Snohomish County 2013 NPDES Structural Stormwater Control Program

Phase I Permit Requirement S5.C.6. Structural Stormwater Controls

i. Each Permittee shall implement a Structural Stormwater Control program designed to control stormwater impacts that are not adequately controlled by other required actions of the Stormwater Management Program (SWMP). Permittees shall provide a list of planned individual projects that are scheduled for implementation during the term of this permit and describe how the selected projects comply with All Known, Available and Reasonable methods of prevention, control and Treatment (AKART) and Maximum Extent Practicable (MEP) requirements. Updates and revisions to the list will be provided in the annual report and will address any concerns identified by Ecology during its review of the Structural Stormwater Control program.

The Structural Stormwater Control program may also include a program designed to implement small scale projects that are not planned in advance.

County Stormwater Management Program

The County's Stormwater Management Program, or SWMP, follows the requirements and guidelines of the Phase I NPDES Permit, and includes the following elements:

1. Legal Authority
2. Municipal Separate Storm Sewer System Mapping and Documentation
3. Coordination
4. Public Involvement and Participation
5. New Development / Redevelopment / Construction Site Runoff Control
6. Structural Stormwater Control Program
7. Stormwater Pollution Source Control Program
8. Illicit Connections and Illicit Discharges Detection and Elimination
9. Operation and Maintenance of Stormwater Facilities, Roads, and Properties
10. Education and Outreach Program

Along with the above elements, the County is required to implement the water quality monitoring, outreach, and other measures for the TMDLs in the North Creek, Swamp Creek, Lower Snohomish Basin, and soon, the Stillaguamish River. The TMDLs are summarized in Table 1 below:

Table 1: Snohomish County TMDL Water Bodies Noted in Phase I NPDES Permit

Water Body	TMDL Parameter	Watershed
North Creek	Fecal Coliform	Cedar-Sammamish
Swamp Creek	Fecal Coliform	Cedar-Sammamish
Lower Snohomish River Tributaries	Fecal Coliform	Snohomish River

Briefly, the SWMP provides for a broad range of activities that are largely of a programmatic nature:

- Element 1 deals with the legal framework for administering the SWMP.
- Element 2 maps out the MS4.
- Element 3 is oriented toward inter- and intra-agency relationships and coordination on the SWMP.
- Elements 4 and 10 concern working with the community for public involvement and participation (element 4) and education and outreach (element 10).
- Element 5 concerns regulatory functions and tools to effect stormwater pollution control in development and redevelopment, including construction pollution prevention.
- Element 7 uses non-structural controls initially, then structural controls if needed, for source control of pollution.
- Element 8 involves field screening and source tracing, investigation, then enforcement and corrective action if needed, to stop illicit discharges and remove illicit connections.
- Element 9 uses inspection, operations and maintenance procedures to ensure proper function of county stormwater control facilities, roads and properties to control stormwater pollution.

Appendix 2 of the Phase I NPDES permit has TMDL program requirements that address North and Swamp Creeks, and the tributaries of the Snohomish River. These water bodies have impaired water quality due to fecal coliform. The program requirements include monitoring, public education and outreach, water pollution control activities, and use of structural methods to prevent additional stormwater bacterial pollution.

Additionally, Snohomish County is required by its Phase I NPDES permit to have a water quality monitoring program.

The remaining element of the SWMP, Element 6, requires a structural stormwater control program to address water quality problems from MS4 discharges that other parts of the SWMP do not address. The following are types of stormwater impacts that are not specifically addressed by the NPDES Phase I municipal permit, and are targeted by the structural stormwater control program.

Stormwater Impacts not Addressed by Other Required SWMP Elements

1. The Phase I permit requires the SWMP to address water bodies with TMDLs. However, there are numerous 303(d) listed water bodies, meaning they have impaired

water quality, that do not have TMDLs in Snohomish County, and hence have no protective measures established yet through the NPDES permit. Figure 1 shows the 2008 303(d) listed water bodies in Snohomish County (Category 5 in the water quality assessment classification system). The complete list of 2008 303(d) water bodies is given in Appendix A. A 303(d) list for 2012 is given in an Addendum to Appendix A; the list is current for marine waters, but provisional for freshwater.

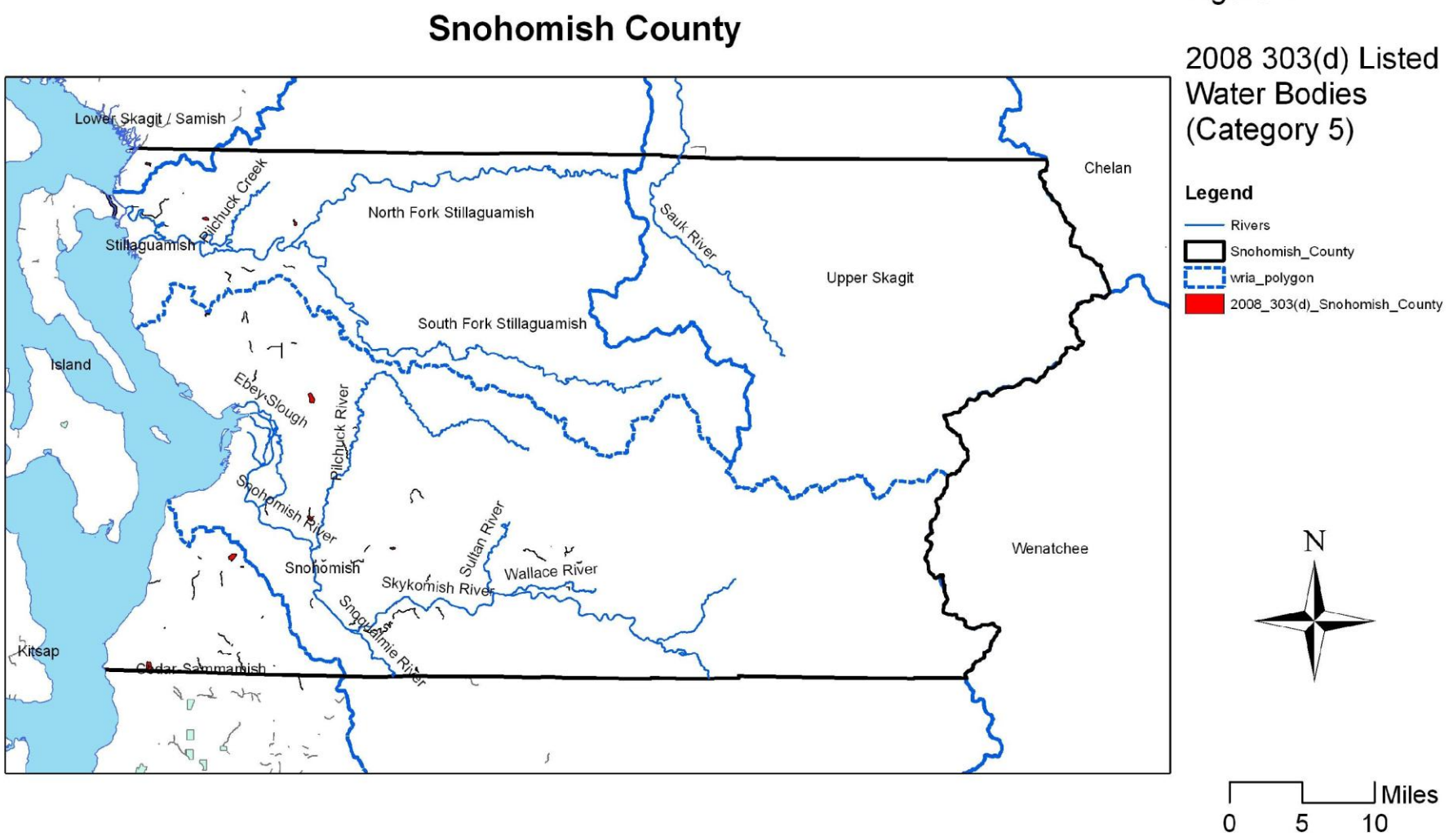
Some of the water bodies that have been historically 303(d) listed, have had recent TMDL activity, but the TMDLs have not been formally adopted yet. Table 2 below lists the water bodies with TMDL activity, and pollutants (parameters) of concern.

