AHS/AHS-Services/Cultural-Resource-Survey.xml>

Alternative Action

The alternative action would have similar effects on traffic as the proposed action, since all transportation related aspects of the alternative are the same.

No Action Alternative

If no action is taken, the Hovander site would continue to have a small impact on nearby traffic congestion. Though demand for boat launching can be high in the warm spring months, the facility would remain inoperable during much of the fishing season. Lines could form and wait times extended, if the boat ramp capacity remains static while the city and nearby county population expands.

Police

Existing Conditions

The proposed boat launch facilities would be served by the Ferndale Police Department located on Third Street in downtown Ferndale.

Proposed Action

The large parking lot and boating facilities could potentially attract unwanted vandalism and/or criminal mischief. The current plan does not address the issue of criminal activity.

Alternative Action

To ensure the boat ramp area stays crime free it would be appropriate for Ferndale police officers to patrol the area on a nightly basis. If criminal activity becomes a significant problem the installation of security cameras might be necessary.

No Action Alternative

If no action is taken the Ferndale Police Department would not be affected.

Fire

Existing Conditions

Station 41 of Whatcom County Fire District 7 located on Washington Street in downtown Ferndale would serve the Riverplace boat launch.

Proposed Action

The construction of the boat ramp and facilities presents little fire danger but in the case of an emergency, Station 41 is located within one mile of the construction site. After the development of the boat launch facilities is completed the only risk of fire danger would be boat fires caused by engine or electrical malfunctions.

Alternative Action

No alternative action is proposed.

No Action Alternative

If no action is taken, Whatcom County Fire District 7 would not be affected.

Public Services & Utilities

Public Water and Electrical Supplies

Existing Conditions

Currently, there are no electrical or public water uses at the proposed site for the boat launch facility. The four abandoned buildings located on the Riverside Golf Course are likely the only sources of wiring and plumbing. However, at the specific site for the proposed location no power poles/lines, light poles, or water spouts, exist.

Proposed Action

It is unclear in the preliminary construction reports from the developer if there would be light poles installed at the proposed parking lot.

Alternative Action

The alternative action proposes that power poles be installed in the parking lot, therefore warranting electrical services. We predict that the installation of power poles would only result in a minor increase of electricity, and minimal impact on the surrounding environment.

No Action Alternative

If no action was taken then there would be no foreseeable impact to the environment.

Facility Maintenance

Existing Conditions

Currently, the site does not require any maintenance as it is not being used for any public or private services. At one point it was managed as a golf course, however it has been abandoned for some time.

Proposed Action

Maintenance practices were not specified by SAS Consulting, Inc. in available preliminary construction plans for the Riverplace Civic Center boat ramp and parking area⁸⁰. Although, we predict that the gravel parking area would require maintenance practices such as grading and resurfacing; particularly after flooding events. We also predict that the fish cleaning area would also require maintenance practices, such as sanitation or waste removal. These practices would help ensure that fish remains are properly disposed of and prevent undesirable situations with local wildlife.

⁸⁰ SAS Consulting (2010). *Riverplace Sports, Recreation, and Leisure Facilities: Boat Launch*. Bellingham, WA.

Alternative Action

Clogging is the largest maintenance concern for using pervious concrete as the parking area surface in the alternative action. Fine particles from various sources can potentially clog the concrete's voids for air and water passage⁸¹. This can affect infiltration rates during water events, and ultimately increase surface runoff flows. Different maintenance practices can be employed to prevent or ease clogging; these include industrial vacuum sweeping or drilling holes in the concrete's surface. During cold weather or frost penetration infiltration rates are not affected, rather they are upheld because of the concrete's open void spaces⁸².

The vegetated filter strip requires low and infrequent maintenance (see Table). Sediment removal would be necessary on a regular, infrequent basis to prevent channelization. Repair and regrading of the strip, on the other hand, would only be required annually⁸³.

Similar to the proposed action, we also predict that the fish cleaning area would also require maintenance practices, such as sanitation or waste removal. These practices would help ensure that fish remains are properly disposed of and prevent undesirable situations with local wildlife.

No Action Alternative

If no action is taken to construct the boat ramp and parking area, then maintenance practices would remain unchanged.

Elements of the Environment Not Addressed

Energy, Natural Resources and Communications were not discussed in this Environmental Impact Assessment due to a lack of available information on these elements of the environment.

Wastewater and Sewers were not addressed for the reason that wastewater would not be generated at the site and a sewer system would not be installed.

A discussion on Schools was not included considering that the Ferndale School District would not be affected by the addition of the boat launch facility.

Summary of Findings

This Environmental Impact Assessment (EIA) was created to examine potential impacts on the natural and built environment that would be caused by the construction of the proposed boat launch facility associated with the Riverplace development project on the Nooksack River in Ferndale, WA. The Washington State Environmental Policy Act (SEPA) requires that an EIA be conducted if a proposed action may have large adverse impacts upon the environment. This document aims to provide decision makers and the general public with a clear and concise description of the proposed action and its possible

⁸¹ U.S. Environmental Protection Agency [US EPA]. (November, 2005). *National Management Measures to Control Nonpoint Source Pollution from Urban Areas: Management Measure 5: New Development Runoff Treatment*. (Publication No. EPA-841-B-05-004). Washington D.C.: Office of Water.

⁸² *Ibid.*

⁸³ *Ibid.*

impacts, as required by SEPA (WAC 197-11-400).

There were three different proposals outlined in this report; the original proposal, the alternative proposal, and the no action alternative. The original proposal would create a new boat launch along the Nooksack River in the Riverplace development. The current boat ramp at Hovander Park was inaccessible for much of the year due to low water levels and sediment build up. In addition to the new boat ramp, a parking area able to accommodate 35 vehicles and trailers would be constructed at the site. The alternative proposal moved the parking lot away from the shore of the river by an additional 25 feet and created a vegetated filter strip. Both actions would not compromise the volume of traffic the boat launch facility would be able to handle. The no action alternative would leave the site in its current state, and local boaters would continue to use the boat ramp at Hovander Park.

Both the original proposal and the alternative proposal would create increased surface water run-off into the Nooksack River. The parking lot of the original proposal would be made of gravel while the alternative proposal would pave the parking lot with pervious concrete. The use of pervious concrete would reduce the amount of sediment in surface run-off, benefiting aquatic species in the Nooksack River. The original proposal places the parking lot 25 feet from the shore while the alternative proposal would place the parking lot 75 feet from the shore, allowing more time for surface run-off to slow down and deposit sediments before they enter the river. In addition to a longer distance to the river, the alternative proposal would create a vegetated filter strip between the parking lot and the shore of the river. This would drastically reduce the amount of sediment entering the Nooksack River. The lack of sediment entering the river would enhance river habitat for many aquatic species. Additionally, the vegetated filter strip would be planted with native riparian species, enhancing the habitat in the area that is currently in marginal condition. The construction techniques for both proposals do not differ and would have minimal negative impacts on the natural environment throughout construction.

