

## City of Shoreline Master Plan and Comprehensive Plan Update

### Summary of Open House Public Comments Surface Water and Critical Areas

On September 24 and 25, 2003, two open houses were held in the City of Shoreline to gather public input on the issues to be addressed in the City's update of the comprehensive plan and preparation of transportation, surface water, and parks/recreation/open space master plans. The following is a summary of public comments received at those open houses on surface water and critical areas.

#### Thornton Creek:

- Stop further development of Thornton Creek.
- Day-light the Thornton Creek drainage.
- Protect Thornton Creek. The *Thornton Creek Basin Characterization Report* does not indicate the full extent of wetlands existing from NE 155<sup>th</sup> south along the edge of I-5. The report misidentifies the watercourse draining into the north end of Twin Ponds as a natural watercourse and does not identify the natural watercourse that extends from behind the church at NE 155<sup>th</sup> south along the base of I-5 to Peverton Pond [Pevery Pond], which is described as an artificial watercourse.
- Remove the concrete bed in Thornton Creek along I-5.

#### Stream Protection:

- Compromise on buffers, if the resource is adequately protected.
- Day-light streams.
- Add more than minimal buffers. Buffers should be sufficient to prevent damage to the resource.
- Do not use streams as ditches.

#### Tree Protection:

- Protect trees.
- Advocate for tree retention by providing education and technical assistance to the public.
- Consider using trees for stabilization on steep slopes.
- Add more trees.
- It takes 100 years to grow one tree. They clean the air.
- Protect healthy trees by preventing cuts.
- Retain tree to help with surface water problems. Trees take up a lot of water!

#### Educational Programs:

- Adopt and enforce a regulation to prevent motor oil and paint from entering storm drains. This starts with education.
- Promote natural yard care.
- Restrict chemical and fertilizer use on lawns, and commercial yard spraying in residential neighborhoods.



- Implement an aggressive public education program to promote environmentally sound lawn and garden care. Work with the neighborhood groups in putting together informational sessions at their regular meetings.

#### Critical Area Protection:

- Enforce the City's critical area ordinances.
- Do not place picnic tables in critical areas, such as Twin Ponds.
- Increase native plant populations in wetlands to reduce erosion and water temperatures, and to increase habitat values.
- Keep the native habitat that is close to streams.
- Renew the storm drainage signs.
- Complete an environmental assessment of Shoreline – and protect its resources. The City is attacking the environment (i.e. Aegis, Thornton Creek, and stalled inventory of environmental resources).
- Remove off leash areas to protect the natural environment.
- Maintain 100-foot setbacks in critical areas.
- Improve water quality at Echo Lake, which has a high phosphorous content. Residents along the lake are very concerned about the water quality. They notice oil sheens after rain.
- Monitor closely the new development at the south end of Echo Lake to avoid environmental impacts.

#### Flooding Concerns:

- Address flooding that occurs along NE 11<sup>th</sup> and NE 175<sup>th</sup>.
- Proceed with original plan to open up the creek, as Ronald Bog endures flooding.
- Address flooding that occurs in the 1700 block, specifically NE 177<sup>th</sup>. There is a lake on the south side of street, and a runoff stream on the north side.
- Address flooding that occurs at NE 11<sup>th</sup> and NE 175<sup>th</sup>. Pump excess water because the dip on 10<sup>th</sup> fills up rapidly with heavy rain and floods the surrounding area. Present construction plans do not provide an adequate outlet for pond water.

#### Drainage Concerns:

- Implement a storm drainage project for 15<sup>th</sup>, between 10<sup>th</sup> NE and 12<sup>th</sup> NE. Only include sidewalks, if trees remain and no front yards are reduced along 175<sup>th</sup>.
- Implement a basin plan for Hamlin Creek in coordination with Seattle. High flows result in flooding and erosion, and prevent re-naturalization of the creek in a ditch along 20<sup>th</sup>.
- Remove invasive plant species in favor of native plants to slow flows.
- Add complexity and storage.
- Do more detention on Hamlin Creek in Fircrest.
- Take Hamlin Creek out of the pipe.
- Address sidewalks in front of new in-fill that disrupts, diverts, and creates water flow problems (see 163<sup>rd</sup> and Linden). One, lot-long gutter, does not make an improvement.
- Address problem with water in crawl spaces on the west side of Corliss between 185<sup>th</sup> and 190<sup>th</sup>.

- Address drainage concern along Meridian Avenue at Ronald Bog.
- Address land sinking at Corliss between 175<sup>th</sup> and 178<sup>th</sup>.
- Address drainage problems associated with large, grass play areas. They can stay boggy for long periods.
- Address drainage concern at Ronald Bog Park.
- Bring to landowner's attention trees that pose a hazard to drainage pipes.
- Address water problem that occurs at 32<sup>nd</sup> Avenue NE between 145<sup>th</sup> and 149<sup>th</sup> Avenue NE. The duplexes and apartments being built on 32<sup>nd</sup> are contributors.
- Increase water filtration of streams that feed Twin Ponds to decrease pollution. The green belts surrounding unearthed streams slow water down and provide a better filtration system.

Runoff Concerns:

- Address runoff from Linden to 184<sup>th</sup>. The area southeast of the fire station floods in heavy rain.
- Address sediment and oil runoff from the Shoreline Park and Ride that feeds directly into Echo Lake causing pollution. Work trucks hose down at the park and ride and the water goes directly into the drain.

# Appendix B.

## Background Information on Regulatory Issues

### ***B.1 Introduction***

This appendix includes a detailed review of the existing city, state, and federal policies, regulations, and ordinances relevant to surface water management in the City of Shoreline.

### ***B.2 Relevant City Policies, Ordinances, and Regulations***

This section provides an overview of the City of Shoreline's policies, ordinances, and regulations relevant to stormwater management. The City's regulations are set forth in the Shoreline Municipal Code (SMC), which includes several chapters related to environmental requirements. The City's Comprehensive Plan is also summarized.

#### **B.2.1 Shoreline Municipal Code**

##### ***B.2.1.1 Chapter 13.10 SMC — Surface Water Management Code***

This chapter adopts Title 9, Surface Water Management, of the King County Code (KCC) by reference as the interim surface water management code, with amendments, in accordance with the Revised Code of Washington (RCW) 35.21.180, 35A.11.020, and 35A.21.160. This chapter also adopts all administrative rules and enforcement remedies that exist regarding Title 9 and any other relevant laws, rules, or regulations that are referenced in Title 9.

KCC Title 9 includes the surface water runoff policies that apply to the entire county. It includes drainage review requirements for new construction, insurance requirements, and types of drainage facilities maintained and not maintained by the County. Title 9 notes that the 1998 *King County Surface Water Design Manual* is to be referred to for additional details.

KCC Title 9 also establishes the surface water management fund and the corresponding rules and regulations for the County including definitions, rates, system development charges, billing and collection, charges for new construction, collection and penalties with respect to bill payment, and rate adjustments. The City of Shoreline obtains its storm drain utility funding from the surface water management fund that is managed by the County in accordance with an interlocal agreement.

**B.2.1.2 Chapter 16.10 SMC — Shoreline Management Plan**

This chapter adopts KCC Title 25 by reference as the City's interim shoreline management regulations and satisfies the requirements of the Shoreline Management Act of 1971 and RCW 35.21.180, 35A.11.020, 35A.21.160, and 90.58.280. The Shoreline Management Plan (SMP) sets forth environmental designations intended to provide a uniform basis for applying policies to varying shoreline uses. This chapter also adopts by reference all administrative rules in effect regarding shoreline management that have been adopted in accordance with Chapter 2.98 KCC, Rules of County Agencies, or KCC Title 23, Code Compliance.

The SMP needs to be updated to comply with the new shoreline master program guidelines that the Washington State Department of Ecology (Ecology) adopted in December 2003. The City is required to update its shoreline master program by 2009

The general purpose of the City's shoreline master program is to encourage uses appropriate to the desired character of that environment and at the same time to place standards and restrictions on development and use activities so that they do not disrupt or destroy the character of that environment. The SMP defines what types of land uses are permitted in the various shoreline areas and defines setbacks for development.

The City has developed a strategy to update its shoreline master program prior to the 2009 deadline. This strategy includes completing the necessary updates to the program and adopting a new ordinance. The SMP is considered an element of the City of Shoreline's Comprehensive Plan and the regulations on activities that are included in the SMP supplement the City's building, zoning, and municipal codes.

**B.2.1.3 Chapter 16.12 SMC — Flood Damage Prevention**

This chapter, along with the regulations in SMC 20.80.360 through 20.80.410, satisfies the requirements of the National Flood Insurance Program and maintains the City as an eligible community for federal flood insurance benefits. These sections reference the Flood Insurance Rate Maps (FIRMs) for King County and incorporated areas which identify the special flood hazard areas. Special flood hazard areas are those areas subject to a one percent or greater chance of flooding in any given year as shown in the FIRM maps, which are compiled by the Federal Insurance Administration in its report, *The Flood Insurance Study for King County, Washington* (May 16, 1995, as amended). These sections summarize development standards intended to prevent flood damage. For information on relevant state regulations, see "State Floodplain Regulations" later in this appendix.

**B.2.1.4 SMC Title 20 — Development Code**

This title is the Unified Development Code for the City of Shoreline, Washington. The purpose of the Unified Development Code is essentially to guide the development of the City in a way that is consistent with the goals and policies of the Comprehensive Plan. The purpose is also to promote environmental protection. Several sections of this title that apply specifically to the stormwater management program are summarized in the following paragraphs.

**SMC 20.30.490 through 20.30.700 — Environmental Procedures Ordinance**

These sections, which make up Subchapter 8 of Chapter 20.30 SMC, were adopted under the State Environmental Policy Act (SEPA) (RCW 43.21C.120), and the SEPA Rules (WAC 197-11-904). These sections contain the City's SEPA procedures and policies to be used in conjunction with the SEPA Rules (Chapter 197-11 WAC).

### **Chapter 20.80 SMC — Critical Areas**

This chapter was developed to comply with the requirements of the Growth Management Act (GMA), which was passed by the Washington State Legislature in 1990. The GMA is discussed in greater detail later in this appendix; however, a brief summary as it relates to the SMC is given here.

The GMA requires the fastest-growing counties in the state (including King County and the municipalities within King County) to develop local comprehensive land use plans and development regulations. It also requires that municipalities classify, designate, and develop regulations to protect certain critical areas prior to the completion of comprehensive land use plans. These critical areas include:

- Fish and Wildlife Habitat Conservation Areas
- Wetlands
- Aquifer recharge areas
- Geologically hazardous areas
- Flood hazard areas.

The intent of the critical areas designation is to require municipalities to provide regulatory protection of these critical areas prior to the development and adoption of comprehensive land use plans that meet the standards of the GMA. In this way, the conservation of critical areas can be accomplished while more detailed studies and discussions occur during the development of comprehensive plans that will ultimately determine a long-term approach to critical area protection.

Chapter 20.80 SMC includes critical environmental area protection goals; definition of regulated activities; standards and criteria for alteration or development of critical areas; rating system for streams and wetlands; required buffer areas for streams and wetlands; allowed development activities in streams, wetlands, and buffers; and mitigation performance standards and requirements.

The City is reviewing and, as necessary, updating the critical areas regulations in accordance with the GMA, which requires the review to be completed by December 2004.

### **B.2.2 Shoreline Comprehensive Plan**

The 1998 City of Shoreline Comprehensive Plan and EIS (Shoreline 1998) were developed and adopted in Chapter 16.05 SMC to meet the requirements of the Growth Management Act as expressed in Chapter 36.70A RCW and the State Environmental Policy Act as expressed in Chapter 43.21C RCW. The plan contains several elements, including environmental protection, housing economic development, community facilities and services, land use, transportation, and utilities. The City's Comprehensive Plan is currently being revised. Goals and policies related to surface water are discussed in Chapters 5, 6, and 7.

## **B.3 Relevant State Regulations and Programs**

### **B.3.1 Puget Sound Water Quality Action Team and Work Plan (Puget Sound Plan Requirements)**

The Puget Sound Water Quality Protection Act, passed during the 1996 Legislative session, creates a new approach to water quality protection in the Puget Sound Basin. A 17-member Puget Sound Action Team and 12-member Puget Sound Council now lead water quality protection efforts in the Puget Sound Basin. The Action Team assumed responsibility for implementing the 1994 Puget Sound Water Quality Management Plan, which had previously been the responsibility of the Puget Sound Water Quality Authority (PSWQA). The Action Team, with guidance from the Puget Sound Council, must also develop biennial work plans that identify both state and local actions necessary to correct regional water quality problems. It is the policy of the state to implement the 1994 Puget Sound Water Quality Management Plan to the maximum extent possible.

#### **B.3.1.1 Puget Sound Water Quality Management Plan**

The *Puget Sound Water Quality Management Plan* (Puget Sound Plan) establishes a comprehensive plan to protect and improve water quality and aquatic resources in Puget Sound. The PSWQA was directed to identify water quality problems and corresponding pollution sources affecting marine life and human health, and to develop effective pollution control and management programs that could be implemented in a comprehensive multi-jurisdictional manner throughout the Puget Sound Basin.

The 1994 Puget Sound Plan incorporated and built on the Authority's 1991, 1989, and 1987 management plans. The *Puget Sound Water Quality Management Plan* is also the Puget Sound Comprehensive Conservation and Management Plan (CCMP) for the Puget Sound Estuary Program, as authorized by the federal Clean Water Act.

As noted above, the Puget Sound Action Team replaced the PSWQA during the 1996 Legislative session. While the PSWQA no longer exists, the intent of the Puget Sound Action Team is to guide the implementation of the many elements of the 1994 Puget Sound Plan (and subsequent plans). A number of programs regarding stormwater management were included in the 1994 plan. State authority to require jurisdictions to implement the provisions contained within the 1994 Puget Sound Plan is inherent in the 1996 Puget Sound Water Quality Protection Act, discussed previously. These programs are described in the following subsections.

#### **B.3.1.2 Development Standards and Operations and Maintenance Programs for all Municipalities**

The provisions within the 1994 Puget Sound Plan for achieving the program's goal of controlling pollution from stormwater is to implement best management practices (BMPs), assess their effectiveness, and, as necessary, require further water quality controls that may include treatment. This includes a requirement for jurisdictions to adopt a stormwater management ordinance (or ordinances) with minimum standards for new development and redevelopment. The ordinances are to be substantially equivalent to Ecology's model ordinances.

These ordinances shall address, at a minimum: (1) the control of water quality and quantity impacts from new development and redevelopment sites; (2) the use of source control best

management practices and treatment best management practices; (3) the effective treatment, using best management practices, of the 6-month design storm for proposed development; (4) the use of infiltration, with appropriate precautions, as the first consideration in stormwater management; (5) the protection of stream channels and wetlands; (6) erosion and sedimentation control for new construction and redevelopment projects; and (7) local enforcement of these stormwater controls.

In addition, each municipality shall also develop and enforce operation and maintenance programs and ordinances for new and existing public and private stormwater systems. Each municipality shall maintain records of new public and private storm drainage systems and appurtenances.

The 1994 plan also requires that in conjunction with the runoff control ordinances for new development and redevelopment, each jurisdiction shall adopt a stormwater management technical manual containing state-approved BMPs. A local government may adopt Ecology's technical manual or prepare its own technical manual as long as it has technical standards equivalent to those included in Ecology's 2001 *Stormwater Management Manual for Western Washington*.

Education programs to inform citizens about stormwater and its effects on water quality, flooding, and fish-wildlife habitat, and to discourage dumping of waste material or pollutants into storm drains, are also included in the Education and Public Involvement Program and the Household Hazardous Waste Program sections of the 1994 plan.

Each municipality that adopts a comprehensive land use plan and development regulations under the provisions of Chapter 36-70A RCW (the Growth Management Act), shall incorporate the goals of the local stormwater program into the goals of the comprehensive plan and shall incorporate the stormwater management ordinances into the development regulations.

Consistent with the Growth Management Act, each local jurisdiction in the Puget Sound Basin is expected to cooperate with neighboring jurisdictions in growth management, stormwater planning, and stormwater basin planning.

Ecology will monitor compliance with these requirements, reviewing the status of municipality operation and maintenance and runoff control programs every two years to ensure consistent and adequate implementation. Ecology's oversight role shall pertain only to compliance with the objectives of the plan's stormwater program and appropriate rules and statutes and technical suggestions to improve implementation. This should ensure maximum flexibility and creativity for local governments to resolve site-specific stormwater problems in accordance with their land use and other local policies.

### ***B.3.1.3 Comprehensive Urban Stormwater Programs***

Each municipality must develop and implement a comprehensive stormwater management program in order to:

- Control erosion and manage the quantity and the quality of stormwater runoff from public and private activities
- Protect and enhance water quality, and achieve water quality and sediment quality standards
- Reduce the discharge of pollutants to the maximum extent practicable within the constraints of federal and state laws

- Protect beneficial uses, as described in Chapter 173-201 WAC
- Achieve the four items above in a manner that makes efficient use of limited resources to address the most critical problems first.

Each urban stormwater program shall seek to control the quality and quantity of runoff from public facilities and industrial, commercial, and residential areas, including streets and roads. Each program shall cover both new and existing development. Early action by urbanized areas that are prepared to implement stormwater control programs is encouraged. Emphasis shall be placed on controlling stormwater through source controls and BMPs. Where local programs are not effectively solving stormwater problems, Ecology shall ensure compliance through its oversight role. Each municipality shall have the flexibility to design its own program, but the content, priorities, and deadlines for compliance shall be subject to review by Ecology for consistency with the Puget Sound Plan.

In some cases, significant stormwater problems may be originating in urbanized areas outside of a local jurisdiction. In those situations, the sequencing of areas for urban stormwater programs may be modified to address problems in shared watersheds. The neighboring jurisdictions will develop local coordination mechanisms to cooperatively resolve the identified problems. Where joint programs are not developed, Ecology shall ensure consistency in programs through its oversight role.

