



# Homeowner Incentive Program

## Lake Whatcom Watershed Stormwater Considerations

Applicable to HIP-Eligible projects within Basin One of the Lake Whatcom Watershed, under the jurisdiction of the City of Bellingham and regulated by Bellingham Municipal Code.

Submitted on behalf of HIP-eligible participants by Eli Mackiewicz, City of Bellingham HIP representative in order to address *Lake Whatcom Stormwater Guidance* document and meet requirements for phosphorus- and/or flow-limiting projects as described in BMC 15.42.060, section B.3.d.

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The Homeowner Incentive Program and the projects it supports are designed to go above and beyond all existing requirements for stormwater management, and specifically phosphorus reduction, applicable to single family lots in the Lake Whatcom Watershed. As such, HIP projects are compliant with land disturbing regulations, generally, and special regulations applicable to the Lake Whatcom watershed, specifically. Compliance can be demonstrated in multiple ways, as follows:

## I. HIP Projects Meet the Phosphorus- and/or Flow-limiting Standard

All HIP Best Management Practices (BMPs) are specifically designed to maximize potential phosphorus reduction. Therefore, by definition, all HIP projects are phosphorus-limiting and most are flow-limiting as well. The following BMPs are defined by HIP and must follow specific HIP Design Guidelines in order to qualify for the program;

- A. **Native Landscaping.** Replacing lawn or ineffective landscape, defined as landscape without adequate plant density and/or mulch layer, with a thick layer of low-Phosphorus mulch and native plants can reduce phosphorus discharge by up to 80%.
- B. **Infiltration Trench/Drywell.** Based on modeling outputs derived through use of the Western Washington Hydrology Model (WWHM4 Pro), all HIP infiltration trenches will manage at least 92% of storm volumes via infiltration into native soil. Infiltration is assigned a phosphorus removal rate of 90%, per Department of Ecology data. Design and siting of this BMP requires intensive soil explorations in the immediate vicinity of the installation.
- C. **Media Filter Drain (MFD).** Based on modeling outputs derived through use of the Western Washington Hydrology Model (WWHM4 Pro), all HIP MFD installations will treat 95% of storm volumes via flow-through treatment media. MFDs are assigned a phosphorus removal rate of 87%, per Department of Ecology data. Design and siting of this BMP requires simplified soil explorations in the immediate vicinity of the installation.
- D. **Dispersion.** Based on design standards common to local and state-wide guidance on full dispersion as a stormwater BMP, HIP Dispersion systems are expected to manage up to 100% of phosphorus and flow by spreading it into a properly-sized downstream vegetated area that varies in length from 25'-100' depending on the make-up of tributary surfaces.
- E. **Lake Whatcom Rain Garden.** Based on modeling outputs derived through use of the Western Washington Hydrology Model (WWHM4 Pro), all HIP rain gardens will manage at least 92% of storm volumes via infiltration into native soil. Infiltration is assigned a phosphorus removal rate of 90%, per Department of Ecology data. Design and siting of



this BMP requires intensive soil explorations in the immediate vicinity of the installation. HIP Rain Garden design requirements have been adapted from the Rain Garden Handbook for Western Washington Homeowners, with changes made in order to maximize phosphorus reduction, specifically by the removal of underdrains and the modification of soil specifications.

- F. **Permeable Surfacing.** This is a secondary HIP BMP only allowed as a protective surface over HIP Infiltration Trenches or MFDs. All materials must conform to manufacturer's specifications for depth of permeable subgrade, spacing, and infiltration rate.
- G. **Rainwater Harvesting.** This is a secondary HIP BMP only allowed as a source of irrigation water for HIP-funded native landscaping areas. Cisterns used for other purposes are not eligible for HIP. Tanks exceeding particular dimensions and/or storage volumes will require a separate plumbing permit and separate submittal for review by the Building Services Department.

All HIP BMPs are required to be sized, located, and constructed following the HIP Design and Submittal Guidelines specific to each. This includes use and reference to HIP Standard Details, the HIP Material Specifications book, and HIP sizing calculators. Alternative sizing methods are not approved under the streamlined HIP design and submittal process, but may be utilized by qualified professionals at their discretion.