Of the three options presented, our group preferred the alternative proposal. The demands of river users would be adequately addressed while protecting the local environment. The construction of the filter strip and the placement of the parking lot away from the shore of the river would mitigate some of the major concerns associated with the proposal. The restoration of the riparian zone and the construction of the filter strip will enhance habitat at the site for terrestrial wildlife. The timing of the construction during the summer months to avoid spawning runs of local salmon would ensure that they were not disturbed and would easily pass by the boat ramp. Overall, the alternative action would balance the natural and built environment by meeting recreational needs and providing mitigation measures to protect, and in some cases, enhance, the natural habitat.

Appendix:



Figure 1. Aerial photograph of the proposed boat launch facility in Ferndale, Washington (Bing Maps, 2011)

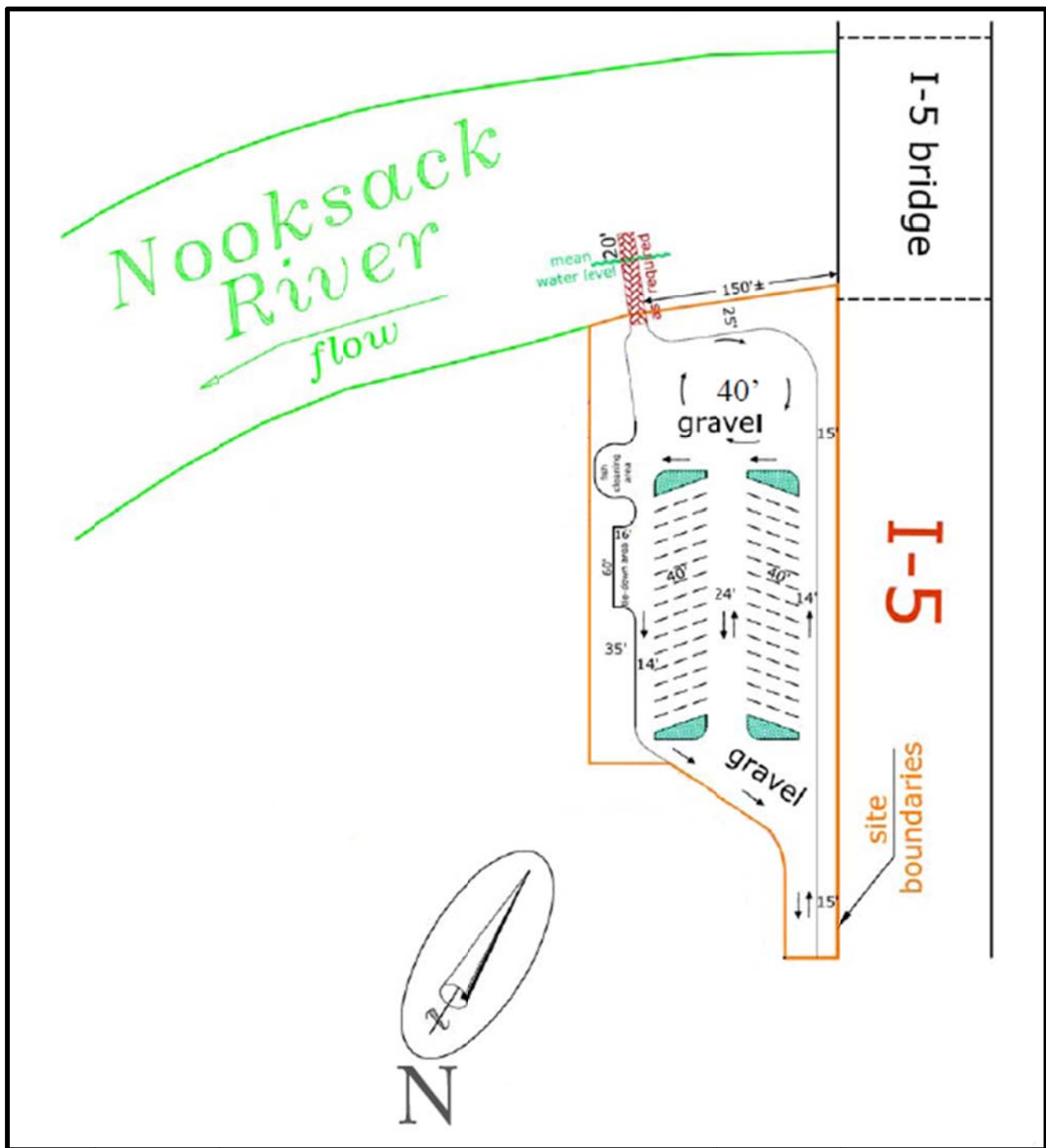
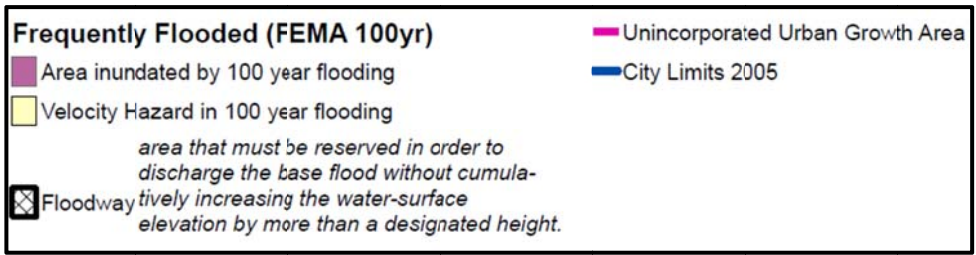
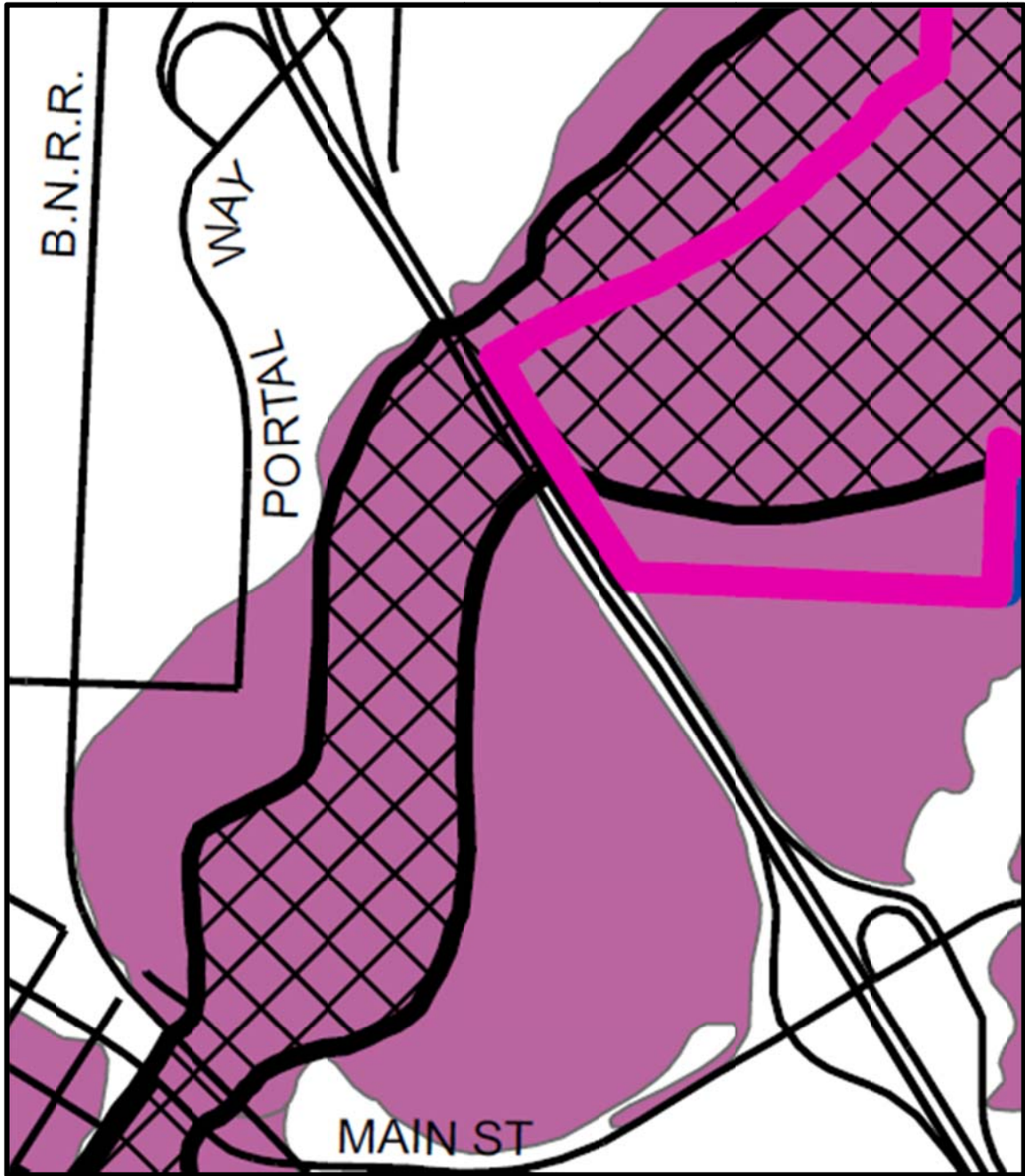


