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Stormwater Control Transfer Program

Out of the Basin

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Stormwater Control Transfer Program

Out of the Basin

by
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Abstract

This document describes an alternative program that Phase I and Western Washington Phase II Municipal Stormwater Permittees can implement to fully satisfy permit requirements associated with flow control, runoff treatment, and/or low impact development (i.e., Appendix 1, Minimum Requirements #5-7) as they are triggered at new and redevelopment sites. The goal of this innovative stormwater management approach is to direct stormwater management efforts to watersheds where they can provide more immediate environmental benefit. The report describes key elements of an approvable program, including stormwater control transfer opportunities, watershed prioritization principles and data needs, allowable types and credit capacities of regional facilities, program tracking tools, and evaluation techniques.



I. Key Features of Programs to Transfer Stormwater Controls to Priority Watersheds in Western Washington State¹

Overview Statement

This document lays out features of an alternative program (a Stormwater Control Transfer Program) that Western Washington State municipal stormwater Permittees (Permittees) can implement to satisfy permit requirements associated with flow control, runoff treatment, and/or low impact development triggered at new and redevelopment sites. This stormwater management approach directs rehabilitation efforts to watersheds within a jurisdiction (referred to as priority watersheds) where they will provide more immediate environmental benefit. This program cannot serve to meet municipal Permittees' obligation to implement a structural retrofit program as currently required by Special Condition S5.C.6 of the Phase I permit. Permittees establishing a Stormwater Control Transfer Program that includes out-of-basin transfers must seek Department of Ecology (Ecology) approval of their alternative program through Section 7 of Appendix 1 (Basin/Watershed Planning) in the Municipal Stormwater Permits.

How to Use this Guidance

This guidance document contains four sections, each of which provides information that will be useful to establish an approvable Stormwater Control Transfer Program in Washington State. The first section of the guidance (**Key Features**) provides a description of the overall program, including general guiding principles, key elements, and opportunities/limitations on the transfer of flow control, runoff treatment, and LID improvements to a site in a different priority watershed. The next section (**Watershed Prioritization**) describes the types of data or information that can inform watershed prioritization as well as several principles that must be considered during that prioritization process. The third section (**Effectiveness Monitoring**) proposes how a monitoring effort can be designed and implemented to document the effectiveness of improvements made in priority watersheds. Finally, the fourth section of the guidance (**Stormwater Facility Transfer Capacity Credits and Tracking**) lays out an accounting program that can be established to track stormwater control transfers on an area basis.

This document does not provide exhaustive and detailed instructions on how to set-up and implement a Stormwater Control Transfer Program. Rather, it is intended to support Permittees considering this approach and to provide general guidance and principles when developing such a program. This guidance is based on Ecology's experience in reviewing and approving alternative programs on a case-by-case basis, and may evolve as issues or nuances are raised and better understood. Permittees exploring this alternative approach to meet permit requirements are encouraged to contact Ecology early in the planning stage.

¹ These guidelines apply to Permittees covered under Phase I and Western Washington Phase II Municipal Stormwater Permits. Many aspects of these guidelines are applicable to Stormwater Control Transfer Programs that incorporate fee-in-lieu features.

General Stormwater Control Transfer Program Principles

1. Environmental goal = Full attainment of water quality standards, including protection/restoration of designated² and existing³ uses.
2. A Stormwater Control Transfer Program must accelerate environmental improvements in high priority watersheds.
3. Transferring stormwater controls (runoff treatment/flow control/LID) away from a project site **cannot result in increased stormwater impacts** to any receiving water.
4. Projects triggering MRs #5, 6, or 7 and **located within a high priority watershed cannot transfer** those stormwater control improvements to another watershed.
5. A municipality must evaluate its watersheds and establish a prioritization scheme **prior** to implementing a Stormwater Control Transfer Program. (See related guidance)
6. Ecology approval of a Stormwater Control Transfer Plan **does not shield the Permittee** from additional or more stringent requirements associated with TMDLs, S4.F.3 adaptive management plans, future stormwater requirements, or other enforceable mechanisms.

Key Stormwater Control Transfer Program Elements

1. For *replaced surfaces*, flow control, runoff treatment, and LID improvements may be transferred to a high priority watershed. For *new surfaces*, only flow control and LID improvements may be transferred.⁴ For purposes of this guidance, the following situations describe where “improvement transfers” to high priority watersheds are allowed or restricted.
 - a. Flow Control: **MR #7 Flow Control** requires that **qualifying projects** control flow durations (for the range of pre-developed discharge rates from 50% of the 2-year peak flow up to the full 50-year peak flow) to match those conditions produced by the *pre-developed* land cover condition (generally, forested) rather than by the immediate *pre-project* land cover condition. *In the control transfer scenario, a project provides flow control to match the pre-project land cover conditions at the project site. The project then transfers the flow control improvement requirement (match the pre-project land cover to the pre-developed land cover condition) to a high priority watershed.*
 - b. Runoff Treatment: **MR #6 Runoff Treatment** requires that various types of runoff treatment be provided to address the post-project condition for certain hard and pervious surfaces at qualifying projects. *In the runoff treatment transfer scenario, a project may transfer certain in-kind runoff treatment improvements to a high priority watershed. Reducing pollutant discharges to levels below those produced by the immediately pre-project condition are considered treatment improvements.*

² Designated in Chapters 173-200 and 173-201A WAC.

