Stormwater Utility Service Charge Credit Program Application Packet

Rationale

The premise behind stormwater credits is that some landowners install on-site stormwater management facilities that exceed basic requirements, others have to treat and dispose of stormwater that is not their own, others provide stormwater education, and some are willing to participate in stormwater demonstration projects. All of these reduce the City's actual stormwater management costs.

Individual single-family and duplex residential lots currently are not required to have on-site stormwater facilities except where the facilities were installed as part of a development plan approved by the City. Therefore, this credit program only applies to non-single family residential and non-duplex residential (NSFR) properties.

Stormwater service charges are based on an Equivalent Residential Unit (ERU). An ERU is 3,800 square feet of impervious surface. This is the average amount of impervious surface on residential lots within the City. NSFR properties are assessed a fee that is based on the number of ERUs. The number of ERUs is calculated by dividing the square feet of impervious surface by 3,800 and rounding to the nearest whole ERU.

The maximum allowable credit amount is based on the Capital Improvements and Water Quality Management portions of the stormwater utility budget. The budget categories and percentages for Fiscal Year 2007-08 are:

Budget Category	Estimated Budget Amount	Percentage of Total Budget
Capital Improvements	$521,000	35.7%
Maintenance	$286,500	19.6%
Water Quality Management	$329,000	22.5%
Engineering and Project Management	$110,000	7.5%
Public Information	$17,500	1.2%
City Administration and Technical Support	$197,000	13.5%

All residents benefit from the City's efforts to manage stormwater in its right-of-way (ROW). These efforts reduce flooding, keep streets passable during storm events, and protect water quality. In many cases, the City also has to manage stormwater that runs onto its streets from private property.

The City and its consultants have determined that the expenses for managing stormwater from NSFR properties are mainly in the Capital Improvements and Water Quality Management budget categories. They further determined that Capital Improvements are related primarily to stormwater quantity (volume and rate). Therefore,

the maximum allowed credits are 36% for water quantity and 23% for water quality. In no case will the monthly service charge for a NSFR property that is not in its natural undeveloped state be less than the base rate of one Equivalent Residential Unit (ERU), which is $4.00/month/ERU for Fiscal Year 2007-08. This is the same base rate that is paid by all single-family and duplex residential property owners.

In summary, maximum allowable credits for stormwater quantity and quality are:

- Water quantity only – up to 36% of the service charge
- Water quality only – up to 23% of the service charge
- Water quantity plus water quality – up to 59% of the service charge

Credits are only available when on-site stormwater systems go beyond the basic requirements described in the Central Oregon Stormwater Manual (COSM). Until such time that the City adopts its own version of the COSM, project proponents are expected to follow the procedures in the COSM when designing stormwater systems in the City. An electronic copy of the COSM is available on the City web site and at www.coic.org. This manual was developed by and for Central Oregon. It is based on good engineering practices and standards and is, therefore, appropriate for use by stormwater professionals. The City of Bend's revised (2007) Standards and Specifications will incorporate and refer to the Bend Edition of the COSM.

Quantity and Quality Procedure and Examples

The City has determined that owners of non-single family residential (NSFR) properties should be allowed credits when their on-site stormwater management exceeds *basic requirements*. This is in recognition of the fact that better on-site management will reduce the city's stormwater management costs. The purpose of this document is to provide the details of how credits will be determined.

There are two ways NSFR property owners can reduce their stormwater service charge. One is to reduce the amount of impervious surface on their site; the other is to manage stormwater quantity or quality on-site in a manner that exceeds *basic requirements.*
Reducing the amount of impervious surface does not qualify for credits. Rather, it merely reduces the amount of impervious surface that the owner will be charged for. This document does not deal with impervious surface area reductions; it deals only with credits. A separate appeals process is available that deals with impervious surface area reductions.

Bend's stormwater management is unique and requires a unique approach for determining credits. The chosen approach is to use a hydrologic model to determine the effects of different levels of on-site management on runoff volume and rate. Several different modeling approaches and examples are included in the Central Oregon Stormwater Manual (COSM). The City will accept the results of an appropriate COSM model for determining credits. Those who choose to use a different approach should first consult with the City Engineer.