Figure 2. SAS Consulting, Inc. proposed layout of the Riverplace Boat Launch Facility in Ferndale, Washington (SAS Consulting, Inc., 2010)



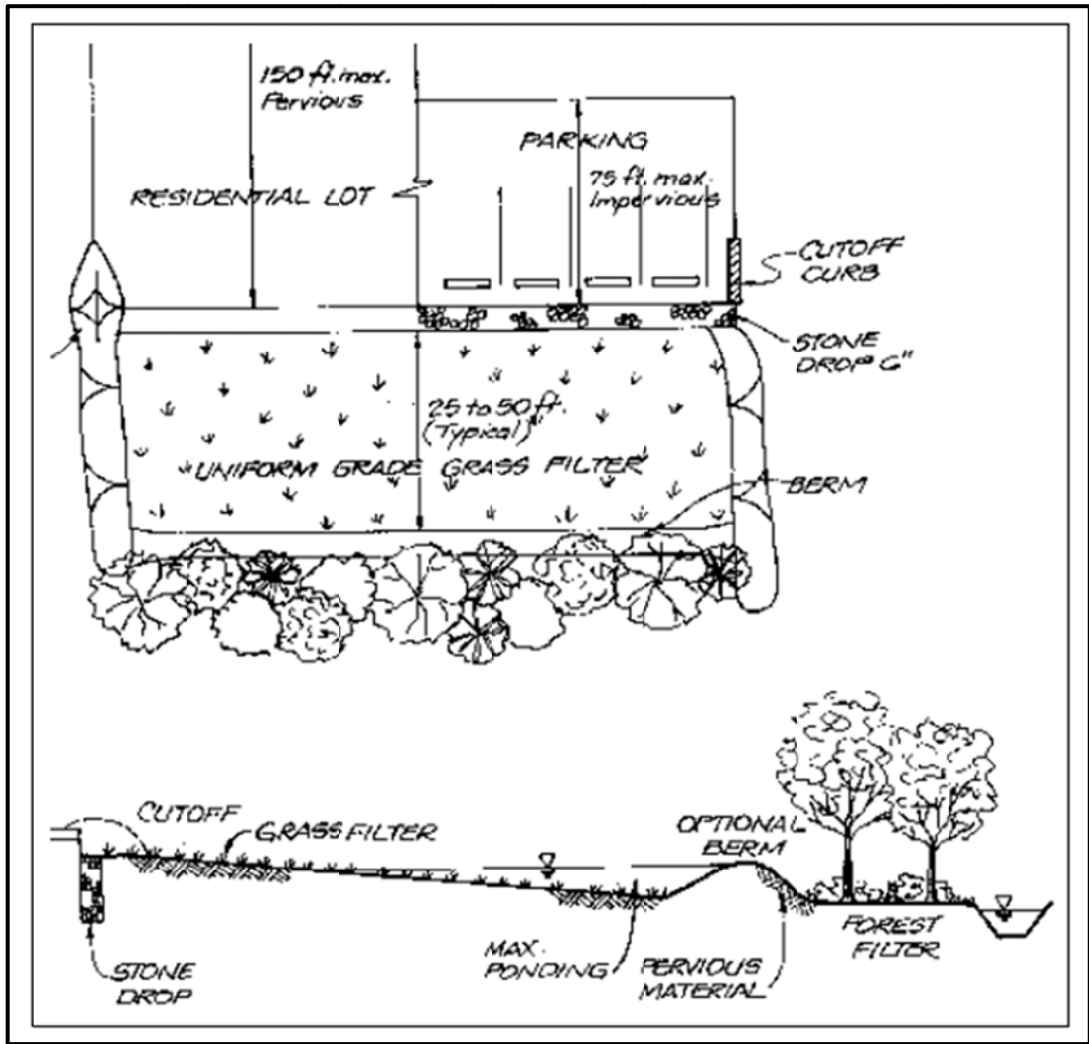
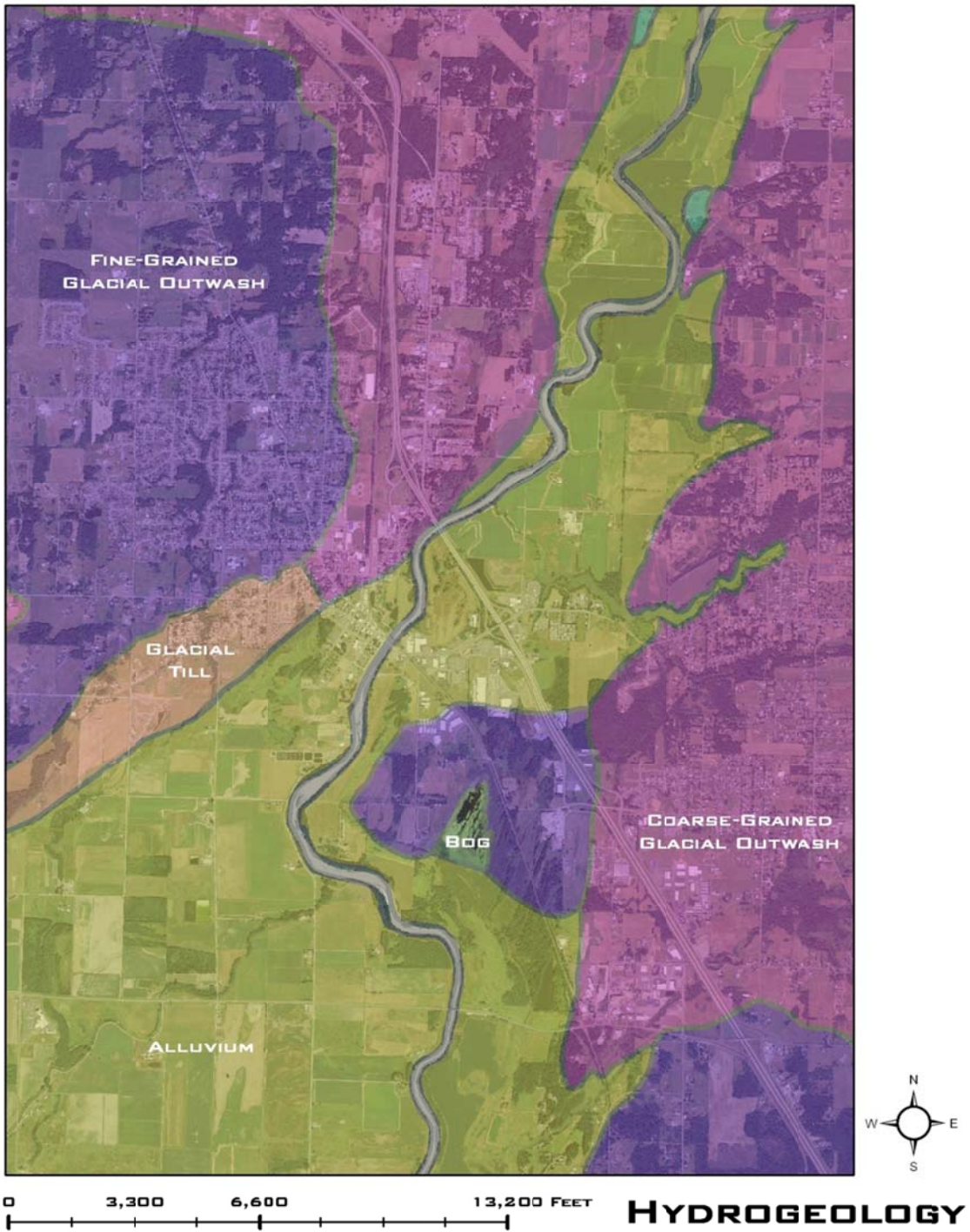
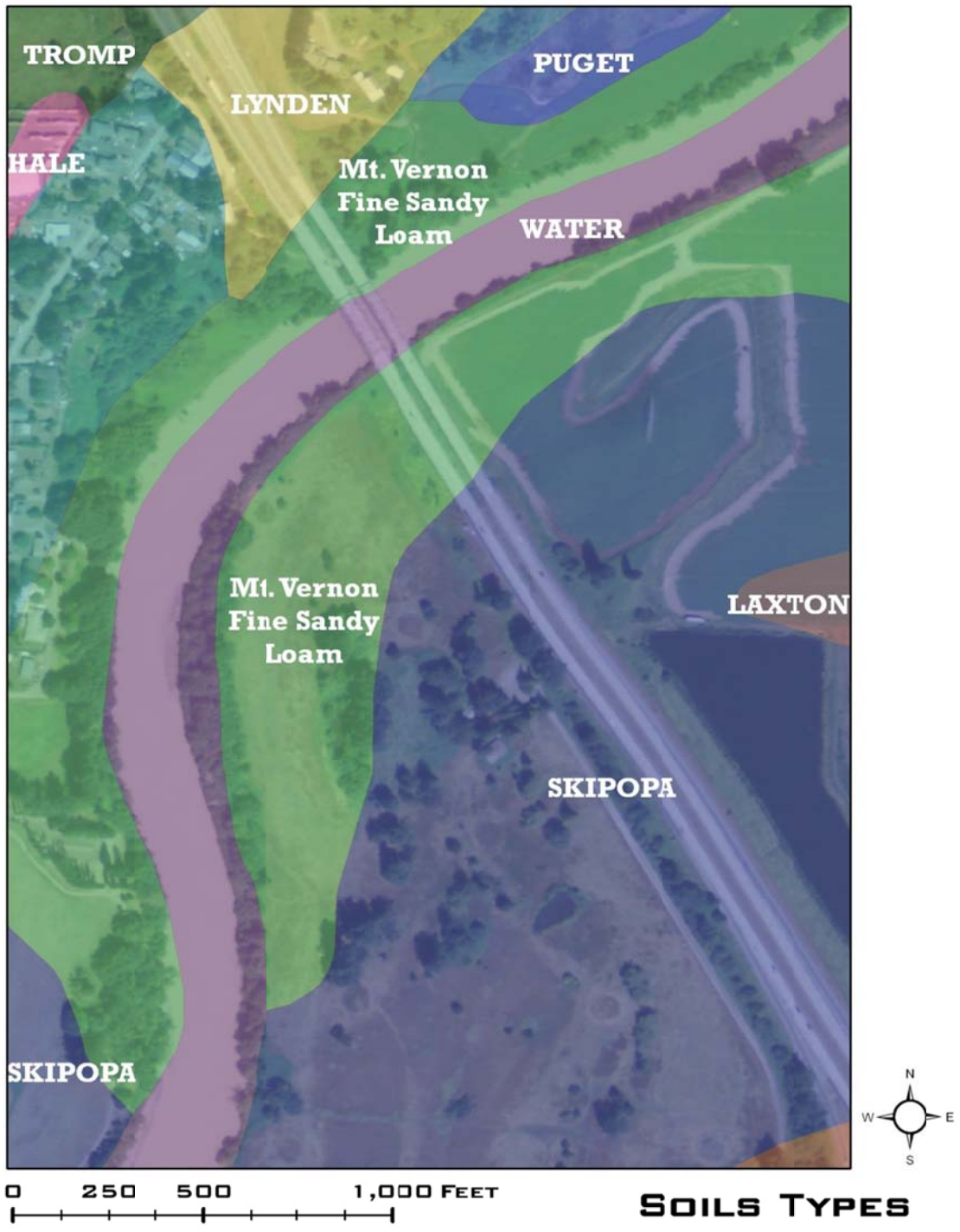
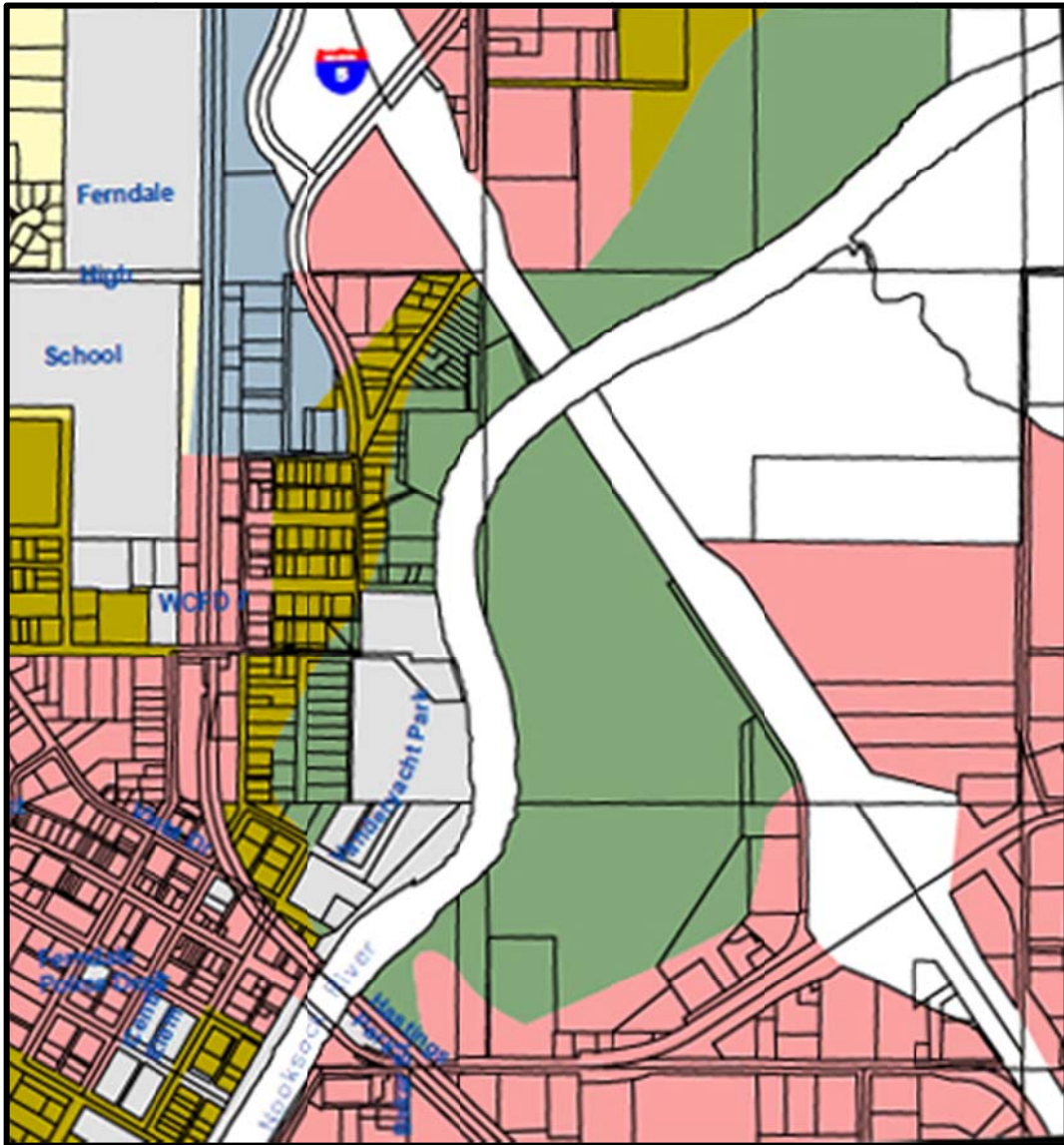