³ Existing uses are defined in 40CFR 131.3 as “those uses actually attained in the water body on or after November 28, 1975, whether or not they are included in the water quality standards.”

⁴ NOTE: Other in-basin transfer options for flow control, runoff treatment, and LID improvements are available but are not discussed in this guidance. See the Supplemental Guidelines for Sections 2.4.1 and 2.4.2 in the Stormwater Management Manual for Western Washington (SWMMWW).

- c. **LID: MR #5 On-Site Stormwater Management** requires projects to infiltrate, disperse, and retain stormwater runoff at a project site. Controlling flow rates to the pre-developed land cover condition (generally, forested) for the LID performance standard range⁵ is the LID improvement. *In the LID transfer scenario, a project transfers to a high priority watershed its obligation to meet the LID performance standard for the project site's replaced or new impervious surfaces or converted vegetation areas.* Under this program, the project controls flows at the project site to match flows produced by the pre-project land cover within the specified range of discharge rates (1% to 10% frequency of exceedance flow rates) predicted for the pre-project land cover. The project then transfers the LID improvement requirement (i.e., match flows produced by the pre-project land cover to the pre-developed land cover within the range of 8% to 50% of the pre-developed 2-year flows) to the high priority watershed.
2. **Permittees must verify the long-term operation and maintenance** of those offsite stormwater runoff treatment and flow control BMPs/facilities constructed as part of a Stormwater Control Transfer Program.
3. Any facilities in priority watersheds built to provide flow control, runoff treatment, or LID improvements in lieu of making those improvements at a project site **must be online before any project may rely on the facility to help meet its stormwater requirements.**
4. In no case can a permitted jurisdiction allow less stormwater improvement than what would have been realized (i.e., equivalent acreage, runoff treatment level, or LID performance standard) by following the jurisdiction's adopted stormwater runoff controls program. That program could include:
 - a. The default Appendix 1 permit requirements, or
 - b. Requirements approved through S5.C.5 of the Phase I permit, or
 - c. Requirements allowed through S5.C.4 of the Phase II permit, or
 - d. Alternative requirements established through an Ecology-approved watershed plan per Section 7 of Appendix 1 of the Phase I and II Western Washington Municipal Stormwater Permits.
5. The Permittee must track runoff treatment, flow control, and/or LID improvement transfers for each project as explained in a related guidance.
6. The Permittee shall provide annual reports to Ecology documenting runoff treatment, flow control, and LID capacity or **credits used**/available in offsite facilities associated with this program.
7. Any Permittee implementing a **"fee-in-lieu" option** must establish dedicated flow control, runoff treatment, and LID sub-accounts to manage any "fee-in-lieu" payments (public and private) that it collects. These funds will not be used for any capital investment outside of this program and are not transferable among sub-accounts.

⁵ The Low Impact Development Performance standard states that "Stormwater discharges shall match developed discharge durations to pre-developed durations for the range of pre-developed discharge rates from 8% of the 2-year peak flow to 50% of the 2-year peak flow." Expressing the standard as a percentage of 2-year flow rates was a reader-friendly substitute for the 1% to 10% frequency of exceedance range for a forested condition. For a pre-developed condition other than forested, it is necessary to express the standard as a frequency of exceedance range because the 8% to 50% of the 2-year flows do not correspond to the target 1% to 10% frequency of exceedance.

Specific Guidelines re: Minimum Requirement 7 Flow Control

1. For all projects participating in a Stormwater Control Transfer Program, the flow control standard to be matched is: “Stormwater discharges shall match developed discharge durations to **pre-developed durations** for the range of pre-developed discharge rates from 50% of the 2-year peak flow up to the full 50-year peak flow.”
2. Flow control transfers will be based on land cover on an area basis for each type of land cover (i.e., impervious surfaces, other hard surfaces, lawn/landscape, and pasture).
3. For **replaced (like) surfaces** (such as replacing impervious surfaces with impervious surfaces), permitted jurisdictions **may transfer** required flow control improvements to priority watersheds.
4. All **new surfaces** must have flow control facilities to match the *pre-project* land cover condition at the project site. The **incremental obligation** to provide flow control of the *pre-project* condition to the pre-developed land cover condition **may then be approved** for transfer to the high priority watershed. If a Permittee does not approve the transfer, the project must provide flow control to the pre-developed condition at the project site.
5. Consider converted vegetation areas, and those impervious and other hard surfaces that are effective at conveying runoff: a) when calculating those impervious and other hard surfaces that are proposed for transfer, and b) when using an approved continuous runoff model for producing the pre-project flow durations. See Appendix 1 of the municipal stormwater permits for Western Washington for a definition of effective impervious surface.

MR #7: Flow Control Improvement Transfer Option for projects in non-priority watersheds		
Surface Subject to MR #7	Flow Control Improvement Transfer Option	Flow Control Required at Project Site
New or replaced impervious surface, or converted vegetation areas	Match flow durations within the Flow Control Standard range produced by the pre-project land covers to the pre-developed land cover. Use an equivalent amount and type of pre-project land covers within the High Priority Watershed.	Match flow durations within the Flow Control Standard range to the <u>pre-project</u> land cover condition.