At a minimum, each urban stormwater program shall include:

- Identification and ranking of significant pollutant sources and their relationship to the drainage system and water bodies through an ongoing assessment program
- Investigations and corrective actions of problem storm drains
- Programs for operation and maintenance of storm drains, detention systems, ditches, and culverts
- A water quality response program, to investigate sources of pollutants, and respond to citizen complaints or emergencies such as spills, fish kills, illegal hookups, dumping and other water quality problems. These investigations should be used to support compliance/enforcement efforts
- Assurance of adequate local funding for the stormwater program through surface water utilities, sewer charges, fees, or other revenue-generating sources
- Local coordination arrangements such as interlocal agreements, joint programs, consistent standards, or regional boards or committees
- Ordinances requiring implementation of stormwater controls for new development and redevelopment
- A stormwater public education program aimed at residents, businesses and industries in the urban area
- Inspection, compliance, and enforcement measures
- An implementation schedule
- If, after implementation of the control measures listed in the points above, there are still discharges that cause significant environmental problems, retrofitting of existing development and/or treatment of discharges from new and existing development may be required.

Stormwater quality in public stormwater systems in commercial and industrial areas shall have a high priority in the municipal programs. Ecology shall determine, in compliance with U.S. Environmental Protection Agency (EPA) regulations and in consultation with local governments, the appropriate approach to controlling stormwater discharges from industrial and commercial facilities that are not currently required to have stormwater National Pollutant Discharge Elimination System (NPDES) or point source discharge permits. Stormwater controls are included in NPDES permits for discharges of stormwater from commercial and industrial point source facilities, which are addressed in the Industrial Discharges Program.

Ecology shall have oversight responsibilities for the urban stormwater programs. Ecology shall review each urban stormwater program every two years to ensure consistent and adequate implementation and report to the Action Team.

***B.3.1.4 Local Government Stormwater Assistance Service***

The intent of the 1994 Puget Sound Plan and subsequent Puget Sound Water Quality Work Plans is to provide technical assistance to local governments through staff who have hands-on experience with (1) the design and implementation of stormwater programs at the local level, (2) current BMPs for stormwater, and (3) local basin characteristics. Ecology shall assist the municipality with current stormwater expertise to establish a technical assistance service.

This service will support the exchange of technical information and assistance on stormwater among local governments, will train Ecology and local government staff in current practices and real world application and problems in stormwater technology, and will operate as an integral part of the state technical assistance program. The service will have the goal of acting as an in-the-field branch of Ecology's technical assistance program.

***B.3.1.5 Guidance and Model Ordinances***

Ecology will prepare and update guidance and model ordinances for stormwater programs for all municipalities and for comprehensive urban stormwater programs. All municipalities will adopt stormwater programs that include minimum requirements for new development and redevelopment set by the plan and in guidance developed by Ecology.

The guidance shall include:

- Procedures for developing local programs, including procedures for review and approval of programs
- Minimum requirements for runoff controls and system maintenance required in local ordinances
- Minimum requirements for control of private sector maintenance of private drainage systems
- Minimum requirements for operation and maintenance programs, including record keeping requirements for drainage systems and facilities
- Methods for assuring practical and appropriate disposal procedures for decant water, solid, and other substances from drainage system cleanout and maintenance. Methods shall address catch basins, oil/water separators, pipelines, swells, detention/retention basins, and other appropriate drainage elements.

Additionally, the guidance for the comprehensive urban stormwater programs will include:

- Procedures for identification and ranking of significant pollutant sources and their relationship to the drainage system and water bodies
- Procedures for source tracing investigations, including sampling of problem storm drains
- Procedures for investigations, implementation of spill-control measures, enforcement, and remedial actions
- Methods for assuring adequate local funding for the urban stormwater program
- Provisions for agreements with neighboring jurisdictions when stormwater and watersheds do not follow jurisdictional boundaries
- Requirements for public education programs
- Requirements for retrofitting and/or treatment measures, if necessary
- Procedures for inspection, compliance, and enforcement measures
- Requirements for implementation schedules
- Methods to coordinate stormwater management with other watershed habitat protection and growth management activities.

The guidance will lay out acceptable approaches to control stormwater from new development and redevelopment, such as water quality policies for use in SEPA, NPDES, and other permit decisions; density controls to limit development in sensitive areas; development standards to limit the amount of impervious surfaces; regional detention ponds; oil separators or other treatment facilities; grading and drainage ordinances; erosion control programs; buffers next to waterways; preservation of wetlands; and other appropriate elements.

### **B.3.2 Hydraulic Project Approval**

The Washington Department of Fish and Wildlife (WDFW) requires a Hydraulic Project Approval (HPA) for construction activities that use, divert, obstruct, or change the natural flow or bed of any waters of the state (RCW 75.20.100). The purpose of the requirements, which are administered through the HPA permit process, is to protect fish habitat in stream channels, to prevent erosion, and to protect freshwater and nearshore marine aquatic life. Any construction activity such as channel widening or culvert improvements within the ordinary high water mark of any stream would fall under the HPA permit requirements. In some instances, WDFW is also extending its permitting authority to include developments creating new impervious surfaces in excess of 5,000 square feet even if the project does not include work within the ordinary high water mark. The rationale for extending its permit authority is that such a project will affect the hydrologic regime of downstream stream habitats.

### **B.3.3 Growth Management Act**

Enacted on July 1, 1990, the Growth Management Act is intended to manage growth in Washington's fastest-growing counties through the adoption of local comprehensive land use plans and development regulations. A 1995 GMA amendment requires all counties and cities in Washington to include the best available science in developing policies and development regulations to protect the functions and values of critical areas. For more

information on the City of Shoreline’s critical areas ordinance, see the discussion of “Chapter 20.80 SMC — Critical Areas” earlier in this appendix.

### **B.3.4 State Floodplain Regulations**

Chapter 86.16 RCW establishes statewide authority through regulations promulgated by Ecology for coordinating the floodplain management regulation elements of the National Flood Insurance Program (NFIP). Under Chapter 173-158 WAC, Ecology requires local governments to adopt and administer regulatory programs compliant with the minimum standards of the NFIP. Ecology provides technical assistance to local governments for identifying the location of the 100-year (base) floodplain.

Ecology also establishes land management criteria in the base floodplain area by adopting the federal standards and definitions contained in 44 CFR Parts 59 and 60 as minimum state standards. In addition to adopting the federal standards, the state regulations provide for additional regulation of residential development in the floodplain.

A Flood Insurance Study and associated Flood Insurance Rate Maps for King County were published in May 1995 and adopted by the City (see the discussion of “Chapter 16.12 SMC — Flood Damage Prevention” earlier in this appendix).

## ***B.4 Relevant Federal Regulations and Programs***

### **B.4.1 National Pollutant Discharge Elimination System**

#### ***B.4.1.1 Federal Stormwater Management Policy***

In 1990, the federal government adopted the NPDES Phase I Rule, which addressed priority sources of pollutant runoff, including stormwater pollution from medium and large Municipal Separate Storm Sewer Systems (MS4s), industrial sources, and construction sites disturbing at least five acres.

In 1999, the federal government adopted the NPDES Phase II Rule, which primarily regulates smaller MS4s not covered under Phase I that are part of urbanized areas, plus construction activities of between one and five acres. The City of Shoreline will be required to obtain a permit under the Phase II Rule. This rule is designed to comply with the requirements of the Clean Water Act (CWA) to further protect our nation’s streams, rivers, and beaches from polluted stormwater runoff.

#### ***B.4.1.2 NPDES Phase II Objectives***

The EPA’s objectives in developing the Phase II regulations include:

- Providing a comprehensive stormwater program that designates and controls additional sources of stormwater discharges to protect water quality, pursuant to CWA Section 402 (p)(6)
- Addressing discharges of stormwater from activities not addressed by Phase I, including:

- All construction site activities involving clearing, grading, and excavating land equal to or greater than one acre (including projects that are comprised of several sites of less than one acre each)
  - “Light” industrial activities not exposed to stormwater (light industrial activities exposed to stormwater are covered under Phase I)
  - MS4s located in urbanized areas not covered under Phase I
  - Municipally owned industrial facilities that were addressed under Phase I but granted an extension under ISTEA (Intermodal Surface Transportation Efficiency Act)
- Facilitating and promoting watershed planning as a framework for implementing water quality programs wherever possible.

EPA aims to achieve these objectives by balancing nationwide automatic designation and locally based designation. EPA will designate, on a nationwide basis, that the NPDES Phase II rule is applicable to the following:

- Stormwater discharges from small MS4s located in urbanized areas
- Construction activities that result in land disturbance equal to or greater than one acre.

EPA believes that these designation criteria address the main sources of stormwater pollution causing significant degradation of surface waters. Permitting authorities (Ecology, in Washington State) may designate additional Phase II permittees, such as additional small MS4s and categories of individual sources of stormwater discharges that are problematic in specific communities.

#### ***B.4.1.3 NPDES Phase II Permitting Authority for the State of Washington***

The State of Washington is authorized to administer the federal NPDES program and Ecology is the state agency with responsibility for the following:

- Issuing NPDES permits
- Issuing the menu of appropriate BMPs in cases of general permits
- Supporting local programs by:
  - Overseeing programs
  - Ensuring municipalities have adequate legal authority
  - Providing technical assistance
- Providing waivers for some or all permit requirements.

Ecology has stated that it will issue one general permit for all Phase II permittees that will describe permit conditions for all small MS4s in order for them to be in compliance with the federal NPDES Phase II Rule. According to the federal rule, each Phase II permittee is required to submit a notice of intent (NOI) to be covered under the general permit as well as the permit application by March 10, 2003. In Washington, these two documents are combined into a single permit application.

According to the federal rule, the NPDES permitting authority (Ecology) was supposed to issue a final general permit by December 8, 2002. Based on recent conversations with

Ecology, the expected date for issuance of the final general permit is between fall 2003 and fall 2004. The expiration date of the first permit term for the general permit will be five years after its issuance.

The federal rule specifies that the regulated MS4 programs, described in this case in Ecology's general permit, must be developed and implemented within the first five-year permit term.

#### ***B.4.1.4 Stormwater Management Requirements under NPDES Phase II***

Stormwater Management Requirements for entities affected by the NPDES Phase II Rule are as follows:

- **For MS4s:** The EPA requires, under the Phase II regulation, that all owners/operators of small MS4s reduce the discharge of pollutants from a regulated system to the "maximum extent practicable" to protect water quality (Federal Register Vol. 63, p. 1574). At a minimum, jurisdictions regulated under Phase II must:
  - Specify BMPs for six minimum control measures and implement them to the "maximum extent practicable"
  - Identify measurable goals for control measures
  - Show an implementation schedule of activities or frequency of activities
  - Define the entity responsible for implementation.
- **For Construction and Other Activities:** Construction activities that disturb one to five acres must also be regulated under an NPDES Phase II permit. The NPDES permitting authority may also require that other facilities and industrial and construction activities, as well as small MS4s outside urbanized areas, be designated on a case-by-case or categorical basis.

Each of these requirements is discussed in more detail in the subsections that follow.

#### ***B.4.1.5 BMPs for Six Minimum Control Measures***

Municipal stormwater management programs must specify best management practices for the following six minimum control measures:

- (1) Public Education and Outreach Minimum Control Measure
  - A public education program must be implemented to distribute educational materials to the community.
  - The community should be made aware about the impacts of stormwater discharges to water bodies and the steps needed to reduce stormwater pollution.
  - Municipalities are encouraged to work with other governmental entities and civic, environmental, and industrial organizations to develop an education/outreach program more efficiently.
- (2) Public Participation/Involvement Minimum Control Measure
  - The public must be involved in developing the municipality's stormwater program by following applicable state, tribal, and local public notice requirements.

- All economic and ethnic groups should be included.
  - Examples of public involvement/participation that should be considered include public hearings, citizen advisory boards, and working with citizen volunteers.
- (3) Illicit Discharge Detection and Elimination Minimum Control Measure
- The goal of this control measure is for the Phase II MS4 permittee to demonstrate awareness of its system, using maps or other existing documents.
  - The permittee also must develop a storm sewer system map that shows all outfalls, and the location/name of all waters of the United States that receive discharges.
  - A Phase II MS4 permittee must effectively prohibit illicit discharges into the separate storm sewer system.
  - Appropriate enforcement procedures must be implemented.
  - A Phase II MS4 permittee must develop and implement a plan to detect and address illicit discharges (including illegal dumping) to the system.
  - Public employees, businesses, and the public must be informed of the hazards associated with illegal discharges and improper disposal of waste.
- (4) Construction Site Runoff Control Minimum Control Measure
- Phase II MS4 permittees must develop, implement, and enforce a program to reduce nonpoint source pollution from construction sites with a land disturbance of more than one acre.
  - A regulatory mechanism must be used to control erosion and sediment from applicable construction sites to the maximum extent practicable and allowable under state, tribal, or local law.
  - Existing erosion and sediment control ordinances may suffice, if approved by the NPDES permitting authority.
- (5) Post-Construction Runoff Control Minimum Control Measure
- Phase II MS4 permittee must develop, implement, and enforce a program that addresses stormwater runoff from new development and redevelopment projects that result in land disturbances of at least an acre and that discharge to their MS4.
  - Appropriate structural and non-structural BMPs must be used.
  - Controls must ensure that water quality impacts are minimized.
  - Adequate long-term operation and maintenance of BMPs connected to a regulated MS4 must be addressed.
  - The goal, at a minimum, should be to maintain pre-development runoff conditions.
  - EPA encourages the use of preventive measures, including non-structural BMPs, which are usually thought to be more cost-effective.

- (6) Pollution Prevention/Good Housekeeping Minimum Control Measure
- Phase II MS4 permittees must develop and implement cost-effective operation and maintenance, as well as training programs, with the goal of preventing or reducing pollutant runoff from municipal operations.

**B.4.1.6 Measurable Goals for Control Measures**

The requirement allowing each permittee to identify its own measurable goals for each control measure is unique to Phase II. Communities regulated under Phase I were subject to more prescriptive compliance requirements. Examples of measurable goals include:

- Inspecting or repairing a certain number of drain inlets each year
- Conducting street-sweeping operations a certain number of times each year
- Inspecting municipal right-of-ways to identify illicit discharges
- Conducting a certain number of training classes for municipal operations each year
- Reporting the help of a certain number of volunteers each year to perform water quality monitoring or education/outreach activities.

**B.4.1.7 Implementation Schedule of Activities or Frequency of Activities**

Regulated communities must show an implementation schedule of activities or frequency of activities that will be done as part of the stormwater management program. An example might include the following entries:

Sweep City streets	X times per year
Vacuum storm drain inlets	Y times per year
Conduct classroom stormwater education	Z times per year
Implement Household Hazardous Waste Program	by a certain date

**B.4.1.8 Entity Responsible for Implementation**

Regulated communities must also indicate who is responsible for the stormwater management program. There must be one entity or person responsible for the entire program.

The Phase II regulations are amenable to creative implementation strategies, as they encourage communities to take a watershed or cooperative approach. Communities may also be covered under a neighboring Phase I community, or allow another entity, such as a county, to implement certain minimum control measures or portions of minimum control measures. The regulated entity, however, is still responsible for complying with the requirements of the permit.

#### **B.4.1.9 Phase II Permitting Process**

##### **Phase II Small MS4**

A general permit will most likely be issued by Ecology to cover Phase II MS4s in Washington, although the timeframe is currently unknown. Permittees will need to submit a permit application to Ecology to be covered under a general permit. As part of this application, an applicant may be required to identify and submit the following information:

- The BMPs that will be implemented
- The measurable goals for the minimum control measures
- The month and year in which each BMP will be started and completed or the frequency of action if it is ongoing
- The person(s) responsible for implementing or coordinating the stormwater management program.

##### **Phase II Regulated Construction Site**

Under the Phase I program, for land-disturbing activities greater than five acres, a notice of intent was required for coverage under a general construction permit. For the Phase II Rule, EPA is not specifying NOI requirements for construction sites of between one and five acres applying for coverage under a general permit. While EPA recognizes the benefit of NOIs—which allow for better outreach and dissemination of information—federal regulators are sensitive to the burden being placed on the regulated community and on the NPDES regulators. Therefore, it is up to Ecology, as the NPDES permitting authority, to determine whether it will require NOI submission for construction sites disturbing less than five acres. Ecology is currently revising its construction stormwater general permit and is expected to require an NOI for sites disturbing one to five acres. Ecology has not announced a date on which the permit will be reissued. The NOI (also known as construction stormwater general permit) for construction projects disturbing greater than five acres can be used to obtain coverage for smaller projects in the interim.

##### **Phase II Industrial Stormwater Permit**

Industrial sites requiring permits, as determined by standard industrial classification (SIC) codes, are required to obtain an NPDES permit for industrial activities. The deadline for permit applications was January 30, 2003; however, the City of Shoreline does not currently own or maintain any facilities that would require an industrial stormwater permit.

#### **B.4.1.10 NPDES Phase II Ongoing Requirements**

Under the Phase II rule, regulated communities must conduct periodic evaluations and assessments of their stormwater management practices, maintain records, and prepare required reports. These requirements are summarized in Table B-1.