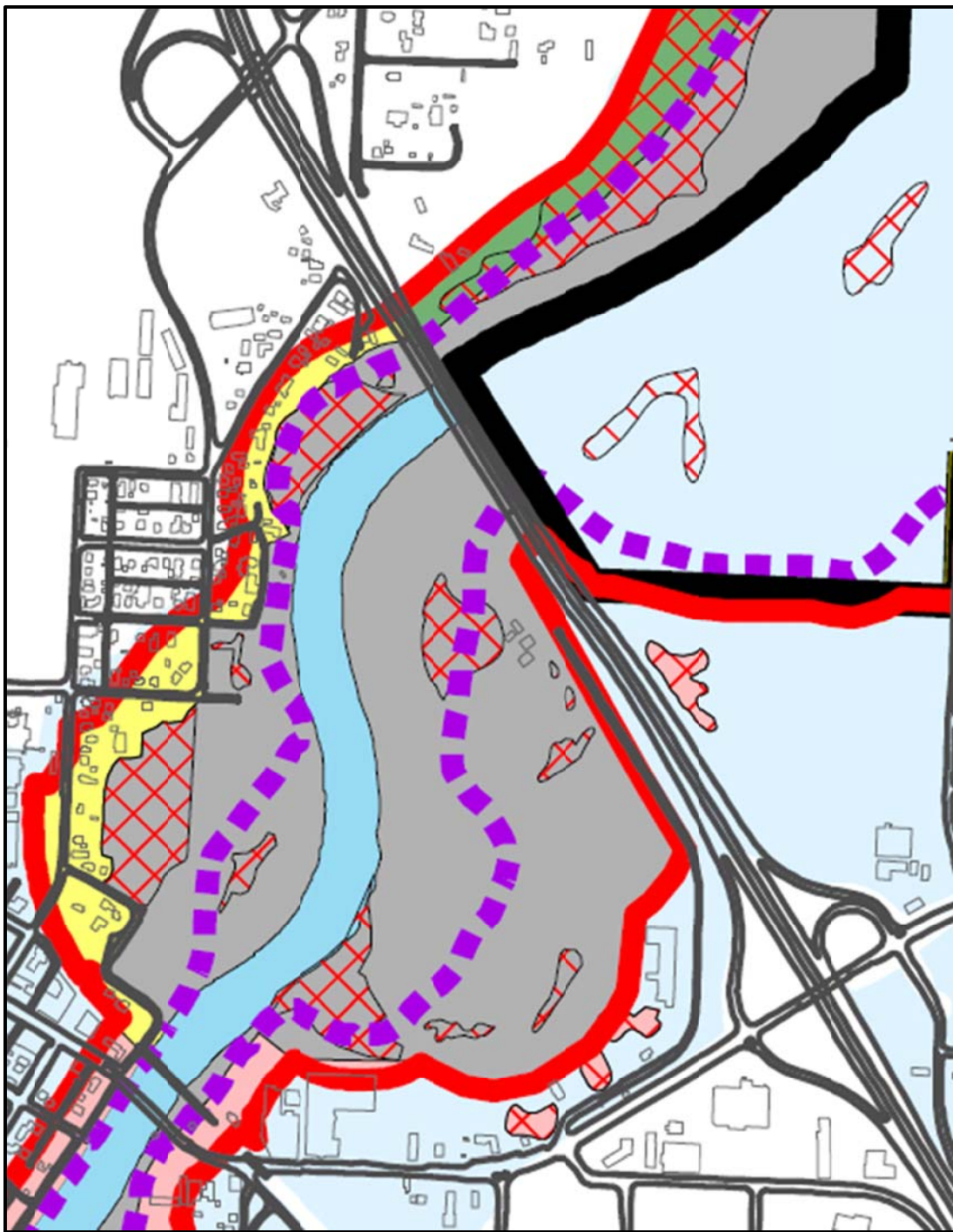
Figure 4. Diagram of a residential filter strip (Claytor and Schueler, 1996).