Table 2: Snohomish County Water Bodies with TMDL Activity (Not Noted in Phase I NPDES Permit)

Water Body	TMDL Parameter	Watershed
Stillaguamish River	Temperature, Fecal Coliform, Dissolved Oxygen, pH, Mercury, Arsenic	Stillaguamish River
Ballinger Lake	Total Phosphorus	Cedar-Sammamish
Little Bear Creek	Fecal Coliform	Cedar-Sammamish
Bear-Evans Watershed	Bacteria, Temperature, Dissolved Oxygen	Cedar-Sammamish
Snoqualmie River	Temperature	Snohomish River

Figure 1

2008 303(d) Listed Water Bodies (Category 5)



2. The Phase I permit does not require the SWMP to address retrofit of stormwater facilities that were designed to past standards, which may have had reduced or no water quality treatment requirements. This includes stormwater detention ponds and outfalls of existing drainage systems.

3. The Phase I permit does not require the SWMP to address protection for streams that serve as natural drainage ways, but are vulnerable to thermal pollution due to lack of tree cover, riparian erosion from high flows of stormwater runoff, damage from livestock activity, or other cause.

4. The Phase I permit does not address stormwater management needs for river basins subject to instream flow rules. All basins in Snohomish County are subject to instream flow rules.

Structural Stormwater Control Program

The Structural Stormwater Control Program addresses stormwater impacts that are not adequately controlled by other required actions of the SWMP. The program includes a list of projects that will be periodically updated and a program designed to identify additional potential future projects. Prioritization process, procedures and criteria used to select the structural stormwater control projects are described below.

Goals of the Structural Stormwater Control Program

The Stormwater Structural Control Program is intended to address stormwater impacts that are not addressed by other elements of the SWMP program, as previously described. Specifically, the goals are to provide structural stormwater controls in the following areas:

1. Stormwater treatment or other best management practices (BMPs) in the watersheds of the 303(d) listed water bodies in Snohomish County that are not addressed by other BMPs in the SWMP.

2. Retrofit of existing stormwater facilities to improve water quality treatment and/or flow control.

3. Improved stream riparian buffers that would otherwise be vulnerable to the effects of runoff from development or modified land, whether directly through the riparian area, or from collected stormwater runoff in the stream, such as lack of tree or vegetative cover which would moderate or mitigate thermal pollution due to lack of cover, reduced wetland areas that could provide biofiltration treatment of instream runoff, riparian erosion from high flows of stormwater runoff, damage from livestock activity due to access, or other cause.

4. Low impact development and infiltration BMPs to promote groundwater recharge and stream flow.

5. Improved stormwater treatment in urbanized and urbanizing areas of the County.

Allowable BMPs

Pursuant to the Phase I permit, the Structural Stormwater Control program "shall consider impacts caused by stormwater discharges from areas of existing development, including runoff from highways, streets and roads owned or operated by the Permittee, and areas of new development, where impacts are anticipated as development proceeds." (Phase I permit, S5.C.6)

Also, "the program shall consider the construction of projects such as: regional flow control facilities; water quality treatment facilities; facilities to trap and collect contaminated particulates; retrofitting of existing stormwater facilities; and rights-of-way, or other property acquisition to provide additional water quality and flow control benefits. Permittees should also consider other means to address impacts, such as reduction or prevention of hydrologic changes through the use of on-site (infiltration and dispersion) stormwater management BMPs and site design techniques, riparian habitat acquisition, or restoration of forest cover and riparian buffers, for compliance with this requirement. Permittees may not use in-stream culvert replacement or channel restoration projects for compliance with this requirement." (Phase I permit, S5.C.6)

Structural Stormwater Control Program Priorities

The Structural Stormwater Control Program extends to the entire county: all major basins in Snohomish County have 303(d) listed waters and instream flow rules. Given the limitations on county resources, however, at least the following will be considered in evaluating project priority:

- Location in areas of existing development or new development, including land modified for agriculture or other use.
- Concentration of potential pollutant sources, indicating higher potential return for investment in water quality improvements.
- Leveraging existing project to install or increase structural control measures, so that water quality treatment can be bundled at incremental cost, taking advantage of economy of scale, and making a more cost-effective capital project. This would include County stormwater facilities needing repair or other work that might otherwise be too small to be labeled as an individual "project".
- Logistical feasibility, including secured funding, land development/access rights, permits, etc. to provide the structural control improvement(s).

Structural Stormwater Control Program

The Structural Stormwater Control Program combines activities and projects from several Surface Water Management (SWM) work areas, including new capital stormwater improvements, structural retrofits to existing stormwater systems, riparian buffer work, riparian buffer acquisition, or other. Because of the varied nature of these activities and projects, each will have specific attributes and profiles for the nature of work being done, the environmental and water quality benefits being achieved, and the method of public involvement being used.

The County anticipates spending approximately $250,000 on an average annual basis for the structural stormwater control program. This represents an increase from the $90,000 historical baseline amount that was used in the earlier NPDES Phase I permit term, as the estimated cost for the required two elements: detention facility retrofits and other water quality improvements. Depending on availability, grants and other funding sources will be used as allowable to leverage SWM funding.

In any given year, the Structural Stormwater Control Program will consist of a combination of a variety of specific project types. The project type will vary from year to year, as the County continues to evaluate water quality problems, coordinate priorities with the public, and identify capital projects to address those problems. As stated earlier, the county is committing to approximately $250,000 on an average annual basis for this Program. The amounts may vary from year to year depending on such factors as funding opportunity, permitting, and weather constraints. Table 3 provides a list of projects for the Structural Stormwater Control Program that have been completed since 2008, that are currently underway, and that are potentially planned through 2013. More detailed information on project options and types is provided in Appendix B. The list in Table 3 will be evaluated and updated each year as projects are completed and new projects are added.