**Table B-1  
Minimum Reporting Requirements**

Evaluation and Assessment Requirements	Recordkeeping Requirements	Reporting Requirements
<ul style="list-style-type: none"> <li>▪ Evaluate program compliance</li> <li>▪ Evaluate the appropriateness of identified BMPs</li> <li>▪ Evaluate progress toward achieving measurable goals</li> <li>▪ The NPDES permitting authority may determine monitoring requirements appropriate to your watershed. EPA encourages participation in a group monitoring project.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Keep records required by the NPDES permitting authority for at least three years</li> <li>▪ Submit the records when requested by the permitting authority</li> <li>▪ Make records and stormwater management plan accessible to the public during regular working hours                             <ul style="list-style-type: none"> <li>○ A reasonable copying fee may be charged</li> <li>○ Advance notice of up to two days for copying may be requested</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▪ Submit annual reports to the permitting authority for the first permit term</li> <li>▪ In subsequent terms, submit reports in years two and four or more frequently as required</li> <li>▪ Reports should include:                             <ul style="list-style-type: none"> <li>○ Status of permit condition compliance</li> <li>○ Appropriateness of identified BMPs</li> <li>○ Progress toward achieving measurable goals for each measure</li> <li>○ Results of data collected and analyzed during the reporting period</li> <li>○ A summary of the activities that will take place during the next reporting period</li> <li>○ Any changes in measurable goals</li> </ul> </li> </ul>

## **B.4.2 Endangered Species Act**

This section contains background on the ESA and the sections of the ESA that are relevant to surface water management activities. This is followed by discussions of that relate the ESA to the City of Shoreline and describe current actions by local and regional governments to respond to ESA requirements.

### **B.4.2.1 Background**

When evaluating the City’s stormwater program, it is important to be aware of how the ESA (as it relates to fish species) can impact the City’s activities. Puget Sound and its tributary

streams in the vicinity of the City of Shoreline provide habitat, or may provide habitat, for aquatic species listed as threatened or endangered under the Endangered Species Act of 1973. The ESA prohibits killing or harming an endangered species in any way, including significant modification of critical habitat for that species. The ESA requires federal agencies to develop programs to conserve endangered and threatened species and assist in species recovery. Under the ESA, a species likely to become extinct in the foreseeable future is categorized as “endangered,” while one likely to become endangered unless action is taken is categorized as “threatened.”

The ESA is jointly administered by the Secretaries of the Department of Commerce (DOC) and the Department of the Interior (DOI) (16 USC 1532 [15]). The National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries), an agency under the DOC, is responsible for marine species including anadromous fish, some sea turtles, and marine mammals. (Until recently, NOAA Fisheries was known as the National Marine Fisheries Service, or NMFS.) The U.S. Fish and Wildlife Service (USFWS), an agency under the DOI, is responsible for terrestrial species and resident aquatic species.

Although the ESA is a federal statute, its implementation can affect local jurisdictions and their citizens in several ways. A listing can potentially affect a wide variety of activities including, but not limited to, stormwater management practices, infrastructure improvements, land use planning, maintenance of existing facilities, and private development proposals.

The body of federal legislation that is commonly termed the “Endangered Species Act” is comprised of 11 sections, six of which are commonly referenced in relation to regulatory actions. These are:

- Section 4: Determination of Endangered and Threatened Species
- Section 6: Cooperation with States
- Section 7: Interagency Cooperation
- Section 9: Prohibited Acts
- Section 10: Exceptions
- Section 11: Penalties and Enforcement.

The following sections describe these six sections of the ESA.

#### **Section 4: The 4(d) Rulemaking Process**

In June 2000, the NMFS adopted a rule prohibiting the “take” (which includes harass, harm, pursue, hunt, shoot, wound, kill, trap, or collect; or to attempt any of these things) of 14 groups of salmon and steelhead listed as threatened under the ESA. NMFS adopted the take rule under Section 4(d) of the ESA. This rule prohibits anyone from taking a listed salmon or steelhead, except in cases where the take is associated with an approved program. The 4(d) rule approves some specific existing state and local programs, and creates a means for NOAA Fisheries to approve additional programs if they meet certain standards set out in the rule. The 4(d) rule for salmon took effect in January 2001. The 4(d) rule for steelhead took effect in September 2000.

In addition to the 4(d) rule, the ESA provides a variety of tools for saving species threatened with extinction. Under Section 7 of the ESA, no federal agency may fund, permit, or carry out any activity that will jeopardize their continued existence. Projects

that require a federal permit or have federal funding must go through a “consultation” with NOAA Fisheries (for salmon and steelhead) or the USFWS (for bull trout). This “consultation” is to make sure that the project will adequately limit any impacts and qualify for an “incidental” take of listed species. Another tool, under Section 10 of the ESA, allows NOAA Fisheries to issue incidental take permits for specific activities such as research that usually do not apply to a municipality.

Under Section 4(d), the ESA requires that activities of state and local governments, tribes, and private citizens be controlled so they do not lead to extinction of listed species. To comply with this, NOAA Fisheries has established protective rules for threatened species. The rules need not prohibit all “take,” however. The 4(d) rule can “limit” the situations to which the take prohibitions apply. But NOAA Fisheries offers 4(d) “limits” only for those programs or activities that will not impair properly functioning habitat of listed species. In accordance with this provision, NOAA Fisheries has established 13 general categories of programs that can qualify for 4(d) limits on the take prohibitions. NOAA Fisheries will evaluate programs under these 13 categories that wish to be granted a 4(d) limit on take prohibitions. Limit No. 10, Routine Road Maintenance, is a category under which a municipal program could be evaluated by NOAA Fisheries for a 4(d) limit on take prohibitions. Limit No. 12, Municipal, Residential, Commercial, and Industrial Development and Redevelopment (MRCI), is another category under which a municipal program could be evaluated by NOAA Fisheries for a 4(d) limit on take prohibitions. The Tri-County effort described below has obtained NOAA Fisheries approval of road maintenance and is working to obtain NOAA Fisheries approval of MRCI programs so that any jurisdiction that adopts these programs would then be eligible for the 4(d) limit on take prohibition.

The ESA does not directly require jurisdictions to change their practices to conform to the take limits described in the final rule. The take limits provide a way for jurisdictions to make sure an activity or program does not violate the take prohibitions. Without this assurance, jurisdictions would risk ESA penalties when an activity in question is determined to result in a take of a listed fish.

The 4(d) rule also provides a list of activities that have a high risk of resulting in a “take” of the listed threatened or endangered salmonids. The following list includes items that the 4(d) rule has determined are likely to result in injury or harm to listed salmonids. City design standards should prohibit:

- Construction of structures like culverts, berms, or dams that eliminate or impede a listed species’ ability to migrate or gain access to habitat
- Removal, addition, or alteration of rocks, soil, gravel, vegetation, or other physical structures that are essential to the integrity and function of a listed species’ habitat
- Removal of water or otherwise altering streamflow in a manner that significantly impairs spawning, migration, feeding, or other essential behavioral patterns
- Construction of dams or water diversion structures with inadequate fish screens or passage facilities
- Construction of inadequate bridges, roads, or trails on stream banks or unstable hill slopes adjacent to or above a listed species’ habitat

- Operations that substantially disturb soil and increase the amount of sediment going into streams.

The following list includes items that should be included in the City's regulations so that these activities that the 4(d) rule has determined are likely to result in injury or harm to listed salmonids would be illegal.

- Discharge of pollutants, such as oil, toxic chemicals, radioactivity, carcinogens, mutagens, teratogens, or organic nutrient-laden water (including sewage water) into a listed species' habitat is prohibited.
- The release of non-indigenous or artificially propagated species into a listed species' habitat or into areas where they may gain access to that habitat is prohibited.

The 4(d) rule has determined that the following maintenance-related items are likely to result in injury or harm to listed salmon. The City's maintenance program should not:

- Maintain structures like culverts, berms, or dams if maintenance eliminates or impedes a listed species' ability to migrate or gain access to habitat
- Remove, poison, or contaminate plants, fish, wildlife, or other biota that the listed species requires for feeding, sheltering, or other essential behavioral patterns
- Remove, add, or alter rocks, soil, gravel, vegetation, or other physical structures that are essential to the integrity and function of a listed species' habitat
- Remove water or otherwise alter streamflow in a manner that significantly impairs spawning, migration, feeding, or other essential behavioral patterns
- Operate dams or water diversion structures with inadequate fish screens or passage facilities
- Maintain or operate inadequate bridges, roads, or trails on stream banks or unstable hill slopes adjacent to or above a listed species' habitat.

Chinook salmon in Puget Sound were federally listed as threatened species by the National Marine Fisheries Service in March 1999. Bull trout in Puget Sound and coastal waters were listed as threatened species by the U.S. Fish and Wildlife Service in October 1999, and coho salmon are currently candidate species in the Puget Sound.

### **Section 6: Cooperation with States**

Although Section 6 is titled "Cooperation with States," the law only requires agencies to "cooperate to the maximum extent practicable" with the states. Such cooperation includes "consultation with the states concerned before acquiring any land or water, or interests therein, for the purpose of conserving any endangered species or threatened species" (16 USC 1535[a]). The ESA does not require the federal government to delegate any authority to state or local governments concerning the conservation or recovery of listed species, although provisions for this are made in Section 10 of the ESA (described later in this section).

### **Section 7: Federal Responsibilities**

Section 7 requires the federal government and its agencies to conserve listed species and to ensure that any projects or actions it authorizes, funds, or implements are not likely to jeopardize listed species or destroy or adversely modify their critical habitat. Under Section 7, the federal agency with permit or funding authority must review a project to determine if the project “may affect” a listed species (50 CFR 402.07). If a project is determined to affect a listed species, the federal agency must consult with the USFWS or NOAA Fisheries (or both), depending on the species (50 CFR Section 402.14). An informal or “conference” process is required if a project may affect a proposed species (50 CFR 402.13). Section 7 requires the preparation of a Biological Assessment (BA) (also termed Biological Evaluation, or BE) for projects with a federal link or “nexus” to determine what, if any, effects the project or action may have on a listed species (50 CFR 402.12). A BA/BE may also be required for species that are proposed for listing, but are not yet formally listed. At this time, coho is a candidate species in the Puget Sound region.

The purpose of a BA/BE is to review the biological requirements of a listed species to determine potential effects of the project or action on those species (50 CFR 402.12). After the consultation process is complete, the USFWS or NOAA Fisheries will issue a Biological Opinion (BO) (50 CFR 402.15). The BO will determine if the project or action would result in “jeopardy” or the destruction or modification of critical habitat (50 CFR 402.14[h][3]). If a project or action is determined to affect a species that has been proposed for listing, the federal lead agency must complete an informal consultation with either the USFWS or NOAA Fisheries, but the results of the subsequent conference is non-binding.

Section 7 consultation is only required for projects that may lead to construction. If a local construction project has a federal nexus, either through federal funding or a requirement for a federal permit, review of that action will be necessary under Section 7. Common federal permits or actions requiring review under Section 7 include:

- National Environmental Policy Act (NEPA) reviews for proposed construction projects
- Corps of Engineers Clean Water Act Section 10 and Section 404 permits
- Funding for construction projects derived from a federal source.

Funding does not have to be in the form of a direct grant from a federal agency. Many types of grant programs are administered by state or local agencies, but these programs often include full or partial federal funding. Such programs include urban development block grants, clean water programs, and most forms of transportation funding.

### **Section 9: Prohibition of “Take”**

Under Section 9 of the ESA, individuals and groups within U.S. jurisdiction are specifically prohibited from “taking” or otherwise harming a listed species (16 USC 1538 [a][1][b]). “Take” means to “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct,” any fish, wildlife, or plant that has been listed as threatened or endangered (16 USC 1532 [19]).

Subsequent interpretation and clarification by federal courts and agencies have expanded “harm” to include indirect actions which may result in the death or injury of

protected species including significant habitat modification which may impair “essential behavior patterns, including breeding, feeding, or sheltering” (50 CFR 17.3).

Whereas the Section 7 process, as stated in the law (16 USC 1536) and implementing regulation (50 CFR 402), includes specific instructions and requirements for review by federal agencies, Section 9 simply states “with respect to any endangered species of fish or wildlife listed pursuant to [Section 4 of the ESA] it is unlawful for any person subject to the jurisdiction of the United States to take any such species within the United States or the territorial sea of the United States” (16 USC 1538[a][1][b]). While Section 9 arguably includes a much broader range of prohibited actions by simply prohibiting take, unlike Section 7, the language of Section 9 does not include a parallel process by which take is evaluated and adjudicated. To deal in part with the ambiguity, the 4(d) rulemaking process often includes criteria that NOAA Fisheries or USFWS will use in determining what constitutes “take.”

#### **Section 10: State and Local Involvement**

Although the ESA does not require the federal government to impart any authority to state or local governments or private parties concerning the conservation or recovery of listed species, the recent policy of federal agencies has been to provide state and local governments and large private landowners the opportunity to develop and implement their own protection and conservation measures. These are accomplished through voluntary, although legally binding, agreements provided for under Section 10 of the ESA (16 USC 1530). The types of agreements allowed under Section 10 include Candidate Conservation Agreements, Safe Harbor Agreements, and Habitat Conservation Plans (HCPs). These plans can provide specific legal protection for actions not included as exemptions under 4(d) rules, but these agreements require a significant amount of coordination and legal efforts to implement.

#### **Section 11: Third-Party Lawsuits**

Section 11 of the ESA specifically enables “citizen suits” for the purpose of: (1) enjoining a person or agency alleged in violation of any provision in the ESA; (2) compelling federal agencies to list a specific species; and (3) compelling the government to enforce protective measures upon the listing of a species (16 USC 1540 [g][1]). In addition, Section 11 provides specific penalties for violations of the ESA including civil fines and criminal judgments (16 USC 1540 [a] and (16 USC 1540 [b], respectively).

#### **B.4.2.2 ESA as It Relates to Shoreline**

A technical memorandum titled “Technical Memorandum: Best Available Science Review in Support of City of Shoreline Critical Areas Update” (Adolfson 2003) contains a description of ESA-regulated species occurring or having the potential to occur in the vicinity of the City of Shoreline, as indicated in ESA Section 4. This document states:

*Boeing Creek has documented salmonid use including Chinook salmon (*Oncorhynchus tshawytscha*), a listed Federal Threatened species; chum salmon (*O. keta*); coho salmon, also a listed Federal Candidate species, (*O. kisutch*); and sea run cutthroat trout (*Salmo clarki*).*

*McAleer Creek has documented anadromous salmonid use including chinook salmon (LFPSF [2001]), coho salmon, and sockeye salmon (O. nerka) [Tetra Tech/KCM, 2003e]. Most use occurs outside the City limits, but coho salmon and resident cutthroat trout have been observed in portions of McAleer Creek within the City limits.*

*Chinook salmon, coho salmon, and sockeye salmon have been documented in Thornton Creek outside of the City limits (WDFW 1998). Resident cutthroat trout are common throughout the Thornton Creek system [Tetra Tech/KCM, 2003e].*

*Many of the City's smaller streams are likely to contain resident cutthroat trout.*

### **B.4.2.3 County and Local Efforts to Respond to ESA**

At the time when ESA listings of threatened fish species occurred, it was recognized by all levels of government that planning and regulatory activities in the region needed to be re-evaluated. In addition, development and business interests began to inquire as to how this listing would affect them. To prepare a response to the listings that would attempt to consider all public and private needs in a coordinated fashion, several different planning and analysis efforts were begun. The following section presents a brief description of ESA response activities that are currently underway and could affect stormwater planning in the City of Shoreline.

Even before the NMFS formally proposed that wild native chinook salmon in the Puget Sound Basin be listed as threatened under the Endangered Species Act, King County and other jurisdictions had begun to evaluate what they might do individually and together to address the reasons for salmon decline. The process of evaluating the current health and viability of chinook in each watershed began with compilation of data describing habitat conditions, population distribution, and abundance. Along with these fisheries assessments, two other efforts were begun. An analysis was initiated of the actions each government body regularly undertakes, funds, or permits others to undertake, which could affect potentially listed salmon species and their habitat. An inventory was also begun to identify all the projects currently underway, and those expected to begin soon, that included federal funding, since the proposed listing initiated additional federal agency consultation and review requirements that were not previously needed.

Shortly after the proposal to list chinook salmon, the executives of King, Pierce, and Snohomish Counties began drawing regional interests together. They formed an inclusive steering committee to work together to identify a strategy for the region to recover salmon populations. This strategy would have the broad goal of recovering salmon stocks to numbers adequate to sustain the population and to provide harvestable salmon for Native American tribes pursuant to their individual treaty rights.

Soon all jurisdictions within the Puget Sound Basin, the area affected by the potential listings, began to communicate on this issue. However, a smaller group composed of King, Pierce, and Snohomish Counties determined to work closely together in a Tri-County Effort (TCE) to meet their salmon conservation and recovery goals.

The participants in the TCE described above have set out a strategy for action. The goals of the TCE are to prepare for long-term recovery of listed species and to develop a response to ESA listing actions. The strategy used to accomplish this was to:

- Create watershed-based efforts called WRIA (Water Resource Inventory Area) Salmon Conservation Plans for each river system in these three counties
- Use the umbrella TCE to address policy issues that affect multiple watersheds.

The Strategy for Action can be described as five basic tasks:

- Identify long-term recovery objectives and steps toward achieving them.
- Inventory, at individual jurisdictional levels, all activities potentially affecting salmon.
- Undertake watershed assessments including determination of the watershed-specific factors for decline.
- Develop Draft WRIA Salmon Conservation Plans.
- Obtain NOAA Fisheries approval of the proposed Road Maintenance (accomplished) and MRCI programs.

This strategy is designed to coordinate the various jurisdictions' efforts to collect and characterize the information necessary to create responses that will fit in a framework appropriate for the whole region. The TCE received NMFS (NOAA Fisheries) approval of Regional Road Maintenance ESA Program Guidelines in 2002 and the TCE is working to obtain the agency's approval of a proposed MRCI program, described above, so that any jurisdiction that adopts the program would then be eligible for the 4(d) rule limit on take prohibition.