facility,







Legend	
	Shoreline Jurisdiction
	City Limits
	Urban Growth Area
	Floodway (Shoreline)
	Wetland in 100-year Floodplain
	Aquatic
	Conservancy
	General Commercial Conservancy
	Manufacturing Conservancy
	Residential
	Rural
	Urban
	100-year Floodplain

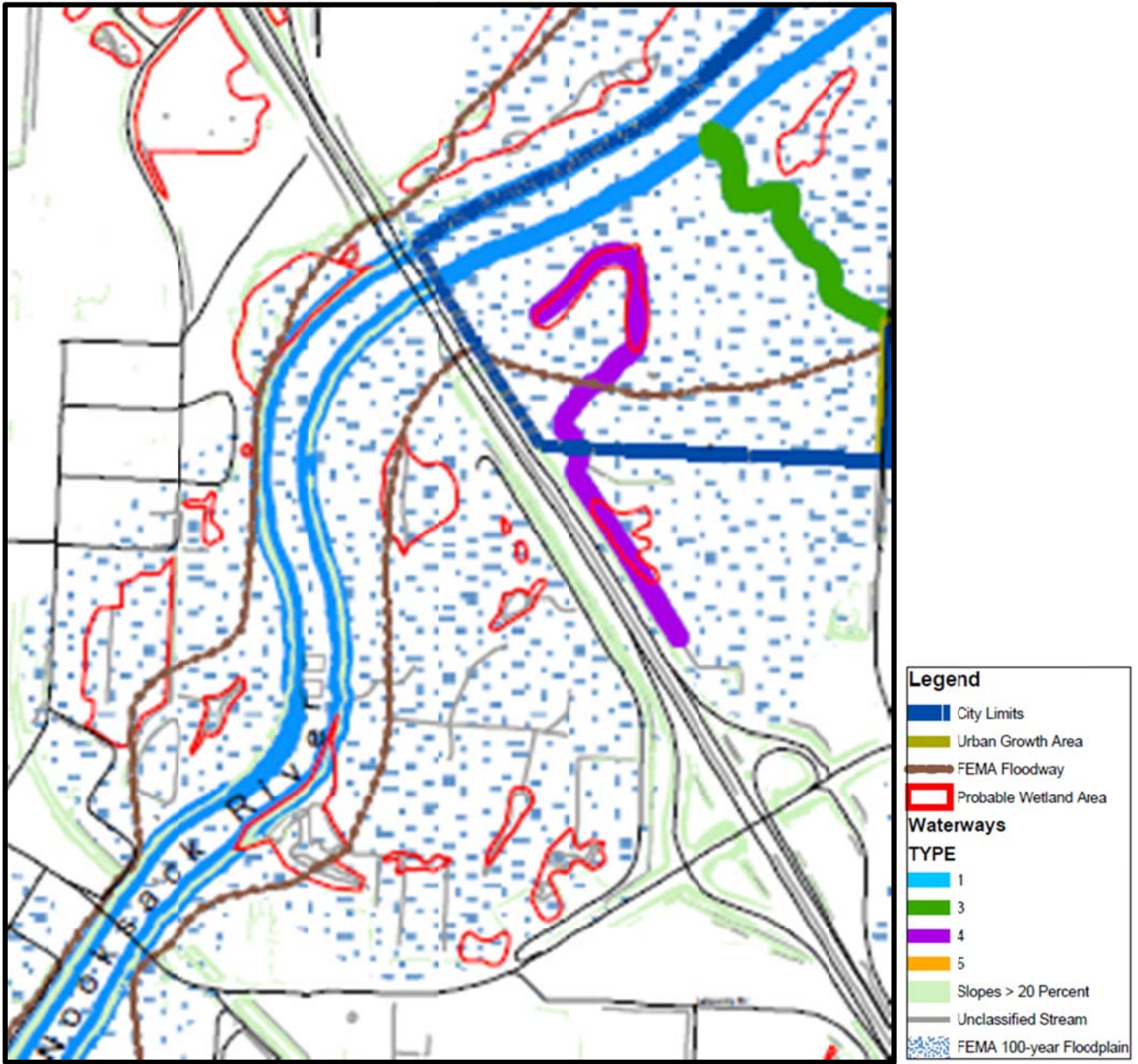
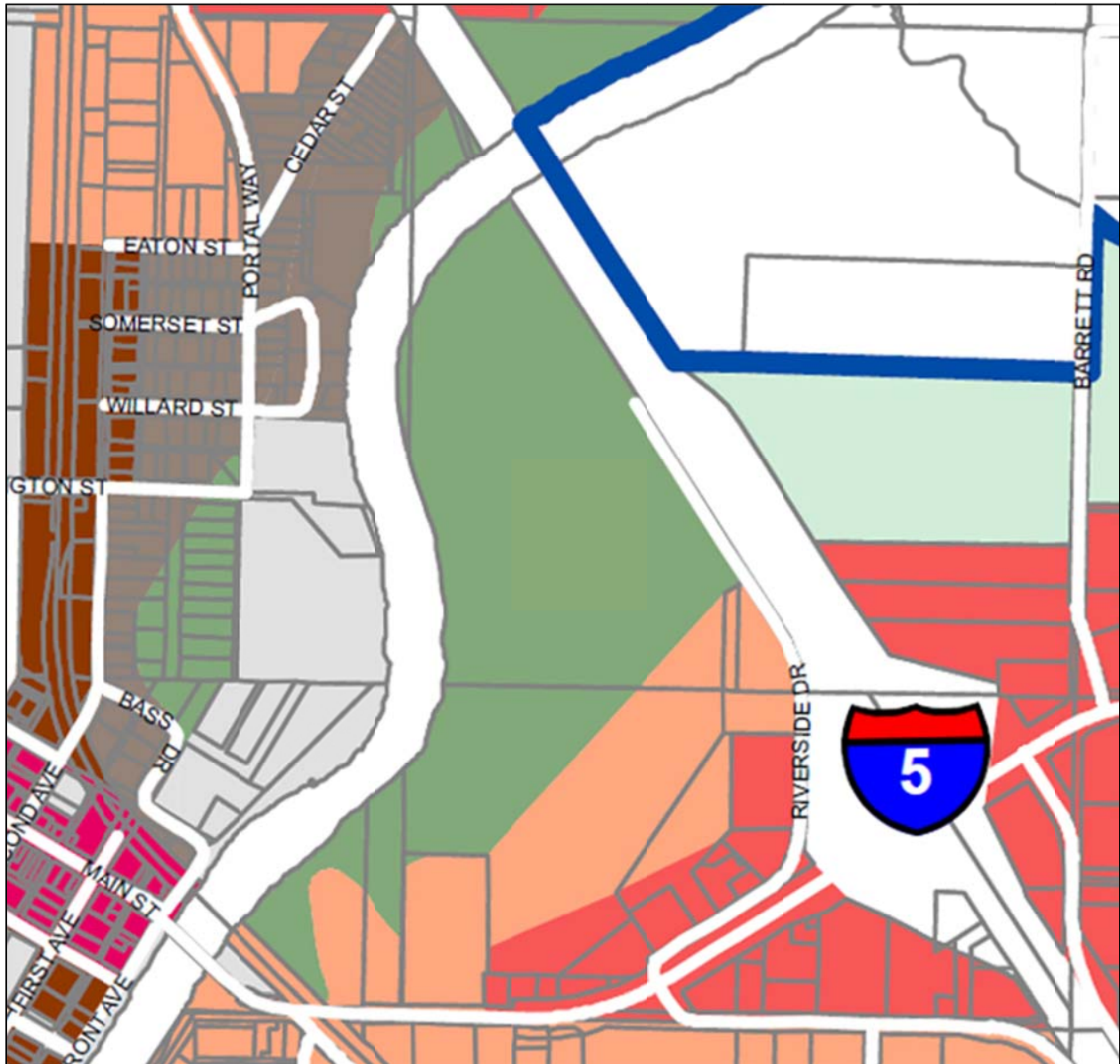