The projects are considered to comply with MEP (maximum extent practicable) and AKART (all known, available and reasonable methods of prevention, control and treatment) requirements for their respective project development processes and as a whole because: (1) they reflect what Snohomish County is best able to implement within its available funding and demands for surface water projects; and (2) they address stormwater impacts not adequately controlled by other permit-required actions, which basically complies with permit condition S5.C.6. By complying with this condition together with all other applicable permit requirements, compliance with MEP and AKART is said to be achieved as set forth in Snohomish County's NPDES Municipal Stormwater Permit condition S4.E.

Specific Project Selection Process

The project selection process for specific projects in the Structural Stormwater Control Program will vary by project type, funding, watershed, water quality benefit, and public participation opportunity. Projects may take several years to plan, fund and develop due to permitting, funding, and coordination needs. The use of a $250,000 floor for project size is to ensure that sufficient size and complexity are involved to accommodate the requirements of part S5.C.6 of the Phase I NPDES permit, regarding the Structural Stormwater Control Program. Under the Phase I NPDES reissued permit effective September 1, 2012, current and future projects are to meet the requirements for use of AKART within the framework of the benefit area and water quality goals, and achievement of the MEP for water quality benefit within the budgetary framework.

Projects are initially conceptualized and planned by the Surface Water Management Division, and eventually are subject to County Council budget review, public hearing, and decision. Projects with grant funding or multi-government participation may have separate Council review for interlocal agreements.

Projects in the Stillaguamish Clean Water District may also be reviewed by an advisory board that includes citizens and agency representatives, and is staffed by Snohomish County. Projects in the Stillaguamish Clean Water District may also be reviewed by a technical committee that includes agency representatives, and is staffed and led by Snohomish County. Past surface water

projects in the Stillaguamish Clean Water District have included riparian restoration, tree planting, and flood fencing.

Projects in the South County and Snohomish Watershed Management Areas have more varied participation processes than in the Stillaguamish Clean Water District. Long term planning and development processes characterized several detention pond retrofit projects in the Lake Stevens area, and included extensive community outreach and participation.

The Water Quality Facilities Program began in the South County Watershed Management Area in 2008, and has continued into 2013. Initial selection of the first pilot area and program targets was established by the Surface Water Management Division as the North Creek watershed and region in the north Bothell vicinity. A Water Quality Facilities Plan was completed for that area (Silver Creek Water Quality Facilities Plan), and project implementation has begun. The Water Quality Facilities Program is starting to bring in areas with other land use types in the South County watershed and the Stillaguamish watershed. The projects being developed out of the Water Quality Facilities Program are shaped and guided by an extensive citizen participation program in the early stages of the program in the target watershed, and consider a range of retrofit types and sites, as well as water quality needs and benefits for the target watershed. This approach maximizes within the pilot area the objectives of AKART and MEP in the final project selection. More discussion of the Water Quality Facilities Program is given below and in Appendix B.

Public Involvement for Structural Stormwater Control Program

This document, which represents the master Structural Stormwater Control Program, was posted on the County's NPDES website for public review and comment on February 15, 2008. The public comment period concluded after 30 days on March 17, 2008. No comments were received during this initial review. The Structural Stormwater Control Program will be periodically updated and posted to the County's NPDES website for public review and comment, and revised as needed. The Stormwater Management Program and the Annual Report both must be submitted annually by March 31, to the Department of Ecology.

The individual projects and project types/options that comprise the Structural Stormwater Control Program, as noted above, may also have project or program-specific public involvement, which may include some or all of the following:

- Neighborhood notification of potential project
- Neighborhood meetings to gain feedback on priority areas or project types
- Coordination with neighborhood or other groups on specific project construction

In addition, Snohomish County goes through an extensive public input process for its yearly Annual Construction Program (ACP) and 6-year Capital Improvement Program (CIP) development and approval. This process includes updating and having formal public meetings for the County Planning Commission and, afterwards, the County Council, who has the responsibility of approving the yearly budget. Projects in this Program will be part of the public process because they will be included in the County's ACP and 6-year CIP.

Table 3: Projects in Snohomish County Structural Stormwater Control Program
Revised 2/7/13
Updated to reflect (A) Projects Completed, (B) Projects Underway (2013), and (C) Potential Projects (2014 or beyond)

A. Projects Completed

2008 - Lake Stevens/Crestline Estates Detention Retrofit

Location: Lake Stevens area, in the Snohomish River watershed

Brief Description: Stormwater pond retrofit. Estimated cost: $258,000 (including matching grant)

Water quality benefits: Improved solids settling and maintenance, elimination of hydraulic short-circuiting through the pond, improved biological uptake with wetland plant installation.

2009 - Water Quality Facilities Program, planning and project selection phase

Location: North Creek watershed, in the South County Watershed Management Area

Brief Description: Comprehensive watershed program to plan, design, and implement a range of stormwater best management practices for the target watershed, which may include LID, water quality inlets, source controls, detention pond retrofits, and improved maintenance. Initial planning and program development costs for the North Creek watershed pilot effort was budgeted at $149,000.

Water quality benefits: removal of certain pollutants, such as TSS, nutrients and total suspended solids, water quantity improvement (flow control).

2009 - Retrofit Project

Location: 4th Avenue W. Detention Pond Retrofit.

Brief Description: Stormwater pond retrofit. Estimated cost: $110,975

Water quality benefits: Improved solids settling and maintenance, improved biological uptake with wetland plant installation.

2010 –Retrofit Projects

Locations:

12305 46th Dr. SE Det. Pond Retrofit-Design and construction cost $155,000 (rounded)

4610 148th St. SW Det. Pond Retrofit- Design and construction cost $42,000 (rounded)

Brief Description: Two pond retrofit projects.

Water quality benefits: Detention pond retrofits, will allow performance improvements for removal of certain pollutants (nutrients, total suspended solids).

2010 – Water Quality Facilities Program – Silver Creek Water Quality Facilities Plan implementation (continuation of 2009 Water Quality Facilities Program project in the North Creek watershed).

WQFP Location: Silver Creek sub-watershed in the North Creek watershed, between the cities of Mill Creek and Bothell.

Brief Description: Development of 22 options for 12 possible projects for the Silver Creek area. Project development costs for 2010 were roughly $91,000.

Proposed projects include:

- Rain gardens
- Rain garden terraces
- Soil amendments

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- Vegetated strips
- Pervious pavement
- Reduced pavement
- Vegetated swales
- Roadside ditch amendments

Project Implementation Location: North Creek watershed, Mays Pond area, in the South County Watershed Management Area

Brief Description: Implementation of two LID pavement reduction rain garden projects (6A and7A) in the Mays Pond area from the Silver Lake WQFP, to reduce pollution from county roads, developed in the 2009 planning and selection phase, in coordination with local residents. $125,000 total cost (rounded).

Water quality benefits: removal of certain pollutants, such as TSS, nutrients and total suspended solids, polyaromatic hydrocarbons, and heavy metals; water quantity improvement (flow control).

2011 – Water Quality Facilities Program –

Location: Pilot Sub-watershed in Stillaguamish River basin
This pilot sub-watershed is in the Stillaguamish watershed area. Preliminary coordination has occurred with the Stillaguamish Clean Water District Advisory Board. The specific subbasin and project location s will be selected in 2012.