Stormwater systems cannot be designed properly without the use of an appropriate hydrologic model. It is important to understand that, for the purpose of stormwater service charge credits, modeling will only be used to determine the relative benefits of on-site

systems that exceed basic requirements. Therefore, the same modeling approach that is used to determine if basic requirements will be met must be used to determine the benefits of exceeding the basic requirements.

The credit calculations should be applied to each drainage area that results in a separate discharge from the site. The amount of credit will be applied to the impervious area contained within the individual areas.

Basic Requirements

Chapter 2 of the COSM lists these eight *basic requirements* for stormwater management that a required for new development and redevelopment projects*:*

- Basic Requirement #1 – Drainage Submittal;
- Basic Requirement #2 – Geotechnical Site Characterization;
- Basic Requirement #3 – Water Quality Treatment;
- Basic Requirement #4 – Flow Control;
- Basic Requirement #5 – Natural and Constructed Conveyance Systems;
- Basic Requirement #6 – Erosion and Sediment Control;
- Basic Requirement #7 – Source Control; and,
- Basic Requirement #8 – Operation and Maintenance

Not all of these basic requirements apply to every project, but those that do apply must be in place before credits will be considered. Subsequent chapters of the COSM explain each of these basic requirements in detail and provide design criteria and examples.

The City wants to encourage property owners to improve their stormwater management systems. Therefore, the City has determined that, for re-development, the owner may make improvements that clearly reduce the volume or rate, or improve the quality, of the stormwater leaving the site without having to upgrade to meet the basic requirements that would otherwise apply. For example, a re-development project that does not involve a change in use or increase in impervious area that could result in more pollutants being discharged from the site would not have to meet the basic requirements.

Owners of NSFR properties wishing to earn credits can manage the following properties of the stormwater that leaves their site:

- Volume
- Rate
- Quality

Each of these is discussed below.

Volume

This is the volume (gallons or cubic feet) that runs off the site during a design storm event.

It is reasonable to assume that the city's stormwater costs are linearly related to the volume of stormwater collected, treated, conveyed and disposed of during a design storm

runoff event. In the COSM, the basic quantity design storm is the 25-year, 24-hour rainfall event.

Since it is difficult and expensive to measure the volume that runs off a site, credits are based on design values. For example (hypothetical), an on-site system designed to retain a 25-year event would have to retain the runoff produced by 2.50 inches of rainfall in 24 hours, whereas a system designed to retain a 50-year event would have to retain 2.78 inches and one designed for a 100 year event would have to retain 3.10 inches. The amount of volume credit allowed is the product of the maximum allowed quantity credit (currently 36%) and a volume reduction factor, F_v. The equation for F_v is

$$F_v = (D_d - D_{25})/(D_{100} - D_{25})$$

where D_d is the design storm depth in inches and D_{25} is the 25-year depth in inches (2.50 in this case). Table 1 is derived from this equation. $\mathbf{I_R}$ is the design storm interval in years and $\mathbf{F_v}$ is the volume reduction factor.