Figure 10. Critical Areas of the City of Ferndale, Washington (City of Ferndale, 2009)



of

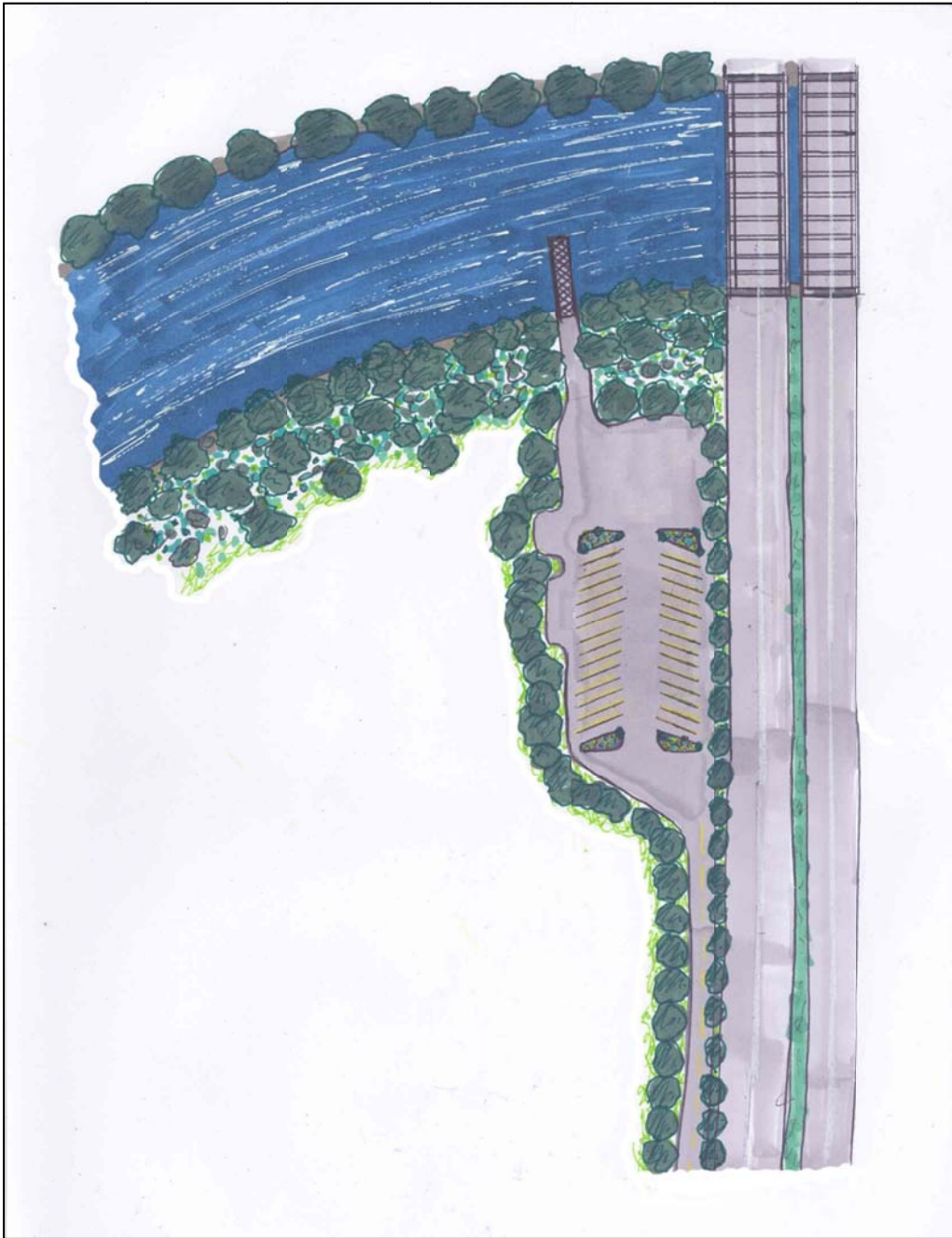


Figure 12. Alternative action diagram for the proposed Riverplace boat launch facility in Ferndale, Washington (Justin Sant, 2011)