Brief Description: Initial stages of a water quality planning effort to plan, design, and implement a range of stormwater best management practices for the target watershed, which may include LID, water quality inlets, source controls, detention pond retrofits, and improved maintenance. Initial planning and program development costs for the pilot effort for 2011 were roughly $68,000 (WA8615 and WA8594) and an additional $137,000 (WC118C and WC118Q) is budgeted for planning and project implementation in 2012.

Water quality benefits: removal of certain pollutants, such as TSS, nutrients and total suspended solids, polyaromatic hydrocarbons, and heavy metals; water quantity improvement (flow control).

Location: South County Silver Creek watershed.

Brief Description: Additional project development and implementation. Program development costs for 2011 were $54,000 (WA8594), including $20,000 for consultant services in program development. An additional $172,000 (WA8605) is budgeted for 2012 for implementation.

Water quality benefits: removal of certain pollutants, such as, nutrients and total suspended solids, polyaromatic hydrocarbons, and heavy metals , and water quantity improvement (flow control).

2011 Retrofit Projects

Locations:

Rain garden projects at 23rd Ave(2 sites, 12 A and 12 B) – Budgeted cost $115,000 (rounded) – Project received a grant for 75% of cost, net County cost of about $29,000

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(rounded) (WQFP implementation)

4216 174th PL NW Rain garden-Budgeted cost $50,000 (rounded). Project received a grant for 75% of cost, net County cost of about $13,000 (rounded)

158th Pl. SW, detention facility bioswale retrofit. Project cost $125,000 (rounded)

Brief Description: Individual improvement projects which retrofit various drainage system components for water quality improvement. Rain gardens provide low impact development technology. The two rain gardens on 23rd Avenue are projected to capture from about 84% to 99% of mean annual runoff, with resulting reduction in runoff pollution. The bioswale retrofit addresses a bioswale that had been filled in, and restores basic treatment of pollutants from the discharge from the detention facility upstream of the bioswale, The rain garden on 174th PL NW is projected to capture about 94% of mean annual runoff, with resulting reduction in runoff pollution. For the two infiltration swales included with the 174th PL NW project, bioretention soil mix will treat offsite runoff flowing into the swales, and grass in the swales will filter overland flows.

Water quality benefits: Low impact development improvements will reduce runoff and improve runoff water quality, The bioswale and infiltration swale retrofits will improve removal of suspended solids and treatment for other pollutants. The bioswale and infiltration swale retrofits also will provide some water quantity improvement (flow control).

2012 -Water Quality Facilities Program

Location: Stillaguamish Pilot Sub-watershed

The Portage Creek subbasin was preliminarily identified for potential water quality facilities retrofit. One potential site was identified, which was where a drainage project was being done as a separate county project. The Water Quality Facilities Plan Process was able to work with this drainage project to make changes to incorporate infiltration into the design, which would help with water quality. Further review indicated instead of another physical project, a programmatic approach would be appropriate as a Water Quality Facilities Plan effort, to improve practices for ditch maintenance in road rights of way, in order to reduce erosion and improve storm water treatment. Discussion has been initiated with the County Road Maintenance division.

Water quality benefit: The main benefit of road maintenance changes would be to reduce erosion and prevent sediment from county ditches and road margins from being carried into streams. Adding infiltration to the separate Portage Creek subbasin project would help with removal of certain pollutants, such as nutrients and total suspended solids, polyaromatic hydrocarbons, and heavy metals, and water quantity benefit (flow control).

Location: Second South County Pilot Sub-watershed – Commercial Area

Early reconnaissance began on a suitable commercial site for BMP retrofit.

Water quality benefit: removal of certain pollutants, such as nutrients and total suspended solids, polyaromatic hydrocarbons, and heavy metals , and water quantity benefit (flow control).

2012 – Retrofit Projects

Locations:

LID at Brook Blvd. (Rain garden) Site 7C (WA8612)- $95k (Water Quality Facilities Plan

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implementation) – Completed except for plantings (planting in early 2013). The project received 75% grant funding, and the net County cost was 25% or about $24,000 (rounded).

LID at Brook Blvd. (Rain garden) Site 2E (WA8613)- $110k (Water Quality Facilities Plan implementation) – Completed except for plantings (planting in early 2013). The project received 75% grant funding, and the net County cost was 25% or about $28,000 (rounded).

Eastside View Det. Pond Retrofit- (conveyance work done in 2012, pond retrofit scheduled in 2013, total $135k for completed project in 2013)

58th DR SE Slope Drain (WA8811)- $105K

Cemetery Rd. Slope Drain (WA8808)-$115K

Brief Description: Individual improvement projects which include retrofits to various drainage system components for water quality improvement (pipe slope drains, water quality inlets/catch basins, detention pond improvements, low impact development technology).

Water quality benefits: Water quality facility improvements (e.g., water quality inlets, detention pond retrofit, etc.) will allow performance improvements for removal of certain pollutants (nutrients, total suspended solids). Benefits from drainage improvements such as slope drains improvements will prevent erosion of hillsides and removal of earth, and the water quality benefit may be typically estimated in terms of linear feet protected or other descriptive measure. Low impact development improvements will reduce runoff and improve runoff water quality.

B. Projects Underway (2013)

2013-Water Quality Facilities Program

Location: Second South County Pilot Sub-watershed – Commercial Area

Sub-watershed selection and planning, design and implementation of the sub-watershed plan. Estimated budget of $103,000 (WC 8620) (rounded)

Water quality benefit: removal of certain pollutants, such as nutrients and total suspended solids, polyaromatic hydrocarbons, and heavy metals , and water quantity benefit (flow control).

2013 – Retrofit Projects

Locations:

Silver Creek basin rain garden projects, Site 2A ($62,500) and Site 10 ($62,500) Eastside View Det. Pond Retrofit- (conveyance work done in 2012, pond retrofit scheduled in 2013, total $125k for completed projects in 2013). These are both grant funded at 75%, with the total net County cost at about $31,000 (rounded).

Hampton Court III Water quality (storm filter installation) (WA8614)-$75K

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Brief Description: Individual improvement projects which include retrofits to various drainage system components for water quality improvement (pipe slope drains, water quality inlets/catch basins, detention pond improvements, low impact development technology).

Water quality benefits: Water quality facility improvements (e.g., water quality inlets, detention pond retrofit, etc.) will allow performance improvements for removal of certain pollutants (nutrients, total suspended solids). Benefits from drainage improvements such as slope drains improvements will prevent erosion of hillsides and removal of earth, and the water quality benefit may be typically estimated in terms of linear feet protected or other descriptive measure. Low impact development improvements will reduce runoff and improve runoff water quality.

C. Potential Projects (2014 or beyond). Approximately $250,000 per year**,** funds may be augmented with grants when available. The following are tentative, and may be revised pending transition to the 2013-2018 NPDES MS4 permit requirements for the Structural Stormwater Control Program.

Water Quality Facilities Plan – Commercial Area

- **2014 design and construct project**

Detention facility retrofits: approximately $150,000 annually

Potential Project Locations: Urban growth areas in Snohomish, Cedar/Sammamish, or Stillaguamish watersheds.

