

X. WHATCOM CREEK SMA

Summary: The entire length of Whatcom Creek is located within the City of Bellingham. SMA jurisdiction associated with this creek is approximately 300 acres. Land use is dominated by high density urban residential development, commercial, industrial development and public park. Public access is available via Whatcom Falls Park (Reaches 6 through 9) and numerous walking trails along the majority of the creek length. The entire creek length is considered polluted for dissolved oxygen, temperature and fecal coliform. A TMDL is in place for fecal coliform. Habitat loss is extensive in the lower reaches which are dominated by residential and commercial development (generally below Interstate-5). Good quality habitat exists in portions of the Iowa Street corridor. This corridor also has the greatest potential for preservation and habitat improvement. The area is of particular importance due to the connectivity with existing habitat in the Cemetery Creek watershed. Habitat quality is high in the upper reaches (Whatcom Falls Park).

X.1 Watershed Analysis

X.1.1 Landscape Setting

Whatcom Creek is the only natural surface water outlet of Lake Whatcom. Whatcom Creek is 4.3 miles long with a drainage basin of approximately 5,790 acres. Both Whatcom Creek and Lake Whatcom were created by glaciation. The predominant hydrology source for Whatcom Creek is Lake Whatcom. Other surface water sources include: Hanna, Cemetery, Fever and Lincoln Creeks. A control dam is located at the upper extent of Whatcom Creek. The dam is used for downstream flooding control, utility storage for water quantity, for water quality considerations and to maintain lake levels. The hydroperiod of Lake Whatcom has been reversed and is controlled for recreation and erosion control purposes. Lake levels are maintained at higher levels during the summer and lowered during the winter. This manipulation of water level and discharge affects the hydroperiod of Whatcom Creek.

The upper portion of the creek flows through continental sedimentary rock, resulting in a narrow incised channel with steep slopes and bedrock substrate and outcrops. Soils in this area are Group B hydrologic soils and tend to allow moderate infiltration and have moderate runoff potential. The lower portion of the creek flows through glaciomarine drift in narrow, incised channels that are surrounded by relatively flat terrain. Soils in glacial marine drift material tend to be very impermeable with little to no infiltration. The hydrologic soil group for these soils is Group D (slow filtration). The mouth of Whatcom Creek is dominated by artificial fill and industrial uses.

X.1.2 Land Use

Land Use: Whatcom Creek flows through the heart of the City of Bellingham, flowing into Bellingham Bay in the middle of dense industrial development. Commercial, industrial and residential uses dominate the land use adjacent to or in close proximity of

the creek in the lower portion of Whatcom Creek. Although land use is dense through these reaches, much of the property immediately adjacent to the creek is in public ownership. Often these properties are only several feet or tens of feet wide on one or both sides of the creek. The Iowa Street corridor between Interstate-5 and Whatcom Falls Park is the only remaining length of the creek where there is development potential. The undeveloped properties along this length are zoned industrial or multi-family residential. Current zoning could allow industrial development that would have severe impacts on existing ecology or the potential for ecological improvement. The upper portion of the creek is dominated by public ownership. Whatcom Falls Park is located at the upper extent of the creek and Marine Park is located at the mouth of the creek.

Transportation and Utilities: In conjunction with dense land use development, transportation corridors and utilities have a major impact on the lower portion of Whatcom Creek. Several major arterials and Interstate-5 cross Whatcom Creek in the stream corridor between Whatcom Falls Creek and Bellingham Bay.

Public Access: Due to the acquisition of public property along the entire length of Whatcom Creek, public access via parks and trails is available over a significant portion of the stream length from Lake Whatcom to Bellingham Bay. Maritime Heritage Park and surrounding public land (approximately three acres) offers direct access to the mouth of Whatcom Creek. Whatcom Falls Park offers many recreational opportunities, including creek access and many miles of trails. Walking trails have also been built along the creek in the central business district and just south of Whatcom Falls Park in the Iowa Street industrial area.

