SULTAN CITY COUNCIL
AGENDA ITEM COVER SHEET

ITEM NO: Public Hearing

DATE: August 9, 2007

SUBJECT: Public Hearing to Consider Establishing a Stormwater Utility

CONTACT PERSON: Deborah Knight, City Administrator D. Knight

ISSUE:

The issue before the City Council is to hold a Public Hearing to take comment on establishing a stormwater utility for developed residential and commercial properties in Sultan.

STAFF RECOMMENDATION:

1. City staff recommend the City Council hold a Public Hearing to take comment on establishing a stormwater utility for developed residential and commercial properties in Sultan.
2. Direct staff to make any changes to the proposed stormwater utility and return to Council with an adopting ordinance.

PLANNING BOARD RECOMMENDATION:

The Planning Board held a public hearing at its meeting on July 17, 2007. Public comment at the meeting was supportive of adopting the Stormwater Utility. The Board received a letter from Donald and Suzanne Martinell located at 327 Walburn Rd (Attachment E) requesting a stormwater utility credit potential for private residential property owners that fully contain all rain water and resulting runoff from adjacent property and buildings.

Although the Small Work Group did not contemplate a credit for private residential facilities, City staff recommend incorporating language into the adopting ordinance (Section 9, page 6 – Adopting Ordinance) and Credit Manual (Section 2.2, page 5) to address this situation.

SUBCOMMITTEE RECOMMENDATION:

The Council subcommittee reviewed the stormwater utility at its July 17, 2007 meeting. The committee discussed establishing a connection fee for new development in

addition to the user fee. The City of Edmonds has adopted a stormwater connection fee. City staff recommend the City Council proceed with adopting the proposed ordinance as written and directing staff to review the stormwater connection fee following adoption of the proposed ordinance.

PUBLIC COMMENT:

The City has endeavored to keep the community informed and involved in the discussion to establish a stormwater utility.

The City established a Small Work Group comprised of a city resident, business owner, and Planning Board member to review alternatives and make a recommendation to the Planning Board.

- The Small Work Group met on February 20, March 6, April 17, and May 1.
- The City held an open house on March 13, 2007. The Open House included information on the proposed Stormwater Utility. Notice of the Open House was mailed to all residents and businesses within the Sultan zip code, including residents outside the City limits.
- On March 20, 2007 the Planning Board received an update from the Small Work Group – the Board reviewed the need to form a stormwater utility and the survey of stormwater utilities across the state.
- On April 12, 2007 the City Council received an update from the Small Work Group – the Council reviewed the need to form a stormwater utility and the survey of stormwater utilities across the state, and key policy questions.
- A second Open House was held on May 15, 2007
- On May 1, 2007 the Planning Board reviewed the calculations for the ERU, draft Stormwater Utility Report, and budget, and directed staff to areas of concern.
- On May 17, the City Council subcommittee received a similar update.
- Notice of the proposed formation of the Stormwater Utility was included in the June and July utility billing statements.
- On May 24, the full Council reviewed the calculations for the ERU, draft Stormwater Utility Report, and budget.
- On June 26, the Planning Board discussed credits for private facilities, public schools, non-profit organizations, and senior citizens and low-income residents. The Board also reviewed the draft ordinance and credit manual, and directed staff to set the Public Hearing for July 17, 2007.
- July 23, meeting with the Sultan School Board to discuss the proposed utility, calculation of equivalent residential units, and grass as a pervious/impervious surface.

At the July 23, 2007 presentation to the School Board, the Board questioned the inclusion of grass areas on the District's properties as impervious surface. A brief review of information on the internet regarding grass as an impervious surface seems to

support the School District's recommendation to remove play fields as an impervious surface when calculating equivalent residential units (Attachment G).

At the Board's request, City staff are surveying peer cities to determine how other jurisdictions are handling play fields. Due to staff vacations, this agenda cover was prepared prior to completion of the survey. Information on play fields will be available to the Council prior to the public hearing.

The schedule to review and adopt a Stormwater Utility is as follows:

- Planning Board public hearing and recommendation to Council - July 17 (complete)
- Final Draft Report and recommendation to Council – July 26 (complete)
- City Council action to adopt ordinance and amend fee schedule – August/September
- Public outreach and implementation – September through December.
- Implementation - December 1, 2007

SUMMARY:

Establishing the Need

Under normal circumstances stormwater flow impounds in wetlands, depressions, ponds and puddles and soaks into the water table slowly. This process allows toxins and pollutants in the water to filter out in the soil, lessening the impact of the stormwater on our aquatic resources and our private well systems. This process also slows the volume of water that goes into our streams during a rain event, reducing flooding.

Increased development and impervious (paved) surfaces in populated areas causes stormwater to flow rapidly from the impervious surfaces into streams, lakes and marine waterways. The stormwater carries pollutants and causes long-term damage to salmon and other aquatic life. Rapid stormwater flows increases the water volume in streams to the point of flooding.

As the population of Sultan grows, so do its impervious surfaces and the need for stormwater infrastructure improvements to handle the additional runoff.

In the future, when Sultan's population reaches a certain level, the State will require the City to comply with the National Pollution Discharge Elimination System (NPDES) permit program, which dictates that cities and counties develop stormwater quality management programs.

The City of Sultan is considering the establishment of a Surface Water Utility based on the recommendations in the 2002 *Surface Water Quality Management Plan*. The Plan

consists of a review of the existing conditions that affect surface water flow and quality within the City to establish a basis for surface water quality management within the City.

The Plan was incorporated in the Comprehensive Plan in Februrary 2006 by Ordinance No. 913-06 (Attachment A). Attachment B contains portions of the Plan as background information for this report. Copies of the Plan are available upon request.
The Plan recommended forming a Surface Water Utility to:

- Provide a stable source of funding to adequately operate and maintain the City's existing surface water facilities
- Create a source of funding that could be set aside in reserve for capital expansion, including upgrading the existing surface water facilities and constructing new surface water facilities which are identified as solutions to the surface water quality and quantity problems in the City.

Surface water facilities consist of catch basins, culverts, ditches, pipelines, rentention/detention ponds and underground vaults. Most surface water is carried to the Skykomish and Sultan Rivers. Some of the water is conveyed through the Waste Water Treatment Plant.

Presently, the operation and maintenance of the City's existing surface water facilities is one of many functions of the Sultan Public Works Department. Currently, surface water management is financed through the Street Fund, which receives the majority of its funding ($231,893) from property taxes, motor vehicle excise taxes, and business and occupation taxes on electric utilities, and the Sewer Fund which funded the Water Quality Management Plan. The Street Fund is also used to support other public works functions such as street maintenance and repair.

The limited amount of funding that is allocated to the Sultan Public Works Department goes primarily toward street maintenance and leaves very little funding and staff resources to operate and maintain the City's surface water facilities. The 2002 Plan notes that previous budgeting activities have been "inadequate to meet the Puget Sound Water Quality Action Plan guidelines."

Adopting the proposed Surface Water Utility fee would make additional funds available for other necessary city activities.

Stormwater Utility

The stormwater utility is made up of three components:

1. Calculation of Equivalent Residential Units (ERU)
2. Annual budget needed to accomplish stormwater functions within the City (e.g. maintenance, operations, capital improvements, public outreach, etc.)
3. Stormwater fee charged to for each ERU

Equivalent Residential Units

The Equivalent Residential Unit is the most prevalent method for calculating a stormwater rate. ERU's are used for the purpose of calculating the stormwater user's rate. An ERU represents the average square footage of impervious surface of a detached single-family residential property and is applied to commercial properties to calculate the commercial rate. The ERU is established by reviewing a representative sample of recorded date, maps, surveys or field measurement to obtain the average impervious area for a single-family lot. Non-residential properties are converted into ERUS based on the amount of impervious area on the property.

Each single family residential customer = 1 ERU
Each non-residential customer = n ERUs
When n = the property's impervious area divided by the average single-family parcel impervious area (x square feet)

For the City of Sultan, the calculated ERU is 4,519 square feet. Of the 14 jurisdictions examined in the phone survey for the study, Sultan's ERU was the second highest. This is largely due to the rural nature of residential properties and the number of barns and outbuildings.

The Stormwater Utility Rate Study (available at City Hall upon Request) includes a section Appendix B to the Study titled "Equivalent Residential Unit – City of Sultan Stormwater Utility". This section provides the detail on how the ERU was calculated for the City. Appendix C to the Study details the impervious surface calculation for each commercial property.

All residential properties will be charged the rate for one (1) ERU

All multi-plex 2-4 unit dwellings will be charged the rate for 1.75 ERUs

All non residential properties and multi-plex properties will be charged for the square footage of impervious surfaces on their property divided by the number of ERUs and multiplied by the base rate per ERU.

Stormwater Fee

The total number of ERUs in the City are:

Multifamily Residential 1-4 plexes	75
Commercial Properties	920
Residential Properties	1,246
Schools	398
Total	2,639

The annual cost for operations, maintenance, and capital improvements divided by the number of ERUs yields the total annual amount that must be charged per ERU to satisfy the needs of the utility. The required rate per ERU per month would be approximately $12.35. The fee determination must take into account the increase in ERUs that happens every year due to development and annexations.

Annual Budget

Costs to operate a stormwater utility are broken down into two categories:

1. On-going costs or costs of conducting Operations and Maintenance, and for associated administrative costs for the stormwater system
2. One-time costs or capital improvements

The City currently maintains 3 detention ponds, 15 infiltration trenches, 592 inlets and 5 outlets. The proposed six-year budget is as follows.

Surfacewater Fund	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
# of full-time Equivelent employees	3	3	3	3	3	3
Salaries and Wages	$ 209,300	$216,626	$224,207	$232,055	$240,177	$ 248,583
Benefits	$ 52,325	$ 54,156	$ 56,052	$ 58,014	$ 60,044	$ 62,146
Operating Supplies	$ 12,000	$ 12,240	$ 12,485	$ 12,734	$ 12,989	$ 13,444
Other Services/charges	$ 115,000	$ 40,750	$ 16,538	$ 17,364	$ 18,233	$ 19,144
Intergovernment Services	$ -	$ -	$ -	$ -		$ -
Capital Outlay	$ 62,000	$ 21,000	$ 21,000	$ 21,000	$ 21,000	$ 23,000
Debt Service Payment w/ Interest	$ 21,000	$ 21,000	$ 21,000	$ 21,000	$ 21,000	$ 21,000
Operating Transfer Out to Capital Improvement	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000
Total Surface Water Fund	$ 521,625	$344,772	$330,282	$341,167	$352,442	$ 366,316

The first year (2008) budget includes start up capital equipment costs such as a utility pick-up, computer, inspection equipment. Debt service payments are for a vactor truck and street sweeper. See Attachment F.

BACKGROUND:

Statutory Authority

A surface water utility is essentially a special assessment district set up to generate funding specifically for surface water management. Users within the district pay a surface water fee, and the revenue generated directly supports maintenance and upgrade of existing storm drain systems; development of drainage plans, flood control measures, and water-quality programs; administrative costs; and sometimes construction of major capital improvements. Unlike a surface water program that draws on the general tax fund or uses property taxes for revenue, the people who benefit are the only ones who pay.

Surface water management within the City is governed by federal, state, regional, county and city laws including the Clean Water Act, Endangered Species Act, the Growth Management Act, Shoreline Management Act, State Environmental Policy Act, Stormwater Management Performance Standards, and Puget Sound Water Quality Action Plan.

There are a number of state statutes that pertain either directly or indirectly to the City's authority to form a surface water utility. One of the more broad based statutes pertains to municipal utilities in general and states that a code city may provide utility service within and outside its city limits and this includes the exercise of all powers to the extent authorized by law (RCW 35A.80.010).

Adopting the Stormwater Utility

City staff recommended forming the City of Sultan's Surface Water Utility through a phased process:

- Phase I - The adoption of the *Surface Water Quality Management Plan*. This is complete.
- Phase II (January 2007-March 2007) - An assessment of revenue sources for the major surface water utility functions centering around operations, maintenance and capital expansion. Some of this work was done in the 2002 Plan but must be updated for an analysis of current costs. The principal source of revenue will be user fees and this will entail a detailed analysis to determine an appropriate and equitable rate structure. This work has just started and should be complete by March.
- Phase III (February 2007-September 2007) - Public outreach including a public awareness/education program and public hearings. This work should begin in

late January and early February, following Council direction, and continue until the Storm Water Utility is adopted and fees are established.

- Phase IV (April 2007-July 2007) – The formation of the utility which would be codified through the passage of the Surface Water Utility formation ordinance. This work would begin in April and should be complete by mid-summer.

  This phase would be predicated upon the outcome of the previous phases. The City will need to have been successful in both making the public aware that there is a surface water need as well as successfully building support for the formation of a utility as the most optimal means to correct the surface water problems that currently exist and proactively address future problems.
  Public hearings will be used to address any concerns that might not have been fully addressed during the awareness/education program, or to make any corrections to the cost of serivce and rate study.

- Phase V (June 2007-September 2007) – Establishing and initiating a surface water utility billing system. There are at least three potential billing systems: including the surface water utility charge with the annual property tax, using the City's existing utility billing system or creating a new billing system with software and hardware specifically for surface water with billings sent out on a monthly, quarterly or annual basis. This work would start June and be complete by September.