Specific Guidelines re: Minimum Requirement 6 Runoff Treatment

1. For replaced pollution generating surfaces (impervious or pervious surfaces), Permittees may allow transfer of runoff treatment improvements for like surface types (e.g., impervious for impervious) and equivalent acreage to priority watersheds.
2. Where a previously developed site with inadequate treatment controls (e.g., lacks necessary Basic treatment) is redeveloped, the runoff treatment improvement for replaced pollution generating surfaces subject to MR #6 may be transferred.
3. Treatment transfers for **in-kind** runoff are allowed; i.e., **Basic treatment** at a facility in a priority watershed **substitutes for Basic Treatment** at a project site. Enhanced treatment at a facility in a priority watershed substitutes for Enhanced treatment at a project site. Note that Enhanced Treatment facilities constructed in high priority watersheds must serve a land use type designated in the Enhanced Treatment menu. **Providing runoff treatment in areas with higher pollution potential (i.e., enhanced treatment or high pollution generating land uses) than the project site is preferred.**
4. Runoff treatment transfers to priority watersheds are not allowed for any new pollution generating surfaces at any project site.
5. Where a project site converts non-pollution generating surfaces (e.g., a building) to pollution generating surfaces (e.g., a parking lot), runoff treatment requirements cannot be transferred to a high priority watershed.
6. Redevelopment sites that trigger more stringent runoff treatment than would apply to the site prior to redevelopment (e.g., a change in the use of the site associated with redevelopment converts runoff treatment requirements from basic to enhanced) cannot transfer runoff treatment requirements.
7. Oil control requirements cannot be transferred to another watershed under any circumstance.

MR #6: Runoff Treatment Improvement Transfer Options for projects in non-priority watersheds		
Surface Conversion/Site Condition Subject to MR#6	Runoff Treatment Improvement Transfer Options	Runoff Treatment required at Project Site
Replaced Pollution-Generating Surface	Transfer runoff treatment improvement to constructed facility within High Priority watershed built to provide required type of treatment.	None 

<p>New Pollution-Generating Surface OR Non Pollution-Generating Surface (e.g., roof) → Pollution-Generating Surface (e.g., parking lot)</p>	<p>Runoff treatment improvement transfer to High Priority watershed not allowed.</p>	<p>Provide 100% of necessary runoff treatment.</p>
<p>Redevelopment site triggers more stringent runoff treatment requirements than would apply to the existing project site</p>	<p>Runoff treatment improvement cannot be transferred away from project site.</p>	<p>Provide all necessary runoff treatment at project site.</p>
<p>Site triggers oil control</p>	<p>Runoff treatment improvement cannot be transferred away from project site.</p>	<p>Provide all necessary runoff treatment at project site.</p>

Specific Guidelines re: Minimum Requirement 5 On-Site Stormwater Management

1. Transferring **MR #5: On-site Stormwater Management** is allowed only by using the **LID performance standard option**. The “mandatory list” option is not available under a Stormwater Control Transfer Program.
2. Transfers will be based on land cover (impervious and other hard surfaces, lawn/landscape, and pasture) and **equivalent acreage**.
3. Consider converted vegetation areas, and those impervious and other hard surfaces that are effective at conveying runoff: a) when calculating those impervious and other hard surfaces that are proposed for transfer, and b) when using an approved continuous runoff model for producing the pre-project flow durations. See Appendix 1 of the municipal stormwater permits for Western Washington for a definition of effective impervious surface.
4. **For replaced surfaces, permitted jurisdictions may transfer low impact development improvements to high priority watersheds.**
5. Ideally, LID improvement transfers will occur with the transfer of flow control improvements so that a single project within the priority watershed generates flows that approximate durations ranging from 8% of the 2-year peak through the 50-year peak flow. Where a project transfers its LID improvements **and** flow control improvements to separate locations within a high priority watershed, an equivalent pre-project land cover must have its flow durations controlled to flow durations produced by a pre-developed land cover at both locations. One location controls flows within the LID Performance Standard range; the other controls flows within the range required by Minimum Requirement #7.
6. For new impervious surfaces and converted vegetation areas, the project must control flows at the project site to match flows produced by the pre-project land cover within the range of

1% to 10% frequency of exceedance flow rates predicted for the pre-project land cover. The project may transfer the LID improvement requirement of controlling flows produced by the pre-project land cover to flows produced by the pre-developed land cover within the range of 8% to 50% of the pre-developed 2-year flows.

- 7. Post-Construction Soil Quality and Depth requirements (BMP T5.13) may NOT be transferred and in all cases must be implemented at any project site that triggers MR #5.



MR #5: On-site Stormwater Management		
Surface Conversion/Site Condition	LID Improvement Transfer Option	On-site Stormwater Management Required at Project Site
New or Replaced Impervious Surfaces or Converted Vegetation Areas	Match flow durations within the LID Performance Standard range produced by the pre-project land covers to the pre-developed land cover. Use an equivalent amount and type of pre-project land covers within the High Priority watershed.	Match flow durations within the LID Performance Standard range (1%-10% frequency of exceedance) to the pre-project land cover condition. Implement BMP T5.13 on project site.
NOTE: For all MR #5 transfers, projects must use the LID performance standard.		