Shoreline Modifications: Data is not available regarding in-stream and shoreline modifications, such as bulkheads and rip-rap, along Whatcom Creek. However, with the aid of aerial photographs, general conclusions about modifications within the SMA jurisdiction can be made. Generally speaking, the SMA jurisdiction below Whatcom Falls Park has been densely developed with structures and impervious surfaces to within several feet of the creek, averaging 25-50 feet in most areas except in the Iowa Street corridor where some buffers are greater than 100 feet. In contrast, very few modifications to the creek and its buffer exist in the upper extent of the creek where it flows through Whatcom Falls Park. The major modifications in the upper reaches of the creek are the control two dams in Reaches 8 and 9.

X.1.3 Critical Areas

Wetlands/ Regulated Streams: Significant wetlands still remain in the upper drainage basin, many of which are associated with Whatcom Creek. Several wetlands exist at the headwater of the creek. In addition, forested and shrub wetlands exist in the upland forest in Whatcom Falls Park. A large wetland complex remains at the confluence of Whatcom and Cemetery Creeks. In this area of the city where development is fairly significant, the wetland complex and associated undeveloped uplands provide a good

habitat corridor to the Cemetery Creek drainage despite development barriers such as roads. Four City regulated stream systems flow into Whatcom Creek: Hanna, Cemetery, Fever and Lincoln Creeks.

FEMA: The only area along the length of Whatcom Creek that has a significant FEMA 100 year floodplain associated with the creek beyond the ordinary channel is in Reaches 3, 4 and 5, between Interstate-5 and Whatcom Falls Park.

Slopes: Steep slopes are present in Whatcom Falls Park. The Whatcom County Planning Department has mapped the geographical area around the lower extent of Whatcom Creek, Reaches 2 through 5, as seismic hazard area based upon geologic units.

Potential PHS/TSE Species: Tidal influence at the mouth of Whatcom Creek does provide some estuary type habitat. Documented fish use in Whatcom Creek below Whatcom Fall Park includes: bull trout, and sea-run cutthroat, Chinook, coho, chum, pink, sockeye and steelhead salmon. Chinook salmon and bull trout are listed as Federal threatened species and by the State as species of concern. Sea-run cutthroat and coho salmon are listed as a Federal species of concern and have no State status. Documented fish usage in Whatcom Creek above the natural fish barrier includes: resident cutthroat and kokanee. Pacific lamprey, a Federal species of concern, is also documented in Whatcom Creek.

Wildlife habitat is severely limited in the heavily urbanized areas, generally downstream from Interstate-5. The Iowa Street corridor offers more habitat for wildlife since the area has not yet been fully developed. Creek buffers in this area tend to be wider and more native vegetation is present, including areas with canopy cover.

The best wildlife habitat along the entire length of the creek is in Whatcom Falls Park where large areas of native mature habitat have been preserved. Wildlife usage tends to be more diverse and include non-urban and larger animals. Documented use by species of interest includes: bald eagle, merlin, common loon, pileated woodpecker and possibly pacific Townsend's big-eared bat.

X.1.4 Ecological Functions

Ecological functions of the creek and adjacent buffers have been greatly reduced in the lower reaches of the creek, down stream from Interstate-5. Development has resulted in the loss of habitat and native vegetation in a majority of the buffer. Moderate functions remain in the Iowa Street corridor. Buffer widths are greater and native vegetation still remains in some areas. Additionally, a large wetland complex with high quality native vegetation remains at the confluence with Cemetery Creek in Reach 5. The Whatcom Falls Park area provides high quality creek and buffer functions. Buffer widths are greater than 200 feet in most areas and the vegetation is native and high in quality. However, the creek and buffer in lower Whatcom Falls Park and Iowa Street corridor

were severely burned during a petroleum fire in the creek during an oil spill in 1999. Extensive restoration has taken place in the effected area. The ecology of the area is still recovering.

