PART THREE

EVERSON SHORELINE
REACH INVENTORY AND ANALYSIS REPORT

CITY OF EVERSON
SHORELINE MASTER PROGRAM UPDATE
AUGUST 10, 2006 DRAFT

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Acronyms

CMZ – Channel Migration Zone
CREP – Conservation Reserve Enhancement Program
DBH – diameter breast height
DOE – Washington State Department of Ecology
ESSI – Earth System Science, Inc.
FEMA – Federal Emergency Management Agency
LWD – Large woody debris
NWI – National Wetlands Inventory
OHWM – ordinary high watermark
PFOC – palustrine, open water, forested, seasonally flooded wetland
PHS – Priority Habitats and Species
POWH – palustrine, open water, permanently flooded wetland
PSSC – palustrine, scrub-shrub, seasonally flooded wetland
SR – State Route
SWMP – Stormwater Management Plan
UGA – Urban Growth Areas
USFWS – United States Department of Fish & Wildlife Services
VCA – Vegetation Conservation Area
WAC – Washington Administrative Code
WDFW – Washington State Department of Fish & Wildlife

1.0 INTRODUCTION

The shorelines of Everson are divided by this Master Program into reach categories. Each reach is defined by its unique characteristics and designation. The Shoreline Management Act requires jurisdictions to include an inventory and analysis of current shoreline conditions within shoreline jurisdiction. The shorelines and water within jurisdiction for the City of Everson and examined in this inventory and analysis document include those shorelines of the Nooksack River within city limits, land within the 100-year floodplain and floodway within 200 feet of the ordinary high water mark, and those wetlands located within the 100-year floodplain historic mark. The following analysis will characterize shoreline functions, identify opportunities for protection, restoration, public access and shoreline use, and address cumulative impacts. ***MAP 1*** – Aerial Views, and ***MAP 2*** – City of Everson, depict the most current state of the City and its surrounding areas and also show the outline for shoreline jurisdiction.

2.0 THE NOOKSACK RIVER

The following text inventories the characteristics and functions of Everson's shoreline jurisdiction, generally described as the area within 200 feet of the ordinary high watermark (OHWM) of the Nooksack River, except where the shoreline jurisdiction has been expanded. The jurisdiction also includes those wetlands located within the FEMA 100-year floodplain. The shoreline jurisdiction is divided into 6 sections, or Reaches, with various subsections depending on reach characteristics and recommended environment designations. It is important to note that certain activities, such as dredging, gravel mining and damming, that directly influence the channeling of the river are regulated at government levels above this local Shoreline Master Program (SMP). See ***MAP 2*** – *City of Everson*, for shoreline jurisdictions outlined within the vicinity of the City. An aerial photograph has also been included as ***MAP 1*** – *2004 Aerials*.

FEMA/Floodway

The Nooksack River through Everson has a tendency to flood during peak flow periods. These flooding events have a great impact on shoreline characteristics and land use policies within the City's SMP jurisdiction. The 100-year floodplain of the Nooksack River is extensive. The 100-year floodplain through Everson jurisdiction extends; south, along Everson Rd. to the end of Mission Rd., west to the city limits along Nolte Rd. and Kale St., north to the urban growth area (UGA) boundary and city limits, and east to the city limits. During larger floods, the Nooksack River will overflow into the Johnson Creek drainage and flow north into the Sumas River. Portions of the Everson downtown core and some residential areas are not within the 100-year floodplain, neither is the majority of the Everson UGA to the south of SR 544 Bridge. See ***MAP 3*** – *FEMA Floodway & 100-Year Floodplain.*

Priority Habitat Species (PHS)

The Washington State Department of Fish and Wildlife (WDFW) maintains a Priority Habitat and Species (PHS) program to inventory potential state or federal proposed,

threatened, or endangered species, as well as other "priority" species of state concern. Listings of species within Everson's shoreline jurisdiction include raptors and waterfowl, such as Trumpeter swans (*Cygnus buccinator*) and Tundra swans (*Cygnus colombianus*), which are found in areas of the Nooksack River and its floodplain. A bald eagle (*Haliaeetus leucocephalus*) communal roost was also mapped by Whatcom County within proximity to Everson shoreline jurisdiction.

The majority of PHS habitats are defined by WDFW for Everson shoreline jurisdiction as Riparian and Wet habitats. Riparian habitats include the WDFW PHS Codes 143, 147, 149, 150, and 152 (more specific information regarding these PHS Codes can be obtained from the WDFW). Riparian habitat generally includes forested shrub zones along the lower Nooksack River. These areas provide protection for water quality and fish resources. This habitat is also used by many wildlife species, including bald eagle. Wet habitat includes the WDFW PHS Codes 148, 151, 153, and 154. Wet habitat consists of various types of wetlands draining to the lower Nooksack River, which also provide habitat to a variety of wildlife species. ***MAP 10*** *– Fish Habitat* and ***MAP 11*** *– Wildlife Habitat* shows the habitat and wildlife within and near the shoreline jurisdiction for Everson.

2.1 REACH 1

Reach 1 is defined as the Nooksack River within the ordinary high water mark and its natural flow patterns through the City of Everson.

Land Use

Current Land Use Patterns

At present, there are no docks, or over water structures within the Everson city limits, with the exception of the State Route 544 Bridge crossing. There are dikes and other forms of hard stabilization, including riprap, groins, and levees in place on the river at various locations. These structures will be discussed in the reach sections addressing their respective land areas.

Potential Species Present

Fish Species

Listed fish species for this section of the Nooksack River are anadromous, resident, and priority anadromous/resident salmonids, including Chinook (*Oncorhynchus tshawytscha*), spring and winter Chinook, chum salmon (*O. keta*), coho salmon (*O. kisutch*), pink salmon (*O. gorbuscha*), sea-run cutthroat (*O. clarki*), summer and winter steelhead (*O. mykiss*), and bull trout *(Salvelinus confluentus*). The use of the Nooksack River by these salmonids extends past Everson city limits. ***MAP 10*** *– Fish Habitat* shows the locations of fish species within the Nooksack River and shoreline jurisdiction.

PHS Species/Habitat

Priority habitat elements include substrate, large woody debris (LWD), pool frequency, pool quality, off-channel habitat, and refugia. Priority species include the threatened species of Chinook and Coastal Bull Trout. The shorelines of the Nooksack River also provide habitat for a variety of waterfowl and two known bald eagle roosting communes.

MAP 11 – *Wildlife Habitat* shows the locations of priority habitat throughout Everson shoreline jurisdiction.

Physical Environment

Soils/Geology

The Nooksack River primarily consists of Riverwash (soil unit 130), including sand, gravel, cobbles and other materials. This soil unit is on the river bottom and shoreline lands that are frequently flooded. Slopes are generally 0 – 2 percent. The native vegetation along the river is mainly small trees, scattered shrubs, and grass. According to the Soil Survey of Whatcom County, this type of soil is not conducive to growing trees. This is due to frequent flooding and poor fertility. Permeability is very rapid in the Riverwash and available water capacity is low. This soil unit is used for wildlife habitat or recreation. (Soil Conservation Service, 1992)

Shoreline Modifications

The Nooksack River channel is armored in several locations, and several levees have been constructed to contain floodwaters. However, there are no physical barriers to fish passages, and all areas are properly functioning for habitat access. Pool frequency and quality within the shoreline jurisdiction are not properly functioning. The Nooksack through Everson lacks substantial amounts of pools and riffles. All shoreline areas within Everson jurisdiction are not properly functioning for riparian reserves. Urban or agricultural development is encroaching on these areas that serve as riparian reserves. (ESSI, 2002) ***MAP 5*** – *Shoreline Modifications*, depicts the location of the levees, groins, riprap and other modifications to the shoreline.

Eroding Shoreline

The banks of the Nooksack River have naturally eroding shorelines in several places. These locations include two large cutbanks on the downstream portions of the Nooksack River within Everson's shoreline jurisdiction. This erosion has washed away two historic river access trails and evidence of the erosion is clear at the ends of the trails. ***MAP 5*** – *Shoreline Modifications*, depicts the location of the two areas of erosion within jurisdiction.

Critical Areas

FEMA/Floodplain

Reach 1 is a FEMA designated floodway and is within the 100-year floodplain. The Nooksack River through Everson tends to flood in the south and north portions of shoreline jurisdiction more so than to the east and west. However, all areas surrounding Reach 1 are within a flood hazard area and are subject to inundation by the 1% annual chance flood event (100 year flood or base flood). ***MAP 3*** – *FEMA Floodway & 100 Year Floodplain*, shows the FEMA 100-year floodway and floodplain for the Nooksack River through the City of Everson.

Acquifer Recharge Areas

Gravel deposits underlie much of the land to the south of the river. This area functions as an aquifer recharge area (Comprehensive Plan 2004). A wellhead protection program established within the City aims to delineate a specific recharge area for the city wells and

to create a management plan for the area. The *2004-2024 Everson Comprehensive Plan* describes in more detail the wellhead protection program. See ***MAP 4*** *– Wetland Inventory & Wellhead Protection.*

Riparian Function

The Nooksack channel at Everson is wide and active downstream of the bridge. Through Everson, the Nooksack River is a considered a Class II river. Despite the fact that the banks of the Nooksack River have naturally eroding shorelines and cutbacks, the channel remains in its historic migration pattern.

Water Quality – Department of Ecology Section 303(d)

Water quality in the Nooksack River within Everson's jurisdiction is considered good based on DOE Section 303(d). The temperature of the Nooksack River in all areas of shoreline jurisdiction is properly functioning. Temperature ranges from 13 degrees Celsius to 3.6 degrees Celsius (55.4 F to 38.9 F), averaging 8.41 C. Sedimentation and turbidity in all areas of the Nooksack River jurisdiction are functioning at risk. These water quality processes are a watershed issue and are beyond the scope of Everson's jurisdiction. (ESSI, 2002)

Data on nutrient and contamination levels appear to indicate that the Nooksack River does meet the criteria for "properly functioning" within the City (ESSI, 2002). Downstream reaches are at risk to future changes in land use and development patterns upstream, which could have an impact on water quality from non-point sources of pollution.

Channel Gradient

The Nooksack River through Everson jurisdiction has a gradient of less than 1%. (Whatcom County, 2006).

