

City of Tacoma

Stormwater Management Manual

Workshop



Stormwater Management Manual (SWMM)

- Previous Manual Adopted in 2008
- SWMM contains stormwater requirements for all new development and redevelopment in Tacoma.
 - ▣ Contains operational BMPs for ongoing activities.
- Many requirements are based on Ecology mandates through the NPDES permit – These changes are not based on Ecology requirements.

Major Changes to the Manual

- ❑ Renamed – Stormwater Management Manual
- ❑ Edits and reorganization for clarity
- ❑ Policy updates (South Tacoma Groundwater Protection District)
- ❑ Updates to reflect current Best Management Practices (BMPs)

Manual Availability

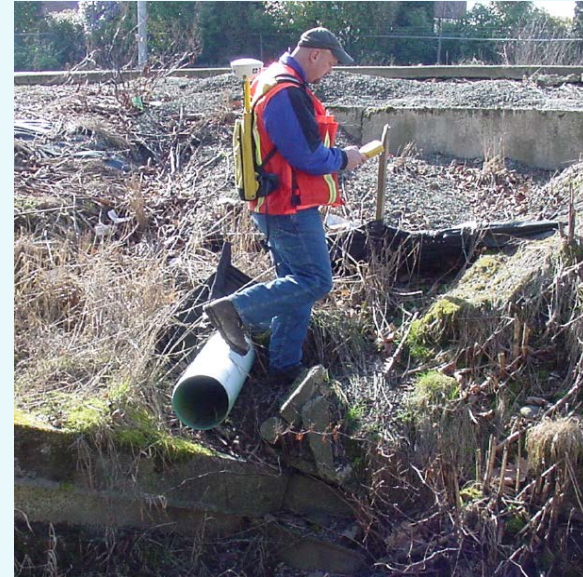
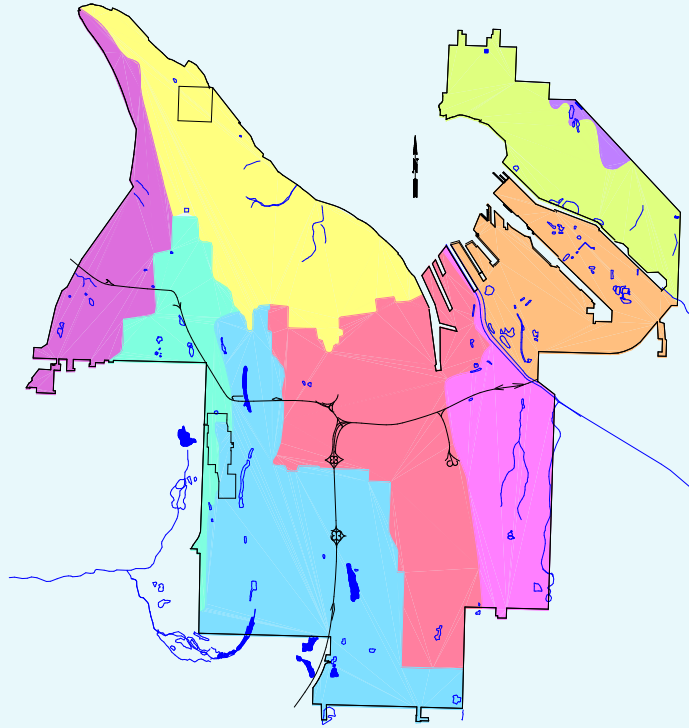
Online at
www.cityoftacoma.org/stormwater

To receive SWMM updates and policy information,
add your contact information to be on the
electronic mailing list. Located at the bottom of
the page under: “Get Updates”

Why do we have a Stormwater Manual?

- Washington State Department of Ecology administers a Phase I Municipal Stormwater Permit (NPDES and State Waste Discharge General Permit for discharges from Large and Medium Municipal Separate Storm Sewer Systems).
- The NPDES permit requires that Phase I permittees have a stormwater manual that is equivalent to Ecology's Surface Water Management Manual. (In 2008 City of Tacoma obtained equivalency).

Volume 1



Stormwater Site Planning



Volume 1 – Major Changes

- Onsite stormwater management practices have been revised to include a required Tree Retention and Transplanting BMP.
 - ▣ The BMP will require the applicant to retain mature trees on their project site and plant trees when space is available.
 - ▣ Tree retention and transplanting can now be used to receive credits for flow control and may help to reach certain landscaping requirements.
 - ▣ Tree retention and transplanting helps to minimize the quantity of stormwater entering the public system which lessens potential for flooding.