REMINDER re: Regional Facilities: *Permittees are reminded that where treatment and flow control requirements apply to replaced hard surfaces at a redevelopment site, they may exempt the project from those requirements on replaced hard surfaces if they have adopted a construction plan and schedule for constructing regional facilities within five years that will serve an area that includes the project site. This option is independent of the stormwater control transfer program discussed above.*



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II. Establishing a Watershed Prioritization for Stormwater Control Transfer Programs in Washington State

The goal of this innovative stormwater management approach is to direct rehabilitation efforts to watersheds (referred to as priority watersheds) where they will provide more immediate environmental benefit. At the same time, the approach prevents further degradation in all watersheds. As individual priority watersheds meet rehabilitation goals, remaining watersheds are prioritized for improvement until all of the municipality's watersheds have been rehabilitated to target levels. 

Flow control and runoff treatment improvements, and LID improvements for replaced impervious surfaces, and in some cases, flow control improvements for new impervious surfaces can be transferred to a high priority watershed within the same municipality. The watershed receiving the improvements ("receiving watershed") must have a higher priority than the watershed from which the improvements are transferred ("sending watershed"). 

Prioritization Analysis Support

As a first step in establishing the Stormwater Control Transfer Program, a Permittee must articulate a clear prioritization goal/focus (e.g., restore beneficial uses). Next, a Permittee must evaluate its watersheds to identify those it considers as priority. The Puget Sound Watershed Characterization Process published by the Washington Department of Ecology is **one analysis that can be used to set initial priorities**⁶. (For more information, see: http://www.ecy.wa.gov/puget_sound/characterization/index.html.) Generally, watersheds that fall into the "Protection" and "Restoration" categories are expected to rank as higher priority than watersheds in the "Conservation" or "Development" categories. 

Ultimately, to implement a program that involves transferring stormwater controls to priority watersheds, more detailed, finer scale information for the municipality's watersheds is needed to refine the categorization of watersheds. Pertinent information includes: 

- Existing hydrology.
- Existing water quality conditions.
- Habitat conditions.
- Presence of sensitive species (e.g., salmonids).
- Land Use – density/intensity, full build-out projections, prevalence of pollution-generating surfaces.
- Watershed boundaries and associated drainages.
- Historical knowledge.

⁶ The Puget Sound Watershed Characterization output should not be relied upon as the only line of information to designate priorities. Local jurisdictions need to verify drainage/watershed area delineations and may need to perform in-stream assessments to better refine the analysis.

Permittees must clearly identify data resources used to prioritize among watersheds. 

Prioritization Principles to Consider

As part of the prioritization analysis, Permittees must consider the following principles for establishing priority watersheds:

1. Give higher priority to watersheds with low to moderate levels of impairment (e.g., as assessed via BIBI scores, habitat surveys). These watersheds are expected to respond more quickly to rehabilitation efforts and thus provide more immediate water quality benefit. This focus allows selected watersheds to be rehabilitated in a shorter amount of time as compared to spreading rehabilitation efforts equally among all of the municipality's watersheds. 
2. Give higher priority to watersheds where the municipality can exert greater influence. For example, assign higher  priority to watersheds that have most of their associated drainage area within the municipality. However, if the municipality coordinates a priority watershed identification and rehabilitation strategy approach with a neighboring municipality, a shared watershed may be scored higher.
3. Give higher priority to watersheds in which stormwater management improvements are expected to accelerate environmental improvement.
4. Give higher priority to watersheds where regional rehabilitation efforts are also focused. Certain watersheds may be identified as important under other planning processes such as WRIA plans, Salmon Recovery Plans, MTCA/Superfund cleanups, Endangered Species Act listings and critical habitat designations. Watersheds with TMDLs may warrant higher priority (e.g., for receiving treatment transfers if the treatment types used will address pollutant(s) of concern in the TMDL, or for flow and LID transfers to address low B-IBI scores associated with hydrologic conditions).
5. In all cases, seek input from federal (US Fish and Wildlife, NOAA fisheries), tribal, and state (Fish and Wildlife, Ecology, Natural Resources) natural resources agencies. Those agencies may have data pertinent to establishing priorities, and informed opinions about the relative importance of watersheds.





III. Considerations for Developing an Effectiveness Monitoring Plan for Stormwater Control Transfer programs

Background

The Washington State Pollution Control Hearings Board ruled (PCHB No. 10-013) that a **monitoring program is necessary** to confirm the equivalency of a stormwater control transfer approach concerning compliance with default stormwater management requirements in the Phase I Municipal Stormwater Permit. Ecology supports the concept of establishing a monitoring program to document effectiveness of a Stormwater Control Transfer Program in improving water quality and/or quantity conditions in a targeted, priority watershed and offers the following guidance for establishing such a program.

Overview



The purpose of a monitoring plan is to measure the effectiveness of improvements in the priority watershed(s) where stormwater facilities have been constructed under a Stormwater Control Transfer Program. The monitoring plan shall track stream water quality and/or hydrologic changes, depending on the type of transfers approved in the program. Monitoring in priority watersheds in advance of facilities' construction is necessary to establish a baseline condition. Repeat the monitoring at some infrequent interval (i.e., annually is probably not necessary) to track cumulative improvements over a number of years, and after significant increments of program implementation.

Case #1: Stormwater control transfer program includes low impact development BMPs as well as flow control facilities to improve all stream flow conditions.

In this case, install continuous recording stream flow gages to record sufficient flow data over a period of at least one year to establish a baseline. Two or more years of continuous streamflow data prior to initiating construction of flow control BMPs in the priority watershed is preferred. The more data available to establish the baseline, the more likely changes in stream flows as a result of BMP implementation will be discernible through computation of various hydrologic metrics. (If the watershed under study includes upgradient areas with uncontrolled inputs, then gages upstream and immediately downstream of the transfer area in the priority watershed will be needed.) Repeat the monitoring in a future year(s) after the Stormwater Control Transfer Program is well under way, and a significant portion of the priority watershed has been retrofitted with flow control BMPs.