The entire length of Whatcom Creek has been listed by the Washington Department of Ecology as Category 5 "Polluted Water" for dissolved oxygen, fecal coliform and temperature. A TMDL is in place for fecal coliform.

X.2 Reach Analysis: Segment A (Reach 1)

X.2.1 Landscape Setting

This reach is approximately 12 acres in size. Glaciomarine drift dominates the geology. Soils in glacial marine drift material tend to be very impermeable with little to no infiltration. The hydrologic soil group for these soils is Group D (slow filtration). All of the soils in Reach 1 are susceptible to severe sheet flow and rill erosion. Steep slopes are present to the southeast and northwest of the creek channel. The water in the upper extent of the reach flows through a natural water fall formed in sedimentary rock. Creek substrate data is unavailable for this reach, however, sedimentary rock dominates the upper reach and marine tides influence the substrate in the lower half of the reach.

X.2.2 Land Use

Land Use: Commercial and public zoning dominates this segment. Commercial and light industrial uses and a public park dominate the uses in this reach. Nine buildings are located within the SMA jurisdiction covering approximately 1.5 acres. Maritime Heritage Park is located along the bank of Whatcom Creek and constitutes approximately 1.3 acres.

Transportation and Utilities: Two major arterials cross the creek at the upper and lower extents of the segment, Holly and Dupont Streets.

Public Access:

Shoreline Modifications: Cement bulkheads have been constructed along portions of the creek shoreline. Restrictive in-water structures are associated with the Holly Street crossing. A foot bridge crosses the creek near the water falls. On average, impervious surfaces constitute 45% of the reach, semi-pervious surfaces 27% and pervious surfaces 28%.

X.2.3 Critical Areas

Wetlands/ Regulated Streams: Some estuarine vegetation is present in the tidally flooded area of this reach. There are no associated streams.

FEMA: The mouth of Whatcom Creek is tidally flooded twice a day up to the natural falls at the upper extent of the reach. Besides tidal flooding within the ordinary channel of the creek, no additional FEMA 100 year floodplain is associated with the creek.

Slopes: Steep slopes are present along the south eastern shoreline and buffer. Steep slopes are also present in the north western boundary of the reach along Dupont Street. Whatcom County Planning Department has identified this reach as being a seismic hazard area based on geologic units.

Potential PHS/TSE Species: Documented PHS usage includes: Chinook, coho, bull trout and sea-run cutthroat salmonid. Chinook salmon and bull trout are listed as a Federal threatened species and by the State as a candidate species. Sea-run cutthroat and coho salmon are listed as a Federal species of concern and have no State status. Pacific lamprey, a Federal species of concern, is also documented in Whatcom Creek. Multiple PHS and species of concern use a portion of the reach for breeding, rearing and wintering.

X.2.4 Ecological Functions

Water Quality: The entire length of Whatcom Creek has been listed by the Washington Department of Ecology as Category 5 “Polluted Water” for dissolved oxygen, fecal coliform and temperature. A TMDL is in place for fecal coliform. There are six stormwater discharges in Reach 1 that flow into Whatcom Creek. One known toxic site is documented in SMA jurisdiction. The site is listed as the Holly Street Landfill. Sediment and/or ground water contamination includes: metals, petroleum, aromatic hydrocarbons, EPA priority pollutants, base neutral acid organics.

Vegetation: Built environment (impervious surfaces), mowed grass and native and naturalized non-native shrubs and trees dominate the vegetation and ground cover in this reach. The buffer along the south side of the creek has been maintained as naturalized vegetation. Vegetation enhancement has also occurred in this buffer area. The buffer on the north side of the creek is mainly lawn and concrete, except for the upper most extent of the reach. The overstory is non-existent in the lower half of the reach and sparse in the upper portion. Overall, the naturalized vegetation in the northern portion of the reach is of medium quality.