Volume 1 - Major Changes

- A new policy document has been developed which outlines specific requirements for infiltration of pollution generating surfaces within the [South Tacoma Groundwater Protection District](#). This policy is available www.cityoftacoma.org/stormwater under Policy Updates and includes the circumstances and requirements for the approval of infiltration facilities for managing pollution generating stormwater runoff in the STGPD. Approval to infiltrate pollution generating surfaces will be given on a case by case basis.

Volume 1 - Major Changes

- General cleanup and clarification.
- New Stormwater Site Plan Short Form
- The Operation and Maintenance checklists have been revised for clarity and to include maintenance frequency.

Volume 2



Stormwater Management for Construction Sites

Volume 2

- General cleanup and clarification.
- New Construction Stormwater Pollution Prevention Plan Short Form.

Volume 3



Onsite Stormwater Management, Flow Control, and Conveyance

Volume 3 – Major Changes

- General cleanup and revisions for clarity.
- Major Reorganization to fully encompass BMPs for onsite stormwater management including:
 - ▣ Roof Downspout Controls
 - ▣ Dispersion BMPs (previously in Volume 6)
 - ▣ Soil Quality BMPs (previously in Volume 6)
 - ▣ New Tree Retention and Transplanting BMP

Volume 3 – Major Changes

- New design requirements for conveyance systems.
 - All new conveyance systems shall be designed using the backwater analysis.
 - Tailwater conditions for closed conveyance at an assumed depth of 90% full.
 - Existing conveyance systems can be analyzed for capacity using either the backwater analysis or the rational method.
 - Preliminary conveyance system sizing for land use planning (short plats, plats, etc.) can use the rational method or backwater analysis but final construction design must use backwater analysis.

Volume 3 – Major Changes

- Inlet Grate Capacity Analysis and Gutter Capacity design requirements now included in the SWMM. These are based off the WSDOT Inlet Grate Capacity Analysis. This analysis is currently required, this section adds guidance on how to complete the analysis.
- Stormwater pump systems no longer require an Exception Request. These systems will be approved by Environmental Services on a case by case basis.

Volume 4



Source Control BMPs

Volume 4

- Guidance for discharges that require oil water separation with discharge to sanitary sewer system have been removed from this document and consolidated into a policy memo which is available at www.cityoftacoma.org/stormwater under Policy Updates. It is called the “Source Control Oil Water Separator Policy”.

Volume 4

- This volume has been updated to reflect current best management practices.
- Guidance has been added for Farmers Markets.
- The washing BMP has been revised to include all washing activities. BMPs were merged.

Volume 5

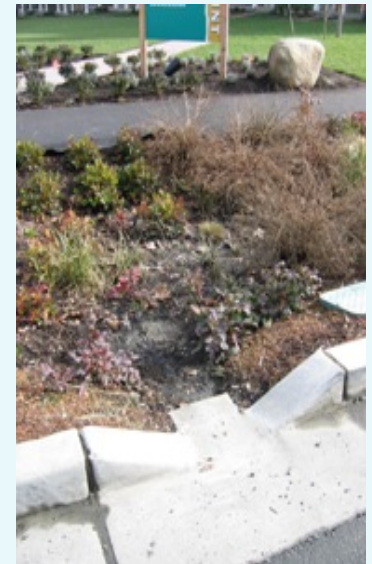


Water Quality Treatment BMPs

Volume 5

- Phosphorus treatment will be required for direct and indirect discharges to Wapato Lake.
- Conversions from native vegetation or uncultivated vegetation to lawn of 2,000 square feet or greater will require phosphorus treatment or an approved nutrient management plan.
- The nutrient management plan, if approved, must be recorded to title.
- Section 2.2 outlines various phosphorus treatment techniques.

Volume 6



Low Impact Development

Volume 6 – Major Changes

- Certain BMPs specific to dispersion were moved to Volume 3.
- General Updating to BMPs
- The City of Tacoma encourages low impact development and implementation of low impact development techniques for all projects, where feasible.

End of Overview of Changes

Questions?

Comments?

Concerns?

Minimum Requirements



New Manual Applicability

- Applies to certain new and redevelopment projects that discharge stormwater under Tacoma Municipal Code (TMC) 12.08. This includes direct and indirect discharges to the City of Tacoma stormwater system or receiving waters within City of Tacoma limits.
- 2012 SWMM adopted/implemented February 1, 2012. Any permits that are deemed complete after this date will be required to comply with the 2012 manual unless a previous land use action or other permit “vests” the project to a different manual.