Case #2: Stormwater Control Transfer Program is restricted to providing retention/detention ponds to meet Minimum Requirement #7 (Flow Control).

The continuous streamflow monitoring described in Case #1 is the best option. However, municipalities can also consider reducing the monitoring to focus on capturing stream flows during storm events. Rainfall and corresponding flow gage-based monitoring should target a number of storms, covering all seasons and a range of storm sizes to define a baseline of stream responses to a variety of events. Repeat the monitoring in a future year after the Stormwater Control Transfer Program is well under way will provide data used to compare the pre- and post-project stream responses. The more pre- and post-data collected, the easier it will be to discern changes in stream flows.

Case #3: Stormwater control transfer program is restricted to transferring runoff treatment improvements.

In this case, collection of in-stream samples for targeted pollutants (Total Suspended Solids (TSS), dissolved metals, and/or phosphorus) will establish a baseline. Repeat the sample collection after the stormwater control transfer program is under way. Composite sampling (flow- or time-weighted) should occur during multiple storm events to establish the baseline and evaluate future conditions. A composite sample is made up of multiple aliquots taken over a number of hours of elevated stream flows - indicating the influence of surface runoff.

Alternatively, if the transfer program targets one or a limited number of discharge locations in the priority watershed, establish a monitoring program to estimate a reduction in the annual loading of targeted pollutants from those discharges. TSS is the target for basic treatment. Dissolved metals and TSS are the targets for Enhanced Treatment. Total Phosphorus and TSS are the targets for Phosphorus Treatment. The outfall monitoring programs developed by Phase I permittees for the 2007 municipal stormwater permits provide a guide for this type of monitoring and loading estimations.

IV. Stormwater Facility Transfer Capacity Credits and Tracking

Purpose

This document describes how a municipality implementing a Stormwater Control Transfer Program can:

- Track the stormwater “improvement transfer” obligation for each development project that proposes to either construct its stormwater obligation in another location (equivalent facility), or purchase capacity in a regional stormwater facility.
- Determine the total and available capacity credits of each facility constructed to provide stormwater treatment, flow control, or LID capacity in a priority watershed.

Determining a Project’s Stormwater Improvement Transfer Obligation

Flow Control, Minimum Requirement #7: The transfer obligation of a development/redevelopment project participating in a Stormwater Control Transfer Program is to provide flow control facilities fully meeting Minimum Requirement #7 of Appendix 1 of the Phase I or western Washington Phase II Municipal Stormwater Permit for areas equivalent to the pre-project land cover of the development/redevelopment project site. The transfer obligation shall be represented and tracked as acres of pre-project land cover for each of the following land cover categories:

- Impervious Area
- Other hard surfaces
- Lawn/landscape
- Pasture



NOTE: Projects that convert a forested land cover⁷ to any other post-developed land cover will not make use of the Stormwater Control Transfer Program because the flow durations required to be matched at the project site are those of the forested condition.



Transfer obligation areas will be tracked by the Permittee to the nearest one-tenth acre. For example, an applicant proposing a 5-acre re-development project having a pre-project (existing) land cover of 1.2 acres of effective impervious area (EIA), 3.3 acres of pasture, and 0.5 acres of forest would provide flow control at the project site to match flow durations produced by the pre-project (existing) land cover AND either: 1) provide flow control facilities in a high priority watershed (designated by the municipality) to match flow durations of a pre-project land cover (1.2 acres of EIA and 3.3 acres of pasture) to flow durations produced by 4.5 acres of the pre-developed (generally, forested) land cover; or (2) to purchase capacity associated with



⁷ Where reasonable historic information indicates that the site was prairie prior to settlement, project applicants model land cover as “pasture” and use that as the land cover condition to be matched.

equivalent areas of EIA and pasture in an already constructed facility in a high priority watershed.

Runoff Treatment, Minimum Requirement #6: The project proponent may transfer the runoff treatment improvement obligation to provide stormwater treatment for replaced pollution-generating surfaces that qualify per the guidelines. Note that Enhanced Treatment facilities constructed to support this program must serve a land use type designated in the Enhanced Treatment menu. **Oil control requirements cannot be transferred to another watershed.** The Transfer Obligation shall be represented and tracked as acres of pre-project land cover for each of the following land cover categories:



- Pollution generating impervious surface (PGIS)
- Non-pollution generating impervious surface (Non-PGIS that mixes with PGIS)
- Pollution-generating pervious surface (PGPS)

Transfer obligation areas will be tracked to the nearest one-tenth acre.

On-site Stormwater Management (LID) Requirement #5: The transfer obligation of a development/redevelopment project is to provide facilities fully meeting the LID Performance Standard in Appendix 1 of the western Washington Municipal Stormwater Permits for areas equivalent to the pre-project land cover of the development/redevelopment project site. The transfer obligation shall be represented and tracked as acres of pre-project land cover for each of the following land cover categories:

- Impervious Area
- Other hard surfaces
- Lawn/landscape
- Pasture

Conversion of pre-project forest on the development/redevelopment site to a post-developed land cover is excluded from consideration because development/redevelopment projects must take pre-project forested area into consideration when matching flow durations within the 1% to 10% frequency of exceedance flow rate range at the original project site.