Table 1

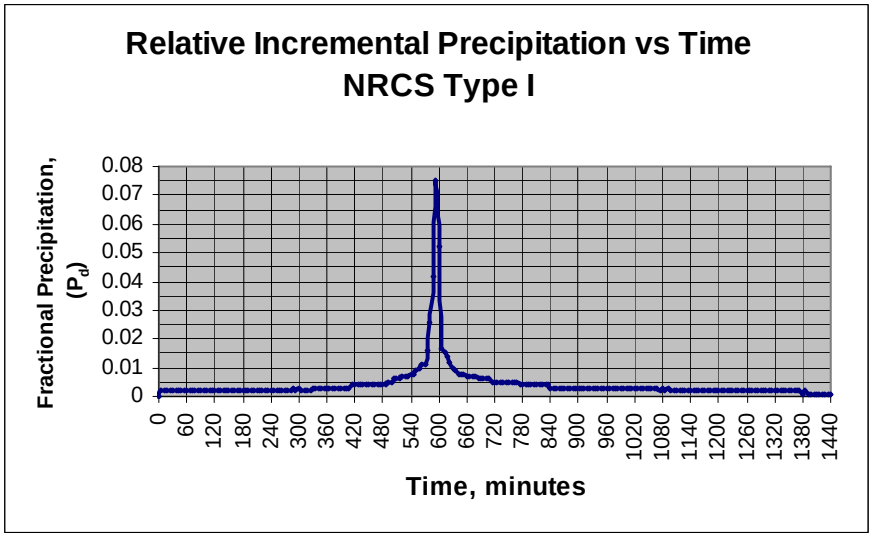
I_R	F_v
25	0.001
30	0.132
35	0.243
40	0.339
45	0.424
50	0.500
55	0.569
60	0.632
65	0.689
70	0.743
75	0.793
80	0.839
85	0.883
90	0.924
95	0.963
100	1.000

Note that this table applies until the Oregon Climate Service changes the rainfall data for Bend.

Example 1: A NSFR on-site system is designed to retain a 50 year storm ($\mathbf{I_R =}$ 50). From Table 1, $\mathbf{F_v}$ = 0.500 so the maximum allowed credit is 36% x 0.500 = 18.0% of the before-credit service charge.

Rate

In lieu of, or in addition to, reducing the volume of runoff, the owner may choose to reduce the peak runoff rate. Reducing the peak runoff rate from a site by means of infiltration or detention allows the city to use smaller conveyance systems. Chapters 7 and 8 of the COSM cover Flow Control and Conveyance, respectively. The design storm type for flow control is the Type I hyetograph shown below:



It is reasonable to assume that the City's stormwater system costs related to the rate of runoff from a specific tax lot vary in proportion to how much the on-site stormwater system is designed to attenuate the peak. Therefore, the peak rate reduction factor, F_p, is

$$F_P = (0.075 – P_d)/0.075$$

where P_d is the fractional precipitation for which the flow control system is designed. Table 2 is based on this equation:

Table 2

P_d	F_p
0.075	0.000
0.070	0.067
0.065	0.133
0.060	0.200
0.055	0.267
0.050	0.333
0.045	0.400
0.040	0.467
0.035	0.533
0.030	0.600
0.025	0.667
0.020	0.733
0.015	0.800
0.010	0.867
0.005	0.933
0.000	1.000

Example 2: The onsite system is designed to reduce the peak runoff rate to the equivalent of a relative peak rate of 0.025. F_P = 0.667. Therefore, the allowed credit is 36% x 0.667 = 24% of the before-credit service charge.

The total allowed volume plus rate credit is 36%. In Examples 1 and 2, the volume credit is 18% and the rate credit is 24% for a total of 42%. Since this is greater than the maximum allowed credit, the maximum of 36% would be allowed.

Quality

The COSM contains treatment efficiency goals. The Oregon Department of Environmental Quality (DEQ) approves treatment designs and requirements for underground injection controls (UICs). Because underground injection and piped systems are side-by-side in a large part of the City and pretreatment standards have not yet been developed specifically for discharges to the Deschutes River, City staff has determined that the Best Management Practices (BMPs) required by the DEQ for underground injection systems should also apply to the piped systems that discharge to the river. This will continue until discharge-specific standards and BMPs have been developed.

The City does not expect that NSFR property owners will find it feasible to remove pollutants that the DEQ does not require to be removed, or to remove them more efficiently than the DEQ requires. However, owners may choose to pre-treat more than the minimum 6-month 24-hour water quality storm runoff. For this reason, quality credits are based on the same approach used for volume credits except that the base design storm is the 6-month instead of the 25-year storm. The City does not expect to derive any financial benefits from owners treating more than the 5-year storm event.