Channel Migration Zone

A channel migration zone (CMZ) is defined in the Shoreline Guidelines (WAC 173-26-221(3)(b)) as "the area within which a river channel is likely to move over a period of time." The dynamic physical processes of rivers, including the movement of water, sediment and wood, cause the river channel in some areas to move laterally, or "migrate," over time. Areas separated from the active channel by artificial channel constraints, as well as structured built above or constructed to remain intact through the 100-year flood are not considered within the CMZ. The Nooksack River through Everson has a distinct CMZ and it has remained fairly consistent throughout history (ESSI, 2002).

Fish Passage Blockages

The Nooksack River through Everson does not exhibit any barriers to fish passage.

Non-point & Point Source Pollution

The City of Everson within shoreline jurisdiction is connected to the public sewer system, which eliminates a major source of non-point source pollution from failing septic systems. Upstream development patterns may have a future impact on pollution within the City. Currently, the sewer treatment plant is the only potential source of point pollution. The sewer treatment plant is regulated at the State level.

Stormwater runoff has an impact on surrounding watercourses, including the Nooksack River and Johnson Creek. However, in November of 2002, the City of Everson created a Stormwater Management Plan (SWMP) that helps to regulate stormwater runoff.

Riffle/Pool Analysis

The shoreline inventory prepared by Earth System Science, Inc. (ESSI) in 2001 suggests that pool ratios and the existence of large woody debris are lacking on the main channel of the Nooksack. It is not likely that the City of Everson will be able to influence the pool ratio or pool quality in the river beyond increasing the recruitment of large woody debris (LWD) within the City. Some restoration projects have increased pool habitat by incorporation of LWD along the shorelines.

Public Access & Parks

Public access and parks will be more thoroughly explained in the reach sections on lands and areas adjacent to the River. Currently, a section of the Bay to Baker Trail is under consideration to cross the SR 544 Bridge.

Function Analysis

Functions & Limiting Factors

Table 1.1 A – Reach 1- Functions & Limiting Factors

Indicators	Pathways	Conditions
Water Quality	Temperature	**Properly functioning**
	Sediment	**Functioning at risk: Glacial origins, forestry and agricultural uses**
	Chemical	**Properly functioning**
Habitat Access	Physical barriers	**Properly functioning: No barriers to fish passage**
Habitat Elements	Substrate	**Functioning at risk**
	LWD	**Not available**
	Pool Frequency	**Not properly functioning**
	Pool Quality	**Not properly functioning**
	Refugia	**Properly functioning (Refugia exist where overhanging vegetation occurs)**
	Off-Channel Habitat	**NA**
Channel Conditions and Dynamics	Width/Depth Ratio	**Functioning at risk**
	Streambank Conditions	**NA**
	Floodplain Connectivity	**Properly functioning**
Flow/Hydrology	Peak/Base Flows	**Properly functioning**
	Drainage Network Increase	**Properly functioning**

Watershed Conditions	Road Density and Location	***Properly functioning***
	Disturbance History	**Functioning at risk**
	Riparian Reserves	**Not properly functioning: Conversion of riparian reserves to park and residential use.**

Enhancement Opportunities

Preservation/Enhancement Opportunities

The City of Everson should be able to increase LWD throughout the river system within its jurisdiction. By increasing LWD, the City can help increase pool frequency and quality and build habitat for riverine system animals.

Recommended Environment Designation

The recommended environment designation for Reach 1 is Aquatic.

2.2 REACH 2

Reach 2 extends from the SR 544 Bridge to the western edge of the city limits at the northern side (right bank) of the Nooksack River. This segment is constrained by riprap and offers limited instream habitat. Land use in this reach includes a park and a sewage treatment plant, with a small residential area to the east. Within this section, the riparian vegetation consists of grassy lawns and a strip of trees adjacent to the river and the sewer treatment plant. See ***MAP 6 –*** *Shoreline Jurisdiction & Environment Designations*.

Land Use

Current Land Use

Reach 2 contains Riverside Park, as well as the Everson Waste Water Treatment Plant. There are also a few residences along the river near the SR 544 Bridge.

Zoning

The current zoning is Residential and potential future zoning is a mix of Parks and Trails in the northwest portion (in the area occupied by the park and treatment plant) and Residential in the southeast portion (in areas currently occupied with residences). (Everson Comprehensive Plan 2004) See Land Use maps, ***MAP 8*** – *Current Zoning*, and ***Map 9*** – *Future Zoning*.

Table 1.2A Reach 2 – Land Use Information

	Reach 2
Acres of Land in Reach	16.17
Number of Buildings/Structures	12
Acres of Impervious Surface	3.94
% Impervious Surface of Total Land	24.3%

Potential Species Present

Wildlife Species

Reach 2 does not host an abundance of wildlife because it is located within close proximity to the City Center. Wildlife species observed for the area are waterfowl and raptor species.

Physical Environment

Culverts/Stormwater Utilities

The Everson Sewage Treatment Plant is located in Reach 2 and includes the main sanitary sewer outfall for the City of Everson. This main sewer outfall drains from the sewage treatment plant to the Nooksack River. City sewer pipes drain from the city towards Riverside Park and the treatment facility. There is an 18" stormwater drain located within Riverside Park. Only 25% of the City's stormwater drains into this outfall, which drains into the Nooksack. The rest of the City's stormwater flows north to the Sumas River, east into Johnson Creek, or in southern parts of the City into the ground; depending on the topography.

Roads/Transportation

Park Drive forms the north boundary for Reach 2. W Main St. connects to the southerly bend of Park Drive. The entrance to Riverside Park is a gravel drive into a gravel parking lot. There are also some residential streets that spur off of Park Dr.

Soils/Geology

The soils in this area include Mt Vernon fine sandy loam, Pilchuck loamy fine sand, and Puyallup sandy loam.

Soil Unit 107 – Mt Vernon fine sandy loam, 0 – 2 percent slopes. Deep, moderately well drained soil on river terraces and on flood plains. Native vegetation generally includes conifers and shrubs. Elevation is 10 to 100 feet. Permeability is moderate and available water capacity is high. This soil unit is used mainly for hay and pasture or as cropland, woodland, and a site for homes. The main limitations in the area are the seasonal high water table and the hazard of flooding. (Soil Conservation Service, 1992)

119 – Pilchuck loamy fine sand, 0 – 3 percent slopes. Very deep, some what excessively drained soil is on floodplains. Elevation is 50 – 400 feet and native vegetation is mainly trees and shrubs. Permeability is rapid and water availability is low. Runoff is very slow, and the hazard of water erosion is severe because of flooding and channeling. This soil unit is used mainly as woodland. (Soil Conservation Service, 1992)

124 – Puyallup fine sandy loam, 0 – 2 percent slope. Very deep, well drained soil is on low river terraces and on flood plains. The native vegetation is mainly conifers and shrubs. Elevation is about 50 – 300 feet. Permeability is moderately rapid in the upper part of the Puyallup soil and rapid in the lower part. Available water capacity is moderate. Runoff is very slow, and there is no hazard of erosion. This soil unit is used mainly for hay and pasture or as cropland, woodland, and a site for homes. The main limitations in the area are the moderate water capacity and the hazard of flooding. (Soil Conservation Service, 1992)

Topography

Topography is relatively flat, as the majority of land use is open parkland and field. Land closer to the river has natural undulations from past peak flow periods where backwaters have traveled through the area. The bank of the Nooksack River was approximately 3' tall at the time of observation in March 2006.

Terrestrial Vegetation

There is a strip of medium-sized deciduous trees running along the riverfront that are spaced far enough apart to provide excellent visual access to the river for park visitors. This vegetation does not provide significant potential for recruitment of LWD. Density is sparse and dominated by hardwoods up to 20 inches diameter breast height (DBH). Vegetation includes red alders, cottonwoods, salmonberry, and willows. A variety of other undergrowth shrubs cover the ground surface, including non-native blackberry.

Shoreline Modifications

There are five groins along the bank that have changed the channel flow in this area. At Riverside Park, on the north right bank, west of the SR 544 Bridge, five rock jetties—or groins—have been installed on the channel. Some of the groins have large pieces of woody debris built into the groin structures. This riprap along the bank and the conversion of riparian habitat to residential land use limits salmon habitat. However, two groins were recently modified and included LWD to increase aquatic habitat. See ***MAP 5*** – *Shoreline Modifications.*

Eroding Shoreline

Land at Riverside Park has experienced extensive riverbank erosion, and efforts have been made to arrest the eroding shore. These efforts include repairing two of the five groins that had eroded. Erosion is evident at the end of two pathways that disappear into the Nooksack channel path within Reach 3. See ***MAP 5*** – *Shoreline Modifications.*

Critical Areas

Wetlands

No wetlands have been identified within Reach 2 of Everson's shoreline jurisdiction.

FEMA/Floodplain

Reach 2 is within the FEMA 100-year floodplain. The southwest corner is also within a FEMA designated floodway area that must be kept free of encroachment so that the annual 1-% chance of a major flood can be carried through the land without substantial increases in flood height. See ***MAP 3*** – *FEMA Floodway & 100 Year Floodplain.*

Riparian Function

LWD Presence

The lack of woody debris along the River in Reach 2 does not allow for properly functioning habitat due to limited riparian vegetation. The potential for LWD recruitment is low. However, a restoration project along the shoreline did include 2 new groins and engineered log jams that provide LWD.

Parks & Public Access

Parks & Public Access

Riverside Park is located on the northern shoreline of the Nooksack River on the west side of town. This park provides public access as well as other amenities, such as a play field, a picnic area, and restroom facilities. All of the trails along the River in Reach 2 are public access trails. See ***MAP 7*** – *Public Access*.

Toxic Sites/Land Fills

The only site of possible pollution concern is the Sewer Treatment Plan, which is regulated at the State level and does not currently fall under shoreline regulations.

Function Analysis

Functions & Limiting Factors

Table 1.2B Reach 2 – Functions & Limiting Factors

Indicators	Pathways	Conditions
Water Quality	Temperature	Properly functioning
	Sediment	Functioning at risk: Glacial origins, forestry and agricultural uses
	Chemical	Properly functioning
Habitat Access	Physical barriers	Properly functioning: No barriers to fish passage
Habitat Elements	Substrate	Functioning at risk
	LWD	Not properly functioning: Limited riparian vegetation
	Pool Frequency	*Not properly functioning*
	Pool Quality	Not properly functioning
	Refugia	Properly functioning (Refugia exist where overhanging vegetation occurs)
	Off-Channel Habitat	NA
Channel Conditions and Dynamics	Width/Depth Ratio	Functioning at risk
	Streambank Conditions	Not properly functioning
	Floodplain Connectivity	Properly functioning : no levees
Flow/Hydrology	Peak/Base Flows	Properly functioning
	Drainage Network Increase	Properly functioning
Watershed Conditions	Road Density and Location	*Properly functioning*
	Disturbance History	Functioning at risk
	Riparian Reserves	Not properly functioning: Conversion of riparian reserves to park and residential use.