## II. HIP Projects Comply with Minimum Requirements for Land Disturbing Projects

HIP Plans and Submittal Documents are intended to meet the minimum requirements for projects disturbing land and making changes to surfacing in the Lake Whatcom watershed. Specifically, these projects are not designed to result in the replacement of impervious or partially pervious surfaces in excess of thresholds set forth by Bellingham's redevelopment requirements. Stormwater management Minimum Requirements 1-5, as defined by the Department of Ecology and adopted by the City of Bellingham, are addressed as follows:

1. **Preparation of Stormwater Site Plans.** All HIP submittals will require the submission of an Existing Conditions sheet, a Proposed Improvements sheet, and a Temporary Erosion and Sediment Control Plan sheet. This plan set will contain all applicable considerations regarding stormwater management before, during, and after the proposed project. Existing site conditions will be addressed, quantified, and analyzed. All improvements and construction activities are illustrated in overview and detailed formats. The plan set and project details cover all temporary and permanent stormwater controls in detail.
2. **Construction Stormwater Pollution Prevention Plan.** In addition to the general SWPPP and construction details provided in the plan set, all HIP project applications will contain a completed, site-specific SWPPP that addresses all thirteen elements completely. TESC



Plans will be provided and are assumed to be performance-based, in that some activities such as native landscaping in mulch areas or delivery of material may not require BMPs if completed in summer weather without rain in the forecast. Special SWPPP considerations and requirements are in place to allow some select native landscaping activities to occur in the winter months, under a Director's Exemption from BMC 16.80.120 (Seasonal Restrictions on Earthwork). Those details will also be included in any submittal for a project wishing to do planting activities in the period between October 1 and June 1.

3. **Source Control of Pollutants.** Other than potential sediment transport via a turbid water surface discharge, there are no potential pollutant sources expected to be associated with HIP projects. Special care will be taken in site design steps and in the implementation of erosion and sediment controls to avoid sediment transport.
4. **Preservation of Natural Drainage Systems and Outfalls.** HIP projects will not concentrate storm flows outside of the basin in which they normally flow and discharge. In the event of a facility overflow or failure, excess water will be directed into the same drainage outfall as currently exists for that water. No new outfalls will be installed. No cross-vain drainage features will be installed. No additional flow will be introduced to downstream waterways in any appreciable way, other than the minor control of otherwise unmanaged surface flows entering waterways via overland flow.
5. **On-Site Stormwater Management.** Reforestation, infiltration, dispersion, and applicable low-impact development strategies are employed in HIP projects and designed and installed in such a way as to maximize on-site management of stormwater. No HIP project activities are expected to result in a need for additional stormwater management techniques or facilities beyond the HIP-specific BMPs.

### III. HIP Project Submittals Exceed Permitting Requirements

For each HIP-eligible project, a Stormwater (STM) permit application will be completed and submitted to the City for review and approval. The application will be subject to intake, stormwater, and planning-level reviews, as well as reviews related to site history that ensure no other active permits conflict with the proposed HIP project. While HIP projects are expected to vary slightly in their detailed design, general information and site-level descriptions of work will be significantly more uniform in their content.

Developing consistent and understandable submittals is the responsibility of the homeowner and their chosen designer, but both parties receive significant support from the City's HIP-focused staff as well as a full-time project coordinator from the Whatcom Conservation District, a direct partner in HIP. It is expected that HIP submittals will have been reviewed and approved by the WCD, the homeowner, and the designer prior to submission to the City. For that reason,



it is anticipated that designs and submittal documents will be, in large part, complete, accurate, field-verified, and understood consistently by all stakeholders. Therefore, it is not expected that intensive review of these projects will be necessary, but due diligence is certainly required. The City's HIP staff will ensure that documents received are accurate and complete and that the rules of HIP (which incorporate compliance with the City's development regulations) are followed in the design. Additional review from the City's Engineering Section and Planning and Development Services Department will also be incorporated into the process to ensure that HIP projects comply with regulations and receive the appropriate level of review for a voluntary project meant solely to improve water quality.

All HIP-supported projects, as a broad rule, will comply with the following conditions:

1. The project is **voluntary** and intended solely to protect water quality in the Lake Whatcom watershed.
2. The methods used to design and construct provide reasonable assurance that the improvement will provide a **public benefit** in terms of water quality protection for Lake Whatcom.
3. The project follows applicable rules and regulations associated with work in the Lake Whatcom watershed.
4. Plans were developed in accordance with pre-approved HIP Best Management Practices (BMPs) to the maximum extent feasible and with reasonable considerations taken to adjust the project to site-specific conditions. **Variations from pre-approved BMPs have been assessed by HIP Staff and approved as effective and/or appropriate variations.** All unique or non-standard components result in improved water quality and provide a public benefit.

#### IV. Submittal Summary: Native Landscaping Projects

For projects consisting of only the HIP Native Landscaping BMP, and adhering to all HIP requirements of that BMP's design, the following items will constitute a complete submittal to be reviewed by City of Bellingham staff in concert with HIP staff at the City and Whatcom Conservation District. Example projects with all documents completed will be provided to designers and review staff in order to communicate the intent and proper use of the forms and the information required to be shown on plan sheets.