The transfer obligation areas will be tracked to the nearest one-tenth acre. For example, a participating 5-acre re-development project would be required to provide flow control/reduction BMPs at the project site to match flow durations within the 1% to 10% frequency of exceedance range that are produced by the pre-project (existing) land cover of 1.2 acres of effective impervious area (EIA), 3.3 acres of pasture, and 0.5 acres of forest. Additionally the applicant would either: (1) provide flow control facilities in a high priority watershed (designated by the municipality) to match flow durations of a pre-project land cover (1.2 acres of EIA and 3.3 acres of pasture) to flow durations produced by 4.5 acres of the pre-developed (generally, forested) land cover; or (2) to purchase capacity associated with equivalent areas of EIA and pasture in an already constructed BMPs/facility in a high priority watershed.

Tracking/Storing Stormwater Obligation Transfers

A. Project Transfer Obligation Tables

The project applicant will submit, and the municipality shall retain, tables for each development/redevelopment project proposing a stormwater transfer. The table will identify whether and to what extent surfaces are being managed on-site, and what surfaces are proposed for transfer. A useable tracking table for each Minimum Requirement is included as **Tables 1A, 1B, and 1C**. The following information shall also be tracked by the municipality:

Project ID: a unique ID attached to the project site by the municipality.

Project Name: is assigned to development projects as their applications are accepted.

Date:

Address:

Parcel #:

Watershed:

Date of Complete Application:

Name of Facility to which obligation was transferred (completed by municipality):

A copy of the above information and each applicable tracking table shall be retained with the project file. A second copy shall be placed within the file for the facility (regional or equivalent) in which capacity was purchased by that project.

B. Regional Facility Tracking

The municipality will maintain a table for each regional facility that documents:

- Facility ID.
- Name of Priority Watershed being served.
- Built Capacity in terms of acres of impervious surface, other hard surface, pollution-generating impervious surface (for tracking MR #6 transfers only), pasture, and lawn/landscape areas that it serves.
- Used Capacity in terms of acres of the same land covers noted above.
- Remaining Capacity in terms of acres of the same land covers noted above.

A regional facility tracking table is included as **Table 2**. The regional facility table need only track acreages for the Minimum Requirement(s) which it addresses. The municipality shall update the table upon each purchase of credit by development projects. Credits can be purchased by projects in a lower priority watershed, and by projects within the drainage area of the regional facility. Whenever a development or redevelopment project occurs within the drainage area to the regional facility, the new effective impervious and other hard surfaces, and converted vegetation areas draining to that facility subtract from its available capacity in regard to credits for Minimum Requirements #5 and #7. Also, any new pollution-generating surfaces from projects within its drainage area, subtract from the available treatment capacity of a regional treatment facility.

In addition, for each regional facility, the municipality shall maintain a summary sheet that identifies each project that has purchased capacity and the acreage amount of each land cover type that was purchased by each project. Land cover totals in this summary sheet shall agree with the Used Capacity totals in **Table 2**. An example is attached as **Table 3**.

Phase I or Phase II municipal stormwater permittees shall submit as an attachment to their annual reports the regional facility tracking tables that are updated to at least the calendar year covered by the annual report.

C. Equivalent Facility Tracking

In a priority watershed, a municipality may permit a project applicant to construct a facility which only serves an area that matches a development project's stormwater improvement obligation. In this case, a file shall be created for the Equivalent Facility that documents the area served and identifies the development project which constructed the facility to meet its stormwater transfer obligation. These files shall be retained by the municipality and made available to Ecology upon request.

Allowable Regional and Equivalent Facilities

A. Flow Control

There are several types of facilities that can serve either as equivalent facilities or as banks with acreage credits that can be purchased by development projects to meet their stormwater transfer obligation. The flow control facility types include:

- Detention Basins
- Retention Basins (Infiltration for flow control)
- Combination Retention/Detention Basins
- Full Dispersion
- Existing facility retrofits
- Permeable Pavements
- Bioretention Facilities
- Reforestation of impervious area, pasture, and/or lawn landscaping on land protected by covenant or easement.

Each of these categories except reforestation has design criteria specified in the *Stormwater Management Manual for Western Washington (SWMMWW) as amended in 2014*. New facilities shall be designed to meet the historic (generally forested) land cover condition for the areas that they serve. Bioretention and Permeable Pavements may be used to fully achieve the flow control requirement (MR #7) as predicted by an approved continuous runoff model, or they may be used to reduce the size of downgradient flow control facilities serving an area that includes them. Where a detention facility is constructed, use **procedure 1** below to determine the land cover acreage that can be assigned to the facility and is available for purchase by project applicants. Where an existing detention pond is being expanded to support the Stormwater Control Transfer

Program, follow **procedure 2** below to determine the land cover acreage that can be assigned and be available for purchase.

B. Runoff Treatment

There are several types of facilities that can serve either as equivalent facilities or as banks with acreage credits that can be purchased by development projects to meet their stormwater transfer obligation. The runoff treatment facility type must either be listed in Chapter 2 of Volume V of the *SWMMWW*, or on the TAPE website (<http://www.wastormwatercenter.org/tape/>) as approved for General Use. Basic Treatment facilities can only receive transfers from sites that require only Basic Treatment. Enhanced Treatment facilities can receive transfers from sites that require Basic or Enhanced Treatment.