Enhancement Opportunities

Current Enhancement Projects

A recently completed project repaired two groins in Reach 2. With the groins, engineered logjams and native plantings were included. The native plants included Willow, Western red cedar, and Douglas Fir. Stabilizing geotextile material was also introduced to the park at the canoe launch point for the yearly Sea-to-Ski race to prevent further erosion.

Recommended Environment Designation

The recommended environment designation for Reach 2 is Urban Conservancy Environment designation. This designation implies that this area is regulated to protect and restore ecological functions of open space, floodplain and other sensitive lands where they exist in urban and developed settings, while allowing a variety of compatible uses. (WAC 173-26-211(e)(i)) See ***MAP 6*** – *Shoreline Jurisdiction & Environment Designations.*

2.3 REACH 3

Reach 3 is located in the northwest Urban Growth Area (UGA). The reach is divided into three sections: Reach 3A, Reach 3B, and Reach 3C. The reaches are divided based on the proximity to the Nooksack River and the anticipated uses of each section. Reach 3 is forested along the shoreline and transitions northward to agricultural fields. See ***MAP 6*** – *Shoreline Jurisdiction & Environment Designations.*

2.3.1 Reach 3A

Reach 3A extends from the western edge of the Everson city limits to the westernmost limit of the Everson UGA on the northern side (right bank) of the Nooksack River. This segment is forested along the shoreline. See ***MAP 6 –*** *Shoreline Jurisdiction & Environment Designations.*

Land Use

Current Land Use

Currently, this reach is undeveloped. There are some walking trails passing through trees along the river. Reach 3A is within the Everson UGA. In the future, Reach 3A may include a portion of Riverside Park.

Zoning

Current County zoning for Reach 3A is Rural. The Whatcom County Comprehensive Plan designates Reach 3A as Everson UGA. The potential future zoning as identified by the Everson Comprehensive Plan is Parks & Trails in the east and Residential in the west. See Land Use maps, ***MAP 8*** – *Current Zoning*, and ***Map 9*** – *Future Zoning*.

Table 1.3A Reach 3A – Land Use Information

	Reach 3A

Acres of Land in Reach	10.82
Number of Buildings/Structures	0
Acres of Impervious Surface	0
% Impervious Surface of Total Land	0

Potential Species Present

Wildlife Species

Wildlife species for Reach 3A are generally the same as Reach 2. Wildlife in Reach 3A consists mainly of waterfowl and raptor species. See ***MAP 11*** – *Wildlife Habitat.*

PHS Species/Habitat

The use of shoreline waters adjacent to Reach 3A for spawning is limited. Although some fish species use the water for rearing, there is limited instream habitat within this area due to lack of riparian vegetation and LWD. See ***MAP 10*** – *Fish Habitat* and ***MAP 11*** – *Wildlife Habitat.*

Physical Environment

Tributary Creeks

Remnant swales exist within Reach 3A, where water has flowed during peak flow periods. There are no tributaries in the area, although past wetland studies suggest two remnant wetlands that may have had some water flow. See ***MAP 4*** – *Wetland Inventory & Wellhead Protection.*

Soils/Geology

Soils in this area include Puyallup fine sandy loam.

Soil Unit 124 – Puyallup fine sandy loam, 0 – 2 percent slope. Very deep, well drained soil is on low river terraces and on flood plains. The native vegetation is mainly conifers and shrubs. Elevation is about 50 – 300 feet. Permeability is moderately rapid in the upper part of the Puyallup soil and rapid in the lower part. Available water capacity is moderate. Runoff is very slow, and there is no hazard of erosion. This soil unit is used mainly for hay and pasture or as cropland, woodland, and a site for homes. The main limitations in the area are the moderate water capacity and the hazard of flooding. (Soil Conservation Service, 1992)

Topography

The land is mostly flat. Areas close to the river show characteristics of smaller depressions that may be remnant from historic wetlands. Swales are also evident within the reach and help to form small undulations in the terrain.

Terrestrial Vegetation

Reach 3A contains a considerable amount of intact riparian habitat and past wetland characteristics. Vegetation includes alder, cottonwood and various under story shrubs. Vegetation is dense with trees in the medium range between 12-20 inches DBH and less than 1/3 ground exposure. Dominant vegetation in this segment includes salmonberry (*Rubus spectabilis*), Himalayan blackberry (*Rubus discolor*), snowberry (*Symphoricarpos albus*), twinberry (*Lonicera involucrata*), red elderberry (*Sambucus racemosa*), stinging

nettle (*Urtica dioica*), willows (*Salix* spp.), black cottonwood (*Populus balsamifera* ssp. *trichocarpa*), and red alder (*Alnus rubra*). (ESSI, 2002)

Eroding Shoreline

Active erosion occurs on the north, right bank of Reach 3A. Trails accessing the shorelines have been washed away by erosional processes. See ***MAP 5*** – *Shoreline Modifications.*

Critical Areas

Wetlands

This forested riparian area occurs on the north right bank at the west end of town limits at the location of Riverside Park. This potential wetland area is associated with the Nooksack River with river cutting and erosion in the shoreline area. A network of drainage channels is directly connected to the Nooksack River. Vegetation consists of cottonwood, alder, willow trees (Salix spp.), salmonberry, and red elderberry. See ***MAP 4*** – *Wetland Inventory & Wellhead Protection.*

The riparian area corresponds with WDFW PHS mapping of 143 Nooksack River Riparian. USFWS classification would be palustrine, scrub-shrub, seasonally flooded wetland (PSSC) and palustrine, forested, seasonally flooded wetland (PFOC). To the south of Stickney Island Road, NWI has mapped a series of palustrine, scrub-shrub, seasonally flooded wetlands (PSSC). These wetlands were formerly described as a complex of forested wetlands. The farmland between the river and Stickney Island Road was reportedly a historic slough, as indicated by park interpretation signage. (Welch, 2002)

FEMA/Floodplain

Reach 3A is within the FEMA 100-year floodplain and also within a FEMA designated floodway area that must be kept free of "encroachment" so that the annual 1% chance of flood can be carried through the land without substantial increases in flood height. See ***MAP 3*** – *FEMA Floodway & 100 Year Floodplain.*

Riparian Function

LWD Presence

Reach 3A is lacks appropriate amount of LWD to improve habitat availability and river conditions. There are existing deciduous/hardwood stands that could aid in future LWD recruitment. This recruitment potential is moderate based on the hardwood vegetation of red alder and cottonwood, and limited by alder dominated stands.

Riffle/Pool Analysis

There is a general lack of riffles, pools, and over-wintering habitat, which affect salmonid rearing. There are also no side channels in this area of the river, but there may be potential for restoration of abandoned side channels to aid in over-wintering habitat.

Parks & Public Access

This reach has a potential for good public trail access for viewing wildlife and accessing the shoreline. The river has eroded some of the river front trails and is cutting into the bank. Future acquired public access could make the riverfront accessible to the public via Riverside Park. See ***MAP 7*** – *Public Access*.

Function Analysis

Functions & Limiting Factors

Table 1.3B Reach 3A – Functions & Limiting Factors

Indicators	Pathways	Conditions
Water Quality	Temperature	Properly functioning
	Sediment	Functioning at risk: Glacial origins, forestry and agricultural uses
	Chemical	Properly functioning
Habitat Access	Physical barriers	Properly functioning: No barriers to fish passage
Habitat Elements	Substrate	*Functioning at risk*
	LWD	Functioning at risk: (existing deciduous/hardwood stands)
	Pool Frequency	*Not properly functioning*
	Pool Quality	Not properly functioning
	Refugia	Properly functioning: Refugia exist where overhanging vegetation occurs.
	Off-Channel Habitat	Functioning at risk: remnant side channels or wetlands exist but are limited.
Channel Conditions and Dynamics	Width/Depth Ratio	*Functioning at risk*
	Streambank Conditions	Functioning at risk: armored or eroding streambank.
	Floodplain Connectivity	Properly functioning: No levees
Flow/Hydrology	Peak/Base Flows	Properly functioning
	Drainage Network Increase	Properly functioning
Watershed Conditions	Road Density and Location	*Properly functioning*
	Disturbance History	Functioning at risk
	Riparian Reserves	Not properly functioning: Conversion of riparian reserves to agricultural use.

Enhancement Opportunities

Preservation/Enhancement Opportunities

It is recommended to include a vegetation conservation area (VCA) in the reach to focus on increasing the number of mixed age conifers. Planting of Douglas fir, Western red

cedar, and Western hemlock at rates of 50% the recommended density will increase the mix of conifers. There is also the potential for restoration of abandoned side channel wetlands to provide over wintering habitat for salmonid.

Recommended Environment Designation

The recommended environment designation for Reach 3A is Natural. The purpose of this designation is to regulate land to protect shoreline areas that are relatively free of human influence, or that include intact or minimally degraded shoreline functions intolerant of human use.

2.3.2 Reach 3B

Reach 3B is described as lying north of the Reach 3A and west of the city limits roughly 1,000 feet, in the Everson UGA.

Land Use

Current Land Use

This section is undeveloped and is currently being used for agricultural purposes. Reach 3B is within the Everson UGA. A portion of this area is expected to be included in the expansion area for ballfields in Riverside Park

Zoning

Current zoning is County Rural, the Whatcom County Comprehensive Plan designates Reach 3B as Everson UGA. The future zoning designation is Parks and Trails. (Everson Comprehensive Plan 2004. See Land Use maps, ***MAP 8*** – *Current Zoning*, and ***Map 9*** – *Future Zoning*.

Table 1.3C Reach 3B – Land Use Information

	Reach 3B
Acres of Land in Reach	10.47
Number of Buildings/Structures	0
Acres of Impervious Surface	0
% Impervious Surface of Total Land	0

Potential Species Present

Wildlife Species

Wildlife species remain the same as previous reach descriptions; including waterfowl and raptor species.