DISCUSSION:

The Planning Board reviewed several policy issues at its meeting on June 26, 2007. and directed staff to make the following changes to the draft ordinance (Attachment C) and credit manual (Attachment D):

- 25% credit for private facilities with existing and maintained stormwater control
- 70% credit for fully-contained private facilities that do not impact the City's system
- 25% credit for public schools upon receipt of an acceptable curriculum regarding stormwater issues.
- 0% credit for non-profit organizations
- Senior Citizen/Low Income Discounts as provided for in the City's other utilities

Although the Small Work Group did not contemplate a credit for private residential facilities, City staff recommend incorporating language into the adopting ordinance (Section 9, page 6 – Adopting Ordinance) and Credit Manual (Section 2.2, page 5) to address this situation.

FISCAL IMPACT:

Cost to Adopt a Surface Water Utility

The cost to adopt a surface water utility include the fee analysis work currently contracted with Shockey Brent. This work is budgeted at approximately $18,500.

The proposed public education/awareness program consists of press releases, community workshop(s), flyers, discussions with interested citizen groups, and public hearings. The estimate for education/awareness is approximately $1,500.

The cost of establishing a billing system is estimated between $2,500 to use the City's existing billing system to $20,000 for a separate system. These costs will be refined throughout the year and will be included in the overall cost of running the utility.

The stormwater utility will be established as an enterprise fund and will reduce expenditures in the General Fund as a result of moving stormwater maintenance functions such as street sweeping, vactoring and staff time to maintain the stormwater system from the General Fund.

RECOMMENDED ACTION:

1. Hold a Public Hearing to take comment on establishing a stormwater utility for developed residential and commercial properties in Sultan.
2. Direct staff to make any changes to the proposed stormwater utility and return to Council with an adopting ordinance.

ATTACHMENTS

Attachment A – Ordinance No. 913-06
Attachment B – 2002 Surface Water Quality Management Plan
Attachment C – Draft Ordinance
Attachment D – Credit Manual for Stormwater Fees
Attachment E – July 17, 2007 letter from Donald and Suzanne Martinell
Attachment F – Proposed Budget
Attachment G – Literature on impervious surfaces

Attachment A

City of Sultan
Ordinance No. 913-06

AN ORDINANCE OF THE CITY OF SULTAN, WASHINGTON APPROVING AND ADOPTING THE SURFACE WATER QUALITY MANAGEMENT PLAN

RECITALS

WHEREAS, on August 10, 2001 Mayor C.H. Rowe representing the City of Sultan signed a loan agreement with Dept. of Ecology, Water Quality Program, Washington State Water Pollution Control Revolving Fund Loan No. L0100034, FY 2001 Funding Cycle to fund a Surface Water Quality Management Plan; and

WHEREAS, a project overview was presented to City Council on February 21, 2001 to develop a Surface Water Quality Management plan that will assist and guide the City in controlling drainage, protecting water quality and stream resources, and complying with current storm water management standards; and

WHEREAS, the City of Sultan owns and operates surface water quality structures and facilities and is concerned about the quality of surface water discharge within the community and surrounding environments; and

WHEREAS, on June 6, 2001 the City of Sultan retained the consulting firm of Berryman and Henigar Engineering to prepare a Surface Water Quality Management Plan with completion scheduled in 2001 and with a requirement to include the Sultan High School to provide volunteer monitoring, funded from a State Revolving Fund loan in the amount of $140,000; and

WHEREAS, the City of Sultan hosted a Public open house for the Surface Water Quality Management Plan on November 7, 2001 which, focused on preserving the environment and focusing what the City can control; and

WHEREAS, on January 4, 2002 City Staff held an executive briefing on the plan for the City Council Public Works Committee; and

WHEREAS, on January 7, 2002, the City held a Public Meeting to report the findings of the existing conditions and to receive public comments and input for the development of Surface Water Quality Management; and

WHEREAS, on April 11, 2002 the Department of Ecology approved the Volunteer Sampling program that the City of Sultan and Sultan High School had submitted to the department for review; and

WHEREAS, limited volunteer monitoring efforts were undertaken by the City which included students from Sultan High School; and

WHEREAS, the monitoring efforts identified certain inflow and infiltration concerns within the city; and

WHEREAS, monitoring data which was developed was incorporated in the draft of the Surface Water Quality Management plan to insure compliance with the Federal Clean Water Act Endangered species Act, Shorelines Management Act and the Washington State Growth Management Act; and

WHEREAS, the City of Sultan in July of 2002 adopted Ordinance Number 783-02 which provided for a Comprehensive Flood Plan for the City: and

WHEREAS, the City of Sultan in August of 2000 approve Ordinance 744-00 which adopted the 1994 Puget Sound Water Quality Management Plan as amended and Incorporated the plan into SMC Title (s) 16 & 17, effective August 1, 2000; and

WHEREAS, the City of Sultan throughout the development of the plan embraced the concepts of the Puget Sound Water Quality Management Plan as guiding principles of their surface water management effort; and

WHEREAS, on May 17, 2002 the City held a public meeting to review the regulatory requirements, tasks, storm water management requirements and review of project schedule for completion of the plan; and

WHEREAS, on July 17, 2002 a public meeting was held to report on the information that the volunteer water quality monitoring High school classes had gathered including the locations of all testing and the locations of localized flooding which would be incorporated and identified in the City of Sultan Surface Water Quality Management Plan; and

WHEREAS, on November 7, 2002 City of Sultan submitted the draft Surface Water Quality Management plan to Department of Ecology for their review and comments; and

WHEREAS, the Department of Ecology comments on the draft plan forwarded to the City were incorporated into the into the Surface Water Quality Management Plan for by the City of Sultan; and

WHEREAS, on April 16, 2003 city staff held a workshop with the City Council to review the progress on the plan; and

WHEREAS, on July 16, 2003 the consultants and staff presented the draft of Surface Water Quality Management Plan to the City Council during the regular session of the City Council meeting; and

WHEREAS, on August 18, 2003 the City was notified by the Department of Ecology they had approved Surface Water Quality Management Plan and was also recommending the City of Sultan implement a Surface Water Utility; and

WHEREAS, on August 21, 2003 the final draft of the Surface Water Quality Management Plan as approved by the Department of Ecology was presented to the City Council; and

WHEREAS, in June of 2005 a SEPA checklist was prepared for the Surface Water Quality Management Plan and a Determination of Non Significant was issued by the SEPA Official; and,

WHEREAS, no comments or appeals on the Determination of Non Significant issued for the Surface Water Quality Management Plan were received by the City; and

WHEREAS, on January 25, 2006 the City Council conducted a Public Hearing on the final draft of the Surface Water Quality Management Plan, dated July 2003.

NOW, THEREFORE, it is ordained by the City Council of the City of Sultan as follows:

Section 1. The City Council makes and adopts as its findings of fact those findings of fact found in the "recitals" portion of this Ordinance above.

Section 2. The City of Sultan approves and adopts the Surface Water Quality Management Plan attached to this Ordinance as Exhibit A.

Section 3. In the event there is any inconsistency between the Surface Water Quality Management Plan as accepted and the City of Sultan 2004 Comprehensive plan the City shall undertake a public participation process and update the utility element of its comprehensive plan.

Passed by the City Council and approved by the Mayor this 22nd day of February, 2006.

City of Sultan

By: _____
Benjamin Tolson, Mayor

Attest:

By: _____
Laura Koenig, City Clerk

By: _____
Thom H. Graafstra, City Attorney

Published: 2/25/06

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Attachment B

CHAPTER 1

INTRODUCTION

This Surface Water Quality Management Plan (Management Plan) for the City of Sultan (the City) consists of a review of existing conditions that affect surface water flow and quality within the City of Sultan to establish a basis for surface water quality management within the City. The existing regulatory environment within which the City operates was also evaluated and the City's present surface water management efforts described.

Water quality and flooding issues and solutions were identified and solutions prepared to address the localized surface water management issues. In addition to changes in City government, planning level cost estimates and funding mechanisms were examined to implement the recommended solutions.

As part of this study, surface water quality monitoring was conducted by students at Sultan High School, and the general public was invited to express their opinions on the purpose, findings, and recommendations of this study.

The Management Plan was funded through the financial assistance of the Washington State Department of Ecology (DOE) and was adopted by the City on _____. The development of the plan was coordinated with DOE and City of Sultan staff, as well as the public, through several public meetings and a public hearing on the plan.

1.1 PURPOSE

Previously, the City's primary focus on the management of surface water was its Federal Emergency Management Administration (FEMA) program to minimize and mitigate catastrophic flooding damage. The purpose of this Management Plan is to identify the existing surface water conveyance and quality problems and to assist the City in protecting the existing high quality of the surface waters surrounding the City, in accordance with the statutory and regulatory environment. This Management Plan will augment the FEMA related efforts concerning catastrophic flooding.

Current laws and regulations directly affect how cities develop and implement programs to manage surface water. These laws and regulations govern the structural solutions that might be envisioned, as well as the inspection and maintenance functions required to manage surface water in the municipal environment. Compliance with these laws and regulations is a corollary purpose of this Management Plan.

1.2 GOALS AND OBJECTIVES

The larger goal for the Management Plan was to develop a long term municipal government mechanism to manage surface water in a way that water quality was preserved and localized flooding and erosion problems were reduced. To achieve this goal, four planning level goals were established for the Management Plan process, each with their own objective. These are summarized in Table 1-1, Goals and Objectives of the Management Plan.

1.3 STUDY HORIZON

The City is undergoing significant change, with the increasing urbanization of Snohomish County and the subsequent movement of people to the less populated areas. The population of the City has doubled in the last ten years and municipal infrastructure has changed, as well. Larger schools, streets and roadways,

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sidewalks, municipal buildings, as well as small housing subdivisions and light commercial and industrial activities have developed. The City's comprehensive land use plan envisions this to continue. For the purpose of this study, it was assumed that the land-use and zoning pattern would not be significantly altered for the next ten years; however, build-out would continue along recent trends. The ten year planning horizon was selected for this Management Plan with the knowledge that a Surface Water and Drainage Comprehensive Plan, mandated by existing regulation, would likely be prepared as an outcome of the recommended changes to City government contained in this plan.

1.4 AUTHORIZATION

Preparation of the Management Plan was authorized by the City of Sultan with the financial and technical assistance of the Washington State Department of Ecology.

1.5 PREVIOUS AND ONGOING STUDIES

This plan has the benefit of the preparation of previous and ongoing plans associated with surface water quality and surface water management in Sultan. These plans include:

- Original design documents for the Central Business District stormwater system.
- The City of Sultan Drainage Master Plan, prepared by KCM (undated). This plan identified improvements to the CBD stormwater collection system.
- The Federal Emergency Management Administration Flood Hazard Mitigation Plan, developed by the City, in conjunction with Earth Tech, (2002).
- The Sanitary Sewer Infiltration and Inflow Mitigation Plan, developed by Berryman & Henigar, (2002).
- The Comprehensive Land Use Plan for the City, developed by Beckwith Consulting Group (2002).

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CHAPTER 3

ASSESSMENT OF THE EXISTING DRAINAGE SYSTEM

3.1 EXISTING DRAINAGE SYSTEM

The existing surface water drainage system is depicted in Figure 2-5, and consists of four areas: the Central Business District (CBD) is bordered by the Sultan River on the west, the State Route to the south, the ridge to the East aligned approximately with 10th Street and a meandering line to the north going as far north as Willow Avenue. The majority of the formal drainage system was designed when Snohomish County drainage ordinances were in effect, requiring basins less than 50 acres to be designed for a 10-year storm and larger basins to convey a 25-year storm. The CBD system carries pollutants that washed off of rooftops, sidewalks, streets and other urban surfaces. The basin is roughly 450[1] acres and is served by a well-developed stormwater conveyance system consisting of inlets, catch basins, manholes and piping. Flow within the basin generally drains from north to south through a series of trunk lines on 1st, 4th and 8th Streets. Reaching Main Street, the flow is collected in a large 42-inch interceptor and is routed to the west to outfalls located along the Skykomish and Sultan Rivers. Other stormwater facilities within the basin include several detention basins and several infiltration systems that are made possible by an abundance of well-sorted gravel deposited over the ages by the nearby river systems.

The Northern Basin is less developed than the Central Business District to the south and as a result the conveyance system is largely composed of ditches, creeks, natural swales and a small amount of pipelines. The basin is approximately 300[1] acres and is bordered by the Sultan River to the west, the City limits to the north, the 8th Street alignment to the east and a meandering border ranging from Willow Avenue down to Fir Avenue to the south. Surface water within the basin flows to the south and to the west to tie into the Sultan River.

The Western Basin is a small 79[1]-acre section bordered by the City limits to the north and west, State Route 2 to the south and the Sultan River on the east. Sheet flow, ditches, a natural drainage course and a limited piped collection system convey water to the Sultan and Skykomish Rivers.

The Eastern Basin is slightly over 1050[1] acres and is the largest of the City's basins. Bordered by the ridge to the west, Skykomish River to the south and the City limits to the north and east, the basin is a mixture of large multi-acre properties and densely developed housing developments. Most of the housing developments have been built since 1990 and have modern stormwater systems with piped conveyance and detention ponds to attenuate developed flows. The stormwater system in the remaining basin is largely comprised of drainage ditches, culverts, swales and tributaries of Wagley's Creek. The flow within the basin from both the new developments and the large properties generally drains from the north to the south until it is collected by Wagley's Creek. Flow from this point continues to meander to the south under State Route 2 and eventually connecting to the Skykomish River.