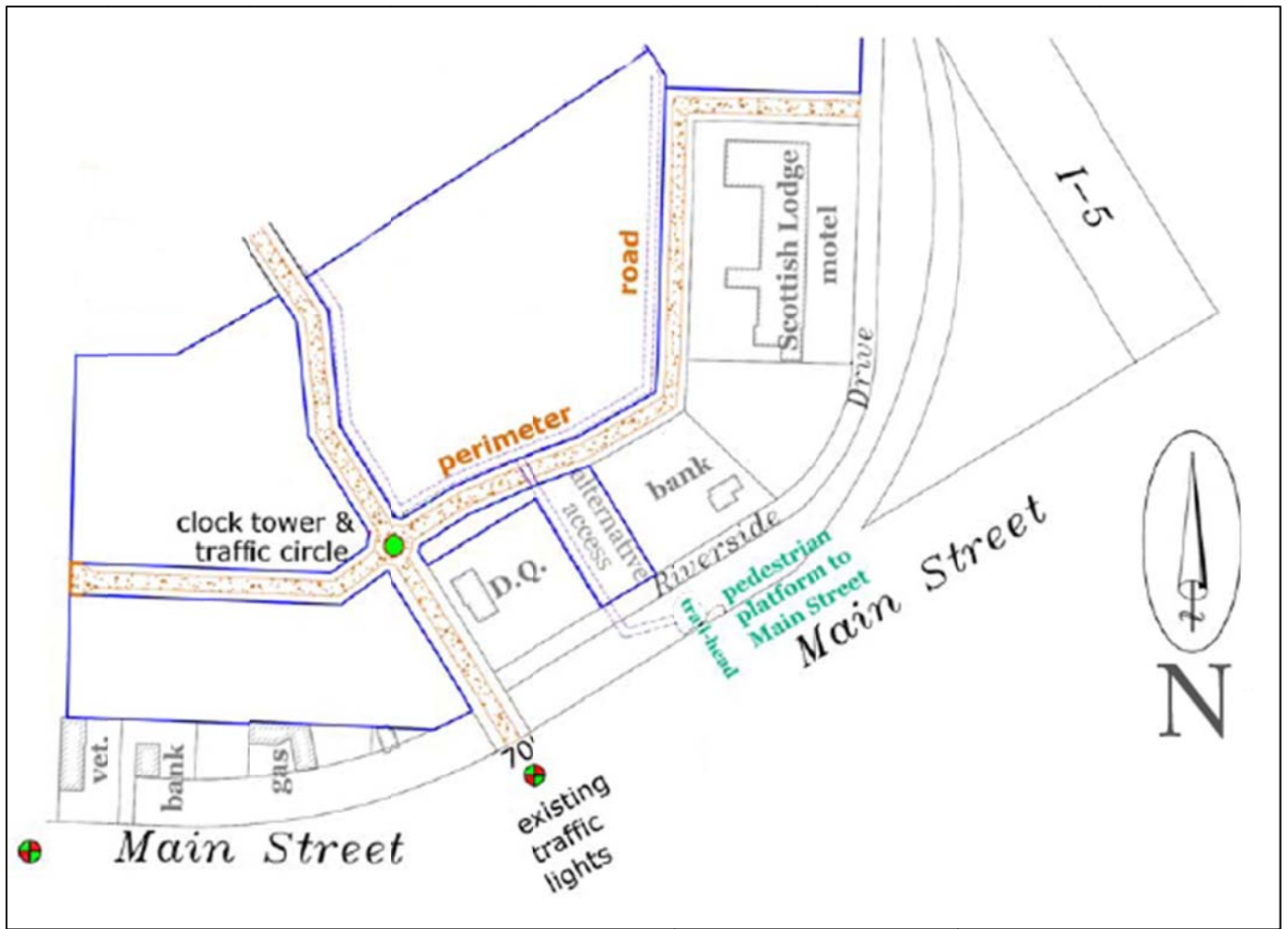
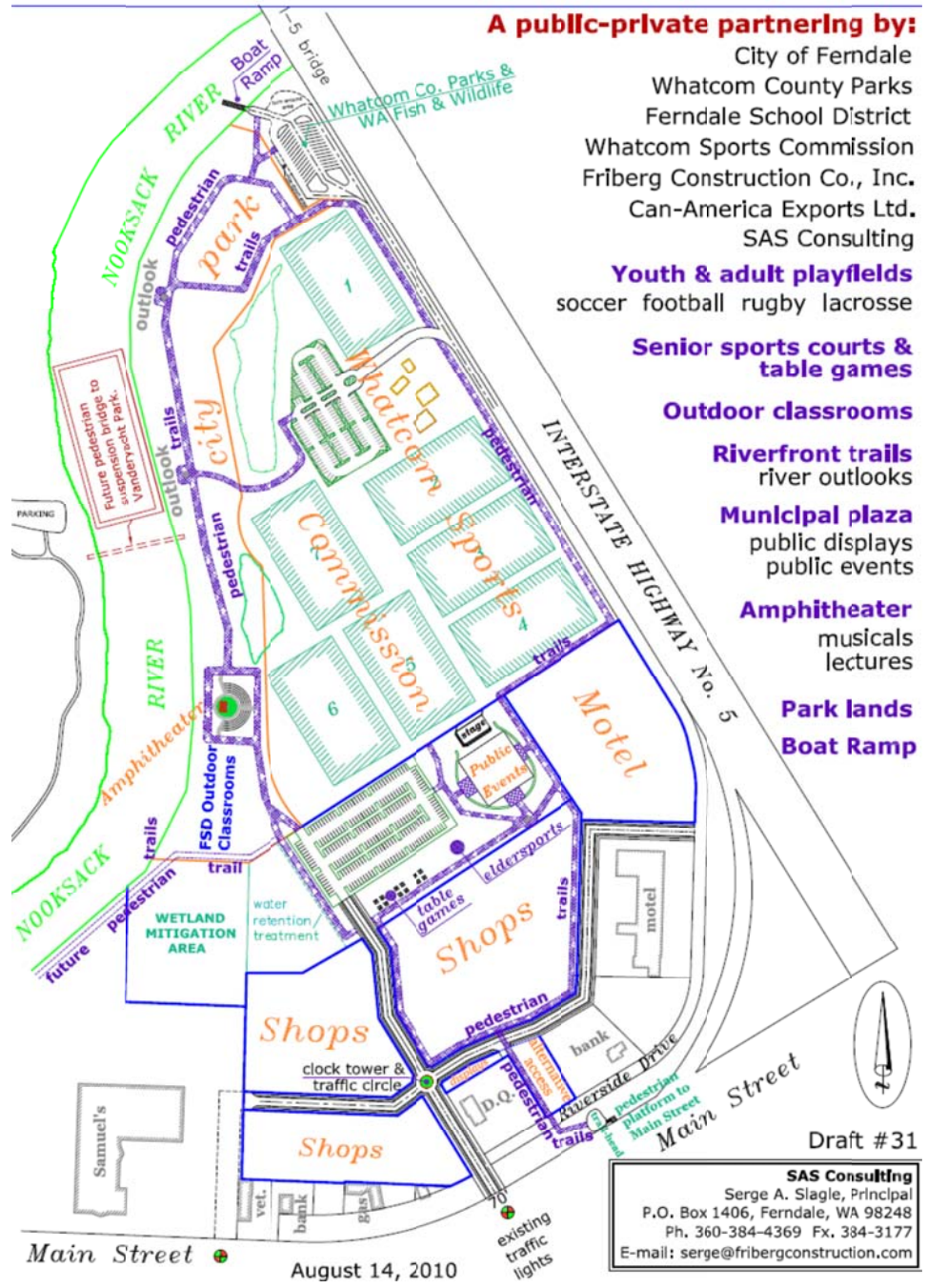


Figure 13. Riverplace Civic Center proposed perimeter road diagram in Ferndale, Washington (SAS Consulting, Inc, 2010)



A public-private partnering by:

- City of Ferndale
- Whatcom County Parks
- Ferndale School District
- Whatcom Sports Commission
- Friberg Construction Co., Inc.
- Can-America Exports Ltd.
- SAS Consulting

Youth & adult playfields
soccer football rugby lacrosse

Senior sports courts & table games

Outdoor classrooms

Riverfront trails
river outlooks

Municipal plaza
public displays
public events

Amphitheater
musicals
lectures

Park lands
Boat Ramp

Draft #31

SAS Consulting
Serge A. Slagle, Principal
P.O. Box 1406, Ferndale, WA 98248
Ph. 360-384-4369 Fx. 384-3177
E-mail: serge@fribergconstruction.com

Main Street

August 14, 2010

existing traffic lights

Figure 14. Proposed Riverplace Civic Center diagram, including the proposed Riverplace boat launch facility (SAS Consulting, Inc., 2010)

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