Brief Description: Individual improvement projects which may include retrofits to various drainage system components for water quality improvement, such as pipe slope drains, water quality inlets/catch basins, detention pond improvements, swale improvements, etc.

Water quality benefits: Water quality facility improvements (e.g., water quality inlets, detention pond retrofit, etc.) will allow performance improvements for removal of certain pollutants (nutrients, total suspended solids). Benefits from drainage improvements such as slope drains improvements will prevent erosion of hillsides and removal of earth, and the water quality benefit may be typically estimated in terms of linear feet protected or other descriptive measure.

Water Quality Facilities (other locations)

Low Impact Development projects

Approximately $100,000 annually

Location: County-wide

Water quality benefits: Low impact development improvements will reduce runoff and improve runoff water quality,

Riparian planting/restoration

Location: County-wide

Brief description: Riparian restoration work using native plants

Water quality benefits: Water quality benefits come from erosion protection from runoff and stream flow, improved biological treatment of runoff, and improved evapotranspiration of rainfall (reducing runoff volume). Native plants also provide an aesthetic and ecological benefit from restoring indigenous species to an area. Improvements are typically noted in terms of numbers of

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plants, linear feet of riparian zone, or acres of riparian buffer.

APPENDIX A: 2008 303(d) LISTED WATER BODIES IN SNOHOMISH COUNTY WRIAS (CURRENT ONLY FOR FRESHWATER, FOR MARINE LISTINGS, SEE ADDENDUM TO APPENDIX A)

2008 303(d) Listed Waterbodies in Snohomish County

LLID_NR	WTRBD_DS	CAT_DS	PARM_DS	MED_DS	LISTING_ID
1221390481029	ALLEN CREEK	5	Dissolved Oxygen	Water	7260
1221661480390	ALLEN CREEK	5	pH	Water	7392
1221661480390	ALLEN CREEK	5	Dissolved Oxygen	Water	47499
1221661480390	ALLEN CREEK	5	Dissolved Oxygen	Water	7261
1221228482268	ARMSTRONG LAKE	5	Total Phosphorus	Water	22587
1223274477809	BALLINGER LAKE	5	PCB	Tissue	52646
1223274477809	BALLINGER LAKE	5	Dieldrin	Tissue	52014
1223274477809	BALLINGER LAKE	5	2,3,7,8-TCDD	Tissue	51543
1217225478679	BEAR CREEK	5	Temperature	Water	35165
1217225478679	BEAR CREEK	5	Temperature	Water	35163
1217137478985	BEAVER CREEK	5	Temperature	Water	35166
1220901478489	BEECHER LAKE	5	Total Phosphorus	Water	22463
1220928479323	BLACKMANS LAKE	5	Fecal Coliform	Water	6312
1220941480523	CASSIDY LAKE	5	Total Phosphorus	Water	22465
1220455480080	CATHERINE CREEK	5	Temperature	Water	7395
1219697479040	CHAIN LAKE	5	Total Phosphorus	Water	22612
1222452481950	COOK SLOUGH	5	Fecal Coliform	Water	9777
1222066477960	CRYSTAL CREEK	5	Dissolved Oxygen	Water	47990
1220869477535	DANIELS CREEK	5	Temperature	Water	48588
1222079480442	EBEY SLOUGH	5	Fecal Coliform	Water	9798
1222088478060	FILBERT CREEK	5	Dissolved Oxygen	Water	47992
1222301481839	FISH CREEK	5	Dissolved Oxygen	Water	47537
1220872478883	FRENCH CREEK	5	Temperature	Water	10640
1220872478883	FRENCH CREEK	5	pH	Water	7282
1220872478883	FRENCH CREEK	5	Dissolved Oxygen	Water	7276
1220872478883	FRENCH CREEK	5	Temperature	Water	9273
1220872478883	FRENCH CREEK	5	Dissolved Oxygen	Water	7272
1220872478883	FRENCH CREEK	5	pH	Water	40748
1220872478883	FRENCH CREEK	5	Dissolved Oxygen	Water	40743
1220872478883	FRENCH CREEK	5	pH	Water	7273
1221438477856	HOWELL CREEK	5	Dissolved Oxygen	Water	47969
1221438477856	HOWELL CREEK	5	Mercury	Water	45386
1223683482401	IRVINE SLOUGH	5	Fecal Coliform	Water	43042
1223515482351	JORGENSON SLOUGH (CHURCH CREEK)	5	Dissolved Oxygen	Water	47598
1223515482351	JORGENSON SLOUGH (CHURCH CREEK)	5	Dissolved Oxygen	Water	7238
1223515482351	JORGENSON SLOUGH (CHURCH CREEK)	5	pH	Water	50866
1223515482351	JORGENSON SLOUGH (CHURCH CREEK)	5	Dissolved Oxygen	Water	40903
1223515482351	JORGENSON SLOUGH (CHURCH CREEK)	5	Dissolved	Water	7240

			Oxygen		
1219317477837	KAYAK LAKE	5	Total Phosphorus	Water	40964
1223439482823	KETCHUM LAKE	5	Total Phosphorus	Water	6343
1219098478459	KISSEE CREEK	5	Dissolved Oxygen	Water	47421
1219098478459	KISSEE CREEK	5	pH	Water	50735
1221675477549	LITTLE BEAR CREEK	5	Dissolved Oxygen	Water	40786
1220358479889	LITTLE PILCHUCK CREEK	5	pH	Water	40817
1222514481342	LOMA LAKE	5	Total Phosphorus	Water	6350
1223192482232	MILLER CREEK	5	Dissolved Oxygen	Water	9250
1223313478654	NORMA CREEK	5	Fecal Coliform	Water	7450
1222081478017	NORTH CREEK	5	Dissolved Oxygen	Water	47991
1221873477562	NORTH CREEK	5	Dissolved Oxygen	Water	7455
1221873477562	NORTH CREEK	5	Dissolved Oxygen	Water	7457
1223515482361	OLD STILLAGUAMISH CHANNEL	5	Temperature	Water	15560
1223515482361	OLD STILLAGUAMISH CHANNEL	5	Temperature	Water	15559
1216972478925	OLNEY CREEK	5	Temperature	Water	35169
1217124478723	OLNEY CREEK	5	Temperature	Water	35296
1217121479027	PEKOLA CREEK	5	Temperature	Water	35297
1220899479044	PILCHUCK RIVER	5	Temperature	Water	7295
1220899479044	PILCHUCK RIVER	5	pH	Water	7294
	PORT GARDNER AND INNER EVERETT HARBOR	5	Sediment Bioassay	Sediment	504390
1222452481960	PORTAGE CREEK	5	Turbidity	Water	8639
1222452481960	PORTAGE CREEK	5	Turbidity	Water	8638
1222137480420	QUILCEDA CREEK	5	Dissolved Oxygen	Water	7302
1221923481342	QUILCEDA CREEK, W.F.	5	Dissolved Oxygen	Water	47983
1221749480850	QUILCEDA CREEK, W.F.	5	Dissolved Oxygen	Water	47502
1220116478251	RILEY SLOUGH	5	pH	Water	50753
1220116478251	RILEY SLOUGH	5	pH	Water	50752
1220116478251	RILEY SLOUGH	5	pH	Water	50751
1220116478251	RILEY SLOUGH	5	pH	Water	50750
1220116478251	RILEY SLOUGH	5	pH	Water	50749
1221927478831	RUGGS LAKE	5	Total Phosphorus	Water	22474
1223060478205	SCRIBER LAKE	5	Total Phosphorus	Water	6368
1222076478926	SILVER LAKE	5	PCB	Tissue	52693
1220450478302	SKYKOMISH RIVER	5	Dissolved Oxygen	Water	9296
1220450478302	SKYKOMISH RIVER	5	Temperature	Water	6569
1222080480202	SNOHOMISH RIVER	5	Fecal Coliform	Water	3756
1222080480202	SNOHOMISH RIVER	5	2,3,7,8-TCDD	Tissue	51584
1222080480202	SNOHOMISH RIVER	5	Fecal Coliform	Water	7406
1222080480202	SNOHOMISH RIVER	5	Fecal Coliform	Water	16696
1222080480202	SNOHOMISH RIVER	5	PCB	Tissue	52699
1220450478301	SNOQUALMIE RIVER	5	Temperature	Water	6570