**Plan Set** (11"X17" minimum sheet size, with scale bar and north arrow):

1. Existing conditions with surfaces delineated and utilities shown
2. Proposed Native Landscaping areas

#### **Submittal Documents:**

1. City of Bellingham Stormwater Permit Application



2. Lake Whatcom Stormwater Considerations Page
3. Project Narrative
4. HIP Native Plant Density Calculator
5. Stormwater Pollution Prevention Plan (SWPPP) for Native Landscaping Projects
6. Language specific to work in the Lake Whatcom Watershed, consistent with BMC 15.42 and 16.80

## V. Submittal Summary: All "Earthwork" projects (includes all other HIP BMPs)

For all projects that disturb soil, and are therefore limited to do work only in the period from June 1 - September 30<sup>th</sup>, the following items will constitute a complete submittal to be reviewed by City of Bellingham staff in concert with HIP staff at the City and Whatcom Conservation District. Example projects with all documents completed will be provided to designers and review staff in order to communicate the intent and proper use of the forms and the information required to be shown on plan sheets.

**Plan Set** (11"X17" minimum sheet size, with scale bar and north arrow):

1. Existing Conditions with surfaces delineated and utilities shown
2. Proposed Improvements with treated areas, HIP BMPs, and conveyance.
3. Erosion and Sediment Control Plan and generic SWPPP Details

### **Submittal Documents:**

1. City of Bellingham Stormwater Permit Application
2. Lake Whatcom Stormwater Considerations Page
3. Project Narrative
4. Soil Exploration and Characterization (when applicable)
5. HIP-Approved BMP Sizing / Plant Density Calculators
6. HIP Standard Details and Specifications
7. Site Specific Stormwater Pollution Prevention Plan
8. Language specific to work in the Lake Whatcom Watershed, consistent with BMC 15.42 and 16.80

## VI. Conclusion

The success of the HIP will depend on the effort of homeowners, the effectiveness of program staff to support those homeowners, and the efficiency of jurisdiction staff to process the wide variety of potential project scopes. This document is intended to outline the framework in which HIP projects will be in compliance with all regulations applicable to voluntary water quality improvement projects that do not include work that trips new or re-development requirements.



## Seasonal Restrictions for Earthwork

Bellingham Municipal Code 16.80.120: Seasonal restrictions on land-disturbing activities.

- A. No land-disturbing activity, including but not limited to clearing of vegetation, grading, filling, excavating or trenching of soil or earth materials, shall be permitted from October 1st through May 31st, with the exception of restoration work described in **BMC 16.80.080(E)** and approved in writing by the planning and public works directors.
  - B. All bare soil and earth areas in excess of 500 square feet shall be required to be covered during the above listed months with any of the following: (1) Well established grass, sod or a vegetated surface sufficient to prevent the erosion or transport of soil, sediment and silt laden water. No soil or earth may be visible; (2) a minimum of three inches cover of shredded wood chip/fiber, vegetative mulch, hay or straw; (3) crushed rock or gravel, not less than three-fourths inch in aggregate size and four inches deep; (4) or other approved coverage method approved in writing by the planning and public works directors.
  - C. The city may approve emergency exemptions to the seasonal restrictions as necessary to protect public health, safety, welfare, the environment and private or public property. Exemptions shall be construed narrowly and may be granted by the planning and public works directors. **Ord. 2009-06-040; Ord. 2001-01-001**].
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# Erosion and Sediment Control Considerations for Winter Work

## Native Landscaping Projects ONLY (Oct-May)

**Condition 1: Seasonal Restrictions on Land Disturbing Activities**, with the following exceptions; a) allowance for individual plantings within a fully mulched area (at least 4" depth of approved mulch) in dry weather and b) exposed soil allowance of 4" radius (.347ft<sup>2</sup>) around the base of plantings.

**Condition 2: Enforcement and Penalty**, without exception.

### **Condition 3: Materials Handling for Watershed Work**

**I.** Projects which import City of Bellingham approved mulch, topsoil, or bare root plantings during the dry season (June 1 – September 30) will be required to provide the following minimum protections to prevent sediment transport;

- a) no material storage or staging shall occur on impervious surfaces OR on slopes greater than 10%,
- b) distribution of materials on site will be done by hand OR applied by machinery (e.g. blown on) which shall not be driven onto the property, and
- c) No heavy machinery, including delivery trucks, are to be driven over or parked on erodible or compactable surfaces on the property at any time for any reason.