Wildlife: Documented fish use includes: bull trout, and sea-run cutthroat, Chinook, coho, chum, pink, sockeye and steelhead salmon. Some garter snakes, lizards and native amphibians are present in approximately half the reach. Urban and non-urban birds also use portions of the reach. Animal movement opportunities are poor for the entire segment.

Habitat: The creek buffer in this reach ranges from none to 75 feet. Most of the buffer is developed or only a few feet wide. The buffer along the south side of the creek is of

better quality, ranging between 25 to 75 feet of native or naturalized vegetation. Although some native habitat exists in this reach, the size of the habitat is small and isolated from other habitats by dense urban development. Some effort has been made to enhance the habitat along Whatcom Creek through the central business district. These improvements do allow for more movement along the stream corridor for some animals.

Tidal influence at the mouth of Whatcom Creek does provide some estuary type habitat. Two small mixed algae beds are present in the tidal zone. The tidal zone of the creek is breeding, rearing and wintering habitat for salmonid species. The falls at the upper extent of the reach may present passage problems for some fish species.

X.2.5 Opportunities

Preservation

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Enhancement or Restoration Opportunities

- Public areas within 50 feet of the creek could be enhanced with additional native plants.
- Canopy cover for the creek could be improved greatly by planting coniferous and deciduous trees along the shoreline.
- Aquatic estuarine vegetation enhancement may be possible in the tidal zone.

X.3 Reach Analysis: Segment B (Reaches 2 & 3)

X.3.1 Landscape Setting

This reach is approximately 78 acres in size. Glaciomarine drift dominates the geology. Soils in glacial marine drift material tend to be very impermeable with little to no infiltration. The hydrologic soil group for these soils is Group D (slow filtration). All of the soils in Reach 2 and about half in Reach 3 are susceptible to severe sheet flow and rill erosion. The risk of water erosion for the remainder of the soils in Reach 3 is slight. The creek flows through an incised channel that has moderately steep slopes. Overall topography beyond the creek channel is relatively flat, with slopes of 2-5%. Creek substrate data is unavailable for this reach.

X.3.2 Land Use

Land Use: Commercial and industrial zoning dominates this segment with scattered areas of residential and public use. The segment is densely developed. One hundred two (102) buildings are located within the SMA jurisdiction.

Transportation and Utilities: Several major arterials pass over the creek in this segment, including Interstate-5.

Public Access: Public land use is concentrated along the creek channel. Multiple restoration projects are located along the right and left bank of the creek through Reach 2, many of which include public walking trails.

Shoreline Modifications: Data on the extent of in-water structures and bulkheads is not available. On average, impervious surfaces constitute 70% of the segment, semi-pervious surfaces 25% and pervious surfaces 5%.

X.3.3 Critical Areas

Wetlands/ Regulated Streams: The only wetlands associated with Whatcom Creek in this segment are located up stream of Interstate-5 on the south side of the creek. There are no streams associated with this segment of Whatcom Creek.

FEMA: The only significant FEMA 100 year floodplain associated with the creek is in Reach 3 above Interstate-5. Floodplain extends beyond the SMA jurisdiction east of the interstate. Flooding in this area is attributed to Whatcom and Fever Creeks. Some floodplain exists downstream of the interstate, but these areas are generally small and confined to the incised channel through with the creek flows.

Slopes: The creek flows through an incised channel that has moderately steep slopes. The slopes become less steep and the channel narrower in the upper half of Reach 3. Overall topography beyond the creek channel is relatively flat, with slopes of 2-5%. Whatcom County Planning Department has identified this reach as being a seismic hazard area based on geologic units.

Potential PHS/TSE Species: Documented PHS usage includes: Chinook, coho, bull trout and sea-run cutthroat salmonids. Chinook salmon and bull trout are listed as a Federal threatened species and by the State as a candidate species. Sea-run cutthroat and coho salmon are listed as a Federal species of concern and have no State status. Pacific lamprey, a Federal species of concern, is also documented in Whatcom Creek. Multiple PHS and species of concern use a portion of this segment for breeding, rearing and wintering.