3.1.1 Existing Drainage Issues

The four basins within the UGA discussed above have several drainage problems that have been identified. No major stormwater problems (where human health and safety were compromised) were identified. Problems instead include nuisance flooding in the Eastern Basin, standing water due to under

[1] The area of these basins have been estimated from topographic maps, plans of existing piping systems and field reconnaissance. Due to the nature of basin delineations, their calculated areas have been rounded off to reflect their relative precision. The total area of the basins is equal to the area of the City limits. Rounding, however, may cause the numerical sum of the basins to be slightly different than the official area of the City limits.

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sized inlet piping or discontinuous stormwater systems in the Central Business District and Northern Basin, and stormwater inflow into the sewer system in the Central Business District. These problems are located in Figure 3-1, Identified Surface Water Problems Map, and a brief description of each symbol designation is provided below:

Red Star	ID'd Problem	Improvement to be addressed in future.
Green Star	ID'd Problem	Applied for Public Works Trust Fund Loan to fund improvement.
Blue Star	ID'd Problem	Improvement underway.
F	ID'd Flooding Problem	For status see associated star.

- In cases where there is a star nearby, an improvement is planned according to the star's designation. For example, a red star nearby indicates improvements are planned for the future.
- In cases where there is no star, no improvements are planned to mitigate the problem due to hydraulic limitations of land slope, natural drainage channel or other limitations.

A list and description of the identified problems including the problem location, description, cause, possible solution and improvement status is presented in Table 3.1.

TABLE 3 -1

IDENTIFIED DRAINAGE PROBLEMS, SOLUTIONS AND IMPROVEMENT STATUS

Location	Problem	Cause	Solution	Improvement Status as of 10/01/02
Eastern Basin				
Cassey Road at culvert 1900' east of Sultan Basin Road	Flooding of rural property and street	Tailwater constraint in downstream drainage channel	No identified fix	NA
Cassey Road at culvert 1000' west of Rice Road	Flooding of residential yard	Culvert limitation	No identified fix – culvert increase would transfer problem downstream	NA
Rice Road 300' south of 140th St. SE	Flooding of rural property	Tailwater constraint in downstream drainage channel	No identified fix	NA
Sultan Basin Road north of Bryant Road	Flooding of rural property and road	Flat grade and culvert limitation	Replace ditch with pipe and eliminate bottlenecks	Improved by future development
Sultan Basin Road 600' south of Bryant Road	Flooding of rural property and road	Flat grade and downstream limitation	Replace ditch with pipe and eliminate bottlenecks	Improved by future development

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TABLE 3 -1

IDENTIFIED DRAINAGE PROBLEMS, SOLUTIONS AND IMPROVEMENT STATUS

Location	Problem	Cause	Solution	Improvement Status as of 10/01/02
Sultan Basin Road 400' south of Kessler Way	Water quality point source	Common discharge point of collection pipes to drainage course	Install passive treatment system (example Stormfilter by Stormwater Management Inc.)	Applied for PWTF loan to design and construct improvement
Wagley's Creek 1100' upstream of Sultan Basin Road	Flooding of nearby properties	Hydraulic limitations of drainage course	No identified fix	NA
Central Business District				
4th St and High Manhole B9.1	Stormwater inflow into sewer	Common storm and sewer manhole	Modify manhole to eliminate cross connection	Improvement underway
4th St and Fir Manhole B9	Stormwater inflow into sewer	Common storm and sewer manhole	Modify local drainage to eliminate cross connection	Improvement underway
4th St and Bell Manhole B8	Stormwater inflow into sewer	Common storm and sewer manhole	Modify local drainage to eliminate cross connection	Improvement underway
3rd St and Date	Standing water in intersection	Undersized inlet piping	Replace inlet piping	Improvement addressed in future
3rd St and Birch	Standing water in intersection	French drain system failing	Extend stormwater line up 3rd St to provide SW conveyance to this area	Approved PWTF loan
1st St and Main	Stormwater inflow into sewer	Cross connected inlets	Road improvement eliminated problem	Improvement completed
3rd St and Main	Stormwater inflow into sewer	Cross connected inlets	Pipe inlets to nearby storm drain	Improvement underway
4th St and Main at Post Office	Stormwater inflow into sewer	Cross connected rain leaders	Pipe leaders to storm drain	Improvement underway
3rd St and Alder at Fire Station Manhole B1	Ground water infiltration into sewer	Leaky manhole	Coat manhole to eliminate infiltration	Improvement underway
SR 2 and Main (East)	Stormwater inflow into sewer	Cross connected inlets	Pipe inlet to nearby storm drain on Main St	Improvement underway

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TABLE 3 -1

IDENTIFIED DRAINAGE PROBLEMS, SOLUTIONS AND IMPROVEMENT STATUS

Location	Problem	Cause	Solution	Improvement Status as of 10/01/02
SR 2 and Main (West)	Stormwater inflow into Sewer	Cross connected inlets	Cross connected inlet eliminated	Improvement completed
Northern Basin				
Trout Farm Road 300' north of Gohr Road	Deteriorating Culvert	Old culvert	Replace culvert	Improvement addressed in future
134th Street 150' East of Gohr Road	Flooding of property and road	Undersized culvert and possibly downstream limitation	Replace culvert with larger pipe	Improvement addressed in future
Western Basin				
Owens Road 200' north of SR 2 at Red Apple	Stormwater inflow into sewer	Cross connected rain leaders and inlets	Expand storm system to collect these stormwater flows	Improvement underway
Owens Road 800' north of SR 2 at Country Hill Mobile Estates	Stormwater inflow into sewer	Cross connected inlets	Private party to eliminate problem	Improvement underway

3.1.2 Future Conditions

The anticipated changes in the stormwater systems vary from basin to basin throughout the City. The Central Business District is highly developed and future development within the basin will not change the characteristics of the basin a great extent. The Eastern, Western and Northern Basins, however, are still relatively undeveloped and future growth is anticipated to greatly change the stormwater system. These stormwater changes are anticipated as a result of increased area of impervious and pollution generating surfaces that are primarily associated with residential development. To mitigate the impacts of these changes, future developments will be required to provide water quality and flow attenuation measures as outlined in the DOE Stormwater Manual.

3.2 WATER QUALITY ISSUES

This assessment of water quality issues is based upon literature reviews of receiving water quality and field observations over a two year period, as well as anecdotal evidence. Water quality studies by local high school students, supported by this study effort, were used to infer the nature of water quality issues, rather than to pinpoint specifics.

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CHAPTER 4

RECOMMENDATIONS

Based upon an assessment of the natural environment (topography, hydrology/climatology) and the existing land use and built environment, we have identified drainage problems (see Table 3-1). Based upon a review of existing and anticipated regulatory requirements, we have identified additional surface water management challenges. Attention to the flooding and surface water management problems will provide a preemptive approach to water quality issues. These actions will preserve the existing high quality water in the creeks and rivers that flow through and around the City.

The following recommendations summarize actions to address both the flooding and management challenges that face the City. These actions can be separated into recommended operational actions, capital improvement projects, and management actions.

4.1 OPERATIONAL RECOMMENDATIONS

Existing street sweeping is a significant management practice that reduces the sediments and associated material (brake linings, exhaust particles, etc.) that is washed off impervious surfaces into creeks and other receiving water. The City should increase the frequency of street sweeping from twice per month to weekly, for all City streets.

The Department of Ecology (DOE) Stormwater Management Manual for Western Washington (2001) provides maintenance standards for drainage facilities. These standards cover the maintenance for 18 different types of drainage facilities from detention ponds to catch basins. The following the table summarizes maintenance requirements relevant to drainage facilities in the City. Of special significance is the role of the City inspection of private drainage facilities and enforcement of appropriate maintenance procedures. Should the City form a surface water management utility, the City should consider accepting long term responsibility for these privately constructed facilities and provide necessary maintenance for a fee to private owners.

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TABLE 4-1

CONDITIONS REQUIRING MAINTENANCE

Detention Ponds	• General · Trash · Noxious or poisonous vegetation · Contaminants and pollutants in pond • Pond bank suffers from rodent holes, beaver dams, insects, tree growth, erosion, settlement or piping • Storage area, inflow or outflow is affected by sediment • Emergency overflow suffers from settlement, loss of armor or tree growth
Infiltration Facilities	• General · Trash · Noxious or poisonous vegetation · Contaminants and pollutants in pond · Sediment affects infiltration rate • Pond bank suffers from rodent holes, beaver dams, insects, tree growth, erosion, settlement or piping • Emergency overflow suffers from settlement, loss of armor or tree growth • Presettling pond or vault filled with sediment
Closed Detention Systems	• Storage Area · Plugged air vents · Debris and sediment · Joints between tank/pipe sections · Vault structure walls, floor and top slab · Cracks in tank inlet or outlet pipe joint or penetration • Access maintenance · Structure, lid or ladder in disrepair
Control Structure	• General · Trash and debris · Structural damage to tee or outlet device, connection to outlet pipe not watertight • Cleanout Gate · Missing, leaking or rusted gate · Missing control rod or chain • Orifice plate and overflow pipe · Damaged, missing, obstructed

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TABLE 4-1

CONDITIONS REQUIRING MAINTENANCE

Catch Basins	• General · Trash and debris · Sediment · Vegetation blocking opening • Structure · Damage to frame or top slab · Cracks in basin walls or bottoms · Settlement or misalignment · Cover · Ladder
Debris Barriers	• General · Trash and debris · Damaged or missing bars · Debris barrier connection to pipe
Energy Dissipaters	• Rock Pad · Missing or moved rock · Erosion • Dispersion Trench · Pipe or perforations plugged with sediment · Not discharging water properly · Water flows out top of distributor structure • Manhole/Chamber · Worn or damaged post, baffles or chamber walls
Biofiltration Swales and Filter Strips	• General · Sediment accumulation on grass · Trash debris accumulation · Standing water · Flow spreader equal distribution · Constant baseflow causing muddy channel · Poor vegetation coverage · Excessive grass height or undesired vegetation · Excessive shading · Inlets and outlets · Erosion and scouring

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TABLE 4-1

CONDITIONS REQUIRING MAINTENANCE

Wetponds	• General · Water level indicating pond leakage · Trash and debris · Oil sheen on water · Sediment accumulation in pond bottom exceeds sediment zone plus 6-inches • Pond Condition · Erosion of pond sides and scouring of pond bottom · Settlement of pond dike/berm greater than 4-inches · Internal berm should be level · Rock armor missing on overflow spillway
Wetvaults	• General · Damaged pipes · Vault structure cracked · Frame damaged · Baffles damaged or corroded · Access ladder damaged
Sand Filters And Media Filters	• General · Trash and debris in · Sediment accumulation on filter media, clean outs or pipes or in first chamber · Sand filter media · Prolonged flows · Short circuiting · Damaged pipes
Oil Water Separators	• General · Effluent contains visible oil sheen · Trash and debris · Sediment accumulation · Oil accumulation • Structure · Damaged or corroded coalescing plates · Damaged or corroded baffles · Vault structure damaged or cracked · Access ladder damaged

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TABLE 4-1

CONDITIONS REQUIRING MAINTENANCE

Catch Basins Inserts	• General · Trash and debris · Sediment accumulation • Media insert · Torn or damaged · Not removing oil · Water saturated minimizing performance · Oil saturated · Past service life

A complete version of this maintenance table is presented in Appendix D with the intention to be used as a guide during facility inspection.

Review of the DOE maintenance recommendations and a general understanding of the City's storm system leads to an extensive work forecast. In the following section, a determination of the worker hours necessary to sustain this level of maintenance will be made.

Maintenance of drainage facilities in accordance with the Stormwater Management Manual for Western Washington will further decrease the wash off of pollutants into receiving waters. Table 4-1 provides a listing of the conditions of surface water management systems that require maintenance. Addressing these maintenance conditions on all City-owned facilities is recommended. This will assist in maintaining the presently high water quality, while also bringing the City into compliance with the Puget Sound Water Quality Action Plan.

4.1.1 Organizational

4.1.2 Recording and Reporting

Developing a system to record maintenance activities is an essential element to measuring the amount of work to be done, the amount accomplished, and the accomplishment rate of existing staff. Based upon this record, an assessment can be made of the need to balance maintenance activities or add staff and equipment to meet the needs of the drainage system. This is an important element of budget development and justification.

Anticipated application of NPDES requirements and the PSWQMP will require the City to report to outside agencies the efforts and successes in maintenance and operation of the surface water management system. Developing a record of maintenance activities will support this reporting requirement.

4.2 CAPITAL IMPROVEMENT PROJECTS

A list of drainage improvements was listed in Table 3-1. Listings of water quality and flooding improvements are presented in Tables 4-2 and 4-3.

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The costs of these improvements have been estimated at a reconnaissance level only. Preliminary engineering and additional cost estimates should be prepared and the projects incorporated into future City budgets.