C. On-Site (LID)

Only LID types that are listed in Chapter 5 of Volume V of the *SWMMWW* may be used to meet the LID Performance Standard, or to help reduce the size of a detention or retention facility built to meet MR #7.

Calculating Capacity (in terms of acreage) of Regional or Equivalent Facilities in Priority Watersheds

A. Detention/Retention Facilities

Permittees will use the procedures detailed below to calculate the Minimum Requirement #7 (flow control) capacity credit earned by regional or equivalent stormwater facilities built in priority watersheds. The procedure uses the Western Washington Hydrology Model (WWHM) to iteratively test the amount of impervious area, lawn, or pasture that is fully controlled to historical conditions by a proposed pond. Recognizing that a new facility may not fully control the area draining to it, the area draining to a facility - as represented in the WWHM - is gradually or iteratively reduced until the pond outflow meets the pre-developed flow control duration standard. The method can also be used to aid design of a simple flow control structure. The step-by-step procedures are as follows:

Procedure 1: Pond Sizing Method for Determining Area Credits in Cases Where There is No Pre-Existing Pond

Step 1: Select pond dimensions based upon available space and available depth for water storage.

Step 2: Using WWHM, route the entire drainage basin into the pond. Use the appropriate historical land cover (forest or prairie) as the pre-developed condition for developing the target flow duration curve. Use the actual land cover and soils conditions for the post-developed condition of the drainage basin. Determine an appropriate discharge structure to meet the target flow duration curve.

Step 3:

Case 1: If the pond is larger than what is necessary to meet the default flow duration standard, reduce the pond size and adjust orifices until just meeting the standard. The entire drainage area is the capacity credit.

Case 2: If the pond cannot meet the flow duration curve, begin reducing the drainage area that was entered into the WWM (preferably by first eliminating the lawn area, and then by reducing the impervious area). Continue reducing the drainage area until the available pond volume, in combination with specific orifice sizes that you have chosen, achieves full compliance. The preferred discharge structure design involves three orifices (or an orifice and a rectangular notch) in a standpipe which is open at the top to pass flows that overtop it. The identified drainage area is the first estimate of the capacity credit.

Step 4: Assuming the pond design arrived at in Case 2 above, use the WWHM to route the entire actual drainage area into the pond. Determine whether the standpipe overflow can manage the most extreme flows so that the emergency overflow (i.e., the armored spillway in the dike) does not engage. If the standpipe is adequate, then no design changes are necessary, and the drainage area identified in Case 2 above is the capacity credit. If the standpipe is not adequate, increase the diameter designated in the WWHM, while keeping the orifices at the same heights and circumferences, until the emergency spillway does not engage. Using the adjusted standpipe diameter, the same orifices, and the same pond dimensions, check to see whether the drainage from the area computed as the first estimate of the capacity credit (in Case 2) can pass through the orifices and standpipe overflow and still meet the flow duration standard. If not, reduce the drainage area until it does. This is the adjusted capacity credit.

Note: In actual practice, all of the drainage area is routed into the pond.



Procedure 2: Pond Sizing Method for Determining Mitigation Credits in Cases Where There is a Pre-existing Pond that will be expanded

Step 1: Determine a theoretical drainage basin which could be fully controlled (i.e., meet the default flow control standard assuming the appropriate historical condition is forested) by the existing pond. The analysis involves changing the discharge design – orifice heights and diameters – but using the as-built pond dimensions.

Step 2: Determine a theoretical drainage basin which could be fully mitigated by the proposed, larger pond and a new discharge structure. Subtract the area for Step 1 from Step 2. This is the initial estimate of the mitigation credit represented by the expanded pond.

Step 3: Enter the characteristics (impervious areas, lawn/landscape areas) of the actual (entire) area draining to the expanded pond into the appropriate fields for the basin icon, and route the basin into the pond designed in Step 2. Note that the expanded pond is not mitigating for all of the area that is draining to it. Check to see if the discharge structure overflow (the top of the standpipe) is adequate to pass all of the predicted flows. If the discharge structure passes all flows without engaging the emergency overflow, it is finished. The initial estimate of credit in Step 2 is also the final estimate. If the discharge structure will not pass all flows, enlarge the overflow structure diameter, keeping the orifices at the same diameters and heights (or if using a vertical rectangular notch, the same width), until the discharge structure does pass all flows.

Using that discharge structure, re-run the model to determine the acreage that can be fully controlled by the expanded pond with the revised standpipe. Subtract the area for Step 3 (in the case where the standpipe was enlarged) from the area for Step 1. This is the final estimate of the capacity credit. 

B. LID Facilities

LID projects built in priority watersheds to support a Stormwater Control Transfer Program must be structural (i.e., permeable pavement or bioretention facilities). If the pavement or bioretention facility fully infiltrates the runoff file as demonstrated by using the WWHM, the entire area draining to it is considered the capacity credit for flow control (MR #7) and LID (MR #5). If the permeable pavement fully infiltrates and is underlain by native soils that meet the Soil Suitability Criteria, the area draining to it is considered the capacity credit for treatment (MR #6).

C. Reforestation

These are projects that directly convert effective impervious area, landscaped area or maintained pasture in the priority watershed to native vegetation that will develop into a fully evergreen forested condition. The native vegetation area must be protected with a conservation covenant, or with a conservation easement granted to the Permittee in cases where the Permittee does not own the land. In this case, the Capacity Credit is the totals of effective impervious area, lawn/landscaping, and pasture that are converted to native vegetation.