X.3.4 Ecological Functions

Water Quality: The entire length of Whatcom Creek has been listed by the Washington Department of Ecology as Category 5 "Polluted Water" for dissolved oxygen, fecal coliform and temperature. A TMDL is in place for fecal coliform. There are 16 stormwater discharges in Reach 2 and 25 in Reach 3 in SMA jurisdiction.

Vegetation: Built environment (impervious surfaces) dominate this segment. Generally, native and naturalized non-native shrubs and trees dominate the vegetation adjacent to the creek. Non-native invasive species dominate the creek side vegetation in areas along this segment, particularly in the northern portion of Reach 3. Some vegetation

enhancement has occurred in the creek buffer in Reach 2. The overstory is either non-existent or sparse. Overall, the naturalized vegetation in the northern portion of the reach is of medium quality.

Wildlife: Documented fish use includes: bull trout, and sea-run cutthroat, Chinook, coho, chum, pink, sockeye and steelhead salmon. Some garter snakes, lizards and native amphibians are present in approximately 20 percent of the reach. Urban and non-urban birds also use portions of the reach. Animal movement opportunities are poor for the entire segment except for the area east of Interstate-5.

Habitat: Average creek buffer width in this segment is between 25 and 50 feet. The buffer is less than 25 feet in scattered areas throughout the segment. The width of the buffer increases east of Interstate-5 to between 50 to 75 feet. Nearly all of the SMA jurisdiction area outside of the immediate creek buffer is developed with impervious surfaces. Generally, the habitat immediately adjacent to the creek is isolated from other habitats by development. Some effort has been made to enhance the habitat along Whatcom Creek in Reach 2. These improvements do allow for more movement along the stream corridor for some animals.

Fish habitat is degraded by low water quality, and the lack of in-stream structures and consistent canopy cover.

X.3.5 Opportunities

Preservation

- The undeveloped buffer area east of Interstate-5 should be preserved and enhanced.

Enhancement or Restoration Opportunities

- Non-native species should be removed and native shrubs and trees planted in order to restore creek side habitat and canopy, particularly in the undeveloped buffer east of I-5. Enhancing this area would benefit habitat and ecological functions due to connectivity with moderate to high quality habitat up stream at the confluence of Cemetery Creek.
- Where practicable, invasive species control and elimination measures should be implemented along the creek channel. The channel should then be planted with native shrubs and trees in order to restore native creek side canopy.

X.4 Reach Analysis: Segment C (Reaches 4 & 5)

X.4.1 Landscape Setting

This reach is approximately 88 acres in size. Glaciomarine drift dominates the geology. Soils in glacial marine drift material tend to be very impermeable with little to no infiltration. The hydrologic soil group for these soils is Group D (slow filtration). All of

the soils in Reaches 4 and 5 have a slight risk for water erosion. The creek flows through relatively flat topography, slopes of 2-5%, in this segment. Creek substrate data is unavailable for this reach.

X.4.2 Land Use

Land Use: Industrial, residential multi-family, and public zoning dominates this segment. Current land use is dominated by light industrial businesses. Development is denser on the northern side of the creek along Iowa Street. The southern side of the creek is a mix of light industry, residential housing and undeveloped publicly owned property. In general, undeveloped buffers in this segment are considerably wider than the buffers down stream. The public property has not been developed into park but a walking trail has been constructed along the north side of the creek through Reach 5. Thirty-nine (39) buildings are located within the SMA jurisdiction.

Transportation and Utilities: One collector road and one major arterial pass over the creek in northern most extent of Reach 5.

Public Access:

Shoreline Modifications: Data on the extent of in-water structures and bulkheads is not available. Ground surfaces in Reach 4 are approximately 50% impervious, 41% semi-pervious and 9% pervious. Ground surfaces in Reach 5 are 23% impervious, 25% semi-pervious and 51% pervious. Pervious surfaces are considerably higher in Reach 5 due to undeveloped public land and a wetland complex associated with Cemetery Creek.