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4.2.1 Water Quality

TABLE 4-2

WATER QUALITY IMPROVEMENT PROJECTS

Location	Problem	Project	Cost
Eastern Basin			
Sultan Basin Road 400' south of Kessler Way	Water quality point source	Install passive treatment system (example Stormfilter by Stormwater Management Inc.)	Unknown
Central Business District			
4th St and Fir Manhole B8 and B9	Stormwater inflow into sewer	Modify local drainage to eliminate cross connection	$42,500[1] Completed
4th St and Main at Post Office	Stormwater inflow into sewer	Pipe leaders to storm drain	$9,500[1] Completed
3rd St and Alder at Fire Station Manhole B1	Ground water infiltration into sewer	Coat manhole to eliminate infiltration	$14,250[1] Completed
SR 2 and Main (East)	Stormwater inflow into sewer	Pipe inlet to nearby storm drain on Main St	$5,500[1] Completed
5th and Alder, 6th and Alder	Stormwater inflow into sewer	Place new storm line along Alder and 5th Street	$175,000[2]
Main Street and SR2 Manhole Repair	Stormwater infiltration into sewer manholes	Coat/Seal 13 identified manholes to eliminate infiltration	$50,500[1] Completed
First Street Sewer	Stormwater infiltration into sewer main	Replace 2,600 LF of existing sewer main	$600,000[2]
Western Basin			
Owens Road 200' north of SR 2 at Red Apple	Stormwater inflow into sewer	Pipe roof leaders to stormwater system	Private party to eliminate problem
Owens Road 800' north of SR 2 at Country Hill Mobile Estates	Stormwater inflow into sewer	Redirect flow to stormwater system	Private party to eliminate problem

1 Completed in November 2002 as part of the Inflow and Infiltration Reduction Program

2 Estimate based on 2002 Public Works Trust Fund Application

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4.2.2 Flooding

TABLE 4-3

FLOODING IMPROVEMENT PROJECTS

Location	Problem	Project	Cost
Eastern Basin			
Cassey Road at culvert 1900' east of Sultan Basin Road	Flooding of rural property and street/ Tailwater constraint in downstream drainage channel	No identified fix	No identified fix
Cassey Road at culvert 1000' west of Rice Road	Flooding of residential yard/ Culvert limitation	No identified fix	No identified fix – culvert increase would transfer problem downstream
Rice Road 300' south of 140th St. SE	Flooding of rural property/ Tailwater constraint in downstream drainage channel	No identified fix	No identified fix
Sultan Basin Road north of Bryant Road	Flooding of rural property and road	Replace 100 ft. ditch with pipe and eliminate bottlenecks	$15,000
Sultan Basin Road 600' south of Bryant Road	Flooding of rural property and road	Replace 150 ft. ditch with pipe and eliminate bottlenecks	$10,000
Wagley's Creek 1100' upstream of Sultan Basin Road	Flooding of nearby properties/ Hydraulic limitations of drainage course	No identified fix	No identified fix
Central Business District			
3rd St and Date and 3rd St and Birch	Standing water in intersection	Extend 12-inch stormwater line 1100 feet up 3rd St to provide SW conveyance to this area	$150,000[1]
Northern Basin			
Trout Farm Road 300' north of Gohr Road	Deteriorating Culvert	Replace culvert with fish passage design	$25,000[2]
134th Street 150' East of Gohr Road	Flooding of property and road	Replace culvert with larger pipe	$20,000[2]

1 Estimate based on 2002 Public Works Trust Fund Application
2 Estimate includes permitting expenses

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4.3 PUBLIC OUTREACH AND EDUCATION

We recommend the City continue to support the surface water education component of environmental studies at Sultan High School by offering guest speakers, tours of facilities, publicizing student monitoring activities, and coordination with the state and county drainage organizations for audio-visual and other teaching aids.

The continued support of the storm drain stenciling program, and other environmental education opportunities with community groups (scouting, Rotary, among others), should also continue. Publicizing the value of local streams and rivers for salmon reproduction habitat will also increase visibility of surface water quality management programs.

4.4 MANAGEMENT

The management of existing surface water operations within the Department of Public Works is adequate for the existing level of service. The City has incorporated many of the "Best Management Practices" into its routine systems. Much of this routine is the result of Public Works staff desires to operate the department in an environmentally responsible manner, staff longevity and the institutional memory they have, and the existing level of requirements placed upon them.

However, anticipated increases in maintenance activities, capital improvement projects, public outreach, and reporting to other agencies are anticipated. This increased complexity will entail increased attention, increased labor hours, and resultant increases in costs to the City. A maintenance management system, more typical of those required for this increasingly complex City is envisioned. The following paragraphs describe that system.

4.4.1 Typical Maintenance Management System

A maintenance management system allows the City to define the tasks that must be completed to adequately maintain the City's investment in drainage infrastructure and meet the goals of maintaining high quality receiving waters and minimizing localized flooding. The management system also allows for the tracking of completed activities and their costs, and identification of other desired improvements. The system has the following basis elements:

- Leadership and Management identifies the activities necessary to achieve the goals and purposes of the surface water quality management plan. This element provides a management framework for the activities and implements the management system. The management communicates with the public through the City Council, or directly through mailings, to present the goals, activities, and results of the program.

- Inventory of Facilities records all physical facilities, both public and private, that influence the management of surface water and its quality as it flows through the City. The inventory includes catchment systems, conveyance pipes and ditches, detention and treatment facilities, and other physical assets. The system records the location in a scheme that allows ready identification of the asset, and its condition. This inventory is augmented and updated as conditions change.

- Needs Assessment identifies the needs for additional physical facilities as well as the maintenance needs for all existing facilities. Maintenance needs include the type and frequency of the maintenance, and the equipment and supplies necessary to provide the maintenance. The reasons for the maintenance are identified, and any specific seasonal requirements are also listed.

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- Maintenance Crew Identification is the optimum crew sizes and skills necessary to accomplish the maintenance needs on the facilities in the system inventory. Identifies the combination of skills needed for each task, as well as the equipment and material necessary to perform the task.

- Operational Requirements list the standards for planning and performing the maintenance in terms of crew hours necessary to execute the maintenance. An example would be the number of lane miles of street surface swept per eight hour shift by one crew, or the number of catch basins cleaned per eight hour shift by one crew. This recognizes the differences in crew size and establishes performance standards as the basis for recording "planned" versus "actual" accomplishment rates.

- Optimization Schedule provides the optimum use of equipment and crew sizes for all activities and integrates the annual needs and crew availability so as to maximize maintenance activities with staff and equipment. This includes seasonal priorities, short term and long term work plans (weekly versus monthly or annual activities), and avoids conflicts for equipment. The optimization schedule also provides mechanisms for the rental or short term lease or loan of equipment when conflicts occur.

- Management Information System reports work planned, work accomplished, and backlog of work to be performed. In this manner planned and actual costs are also tracked to measure productivity and efficiency. Measurement of the work accomplished and the duration necessary to perform the work allows scheduling to be adjusted as crew efficiencies improve, new equipment is introduced, or additional drainage features are added to the system. A chart of accounts is generally created to budget and track these tasks.

4.4.2 Anticipated Future Costs

From a planning level, we have estimated the first year's costs of implementing and operating a surface water management program for the City. This information is presented on Table 4-4. The costs were based upon existing staffing and operations costs and increased to address the recommendations presented above.

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CITY OF SULTAN
SULTAN WASHINGTON

RESOLUTION 05-30

A RESOLUTION OF THE CITY OF SULTAN DIRECTING STAFF TO PROCEED WITH THE FORMATION OF A SURFACE WATER UTILITY TO SERVE THE CITY AND CALLING FOR A DRAFT ORDINANCE AND AN IMPLEMENTATION PLAN TO BE PROVIDED TO THE COUNCIL WITHIN 90 DAYS.

WHEREAS, the powers granted the City Council by the Sultan Municipal Code allow for the formation of special purpose functions to be identified as a part of the City government; and whereas the Sultan City Council has determined that it is in the best interest of the public that it initiate the formation of a special function of government to accomplish the management of surface water within the City.

WHEREAS, the formation of this special purpose is in accordance with the surface water management goals and plans for the City and in concert with State, Regional and County programs and will further the goals and policies of the City of Sultan Comprehensive Plan while preserving the high quality surface waters that are a significant City amenity and allow for reduction in flooding issues in the City;

NOW, THEREFORE BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF SULTAN, WASHINGTON AS FOLLOWS:

The City Council hereby directs that the City prepare an ordinance for the formation of a Surface Water Management Utility. Staff shall prepare a draft ordinance, prepare an implementation plan and report back to the City Council within 90 days of the date of this resolution. It is the direction of the Council that the implementation plan target implementation for the coming fiscal year, 2006 and that the utility be funded through existing revenue sources for that fiscal year.

PASSED by the City Council and APPROVED by the Mayor this 22nd day of November 2005.

Ben Tolson, Mayor

ATTEST:

Laura J. Koenig, City Clerk/Treasurer

Approved as to form:

Thom Graafstra, City Attorney

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Attachment C

City of Sultan
Snohomish County, Washington

Ordinance
An ordinance of the City of Sultan on Snohomish County, Washington establishing a Stormwater Utility

Whereas, the Federal Clean Water Act, 33 U.S.C. 1251 et seq., requires certain political entities, such as the City, to implement stormwater management programs within prescribed time frames, and the Environmental Protection Agency, pursuant to the Federal Clean Water Act, 33 U.S.C. 1251 et seq., has published rules for stormwater outfall permits; and

Whereas, pursuant to RCW Ch. 35 A.11, Ch. 35.67 and Ch. 35.92, the City has the authority to establish a Stormwater Utility and set utility rates, and

Whereas, the City currently combines its Sewer and Stormwater Utility rates into a single utility rate; and

Whereas, in 2001 the City received a loan for $140,000 from the Washington State Revolving Fund to develop a Surface Water Quality Management Plan; and

Whereas, the City commissioned a Surface Water Quality Management Plan Report including analysis of existing conditions and recommendations for a Stormwater Utility and Stormwater Utility rate. A written report was developed by a qualified consultant. Said report is dated December 1, 2002 and is hereby incorporated by this reference; and

Whereas, the City adopted the Surface Water Quality Management Plan on XXXXXX

Whereas, the City desires to establish a Stormwater Utility to be responsible for the operation, construction and maintenance of stormwater facilities; for stormwater system planning, and for review of stormwater development plans for compliance with stormwater management codes; and

Whereas, the City Clerk did give notice of a public hearing as required by law; and

Whereas, on August 21, 2003 the City Council did conduct a public meeting for a Surface Water Quality Management Plan to include the establishment of a Stormwater Utility and Stormwater Utility rate; and

Whereas, for purposes of convenience and efficiency, the City has combined its rates and charges for water, sewer, garbage and stormwater into one ordinance; and

Whereas, the City did set up and involve a Citizen's Advisory Board to participate in the formation of the Stormwater Utility; and

Whereas, on March 20, 2007 the City did update the Planning Board on the progress of the Stormwater Utility development and associated research activities and public involvement; and

Whereas, on May 10, 2007 the City did update the Planning Board.

Now therefore, the City Council of the City of Sultan, Washington do ordain as follows:

Section 1. The City of Sultan finds, determines and declares that the stormwater system, which provides for the collection, treatment, storage and disposal of stormwater, provides benefits and services to all property within the incorporated City limits. Such benefits include, but are not limited to: the provision of adequate systems of collection, conveyance, detention, treatment and release of stormwater; the reduction of hazards to property and life resulting from stormwater runoff; improvements in general health and welfare through reduction of undesirable stormwater conditions; and improvements to the water quality in the stormwater and surface water system and its receiving waters.

1) Toxic metals, organic compounds, and bacterial and viral pathogens that are unsafe to humans and can pollute our streams, drinking water, fish and animal habitat.
2) The City Council finds that the extent of impervious area preventing infiltration or hastening the drainage of storm and surface water from a parcel of property, and carrying contaminants into the streams and receiving waters is the primary factor determining an individual property's contribution into the City stormwater system.
3) Impervious surfaces, as well as the failure of existing stormwater systems due to inadequate maintenance has increased flood events in recent years.
4) The City will be required to meet the standards of its National Pollution Discharge Elimination System Phase II requirements in the near future.
5) All property within the City will benefit from the Stormwater Utility, which will provide a regional system and improvements, which will protect property from upslope and upstream stormwater effects.
6) In 2003 the City's Surface Water Quality Plan contained a recommended storm and surface water management program and recommended establishing a Stormwater Utility as the primary funding mechanism.
7) In 2007 the City of Sultan formed a Citizen's Advisory Board to review the Plan and establish a budget for the implementation and ongoing activities of a Stormwater Utility.

Section 2. For those purposes of the Federal Clean Water Act and pursuant to authority set forth in RCW Chapters 35A.11, 35.67, and 35.92, there is created a Stormwater Utility, which shall consist of a separate fund account and such staff necessary to implement and manage the Utility as the City Council shall authorize. The Stormwater Utility, under the control of the City Council shall:

1) Administer the acquisition, design, construction, maintenance and operation of the Stormwater Utility system, including capital improvements.
2) Administer and enforce this ordinance and all regulations and procedures adopted relating to the design, construction, maintenance, operation and alteration of the Utility

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stormwater system, including, but not limited to the quantity, quality and/or velocity of the stormwater conveyed thereby;

3) Advise the City Council and other City departments on matters relating to the Utility;
4) Review plans and approve or deny, inspect and accept extensions and connections to the system;
5) Enforce regulations to protect and maintain water quality and quantity within the system in compliance with water quality standards established by State, regional and/or federal agencies as now adopted or here after amended;
6) Periodically analyze the cost of services and benefits provided, and the system and structure of fees, charges, civil penalties and other revenues of the Utility;
7) Perform such other actions as are consistent with the Federal Clean Water Act and RCW Chapters 35A.11, 35.67 and 35.92.