# Appendix C. Background Information on Current SWM Program

## C.1 Maintenance Activities

Maintenance contracts with King County and private contractors are renewed on an annual basis. Each year, City staff review current maintenance costs and decide on the appropriate tasks to be performed by King County and private contractors. In recent years, the City has increased the amount of catch basin and street sweeping done by private contractors because the private contractors could provide these services for less cost than King County. Table C-1 identifies the current roles of city crews, King County, and private contractors in completing maintenance activities

**Table C-1  
Maintenance Activities**

Maintenance Activity	King County	Private Contractors	City Crews
Clean Drainage System: Equipment	√	√	
Clean Drainage System: Hand			√
Clean Catch Basins/Manholes	√	√	√
Repair and Replace Catch Basins			√
Replace Catch Basin Grates			√
Replace/Install Drainage Pipe			√
Culvert Cleaning by Hand			√
Ditch Reshaping			√
Hand Ditching			√
Construct Swales and Berms			√
Maintenance of Retention/Detention Facilities	√		
Pump Station Maintenance	√		
Shoulder Reconstruction			√
Extend Pavement Edges	√		√
Street Sweeping	√	√	
Erosion Control—Riprap			√
Debris Removal			√
Silt Removal			√
Complaint Investigation			√
Emergency Repairs	√		√

## C.2 SWM Program Organization

### C.2.1 City of Shoreline Organization

This section describes the organizational structure of the City's surface water management (SWM) program. Figure C-1 shows the City's organizational structure. Shoreline is governed by an elected seven-member City Council. The City Council is assisted by several commissions, boards, and advisory committees. One of these, the Planning Commission, is helping review surface water management policy decisions.

The majority of surface water management activities are completed within the Public Works Department, which reports to the Deputy City Manager. Other City departments also support SWM activities, including the Finance Department, Customer Response Team, Human Resources Department, and Planning and Development Services.

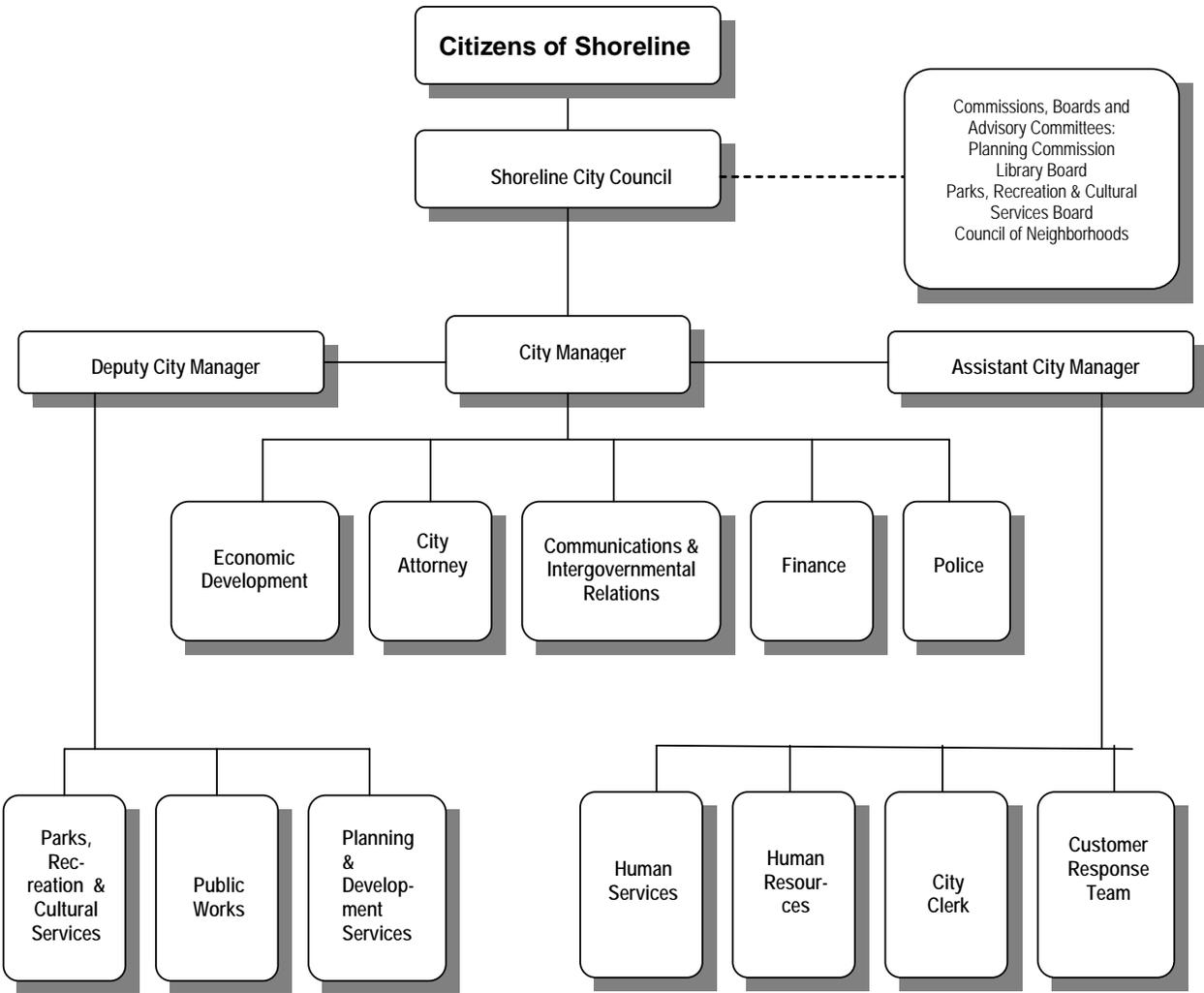


Figure C-1. City of Shoreline Organizational Chart

## C.2.2 Public Works Department

The Public Works Department has established the following mission statement:

**“Public Works: What are we doing to make a difference? Public Works employees are guided by the principles of integrity, respect and partnerships combined with innovation, hard work and customer responsiveness. We, as a team are dedicated to maintaining and improving our City’s infrastructure through positive and proactive leadership, education, planning and the delivery of quality projects on time, on target and on budget while being strong stewards of the environment, public safety, and fiscal resources. Public Works Employees strive to be known for getting it done...and done well.”**

There are seven identified Public Works Department programs. The activities of each program are shown in Table C-1, along with the number of full-time equivalents in the City’s 2004 budget. The surface water management program is one of the seven department programs, and 5.72 FTEs are currently devoted to SWM program activities. Other department programs (such as the right-of-way program and the CIP and engineering services program) also are responsible for surface water management activities. Table C-2 also describes, in general terms, how SWM activities are funded. SWM program activities are funded by SWM fees. SWM fees also pay the majority of capital improvement costs, which include construction inspection and CIP and engineering services. Administrative and facilities support are funded by the General Fund. However, through the City’s General Fund Cost Allocation, the SWM Fund transfers funds each year to the General Fund. The majority of plan review is funded by permit fees.

**Surface water management activity:** a general term meaning any City activity that affects surface water.  
**SWM program activity:** an activity of the surface water management program, one of seven programs that comprise the City’s public works department.

**Table C-2  
Public Works Department Programs and Activities**

Department Program	Program Activities	FTEs (2004 Budget)	SWM Activities?	Funding of SWM Activities
<b>Administration</b>	<ul style="list-style-type: none"> <li>■ Budget and financial management</li> <li>■ Policy development and leadership</li> <li>■ Administrative support and report</li> </ul>	2.1	Support	General Fund; SWM fees pay for transfer to General Fund
<b>Surface Water Management (SWM)</b>	<ul style="list-style-type: none"> <li>■ Inspection and operation of stormwater facilities</li> <li>■ Ambient water quality monitoring of streams and investigation of illicit discharges to the stormwater system</li> <li>■ Surface water drainage systems maintenance</li> <li>■ Environmental education</li> </ul>	5.72	All SWM	SWM fees
<b>Street Operations</b>	<ul style="list-style-type: none"> <li>■ Street maintenance</li> <li>■ Street drainage systems maintenance</li> <li>■ Right-of-way vegetation management</li> <li>■ Traffic management</li> </ul>	7.98	Partially SWM	Street Fund
<b>Traffic Services</b>	<ul style="list-style-type: none"> <li>■ Pedestrian and traffic improvements</li> </ul>	2.5	No	Street Fund
<b>Facilities</b>	<ul style="list-style-type: none"> <li>■ Building operations and maintenance</li> <li>■ Vehicle operations and maintenance</li> <li>■ Capital project management support</li> </ul>	2.45	No	General Fund; SWM fees pay for transfer to General Fund
<b>Recycling</b>	<ul style="list-style-type: none"> <li>■ Community/school education and outreach</li> <li>■ Community recycling events</li> <li>■ Hazardous waste recycling</li> </ul>	0.35	Partially SWM	Waste Management Fund
<b>Right-of-Way Program</b>	<ul style="list-style-type: none"> <li>■ Construction inspection</li> <li>■ Plan review</li> </ul>	1.5	Partially SWM	Permit fees and SWM fees
<b>CIP and Engineering Services</b>	<ul style="list-style-type: none"> <li>■ CIP project development and management</li> <li>■ Non-CIP engineering services</li> </ul>	13.0	Partially SWM	SWM fees through SWM Capital Fund

**PLANNING LEVEL CONSTRUCTION COST OPINION**

PROJECT ID:

TITLE: **Midvale Ave N Drainage (F-3)**

BY: JLG

ITEM NO.	BID ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
1	CLEARING AND GRUBBING		AC	\$5,000.00	\$ -
2	REMOVE PAVEMENT	513	SY	\$25.00	\$ 12,833
3	REMOVE PIPE	770	LF	\$20.00	\$ 15,400
4	REMOVE CATCH BASIN	9	EA	\$325.00	\$ 2,925
5	12" DIA. SMOOTH INTERIOR WALL CORRUGATED POLYETHYLENE		LF	\$40.00	\$ -
6	18" DIA. SMOOTH INTERIOR WALL CORRUGATED POLYETHYLENE	390	LF	\$55.00	\$ 21,450
7	24" DIA. SMOOTH INTERIOR WALL CORRUGATED POLYETHYLENE	390	LF	\$70.00	\$ 27,300
8	36" DIA. SMOOTH INTERIOR WALL CORRUGATED POLYETHYLENE		LF	\$110.00	\$ -
9	CATCH BASIN TYPE 1	9	EA	\$1,420.00	\$ 12,780
10	PAVEMENT, ASPHALT CONCRETE CL B	120	TON	\$85.00	\$ 10,200
11	FLOW CONTROL STRUCTURE, 48-INCH		EA	\$4,240.00	\$ -
12	EROSION CONTROL, HYDROSEEDING		SF	\$0.20	\$ -
13	CHAIN LINK FENCE		LF	\$15.00	\$ -
14	ACCESS ROAD (15' WIDE, 6" GRAVEL DEPTH)		LF	\$20.00	\$ -
15	ROADSIDE PLANTING/LANDSCAPING	120	SY	\$30.00	\$ 3,600
16	UTILITY RELOCATIONS	1	LS	\$5,000.00	\$ 5,000
17	TEMPORARY FLOW BYPASS	1	LS	\$5,000.00	\$ 5,000
<b>Subtotal</b>					\$ 116,488
	DEWATERING	10%			\$ 11,649
	EROSION & SEDIMENTATION CONTROL	10%	(See Note 3)		\$ 11,649
	TRAFFIC CONTROL	10%	(See Note 4)		\$ 11,649
<b>Subtotal</b>					\$ 151,435
	MOBILIZATION (GENERAL REQUIREMENT)	10%			\$ 15,143
	CONTINGENCY	40%			\$ 60,574
<b>Construction Subtotal (Rounded)</b>					\$ 227,000
	STATE SALES TAX	8.9%			\$ 20,203
	PRELIMINARY & DESIGN ENGINEERING/LEGAL/ADMIN	35%			\$ 79,450
	CONSTRUCTION MANAGEMENT	20%			\$ 45,400
	PERMITTING	10%			\$ 22,700
<b>Project Subtotal (Rounded)</b>					\$ 395,000
	LAND ACQUISITION (see note 5)	0	AC	\$0	\$ -
	CONTINGENCY	30%			\$ -
	EASEMENT CONTINGENCY	4	PARCEL	\$5,000	\$ 20,000
<b>2004 Dollars</b>					
<b>Total Estimated Project Cost (Rounded)</b>					<b>\$ 415,000</b>

Notes:

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- Increase percentage markup if work is in or immediately adjacent to flowing or standing water, steep slope, and/or other erosion-prone conditions.
- Increase percentage markup if work is in or immediately adjacent to secondary, arterial, or other high-volume road or temporarily closes a roadway.
- Land acquisition unit costs include administrative costs and condemnation.

**PLANNING LEVEL CONSTRUCTION COST OPINION**

PROJECT ID:

TITLE: **Darnell Park Neighborhood Drainage (F-4)**

BY: JLG

ITEM NO.	BID ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
1	CLEARING AND GRUBBING	0.2	AC	\$5,000.00	\$ 1,000
2	REMOVE PAVEMENT	430	SY	\$25.00	\$ 10,750
3	REMOVE PIPE	880	LF	\$20.00	\$ 17,600
4	REMOVE CATCH BASIN	5	EA	\$325.00	\$ 1,625
5	12" DIA. SMOOTH INTERIOR WALL CORRUGATED POLYETHYLENE		LF	\$40.00	\$ -
6	18" DIA. SMOOTH INTERIOR WALL CORRUGATED POLYETHYLENE		LF	\$55.00	\$ -
7	24" DIA. SMOOTH INTERIOR WALL CORRUGATED POLYETHYLENE	700	LF	\$70.00	\$ 49,000
8	36" DIA. SMOOTH INTERIOR WALL CORRUGATED POLYETHYLENE	180	LF	\$110.00	\$ 19,800
9	CATCH BASIN TYPE 2	5	EA	\$3,120.00	\$ 15,600
10	EXPAND POND BY 3 FOOT DEPTH (COMMON EXCAVATION)	1700	CY	\$20.00	\$ 34,000
11	PAVEMENT, ASPHALT CONCRETE CL B	100	TON	\$85.00	\$ 8,500
12	FLOW CONTROL STRUCTURE, 48-INCH	1	EA	\$ 4,240.00	\$ 4,240
13	EROSION CONTROL, HYDROSEEDING	1500	SF	\$0.20	\$ 300
14	CHAIN LINK FENCE		LF	\$15.00	\$ -
15	ACCESS ROAD (15' WIDE, 6" GRAVEL DEPTH)	50	LF	\$20.00	\$ 1,000
16	ROADSIDE PLANTING/LANDSCAPING	1000	SY	\$30.00	\$ 30,000
17	UTILITY RELOCATIONS	1	LS	\$10,000.00	\$ 10,000
18	TEMPORARY FLOW BYPASS	1	LS	\$5,000.00	\$ 5,000
				<b>Subtotal</b>	\$ 208,415
	DEWATERING	10%		\$	20,842
	EROSION & SEDIMENTATION CONTROL	15%	(See Note 3)	\$	31,262
	TRAFFIC CONTROL	10%	(See Note 4)	\$	20,842
				<b>Subtotal</b>	\$ 281,360
	MOBILIZATION (GENERAL REQUIREMENT)	10%		\$	28,136
	CONTINGENCY	40%		\$	112,544
				<b>Construction Subtotal (Rounded)</b>	\$ 422,000
	STATE SALES TAX	8.9%		\$	37,558
	PRELIMINARY & DESIGN ENGINEERING/LEGAL/ADMIN	35%		\$	147,700
	CONSTRUCTION MANAGEMENT	20%		\$	84,400
	PERMITTING	10%		\$	42,200
				<b>Project Subtotal (Rounded)</b>	\$ 734,000
	LAND ACQUISITION (see note 5)	0	AC	\$0	\$ -
	CONTINGENCY	30%		\$	-
	EASEMENT CONTINGENCY	3	PARCEL	\$5,000	\$ 15,000
<b>2004 Dollars</b>				<b>Total Estimated Project Cost (Rounded)</b>	<b>\$ 749,000</b>

Notes:

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- The order-of-magnitude cost opinion has been prepared with information provided by the City. Little or no field reconnaissance may have been conducted. Final costs will depend on actual labor and material costs, site conditions, and other variable factors. As a result, the final project costs will vary from those presented above. Because of these factors, funding needs for individual projects must be scrutinized prior to establishing the final project budgets.
- Increase percentage markup if work is in or immediately adjacent to flowing or standing water, steep slope, and/or other erosion-prone conditions.
- Increase percentage markup if work is in or immediately adjacent to secondary, arterial, or other high-volume road or temporarily closes a roadway.
- Land acquisition unit costs include administrative costs and condemnation.