1219452479496	SORGENFREI CREEK	5	Dissolved Oxygen	Water	47423
1223515482361	STILLAGUAMISH RIVER	5	Dissolved Oxygen	Water	47605
1223515482361	STILLAGUAMISH RIVER	5	Dissolved Oxygen	Water	47603
1223515482361	STILLAGUAMISH RIVER	5	Dissolved Oxygen	Water	14559
1223515482361	STILLAGUAMISH RIVER	5	Dissolved Oxygen	Water	14556
1221262482038	STILLAGUAMISH RIVER, N.F.	5	Turbidity	Water	15912
1221262482048	STILLAGUAMISH RIVER, S.F.	5	Dissolved Oxygen	Water	10582
1222564482293	SUNDAY LAKE	5	Total Nitrogen	Water	40865
1222564482293	SUNDAY LAKE	5	Total Phosphorus	Water	8637
1222404477542	SWAMP CREEK	5	pH	Water	51293
1222404477542	SWAMP CREEK	5	Dissolved Oxygen	Water	40892
1222404477542	SWAMP CREEK	5	Dissolved Oxygen	Water	40747
1222404477542	SWAMP CREEK	5	Dissolved Oxygen	Water	7462
1221592479467	SWAN TRAIL SLOUGH	5	Ammonia-N	Water	9298
1220936479104	SWIFTY (FERGUSON) CREEK	5	Dissolved Oxygen	Water	17494
1220936479104	SWIFTY (FERGUSON) CREEK	5	Temperature	Water	17495
1221950477907	UNNAMED CREEK (TRIB TO NORTH CREEK)	5	Dissolved Oxygen	Water	47988
1220248480200	UNNAMED CREEK (TRIB TO PILCHUCK RIVER)	5	Dissolved Oxygen	Water	47441
1221626480995	UNNAMED CREEK (TRIB TO QUILCEDA CREEK)	5	Dissolved Oxygen	Water	47492
1221988481271	UNNAMED CREEK (TRIB TO QUILCEDA CREEK, W.F.)	5	Dissolved Oxygen	Water	47512
1220200478332	UNNAMED CREEK (TRIB TO SKYKOMISH RIVER)	5	Dissolved Oxygen	Water	47439
1220200478332	UNNAMED CREEK (TRIB TO SKYKOMISH RIVER)	5	pH	Water	50754
1222533478906	UNNAMED CREEK (TRIB TO SWAMP CREEK)	5	Dissolved Oxygen	Water	48005
1217191478679	WALLACE RIVER	5	Temperature	Water	7435
1219192478714	WOODS CREEK, W.F.	5	Dissolved Oxygen	Water	14726
	PUGET SOUND (CENTRAL)	5	Fecal Coliform	Water	42489
	PUGET SOUND (N-CENTRAL) AND USELESS BAY	5	Fecal Coliform	Water	42488
	PUGET SOUND (N-CENTRAL) AND USELESS BAY	5	Fecal Coliform	Water	42487
	POSSESSION SOUND (NORTH)	5	Dissolved Oxygen	Water	10155
	POSSESSION SOUND (NORTH)	5	Dissolved Oxygen	Water	48964
	POSSESSION SOUND (NORTH)	5	Dissolved Oxygen	Water	48965
	PORT SUSAN	5	Dissolved Oxygen	Water	48967
	PORT SUSAN	5	Dissolved Oxygen	Water	10123
	SKAGIT BAY AND SIMILK BAY	5	Fecal Coliform	Water	53165
	SKAGIT BAY AND SIMILK BAY	5	Fecal Coliform	Water	53166

	SKAGIT BAY AND SIMILK BAY	5	Fecal Coliform	Water	53197
	SKAGIT BAY AND SIMILK BAY	5	Fecal Coliform	Water	53200

ADDENDUM TO APPENDIX A: 2012 303(d) LISTINGS FOR SNOHOMISH COUNTY

(CURRENT FOR MARINE WATERS, PROVISIONAL FOR FRESHWATER)

Listing ID	Waterbody	Medium	Parameter	2012 Category
3756	SNOHOMISH RIVER	Water	Bacteria	5
6312	BLACKMANS LAKE	Water	Bacteria	5
6343	KETCHUM LAKE	Water	Total Phosphorus	5
6350	LOMA LAKE	Water	Total Phosphorus	5
6368	SCRIBER LAKE	Water	Total Phosphorus	5
6569	SKYKOMISH RIVER	Water	Temperature	5
7238	JORGENSON SLOUGH (CHURCH CREEK)	Water	Dissolved Oxygen	5
7240	JORGENSON SLOUGH (CHURCH CREEK)	Water	Dissolved Oxygen	5
7260	ALLEN CREEK	Water	Dissolved Oxygen	5
7261	ALLEN CREEK	Water	Dissolved Oxygen	5
7272	FRENCH CREEK	Water	Dissolved Oxygen	5
7273	FRENCH CREEK	Water	pH	5
7276	FRENCH CREEK	Water	Dissolved Oxygen	5
7282	FRENCH CREEK	Water	pH	5
7294	PILCHUCK RIVER	Water	pH	5
7295	PILCHUCK RIVER	Water	Temperature	5
7302	QUILCEDA CREEK	Water	Dissolved Oxygen	5
7392	ALLEN CREEK	Water	pH	5
7395	CATHERINE CREEK	Water	Temperature	5
7406	SNOHOMISH RIVER	Water	Bacteria	5
7435	WALLACE RIVER	Water	Temperature	5
7450	NORMA CREEK	Water	Bacteria	5
7455	NORTH CREEK	Water	Dissolved Oxygen	5
7457	NORTH CREEK	Water	Dissolved Oxygen	5
7462	SWAMP CREEK	Water	Dissolved Oxygen	5
8637	SUNDAY LAKE	Water	Total Phosphorus	5
8638	PORTAGE CREEK	Water	Turbidity	5
8639	PORTAGE CREEK	Water	Turbidity	5
9250	MILLER CREEK	Water	Dissolved Oxygen	5
9273	FRENCH CREEK	Water	Temperature	5
9296	SKYKOMISH RIVER	Water	Dissolved Oxygen	5
9298	SWAN TRAIL SLOUGH	Water	Ammonia-N	5
9777	COOK SLOUGH	Water	Bacteria	5
9798	EBEY SLOUGH	Water	Bacteria	5
9839	POSSESSION SOUND (NORTH)	Water	Bacteria	5
10123	PORT SUSAN	Water	Dissolved Oxygen	5
10155	POSSESSION SOUND (NORTH)	Water	Dissolved Oxygen	5
10582	STILLAGUAMISH RIVER, S.F.	Water	Dissolved Oxygen	5
10640	FRENCH CREEK	Water	Temperature	5
14556	OLD STILLAGUAMISH CHANNEL	Water	Dissolved Oxygen	5
14559	OLD STILLAGUAMISH CHANNEL	Water	Dissolved Oxygen	5
14726	WOODS CREEK, W.F.	Water	Dissolved Oxygen	5
15559	OLD STILLAGUAMISH CHANNEL	Water	Temperature	5
15560	OLD STILLAGUAMISH CHANNEL	Water	Temperature	5
15912	STILLAGUAMISH RIVER, N.F.	Water	Turbidity	5
16696	SNOHOMISH RIVER	Water	Bacteria	5
17494	SWIFTY (FERGUSON) CREEK	Water	Dissolved Oxygen	5