Section 3. Definitions. The following words when used herein shall have the following meanings, unless the context clearly indicates otherwise:

1) "Adjustment Request" means a request by a rate payer for review and adjustment of the rate levied upon the property.
2) "Base Rate" means the gross charge per ERU needed to satisfy all of the projected costs associated with the stormwater utility for an established period of time.
3) "City" means the City of Sultan, Washington or another city with whom Sultan has an interlocal agreement for stormwater rate collection.
4) "Developed" means the state, status, or condition of the subject property at the time the proposed project has been completed or development permits have expired, which may include existing buildings, impervious areas, and topography as is affected.
5) "Equivalent Residential Unit (ERU)" shall mean the measure of impervious square feet to be used by the Utility in assessing service charges against each parcel of property. It shall be calculated by averaging the impervious square footage of a randomly selected sample set of at least twenty (20) single family residential properties.
6) "Impervious Area" means that hard surface area which prevents or retards the entry of water into the soil mantle and/or causes water to run off the surface in greater quantities or at an increased rate of flow from that present under natural conditions prior to development. Common impervious surfaces include, but are not limited to, roof tops, walkways, patios, driveways, parking lots or storage areas, concrete or asphalt paving, gravel roads, packed earthen materials, and oiled macadam or other surfaces which similarly impede the natural infiltration of surface and stormwater runoff. Open retention/detention facilities and wetlands shall not be considered as impervious surfaces for the purposes of this section. An area may be impervious whether or not the same is occupied or inhabited.
7) "Non-Profit Organization" as defined by United States Internal Revenue Code (26 U.S.C. § 501(c)) means Corporations, and any community chest, fund, or foundation, organized and operated exclusively for religious, charitable, scientific, testing for public safety, literary, or educational purposes, or to foster national or international amateur sports competition (but only if no part of its activities involve the provision of athletic facilities or equipment), or for the prevention of cruelty to children or animals, no part of the net earnings of which inures to the benefit of any private shareholder or individual, no substantial part of the activities of which is carrying on propaganda, or otherwise

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attempting, to influence legislation and which does not participate in, or intervene in (including the publishing or distributing of statements), any political campaign on behalf of (or in opposition to) any candidate for public office.

8) "Stormwater Utility Fee" means the monthly fee levied by the Utility upon all developed real property within the boundary of the Utility as authorized herein.
9) "System" shall mean the entire systems of storm drainage facilities owned by the Utility for the movement and control of storm and surface waters, including both naturally occurring and manmade facilities.
10) "Undeveloped Conditions" means the state, status, or condition of the subject property prior to any development of the property that has occurred, which may include trees, pastures, or native features.
11) "Utility" means the Sultan Stormwater Utility, the boundaries of which shall be the city limits of the City of Sultan.

Section 4. Rate Policy. It shall be the policy of the City that the rate structure be based upon the Equivalent Residential Unit (ERU), which will be adopted by separate ordinance by the City.

Section 5. Property Classification for Stormwater Utility Fee.

1) Property Classification: For purposes of determining the stormwater user's fee, all properties in the City are classified into one of the following classes:
   Single-family detached residential property;
   Two-, three- and four-family residential property; or
   Commercial and Other developed property including multi-family (5-99 units).
2) Single-family residential fee: The City Council finds that the intensity of development of most parcels of real property in the City classified as single-family residential is similar and that it would be excessively and unnecessarily expensive to determine precisely the square footage of the improvements (such as building, structures, and other impervious areas) on each such parcel. Therefore, all single-family residential properties in the City shall be charged a flat stormwater management fee, equal the base rate, regardless of the size of the parcel or the improvements.
3) Two-, three- and four-family residential fee: The City Council finds that the intensity of development of most two-, three- and four-family residential properties is approximately 1.75 times that of the average single-family residential properties. Therefore, the fee for all two-, three- and four-family residential properties will be 1.75 times the stormwater fee charged to single-family residential properties.
4) Commercial and Other developed property fee: The fee for all other developed property in the City shall be the base rate multiplied by the numerical factor obtained by dividing the total impervious surface area (square feet) of the property by one ERU. The impervious surface area for other developed property is the square footage for the buildings and other improvements on the property. The minimum stormwater management fees for other developed property shall be equal the base rate for single-family residential property.

Section 6. Real Property in an Undeveloped Condition. In accordance with the policy established in Section 4, the service charge shall be determined by the amount of impervious area contained on each parcel of real property. Those properties remaining in an undeveloped

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condition are deemed not to make use of the services of the Utility or of the facilities of the system beyond that used by such property in the natural state. Therefore, no service charge shall be imposed upon that real property within the boundaries of the Utility that is in an undeveloped state.

Section 7. Initial Service Charge Rates. In accordance with the rate structure established herein, there is hereby levied upon all developed real property within the boundaries of the Utility the following service charges:

1) For all single-family residences and detached single-family condominiums, the monthly service charge shall be the fee established and approved by separate resolution for one Equivalent Residential Unit (ERU).
2) For two-, three- and four-family residential property, the monthly service charge shall be the fee established and approved by separate resolution for 1.75 ERUs.
3) For all other developed property including commercial, institutional, manufacturing, multi-family 5-99 units, attached condominiums of greater than five (5) units and mobile home parks within the boundaries of the Utility, except as specified under Section 8, the monthly services charge shall be the product of the fee adopted by separate resolution and the number of ERUs determined by the Utility to be contained in such parcel pursuant to Section 5.

Section 8. Property Exempt From Service Charges. The following special categories of property are exempt from service charges:

1) City street rights-of-way, all of which are part of the system pursuant to the plan.
2) State of Washington highway rights-of-way and Snohomish County road rights-of way so long as the State of Washington and Snohomish County shall agree to maintain, construct and improve all drainage facilities contained within such rights-of-way as required by the Utility in conformance with all Utility standards for maintenance, construction and improvement hereafter established by the Utility and so far as such maintenance, construction and improvements shall be achieved at no cost to the Utility or to the City.

Section 9. Credit Potential for Private, On-Site Control Facilities on Non-single Family Properties and School Facilities.

1) The Utility may grant a credit of twenty-five (25) percent for private, on-site control facilities that benefit the overall stormwater system. To be eligible for the credit, the property owner or homeowners association (for common area) must demonstrate that the on-site control system exists, was installed per the City and Department of Ecology's standards at the time of development, and the system has been maintained by the property owner or homeowner's association in accordance with City and Department of Ecology standards at the time of development. The eligibility of the credit shall be reviewed and the facility inspected by the City on an annual basis to ensure proper maintenance of said private facilities. The Public Works Director shall determine the forms, requirements and process for determining eligibility. If a homeowners association is granted the discount it will be applied to all residential properties listed by the homeowners association as participating properties.
2) The Utility may grant a credit of seventy (70) percent for condition and performance that is compliant with the most recent City and Department of Ecology Best Management

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Practices (BMP) standards for on-site control facilities that have the capacity to fully contain and infiltrate on the parcel the runoff from the 100-year, 7-day storm event. The facility must be properly maintained to achieve performance standards by the property owner or homeowner's association. The eligibility of the credit shall be reviewed and the facility inspected on an annual basis to ensure proper maintenance of said private facilities. The Public Works Director shall determine the forms, requirements and process for determining eligibility.

3) The Utility shall grant public schools twenty-five (25) percent additional credit upon receipt of an acceptable curriculum showing how the school district provides education regarding stormwater issues. Each site owned and operated by the school district in support of education shall be eligible for this credit in addition to any site-specific credits also available for individual sites. The Public Works Director shall determine the forms, requirements and process for determining eligibility.
4) The Utility shall grant non-profit organizations up to 25% off of their stormwater bill if they (What are other cities doing?) Kim is finding out![11]
5) Senior Citizens may apply the standard Senior Citizen Utility Discount to their stormwater utility fee.

Section 10. Billing.

1) The charges imposed by this chapter shall be billed in conjunction with the property owner's or user's customary water and sanitary sewer bill issued by the City. For developed properties subject to the service charge that do not otherwise receive a water or sanitary sewer bill from the City of Sultan, the stormwater service charge may be billed at intervals set by the Public Works Director, but not less than annually.
2) Delinquent accounts shall be determined and administered in a manner consistent with that provided for water and sewer.
3) Billings may be made in the name of tenant or other occupants of the premises that are provided Stormwater Utility services at the mailing address of the property. Such billings shall not relieve the owner of the property from liability for the payment of the charges for furnishing of such stormwater services nor in any way affect the lien rights of the City against the premises to which said stormwater services are furnished. Failure to receive mail properly addressed to the mailing address provided above shall not be a valid defense for failure to pay the delinquent charges and penalties. Any change in the mailing address provided above must be properly filed in writing with the Office of the City Clerk before it will become effective.
4) In the event the City must bring legal action to collect stormwater service charges and/or penalties, the City, in addition to such charges and penalties, shall recover its attorney's fees and other costs incurred in connection with such collection.

Section 11. Rate Adjustment and Appeals:

1) Any person billed a stormwater fee under this chapter may file an "Adjustment Request" with the Public Works Director within sixty (60) days of the date of the billing statement. Submittal of an Adjustment Request shall be made on forms provided by the Director and shall not extend the period of payment for the stormwater fee.

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2) Upon timely receipt of an Adjustment Request, the Public Works Director or his/her designee will review the request and make a preliminary determination after a review of Utility records or a site visit.
3) The Public Works Director may grant a rate adjustment only in accordance with this chapter and only upon a finding that one or more of the following conditions exist:
   a. The parcel charged is not within the Sultan city limits.
   b. The impervious surface area of the parcel would change the number of Equivalent Residential Units used in determining the stormwater fee.
   c. The parcel is in an undeveloped condition and not paved, graveled or covered with any impervious surface.
   d. The parcel is not single-family and contains a constructed or natural on-site surface water control facility that is determined by the stormwater engineer or inspector to be maintained at optimum operating condition and improves water quality at the outlet to meet State standards for stormwater discharge.
   e. The rate charged was otherwise not calculated in accordance with the terms of this chapter.
4) If the property owner does not agree with the preliminary determination, the property owner may submit further evidence supporting the calculation prepared by a licensed surveyor, engineer or professional. This may include an approved drainage plan, a detailed site plan or other information required by the Public Works Director.
5) The property owner shall have the burden of proving by a preponderance of the evidence that the desired Adjustment Request meets the requirements of this section.
6) When granted, an Adjustment Request shall only apply to the Service Charge bills subsequently issued. If an Adjustment Request is granted which reduces the rate charge for the current year, the applicant shall be refunded the amount overpaid in the current calendar year only. If the Public Works Director finds that a rate charge bill has been undercharged, then at the Director's discretion, either an amended bill shall be issued which reflects the increase in the service charge, or the undercharged amount shall be added to the next bill. Any amended bill shall be due and payable under the provisions set forth in this chapter.
7) Decisions on Adjustment Requests shall be made by the Public Works Director based on information submitted by the applicant in the Adjustment Request, the utility's records and a site visit. Decisions shall be made within thirty (30) days of the date of the Adjustment Request, except when additional information is requested or needed by the Public Works Director. The applicant shall be notified in writing of the Public Works Director's decision.
8) Decisions of the Public Works Director on Adjustment Requests shall be final unless appealed to the Snohomish County Superior Court within thirty (30) days of the final decision on the Adjustment Request.

Section 12. Effective Date. This ordinance shall become effective from and after its passage and the expiration of five (5) days after publication as provided by law, except the provisions of Section 7, Initial Service Charge Rates, shall be effective on January 1, 2008.

Section 13. Severability. If any section, subsection, sentence, clause, phrase or word of this ordinance should be held to be invalid or unconstitutional by a court of competent jurisdiction,

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such invalidity or unconstitutionality thereof shall not affect the validity or constitutionality of any other section, subsection, sentence, clause, phrase or word of this ordinance.

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ADOPTED by the City Council and APPROVED by the Mayor this ___day of _____, 2007.

CITY OF SULTAN

By: _____
Ben Tolson, Mayor

ATTEST:

By: _____
Laura Koenig, City Clerk

APPROVED AS TO FORM:

By _____
Tom Graafstra, City Attorney

Date of Publication: __ day of _____, 2007

Effective Date: __ day of _____, 2007

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Attachment D

CITY OF SULTAN

STORMWATER UTILITY
CREDIT MANUAL FOR STORMWATER FEES

Prepared by
SHOCKEY BRENT, INC.

Prepared for

Department of Public Works
City of Sultan

May 2007

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SECTION 1: INTRODUCTION

1.1 OVERVIEW

On xxx xx, 2007 the City Council of Sultan, Washington passed Ordinance No. xxxx, which created a citywide Stormwater Utility within the Department of Public Works. In 2007, the City Council adopted Ordinance No. xxxx establishing a utility rate and method for collection. This utility provides a stable and adequate source of revenue for the City's stormwater management program that allocates the cost of stormwater services across every stormwater "user" in the City through an Equivalent Residential Unit (ERU). Each property is charged a fee based on the amount of impervious surface area on the property and its use.

The ordinance also allowed for a system of credits for stormwater service customers who undertake specific, approved actions that reduce the impact of stormwater runoff on the public stormwater system, or provide an ongoing public benefit related to stormwater management. A credit is an ongoing reduction in the fee. This manual details the policies and procedures for stormwater utility credits.