**PLANNING LEVEL CONSTRUCTION COST OPINION**

PROJECT ID:

TITLE: **Meadowbrook Neighborhood Drainage (F-5)**

BY: JLG

ITEM NO.	BID ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
1	CLEARING AND GRUBBING		AC	\$5,000.00	\$ -
2	REMOVE PAVEMENT	1300	SY	\$25.00	\$ 32,500
3	REMOVE PIPE	1000	LF	\$20.00	\$ 20,000
4	REMOVE CATCH BASIN	10	EA	\$325.00	\$ 3,250
5	12" DIA. SMOOTH INTERIOR WALL CORRUGATED POLYETHYLENE		LF	\$40.00	\$ -
6	18" DIA. SMOOTH INTERIOR WALL CORRUGATED POLYETHYLENE		LF	\$55.00	\$ -
7	24" DIA. SMOOTH INTERIOR WALL CORRUGATED POLYETHYLENE		LF	\$70.00	\$ -
8	36" DIA. SMOOTH INTERIOR WALL CORRUGATED POLYETHYLENE	1850	LF	\$110.00	\$ 203,500
9	CATCH BASIN TYPE 2	12	EA	\$3,120.00	\$ 37,440
10	EXPAND POND BY 3 FOOT DEPTH (COMMON EXCAVATION)		CY	\$20.00	\$ -
11	PAVEMENT, ASPHALT CONCRETE CL B	400	TON	\$85.00	\$ 34,000
12	FLOW CONTROL STRUCTURE, 48-INCH		EA	\$ 4,240.00	\$ -
13	EROSION CONTROL, HYDROSEEDING		SF	\$0.20	\$ -
14	CHAIN LINK FENCE		LF	\$15.00	\$ -
15	ACCESS ROAD (15' WIDE, 6" GRAVEL DEPTH)		LF	\$20.00	\$ -
16	ROADSIDE PLANTING/LANDSCAPING	400	SY	\$30.00	\$ 12,000
17	UTILITY RELOCATIONS	1	LS	\$20,000.00	\$ 20,000
18	TEMPORARY FLOW BYPASS	1	LS	\$8,000.00	\$ 8,000
<b>Subtotal</b>					<b>\$ 370,690</b>
	DEWATERING	10%			\$ 37,069
	EROSION & SEDIMENTATION CONTROL	10%	(See Note 3)		\$ 37,069
	TRAFFIC CONTROL	10%	(See Note 4)		\$ 37,069
<b>Subtotal</b>					<b>\$ 481,897</b>
	MOBILIZATION (GENERAL REQUIREMENT)	10%			\$ 48,190
	CONTINGENCY	40%			\$ 192,759
<b>Construction Subtotal (Rounded)</b>					<b>\$ 723,000</b>
	STATE SALES TAX	8.9%			\$ 64,347
	PRELIMINARY & DESIGN ENGINEERING/LEGAL/ADMIN	35%			\$ 253,050
	CONSTRUCTION MANAGEMENT	20%			\$ 144,600
	PERMITTING	10%			\$ 72,300
<b>Project Subtotal (Rounded)</b>					<b>\$ 1,257,000</b>
	LAND ACQUISITION (see note 5)	0	AC	\$0	\$ -
	CONTINGENCY	30%			\$ -
	EASEMENT CONTINGENCY		PARCEL	\$5,000	\$ -
<b>2004 Dollars</b>					<b>Total Estimated Project Cost (Rounded) \$ 1,257,000</b>

Notes:

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- The order-of-magnitude cost opinion has been prepared with information provided by the City. Little or no field reconnaissance may have been conducted. Final costs will depend on actual labor and material costs, site conditions, and other variable factors. As a result, the final project costs will vary from those presented above. Because of these factors, funding needs for individual projects must be scrutinized prior to establishing the final project budgets.
- Increase percentage markup if work is in or immediately adjacent to flowing or standing water, steep slope, and/or other erosion-prone conditions.
- Increase percentage markup if work is in or immediately adjacent to secondary, arterial, or other high-volume road or temporarily closes a roadway.
- Land acquisition unit costs include administrative costs and condemnation.

**PLANNING LEVEL CONSTRUCTION COST OPINION**

PROJECT ID:

TITLE: **Ridgecrest Drainage at 12th Avenue NE (F-6a)**

BY: JLG

ITEM NO.	BID ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
1	CLEARING AND GRUBBING	0.3	AC	\$5,000.00	\$ 1,500
2	REMOVE PAVEMENT	400	SY	\$25.00	\$ 10,000
3	REMOVE PIPE	600	LF	\$20.00	\$ 12,000
4	REMOVE CATCH BASIN	1	EA	\$325.00	\$ 325
5	12" DIA. SMOOTH INTERIOR WALL CORRUGATED POLYETHYLENE		LF	\$40.00	\$ -
6	18" DIA. SMOOTH INTERIOR WALL CORRUGATED POLYETHYLENE		LF	\$55.00	\$ -
7	24" DIA. SMOOTH INTERIOR WALL CORRUGATED POLYETHYLENE	820	LF	\$70.00	\$ 57,400
8	36" DIA. SMOOTH INTERIOR WALL CORRUGATED POLYETHYLENE		LF	\$110.00	\$ -
9	CATCH BASIN TYPE 2	8	EA	\$3,120.00	\$ 24,960
10	EXPAND POND BY 3 FOOT DEPTH (COMMON EXCAVATION)		CY	\$20.00	\$ -
11	PAVEMENT, ASPHALT CONCRETE CL B	100	TON	\$85.00	\$ 8,500
12	FLOW CONTROL STRUCTURE, 48-INCH		EA	\$ 4,240.00	\$ -
13	EROSION CONTROL, HYDROSEEDING		SF	\$0.20	\$ -
14	CHAIN LINK FENCE		LF	\$15.00	\$ -
15	ACCESS ROAD (15' WIDE, 6" GRAVEL DEPTH)		LF	\$20.00	\$ -
16	ROADSIDE PLANTING/LANDSCAPING	50	SY	\$30.00	\$ 1,500
17	UTILITY RELOCATIONS	1	LS	\$4,000.00	\$ 4,000
18	TEMPORARY FLOW BYPASS	1	LS	\$4,000.00	\$ 4,000
<b>Subtotal</b>					<b>\$ 124,185</b>
	DEWATERING	10%			\$ 12,419
	EROSION & SEDIMENTATION CONTROL	10%	(See Note 3)		\$ 12,419
	TRAFFIC CONTROL	10%	(See Note 4)		\$ 12,419
<b>Subtotal</b>					<b>\$ 161,441</b>
	MOBILIZATION (GENERAL REQUIREMENT)	10%			\$ 16,144
	CONTINGENCY	40%			\$ 64,576
<b>Construction Subtotal (Rounded)</b>					<b>\$ 242,000</b>
	STATE SALES TAX	8.9%			\$ 21,538
	PRELIMINARY & DESIGN ENGINEERING/LEGAL/ADMIN	35%			\$ 84,700
	CONSTRUCTION MANAGEMENT	20%			\$ 48,400
	PERMITTING	10%			\$ 24,200
<b>Project Subtotal (Rounded)</b>					<b>\$ 421,000</b>
	LAND ACQUISITION (see note 5)	0	AC	\$0	\$ -
	CONTINGENCY	30%			\$ -
	EASEMENT CONTINGENCY	3	PARCEL	\$5,000	\$ 15,000
<b>2004 Dollars</b>					<b>Total Estimated Project Cost (Rounded) \$ 436,000</b>

Notes:

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- The order-of-magnitude cost opinion has been prepared with information provided by the City. Little or no field reconnaissance may have been conducted. Final costs will depend on actual labor and material costs, site conditions, and other variable factors. As a result, the final project costs will vary from those presented above. Because of these factors, funding needs for individual projects must be scrutinized prior to establishing the final project budgets.
- Increase percentage markup if work is in or immediately adjacent to flowing or standing water, steep slope, and/or other erosion-prone conditions.
- Increase percentage markup if work is in or immediately adjacent to secondary, arterial, or other high-volume road or temporarily closes a roadway.
- Land acquisition unit costs include administrative costs and condemnation.

**PLANNING LEVEL CONSTRUCTION COST OPINION**

PROJECT ID:

TITLE: **N 167th St and Wallingford Ave N (F-7)**

BY: JLG

ITEM NO.	BID ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
1	CLEARING AND GRUBBING	0.2	AC	\$5,000.00	\$ 1,000
2	REMOVE PAVEMENT	350	SY	\$25.00	\$ 8,750
3	REMOVE PIPE	500	LF	\$20.00	\$ 10,000
4	REMOVE CATCH BASIN	4	EA	\$325.00	\$ 1,300
5	12" DIA. SMOOTH INTERIOR WALL CORRUGATED POLYETHYLENE		LF	\$40.00	\$ -
6	18" DIA. SMOOTH INTERIOR WALL CORRUGATED POLYETHYLENE	750	LF	\$55.00	\$ 41,250
7	24" DIA. SMOOTH INTERIOR WALL CORRUGATED POLYETHYLENE		LF	\$70.00	\$ -
8	36" DIA. SMOOTH INTERIOR WALL CORRUGATED POLYETHYLENE		LF	\$110.00	\$ -
9	CATCH BASIN TYPE 1	6	EA	\$1,420.00	\$ 8,520
10	EXPAND POND BY 3 FOOT DEPTH (COMMON EXCAVATION)		CY	\$20.00	\$ -
11	PAVEMENT, ASPHALT CONCRETE CL B	110	TON	\$85.00	\$ 9,350
12	FLOW CONTROL STRUCTURE, 48-INCH		EA	\$ 4,240.00	\$ -
13	EROSION CONTROL, HYDROSEEDING		SF	\$0.20	\$ -
14	CHAIN LINK FENCE		LF	\$15.00	\$ -
15	ACCESS ROAD (15' WIDE, 6" GRAVEL DEPTH)		LF	\$20.00	\$ -
16	ROADSIDE PLANTING/LANDSCAPING	75	SY	\$30.00	\$ 2,250
17	UTILITY RELOCATIONS	1	LS	\$4,000.00	\$ 4,000
18	TEMPORARY FLOW BYPASS	1	LS	\$4,000.00	\$ 4,000
				<b>Subtotal</b>	<b>\$ 90,420</b>
	DEWATERING	10%		\$	9,042
	EROSION & SEDIMENTATION CONTROL	10%	(See Note 3)	\$	9,042
	TRAFFIC CONTROL	10%	(See Note 4)	\$	9,042
				<b>Subtotal</b>	<b>\$ 117,546</b>
	MOBILIZATION (GENERAL REQUIREMENT)	10%		\$	11,755
	CONTINGENCY	40%		\$	47,018
				<b>Construction Subtotal (Rounded)</b>	<b>\$ 176,000</b>
	STATE SALES TAX	8.9%		\$	15,664
	PRELIMINARY & DESIGN ENGINEERING/LEGAL/ADMIN	35%		\$	61,600
	CONSTRUCTION MANAGEMENT	20%		\$	35,200
	PERMITTING	10%		\$	17,600
				<b>Project Subtotal (Rounded)</b>	<b>\$ 306,000</b>
	LAND ACQUISITION (see note 5)	0	AC	\$0	\$ -
	CONTINGENCY	30%		\$	-
	EASEMENT CONTINGENCY	4	PARCEL	\$5,000	\$ 20,000
<b>2004 Dollars</b>				<b>Total Estimated Project Cost (Rounded)</b>	<b>\$ 326,000</b>

Notes:

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- Increase percentage markup if work is in or immediately adjacent to flowing or standing water, steep slope, and/or other erosion-prone conditions.
- Increase percentage markup if work is in or immediately adjacent to secondary, arterial, or other high-volume road or temporarily closes a roadway.
- Land acquisition unit costs include administrative costs and condemnation.

**PLANNING LEVEL CONSTRUCTION COST OPINION**

PROJECT ID:

TITLE: **N 167th St and Whitman Ave N Drainage (F-8)**

BY: JLG

ITEM NO.	BID ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
1	CLEARING AND GRUBBING	0.2	AC	\$5,000.00	\$ 1,000
2	REMOVE PAVEMENT	150	SY	\$25.00	\$ 3,750
3	REMOVE PIPE	150	LF	\$20.00	\$ 3,000
4	REMOVE CATCH BASIN	4	EA	\$325.00	\$ 1,300
5	12" DIA. SMOOTH INTERIOR WALL CORRUGATED POLYETHYLENE	630	LF	\$40.00	\$ 25,200
6	18" DIA. SMOOTH INTERIOR WALL CORRUGATED POLYETHYLENE	150	LF	\$55.00	\$ 8,250
7	24" DIA. SMOOTH INTERIOR WALL CORRUGATED POLYETHYLENE		LF	\$70.00	\$ -
8	36" DIA. SMOOTH INTERIOR WALL CORRUGATED POLYETHYLENE		LF	\$110.00	\$ -
9	CATCH BASIN TYPE 1	6	EA	\$1,420.00	\$ 8,520
10	EXPAND POND BY 3 FOOT DEPTH (COMMON EXCAVATION)		CY	\$20.00	\$ -
11	PAVEMENT, ASPHALT CONCRETE CL B	40	TON	\$85.00	\$ 3,400
12	FLOW CONTROL STRUCTURE, 48-INCH		EA	\$ 4,240.00	\$ -
13	EROSION CONTROL, HYDROSEEDING		SF	\$0.20	\$ -
14	CHAIN LINK FENCE		LF	\$15.00	\$ -
15	ACCESS ROAD (15' WIDE, 6" GRAVEL DEPTH)		LF	\$20.00	\$ -
16	ROADSIDE PLANTING/LANDSCAPING	50	SY	\$30.00	\$ 1,500
17	UTILITY RELOCATIONS	1	LS	\$4,000.00	\$ 4,000
18	TEMPORARY FLOW BYPASS	1	LS	\$4,000.00	\$ 4,000
<b>Subtotal</b>					\$ 63,920
	DEWATERING	10%			\$ 6,392
	EROSION & SEDIMENTATION CONTROL	10%	(See Note 3)		\$ 6,392
	TRAFFIC CONTROL	10%	(See Note 4)		\$ 6,392
<b>Subtotal</b>					\$ 83,096
	MOBILIZATION (GENERAL REQUIREMENT)	10%			\$ 8,310
	CONTINGENCY	40%			\$ 33,238
<b>Construction Subtotal (Rounded)</b>					\$ 125,000
	STATE SALES TAX	8.9%			\$ 11,125
	PRELIMINARY & DESIGN ENGINEERING/LEGAL/ADMIN	35%			\$ 43,750
	CONSTRUCTION MANAGEMENT	20%			\$ 25,000
	PERMITTING	10%			\$ 12,500
<b>Project Subtotal (Rounded)</b>					\$ 217,000
	LAND ACQUISITION (see note 5)	0	AC	\$0	\$ -
	CONTINGENCY	30%			\$ -
	EASEMENT CONTINGENCY	5	PARCEL	\$5,000	\$ 25,000
<b>2004 Dollars</b>					
<b>Total Estimated Project Cost (Rounded)</b>					<b>\$ 242,000</b>

Notes:

- The above cost opinion is in 2004 dollars and does not include future escalation, financing, or O&M costs.
- The order-of-magnitude cost opinion has been prepared with information provided by the City. Little or no field reconnaissance may have been conducted. Final costs will depend on actual labor and material costs, site conditions, and other variable factors. As a result, the final project costs will vary from those presented above. Because of these factors, funding needs for individual projects must be scrutinized prior to establishing the final project budgets.
- Increase percentage markup if work is in or immediately adjacent to flowing or standing water, steep slope, and/or other erosion-prone conditions.
- Increase percentage markup if work is in or immediately adjacent to secondary, arterial, or other high-volume road or temporarily closes a roadway.
- Land acquisition unit costs include administrative costs and condemnation.

**PLANNING LEVEL CONSTRUCTION COST OPINION**

PROJECT ID:

TITLE: **Cromwell Park Wetpond (WQ-3)**

BY: **DLP**

ITEM NO.	BID ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT	
1	COMMON EXCAVATION {QTY >= 1000}	1,000	CY	\$ 16.00	\$ 16,000	
2	WETPOND EMERGENT VEGETATION	8,000	SF	\$ 2.00	\$ 16,000	
					<b>Subtotal</b>	\$ 32,000
	DEWATERING	0%			\$ -	
	EROSION & SEDIMENTATION CONTROL	0%			\$ -	
	TRAFFIC CONTROL	0%	(See Note 4)		\$ -	
					<b>Subtotal</b>	\$ 32,000
	CONTINGENCY	40%			\$ 12,800	
	MOBILIZATION (GENERAL REQUIREMENT)	0%			\$ -	
					<b>Construction Subtotal (Rounded)</b>	\$ 45,000
	STATE SALES TAX	8.9%			\$ 4,005	
	PRLIMINARY ENGINEERING/DESIGN ENGINEERING/LEGAL/ADMIN	85%		\$ -	\$ 38,250	
	CONSTRUCTION MANAGEMENT	20%			\$ 9,000	
	PERMITTING	0%			\$ -	
					<b>Project Subtotal (Rounded)</b>	\$ 96,000
	LAND ACQUISITION (see note 5)	0	AC	\$ -	\$ -	
	CONTINGENCY	30%			\$ -	
<b>2004 Dollars</b>					<b>Total Estimated Project Cost (Rounded)</b>	\$ <b>96,000</b>

Notes:

- The above cost opinion is in 2004 dollars and does not include future escalation, financing, or O&M costs.
- The order-of-magnitude cost opinion has been prepared with information provided by the City. Little or no field reconnaissance may have been conducted. Final costs will depend on actual labor and material costs, site conditions, and other variable factors. As a result, the final project costs will vary from those presented above. Because of these factors, funding needs for individual projects must be scrutinized prior to establishing the final project budgets.
- Increase percentage markup if work is in or immediately adjacent to flowing or standing water, steep slope, and/or other erosion-prone conditions.
- Increase percentage markup if work is in or immediately adjacent to secondary, arterial, or other high-volume road or temporarily closes a roadway.
- Land acquisition unit costs include administrative costs and condemnation.

**PLANNING LEVEL CONSTRUCTION COST OPINION**

PROJECT ID:

TITLE: **Darnell Park WQ Wetpond (WQ-2)**  
 BY: **DLP**

ITEM NO.	BID ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
1	COMMON EXCAVATION {QTY >= 1000}	1,000	CY	\$ 16.00	\$ 16,000
2	WETPOND EMERGENT VEGETATION	8,000	SF	\$ 2.00	\$ 16,000
					<b>Subtotal</b> \$ 32,000
	DEWATERING	0%			\$ -
	EROSION & SEDIMENTATION CONTROL	0%			\$ -
	TRAFFIC CONTROL	0%	(See Note 4)		\$ -
					<b>Subtotal</b> \$ 32,000
	CONTINGENCY	40%			\$ 12,800
	MOBILIZATION (GENERAL REQUIREMENT)	0%			\$ -
					<b>Construction Subtotal (Rounded)</b> \$ 45,000
	STATE SALES TAX	8.9%			\$ 4,005
	PRLIMINARY ENGINEERING/DESIGN ENGINEERING/LEGAL/ADMIN	85%		\$ -	\$ 38,250
	CONSTRUCTION MANAGEMENT	20%			\$ 9,000
	PERMITTING	0%			\$ -
					<b>Project Subtotal (Rounded)</b> \$ 96,000
	LAND ACQUISITION (see note 5)	0	AC	\$ -	\$ -
	CONTINGENCY	30%			\$ -
<b>2004 Dollars</b>					<b>Total Estimated Project Cost (Rounded)</b> \$ 96,000

Notes:

1. The above cost opinion is in 2004 dollars and does not include future escalation, financing, or O&M costs.
2. The order-of-magnitude cost opinion has been prepared with information provided by the City. Little or no field reconnaissance may have been conducted. Final costs will depend on actual labor and material costs, site conditions, and other variable factors. As a result, the final project costs will vary from those presented above. Because of these factors, funding needs for individual projects must be scrutinized prior to establishing the final project budgets.
3. Increase percentage markup if work is in or immediately adjacent to flowing or standing water, steep slope, and/or other erosion-prone conditions.
4. Increase percentage markup if work is in or immediately adjacent to secondary, arterial, or other high-volume road or temporarily closes a roadway.
5. Land acquisition unit costs include administrative costs and condemnation.