17495	SWIFTY (FERGUSON) CREEK	Water	Temperature	5
22463	BEECHER LAKE	Water	Total Phosphorus	5
22465	CASSIDY LAKE	Water	Total Phosphorus	5
22474	RUGGS LAKE	Water	Total Phosphorus	5
22587	ARMSTRONG LAKE	Water	Total Phosphorus	5
22612	CHAIN LAKE	Water	Total Phosphorus	5
35163	BEAR CREEK	Water	Temperature	5
35165	BEAR CREEK	Water	Temperature	5
35166	BEAVER CREEK	Water	Temperature	5
35169	UNNAMED CREEK (TRIB TO OLNEY CREEK)	Water	Temperature	5
35296	OLNEY CREEK	Water	Temperature	5
35297	PEKOLA CREEK	Water	Temperature	5
40743	FRENCH CREEK	Water	Dissolved Oxygen	5
40747	SWAMP CREEK	Water	Dissolved Oxygen	5
40748	FRENCH CREEK	Water	pH	5
40786	LITTLE BEAR CREEK	Water	Dissolved Oxygen	5
40817	LITTLE PILCHUCK CREEK	Water	pH	5
40865	SUNDAY LAKE	Water	Total Nitrogen	5
40892	SWAMP CREEK	Water	Dissolved Oxygen	5
40903	JORGENSON SLOUGH (CHURCH CREEK)	Water	Dissolved Oxygen	5
40964	KAYAK LAKE	Water	Total Phosphorus	5
42487	PUGET SOUND (NORTH-CENTRAL)	Water	Bacteria	5
42488	PUGET SOUND (NORTH-CENTRAL)	Water	Bacteria	5
43042	IRVINE SLOUGH	Water	Bacteria	5
45386	HOWELL CREEK	Water	Mercury	5
47421	KISSEE CREEK	Water	Dissolved Oxygen	5
47423	SORGENFREI CREEK	Water	Dissolved Oxygen	5
47439	UNNAMED CREEK (TRIB TO SKYKOMISH RIVER)	Water	Dissolved Oxygen	5
47441	UNNAMED CREEK (TRIB TO PILCHUCK RIVER)	Water	Dissolved Oxygen	5
47492	UNNAMED CREEK (TRIB TO QUILCEDA CREEK)	Water	Dissolved Oxygen	5
47499	ALLEN CREEK	Water	Dissolved Oxygen	5
47502	QUILCEDA CREEK, W.F.	Water	Dissolved Oxygen	5
47512	INDIAN CREEK	Water	Dissolved Oxygen	5
47537	FISH CREEK	Water	Dissolved Oxygen	5
47598	JORGENSON SLOUGH (CHURCH CREEK)	Water	Dissolved Oxygen	5
47603	OLD STILLAGUAMISH CHANNEL	Water	Dissolved Oxygen	5
47605	STILLAGUAMISH RIVER	Water	Dissolved Oxygen	5
47969	HOWELL CREEK	Water	Dissolved Oxygen	5
47983	QUILCEDA CREEK, W.F.	Water	Dissolved Oxygen	5
47988	UNNAMED CREEK (TRIB TO NORTH CREEK)	Water	Dissolved Oxygen	5
47990	CRYSTAL CREEK	Water	Dissolved Oxygen	5
47991	NORTH CREEK	Water	Dissolved Oxygen	5
47992	FILBERT CREEK	Water	Dissolved Oxygen	5
48005	UNNAMED CREEK (TRIB TO SWAMP CREEK)	Water	Dissolved Oxygen	5

50735	KISSEE CREEK	Water	pH	5
50749	RILEY SLOUGH	Water	pH	5
50750	RILEY SLOUGH	Water	pH	5
50751	RILEY SLOUGH	Water	pH	5
50752	RILEY SLOUGH	Water	pH	5
50753	RILEY SLOUGH	Water	pH	5
50754	UNNAMED CREEK (TRIB TO SKYKOMISH RIVER)	Water	pH	5
50866	JORGENSON SLOUGH (CHURCH CREEK)	Water	pH	5
51293	SWAMP CREEK	Water	pH	5
51543	BALLINGER LAKE	Tissue	2,3,7,8-TCDD	5
51584	SNOHOMISH RIVER	Tissue	2,3,7,8-TCDD	5
52014	BALLINGER LAKE	Tissue	Dieldrin	5
52646	BALLINGER LAKE	Tissue	PCB	5
52693	SILVER LAKE	Tissue	PCB	5
52699	SNOHOMISH RIVER	Tissue	PCB	5
60259	POSSESSION SOUND (NORTH)	Water	Bacteria	5
63188	PUGET SOUND (NORTH-CENTRAL)	Tissue	Benz[a]anthracene	5
63189	PUGET SOUND (NORTH-CENTRAL)	Tissue	Benzo[a]pyrene	5
63190	PUGET SOUND (NORTH-CENTRAL)	Tissue	Benzo[b]fluoranthene	5
63191	PUGET SOUND (NORTH-CENTRAL)	Tissue	Benzo[k]fluoranthene	5
63192	PUGET SOUND (NORTH-CENTRAL)	Tissue	Chrysene	5
63207	PUGET SOUND (NORTH-CENTRAL)	Tissue	PCB	5
63240	POSSESSION SOUND (NORTH)	Tissue	Benz[a]anthracene	5
63241	POSSESSION SOUND (NORTH)	Tissue	Benzo[a]pyrene	5
63242	POSSESSION SOUND (NORTH)	Tissue	Benzo[b]fluoranthene	5
63243	POSSESSION SOUND (NORTH)	Tissue	Benzo[k]fluoranthene	5
63244	POSSESSION SOUND (NORTH)	Tissue	Chrysene	5
63259	POSSESSION SOUND (NORTH)	Tissue	PCB	5
63266	POSSESSION SOUND (NORTH)	Tissue	Benz[a]anthracene	5
63268	POSSESSION SOUND (NORTH)	Tissue	Benzo[b]fluoranthene	5
63269	POSSESSION SOUND (NORTH)	Tissue	Benzo[k]fluoranthene	5
63270	POSSESSION SOUND (NORTH)	Tissue	Chrysene	5
63321	POSSESSION SOUND (NORTH)	Tissue	Chrysene	5
63344	PORT SUSAN	Tissue	Chrysene	5
63778	POSSESSION SOUND (NORTH)	Tissue	PCB	5
64441	POSSESSION SOUND (NORTH)	Tissue	2,3,7,8-TCDD	5
64445	SNOHOMISH RIVER	Tissue	2,3,7,8-TCDD	5
64447	POSSESSION SOUND (NORTH)	Tissue	2,3,7,8-TCDD	5
66370	PORT SUSAN	Water	Dissolved Oxygen	5
66373	POSSESSION SOUND (NORTH)	Water	Dissolved Oxygen	5