Physical Environment

Roads/Transportation

Stickney Island Road, a 2-lane road, runs along the northern boundary of Reach 3B heading east towards the City where it turns into Park Dr at the City limits. Roads are limited in Reach 3B and consist mainly of dirt and gravel driveways.

Soils/Geology

Soils include Mt Vernon fine sandy loam and Puyallup fine sandy loam.

Soil Unit 107 – Mt Vernon fine sandy loam, 0 – 2 percent slopes. Deep, moderately well drained soil on river terraces and on flood plains. Native vegetation generally includes conifers and shrubs. Elevation is 10 to 100 feet. Permeability is moderate and available water capacity is high. This soil unit is used mainly for hay and pasture or as cropland, woodland, and a site for homes. The main limitations in the area are the seasonal high water table and the hazard of flooding. (Soil Conservation Service, 1992)

124 – Puyallup fine sandy loam, 0 – 2 percent slope. Very deep, well drained soil is on low river terraces and on flood plains. The native vegetation is mainly conifers and shrubs. Elevation is about 50 – 300 feet. Permeability is moderately rapid in the upper part of the Puyallup soil and rapid in the lower part. Available water capacity is moderate. Runoff is very slow, and there is no hazard of erosion. This soil unit is used mainly for hay and pasture or as cropland, woodland, and a site for homes. The main limitations in the area are the moderate water capacity and the hazard of flooding. (Soil Conservation Service, 1992)

Topography

Topography is relatively flat which would make a good transition for the future park expansion.

Terrestrial Vegetation

Vegetation in this reach includes agricultural crops and grasses.

Critical Areas

Wetlands

Abandoned side channel/wetlands were observed in this reach. Currently there are no wetlands, and only small amounts of wetland-like vegetation.

FEMA/Floodplain

Reach 3B is within the FEMA 100-year floodplain. The southwest corner is also within a FEMA designated floodway area that must be kept free of encroachment so that the annual 1% chance of flood can be carried without substantial increases in flood height. See ***MAP 3*** *– FEMA Floodway & 100-Year Floodplain.*

Riparian Function

LWD Presence

LWD is lacking in Reach 3B due to limited riparian vegetation. Reach 3B is not contiguous with the shores of the Nooksack River.

Parks & Public Access

Reach 3B may become an expansion of Riverside Park. This would increase public access to the river and provide more space for recreational activity. See ***MAP 7*** *– Public Access*.

Function Analysis

Functions & Limiting Factors

Table 1.3D Reach 3B – Functions & Limiting Factors

Indicators	Pathways	Conditions
Water Quality	Temperature	Properly functioning
	Sediment	Functioning at risk: Glacial origins, forestry and agricultural uses
	Chemical	Properly functioning
Habitat Access	Physical barriers	Properly functioning: No barriers to fish passage
Habitat Elements	Substrate	*Functioning at risk*
	LWD	Not properly functioning: Limited riparian vegetation
	Pool Frequency	*Not properly functioning*
	Pool Quality	Not properly functioning
	Refugia	Properly functioning: refugia exist where overhanging vegetation occurs
	Off-Channel Habitat	NA
Channel Conditions and Dynamics	Width/Depth Ratio	*Functioning at risk*
	Streambank Conditions	Functioning at risk
	Floodplain Connectivity	Properly functioning: no levees
Flow/Hydrology	Peak/Base Flows	Properly functioning
	Drainage Network Increase	Properly functioning
Watershed Conditions	Road Density and Location	*Properly functioning*
	Disturbance History	Functioning at risk
	Riparian Reserves	Not properly functioning: Conversion of riparian reserves to residential and agricultural use.

Enhancement Opportunities

Preservation/Enhancement Opportunities

It is recommended to direct stormwater through bioswales and into ditches before draining into the river in this reach. Some vegetation enhancement adjacent to Reach 3A may be appropriate.

Recommended Environment Designation

The recommended environment designation for Reach 3B is Urban Conservancy. The goal of this environment designation is to protect and restore ecological functions of open space, floodplain and other sensitive lands where they exist in urban and developed settings, while allowing a variety of compatible uses. See ***MAP 6 –*** *Shoreline Jurisdiction & Environment Designations.*

2.3.3 Reach 3C

Reach 3C is identified as being west of Reach 3B, and extending to the limits of the UGA.

Land Use

Current Land Use

Reach 3C is used for residential and some agricultural purposes. The land is flat with larger tracts of open space.

Zoning

Current zoning is County Rural, and the Whatcom County Comprehensive Plan designates Reach 3C as Everson UGA. The future zoning designation is Residential as shown in the Everson Comprehensive Plan (2004). See Land Use maps, ***MAP 8*** – *Current Zoning*, and ***Map 9*** – *Future Zoning*.

Table 1.3E Reach 3C – Land Use Information

	Reach 3C
Acres of Land in Reach	20.44
Number of Buildings/Structures	12
Acres of Impervious Surface	0.52
% Impervious Surface of Total Land	2.5%

Physical Environment

Roads/Transportation

Stickney Island Road, a 2-lane road, forms the northern boundary of Reach 3C heading east to past Reach 3B and into the City. No other roads exist except for gravel and dirt driveways.

Soils/Geology

Soils include Mt. Vernon fine sandy loam and Puyallup fine sandy loam.

Soil Unit 107 – Mt Vernon fine sandy loam, 0 – 2 percent slopes. Deep, moderately well drained soil on river terraces and on flood plains. Native vegetation generally includes conifers and shrubs. Elevation is 10 to 100 feet. Permeability is moderate and available water capacity is high. This soil unit is used mainly for hay and pasture or as cropland, woodland, and a site for homes. The main limitations in the area are the seasonal high water table and the hazard of flooding. (Soil Conservation Service, 1992)

124 – Puyallup fine sandy loam, 0 – 2 percent slope. Very deep, well drained soil is on low river terraces and on flood plains. The native vegetation is mainly conifers and shrubs. Elevation is about 50 – 300 feet. Permeability is moderately rapid in the upper part of the Puyallup soil and rapid in the lower part. Available water capacity is moderate. Runoff is very slow, and there is no hazard of erosion. This soil unit is used mainly for hay and pasture or as

cropland, woodland, and a site for homes. The main limitations in the area are the moderate water capacity and the hazard of flooding. (Soil Conservation Service, 1992)

Topography

The area is relatively flat with very little change in elevation.

Terrestrial Vegetation

Vegetation in the reach consists of agricultural crops and some medium-sized trees and shrubs near residences.

Critical Areas

FEMA/Floodplain

Reach 3C is within the FEMA 100-year floodplain and also within an area that must be kept free of encroachment so that the annual 1% chance of flood can be carried without substantial increases in flood height. This floodway designation will limit the number of residences that can be built here in the future. However, the northwestern part of Reach 3C is above the 100-year floodplain and has future potential for residential zoning and development. See ***MAP 3*** – *FEMA Floodway & 100 Year Floodplain.*

Riparian Function

LWD Presence

Reach 3C does not have quality LWD due to limited riparian vegetation.

Parks & Public Access

There is currently no plan to include public access within Reach 3C. Most of the parcels are privately owned which makes it difficult to require public access. Future regulations may require residential subdivisions to provide public and/or community access to the shoreline, while preserving the natural buffer of trees and vegetation that line the river.

Function Analysis

Functions & Limiting Factors

Table 1.3F Reach 3C – Functions & Limiting Conditions

Indicators	Pathways	Conditions
Water Quality	Temperature	Properly functioning
	Sediment	Functioning at risk: Glacial origins, forestry and agricultural uses
	Chemical	Properly functioning
Habitat Access	Physical barriers	Properly functioning: No barriers to fish passage

Habitat Elements	Substrate	*Functioning at risk*
	LWD	Not properly functioning: Limited riparian vegetation
	Pool Frequency	*Not properly functioning*
	Pool Quality	Not properly functioning
	Refugia	Properly functioning: refugia exist where overhanging vegetation occurs.
	Off-Channel Habitat	NA
Channel Conditions and Dynamics	Width/Depth Ratio	*Functioning at risk*
	Streambank Conditions	NA
	Floodplain Connectivity	Properly functioning: No levees
Flow/Hydrology	Peak/Base Flows	Properly functioning
	Drainage Network Increase	Properly functioning
Watershed Conditions	Road Density and Location	*Properly functioning*
	Disturbance History	Functioning at risk
	Riparian Reserves	Not properly functioning: Conversion of riparian reserves to residential and agricultural use.

Enhancement Opportunities

Preservation/Enhancement Opportunities

Within Reach 3C the planting of more native vegetation with minimal use of fertilizers could be encouraged or required in conjunction with future residential subdivisions.

Recommended Environment Designation

The recommended environment designation for Reach 3C is Shoreline Residential. This designation will provide future opportunity for residential development while protecting the ecological functions of the shorelines of the Nooksack.

2.4 REACH 4

This reach area is described as being on the left or south bank of the river, west and south of the SR 544 Bridge from Everson Road to the western city limits. Reach 4 runs parallel to the Nooksack River. Reach 4 has been divided into two sections: Reach 4A and 4B.

2.4.1 Reach 4A

Reach 4A extends from the western edge of the city limits to the eastern edge of the SR 544 Bridge on the southern side (left bank) of the Nooksack River. The Nooksack River

forms the boundary on the north side of 4A. The width of Reach 4 is the distance between the OHWM and the historic topographic break or the tree line.

Land Use

Current Land Use

This reach is undeveloped, and contains deciduous riparian forest with remnant wetland characteristics. There are several subdivisions that begin to encroach on the southern boundary of this reach.

Zoning

The current zoning designation for this area is Residential. The future land use designation for this unit is Residential – Multiple-Use. However, based on the close proximity to the Nooksack River, this area will more than likely remain undeveloped and relatively similar to current conditions. See Land Use maps, ***MAP 8*** – *Current Zoning*, and ***Map 9*** – *Future Zoning*.

Table 1.4A Reach 4A – Land Use Information

	Reach 4A
Acres of Land in Reach	10.22
Acres of Impervious Surface	0.58
Number of Buildings/Structures	0
% Impervious Surface of Total Land	5.7%

*The total amount of impervious surface in Reach 4A includes the SR 544 Bridge on the east and Mead Ave./Nolte Rd. to the west.