X.4.3 Critical Areas

Wetlands/ Regulated Streams: Stream side wetlands were identified by the 1992 City inventory along the southern bank of the creek in Reach 4 between Interstate-5 and the confluence of Lincoln Creek. Stream side wetlands were also identified on both sides of the creek between Lincoln Creek and Racine Street. A large wetland complex is located in the southern portion of Reach 5 and is associated with the Cemetery Creek system. Three creeks enter Whatcom Creek in this segment: Lincoln and Fever Creeks at the lower end of Reach 4 and Cemetery Creek at the lower extent of Reach 5. These creeks are not SMA jurisdictional waters but are regulated by the City.

FEMA: The entire SMA jurisdiction of Reach 4 is located within a FEMA 100 year floodplain. Flooding in this area is attributed to Whatcom and Fever Creeks. FEMA 100 year floodplain is also associated with Cemetery Creek in the vicinity of Whatcom Creek. This area coincides with wetlands associated with Cemetery Creek. The only other floodplain is a small area located at the upper most extent of Reach 5.

Slopes: There are no steep slopes in this segment. Whatcom County Planning Department has identified this reach as being a seismic hazard area based on geologic units.

Potential PHS/TSE Species: Documented PHS usage includes: Chinook, coho, bull trout and sea-run cutthroat salmonids. Chinook salmon and bull trout are listed as a Federal threatened species and by the State as a candidate species. Sea-run cutthroat and coho salmon are listed as a Federal species of concern and have no State status. Pacific lamprey, a Federal species of concern, is also documented in Whatcom Creek. Fifty to seventy-five percent of the segment is used by multiple PHS and species of concern breeding, rearing and wintering.

X.4.4 Ecological Functions

Water Quality: The entire length of Whatcom Creek has been listed by the Washington Department of Ecology as Category 5 “Polluted Water” for dissolved oxygen, fecal coliform and temperature. A TMDL is in place for fecal coliform. There are five stormwater discharges in Reach 4 and four in Reach 5 that flow into Whatcom Creek. Several more stormwater discharges are present in Reach 5 south of the creek.

Vegetation: Large portions of this segment remain undeveloped. While industrial businesses and housing is a dominant use, large areas along Whatcom and Cemetery Creeks are vegetated with native and naturalized non-native plant communities, as well as undeveloped areas that have been disturbed and are therefore dominated by invasive species. Approximately 70% of the segment is predominantly native vegetation of high quality, with some mature forest and emerging young trees. The majority of the higher quality vegetation occurs in Reach 5. Non-native naturalized and invasive species are dominant in areas along the creek that have been disturbed, particularly in the southern extent of Reach 4 and northern extent of Reach 5. Canopy cover along the creek is sparse over the length of the entire segment. The creek and adjacent vegetation in this segment was burned during the pipeline fire of 1999.

Wildlife: Documented fish use includes: bull trout, and sea-run cutthroat, Chinook, coho, chum, pink, sockeye and steelhead salmon. Some garter snakes, lizards and native amphibians are present in approximately 70% of the segment. Urban and non-urban mammals are present, and a variety of predominantly non-urban birds and native only amphibians use approximately 70% of the segment. Due to larger areas of undeveloped property and better habitat connectivity between this property and the creek, movement is possible for medium to large sized animals.

Habitat: Creek buffer widths increase substantially from those down stream. Buffer widths range from 25 to 200 feet. Buffer widths are generally wider overall, greater than 50 feet. In addition to wider habitat buffers along the creek in this segment, the habitat is connected to both wetland and upland habitats of good quality, particularly in the

Cemetery Creek drainage. Connectivity to habitat in Whatcom Falls Park is available for some animals. Movement through this area is limited by the quality of the vegetation, size of the buffer and human development, including a major arterial.