APPENDIX B: POTENTIAL CATEGORIES OF STRUCTURAL STORMWATER CONTROL PROJECTS

Potential Categories of Structural Stormwater Control Projects: Approximately $250,000 per year, funds may be augmented with grants when available.

Drainage facility retrofits

- Program synopsis

  SWM has an annual construction program (ACP) and a 5-year capital improvement program (CIP) for drainage improvements. Projects in the 5-year CIP will be evaluated periodically for water quality retrofit opportunities as stand alone projects, or that can be added to drainage improvement projects. Projects tend to be located in urban growth areas, and derive information from the Drainage Needs Report (DNR), Drainage Rehabilitation and Implementation (DRI) program, and other sources.

  Water quality related projects in recent years have included swale improvements, pipe slope drains, and detention pond retrofits. Future projects may include similar or other improvements, such as water quality catch basins, vaults, low impact development BMPs, or other.

  Water quality facility improvements (e.g., water quality inlets, detention pond retrofit, etc.) will allow performance improvements for removal of certain pollutants (nutrients, total suspended solids). Benefits from drainage improvements such as slope drains improvements will prevent erosion of hillsides and removal of earth, and the water quality benefit may be typically estimated in terms of linear feet protected or other descriptive measure.

  This program may eventually merge with the Water Quality Facilities Management Plan (described below) for more comprehensive and integrated capital program development for water quality facilities.

  Public involvement with individual projects will vary. The Lake Stevens projects, which included the Crestline Estates detention pond retrofit, had extensive public involvement, as described previously, including meetings, hearings, agency coordination, homeowner association communications, etc. This arose from the development of the Lake Stevens Urban Growth Area Plan and the Lake Stevens Master Drainage Plan in 2000 and 2001, respectively. Water quality related improvements have included detention pond retrofits, bioswale improvements, and other improvements.

  The Eastmont area program, completed the first two phases of projects in 2007, and will go into phase 3 in 2008. In Eastmont, public involvement has been in the form of massive mail outs to the community to identify drainage problems, discussions with property owners, and correspondence, in a direct, interactive form of public involvement.

Water Quality Facilities

- Project synopsis

  In order to protect and improve water resources, SWM is planning to develop a Water Quality Facilities program for different areas of the County. The program is intended to evaluate existing water quality conditions at the neighborhood scale and recommend specific capital projects and maintenance actions for implementation to help address these problems and improve water quality. The program will evaluate both traditional and innovative programs to manage existing surface water facilities. The program will

also be proactive in planning the development and construction of facilities that emphasize LID designs, taking advantage of natural processes wherever possible to minimize disruptions to the natural hydrologic system. Water quality facility improvements (e.g., water quality inlets, detention pond retrofit, etc.) will allow performance improvements for removal of certain pollutants (nutrients, total suspended solids).

The short term goal of the pilot program will be to measurably improve water quality in the watershed by recommending a combination of capital projects and maintenance actions. Potential projects that will likely be considered include retrofitting existing facilities and outfalls, enhancing ditches, and implementing source control BMPs in their contributing areas. Potential maintenance activities may include use of high efficiency vacuum-sweepers for roads. The long-term goal of the pilot program will be to serve as a template that can be applied to watersheds throughout the county.

The intended highlights include:

- Develop timelines, budgets, staffing requirements and identify funding sources
- Develop a pilot watershed selection process
- Develop a public process to engage all stakeholders in the development of the plan
- Inventory and map all facilities, including their contributory areas
- Develop an assessment protocol and prioritize facilities
- Create a project list based on priorities
- Identify, assess, and prioritize all sources of pollution entering facilities for source reduction strategies
- Develop public involvement and outreach plans
- Develop a project list and implementation schedule
- Develop an early action component based on citizen input and existing data on current facility failures or problems

Riparian planting/restoration

- Program synopsis

  SWM is active in riparian area restoration. One component of its riparian restoration activities is the Native Plant Program. Utilizing community volunteers and with the support of a Washington Conservation Corps crew, the Native Plant Program installs approximately 40,000 plants per year in riparian (streamside) zones throughout Snohomish County. Native Plants improve air quality, prevent flooding and erosion, improve water quality, create fish habitat, and play a crucial role in stream ecology. Measurements are typically noted in terms of numbers of plants, linear feet of riparian zone, or acres of riparian buffer. Restoration work has ranged from several hundred square feet of planting area to several acres at a time, with plants ranging from wetland plants, to grasses, to shrubs and bushes, to conifers and deciduous trees. The program has a strong community outreach component, training volunteers in riparian restoration, and providing community participation opportunities. The Native Plant Program has an ongoing program for monitoring all installation projects.

  Along with the ongoing Native Plant Program, SWM from time to time conducts specific riparian area restoration projects. Typical work has included such projects as:

- Sister of Friar project, completed in 2007 and improving a ¼ mile reach of Sister of Friar Creek (Snohomish River watershed)
- West Fork Wood Creek (under project development), to improve 625 linear feet of West Fork Wood Creek and 365 linear feet of a tributary, total of 1.3 acres. (Snohomish River watershed)
- Mosher Creek, improving in-stream, streamside, and wetland habitat along 600 feet of the creek.
- South Fork Big Trees project, which started in 2007, and is located along the south fork of the Stillaguamish River between Arlington and Granite Falls (4.6 stream miles). (Stillaguamish River watershed)

Public involvement on some of the larger projects, such as the South Fork Big Trees project, may include review and coordination with the local boards, committees and agencies. In the case of the South Fork, there was review and coordination with the Stillaguamish River Clean Water District Advisory Board (consisting of community, commercial, public agency, and tribal representatives), the Stillaguamish Implementation Review Committee (consisting of public agency and tribal representatives), and other groups.

Monitoring may vary depending on project size and needs. For example, in the South Fork Big Trees project, riparian vegetation and stream conditions will be monitored for a four year period.