The five (5) different stormwater fee credits that will be offered in the City of Sultan are summarized on the following pages.

- Credit for Private On-Site Control Facilities on Non-single Family Properties, and Common Areas
- Credit for On-Site Control Facilities that comply with the most recent City and Department of Ecology Best Management Practices (BMP) maintenance and performance for a facility that is of sufficient capacity to fully contain and infiltrate on the parcel the runoff from the 100-year, 7-day storm event
- Credit to Public Schools for Acceptable Curriculum
- Credit for non-profit organizations
- Credit for the standard Senior Citizens Utility Discount.

1.2 DEFINITIONS

"Adjustment Request" means a request by a ratepayer for review and adjustment of the fee levied upon the property.

"Base Rate" means the gross charge per ERU needed to satisfy all of the projected costs associated with the stormwater utility for an established period of time.

"City" means the City of Sultan, Washington.

"Developed" means the state, status, or condition of the subject property at the time the proposed project has been completed or development permits have expired, which may include existing buildings, impervious areas, and topography as is affected.

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"Equivalent Residential Unit (ERU)" means the measure of impervious square feet to be used by the Utility in assessing service charges against each parcel of property. It shall be calculated by averaging the impervious square footage of a randomly selected sample set of at least twenty (20) single family residential properties.

"Impervious Area" means that hard surface area which prevents or retards the entry of water into the soil mantle/or causes water to run off the surface in greater quantities or at an increased rate of flow from that present under natural conditions prior to development. Common impervious surfaces include, but are not limited to, roof tops, walkways, patios, driveways, parking lots or storage areas, concrete or asphalt paving, gravel roads, packed earthen materials, and oiled macadam or other surfaces which similarly impede the natural infiltration of surface and stormwater runoff. Open retention/detention facilities and wetlands shall not be considered as impervious surfaces for the purposes of this section. An area may be impervious whether or not the same is occupied or inhabited.

"Non-Profit Organization" as defined by United States Internal Revenue Code (26 U.S.C. § 501(c)) means Corporations, and any community chest, fund, or foundation, organized and operated exclusively for religious, charitable, scientific, testing for public safety, literary, or educational purposes, or to foster national or international amateur sports competition (but only if no part of its activities involve the provision of athletic facilities or equipment), or for the prevention of cruelty to children or animals, no part of the net earnings of which inures to the benefit of any private shareholder or individual, no substantial part of the activities of which is carrying on propaganda, or otherwise attempting, to influence legislation and which does not participate in, or intervene in (including the publishing or distributing of statements), any political campaign on behalf of (or in opposition to) any candidate for public office.

"Non-single family residential property" means individual properties that have impervious surface and are not used as a single-family residential property. This can include, but is not limited to, multiple dwelling unit residential properties (e.g. apartments 5-99 units), commercial and office buildings, public buildings and structures, industrial and manufacturing buildings, storage buildings and storage areas covered with impervious surfaces, parking lots, parks, recreation properties, public and private schools and universities, research stations, hospitals and convalescent centers, airport, agricultural uses covered by impervious surfaces, water reservoirs, and water and wastewater treatment plants.

"Plan" means the current Stormwater Utility Plan and recommended program written in 2003 and amended by the City in 2007.

"Retention facility" means a stormwater facility that provides storage of stormwater runoff and is designed to eliminate subsequent surface discharges. These facilities are effective in reducing downstream flooding because they do not allow discharge of stormwater runoff to downstream locations except in extreme flood events where the storage volume of the facility is exceeded. Retention facilities can also be effective in reducing stormwater pollution since the pollutants contained in the stormwater are not

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released downstream. Refer to the adopted Department of Ecology Stormwater Manual for the specified criteria on detention/retention basin design.

"School" means any building or group of buildings the use of which meets State requirements for elementary, secondary, or higher education and which use does secure the major part of its funding from any governmental agency.

"Service Charge" means the monthly fee levied by the Utility upon all developed real property within the boundary of the Utility as authorized herein.

"Single-family residential property" means developed land containing one structure, which is not attached to another dwelling and is designed for occupancy for one family.

"Stormwater" means rainfall runoff, snowmelt runoff, and surface runoff and general drainage related to a precipitation event.

"System" means the entire systems of storm drainage facilities owned by the Utility for the movement and control of storm and surface waters, including both naturally occurring and manmade facilities.

"Undeveloped condition" means the state, status, or condition of the subject property prior to any development of the property that has occurred, which may include trees, pastures, or native features.

"Utility" means the Sultan Stormwater Utility, the boundaries of which shall be the City limits of the City of Sultan.

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SECTION 2: CREDIT POLICIES AND INSTRUCTIONS

2.1 GENERAL POLICIES

There are certain conditions that must be met and applications that must be completed that will determine what properties qualify for a credit and for what amount of credit. General policies for Stormwater Utility credits are listed below.

2.1.1 Credit is given to eligible properties only, as listed in the next sections.

2.1.2 It is the responsibility of the property owner or his/her designee to apply for stormwater credits, and provide the necessary substantiating information with the Credit Application, as described herein.

2.1.3 Credit applications are available from the Department of Public Works. Questions regarding credits should be referred to the Public Works Director. Although the Department of Public Works staff is happy to answer questions, they are not responsible for initiating, performing engineering calculations, or otherwise assisting in the preparation of credit applications.

2.1.4 The Department of Public Works will only review complete credit applications. The review will be performed within four (4) weeks after a complete application is submitted. If approved, the credit will be applied in the next month after approval.

2.1.5 Any approved credit application received within one (1) year of the date of the initiation of user fee billing by the Stormwater Utility will apply retroactively to:

- 2.1.5.1 The date of the initiation of user fee billing by the Stormwater Utility for existing developed property; or
- 2.1.5.2 The date of initiation of billing for new construction.

2.1.6 One year after the date of the initiation of user fee billing by the Stormwater Utility, the Utility will not refund any portion of the stormwater fees paid prior to the approval of an applicant's credit application, and no more than four months retroactive credit shall be allowed.

2.1.7 Multiple credits can be given to eligible properties. However, the total credit available to any one property cannot exceed 70% of the stormwater fee.

2.1.8 Credits are maintained on a property as long as the activity is being performed in accordance with City and Department of Ecology BMP requirements established at the time of credit approval and/or the stormwater facility is properly functioning in accordance with applicable City codes and ordinances and Department of Ecology BMPs, or policies stated herein.

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2.2 THE ON-SITE CONTROL CREDIT

In order to alleviate the costs and time of maintaining on-site stormwater control facilities, the On-Site Control Credit is available to businesses, industries and other non-residential properties that discharge stormwater to a detention or retention facility.

When constructed and maintained properly and in appropriate locations, stormwater detention, infiltration and retention facilities reduce the peak flow and/or volume of runoff from the property, thereby alleviating downstream flooding. However, when constructed in an inappropriate location, or when left un-maintained or improperly maintained these facilities can aggravate drainage problems. The following policies are specific to the On-Site Control Credit:

2.2.1 An On-Site Control Credit will be available to non-single family residential properties that have on-site stormwater detention, infiltration and detention ponds designed to control the peak stormwater runoff rate or runoff volume in accordance with the adopted Stormwater Manual and the policies stated in this manual.

2.2.2 A homeowners association may apply for an On-Site System that serves their neighborhood that received a Stormwater Utility bill. Credits will be applied to the fees of all single-family residents listed in the homeowners association.

2.2.3 Sufficient information must be supplied to the City to verify that the controls meet the following criteria: the peak runoff rate under developed conditions must be less than, or equal to, the peak runoff rate for the same property under undeveloped conditions.

2.2.4 Credit applications for new constructions may be submitted to the City at any time during the construction process. However, the credit will not be approved based on site plans alone. The credit application requires that the detention/retention facility must be constructed as designed and working in proper operating condition. The facility will be inspected when complete and annually thereafter by the City.

2.2.5 The total credit percentage is dependent on the magnitude of stormwater control provided by the facility. Up to a 25% credit to the assessed stormwater fee will be given for an On-Site Control facility.

2.2.6 Credit will be considered, on a case-by case basis, for other types of facilities, activities, or control devices that restrict and control the volume and/or peak flow related to impacts of a property's stormwater runoff on the municipal or private stormwater systems. Sufficient technical justification must be submitted in the application package to make such determinations.

2.2.7 A credit shall only be applied to that portion of the property served by the stormwater facility.

2.2.8 All stormwater Control facilities for which credit is applied must be in proper operating condition at the time that the application is submitted and must be properly maintained to City and Department of Ecology BMPs standards continuously.

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2.2.9 The facilities must be owned, operated and maintained, either on-site or by record of agreement by the applicant. The applicant must provide documentation of the activities that have or will occur in order to maintain the facility to the standards presented.

2.2.10 In the event that the stormwater facility is not located on the property owned or operated by the applicant, the applicant must provide a copy of a recorded agreement between the applicant and the owner of the off-site facility stating that the applicant is responsible for maintaining all or portion of the facility and that the owner understands that the applicant will receive the stormwater fee credit for the facility. In addition, the owner of the off-site parcel should provide a letter to the City indicating that he/she is in agreement with the information contained in the application for credit.

2.2.11 The stormwater detention/retention facilities must be operated and maintained according to City and Department of Ecology BMP standards and be in proper condition to control the peak runoff rate as presented in this manual. Receipts from Professional Services may be accepted as evidence of maintenance as long as the annual City inspection reports verify the documented maintenance. If the applicant does not operate and maintain the facility as required and provide documentation then the credit will be discontinued.

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SECTION 3: CREDIT APPLICATION AND APPROVAL PROCESS

3.1 ON-SITE CONTROL APPLICATIONS

3.1.1 Credit applications must include hydrologic calculations demonstrating the stormwater facility effectiveness based on a hydrologic study of the site using the techniques presented in the adopted Stormwater Manual, as appropriate for the size of the site. The applicant can utilize hydrologic modeling software pre-approved by the Public Works Director (often these documents were prepared during construction of the site and can be referenced within the City's existing files).

3.1.2 All engineering calculations and drawing shall be prepared, sealed and stamped by a professional engineer registered to design stormwater management facilities in the State of Washington.

3.1.3 If all requirements and conditions of this section are met, the credit will be available upon successful completion of the credit application process and approval of an on-site City inspection.

3.1.4 Credit applications for new developments can occur as a part of the normal site civil development plan review procedures. The completed credit application should accompany the as-builts for the site.

3.1.5 A right-of-entry or easement, as applicable, must be granted to the City in order for the City to review and approve the credit, and to perform occasional inspections to see that the stormwater management facility is maintained and operating as designed. Right-of-entry is granted via the applicant's or property owner's signature on the credit application.

3.1.6 The Utility may grant a credit of up to twenty-five (25) percent for private, on-site control facilities that benefit the overall stormwater system. To be eligible for the credit, the property owner must demonstrate that the on-site control system exists, was installed per the standards at the time of development, and the system has been maintained in accordance with current City and Department of Ecology BMP standards. The eligibility of the credit shall be reviewed and the facility shall be inspected on an annual basis to ensure proper maintenance of said private facilities.

3.1.7 The Utility may grant a credit of up to seventy (70) percent for on-site control facilities that have the capacity to fully contain and infiltrate on the parcel the runoff from the 100 year, 7-day storm event, *if* the facilities are maintained in accordance with current City and Department of Ecology BMP standards. The eligibility of the credit shall be reviewed and the facility shall be inspected by the City on an annual basis to ensure proper maintenance of said private facilities.

3.1.8 In no case shall any site be eligible for more than a seventy (70) percent total credit.

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3.2 THE WATER EDUCATION CREDIT

Education credits are provided to public schools (K through 12) for the purpose of providing water (stormwater, flooding, water quality, and watershed management) type education programs to students.

Policies specific to the Water Education Credit are as follows:

3.2.1 The Water Education Credit is available to colleges, elementary, middle and high schools located in the City of Sultan.

3.2.2 The school must teach a water resources-based curriculum that is approved by the Public Works Department. The curriculum must include a field or laboratory component that focuses on the results of human activities on water quality and the impacts reduced water quality has on the aquatic and human environments.

3.2.3 The Water Education Credit will be approved on an annual basis for education that was performed in the previous school year. Credit received for the prior year's educational activities will be shown on the Utility bill over a 12-month period, starting on the September bill following the school year during which the activities were performed.

3.2.4 The Water Education Credit requires submittal of both an application and an annual report to the Public Works Department. The application need only be completed once, and requires a description of the educational program, list of educational tools used, estimated number of students that will/have received the education, and the length of the educational program. Submittal of the application is necessary to indicate to the applicant that the proposed curriculum meets the criteria stated in item 2 above, and that a credit will be received pending approval of an annual report to follow.

3.2.5 Credit approval must be renewed each year via approval of an annual report. The annual report must be submitted after the end of the school year, but prior to August 1. It must provide an accurate accounting of the education activity performed as described in the application, including the grade levels and the number of students that received the education.

3.2.6 Approvals of both the credit application and annual report will result in a maximum of up to 70% credit to the assessed fee. The credit will be applied only to the school property(s) where the curriculum is taught.