Potential Species Present

Wildlife Species

The same species exist for Reach 4A as for the preceding reaches. These species include waterfowl and raptor. There is a mapped bald eagle roost on the western outskirts of this reach. (Whatcom County PDS, 2006)

PHS Species/Habitat

Habitat for pink salmon and chum salmon habitat exists in this area. An existing side channel has the potential to create off-channel habitat for these fish species, but only during times of increased flow. Whatcom County has also mapped the location of a bald eagle roosting commune to the west of Reach 4A. See ***MAP 10*** – *Fish Habitat* and ***MAP 11*** – *Wildlife Habitat.*

Physical Environment

Culverts/Stormwater Utilities

A 50-foot arch culvert, connected to Wetland N at the connection with the Nooksack River, conveys high water beneath SR 544. On the western side of Reach 4A, Whatcom County is considering a road improvement project, which will involve lowering the road at Nolte Road. for flood overflow control and constructing a flood relief valve. This project would divert floodwaters from the Nooksack across the road and flow south into Scott Ditch.

Roads/Transportation

The SR 544 Bridge passes along the eastern boundary of Reach 4A as it crosses the Nooksack River into the City Center. Mead Ave. runs along the southwest portion of Reach 4A where it abuts with Reach 4B.

Soils/Geology

Soils include Mt. Vernon fine sandy loam and Puyallup fine sandy loam.

Soil Unit 107 – Mt Vernon fine sandy loam, 0 – 2 percent slopes. Deep, moderately well drained soil on river terraces and on flood plains. Native vegetation generally includes conifers and shrubs. Elevation is 10 to 100 feet. Permeability is moderate and available water capacity is high. This soil unit is used mainly for hay and pasture or as cropland, woodland, and a site for homes. The main limitations in the area are the seasonal high water table and the hazard of flooding. (Soil Conservation Service, 1992)

124 – Puyallup fine sandy loam, 0 – 2 percent slope. Very deep, well drained soil is on low river terraces and on flood plains. The native vegetation is mainly conifers and shrubs. Elevation is about 50 – 300 feet. Permeability is moderately rapid in the upper part of the Puyallup soil and rapid in the lower part. Available water capacity is moderate. Runoff is very slow, and there is no hazard of erosion. This soil unit is used mainly for hay and pasture or as cropland, woodland, and a site for homes. The main limitations in the area are the moderate water capacity and the hazard of flooding. (Soil Conservation Service, 1992)

Topography

The land remains generally flat in both Reach 4A and 4B. Areas close to the river show characteristics of waterflow during peak flow periods. This waterflow creates undulations where the natural path of water follows when the water level in up.

Terrestrial Vegetation

Vegetation consists mostly of hardwood, deciduous trees and shrubs, including black cottonwood, red alder, willows, salmonberry, snowberry, red-osier dogwood, and Pacific ninebark (*Physocarpus capitatus*). A small number of mature conifers exist along the edge of the tree line. There is some non-native blackberry vines and other vines on the ground floor mixed in with the vegetation.

Shoreline Modifications

Streambank conditions are functioning at risk due to eroding streambank in the westernmost portion of this reach. There are no human modifications to this section of the reach. However, Whatcom County may consider some flood control improvements to Nolte Rd just outside of the Everson City limits. See ***MAP 5*** – *Shoreline Modifications.*

Eroding Shoreline

This reach is experiencing active erosion along the western limits. The river channel is migrating and extensive portions of the mapped riparian area have already eroded. These areas are on the south, left bank, and are cutting in a forested riparian area near Nolte Road. See ***MAP 5*** – *Shoreline Modifications.*

Critical Areas

Wetlands

Wetland N occurs south of the Nooksack River to the east of SR 544 (Section 31,36) and likely once was a tributary drainage to the Nooksack River. It straddles Reach 4A and Reach 5, and the eastern UGA, forming a long narrow linear stream and wetland that is oriented north/south. Most of the features occur beyond the city and UGA limits. The

downstream end is connected to the Nooksack River through a large approximately 50-foot arch culvert that conveys high water beneath the SR 544 Bridge. Just upstream of the bridge, the channel is ill defined, coursing through an emergent wetland swale dominated by reed canarygrass. Upstream of the open channel, the wetland and channel is forested. (Welch, 2002)

The mouth of Wetland N, which connects to the Nooksack River, includes an abandoned side channel wetland located just west of the SR 544 Bridge that has been identified within this reach. Remnant wetland channels also exist near the river's edge but these previously identified wetland areas are now understood to be swales where the natural path of the river flows during peak flow periods. See ***MAP 4*** *– Wetland Inventory & Wellhead Protection.*

FEMA/Floodplain

The majority of Reach 4A is within the FEMA 100-year floodplain and designated floodway. See ***MAP 3*** *– FEMA Floodway & 100 Year Floodplain.*

Channel Migration Zone

Reach 4A and Reach 4B are within the historic migration zone of the Nooksack River, as mapped by Whatcom County (2006). This indicates that at some point in history, the Nooksack flowed through these now more upland areas. This is the only distinct area where the Nooksack River has moved outside of its fairly consistent CMZ.

Riparian Function

LWD Presence

LWD is limited due to the lack of conifer trees in the reach. LWD functions to minimize bank erosion, dissipate channel energy, and contribute to the stabilization of the main river channel. The LWD recruitment potential is moderate based on the hardwood vegetation type of red alder and cottonwood. The vegetation is dense, with trees in the medium range between 12 and 20 inches DBH and less than $^1/_3$ ground exposure. (ESSI, 2002)

Parks & Public Access

Archeological & Historic Sites

There are no recorded archaeological or cultural resources sites within Everson shoreline jurisdiction. However, ethnohistoric records of the Nooksack people show at least one permanent village and several seasonal sites and use areas. This area was a focal point of a transportation corridor between Bellingham Bay and the Sumas area to reach the gold fields of the Fraser River. The Nooksack tribal named location of "Sxwi'tl'" spans reaches 4A and 5. This location in 4A is the place of the historic "Crossing" of the Nooksack River, and the site of the first Euroamerican ferry crossing and store in the upper Nooksack Valley. (Reid 2002)

Parks & Public Access

Farther south from the western portion of Reach 4A is Scott Ditch. Scott Ditch has a public access trail that begins in the Maple Ridge development and extends north to Scott Ditch. This trail could be extended into Reach 4 to the shore of the Nooksack River to provide

more public access. Future regulations may require residential subdivisions to include public and/or community access to the shoreline. See ***MAP 7*** – *Public Access*.

Function Analysis

Functions & Limiting Factors

Table 1.4B Reach 4A – Functions & Limiting Factors

Indicators	Pathways	Conditions
Water Quality	Temperature	Properly functioning
	Sediment	Functioning at risk: Glacial origins, forestry and agricultural uses
	Chemical	Properly functioning
Habitat Access	Physical barriers	Properly functioning: No barriers to fish passage
Habitat Elements	Substrate	*Functioning at risk*
	LWD	Functioning at risk: existing deciduous/hardwood stands.
	Pool Frequency	*Not properly functioning*
	Pool Quality	Not properly functioning
	Refugia	Properly functioning: refugia exist where overhanging vegetation occurs.
	Off-Channel Habitat	Properly functioning: existing side channel.
Channel Conditions and Dynamics	Width/Depth Ratio	*Functioning at risk*
	Streambank Conditions	Functioning at risk: armored or eroding streambank.
	Floodplain Connectivity	Properly functioning: No levees
Flow/Hydrology	Peak/Base Flows	Properly functioning
	Drainage Network Increase	Properly functioning
Watershed Conditions	Road Density and Location	*Properly functioning*
	Disturbance History	Functioning at risk
	Riparian Reserves	Not properly functioning: Conversion of riparian reserves to residential and agricultural use.

Enhancement Opportunities

Preservation/Enhancement Opportunities

One potential opportunity to include public access and parks in 4A is to establish a community trail access corridor from the western reaches of Reach 4A that would continue south and meet up with the existing Scott Ditch Trail.

Recommended Environment Designation

Reach 4A is recommended to be designated as Natural. The goal of this environment designation is to protect those shorelines that are relatively free of human influence or that include intact or minimally degraded shoreline functions intolerant of human use.

2.4.2 Reach 4B

This reach is located immediately to the south of Reach 4A and extends from Everson Road to the western city limits. Reach 4B borders the vegetation buffer running along the length of the river and Reach 4A. The width of Reach 4B averages about 125 feet. (Supplemental Analysis, 2002)

Land Use

Current Land Use

Reach 4B is largely residential. There are still smaller parcels remnant of past agricultural practices, but current development activity is geared toward residential development. There are currently two subdivisions underway for Reach 4B.

Zoning

The current zoning in Reach 4B is Residential with a future zoning designation of Residential Multiple-Use. (Everson Comprehensive Plan 2004). See Land Use maps, ***MAP 8*** – *Current Zoning*, and ***Map 9*** – *Future Zoning.*

Table 1.4C Reach 4B – Land Use Information

	Reach 4B
Acres of Land in Reach	5.54
Number of Buildings/Structures	6
Acres of Impervious Surface	0.56
% Impervious Surface of Total Land	10.2%

The total amount of impervious surface is approximate. The Rivers Edge development has not reached full build-out at this point.

Potential Species Present

Wildlife Species

Because this reach is largely favored for residential development, wildlife species are scarce. There are some waterfowl and raptor species that frequent the area, but most species spend time in 4A along the shores of the Nooksack River.

Physical Environment

Buildings/Structures

Reach 4B is zoned for residential purposes. Currently there are two residential subdivision projects in the reach. The River's Edge subdivision is one example and is nearly

complete. These subdivision projects could have a major effect on the use of the shorelines and on water quality of the river. See ***MAP 1*** *– 2005 Aerials.*

Culverts/Stormwater Utilities

On the north boundary of 4B, abutting Reach 4A in the River's Edge development, a stormwater swale has been constructed. There is a stormwater outfall from the property to the east of River's Edge. This property has installed a French gravel drain to drain into the manmade drainage swale. See ***MAP 5*** *– Shoreline Modifications.*

Roads/Transportation

Reach 4B is accessed by residential roads. There are also numerous driveways to access the housing within the current developments.

Soils/Geology

Soil in this reach is largely defined as Mt. Vernon fine sandy loam.