In Bend, the 6-month 24-hour storm is 2/3 of the 2-year 24-hour storm depth. Table 3 shows the water quality credit factors for different design storms where I_R is the design storm return interval in years and F_q is the quality reduction factor.

Table 3

I_R	F_q
0.5	0.000
1.0	0.311
1.5	0.493
2.0	0.622
2.5	0.722
3.0	0.804
3.5	0.873
4.0	0.933
4.5	0.970
5.0	1.000

Example 3: The owner proposes a design to provide DEQ-approved pretreatment for a 2-year storm. The available credit is 23% x 0.622 = 14.03% of the before-credit charge.

Example 4: The owner proposes to completely retain a 35-year storm, reduce the relative peak runoff to 0.40 for storms up to a 75-year runoff event, and treat a 3-year storm runoff event. From Table 1, the 35-year volume reduction factor is 0.243 and from Table 2, the rate reduction factor is 0.467. Therefore, the total quantity reduction factor is 0.243 + 0.467 = 0.710. Since this is < 1.0, it would be allowed and the quantity credit would be 0.710 x 36% = 25.6% of the before-credit charge.

Where more than a 5-year storm is entirely retained on-site, the full water quality credit would be applied. Since all stormwater will be retained on-site for up to a 35 year event, 100% of the quality credit would be allowed so the quality credit would be 23%. If the before-credit charge was $36, the after-credit charge would be $36 – [$36(0.256 + 0.23)] = $18.50.

Private Management of Public Stormwater

Under Oregon Drainage Law, property owners must accept natural flows of stormwater and must not unreasonably alter natural flows from their property to neighboring properties. Development will alter natural flows in violation of Oregon Drainage Law unless owners properly manage their stormwater.

The responsibility for handling stormwater within the City is shared between the City and other property owners. Unlike most cities, Bend does not have a piped stormwater system except in a small part of town near the river. In the past, the City has designed its streets to handle a portion of the runoff from private properties but not all of the runoff it is getting. This causes the street drainage systems to be overloaded and water to flow from the street to private property. The City believes that its street drainage systems are generally capable of handling the stormwater for which the drainage systems are designed. The only way to determine if street drainage is under-designed is for owners of private properties that contribute flow to the street to retain their stormwater as required by City codes, standards and specifications. Therefore, except for the special case discussed below, the City will not accept applications for credits based on private management of public stormwater.

The exception is where the City street is the only possible origin of the water that flows onto the private property and this flow is in excess of what would naturally flow onto the property. Owners who believe this exception is applicable to their site are encouraged to submit a proposal to the City. The City may grant credits or upgrade its street drainage system to alleviate the problem. It is important to note that the soil and other characteristics in and around Bend are such that pre-development runoff in most areas was essentially zero even for storms with return periods of 100 years or more.

If there are other exceptions, the City will generally upgrade or change its drainage system rather than grant credits.

Education Credits

As part of its stormwater permits, the City has tasks (BMPs) related to providing stormwater quality education to school children. To achieve these BMPs (see especially Integrated Stormwater Management Plan BMP III-4 and BMP IV-3), the City will grant stormwater service charge credits to public and private schools that provide this education.

Based on the cost savings to the City from implementing a 4th grade education program with City staff presentations via the tasks described above, the education credit will be $2.00 for each student taught per year. The City prefers that the stormwater curriculum

be taught in the 4th through 6th grades but may accept applications for higher grades. To qualify for the credit, the applicant shall provide a copy of the lesson plan (or use a lesson plan provided by the City) and an estimate of the number of children expected to receive the education during the school year. To renew the credit for a subsequent year, the applicant shall provide a copy of the updated lesson plan as appropriate, an accounting of the number of children who received the education during the previous school year, and an estimate of the number who will receive the education during the upcoming school year. Lesson plans must be approved or provided by the City of Bend. The credit will be based on the applicant's estimate of the number of school children expected to receive the stormwater education during the school year. This credit is in addition to any other stormwater service charge credits the applicant may receive.