3.2.7 To receive the full credit, the curriculum must be scheduled with the intention that all students should receive the curriculum at least once during the typical tenure at the school. For example, a typical tenure for high school would be four (4) years, so it would be expected that approximately 25% of students in the school would be taught the curriculum. A curriculum that is scheduled for teaching to all the students in tenth grade meets this criterion.

3.3 The Non-profit Organization Credit[11]

3.4 Senior Citizen Credit

3.4.7 The City may apply the standard Senior Citizens Utility Discount to their stormwater utility fee for customers that qualify or that are already receiving the discount on their other utilities.

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3.3 APPEALS

Decisions of the Public Works Director on adjustment requests shall be final unless appealed to the Snohomish County Superior Court within thirty (30) days of the final decision on the request.

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Attachment E

Donald A. and Suzanne L. Martinell
327 Walburn Rd.
Sultan, WA 98294
360-793-3249

July 17, 2007

Deborah Knight, City Administrator
Sultan Planning Board
City of Sultan
P.O. Box 1199
Sultan, WA 98294

Dear Ms. Knight and Planning Board members,

We own 5 acres north and west of the end of the privately owned, graveled Walburn Road, located on the hill east of Main St. The property has one single-family home that we occupy. The property contains wetlands and a pond with no outlet. The pond has water in it approximately 9 months of the year. It is full during the rainy season (October through April most years). Whenever the Sky Valley floods we have some flooding on our property. However, our property fully contains all rain water and resulting runoff from our property and buildings. All of our stormwater percolates into the ground of our property. There is nowhere else for this water to go. No stormwater from our property flows onto anyone else's property or onto any roads. Not only does our property drain our stormwater, it drains and fully contains and percolates the stormwater from five other property sites of over 10 acres in total (plus our five), including the stormwater from severe flooding of 1996 and 2006. Craig Bruner can attest to this fact, as we have invited him to come onto our property on several occasions over the years to view our stormwater drainage issues.

We respectfully request a stormwater utility credit potential be written into the City of Sultan Credit Manual for Stormwater Fees (attachment C) because of our unique circumstances of not only containing our own stormwater, but draining and containing the stormwater from at least 5 other properties.

For possible future consideration, any suggestions in diverting other property owner's stormwater to flow away from our property would be helpful to us.

Thank you for your consideration of this matter.

Sincerely,

Donald A. Martinell

Suzanne L. Martinell

STORMWATER UTILITY
PRPOSED 6-YEAR BUDGET

Attachment F

Surfacewater Fund	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
# of employees	3	3	3	3	3	3
Salaries and Wages	$ 209,300	$216,626	$224,207	$232,055	$240,177	$ 248,583
Benefits	$ 52,325	$ 54,156	$ 56,052	$ 58,014	$ 60,044	$ 62,146
Operating Supplies	$ 12,000	$ 12,240	$ 12,485	$ 12,734	$ 12,989	$ 13,444
Other Services/charges	$ 115,000	$ 40,750	$ 16,538	$ 17,364	$ 18,233	$ 19,144
Intergovernment Services	$ -	$ -	$ -	$ -		$ -
Capital Outlay	$ 62,000	$ 21,000	$ 21,000	$ 21,000	$ 21,000	$ 23,000
Debt Service Payment w/ Interest	$ 29,631	$ 29,631	$ 29,631	$ 29,631	$ 29,631	$ 29,631
Operating Transfer Out to Capital Improvement	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000
Total Surface Water Fund	$ 530,256	$424,403	$409,913	$420,798	$432,073	$ 445,947
Employees						
Public Works Director	0.33	0.33	0.33	0.33	0.33	0.33
Administrative Assistant	0.17	0.17	0.17	0.17	0.17	0.17
Stormwater Engineer	1	1	1	1	1	1
Inspector	0.5	0.5	0.5	0.5	0.5	0.5
Utility Worker	1	1	1	1	1	1
Total	**3**	**3**	**3**	**3**	**3**	**3**
Other Services/Charges						
Surface Water Comp Plan	100000	25000	0	0	0	0
Professional Services	15000	15750	16538	17364	18233	19144
Total Other Svc/Charges	115000	40750	16538	17364	18233	19144
Capital Outlay						
Truck	40000	5000	5000	5000	5000	5000
Computer	2000	0	0	0	0	2000
Inspection Equipment	5000	1000	1000	1000	1000	1000
Minor Repairs (<$5k)	15000	15000	15000	15000	15000	15000
Total	**62000**	**21000**	**21000**	**21000**	**21000**	**23000**
Debt Service Payments						
Vactor	14000	14000	14000	14000	14000	14000
Sweeper	7000	7000	7000	7000	7000	7000
2002 Water Quality Report	8631	8631	8631	8631	8631	8631
Total	**29631**	**29631**	**29631**	**29631**	**29631**	**29631**

7/27/2007

Attachment G

Science News Online
Week of Sept. 4, 2004; Vol. 166, No. 10

Paved Paradise?

Impervious surfaces affect a region's hydrology, ecosystems—even its climate

Sid Perkins

When raindrops fall on uninhabited terrain, many things can happen. Precipitation that lands on craggy mountainsides flows downhill to streams. Drops that hit soil often soak in; some of that water later evaporates, while much of the rest seeps through the earth to replenish aquifers and nourish springs. Raindrops that splash into rivers immediately join a headlong tumble toward the sea. Consider, however, raindrops that fall on populated areas. Development brings homes, shopping centers, streets, sidewalks, driveways, parking lots, tennis courts—all of which typically shed water more effectively than the proverbial duck's back. On the green space that's left, even small amounts of traffic—tractors, golf carts, lawn mowers, mere human footfalls—can compress the soil and reduce the rate at which it absorbs precipitation.

As an environment becomes inhabited, therefore, less precipitation soaks into the ground and runoff increases. As a result, floods occur more often and develop more rapidly. These hydrological changes, along with the pollutants picked up by water as it pours across the urban landscape, can wreak havoc on aquatic ecosystems and damage habitats alongside waterways.

The relative dearth of water left behind in populated landscapes contributes to the phenomenon of urban heat islands, in which densely populated areas are warmer than the surrounding rural zones (SN: 7/10/04, p. 21: Available to subscribers at http://www.sciencenews.org/articles/20040710/fob6.asp**). However, scientists suggest that innovative landscaping and architecture could alleviate some of the detrimental effects of this sprawl.**

Density's child

Each year, the population of the United States grows by about 3 million. Construction costs to support that growth exceed $480 billion annually, a substantial portion of which builds about 1 million new single-family homes and more than 10,000 new miles of roads. These impervious surfaces aren't scattered evenly, however. In suburban areas where homes are built on one-third-acre lots, about 35 percent of the ground is impermeable to precipitation. In densely packed cities such as New York and San Francisco, impervious surfaces may cover more than 90 percent of the ground.

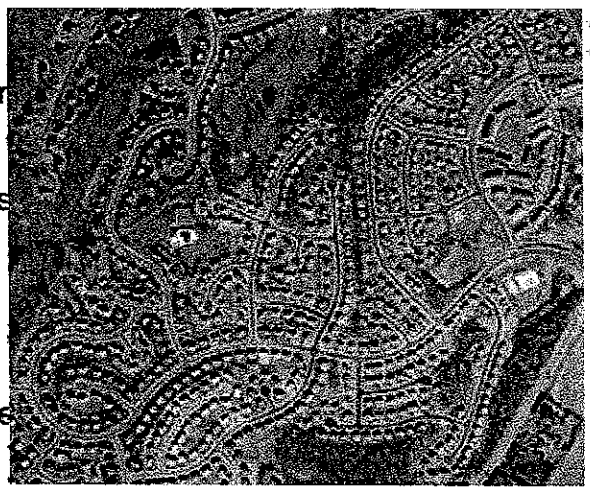
A new analysis of the lower 48 states captures details of the distribution of the nation's impervious surfaces. The information will be useful to a wide variety of scientists, including hydrologists, ecologists, and water-resource managers, says

G-1

Christopher D. Elvidge of the National Oceanic and Atmospheric Administration in Boulder, Colo. He and his colleagues used government highway data and satellite images to assemble a first-of-its-kind map on a 1-square-kilometer grid.

THEN AND NOW. These aerial photos taken of the same site near Leesburg, Va., in 1983 (above) and 2002 (below) depict the growth of roads, houses, and other impervious surfaces in one of the nation's fastest-growing counties. USGS

Then, the researchers used detailed analyses of 80 high-resolution aerial photos taken in and around 13 urban areas to assign specific values to squares of the map. The results suggest that nationwide, almost 113,000 km^2—an area a bit smaller than the state of Ohio—are covered with impervious surfaces. Elvidge and his colleagues describe their findings in the June 15 *Eos*.



Commonwealth of Virginia

The largest contributor to a region's impervious-surface area vary with the extent of local developme says Janet S. Tilley, a physical scientist at the U.S. Geological Survey in Reston, Va. In sparsely populated locales, highways account for the largest proportion of impermeable surfaces, she notes. Although many researchers consider pavement to be the biggest source of impervious area in more-developed regions as well, two other factors make major contributions there.

In analyses of satellite and aerial photos of six urban and suburban watersheds scattered across the lower 48 states, Tilley and E. Terrence Slonecker, an environmental scientist at the Environmental Protection Agency in Reston, Va., found that roads accounted for about 28 percent of the impervious areas. Buildings were responsible for around 29 percent of the impervious surfaces, and parking lots made up nearly 25 percent.

Surprisingly, Tilley notes, the research showed that driveways, sidewalks, patios, and pools—features not typically considered in previous research—together made up about 14 percent of those areas' impermeable surfaces. She and Slonecker presented their findings in the April 1 *GIScience and Remote Sensing*.

Spillover effects

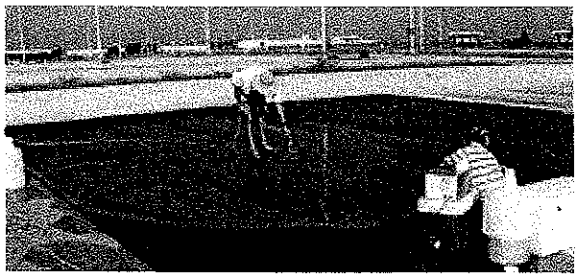
As the amount of impervious-surface area increases, the environmental consequences G-2

become more serious. Previous research has suggested that when the percentage of impermeable surfaces in a watershed is 10 percent or less, streams typically retain good water quality and stable channels. When the proportion is between 10 and 25 percent, storm-fed flows cause noticeable erosion. Major floods tend to widen a stream's channel, spill over its banks, and scour away waterside vegetation.

Streams in watersheds where more than 25 percent of the surface area is impermeable usually show severe physical and ecological damage.

Because impervious surfaces typically absorb more solar radiation than natural ones do, the water entering streams in urbanized areas can be as much as 6°C warmer than it would be if the area were undeveloped. The stress of that temperature increase, as well as the insult of pollutants swept up from tainted pavement and soil, can kill some aquatic organisms or drive them downstream. Such noxious chemicals can include pesticides, nitrates and phosphates from fertilizers, and salt used to deice roadways.

Parking lots not only make up a large proportion of an urban area's impervious surfaces but also provide many pollutants to urban runoff. Motor oil and other fluids that leak from parked vehicles find their way into city streams. New research suggests that significant quantities of suspected carcinogens known as polycyclic aromatic hydrocarbons (PAHs) can leach from asphalt-based and coal tar–based sealants used on paved lots.



COOL RINSE. Field tests indicate that sediments swept up in runoff from parking lots ***treated with coal tar–based and asphalt-based sealants can be tainted with noxious chemicals.*** B. Mahler/USGS

The sealants first came under scrutiny when chemical analyses of sediments collected in 2001 and 2002 from creeks near parking lots in Austin, Texas detected unusually high concentrations of PAHs, says Peter C. Van Metre of the U.S. Geological Survey in Austin. In 2003, he and his colleagues tested the sealants' impact by running distilled water over 5-by-10-meter areas of sealed and unsealed pavement in local parking lots. The scientists sprayed 100 liters of water over each pavement patch and analyzed the chemicals in dirt swept up by the faux runoff.

Previous research by other scientists detected adverse ecological effects for aquatic organisms when the PAH concentration in sediments reached about 23 milligrams/kilogram, says Van Metre. Material washed from even the unsealed parking lots showed higher concentrations of these contaminants, his team found.

On average, each kilogram of particles from unsealed concrete and asphalt lots contained 54 mg of PAHs. Those substances could have come from vehicle emissions, the smoke and soot from power plants, or material left behind by tires, says Van Metre.

Particles filtered from the runoff from asphalt-sealed parking lots contained 620 mg of PAHs per kilogram, and those from lots treated with coal tar–based sealants held 3.5 grams of PAHs per kilogram of sediment.

Ecological havoc

G-3

A recent census of the aquatic larvae of mayflies, stoneflies, and caddisflies—key links in a stream's food chain—showed that the number of species within the three groups dropped in a typical stream as the percentage of urban land in a watershed increased. Those studies, conducted in and around the metropolitan areas of Boston, Chicago, Philadelphia, and Cincinnati, were reported by USGS scientists earlier this year.

The amount of impervious surface that begins to cause ecological damage in streams varies in different areas. In some estuarine ecosystems in South Carolina, water levels fluctuate up to 2 m between high tide and low tide, says Dana Beach, executive director of the South Carolina Coastal Conservation League in Charleston. That constant flushing action masks to some degree the detrimental effects of impervious surfaces. An aquatic ecosystem there doesn't begin to degrade until impervious surfaces make up 15 percent of its watershed area, Beach has found.