Soil Unit 107 – Mt Vernon fine sandy loam, 0 – 2 percent slopes. Deep, moderately well drained soil on river terraces and on flood plains. Native vegetation generally includes conifers and shrubs. Elevation is 10 to 100 feet. Permeability is moderate and available water capacity is high. This soil unit is used mainly for hay and pasture or as cropland, woodland, and a site for homes. The main limitations in the area are the seasonal high water table and the hazard of flooding. (Soil Conservation Service, 1992)

Topography

Reach 4B is generally flat, with a very gentle slope down toward the river.

Terrestrial Vegetation

Reach 4B lies to the south of a vegetation buffer along the river. Some field-like agricultural production does exist between the current housing development projects. Residences in the reach have some small trees and plants.

Critical Areas

Wetlands

Part of the Everson Slough, or Wetland N as it is referred to in past wetland studies, is also located near the eastern edge of this section. (See Reach 4A "*Wetlands*" for a more detailed description of Wetlands within Reach 4B.)

FEMA/Floodplain

Reach 4B is within the FEMA 100-year floodplain. See ***MAP 3*** *– FEMA Floodway & 100-Year Floodplain.*

Riparian Function

LWD Presence

LWD not properly functioning due to limited riparian vegetation. Reach 4B does not abut with the shoreline edge and therefore has a more limited impact on LWD and aquatic habitat.

Parks & Public Access

Residential communities in Reach 4B have community/neighborhood access to the river through remnant swales and footpaths. Residents do not like the idea of opening up the shoreline property of Reach 4A to the public. The Lion's Club of Everson has recently obtained property in the area and may propose a public access point to the River. See ***MAP 7*** *– Public Access*.

Function Analysis

Functions & Limiting Factors

Table 1.4D Reach 4B – Functions & Limiting Conditions

Indicators	Pathways	Conditions
Water Quality	Temperature	Properly functioning
	Sediment	Functioning at risk: Glacial origins, forestry and agricultural uses
	Chemical	Properly functioning
Habitat Access	Physical barriers	Properly functioning: No barriers to fish passage
Habitat Elements	Substrate	*Functioning at risk*
	LWD	Not properly functioning: Limited riparian vegetation
	Pool Frequency	*Not properly functioning*
	Pool Quality	Not properly functioning
	Refugia	Functioning at risk: Refugia exist where overhanging vegetation occurs but are limited because of buffer widths and levees.
	Off-Channel Habitat	NA
Channel Conditions and Dynamics	Width/Depth Ratio	*Functioning at risk*
	Streambank Conditions	NA
	Floodplain Connectivity	Properly functioning: No levees.
Flow/Hydrology	Peak/Base Flows	Functioning at risk
	Drainage Network Increase	Functioning at risk
Watershed Conditions	Road Density and Location	*Functioning at risk*
	Disturbance History	Functioning at risk
	Riparian Reserves	Not properly functioning: Conversion of riparian reserves to residential. Commercial, and agricultural use.

Enhancement Opportunities

Preservation/Enhancement Opportunities

Public access through 4B is a contentious issue. Currently, residents have access to the shoreline. It would be possible to create community access through the current housing developments, and potential public access through adjacent properties. The Lion's Club has expressed interest in creating a public access point through their property located at the northeast corner of the intersection of Mead Avenue and Kale Street.

A VCA with a width of approximately 50 feet could be established that would serve to protect the possible remnant wetland through restoring native vegetation within the required wetland buffer. According to ESSI's Shoreline Inventory, Wetland N could be restored to provide salmonid habitat.

Recommended Environment Designation

The recommended environment designation for Reach 4B is Shoreline Residential. This designation will provide future opportunity for residential development while protecting the ecological functions of the shorelines of the Nooksack.

2.5 REACH 5

Reach 5 is a small, fully vegetated area located just east of the bridge on the south or left bank of the river. It extends eastward to the Everson City limits.

Land Use

Current Land Use

Reach 5 is undeveloped and consists of larger trees, and shrubby vegetation all the way up to the Nooksack shores. The majority of land in Reach 5 is floodway.

Zoning

The current and future zoning of this reach is Light Industrial. However, it is highly unlikely that this land will be developed to light industrial standards due to the tendency to flood periodically. Regulations do not allow much development to occur in Reach 5. There would also be very limited access to these properties from SR 544. See Land Use maps, ***MAP 8*** *– Current Zoning*, and ***Map 9*** *– Future Zoning.*

Table 1.5A Reach 5 – Land Use Information

	Reach 5
Acres of Land in Reach	2.33
Number of Buildings/Structures	0
Acres of Impervious Surface	0

% Impervious Surface of Total Land	0

Potential Species Present

Wildlife Species

Wildlife species remain the same as for the previous reach assessments. There is a bald eagle roosting location within or near Reach 5. (Whatcom County PDS, 2006). See ***MAP 11*** *– Wildlife Habitat.*

PHS Species/Habitat

Bald eagle, coho salmon and cutthroat trout have habitat in Reach 5. This habitat occurs in and around an off-stream channel. A bald eagle communal roost was mapped by Whatcom County just outside the southeastern boundary of Reach 5. See ***MAP*** *10 – Fish Habitat* and ***MAP 11*** *– Wildlife Habitat.*

Physical Environment

Tributary Creeks

A portion of the Everson Slough (or Wetland N) is located in the western corner of Reach 5. This Slough may flow into the Nooksack during peak flow periods. See ***MAP 4*** *– Wetland Inventory & Wellhead Protection.*

Roads/Transportation

SR 544 forms the northwestern boundary of Reach 5.

Soils/Geology

Soils in this reach include Mt. Vernon fine sandy loam and Pilchuck loamy fine sand.

Soil Unit 107 – Mt Vernon fine sandy loam, 0 – 2 percent slopes. Deep, moderately well drained soil on river terraces and on flood plains. Native vegetation generally includes conifers and shrubs. Elevation is 10 to 100 feet. Permeability is moderate and available water capacity is high. This soil unit is used mainly for hay and pasture or as cropland, woodland, and a site for homes. The main limitations in the area are the seasonal high water table and the hazard of flooding. (Soil Conservation Service, 1992)

119 – Pilchuck loamy fine sand, 0 – 3 percent slopes. Very deep, some what excessively drained soil is on floodplains. Elevation is 50 – 400 feet and native vegetation is mainly trees and shrubs. Permeability is rapid and water availability is low. Runoff is very slow, and the hazard of water erosion is severe because of flooding and channeling. This soil unit is used mainly as woodland. (Soil Conservation Service, 1992)

Topography

The topography is relatively flat. Small undulations in terrain may exist near the shoreline. The bank gently steps down from the SR 544 Bridge approach. There is also a levee within Reach 5 that creates some change in topography.

Terrestrial Vegetation

Reach 5 consists mainly of large deciduous trees near the river and fairly dense ground cover. The vegetation transition into hay fields on the southern edge.

Shoreline Modifications

There is a levee that runs the extent of Reach 5. See ***MAP 5*** – *Shoreline Modifications.*

Critical Areas

Wetlands

The Everson Slough, or Wetland N, is located in the western corner of Reach 5. (See Reach 4A "*Wetland*" for a more detailed description on Wetland N.) See ***MAP 4*** – *Wetland Inventory & Wellhead Protection.*

FEMA/Floodplain

Reach 5 is within the FEMA 100-year floodplain and also within a FEMA designated floodway area that must be kept free of encroachment so that the annual 1% chance of flood can be carried without substantial increases in flood height. See ***MAP 3*** – *FEMA Floodway & 100-Year Floodplain.*

Riparian Function

LWD Presence

LWD is lacking due to the large amount of existing deciduous/hardwood stands. LWD recruitment potential is moderate based on the existing standing vegetation.

Parks & Public Access

No public access or parks exists for Reach 5 nor are any proposed in the future.

Function Analysis

Functions & Limiting Factors

Table 1.5B Reach 5 – Functions & Limiting Factors

Indicators	Pathways	Conditions
Water Quality	Temperature	Properly functioning
	Sediment	Functioning at risk: Glacial origins, forestry and agricultural uses
	Chemical	Properly functioning
Habitat Access	Physical barriers	Properly functioning: No barriers to fish passage
Habitat Elements	Substrate	*Functioning at risk*
	LWD	Functioning at risk: Existing deciduous/hardwood stands.
	Pool Frequency	*Not properly functioning*
	Pool Quality	Not properly functioning

	Refugia	Functioning at risk: Refugia exist where overhanging vegetation occurs but are limited because of buffer widths and levees.
	Off-Channel Habitat	NA
Channel Conditions and Dynamics	Width/Depth Ratio	*Functioning at risk*
	Streambank Conditions	Properly functioning
	Floodplain Connectivity	Not properly functioning: Levees.
Flow/Hydrology	Peak/Base Flows	Functioning at risk
	Drainage Network Increase	Functioning at risk
Watershed Conditions	Road Density and Location	*Functioning at risk*
	Disturbance History	Functioning at risk
	Riparian Reserves	Not properly functioning: Conversion of riparian reserves to residential. Commercial, and agricultural use.

Future Recommendations

Preservation/Enhancement Opportunities

The City should designate Reach 5 as a VCA. Enhancement and/or restoration of the Everson Slough, or Wetland N, could be encouraged to provide a hydrological connection between the river and the remaining portions of the old side channel/slough. The City could also encourage some restoration of wetland plants and grasses near the connection of the Slough with the River to reduce impacts on water quality from runoff flowing into the Nooksack via the culvert just south of the SR 544 Bridge.

Recommended Environment Designation

It is recommended that Reach 5 be designated as Natural. The goal of this environment designation is to protect those shorelines that are relatively free of human influence or that include intact or minimally degraded shoreline functions intolerant of human use.

2.6 REACH 6

Reach 6 includes the area north of the river and east of the bridge, from SR 544 to Emmerson Road. This Reach has been divided into three sections: Reach 6A, 6B and 6C.

2.6.1 Reach 6A

Reach 6A extends from the SR 544 Bridge east approximately 500 feet to a gravel road just east of the old cannery. Reach 6A is on the north bank of the Nooksack River.

Land Use

Current Land Use

Reach 6A has a history of high intensity uses including a cannery. Land use in this reach includes a portion of a commercial industrial building and the remainder is a vacant grass lawn. There is potential for future industrial/commercial development in this reach.

Zoning

The comprehensive plan and zoning map indicate that future land use for this segment will change from Commercial to Light Industrial.