Demonstration Project Credits

The City encourages innovative stormwater management projects and will reduce or waive the service charge for qualified participants. NSFR landowners who wish to participate in a stormwater demonstration project should submit a proposal to the City. Proposals will be considered on a case-by-case basis. The proposal must include, at a minimum, engineering and design information; a performance evaluation plan; a commitment to allow reasonable public access to the facility and to any data and reports; and a schedule for beginning of construction through final evaluation. Projects will be judged on the basis of their innovative concepts and applicability to Bend's unique climate and geology.

REVIEW PROCESS

Applicants interested in applying for stormwater credits should complete the attached application and provide any supplementary materials requested. Information should be submitted to:

City of Bend Stormwater Utility
ATTN: SERVICE CHARGE CREDITS
575 NE 15th Street
Bend, OR 97701
Tele: 541-317-3000
Fax: 541-389-2245

Upon receiving an application, City Stormwater Utility staff will conduct a review of application completeness within 30 days, and will notify the applicant should the application be deemed not complete. Within 60 days of receipt of a completed application, the utilty staff person will make a decision. The stormwater utility staff person will send an intermediary correspondence to the applicant informing him/her of the decisions made and will provide the necessary information to the Finance department for processing. For completed applications received prior to December 31, 2007, all credits will automatically be backdated to July 1, 2007, the start of the utility service charge. For completed applications received after December 31, 2007, the credits will be backdated to the date the completed application was received by the City.

CITY OF BEND
STORMWATER UTILITY
CREDIT APPLICATION

SECTION I. REQUIRED INFORMATION (TO BE COMPLETED BY ALL)

1. Non-single Family/Duplex Residential Property?	Yes	No

Note: If "No", STOP. Water quality or quantity credits are not available for single family/duplex residential property.

2. Site Location	
Street Address/Zip	
City Account No.	
Tax Lot No.	
Cycle/Route (Shown on bill)	
3. Authorized Contact (Last Name, First, Title)	
4. Mailing Address of Contact (if different from above)	
Street Address	
City, Zip	
Phone	
Email	
Fax	

5. Credits Applying For (Check All that Apply)		
Water Quantity		*Please complete Sections 2 and 6.*
Water Quality		*Please complete Sections 2 and 6.*
Private Management of Public Stormwater		*Please complete Sections 3 and 6.*
Education		*Please complete Sections 4 and 6.*
Demonstration Project		*Please complete Sections 5 and 6.*

SECTION 2. WATER QUANTITY AND QUALITY SERVICE CHARGE CREDITS

Eligibility. To be eligible for a stormwater quality or quantity credit, a property in Bend must comply with the City's basic requirements for credits:

- Stormwater facilities must meet the basic requirements of the Central Oregon Stormwater Manual (COSM) available via the City's website at http://www.ci.bend.or.us/depts/public_works/stormwater/what_s_new.html.
- Stormwater facilities for all re-development and new development must be designed to retain all runoff from the 25-year NRCS Type I storm event. (See COSM for more information).
- Stormwater must not be released from the site in a manner that would violate Oregon Drainage Law.
- Stormwater facilities must be designed to meet or exceed the City's Standards and Specifications available from the City of Bend Engineering Department at www.ci.bend.or.us.

1. What is the primary activity on the site?	
2. NAICS Code for Site	
3. Do you have, or are you required to have, a NPDES Industrial Stormwater Permit?	
4. Please attach to this application form:	

☐	A. A scaled sketch or drawing of the site as is and as proposed showing legal boundaries; grading and topography; path of stormwater flow on, to and from the site for the design storms; stormwater system components and locations; adjacent property ownership; all buildings, parking areas, roads, storage, landscaped areas and any other improvements affecting stormwater flows.
☐	B. Modeling results and other calculations to support your claim for credits.