The area undergoing reforestation must meet the following criteria:

- Existing impervious, lawn/landscaped, and pasture areas that are intended for conversion back to native pre-developed conditions must meet the soil quality and depth requirements of BMP T5.13 in Volume V of the *SWMMWW*.
- The area must be planted with native vegetation, including evergreen trees. For further guidelines, see the Washington State Department of Transportation (WSDOT) *Roadside Manual*. Refer to Sections 800 and 810 in regard to design, procedures, and other recommendations pertinent to Accelerated Climax Community Development.
- The area must be permanently protected from development through a conservation easement or some other legal covenant that requires it to remain in native vegetation.

Reforested areas are considered stormwater facilities and should be mapped and maintained.

D. Runoff Treatment BMPs

Regional or Equivalent runoff treatment facilities that are fully sized for the area draining to them - as determined using the applicable design criteria in the *SWMMWW* in combination with the water quality design flow rate or volume - use the drainage area characteristics (impervious area, lawn area, pasture area) as the capacity credit. If the space available for a runoff treatment facility is not adequate to fully size the facility for its tributary drainage area, an upstream flow splitter may be used to bypass flows above the flow rate for which it meets design criteria. In that case, the capacity credit is restricted to that theoretical area for which the runoff treatment facility would be fully sized a etermined using an approved continuous runoff model.

Note: Pond facilities (wet ponds, treatment wetlands, wet vaults) must be fully sized for the drainage area. Flow splitters cannot be used.

Tables

Table 1A: Minimum Requirement #7

	Acres (to the tenth)
1. Stormwater Control Improvement Transfer to Facility in Priority Watershed	
a. Impervious to Forest Debit	
b. Other Hard Surface to Forest Debit	
c. Lawn/landscape to Forest Debit	
d. Pasture to Forest Debit	
2. Stormwater Control Provided at Project Site	
a. Impervious to Existing Forest	
b. Impervious to Existing Pasture	
c. Impervious to Existing Lawn/Landscape	
d. Other hard surface to Existing Forest	
e. Other hard surface to Existing Pasture	
f. Other hard surface to Existing Lawn/landscape	
g. Lawn/landscape to Existing Forest	
h. Lawn/landscape to Existing Pasture	
i. Pasture to Existing Forest	
3. Stormwater Control Provided Only at Facility in Priority Watershed	
a. Impervious redeveloped as Impervious Debit	
b. Other Hard Surface redeveloped as Other Hard Surface Debit	
c. Pasture redeveloped as Pasture Debit	
d. Lawn redeveloped as Lawn Debit	

Notes:

1a = 3a

1b = 3b

1c = 2c + 2f + 3d

1d = 2b + 2e + 2h + 3c

Table 1B: Minimum Requirement #6

	Acres (to the tenth)
Proposed Transfers of Replaced Surfaces	
PGIS	
Non-PGIS that mixes with PGIS	
Pasture	
Lawn/landscaping	
Replaced Surfaces Treated on the Project Site	
PGIS	
Non-PGIS that mixes with PGIS	
Pasture	
Lawn/landscaping	
New Surfaces and Non-PGIS converted to PGIS (both must be treated on the Project Site)	
PGIS	
Non-PGIS that mixes with PGIS	
Pasture	
Lawn	

Table 1C: Minimum Requirement #5

	Acres (to the tenth)
1. Stormwater Control Improvement Transfer to Facility in Priority Watershed	
a. Impervious to Forest Debit	
b. Other Hard Surface to Forest Debit	
c. Lawn/landscape to Forest Debit	
d. Pasture to Forest Debit	
2. Stormwater Control Provided at Project Site	
a. Impervious to Existing Forest	
b. Impervious to Existing Pasture	
c. Impervious to Existing Lawn/Landscape	
d. Other hard surface to Existing Forest	
e. Other hard surface to Existing Pasture	
f. Other hard surface to Existing Lawn/landscape	
g. Lawn/landscape to Existing Forest	
h. Lawn/landscape to Existing Pasture	
i. Pasture to Existing Forest	

3. Stormwater Control Provided Only at Facility in Priority Watershed	
a. Impervious redeveloped as Impervious Debit	
b. Other Hard Surface redeveloped as Other Hard Surface Debit	
c. Pasture redeveloped as Pasture Debit	
d. Lawn redeveloped as Lawn Debit	

Notes:

1a = 3a

1b = 3b

1c = 2c + 2f + 3d

1d = 2b + 2e + 2h + 3c

Table 2: Regional Facility Tracking Table

Facility ID:			
Name of Priority Basin Location:			
	Total Capacity (X.X acres)	Credits Purchased (X.X acres)	Remaining Capacity (X.X acres)
MR #7			
Impervious			
Other hard surface			
Lawn/landscape			
Pasture			
MR #6			
PGHS			
PGPS			
MR #5			
Impervious			
Other hard surface			
Lawn/landscape			
Pasture			

Table 3: Example Project Identification Table for a Regional Facility

Project Name and ID No.	Impervious (X.X acres)	Other Hard Surface (X.X acres)	Lawn/landscape (X.X acres)	Pasture (X.X acres)	PGHS (X.X acres)	PGPS (X.X acres)
Elysian Fields; ID No. 123						
Scab Lands Estates ID No. 456						
Etc.						