Table 1.6A Reach 6A – Land Use Information

	Reach 6A
Acres of Land in Reach	3.89
Number of Buildings/Structures	1
Acres of Impervious Surface	1.24
% Impervious Surface of Total Land	32.0%

Physical Environment

Culverts/Stormwater Utilities

An 18-inch stormwater main line is located on Lincoln St. and travels to the Bridge where it opens up on the north bank. See ***MAP 5*** – *Shoreline Modifications.*

Roads/Transportation

SR 544, a 2-lane state highway, passes at the northwest border of Reach 6A. Other commercial/industrial access driveways exist in Reach 6A.

Soils/Geology

Soil in the reach is Puyallup fine sandy loam.

Soil Unit 124 – Puyallup fine sandy loam, 0 – 2 percent slope. Very deep, well drained soil is on low river terraces and on flood plains. The native vegetation is mainly conifers and shrubs. Elevation is about 50 – 300 feet. Permeability is moderately rapid in the upper part of the Puyallup soil and rapid in the lower part. Available water capacity is moderate. Runoff is very slow, and there is no hazard of erosion. This soil unit is used mainly for hay and pasture or as cropland, woodland, and a site for homes. The main limitations in the area are the moderate water capacity and the hazard of flooding. (Soil Conservation Service, 1992)

The Soil Survey suggests Puyallup Fine Sandy Loam; however, it is unknown what the exact composition of the levee and commercial areas are based on the history of disturbance and fill.

Topography

The topography of Reach 6A is flat as it approaches the River and then there is a slight bank to the water's edge.

Terrestrial Vegetation

Little riparian vegetation exists; vegetation that does exist includes willows, red alders, and grass lawn. There are small trees growing along the shoreline and grass covers most

of the site within 100 feet of the river. Vegetation density is sparse and dominated by hardwoods of less than 12 inches DBH.

Shoreline Modifications

This segment is constrained by a levee and riprap, offering limited instream habitat. This length of the shoreline is diked. The levee is on the right bank of the river and extends from the SR 544 Bridge upstream to Emmerson Road at the city limits. See ***MAP 5*** – *Shoreline Modifications.*

Critical Areas

Wetlands

No wetlands have been identified for Reach 6A.

FEMA/Floodplain

The southern portion of Reach 6A, closest to the Nooksack River, is within the FEMA 100-year floodplain and designated floodway. See ***MAP 3*** – *FEMA Floodway & 100-Year Floodplain.*

Riparian Function

LWD Presence

Reach 6A lacks LWD due to limited riparian vegetation along the shoreline. There may be potential to increase LWD in this reach, as there is some natural vegetation inland from the water.

Parks & Public Access

Parks & Public Access

The levee located on the north side of the river provides potential public access to the shoreline area. Currently there are no public access points or parks within Reach 6A. See ***MAP 7*** – *Public Access*.

Archeological & Historic Sites

Reach 6A was historically the site of the Nooksack tribal named village of Kwa'nech. This area was a major traditional village and home to important Nooksack leaders. The last "chief" was known as George Welu'sius, whose homestead included this village and the majority of the present town of Everson. The village was abandoned in 1888 in a rush preceding the oncoming railroad. (Reid, 2002) The old cannery now occupies this site.

Function Analysis

Functions & Limiting Factors

Table 1.6B Reach 6A – Functions & Limiting Factors

Indicators	Pathways	Conditions

Water Quality	Temperature	Properly functioning
	Sediment	Functioning at risk: Glacial origins, forestry and agricultural uses
	Chemical	Properly functioning
Habitat Access	Physical barriers	Properly functioning: No barriers to fish passage
Habitat Elements	Substrate	*Functioning at risk*
	LWD	Not properly functioning: Limited riparian vegetation.
	Pool Frequency	*Not properly functioning*
	Pool Quality	Not properly functioning
	Refugia	Functioning at risk: Refugia exist where overhanging vegetation occurs.
	Off-Channel Habitat	NA
Channel Conditions and Dynamics	Width/Depth Ratio	*Functioning at risk*
	Streambank Conditions	Functioning at risk: Armored or eroding streambank.
	Floodplain Connectivity	Not properly functioning: Levees.
Flow/Hydrology	Peak/Base Flows	Functioning at risk
	Drainage Network Increase	Functioning at risk
Watershed Conditions	Road Density and Location	*Functioning at risk*
	Disturbance History	Functioning at risk
	Riparian Reserves	Not properly functioning: Conversion of riparian reserves to residential. Commercial, and agricultural use.

Future Recommendations

Preservation/Enhancement Opportunities

It is important that Everson retain this area for high intensity uses. It is recommended that the City require revegetation in areas that will not interfere with commercial/industrial operations. The City may also require public access, restoration plans, and/or mitigation measures to retain important ecological functions. Reach 6A also has the potential for the development of a public boat launch.

Recommended Environment Designation

The recommended environment designation for Reach 6A is High Intensity. This environmental designation provides for high-intensity water-oriented commercial, transportation, and industrial uses while protecting the existing ecological functions and restoring ecological functions in areas that have previously been degraded.

2.6.2 Reach 6B

Reach 6B extends from approximately 500 feet east of the SR 544 Bridge to the eastern edge of the city limits on the right bank of the Nooksack River. It is described as the strip of land waterward of the base of the levee beginning at the eastern edge of Reach 6A and running eastward to the point where the city limits intersect the elbow in the levee turning towards Emmerson Road.

Land Use

Current Land Use

Land use in unit is currently undeveloped-forested riparian bottomland. This reach will remain undeveloped due to its tendency to flood and its proximity to the River.

Zoning

The comprehensive plan and zoning map identify the area as Residential – Multi-Use. However, because of its location within the floodway, it is likely the future land use for this segment will remain similar to current undeveloped conditions. See Land Use maps, ***MAP 8*** *– Current Zoning*, and ***Map 9*** *– Future Zoning.*

Table 1.6C Reach 6B – Land Use Information

	Reach 6B
Acres of Land in Reach	10.83
Number of Buildings/Structures	0
Acres of Impervious Surface	0
% Impervious Surface of Total Land	0

Potential Species Present

Wildlife Species

Wildlife species remain the same as for the rest of the reach locations within the City of Everson.

PHS Species/Habitat

There is a lack of quality off-channel habitat in Reach 6B. There are remnant side channels or wetland that could provide for PHS habitat. See Critical Areas below for a discussion on the remnant side channels/wetland.

Physical Environment

Soils/Geology

Soil includes Puyallup fine sandy loam and Pilchuck loamy fine sand.

Soil Unit 124 – Puyallup fine sandy loam, 0 – 2 percent slope. Very deep, well drained soil is on low river terraces and on flood plains. The native vegetation is mainly conifers and shrubs. Elevation is about 50 – 300 feet. Permeability is moderately rapid in the upper part of the Puyallup soil and rapid in the lower part. Available water capacity is moderate. Runoff is very slow, and there is no hazard of erosion. This soil unit is used mainly for hay and pasture or as

cropland, woodland, and a site for homes. The main limitations in the area are the moderate water capacity and the hazard of flooding. (Soil Conservation Service, 1992)

119 – Pilchuck loamy fine sand, 0 – 3 percent slopes. Very deep, some what excessively drained soil is on floodplains. Elevation is 50 – 400 feet and native vegetation is mainly trees and shrubs. Permeability is rapid and water availability is low. Runoff is very slow, and the hazard of water erosion is severe because of flooding and channeling. This soil unit is used mainly as woodland. (Soil Conservation Service, 1992)

According to the Soil Survey of Whatcom County, soils in Reach 6B range from Puyallup Fine Sandy Loam nearer to the river and Mt Vernon Fine Sandy Loam in a strip along the levee.

Topography

Topography is flat and characteristic of flood prone terrain; consisting of swales and depressions, as well as a few side channels.

Terrestrial Vegetation

Vegetation within this area includes black cottonwood, red alder, willow, salmonberry, and red-osier dogwood (*Cornus stolonifera*). The vegetation density is moderate with trees in the medium range between 12 and 20 inches DBH.

Shoreline Modifications

This segment is constrained by a dike that is set back approximately 200 feet from the active river channel. The distance from the bottom of the levee to the ordinary high water mark ranges from about 200 feet in the west to about 400 feet in the east. The levee is on the northeast, right, bank of the river and extends from the SR 544 Bridge south upstream to Emmerson Road near the city limits. The levee provides a visual break in topography from Reach 6B to Reach 6C. See ***MAP 5*** *– Shoreline Modifications.*

Critical Areas

Wetlands

A riparian wetland system, defined as Wetland 3 by Welch, was identified within this area between the river and the dike (Welch, 2001). See ***MAP 4*** *– Wetland Inventory & Wellhead Protection.*

This riparian wetland occurs along the right north bank on the east side of the bridge. The forested wetland extends upstream and is bordered by the levee that separates Reach 6B from Reach 6C. The riparian area corresponds with WDFW PHS mapping of 152 Nooksack River Riparian and 148 Nooksack River Wetlands. This wetland would be considered a Category 2 wetland due to size, diversity of habitat, and presence of open water. If restored, this wetland could provide some over wintering habitat. (Welch, 2002)

FEMA/Floodplain

Area 6B is within the FEMA 100-year floodplain and FEMA designated floodway. See ***MAP 3*** *– FEMA Floodway & 100-Year Floodplain.*

Riparian Function

LWD Presence

Reach 6A lacks LWD, but recruitment potential is moderate based on the hardwood vegetation type of red alder and cottonwood.

Riffle/Pool Analysis

There is a lack of riffles and pools in the aquatic areas adjacent to Reach 6B.

Parks & Public Access

The levee located on the north side of the river provides access to the shoreline area. There may also be opportunities for increased public access to the river via the SR 544 Bridge forested riparian buffer zones. It has been suggested that the top of the levee could provide an excellent public trail. The levee could provide public access, except that the levee, which connects to Emmerson Road, ends on private property in close proximity to a residence. See ***MAP 7*** – *Public Access*.