In contrast, studies showed parts of Alaska to be unusually sensitive to damage from pavement. There, the populations of some aquatic invertebrates start to decline when the proportion of impervious surface in a watershed reaches 5 percent, says Steven A. Frenzel, a hydrologist with USGS in Anchorage.

In four streams that flow into and through Anchorage, Frenzel and his colleagues found that sites within the boundaries of an undeveloped military reservation upstream of the city—and therefore not affected by any impervious surfaces—were home to a diversity of insect larvae and other invertebrates. Many of the species found in those waterways don't survive well if their ecosystem is disrupted. At downstream sites surrounded by areas with impervious surfaces, invertebrate biodiversity was diminished and species known to tolerate some degree of ecosystem disruption, such as sediment-dwelling worms, dominated, Frenzel and his colleagues reported in the July 2003 *Hydrobiologia*.

No sweat

When a stream's velocity increases as a result of urban runoff, its channel often carves deeper into the terrain, says Deborah Slawson, a consulting ecologist in Glenville, Pa. In such instances, the rushing water doesn't spill out among streamside vegetation that would otherwise provide havens for some aquatic life. Many such streams lack shallows where fish can spawn.

Diverting urban runoff through storm drains rather than into streams creates a different set of problems, Slawson adds. If the amount of water that soaks into permeable areas of a watershed and recharges its aquifers is greatly reduced, then the underground supply of water that nourishes streams during dry seasons is diminished as well. In that case, small streams become more susceptible to temperature fluctuations when they receive warm runoff and are less capable of diluting pollutants washed into the waterway.

Increasing the amount of runoff from an urban area influences the local climate. If precipitation doesn't soak into the urban landscape, it isn't available to absorb heat, evaporate, and thereby cool the city, explains David J. Sailor of Portland State University in Oregon. By losing its capacity to retain soil moisture, a city, in a sense, loses its capacity to sweat. Other factors contributing to this heat-island effect include heat emitted by industrial activity, gasoline combustion in the city's automobiles, and the use of utilities such as electricity and natural gas.

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Portland creates only a moderate urban heat island, says Sailor. Temperatures in a 2-km^2 industrial district near the city's core, on average, are between 0.5°C and 1.0°C higher than those in areas outside the city.

About 29 percent of that industrial district is now composed of rooftops, and construction on vacant lots there may boost that figure to 57 percent by 2050.

To avoid greatly increasing the temperature, some environmentalists propose a solution consistent with urban development: Buildings could be topped with soil and vegetation, which act as a reservoir for precipitation that would otherwise flow out of the city.

If all the buildings in Portland's industrial district converted their impervious roofs to so-called ecoroofs, in which vegetation covers at least 75 percent of the rooftop, then daytime temperatures in the district could be as much as 0.5°C cooler than they would be otherwise. Those cooler temperatures could lower the demand for air conditioning in the summer and reduce the adverse health effects that accompany heat waves, Sailor notes.

Ecoroofs are only one of many prospective techniques to avoid the effects of impervious surfaces. Some developers, for example, are digging large, shallow ponds where runoff can collect and seep into aquifers rather than rush into streams and increase erosion.

These approaches may permit further urban and suburban development without exacerbating the problems associated with impervious surfaces.

Letters:

It wasn't the news of polluting runoff that caught my attention in your article, but the startling statistic that the 3 million annual increase in the U.S. population costs $480 billion in construction costs alone. That's $160,000 dollars for each added person!

John Brooks
Lake Shastina, Calif.

If you have a comment on this article that you would like considered for publication in *Science News*, send it to editors@sciencenews.org. Please include your name and location.

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6-6

STRATEGIES FOR COPING WITH POLLUTED RUNOFF

Linking Land Use to Water Quality

Key Finding

As the intensity of development increases, so does the generation of nonpoint source water pollution, or polluted runoff. A good indicator of the intensity of development in a given area is the amount of impervious surface. Studies have shown that the greater the impervious surface coverage in a watershed, the greater the potential degradation of that watershed's water systems. Thus, local officials can do much to protect their water resources by considering the location, extent, drainage and maintenance of impervious surfaces on the town, watershed and individual site levels. Natural resource planning, site design and use of best management practices form an effective three-tiered approach to the problem.

The Problem

Development affects both the quantity and the quality of stormwater runoff, which in turn has impacts on watercourses. By enhancing and channeling surface drainage in favor of natural drainage systems, impervious surfaces like asphalt, concrete and roofing increase the volume and velocity of the runoff, often resulting in flooding, erosion and permanent alterations in stream form and function (see NEMO Fact Sheet #3). In addition, by blocking the infiltration of water and its associated pollutants into the soil, impervious surfaces interfere with natural processing of nutrients, sediment, pathogens and other contaminants, resulting in degradation of surface water quality.

Because of these impacts, a growing body of scientific research is finding a direct relation-

"Development affects both the quantity and the quality of stormwater runoff, which in turn has impacts on watercourses."

surface in watershed and the water quality of the watershed's receiving stream. Many studies find that without nonpoint source management of some kind, stream water quality becomes increasingly degraded as impervious levels climb above 15%; in highly sensitive streams, degradation can begin when as little as 8% to 10% of the watershed area has impervious cover.

What Towns Can Do

Pavement is an unavoidable fact of modern life. However, there are still many options available to the municipality interested in reducing the water quality impacts of existing or future development. Strategies can be organized into a three-tiered approach, which can be summarized as: ***plan, minimize, mitigate.***

***1. Plan** Development Based on Your Town's Natural Resources.* Remember, preventing pollution by wise planning is by far the least expensive and most effective way to protect your town's waterways. To this end, a working knowledge of your town's natural resources is critical to guide appropriate development. A natural resource inventory is an essential first step. Identifying important natural resources and setting protection priorities provides a framework within which the impacts of proposed or existing development can be evaluated. Formal inclusion of these priorities in town plans and procedures is also important (see NEMO Fact Sheet #5). Broad resource protection strategies applied at the town or watershed level, such as buffer zone and setback requirements, are increasingly coming into use. With regard to impervious surfaces

local officials should consider a "budget" approach that sets an overall limit for key areas, and above that limit requires increase in pavement on one site to be compensated for decreases on another site (or some other acceptable method of compensation). This technique might be appropriate, for instance, in a watershed where analyzes show a threat to critical water resources from future growth.

*2. **Minimize** Impacts Through Site Design.* The site planning stage offers the best chance for local officials, designers and builders to work together to reduce polluted runoff from a site. Evaluate site plans with an eye to minimizing both impervious areas and disruption of natural drainage and vegetation. Cluster development, which reduces the total area of paved surfaces and increases open space, should be considered. Are the proposed sidewalks, roads and parking lot sizes absolutely necessary or could they be reduced? Brick, crushed stone, or pervious pavement is often a viable alternative in low traffic areas. Are curbing and piping necessary, or could drainage be directed to vegetated swales? Designs which reduce grading and filling and retain natural features should be encouraged. In addition to protecting waterways, such designs can often be less expensive and more pleasing to the eye.

*3. **Mitigate** Unavoidable Impacts by Using Best Management Practices.* Best management practices (BMPs) include a whole range of methods designed to prevent, reduce or treat stormwater runoff. Choosing the correct BMPs is often highly site-specific. There are a number of agencies and publications that can provide guidance (see NEMO Fact Sheet #5). There are some basic BMP concepts to keep in mind:

- **Slow that stormwater.** This is the basic idea behind both detention basins, which are meant to slow and hold stormwater before releasing it, and retention basins, which are designed to hold the water permanently until it infiltrates into the ground. In both cases, pollutant removal takes place through settling of particles and through chemical and biological interactions in the standing water or in the soil. As with any device, these BMPs must be correctly designed in order to work properly. For instance, basins must be large enough to treat runoff generated by the combination of local climate and site configuration.
- **Avoid direct connections.** Break up the "expressway" of polluted runoff by using grass swales, filter strips or other forms of vegetative BMPs wherever possible in place of curving and piped drainage. In many cases, these methods are most effective when used in combination with structural BMPs like detention ponds.
- **Ensure regular maintenance.** Most structural BMPs require regular maintenance to retain peak pollutant-removal efficiency. Maintenance ranges from the frequent, but simple (sweeping parking lots, cleaning storm drains) to the infrequent, but complex (sediment removal from detention/retention ponds), but in all cases it must be budgeted and planned for.
- **Don't forget the two "e's": enforcement and education.** It's important to make sure that contractors are following through on agreed-upon designs and methods. Don't underestimate things like storm drain stenciling and hazardous waste disposal days, which can reduce pollution, raise public awareness and help to engender support for all your town's water protection activities.

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Nonpoint Education for Municipal Officials (NEMO) is a University of Connecticut educational program for land use decision makers that addresses the relationship of land use to natural resource protection.

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Written by: Chester Arnold 1994

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College of Agriculture and Natural Resources

NEMO is an educational program of the University of Connecticut, Cooperative Extension System, Connecticut Sea Grant College Program and Natural Resource Management and Engineering Department. In addition to support from UConn, NEMO is funded by grants from the CT DEP Nonpoint Source Program and the NOAA National Sea Grant College Program. NEMO is a program of the Center for Land Use Education and Research (CLEAR). Land, Sea and Space Grant collaborating. For more information about CLEAR, visit clear.uconn.edu.

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ASKING THE RIGHT QUESTIONS

RAISING THE ISSUE OF POLLUTED RUNOFF AT A PUBLIC MEETING

Linking Land Use to Water Quality

Key Finding

The best way to protect your local waters from polluted runoff is to address the issue through your town's land use regulation process. In most communities, this regulation is done through planning, zoning and wetlands commissions. The public meetings of these commissions provide an opportunity for concerned individuals to raise important environmental issues whenever development is proposed. By asking a few simple questions, you can ensure that water quality impacts are duly considered by the proper authorities.

"The best way to protect your local waters from polluted runoff is to address the issue through your town's land use regulation process."

The Problem

Water quality is greatly influenced by land use. Stormwater runoff carries contaminants such as pathogens, nutrients, sediment, toxic materials and debris from the land to your local waterways. This is known as polluted runoff, or nonpoint source water pollution (see NEMO fact sheet #2). Municipal land use policies can therefore have a great impact on the health of local waterways, and because land use decisions are often made on a case-by-case basis, each individual development proposal counts. We've all heard it said that in America, one person can make a difference.

Although this axiom may be a little shopworn, it is nevertheless true when talking about local land use decisions. When development is proposed in your town, it is important that someone ask questions about the water quality aspects of that project. If that "someone" is not one of your municipal land use boards, then it might have to be you!

While each proposal is different, there are some basic water quality considerations that need to be taken into account. Until you hear otherwise, you can't assume that these issues have been addressed by either the applicant or the commission. Don't be afraid to ask questions—the land use regulatory system was set up specifically to allow you to participate in the process, and lack of expertise on Robert's Rules of Order or stormwater engineering should not deter you from exercising that right.

Remember that the people on your land use boards probably aren't experts on polluted runoff either—they're volunteers and your neighbors, and no matter how conscientious, they can't be expected to always understand the environmental impact of each decision.

Questions to Ask

Here are some basic questions that should be asked concerning proposed development and its possible effects on your town's water resources. They are roughly organized according to the three-tiered NEMO Program strategy of natural resource planning, environmentally sound site design and use of best management practices (see NEMO Fact Sheet #4). Although there is no guarantee that asking these questions will always result in stopping polluted runoff, there is no better way to ensure that, at the very least, the issue will be put on the table for discussion.

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Written by: Chester Arnold, 1994

Planning with an Eye on Natural Resource Protection

1. Does the town Plan of Development address watershed management and/or polluted runoff?

2. Where is the project located with respect to your town's water resources? For instance, is the project located within a watershed that drains into a key cove, reservoir or aquifer?

3. Does the proposed development encroach upon, or through its runoff, affect, any recognized priority natural resource areas (ex: wetlands, watercourses, aquifer recharge areas, wildlife areas, dedicated open space)?

Minimizing Impacts Through Sensitive Site Design

1. Is the natural topography and drainage system retained, or is the stormwater collected and piped off site? Where will the stormwater runoff ultimately be discharged? Does it go directly into any wetlands or watercourses?

2. Is natural vegetation retained wherever possible?

3. Does the design minimize disturbance of water resources (i.e., road and driveway crossings and bridges; piped or channelized sections)?

4. Are impervious areas minimized? Are parking and other paved areas larger than truly needed? Have pavement alternatives (concrete latticework, pervious pavement, crushed stone) been considered for use in low traffic areas?

5. Are wetlands or watercourses insulated from the development through buffer strips of open areas?

6. Is the project within any "setback" or "buffer" zone around wetlands and watercourses that restricts certain types of development or activities? If so, who will be charged with enforcing the restrictions? Will signs be posted to inform residents/owners of the restrictions?

Mitigating Impacts Through Best Management Practices (BMPs)

1. What erosion control measures will be used during the construction phase? Who will make sure that they are effective?

2. Will stormwater be contained on site, or will it be allowed off site?

3. How is the stormwater runoff going to be treated? What BMPs (oil/grit separators, detention ponds, etc.) will be used? What pollutants, specifically, are they designed to remove? What volume of water are they designed to hold or treat?

4. Who will maintain the BMPs and how often? What is their projected life span?

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