**II.** During the wet season (October 1 – May 31) materials shall be handled as indicated in a), b), and c) above as well as meeting the following additional considerations;

- d) importation, delivery, and spreading of materials shall not occur during adverse weather conditions, including precipitation events and strong winds with or without precipitation;
- e) storage of materials shall be performed per BMP C123 Plastic Covering, found in the Washington State Department of Ecology Stormwater Management Manual for Western Washington, Volume II, Construction Stormwater Pollution Prevention, and
- f) any activity which results in materials contacting impervious surfaces shall be mitigated by sweeping clean any impervious surfaces as soon as is reasonably possible.

### **Condition 4: Adaptive Management**

If the owner or City of Bellingham staff determine that further erosion controls are necessary to prevent an illicit discharge, formal TESC measures shall be implemented as directed by City staff or a Certified Erosion and Sediment Control Lead (CESCL). The project owner shall immediately contact City staff if any potential discharge is witnessed or imminent. Failure to do so may result in fines per Condition 2: Enforcement and Penalty (BMC 16.80.150).

### **Condition 5: Permanent Site Stabilization**

Upon completion of all planting activities, regardless of season, mulch must be applied to all erodible surfaces and must be maintained as needed to prevent exposed soils. A minimum of 2" of cover must be maintained in the long term.





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## **Public Works Department City of Bellingham**

March 8, 2018

To All City of Bellingham Lake Whatcom Watershed Residents

Re: Directors' Exemption to Seasonal Restrictions on Land Disturbing Activities (BMC 16.80.120)

Dear Resident:

The City of Bellingham supports and encourages homeowners' efforts to take voluntary action on their properties to protect water quality in the Lake Whatcom basin. Many of these voluntary water quality improvements involve the replacement of lawns and hard surfaces with native landscapes which can better replicate the natural hydrology and nutrient cycling found in native forests. Native plants, either in container or in bare-root form, are available in desirable quantities and at reasonable costs during the time when the Lake Whatcom watershed area is normally closed to land disturbing activities (October 1 - May 30, per BMC 16.80.120).

Considering the benefits of establishing native plant landscapes in the Lake Whatcom Watershed, and considering that fall and winter months are the ideal time for installing native plants, the Public Works and Planning Department directors grant this exemption to Homeowner Incentive Program (HIP) participants.

The exemption allows homeowners to install native plants as part of a voluntary phosphorus- or flow- limiting project in the City portion of the Lake Whatcom watershed at any time of year when all of the following criteria are met:

1. The project shall be in compliance with BMC 16.80 (Lake Whatcom Regulatory Chapter) and BMC 15.42 (Stormwater Management).
2. The project shall be designed as a phosphorus- and flow- limiting feature that will not increase flows or phosphorus loading above that expected from a forested condition.
3. A no-fee stormwater permit shall be obtained prior to any activity. This permit review process will determine if the project meets the phosphorus- or flow- limiting definitions.
4. The project shall adhere to the following minimum requirements associated with participation in the Homeowner Incentive Program:

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- a. The project is **voluntary** and intended solely to protect water quality in the Lake Whatcom watershed.
  - b. The methods used to design and construct provide **reasonable assurance** that the improvement will provide a **public benefit** in terms of water quality protection for Lake Whatcom.
  - c. The project follows **applicable rules and regulations** associated with work in the Lake Whatcom watershed.
  - d. Plans were developed in accordance with pre-approved HIP Best Management Practices (BMPs) to the maximum extent feasible and with reasonable considerations taken to adjust the project to site-specific conditions. **Variations from pre-approved BMPs have been assessed by HIP Staff and approved as effective and/or appropriate variations.** All unique or non-standard components result in improved water quality and provide a public benefit.
5. The planting project shall be installed following the guidance provided by the Homeowner Incentive Program's "Design Standards and Permitting Requirements: Native Landscaping" document. (Available online at [www.lakewhatcomHIP.org/resources](http://www.lakewhatcomHIP.org/resources)).
  6. Work must follow, to the maximum extent practicable, the guidance provided in the HIP-required document titled "Winter Work Allowances and Exemptions", which must be included in the permit application packet in order to utilize this exemption. (Available online at [www.lakewhatcomHIP.org/resources](http://www.lakewhatcomHIP.org/resources)).

Sincerely,



Ted Carlson  
Public Works Director



Rick Sepler  
Planning and Community Development Director

**References/Enclosures:**

HIP Design Standards for Native Landscaping Projects

HIP Winter Work Allowances and Exemptions

Full Design Manual and all technical information for HIP Projects is available online here:

[www.lakewhatcomHIP.org/resources](http://www.lakewhatcomHIP.org/resources)

Cc: Jason Porter, Stormwater Manager  
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