Function Analysis

Functions & Limiting Factors

Table 1.6D Reach 6B – Functions & Limiting Factors

Indicators	Pathways	Conditions
Water Quality	Temperature	Properly functioning
	Sediment	Functioning at risk: Glacial origins, forestry and agricultural uses
	Chemical	Properly functioning
Habitat Access	Physical barriers	Properly functioning: No barriers to fish passage
Habitat Elements	Substrate	*Functioning at risk*
	LWD	Functioning at risk: Existing deciduous/hardwood stands.
	Pool Frequency	*Not properly functioning*
	Pool Quality	Not properly functioning
	Refugia	Properly functioning: refugia exist where overhanging vegetation occurs.
	Off-Channel Habitat	Functioning at risk: Remnant side channel or wetland exist.
Channel Conditions and Dynamics	Width/Depth Ratio	*Functioning at risk*
	Streambank Conditions	Properly functioning
	Floodplain Connectivity	Not properly functioning: Levees.
Flow/Hydrology	Peak/Base Flows	Properly functioning
	Drainage Network Increase	Properly functioning

Watershed Conditions	Road Density and Location	*Properly functioning*
	Disturbance History	Functioning at risk
	Riparian Reserves	Not properly functioning: urban or agricultural development encroaching on riparian reserves.

Enhancement Opportunities

Preservation/Enhancement Opportunities

Development occurring within other sections of Reach 6 could make proportionate contribution toward enhancing Reach 6B. The primary emphasis should be on planting conifers similar to those described in a VCA for Reach 3A. Blackberries and other thickly growing vegetation should be cleared to allow the conifers to establish. Options for public access might also be explored in this area.

Recommended Environment Designation

The recommended environment designation for Reach 6B is Natural. The goal of this environment designation is to protect those shorelines that are relatively free of human influence or that include intact or minimally degraded shoreline functions intolerant of human use.

2.6.3 Reach 6C

This reach is described as including the area landward of the levee beginning at Reach 6A and running parallel to the river, plus the remaining portion of Reach 6 adjacent to Emmerson Road.

Land Use

Current Land Use

Reach 6C has potential for residential development. Currently it includes a few residences and is adjacent to a larger residential area landward of the Reach.

Zoning

Current and future zoning in Reach 6C is Residential – Multi-Use. The current pattern of residential development could very well continue throughout this reach until it reaches full build out. See Land Use maps, ***MAP 8*** – *Current Zoning*, and ***Map 9*** – *Future Zoning.*

Table 1.6E Reach 6C – Land Use Information

	Reach 6C
Acres of Land in Reach	7.60
Number of Buildings/Structures	9
Acres of Impervious Surface	0.51
% Impervious Surface of Total Land	6.7%

Physical Environment

Buildings/Structures

Reach 6C is used primarily for residential purposes. There are existing residential units and a new subdivision for duplex housing is already being developed as of March 2006. See ***MAP 1*** – *2005 Aerials*.

Roads/Transportation

Residential access streets and driveways run through Reach 6C.

Soils/Geology

Soils include Mt. Vernon fine sandy loam and Oridia silt loam.

Soil Unit 107 – Mt Vernon fine sandy loam, 0 – 2 percent slopes. Deep, moderately well drained soil on river terraces and on flood plains. Native vegetation generally includes conifers and shrubs. Elevation is 10 to 100 feet. Permeability is moderate and available water capacity is high. This soil unit is used mainly for hay and pasture or as cropland, woodland, and a site for homes. The main limitations in the area are the seasonal high water table and the hazard of flooding. (Soil Conservation Service, 1992)

115 – Oridia silt loam, drained, 0 – 2 percent slopes. Very deep, poorly drained soil is on floodplains and is artificially drained. Elevation is about 20 to 300 feet. Permeability is moderate and available water capacity is high. This soil is mainly used for hay and pasture or as cropland. Its main limitations are the high water table and the hazard of flooding. (Soil Conservation Service, 1992)

Topography

The terrain is relatively flat, with some undulations.

Terrestrial Vegetation

Vegetation consists mostly of grass fields and lawns with some alder, cottonwood and a few conifers.

Shoreline Modifications

The main feature here is the levee. The levee separates Reach 6C from the river and the riparian areas in Reach 6B. Within Reach 6C, the levee is setback from the channel and separates a residential area from a forested riparian area and wetlands that occurs between the levee and the river. See ***MAP 5*** – *Shoreline Modifications.*

Critical Areas

FEMA/Floodplain

Reach 6C is within the FEMA floodway and the 100-year floodplain. See ***MAP 3*** – *FEMA Floodway & 100-Year Floodplain.*

Riparian Function

LWD Presence

There is no LWD and limited riparian vegetation in Reach 6C due to residential development and the distance from the River. Reach 6C is not contiguous to the Nooksack River.

Parks & Public Access

There are access points onto the levee. However, these access points are not public. River Street is a public right-of-way and could help to provide future access to the shoreline. The City would need to obtain an easement over the levee to provide this type of public access. See ***MAP 7*** – *Public Access*.

Function Analysis

Functions & Limiting Factors

Table 1.6F Reach 6C – Functions & Limiting Factors

Indicators	Pathways	Conditions
Water Quality	Temperature	Properly functioning
	Sediment	Functioning at risk: Glacial origins, forestry and agricultural uses
	Chemical	Properly functioning
Habitat Access	Physical barriers	Properly functioning: No barriers to fish passage
Habitat Elements	Substrate	*Functioning at risk*
	LWD	Not properly functioning: Limited riparian vegetation.
	Pool Frequency	*Not properly functioning*
	Pool Quality	Not properly functioning
	Refugia	Properly functioning: refugia exist where overhanging vegetation occurs.
	Off-Channel Habitat	Functioning at risk: Remnant side channel or wetland.
Channel Conditions and Dynamics	Width/Depth Ratio	*Functioning at risk*
	Streambank Conditions	Properly functioning
	Floodplain Connectivity	Not properly functioning: Levees.
Flow/Hydrology	Peak/Base Flows	Properly functioning
	Drainage Network Increase	Properly functioning
Watershed Conditions	Road Density and Location	*Properly functioning*
	Disturbance History	Functioning at risk
	Riparian Reserves	Not properly functioning: urban or agricultural development encroaching on riparian reserves.

Recommended Environment Designation

The recommended designation for Reach 6C is Urban Conservancy. This designation implies that this area is regulated to protect and restore ecological functions of open space, floodplain and other sensitive lands where they exist in urban and developed settings, while allowing a variety of compatible uses. (WAC 173-26-211(e)(i))

3.0 WETLANDS WITHIN 100-YEAR FLOODPLAIN

3.1 JOHNSON CREEK TRIBUTARY

Johnson Creek is one of the major tributaries to the Sumas River. Johnson Creek passes under E. Main St. (SR 544) through Everson, to the east of Blair Dr. It flows northward along the eastern edge of the golf course.

Critical Areas

Regulated critical areas along Johnson Creek include wetlands and frequently flooded areas.

FEMA/Floodway

Johnson Creek is within the FEMA designated 100-year floodway from its southerly beginning to the northern Everson City limits. This includes a flood hazard are that is subject to inundation by the 1% annual chance flood event (100-year flood or base food). It is also located within a FEMA designated floodway that must be kept free of encroachment so that the 1% annual chance of flood can be carried without substantial increases in flood height (Everson Comprehensive Plan 2004).

Johnson Creek has a large floodplain with high storage potential. Portions of the Johnson Creek drainage contain areas important for both infiltration and storage. Johnson Creek receives runoff from the Nooksack River during events that overtop the river's levees and is an important stormwater storage area for the City of Everson. See ***MAP 3*** – *FEMA Floodway & 100-Year Floodplain.*

Physical Environment

Shoreline Modifications

Johnson Creek has been modified along its entire length to improve stormwater-holding capacity. These modifications have had an impact on the creek's capacity during large flood events. Ditching along the creek is evident in most areas mapped as wetlands (Whatcom County, 2006).

Riparian Function

Water Quality – Department of Ecology Section 303(d)

Johnson Creek has been tested to find impaired levels of fecal coliform and dissolved oxygen. These levels may increase during times of flooding and are caused in part from agricultural practices. (Whatcom County, 2006) Although water quality has reached "impaired" levels, there is still high quality riparian habitat along the banks of Johnson Creek.

Enhancement Opportunities

Conservation Reserve Enhancement Program (CREP) planted trees downstream and to the east of Johnson Creek in 2004. These plantings are located just outside the city limits and are in two disjointed areas on the eastern boundary of the golf course.

Recommended Environment Designation

The recommended environment designation for Johnson Creek is Natural.

3.2 SCOTT DITCH

Scott Ditch is located approximately at the center point of Mead Ave. within the city limits of Everson. It extends directly west along the city limit boundary, through the Everson UGA and into the county. Scott Ditch runs from Everson to its confluence with the river south of Lynden. (Whatcom County, 2006) Scott Ditch has the potential to be used as a public access and trail to the Nooksack River shoreline.

Enhancement Opportunities

WDFW and CREP have completed a number of enhancement projects along Scott Ditch. WDFW completed an instream enhancement project, which included planting a vegetative buffer on either side of Scott Ditch. This project is referred to as the Nolte/Scott Ditch Tributary Riparian Project. CREP planted vegetation in 2003 along a section of the ditch just outside of the Everson UGA.

Recommended Environment Designation

The recommended environment designation for Scott Ditch is Natural.

3.3 EVERSON SLOUGH

Critical Areas

Wetlands

The Everson Slough, also referred to as Wetland N in work prepared by Perry Welch in 2002, extends south from its confluence with the Nooksack on the downstream side of the

SR 544 Bridge, to just south of Robinson St. within the city limits. At the time of visit in March 2006, the Slough contained open waters. This area could potentially be restored to provide habitat for wildlife and fish species. Both sides of the Slough are vegetated with a mix of shrubs and larger deciduous trees. Non-native species, such as blackberry, were also present.

Work prepared by Welch in 2002 identified the Slough, or Wetland N, as a forested wetland with open drainage channels. The drainage channel would ultimately flow into the Nooksack River on the left, west, downstream bank of the SR 544 Bridge. Based on Everson's wetland classification system, this wetland could be considered a Category 2 wetland because it is currently not contiguous with the Nooksack River. However, if Wetland N was reconnected to the Nooksack River, it would be considered a Category 1 Wetland. (Welch, 2002) See ***MAP 3*** *– FEMA Floodway & 100-Year Floodplain.*

Enhancement Opportunities

The Everson Slough could provide opportunity for future enhancement projects. These projects could include the removal of non-native vegetation, instream projects to enhance habitat, and reconnecting the Slough to the Nooksack River.

Recommended Environment Designation

The recommended environment designation for the Everson Slough, or Wetland N, is Natural.