**PLANNING LEVEL CONSTRUCTION COST OPINION**

PROJECT ID:

TITLE: **Ridgecrest at 10th Ave WQ Wetpond (WQ-4)**

BY: **DLP**

ITEM NO.	BID ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT	
1	COMMON EXCAVATION {QTY >= 1000}	1,000	CY	\$ 16.00	\$ 16,000	
2	WETPOND EMERGENT VEGETATION	8,000	SF	\$ 2.00	\$ 16,000	
					<b>Subtotal</b>	\$ 32,000
	DEWATERING	0%			\$ -	
	EROSION & SEDIMENTATION CONTROL	0%			\$ -	
	TRAFFIC CONTROL	0%	(See Note 4)		\$ -	
					<b>Subtotal</b>	\$ 32,000
	CONTINGENCY	40%			\$ 12,800	
	MOBILIZATION (GENERAL REQUIREMENT)	0%			\$ -	
					<b>Construction Subtotal (Rounded)</b>	\$ 45,000
	STATE SALES TAX	8.9%			\$ 4,005	
	PRMLINARY ENGINEERING/DESIGN ENGINEERING/LEGAL/ADMIN	85%		\$ -	\$ 38,250	
	CONSTRUCTION MANAGEMENT	20%			\$ 9,000	
	PERMITTING	0%			\$ -	
					<b>Project Subtotal (Rounded)</b>	\$ 96,000
	LAND ACQUISITION (see note 5)	0	AC	\$ -	\$ -	
	CONTINGENCY	30%			\$ -	
<b>2004 Dollars</b>					<b>Total Estimated Project Cost (Rounded)</b>	\$ 96,000

Notes:

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- Increase percentage markup if work is in or immediately adjacent to flowing or standing water, steep slope, and/or other erosion-prone conditions.
- Increase percentage markup if work is in or immediately adjacent to secondary, arterial, or other high-volume road or temporarily closes a roadway.
- Land acquisition unit costs include administrative costs and condemnation.

**PLANNING LEVEL CONSTRUCTION COST OPINION**

PROJECT ID:

TITLE: **Miscellaneous WATER QUALITY Projects (WQ-5 and WQ-6)**

BY: DLP

ITEM NO.	BID ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
1	PARK AND RIDE VAULT (assume 1acre site basic wq treatment plus appurtneance:	1	LS	\$240,000.00	\$ 175,000
2	ENGINEERING IDENTIFYING OTHER PROJECTS	1	LS	\$80,000.00	\$ 80,000
3	STANDALONE WETPOND (PROPERTY ACQUISITION PROJECT)				\$ -
3a	COMMON EXCAVATION {QTY >= 1000}	500	CY	\$ 16.00	\$ 8,000
3b	WETPOND EMERGENT VEGETATION	1,300	SF	\$ 2.00	\$ 2,600
3c	ROADSIDE PLANTING/LANDSCAPING	1,500	SF	\$ 30.00	\$ 45,000
3d	REINF. CONC. PIPE 18-INCH	200	LF	\$80.00	\$ 16,000
5	O/W SEPARATOR AT OUTFALLS (15 out of 60 total outfalls)	15	EA	\$100,000.00	\$ 1,500,000
	<b>Subtotal</b>				\$ 1,826,600
	DEWATERING	5%			\$ 91,330
	EROSION & SEDIMENTATION CONTROL	10%	(See Note 3)		\$ 182,660
	TRAFFIC CONTROL	5%	(See Note 4)		\$ 91,330
	<b>Subtotal</b>				\$ 2,191,920
	CONTINGENCY	40%			\$ 876,768
	MOBILIZATION (GENERAL REQUIREMENT)	10%			\$ 219,192
	<b>Construction Subtotal (Rounded)</b>				\$ 3,288,000
	STATE SALES TAX	8.9%			\$ 292,632
	PRLIMINARY ENGINEERING/DESIGN ENGINEERING/LEGAL/ADMIN	35%			\$ 1,150,800
	CONSTRUCTION MANAGEMENT	20%			\$ 657,600
	PERMITTING	5%			\$ 164,400
	<b>Project Subtotal (Rounded)</b>				\$ 5,553,000
	LAND ACQUISITION (see note 5)	1	PARCEL	\$ 390,000.00	\$ 390,000
	CONTINGENCY	30%			\$ 117,000
<b>2004 Dollars</b>	<b>Total Estimated Project Cost (Rounded)</b>				<b>\$ 6,060,000</b>
	<b>WQ-5</b>	<b>1/3</b>	<b>Priority Level 2</b>	<b>\$ 2,020,000</b>	
	<b>WQ-6</b>	<b>2/3</b>	<b>Priority Level 3</b>	<b>\$ 4,040,000</b>	

Notes:

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- Increase percentage markup if work is in or immediately adjacent to flowing or standing water, steep slope, and/or other erosion-prone conditions.
- Increase percentage markup if work is in or immediately adjacent to secondary, arterial, or other high-volume road or temporarily closes a roadway.
- Land acquisition unit costs include administrative costs and condemnation.

**PLANNING LEVEL CONSTRUCTION COST OPINION**

**PROJECT ID:**

**TITLE: BOEING CREEK REACH 1 - STREAMBANK RESTORATION (H-1)**

**BY: DLP**

ITEM NO.	BID ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
1	BANK STABILIZATION	1000	LF	\$700.00	\$ 700,000
2	BOEING CREEK REACH 1 RIPARIAN REVEGETATION	0.75	AC	\$ 3,200.00	\$ 2,400
3	LARGE WOODY DEBRIS	2	EA	\$500.00	\$ 1,000
				<b>Subtotal</b>	<b>\$ 703,400</b>
	DEWATERING	5%			\$ 35,170
	EROSION & SEDIMENTATION CONTROL	10%	(See Note 3)		\$ 70,340
	TRAFFIC CONTROL	5%	(See Note 4)		\$ 35,170
				<b>Subtotal</b>	<b>\$ 844,080</b>
	CONTINGENCY	40%			\$ 337,632
	MOBILIZATION (GENERAL REQUIREMENT)	20%			\$ 168,816
				<b>Construction Subtotal (Rounded)</b>	<b>\$ 1,351,000</b>
	STATE SALES TAX	8.9%			\$ 120,239
	PRLIMINARY ENGINEERING/DESIGN ENGINEERING/LEGAL/ADMIN	35%			\$ 472,850
	CONSTRUCTION MANAGEMENT	15%			\$ 202,650
	PERMITTING	20%			\$ 270,200
				<b>Project Subtotal (Rounded)</b>	<b>\$ 2,417,000</b>
	LAND ACQUISITION (see note 5)	0	AC	\$ -	\$ -
	CONTINGENCY	30%			\$ -
<b>2004 Dollars</b>				<b>Total Estimated Project Cost (Rounded)</b>	<b>\$ 2,417,000</b>

**Notes:**

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2. The order-of-magnitude cost opinion has been prepared with information provided by the City. Little or no field reconnaissance may have been conducted. Final costs will depend on actual labor and material costs, site conditions, and other variable factors. As a result, the final project costs will vary from those presented above. Because of these factors, funding needs for individual projects must be scrutinized prior to establishing the final project budgets.
3. Increase percentage markup if work is in or immediately adjacent to flowing or standing water, steep slope, and/or other erosion-prone conditions.
4. Increase percentage markup if work is in or immediately adjacent to secondary, arterial, or other high-volume road or temporarily closes a roadway.
5. Land acquisition unit costs include administrative costs and condemnation.

**PLANNING LEVEL CONSTRUCTION COST OPINION**

PROJECT ID:

TITLE: **BOEING CREEK REACH 8 - STREAMBANK RESTORATION (H-2)**

BY: DLP

ITEM NO.	BID ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
1	BANK STABILIZATION	500	LF	\$700.00	\$ 350,000
2	BOEING CREEK REACH 1 RIPARIAN REVEGETATION	0.5	AC	\$ 3,200.00	\$ 1,600
3	LARGE WOODY DEBRIS	5	EA	\$850.00	\$ 4,250
<b>Subtotal</b>					<b>\$ 355,850</b>
	DEWATERING	5%			\$ 17,793
	EROSION & SEDIMENTATION CONTROL	10%	(See Note 3)		\$ 35,585
	TRAFFIC CONTROL	5%	(See Note 4)		\$ 17,793
<b>Subtotal</b>					<b>\$ 427,020</b>
	CONTINGENCY	40%			\$ 170,808
	MOBILIZATION (GENERAL REQUIREMENT)	10%			\$ 42,702
<b>Construction Subtotal (Rounded)</b>					<b>\$ 641,000</b>
	STATE SALES TAX	8.9%			\$ 57,049
	PRLIMINARY ENGINEERING/DESIGN ENGINEERING/LEGAL/ADMIN	35%			\$ 224,350
	CONSTRUCTION MANAGEMENT	20%			\$ 128,200
	PERMITTING	20%			\$ 128,200
<b>Project Subtotal (Rounded)</b>					<b>\$ 1,179,000</b>
	LAND ACQUISITION (see note 5)	0	AC	\$ -	\$ -
	CONTINGENCY	30%			\$ -
<b>2004 Dollars</b>	<b>Total Estimated Project Cost (Rounded)</b>				<b>\$ 1,179,000</b>

Notes:

1. The above cost opinion is in 2004 dollars and does not include future escalation, financing, or O&M costs.
2. The order-of-magnitude cost opinion has been prepared with information provided by the City. Little or no field reconnaissance may have been conducted. Final costs will depend on actual labor and material costs, site conditions, and other variable factors. As a result, the final project costs will vary from those presented above. Because of these factors, funding needs for individual projects must be scrutinized prior to establishing the final project budgets.
3. Increase percentage markup if work is in or immediately adjacent to flowing or standing water, steep slope, and/or other erosion-prone conditions.
4. Increase percentage markup if work is in or immediately adjacent to secondary, arterial, or other high-volume road or temporarily closes a roadway.
5. Land acquisition unit costs include administrative costs and condemnation.

**PLANNING LEVEL CONSTRUCTION COST OPINION**

PROJECT ID:

TITLE: **McALEER - CULVERT REPLACEMENT (H-5)**

BY: DLP

ITEM NO.	BID ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
1	CORRUGATED METAL PIPE ARCH 64"X 43" (EQUIV. DIA 54")	50	LF	\$125.00	\$ 6,250
2	REMOVE CULVERT	50	LF	\$13.00	\$ 650
3	ROAD RESTORATION	200	SY	\$ 33.00	\$ 6,600
4	RIPARIAN REVEGETATION	0.5	AC	\$ 3,200.00	\$ 1,600
2	STREAM GRAVEL	100	TN	\$40.00	\$ 4,000
					\$ -
				<b>Subtotal</b>	\$ 19,100
	DEWATERING	5%			\$ 955
	EROSION & SEDIMENTATION CONTROL	10%	(See Note 3)		\$ 1,910
	TRAFFIC CONTROL	5%	(See Note 4)		\$ 955
				<b>Subtotal</b>	\$ 22,920
	CONTINGENCY	40%			\$ 9,168
	MOBILIZATION (GENERAL REQUIREMENT)	10%			\$ 2,292
				<b>Construction Subtotal (Rounded)</b>	\$ 34,000
	STATE SALES TAX	8.9%			\$ 3,026
	PRLIMINARY ENGINEERING/DESIGN ENGINEERING/LEGAL/ADMIN	85%			\$ 28,900
	CONSTRUCTION MANAGEMENT	20%			\$ 6,800
	PERMITTING	15%			\$ 5,100
				<b>Project Subtotal (Rounded)</b>	\$ 78,000
	LAND ACQUISITION (see note 5)	0	AC	\$ -	\$ -
	CONTINGENCY	30%			\$ -
<b>2004 Dollars</b>				<b>Total Estimated Project Cost (Rounded)</b>	<b>\$ 78,000</b>

Notes:

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- Increase percentage markup if work is in or immediately adjacent to flowing or standing water, steep slope, and/or other erosion-prone conditions.
- Increase percentage markup if work is in or immediately adjacent to secondary, arterial, or other high-volume road or temporarily closes a roadway.
- Land acquisition unit costs include administrative costs and condemnation.

**PLANNING LEVEL CONSTRUCTION COST OPINION**

PROJECT ID:

TITLE: **MISCELLANEOUS STREAM HABITAT PROJECTS (H-6 & H-7)**

BY: DLP

ITEM NO.	BID ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT	
1	STREAM STABILIZATION (for all fish)	1	LS	\$356,000.00	\$ 356,000	
2	CULVERT REPLACEMENT	1	EA	\$20,000.00	\$ 20,000	
3	ENGINEERING INVESTIGATION	1	EA	\$100,000.00	\$ 100,000	
4	STREAM STABILIZATION (for all fish)	1	LS	\$356,000.00	\$ 356,000	
5	CULVERT REPLACEMENT	1	EA	\$20,000.00	\$ 20,000	
6	ENGINEERING INVESTIGATION	1	EA	\$100,000.00	\$ 100,000	
					<b>Subtotal</b>	\$ 952,000
	DEWATERING	5%			\$ 47,600	
	EROSION & SEDIMENTATION CONTROL	10%	(See Note 3)		\$ 95,200	
	TRAFFIC CONTROL	5%	(See Note 4)		\$ 47,600	
					<b>Subtotal</b>	\$ 1,142,400
	CONTINGENCY	40%			\$ 456,960	
	MOBILIZATION (GENERAL REQUIREMENT)	20%			\$ 228,480	
					<b>Construction Subtotal (Rounded)</b>	\$ 1,828,000
	STATE SALES TAX	8.9%			\$ 162,692	
	PRLIMINARY ENGINEERING/DESIGN ENGINEERING/LEGAL/ADMIN	35%			\$ 639,800	
	CONSTRUCTION MANAGEMENT	20%			\$ 365,600	
	PERMITTING	5%			\$ 91,400	
					<b>Project Subtotal (Rounded)</b>	\$ 3,087,000
	LAND ACQUISITION (see note 5)	0	AC	\$ -	\$ -	
	CONTINGENCY	30%			\$ -	
					<b>2004 Dollars</b>	
					<b>Total Estimated Project Cost (Rounded)</b>	\$ 3,087,000
		<b>H-6</b>	<b>1/3</b>	<b>Priority Level 2</b>	<b>\$ 1,029,000</b>	
		<b>H-7</b>	<b>2/3</b>	<b>Priority Level 3</b>	<b>\$ 2,058,000</b>	

Notes:

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- Increase percentage markup if work is in or immediately adjacent to flowing or standing water, steep slope, and/or other erosion-prone conditions.
- Increase percentage markup if work is in or immediately adjacent to secondary, arterial, or other high-volume road or temporarily closes a roadway.
- Land acquisition unit costs include administrative costs and condemnation.

# Appendix E.

## Operation and Maintenance

### Supporting Information

The information in this appendix supplements the summary of Operation and maintenance (O&M) needs described in Chapter 8 of this master plan. O&M needs for the surface water management (SWM) program have been developed based on a review of the City's existing program, a review of existing needs identified by City staff, and the priority level alternatives for the flood protection, water quality, and stream habitat program areas. All O&M costs in this appendix are in 2004 dollars.

The O&M costs in the following sections are direct O&M costs, and do not include the City's General Fund Cost Allocation. The General Fund Cost Allocation is shown in Table E-2 at the end of this appendix.

#### ***E.1 Flood Protection O&M Needs: Additional Detail***

##### **Priority Level 1**

###### ***Additional O&M Costs for Future Capital Improvements***

Capital improvements, particularly those that add infrastructure, require additional maintenance effort and expenditure. The O&M activities associated with future capital improvements are expected to be as follows:

- **3rd Avenue NW Drainage Improvements.** O&M activities include maintenance of new conveyance facilities. The annual new O&M expenditure is estimated to be \$5,000.
- **Ronald Bog Drainage Improvements.** New O&M activities include maintenance of detention improvements and new conveyance facilities. The annual new O&M expenditure is estimated to be \$5,000, which would include any required additional maintenance in the wetland facilities and daylighted water course.
- **Other Flood Protection Improvements.** New conveyance, retention, and detention facilities will require maintenance, including such activities as such as catch basin cleaning, catch basin inlet cleaning, periodic inspections, vegetation management, and minor repairs. The unit cost is based on the City's existing maintenance costs (excluding street sweeping) divided by its estimated drainage pipe inventory. For the flood protection Priority Level 1 capital projects, the estimated additional O&M cost is \$29,000 per year. Throughout this analysis, the annual O&M cost for new facilities is estimated to be 0.3 percent of the project cost. This factor was estimated based on the City's current costs for contracted maintenance services and vactoring divided by an estimated replacement cost for the City's approximately 500,000 lineal feet (LF) of piped drainage system.

###### ***Acquiring Maintenance Responsibility for Systems on Private Property***

Drainage and surface water infrastructure currently owned and maintained by the City is located in the publicly owned right-of-way. Some drainage and surface water systems, however, were built to follow predevelopment drainage paths that are not located in the public right-of-way but instead on

private property. Public water moving through private facilities creates service level and risk concerns.

These systems located on private property are critical elements of Shoreline’s drainage system, but the City has limited access for maintenance or inspection. Often, maintenance of these systems is inadequate, contributing to flooding problems. Acquiring maintenance access to these systems will help meet the City’s overall flood protection goals.