Exemptions to the Minimum Requirements

- Underground utility projects that replace the ground surface with in-kind material or materials are only subject to minimum requirement #2
- Parking lot maintenance:
 - ▣ Pothole and square cut patching
 - ▣ Overlying existing asphalt or concrete pavement with asphalt or concrete without expanding the area of coverage
 - ▣ Crack sealing
 - ▣ Catch basin, pipe and vegetation maintenance

Exemptions to the Minimum Requirements

- Minor Clearing and Grading as follows:
 - ▣ Excavation for wells, except that fill made with the material from such excavation shall not be exempt
 - ▣ Exploratory excavations under the direction of soil engineers or engineering geologists, except that fill made with the material from such excavation shall not be exempt
 - ▣ Removal of hazardous trees
 - ▣ Removal of trees or other vegetation which cause sight distance obstructions at intersections as determined by the City of Tacoma traffic engineer

Exemptions to the Minimum Requirements

- Minor Clearing and Grading as follows continued:
 - ▣ Minor clearing and grading associated with cemetery graves
 - ▣ Land clearing associated with routine maintenance by public utility agencies
- Emergency projects, which if not performed immediately would substantially endanger life or property, are exempt only to the extent necessary to meet the emergency.

Vesting

- Vesting is based on state and local regulations.
- In general, date of vesting is based upon the date an application is deemed complete.
- Certain land use actions can vest a project.

Actions that vest a project.

- Complete applications for:
 - ▣ Preliminary plats
 - ▣ Short plats
 - ▣ Building permit

Actions that do not vest a project

- Incomplete applications
- Complete applications for:
 - ▣ SEPA
 - ▣ Work Order
 - ▣ Rezone
 - ▣ Boundary Line Adjustment (BLA)

Actions that may vest a project

- Complete applications for:
 - ▣ Wetland Permit
 - ▣ Conditional Use Permit (CUP)

A wetland or CUP permit will vest a project if the permit includes a preliminary design of the stormwater system that meets regulations at the time of wetland or CUP permitting.

Information Basics

- ❑ What is the scope of the project?
- ❑ Is this project “vested” to an already approved site plan? Is this site part of a plat, short plat, etc.?
- ❑ Is this a road-related project?
- ❑ In what watershed is the project located?
- ❑ What is the ultimate discharge location?
- ❑ What minimum requirements apply to my project?
- ❑ What documents should I submit for review?

Threshold Determination Terms

- **Project** – Any proposed action to alter or develop a site. The proposed action of a permit application or an approval, which requires drainage review.
- **Project Site** – That portion of a property, properties, or right of way subject to land disturbing activities, new impervious surfaces, or replaced impervious surfaces. On-site and off-site improvements shall be added together when determining if a project site exceeds a threshold. Environmental Services shall make the final determination of the project site.
- **Site** – The legal boundaries of a parcel or parcels of land that is (are) subject to new development or redevelopment. For road projects, the length of the project site and the right-of-way boundaries define the site.

What Defines a Project

- A project shall be defined by:
 - ▣ Land Use Actions
 - ▣ Parcels that are permitted under the same permit number.
 - ▣ Other City departments
 - ▣ Parcels that share onsite or offsite improvements.
 - ▣ And...

What Defines a Project

When underlying parcels exist that are not associated with a land use action and an applicant would like to develop those parcels, the threshold determinations would be based on ownership or development of parcels in the same threshold discharge area and on the same City block. A City block shall be defined by existing roads. A City block shall not be defined by alleys. The project is defined by all onsite and offsite improvements. The final determination of a project shall be made by Environmental Services.

Project Site Example 1

- Existing
 - Eight contiguous (or noncontiguous but located on the same City block) 7000 square foot lots under one ownership.
- Proposed
 - Construct duplexes on each lot and lots are still under a single ownership. No land use is required and off-site improvements are required for road widening.

This is a project site. Total of all lots onsite and offsite improvements must be considered for threshold determination.

Project Example 2

- Existing
 - Eight contiguous 7000 square foot parcels under one ownership.
- Proposed
 - Each lot is sold before the home is constructed. No land use is required and offsite improvements are not required for the lots.

This is not a project site. Since all parcels are under separate ownership when permits are applied for and there is no land use action or offsite improvements linking the lots, each lot is considered a separate project site.

Project Site Example 3

- Existing
 - Several 6,000 square foot lots under the same ownership.
- Proposed
 - Construct single family homes (over the course of several years or at the same time). No land use is required and offsite improvements may or may not be required for road widening.

This is a project site. Total of all lots and offsite improvements must be considered for threshold determination.

Note: If all the lots are under separate ownership at the time of construction, it is not a project.

Project Site Example 4

- Existing
 - Plats. The preliminary plat occurs and no actual onsite development occurs for some length of time. The infrastructure is either built under a fill and grade and/or work order permit or was bonded for.
- Proposed
 - Construct single family homes (over the course of years or at the same time). The lots are connected by the land use action. Offsite improvements may or may not be required. Fill and Grade and/or Work Order permits have been completed or bonded for. The lots are owned by a single developer or owned individually.