Fish habitat is degraded by low water quality and lack of consistent canopy cover. All three streams that flow into Whatcom Creek in this segment support fish usage.

X.4.5 Opportunities

Preservation

- Existing undeveloped buffer width should be protected and enhanced with native vegetation.
- Undeveloped upland and wetland habitat associated with Cemetery Creek should be protected, including wetlands throughout the Cemetery Creek watershed.

Enhancement or Restoration Opportunities

- The publicly owned property south of the creek in Reach 4 should be restored to a native riparian forested vegetation community.
- Creek canopy cover in both reaches is negligible. Enhancement of the canopy by planting coniferous and deciduous species should be encouraged. Increased canopy with diversify habitat and increase water quality by moderating creek temperature.

X.5 Reach Analysis: Segment D (Reaches 6, 7, 8, 9)

X.5.1 Landscape Setting

This reach is approximately 123 acres in size. This segment of Whatcom Creek flows through continental sedimentary rock, resulting in a narrow incised channel with steep slopes and bedrock substrate and outcrops. Soils in this area are Group B hydrologic soils and tend to allow moderate infiltration and have moderate runoff potential. The soils in Reaches 6, 7 and 8 have moderate to slight risk for water erosion. Approximately half the soils in Reach 9 are susceptible to severe sheet flow and rill erosion; the remaining soils are a slight risk for water erosion. Slopes in this segment are moderate to steep in Reaches 6, 7 and 8, ranging from 20 to 100 percent. Slopes are relatively flat in Reach 9 (2-5%). Creek substrate data is unavailable for the majority of the reach, except for a sampling point taken just down stream from the falls in Reach 6. The reported substrate content was: 14% fine gravel, 18% coarse gravel, 53% cobble and 16% boulder.

X.5.2 Land Use

Land Use: Public zoning dominates this segment. Whatcom Falls Park and other publicly held property dominates the segment. Residential development and zoning fringe the park and SMA jurisdiction throughout the segment, but is more prevalent in

the upper reaches. Four buildings are located in Reaches 6 and 7, 21 in Reach 8 and 15 in Reach 9.

Transportation and Utilities: Park roads and Electric Avenue are located in SMA jurisdiction in the northern part of the segment where residential and urban development abuts park property.

Public Access:

Shoreline Modifications: Data on the extent of in-water structures and bulkheads is not available, except for the two control dams that are located at the southern extent of Reaches 8 and 9. Internal park roads are located in the southern portion of the segment. Ground surfaces in Reaches 6, 7 and 8 average 5% impervious, 32% semi-pervious and 63% pervious. Ground surfaces in Reach 9 are 17% impervious, 38% semi-pervious and 46% pervious. Pervious surfaces are higher in Reach 9 due to residential development.

X.5.3 Critical Areas

Wetlands/ Regulated Streams: Significant wetlands still remain in this segment, many of which are associated with Whatcom Creek. Several wetlands exist at the headwater of the creek. In addition, forested and shrub wetlands exist in the upland forest throughout Whatcom Falls Park. One creek enters Whatcom Creek in this segment: Hanna Creek. The creek is not a SMA jurisdictional water but is regulated by the City.

FEMA: Flooding is limited in this segment due to the nature of the geology. The creek flows through a channel cut through sedimentary rock. The floodplain is limited to the width of the channel and its natural confinement between steep slopes. The flood area is predictable and does not pose an immediate hazard due to the use of this region as a public park. In addition, flooding is controlled through this area with two dams.

Slopes: Steep slopes are present throughout Reaches 6, 7 and 8, and in the southern most channel of the creek in Reach 9 – just before the dam.