Estimated maintenance of these systems related to areas of structural flooding, not including any needed capital upgrades, is expected to cost \$17,500 per year. The maintenance cost is based on maintaining an additional 17,500 LF of conveyance infrastructure and an annual unit cost of \$1 per LF for maintenance.

**Additional Ditch Reshaping**

City staff indicate that the City’s roads and street crews should spend five weeks per year on ditch reshaping instead of the three weeks that is currently budgeted. Five weeks of crew time is expected to result in reshaping ditches on an approximately 15-year cycle. The annual financial impact is approximately \$14,000.

**Additional Retention/Detention Facility Inspection**

The City is responsible for inspecting all retention/detention facilities. Approximately two-thirds of these facilities serve commercial development and are privately maintained. Residential retention/detention facilities are generally maintained by the City, as are regional facilities. A projected inventory of retention/detention facilities was developed by City staff and is shown in Table E-1. The number of facilities is projected to increase from the current 314 to over 500 by 2010 as a result of new development and redevelopment in the City.

**Table E-1  
Projected Retention/Detention Facility Inventory**

Year	Regional and Residential (City-Maintained)	Commercial (Privately Maintained)	Total
2003	95	219	314
2004	100	229	329
2005	110	249	359
2006	120	269	389
2007	130	289	419
2008	140	309	449
2009	150	329	479
2010	160	349	509

Currently, inspections are done on an annual basis and are completed by two interns who combine for 1.0 full-time equivalent (FTE). City staff report that the required staffing level to adequately document inspections is 1.0 FTE plus one half-time intern support. The City intends to reprioritize efforts of existing staff to meet this staffing need. By 2010, since the projected number of facilities is expected to increase by over 60 percent, it is anticipated that an additional 1.0 FTE would be required. The additional expenditure for this FTE is \$60,000, to be phased in incrementally through 2010 as the number of facilities increases. For planning purposes, 50 percent of this expenditure is considered flood protection and 50 percent is associated with water quality. The expenditure associated with flood protection Priority Level 1 is \$30,000 per year.

## Priority Level 2

Priority Level 2 includes all Priority Level 1 activities plus the following additional activities.

### ***Additional O&M Costs for Future Capital Improvements***

For flood protection Priority Level 2 capital projects (see Table 5-3 in the master plan), the estimated new O&M cost is \$4,000 per year.

### ***Acquiring Maintenance Responsibility for Systems on Private Property***

Continuing from Priority Level 1, the City will expand its maintenance responsibility for drainage infrastructure on private property. Annual maintenance expenditures are an estimated \$17,500 above those include in Priority Level 1.

### ***Additional Shoulder Reconstruction***

City staff indicate that shoulder reconstruction should occur on an approximately 8-year cycle, compared to the current 10-year cycle. The annual financial impact is approximately \$14,000.

## Priority Level 3

Priority Level 3 activities are the same as Priority Level 2 activities.

## ***E.2 Water Quality O&M Needs: Additional Detail***

### Priority Level 1

#### ***Additional O&M Costs for Future Capital Improvements***

Aurora Avenue improvements are being completed in three phases, and each phase is expected to contain oil/water separators, sediment traps, and one new detention facility. The estimated annual O&M cost for facilities to be completed within the next six years is \$15,000 per year.

#### ***Additional Catch Basin Cleaning***

Although the Washington State Department of Ecology (Ecology) has not yet issued an NPDES Phase II municipal stormwater general permit (see Chapter 3), it is anticipated that this permit could require annual catch basin cleaning. This would represent increasing the frequency of catch basin cleaning by approximately 25 percent. The estimated annual financial impact, based on a unit cost of \$25 per catch basin, is approximately \$30,000. Because the 2004 budget for contracted maintenance services includes a larger dollar amount than anticipated to deliver the current services, this increase in catch basin cleaning can be funded within the dollar amount specified in the 2004 budget.

#### ***Additional Retention/Detention Facility Inspection***

As described in Section E.1, additional retention/detention facility inspection is anticipated as the number of facilities increases. For planning purposes, 50 percent of this new expenditure is related to water quality, corresponding to an additional annual expenditure of \$30,000.

#### ***Water Quality Monitoring***

An additional \$20,000 expenditure for water quality monitoring activities is proposed, which will allow for a water quality survey every five years, and other annual water quality monitoring activities.

### ***Additional FTE for Programmatic Activities***

By fall 2004, Ecology anticipates issuing the NPDES Phase II municipal stormwater general permit, which will apply to the City of Shoreline. The requirements of this permit are not yet known, and this master plan incorporates anticipated permit requirements. It is anticipated that this permit may require hiring of an additional FTE for programmatic activities. City staff have identified needs including 0.20 FTE to expand the clean car-wash program, 0.25 FTE to expand no-spray zone activities, 0.4 FTE to expand the community involvement restoration program, and the balance to expand the natural lawn and garden care program. The estimated cost for this additional FTE is \$60,000 per year.

Combined, these programmatic activities will improve the water quality in Shoreline's surface water by reducing the discharge of pollutants. These activities will also foster community knowledge and involvement in activities that benefit Shoreline's surface waters.

Expanding the clean car-wash program would allow the City to provide support for a vacu-broom to be loaned to the community, provide outreach to community and youth fundraising groups, and develop and distribute educational materials. Expanding the no-spray project would allow City staff to expand this project citywide. Expanding the community involvement restoration and the natural lawn and garden care programs will allow City staff to provide more outreach and education, and to facilitate greater volunteer efforts.

## **Priority Level 2**

Priority Level 2 includes all Priority Level 1 activities plus the following additional activities.

### ***Additional O&M Costs for New Capital Improvements***

For water quality Priority Level 2 capital projects, the estimated new O&M cost is \$6,000 per year.

## **Priority Level 3**

Priority Level 3 includes all Priority Level 2 activities plus the following additional activities.

### ***Additional O&M Costs for New Capital Improvements***

For water quality Priority Level 3 capital projects, the estimated new O&M cost is \$8,000 per year.

### ***Increased Frequency of Street Sweeping***

City staff indicate that a meeting a targeted street sweeping frequency would require approximately 25 percent more sweeping than current levels (as described in Chapter 4). The estimated financial impact would be approximately \$37,500 per year.

### ***Use of Regenerative Air Street Sweepers***

The majority of street sweepers used in Shoreline are mechanical broom sweepers. Additional water quality benefits could be obtained by use of regenerative air sweepers (or other types of high-efficiency sweepers) because these sweepers can pick up smaller particulates. Prior to using regenerative air sweepers, several items need further evaluation, including (1) the amount of water quality benefit in Shoreline, (2) whether regenerative air sweepers should be used on all streets or only on those with curb/gutter drainage systems, and (3) the ability of regenerative air sweepers to pick up heavier debris that can be picked up by mechanical broom sweepers. This last consideration will define whether regenerative air sweepers could be used instead of mechanical broom sweepers, or whether they would follow behind mechanical broom sweepers. The estimated annual financial impact is \$60,000, based on the assumptions that (1) regenerative air sweepers would be used only on the estimated 25 percent of Shoreline's streets with curb/gutter drainage systems, (2) regenerative air sweepers would follow behind mechanical broom sweepers, (3) the City's current street sweeping

frequencies (described in Chapter 4) would remain unchanged, and (4) the unit cost for a regenerative air sweeper would be 50 percent higher than that of a mechanical broom sweeper.

**Additional O&M Activities**

Associated with water quality Priority Level 3 is a 10 percent increase in all water quality maintenance activities.

## **E.3 Stream Habitat O&M Needs: Additional Detail**

### **Priority Level 1**

**Additional O&M Costs for New Capital Improvements**

For stream habitat Priority Level 1 capital projects, the estimated new O&M cost is \$12,000 per year.

**Thornton Creek Reach 14**

Maintenance of the restoration area in Paramount Park is needed to remove invasive plant species. The estimated annual cost of this maintenance is \$2,000.

### **Priority Level 2**

Priority Level 2 includes all Priority Level 1 activities plus the following additional activities.

**Additional O&M Costs for New Capital Improvements**

For stream habitat Priority Level 2 projects, the estimated new O&M cost is \$5,000 per year.

**Additional Programmatic Activities**

An additional \$15,000 per year expenditure is included to organize volunteer groups for habitat restoration projects, to provide public education and involvement, to organize a network of volunteer stream stewards, and to perform additional invasive plant species removal.

### **Priority Level 3**

Priority Level 3 includes all Priority Level 2 activities plus the following additional activities.

**Additional Programmatic Activities**

An additional \$21,000 per year expenditure is included to organize volunteer groups for habitat restoration projects, to provide public education and involvement, to organize a network of volunteer stream stewards, and to perform additional invasive plant species removal.

## **E.4 Summary of All New O&M Needs**

Table E-2 shows a summary of anticipated new O&M activities for each priority level, including the direct O&M expenditure and the General Fund Cost Allocation impact. The financial analysis in Chapter 9 contains additional information regarding the impacts to SWM fees and how these activities could be phased in over the 20-year planning period.

**Table E-2**  
**Projected Annual O&M Needs (in 2004 dollars)**

New Annual O&M Expenditure	Direct O&M Cost	General Fund Cost Allocation Impact <sup>1</sup>	Total (2004\$)	Notes
<b>Priority Level 1 (Years 1 - 6)</b>				
<b>Flood Protection</b>				
O&M from Ongoing Capital Projects	\$10,000	\$3,000	\$13,000	2
O&M from Other New Capital Projects	29,000	7,000	36,000	3
O&M of Systems on Private Property	17,500	4,000	21,500	4
Ditch Reshaping	14,000	4,000	18,000	5
Inspection/Source Control	30,000	8,000	38,000	6
Subtotal, Flood Protection	<u>\$100,500</u>	<u>\$26,000</u>	<u>\$126,500</u>	
<b>Water Quality</b>				
O&M from Ongoing Capital Projects	14,000	4,000	18,000	7
O&M from Other New Capital Projects	1,000	0	1,000	3
WQ Monitoring Program	20,000	5,000	25,000	12
Catch Basin Cleaning	0	0	0	8
Inspection/Source Control	30,000	8,000	38,000	6
Programmatic	60,000	15,000	75,000	9
Subtotal, Water Quality	<u>\$125,000</u>	<u>\$32,000</u>	<u>\$157,000</u>	
<b>Stream Habitat</b>				
Additional O&M Activities	\$2,000	\$1,000	\$3,000	
O&M from New Capital Projects	12,000	3,000	15,000	3
Subtotal, Stream Habitat	<u>\$14,000</u>	<u>\$4,000</u>	<u>\$18,000</u>	
<b>Parks and Transportation Projects</b>				
O&M from New Capital Projects	\$7,000	\$2,000	\$9,000	3
<b>Total Priority Level 1</b>	<b>\$246,500</b>	<b>\$64,000</b>	<b>\$310,500</b>	
<b>Priority Level 2 (Years 7 - 12)</b>				
<b>Flood Protection</b>				
Priority Level 1	\$100,500	\$26,000	\$126,500	
O&M from New Capital Projects	4,000	1,000	5,000	3
O&M of Systems on Private Property	17,500	4,000	21,500	4
Shoulder Reconstruction	14,000	4,000	18,000	10
Subtotal, Flood Protection	<u>\$136,000</u>	<u>\$35,000</u>	<u>\$171,000</u>	
<b>Water Quality</b>				
Priority Level 1	\$125,000	\$32,000	\$157,000	
O&M from New Capital Projects	6,000	2,000	8,000	3
Use of Regenerative Air Street Sweepers	0	0	0	11
Subtotal, Water Quality	<u>\$131,000</u>	<u>\$34,000</u>	<u>\$165,000</u>	
<b>Stream Habitat</b>				
Priority Level 1	\$14,000	\$4,000	\$18,000	
Additional O&M Activities	15,000	4,000	19,000	11
O&M from New Capital Projects	5,000	1,000	6,000	3
Subtotal, Stream Habitat	<u>\$34,000</u>	<u>\$9,000</u>	<u>\$43,000</u>	
<b>Parks and Transportation Projects</b>				
Priority Level 1	\$7,000	\$2,000	\$9,000	
New O&M from New Capital Projects	19,000	5,000	24,000	3
Subtotal, Parks and Transportation Projects	<u>\$26,000</u>	<u>\$7,000</u>	<u>\$33,000</u>	
<b>Total Priority Level 2</b>	<b>\$320,000</b>	<b>\$83,000</b>	<b>\$412,000</b>	

**Table E-2 (continued)**  
**Projected Annual O&M Needs (2004 Dollars)**

New Annual O&M Expenditure	Direct O&M Cost	General Fund Cost Allocation Impact <sup>1</sup>	Total (2004\$)	Notes
<b>Priority Level 3 (Years 13 - 20)</b>				
<b>Flood Protection</b>				
Priority Level 2	\$136,000	\$35,000	\$171,000	
O&M from New Capital Projects	0	0	0	3
Subtotal, Flood Protection	\$136,000	\$35,000	\$171,000	
<b>Water Quality</b>				
Priority Level 2	\$131,000	\$34,000	\$165,000	
O&M from New Capital Projects	0	0	0	3
Street Sweeping (additional service)	37,500	9,000	46,500	11
Use of Regenerative Air Street Sweepers	60,000	15,000	75,000	11
Resume Water Quality Monitoring	0	0	0	11
Water Quality Monitoring in Lakes	0	0	0	11
Additional WQ O&M activities	38,000	10,000	48,000	11
Subtotal, Water Quality	\$266,500	\$68,000	\$334,500	
<b>Stream Habitat</b>				
Priority Level 2	\$34,000	\$9,000	\$43,000	
Additional O&M Activities	21,000	5,000	26,000	11
O&M from New Capital Projects	0	0	0	3
Subtotal, Stream Habitat	\$55,000	\$14,000	\$69,000	
<b>Parks and Transportation Projects</b>				
Priority Level 2	\$26,000	\$7,000	\$33,000	
New O&M from New Capital Projects	0	0	0	3
Subtotal, Parks and Transportation Projects	\$26,000	\$7,000	\$33,000	
<b>Total Priority Level 3</b>	<b>\$483,500</b>	<b>\$124,000</b>	<b>\$607,500</b>	

Notes:

- (1) The General Fund Cost Allocation impact is estimated at 25% of the direct O&M cost.
- (2) Ronald Bog: \$5K, and Aurora Avenue Phase 1, \$5K.
- (3) The annual O&M expenditure for new capital projects is an estimated 0.3 percent of the capital investment. This was estimated based on the City's current costs for catch basin cleaning and contracted King County maintenance, divided by the estimated investment (in today's dollars) of drainage pipe (equal to 500,000 LF of pipe at \$150 per LF). Repair/replacement expenditures excluded from this calculation.
- (4) Based on acquisition of 35,000 LF of piped conveyance systems at a maintenance cost of \$1/LF/year.
- (5) Based on two additional crew weeks of effort each year.
- (6) Based on one new FTE, due to increased number of facilities. 50% flood protection, 50% water quality.
- (7) \$14K for Aurora Avenue Phase 1.
- (8) The 2004 budget has unallocated funds for contracted maintenance services that cover the projected costs of additional catch basin cleaning.
- (9) Anticipated requirement of the General MS4 NPDES Phase 2 Permit.
- (10) Based on an eight-year cycle of shoulder maintenance.
- (11) See text above for explanations of these costs. Priority Level 3 additional service is estimated to be a 25% increase compared with current (2004) levels.
- (12) Annual \$20,000 expenditure for water quality monitoring covers a "state of the waters" report every five years at an estimated cost of \$60,000 and ongoing monitoring of \$8,000/year.

# Appendix F. Financial Analysis Supporting Information

## ***F.1 Introduction***

This appendix provides information that supplements Chapter 9 of the master plan.

## ***F.2 Past and Present Financial Status***

The City accounts for surface water management (SWM) revenues and expenditures in the following two funds:

- **Surface Water Management Fund** – Drainage system operating expenses are recorded in this fund and the primary revenue source is the storm drainage fees paid by Shoreline property owners. A portion of the funds are transferred to the Surface Water Capital Fund for drainage improvement projects. As of January 1, 2003, the City reported a fund balance of \$2,370,539 in the Surface Water Management Fund. The projected fund balance for January 1, 2004 is \$1,972,470.
- **Surface Water Capital Fund** – The Surface Water Capital Fund receives funds from the Surface Water Management Fund and dedicated grant sources for capital purposes. These funds are used for surface water drainage and stream rehabilitation projects. As of January 1, 2003, the City reported a fund balance of \$2,468,014 in the Surface Water Capital Fund. The projected fund balance for January 1, 2004 is \$3,605,642.

Tables F-1 and F-2 summarize revenues and expenses for the Surface Water Management Fund and Surface Water Capital Fund in 2001 and 2002. These summaries of historical data were obtained from the City of Shoreline 2004 Proposed Budget.

**Table F-1**  
**Surface Water Management Fund, 2001–2002**

	<b>2001</b>	<b>2002</b>
<b>Sources of Funds</b>		
Beginning Fund Balance	\$2,720,300	\$2,314,525
Intergovernmental Revenue	61,600	3,197
Charges for Goods and Services	2,055,702	2,084,661
Miscellaneous Revenues	88,637	41,922
<b>Total Sources of Funds</b>	<b>\$4,926,239</b>	<b>\$4,444,306</b>
<b>Uses of Funds</b>		
Salary and Benefits	\$429,419	\$503,163
Supplies	39,733	43,050
Other Services & Charges	296,478	249,938
Intergovernmental Services	434,804	497,931
Capital Outlays	44,655	22,755
Debt Service	0	2,481
Interfund Payments for Service <sup>a</sup>	1,366,626	754,449
<b>Total Expenditures</b>	<b>\$2,611,715</b>	<b>\$2,073,767</b>
<b>Ending Fund Balance</b>	<b>\$2,314,525</b>	<b>\$2,370,539</b>

<sup>a</sup> Part of the Interfund Payments is a transfer to the Surface Water Capital Fund. The remainder is the City's General Fund Cost Allocation.