☐	C. For existing systems, an operation and maintenance plan, and evidence that the drainage system is working as designed and is being regularly maintained.
☐	D. For proposed systems, an operation and maintenance plan.
☐	E. Evidence that site is meeting, or will meet, all applicable basic requirements.
☐	F. A narrative description that describes how the system will operate and supporting the basis for the claimed service charge credit(s).
☐	G. A description of any operational practices you are including in your claim for credits. (Operational practices are steps taken to prevent stormwater from becoming contaminated in the first place.)
	I understand that City staff may request periodic site visits and periodic submittals of maintenance inspections reports to verify that the stormwater facilities are installed and maintained in good working order. Failure to allow access or to provide the reports may be cause for termination of the credit received. (Initial if accept.)

SECTION 3. PRIVATE MANAGEMENT OF PUBLIC STORMWATER

Eligibility. To be eligible for this credit you must show that a City street is the only possible origin of the water that flows onto your property and that this flow is in excess of what that natural flow would be. Owners who believe this credit is applicable to them are encouraged to submit a proposal to the City. The City may grant credits or upgrade its street drainage system to alleviate the problem.

1. What is the primary activity on the site?	
2. NAICS Code for Site	
3. Do you have, or are you required to have, a NPDES Industrial Stormwater Permit?	
4. Please attach to this application form a proposal including:	
☐	A. Engineering calculations
☐	B. Maps
☐	C. Drawings
☐	D. Other information to back up your claim for credits.
	I understand that City staff may request that a professional engineer review and stamp your proposal. Failure to meet this request may be cause for denial of credit. (Initial if accept.)

SECTION 4. EDUCATION

Eligibility. To be eligible for this credit, the applicant must be a public or private school in the State of Oregon with facilities located within the city limits of Bend.

1. School Name	
2. Number of Students Expected to Receive Instruction in the Curriculum/ Participating in Program	
3. Grade that will receive stormwater curriculum	
If other than 4th grade, please explain.	
4. This application is for school year ____ (July 1 to June 30)	
5. Number of students that were taught curriculum during the previous school year	

4. Please attach to this application form:	
☐	A. Copy of Lesson Plan to be used. (*Note: City has lessons plans associated with its watershed diorama that are available for use).* If no lesson plan attached, please explain:
	I understand that City staff may request that students and/or teachers complete brief evaluation forms to determine the effectiveness of the program. Failure to meet this request may be cause for denial of credit. (Initial if accept.)

SECTION 5. DEMONSTRATION PROJECT

Eligibility. The City encourages innovative stormwater management projects and will reduce or waive the service charge for qualified participants. Landowners who wish to participate in a stormwater demonstration project should submit a proposal to the City. Proposals will be considered on a case-by-case basis. Projects will be judged on the basis of their innovative concepts and applicability to Bend's unique climate and geology.

1. What is the primary activity on the site?	
2. NAICS Code for Site	
3. Do you have, or are you required to have, a NPDES Industrial Stormwater Permit?	
4. Please attach to this application form a proposal including:	
☐	A. Engineering calculations
☐	B. Design Information (May include maps, drawings)
☐	C. Performance Evaluation Plan
☐	D. Schedule (From Construction Start through Final Evaluation).
	I understand that City staff may request that a professional engineer review and stamp your proposal. Failure to meet this request may be cause for denial of credit. I understand that City staff may request periodic site visits and periodic submittals of any data and reports related to the facility, including maintenance inspections reports to verify that the stormwater facilities are installed and maintained in good working order. I understand that, as a demonstration project, data provided may be used for public information and I agree to allow public access to view the project with adequate notice. Failure to allow access or to provide the reports may be cause for termination of the credit. (Initial if accept.)

SECTION 6. CERTIFICATION (TO BE COMPLETED BY ALL)

I certify under penalty of law that I have personally examined, and am familiar with, the information and attachments submitted in this application and that, based on my inquiry of those persons responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information.

1. Name of Responsible Person (Please type or print clearly)	
2. Signature	
3. Date	

Please send your completed application form and supporting materials to:
Stormwater Utility, ATTN: SERVICE CHARGE CREDITS, 575 NE 15th Street, Bend, OR 97701,
For questions or comments, please call 541-317-3000. Fax: 541-389-2245