Potential PHS/TSE Species: Documented PHS usage includes: Chinook, coho, bull trout and sea-run cutthroat salmonids down stream of the natural fish blockage in Reach 6. Chinook salmon and bull trout are listed as a Federal threatened species and by the State as a candidate species. Sea-run cutthroat and coho salmon are listed as a Federal species of concern and have no State status. Pacific lamprey, a Federal species of concern, is also documented in Whatcom Creek. Approximately 90% the segment is used by multiple PHS and species of concern breeding, rearing and wintering.

X.5.4 Ecological Functions

Water Quality: The entire length of Whatcom Creek has been listed by the Washington Department of Ecology as Category 5 “Polluted Water” for dissolved oxygen, fecal

coliform and temperature. A TMDL is in place for fecal coliform. One known toxic site is documented just outside of SMA jurisdiction. The site is listed as Olympic Pipeline located at 3201 Arbor Court. The site is listed for petroleum products.

Vegetation: Large portions of this segment remain undeveloped primarily due to public ownership and designation as public park. The majority of the segment is vegetated with native coniferous and deciduous forest. Some portions of the park are maintained as mowed grass. Some portions of Reaches 8 and 9 are developed with residential structures and landscaping/lawn, but these areas are generally on the fringe of the SMA and do not dominate the reach. The creek and adjacent vegetation in Reaches 6 and 7 was burned during the pipeline fire of 1999. Some affected areas have been replanted with native plant species. Creek canopy cover in these areas has been greatly reduced.

Reaches 6, 7 and 8 are predominately mature native mixed forest communities with a mature overstory. Habitat is diverse and multi-structured and of high quality. Reach 9 is a mix of vegetation communities: mixed coniferous/deciduous forest, shrub wetland, emergent wetland, open water and residential landscaping. Some mature canopy exists in this reach. Non-native invasive species are also present and are concentrated in the ponded area of the reach. Known species include: Eurasian water milfoil, yellow flag iris, knotweed, reed canary grass, hairy willow-herb, bittersweet nightshade and traveler's joy.

Wildlife: Documented fish use in Reach 6 includes: sea-run and resident cutthroat, Chinook, chum, pink and steelhead salmon. Reach 6 also has a presumed potential or historic usage by bull trout and coho. Resident cutthroat is present throughout the segment and kokanee is present in Reaches 8 and 9. Many of the species introduced to Lake Whatcom may also be present in Reach 9, including: rainbow trout, lake trout, large and small mouth bass, yellow perch, brown bullhead and pumpkinseed. Documented use of the shoreline by specific priority habitat species was not found. However, bald eagles have used the black cottonwood trees in Reach 9 for nesting. For 100% of Reaches 6 and 7, and 80% of Reaches 8 and 9 there is an abundance of garter snakes and lizards with denning habitat; a variety of native amphibians; a variety of non-urban mammals and birds including habitat specific species. Due to larger areas of undeveloped property and good habitat connectivity within the segment, movement is possible for all animals and amphibians.

Habitat: Buffer widths in this segment are 200 feet or greater in the majority of the segment. Some exceptions to this are in Whatcom Falls Park (park facilities and utility roads) and in Reaches 8 and 9 in residential areas. The majority of the buffer is native mature forest and of very high quality. A relatively large wetland/upland complex with medium to high quality native vegetation dominates Reach 9. The wetland is directly associated with the lake and has good connectivity with upland habitat. In addition, many shrub and forested wetlands exist throughout Whatcom Falls Park, both directly

associated with Whatcom Creek and in the forested uplands. Connectivity between these wetlands and other habitat types is high. Overall, the size and quality of the native habitat in this segment is very high, making this area very valuable.

Hanna Creek flows into Whatcom Creek in lower portion of this segment. There is no documented fish usage for this creek. A natural fish barrier exists in Reach 6 (falls). Two dams are also located in Reaches 8 and 9.

X.5.5 Opportunities

Preservation

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Enhancement or Restoration Opportunities

- Where practicable, invasive species control and elimination measures should be implemented. Shoreline upland vegetation could be diversified by planting native coniferous species. Diversification would increase habitat and canopy cover.