**Table F-2**  
**Surface Water Capital Fund, 2001–2002**

	2001	2002
<b>Sources of Funds</b>		
Beginning Fund Balance	\$1,712,792	\$2,371,430
Transfers In	641,411	90,716
Other Financing Sources	239,629	156,190
Miscellaneous Revenues	99,538	55,015
<b>Total Sources of Funds</b>	<b>\$2,693,370</b>	<b>\$2,673,351</b>
<b>Uses of Funds</b>		
Salary and Benefits	\$44,369	\$21,104
Supplies	62	1,587
Other Services & Charges	272,190	128,037
Intergovernmental Services	5,319	37,527
Capital Outlays	0	17,082
Interfund Payments for Service	0	0
<b>Total Expenditures</b>	<b>\$321,940</b>	<b>\$205,337</b>
<b>Ending Fund Balance</b>	<b>\$2,371,430</b>	<b>\$2,468,014</b>

The City has completed limited capital improvements in 2001 and 2002. Currently, the City is completing two large capital improvements to improve drainage in the 3rd Ave NW and Ronald Bog areas.

The City has obtained two Public Works Trust Fund (PWTF) loans for the Ronald Bog and 3rd Avenue NW projects that began being drawn in 2002. The City expects to complete these projects by 2006.

### ***F.3 Projected Capital Expenditures***

Table F-3 shows projected capital expenditures for the 20-year planning period, not including projected repair and replacement expenditures, which are described in Chapter 8. A notation of “RB” in Table F-3 indicates the project is part of the Ronald Bog improvements. The total capital expenditure, in 2004 dollars, over the 20-year period is an estimated \$41,334,000. Over 40 percent of this capital expenditure is in the first six years. Approximately 30 percent of the capital expenditure is in the middle six years of the 20-year planning period, and the remaining 30 percent of projected capital expenditures are in the final eight years of the 20-year planning period.



**Table F-3  
Projected Capital Expenditures**

	Estimated Cost (\$M, 2004\$)
<b>Priority Level 1 (Years 1 - 6)</b>	
<b>Flood Protection</b>	
SWM CIP Formulation (\$40K/yr for 6 years)	\$0.240
3rd Avenue NW Drainage Improvements	3.670
Ronald Bog Park (RB)	0.288
Pump Station 25 (RB)	0.143
Serpentine SD Improvements (RB)	0.656
Midvale Ave N Drainage	0.415
Darnell Park Neighborhood Drainage	0.749
Ridgecrest Drainage at 10th Ave NE	0.600
Cromwell Park Wetland (RB)	0.222
Cromwell Park Pond (RB)	0.244
Thornton Creek Corridor (RB)	1.227
Hillwood Park Stormwater Detention Pond	0.250
Small Works Projects (\$150K/yr for 6 years)	0.900
<b>Water Quality</b>	
Third Ave Oil/Water Separator	0.100
Darnell Park Wetpond	0.096
Cromwell Park Wetpond	0.096
Ridgecrest Drainage at 10th Ave NE Wetpond	0.096
<b>Stream Habitat</b>	
Stream Rehab/Habitat Enhancement Pgm (50K/yr for 6 years)	0.300
Advanced Stormwater R/W Acquisition (20K/yr for 6 years)	0.120
Boeing R1 Bank Stabilization	2.417
Boeing R8 Bank Stabilization	1.179
<b>SWM Facilities: Parks</b>	
One Project	0.100
<b>SWM Facilities: Transportation</b>	
15 Pedestrian Projects (SWM cost = 10% of total cost)	1.780
Five Road/Intersection Projects (SWM cost = 20% of total cost)	0.303
<b>Total Priority Level 1</b>	<b>\$16.192</b>
	Estimated Cost (\$M, 2004\$)
<b>Priority Level 2 (Years 7 - 20)</b>	
<b>Flood Protection</b>	
SWM CIP Formulation (\$40K/yr for 6 years)	\$0.240
Ridgecrest Drainage at 12th Ave NE	0.436
N 167 & Wallingford Ave N Drainage	0.326
N 167 & Whitman Ave N Drainage	0.242
<b>Water Quality</b>	
Misc WQ Projects Priority Level 2	2.020
<b>Stream Habitat</b>	
Stream Rehab/Habitat Enhancement Pgm (50K/yr for 6 years)	0.300
Advanced Stormwater R/W Acquisition (20K/yr for 6 years)	0.120
McAleer Culvert Replacement	0.078
Misc Habitat Projects Priority Level 2	1.029
<b>SWM Facilities: Parks</b>	
Two Projects	0.350
<b>SWM Facilities: Transportation</b>	
27 Pedestrian Projects (SWM cost = 10% of total cost)	3.570
Nine Road/Intersection Projects (SWM cost = 20% of total cost)	2.380
<b>Total Priority Level 2</b>	<b>\$11.091</b>

## **F.4 Existing Debt Service**

The City has two PWTF loans for the 3rd Avenue NW improvements and the Ronald Bog improvements. These loans are at favorable interest rates (1.5 percent or less) and will be repaid over a 20-year period. The City has not fully drawn the available PWTF loan funds, but expects to do so in the future as construction of the two projects proceeds. Projected loan draw and repayment information is summarized below.

### **3rd Avenue NW Project**

Total PWTF loan: \$1,959,000

Combined principal and interest payment on full draw: approximately \$110,000 per year

2004 payment: per 2004 budget

2005 payment: through 12/04, approximately 20% of loan will have been drawn, so 2005 payment is 20% of \$110,000

2006 payment: through 12/05, 100% of loan will have been drawn, so 2006 payment is 100% of \$110,000

2007 until repayment: approximately \$110,000 per year

### **Ronald Bog Project**

Total PWTF loan: \$4,055,500

Combined principal and interest payment on full draw: approximately \$230,000 per year

2004 payment: per 2004 budget

2005 payment: through 12/04, approximately 25% of loan will have been drawn, so 2005 payment is 25% of \$230,000

2006 payment: through 12/05, approximately 70% of loan will have been drawn, so 2006 payment is 70% of \$230,000

2007 payment: through 12/06, 100% of loan will have been drawn, so 2007 payment is 100% of \$230,000

2008 until repayment: approximately \$230,000 per year

## **F.5 Six-Year Projected Revenues and Expenditures**

Table F-4 shows the projected revenues and expenditures for the City's SWM Fund for 2004 through 2010. SWM fees are the primary source of SWM Fund revenues. Miscellaneous revenues are primarily interest income on fund reserves. All O&M expenditures and debt service payments are made from the SWM Fund, including the City's General Fund Cost Allocation. Table F-4 shows the existing PWTF loan debt service payments, as well as projected debt service payments from future debt issues. Also shown in Table F-4 is a transfer to the SWM Capital Fund.

**Table F-4**  
**SWM Fund Projected Revenues and Expenditures**

Sources of Funds	2004	2005	2006	2007	2008	2009	2010	
Beginning Fund Balance	\$1,972,470	\$2,386,856	\$3,280,300	\$4,328,242	\$4,049,864	\$1,869,778	\$447,722	
Charges for Goods and Services								
Current Rates	% Increase	2,492,192	2,505,000	2,518,000	2,531,000	2,544,000	2,557,000	2,570,000
2005 Rate Increase	8.88%		222,444	223,598	224,753	225,907	227,062	228,216
2006 Rate Increase	8.11%			222,344	223,492	224,639	225,787	226,935
2007 Rate Increase	3.00%				89,377	89,836	90,295	90,755
2008 Rate Increase	3.00%					92,531	93,004	93,477
2009 Rate Increase	3.00%						95,794	96,281
2010 Rate Increase	3.00%							99,170
Miscellaneous Revenues	45,000	160,000	206,000	184,000	123,000	57,000	19,000	
<b>Total Sources of Funds</b>	<b>\$4,509,662</b>	<b>\$5,274,300</b>	<b>\$6,450,242</b>	<b>\$7,580,864</b>	<b>\$7,349,778</b>	<b>\$5,215,722</b>	<b>\$3,871,556</b>	
Uses of Funds	2004	2005	2006	2007	2008	2009	2010	
Salary and Benefits	\$417,452	\$430,000	\$443,000	\$456,000	\$470,000	\$484,000	\$499,000	
Supplies	43,200	45,000	46,000	47,000	48,000	49,000	50,000	
Other Services and Charges	202,679	209,000	215,000	221,000	228,000	235,000	242,000	
Intergovernmental Services	289,790	299,000	308,000	317,000	327,000	337,000	347,000	
PWTF Loan Debt Service	51,785	183,000	271,000	340,000	340,000	340,000	340,000	
New Debt Service	0	0	0	0	0	0	96,853	
General Fund Cost Allocation	413,028	423,000	434,000	445,000	456,000	467,000	479,000	
Transfer to SWM Capital Fund	700,000	400,000	400,000	1,600,000	3,400,000	2,500,000	1,100,000	
Other Interfund Charges	4,872	5,000	5,000	5,000	5,000	5,000	5,000	
New O&M Expenses								
Priority Level 1 (1)				100,000	206,000	351,000	360,000	
<b>Total Expenditures</b>	<b>\$2,122,806</b>	<b>\$1,994,000</b>	<b>\$2,122,000</b>	<b>\$3,531,000</b>	<b>\$5,480,000</b>	<b>\$4,768,000</b>	<b>\$3,518,853</b>	
Ending Fund Balance	\$2,386,856	\$3,280,300	\$4,328,242	\$4,049,864	\$1,869,778	\$447,722	\$352,703	
Exceed Minimum Balance Criterion?	Yes							

Note 1: New O&M expenses are phased in between 2007 and 2012

Table F-5 shows the sources and uses of funds for the SWM Capital Fund. The projected sources of revenue are a transfer from the SWM Fund, and loan proceeds from the PWTF loan and future revenue bond issues. SWM Capital Fund expenditures include surface water engineering, General Fund Cost Allocation for capital-related expenditures, repair and replacement expenditures, and capital project expenditures.

At the end of the six-year planning period, the SWM Fund and the SWM Capital Fund are projected to maintain reserve balances that exceed the financial policy targets. These reserve balances are maintained for use later in the 20-year planning period.

**Table F-5**  
**SWM Capital Fund Projected Revenues and Expenditures**

Sources of Funds	2004	2005	2006	2007	2008	2009	2010
Beginning Balance	\$3,605,642	\$2,934,175	\$3,600,510	\$1,804,598	\$53,598	\$18,598	\$67,148
Transfer from SWM Fund	700,000	400,000	400,000	1,600,000	3,400,000	2,500,000	1,100,000
PWTF Loan Draws	258,358	3,455,335	1,073,088	0	0	0	0
Revenue Bond Proceeds	0	0	0	0	0	1,068,550	2,504,000
<b>Total Sources of Funds</b>	<b>\$4,564,000</b>	<b>\$6,789,510</b>	<b>\$5,073,598</b>	<b>\$3,404,598</b>	<b>\$3,453,598</b>	<b>\$3,587,148</b>	<b>\$3,671,148</b>
Uses of Funds	2004	2005	2006	2007	2008	2009	2010
Surface Water Engineering	147,825	152,000	156,000	160,000	164,000	168,000	172,000
General Fund Cost Allocation	114,000	117,000	120,000	123,000	126,000	129,000	132,000
Repair and Replacement (4)	0	154,000	158,000	162,000	166,000	170,000	174,000
Priority Level 1 Capital Projects (5)		2,766,000	2,835,000	2,906,000	2,979,000	3,053,000	3,130,000
Other 2004 Capital Expenditures (9)	1,368,000						
<b>Total</b>	<b>\$1,629,825</b>	<b>\$3,189,000</b>	<b>\$3,269,000</b>	<b>\$3,351,000</b>	<b>\$3,435,000</b>	<b>\$3,520,000</b>	<b>\$3,608,000</b>
Ending Fund Balance	\$2,934,175	\$3,600,510	\$1,804,598	\$53,598	\$18,598	\$67,148	\$63,148

**Notes:**

Notes 1, 2, 3, and 6-8 refer to the 20-year financial projection, which is not shown in detail in this Appendix.

Note 4: Projected repair/replacement expenditures are \$150,000/year in 2004 dollars.

Note 5: Priority Level 1 capital expenditures are distributed equally (in 2004 dollars) over the six-year period.

Note 9: \$25K stream rehab/habitat enhancement; \$40K CIP project formulation; \$175K surface water small projects; \$297K Ronald Bog; \$702K 3rd Ave NW; \$20K ROW Acquisition; \$109 SW Master Plan. Source: 2004 Budget

# Appendix G. Changes in the Recommended Plan and the Financial Analysis from the Public Review Draft

## G.1 Introduction

This appendix provides information that supplements Chapter 9 of the master plan.

## G.2 Previous Proposal in the Public Review Draft

In April 2004, the City produced the public review draft of the surface water master plan (SWMP). This public review draft contained a financial projection fully funding the R&R, O&M, and CIP expenditures by increasing the SWM fee accordingly. The costs of the R&R, O&M, and CIPs were based on a set of draft assumptions. Figure 10-1 shows the projected SWM fee structure contained in the public review draft. This figure is the same as Figure 9-3 in the public review draft but is not the same as Figure 9-3 in the final version of the SWMP.

This graph represents one of several possible strategies to provide increased flood protection, water quality, and stream habitat services; this strategy is subject to City Council and public review. Analysis includes 2.5% annual inflation.

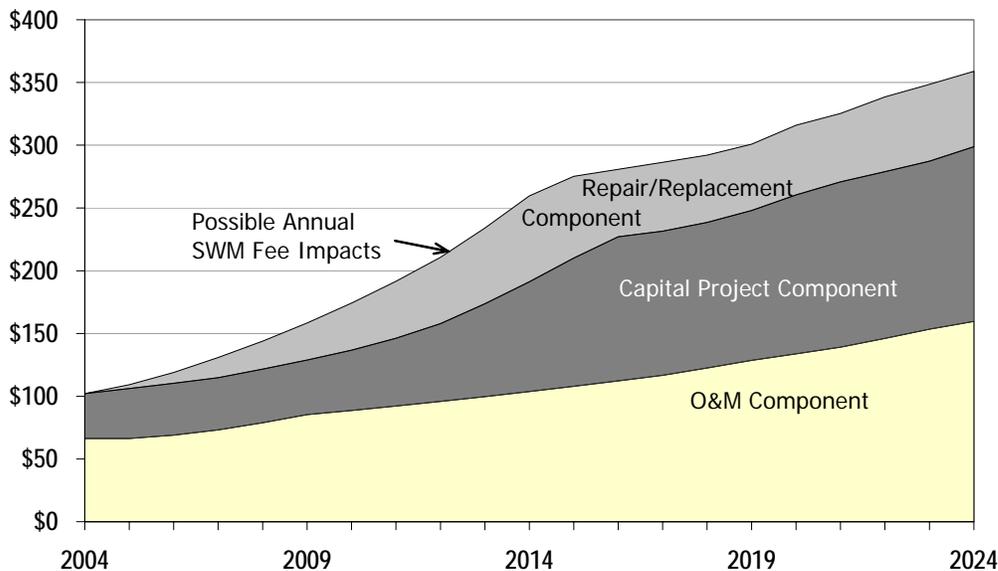


Figure G-1. April 2004 Public Review Draft 20-Year Projection of SWM Fees

## **G.3 Changes to the Public Review Draft Financial Assumptions**

This section describes the changes made to the cost and funding assumptions in the public review draft that form the basis for the recommended plan

### **G.3.1 Changes in R&R and O&M Spending Assumptions from Public Review Draft**

Figure G-1 shows the projected SWM fee for a single-family residence exceeding \$350/year in inflation-adjusted dollars by 2024 to fully fund all the R&R, O&M, and CIPs in the public review draft. As a result of these large projected increases in SWM fees, City staff reviewed the R&R and O&M spending assumptions in the draft SWMP and recommended changes to them. No changes were made in the cost of the CIPs from those in the public review draft. (Note that all assumptions will be revisited in five to seven years when this SWMP is revised.)

#### **G.3.1.1 Repair and Replacement**

In the public review draft R&R spending was based on the estimated value of the drainage infrastructure without specific reference to the condition of existing infrastructure.

R&R assumptions were refined based on actual expenditures plus the need to perform a system-wide condition assessment. This refined set of assumptions resulted in a substantial reduction in projected R&R spending. This refined level of R&R spending will cover the necessary fixes to keep the current system functioning while providing a rational basis for prioritizing R&R expenditures in years 7 through 20.

#### **G.3.1.2 Operation and Maintenance**

O&M assumptions were refined in the following areas:

- Type and frequency of street sweeping practices. Initiation of street sweeping using regenerative air street sweepers was delayed from year 7 to year 14. The frequency of street sweeping, previously projected to be double the current amount, was revised to be 125 percent of the current amount.
- Change in water quality sampling frequency and intensity. Projected spending on water quality monitoring will remain higher than current spending levels, but implementation of new monitoring initiatives has been scaled back and/or delayed.
- Change in the number of private stormwater systems added to the City's O&M program. This implies the city will be less aggressive in obtaining maintenance access to stormwater conveyance facilities that are currently located on private property.

These refinements reduced projected O&M spending compared with that projected in the public review draft. These refinements also were developed, based on the best available information, to predict the required actions to comply with current and future (assumed) environmental requirements.

### **G.3.2 Changes in Funding Assumptions from Public Review Draft**

The resulting SWM fee increases in the public review draft, necessary to fully fund all the CIPs and the assumed R&R and O&M spending, was determined by City staff to be unrealistic. In this recommended plan, a SWM fee structure that supports the majority of the priority CIPs was developed using the following assumptions:

- Current SWM fee for a single-family residence: \$102 per year
- SWM fee increase in 2005: 8.9 percent, resulting in an annual SWM fee of \$111 for a single-family residence
- SWM fee increase in 2006: 8.1 percent, resulting in an annual SWM fee of \$120 for a single-family residence
- In subsequent years, SWM fees would increase 3.0 percent annually, or 0.5 percent above the annual inflation rate used in this financial analysis.