This is a project site. Total of all lots and offsite impacts must be considered together for threshold determination. (The impacts should have been identified and mitigation built or bonded for fill and grade and/or work order that is required prior to final plat). The development must comply with the proposed improvements constructed or bonded for under the fill and grade and/or work order. Any proposed changes would need to be considered in the context of the entire project and those changes are not vested. If the total of all disturbed area is over 1 acre, coverage under the NPDES Construction General Permit may be required for construction of a single home.

Project Site Example 5

- Existing
 - Short Plats. The short plat occurs and no actual onsite development occurs for some time.
- Proposed
 - Construct single family homes (over the course of years or at the same time). The lots are connected by the land use action. Offsite improvements may or may not be required for road widening. The lots are owned by a single developer or owned individually.

This is a project site. Total of all lots and offsite must be considered for threshold determination. The short plat drainage plan prepared prior to issuance of the short plat decision would have provided a feasible means to mitigate for stormwater requirements. The actual stormwater mitigation for the lots does not have to match the proposal outlined in the short plat drainage plan but it does have to meet the requirements of the short plat conditions and the stormwater manual at the time of vesting. The proposed impacts -as referenced in the short plat drainage plan cannot be exceeded or additional mitigation may be required. If the total area disturbed for the project is over 1 acre, a NPDES Construction Permit may be required for construction of the single home(s).

Minimum Requirement #1

Preparation of a Stormwater Site Plan

- A stormwater site plan is a report and drawings that assesses both temporary and permanent stormwater drainage impacts at the site.
- Smaller projects may use the Short Form SSP (Volume 1 and available at www.govme.org)
- Volume 1, Chapter 4 of the SWMM gives guidance on preparation of this document.

Minimum Requirement #2

Construction Stormwater Pollution Prevention (SWPP)

- A plan and associated drawings that describe how stormwater runoff will be managed during construction and how sediment will be kept from leaving the site.
- All new and redevelopment must comply with Construction SWPP Elements #1-#12.
- Only projects that meet the thresholds must prepare a construction stormwater pollution prevention plan (SWPPP).
- Smaller projects can use the Construction SWPPP Short Form.
- Information on preparing a SWPPP and the appropriate BMPs are located in Volume 2 of the manual.

NPDES Construction Stormwater Permit

- The Washington State Department of Ecology requires that sites that disturb one or more acres and discharge stormwater require a NPDES Construction Stormwater General Permit.
- Sites that are part of a common plan of development or sale that will ultimately disturb one or more acre and discharge stormwater also requires a permit. Note: This means that single lot development may require a NPDES Permit from the State.

Minimum Requirement #3

Source Control of Pollution

- All known, available, and reasonable source control BMPs shall be applied to all projects.
- Structural source control BMPs shall be identified in the stormwater site plan and shall be shown on construction plans as applicable.

Minimum Requirement #4

Preservation of Natural Drainage Systems

- Natural drainage patterns shall be maintained and discharges from the project shall occur at the natural location to the maximum extent practicable.
- Stormwater discharges cannot be diverted to a different watershed .

Minimum Requirement #5

Onsite Stormwater Management

The following shall be employed on all sites where feasible:

- ❑ Manage roof runoff
- ❑ Dispersion of all other impervious surfaces
- ❑ Soil Quality BMPs
- ❑ Tree Retention and Transplanting BMPs

For roof runoff the following must be considered in order:

- ❑ Downspout infiltration systems (including rain gardens)
- ❑ Downspout dispersion
- ❑ Collect and convey to City system

Minimum Requirement #5

When can I collect and convey directly to City system?

Prove infiltration/bioretention does not work. (Volume 3, Section 2.4)

1. Setback requirements cannot be met.
2. Site geography is not adequate for infiltration. This requires a written report from a soils expert (a soils scientist, registered professional geologist, or P.E. with expertise). The report will require soils logs per Volume 3, Section 2.

Prove dispersion does not work.

1. Setback requirements cannot be met or the flowpath is not adequate (steep slopes).

Minimum Requirement #5

Soil Quality BMP

- All areas subject to disturbance, clearing and grading that have not been covered by impervious surfaces, incorporated into a drainage facility, or engineered as fill or a slope must show that the soil meets soil quality as specified in BMP L613 (Volume 6).
- Provide how this requirement will be met on the plan set. Hatch or otherwise identify all areas that require amending and what the final cover measure will be.



Glacial till: high in runoff
and poor turf quality



Same soil with 30%
compost added. Up to 50%
less runoff. Turf still
healthy 4 years later

Minimum Requirement #5

- Tree Retention and Transplanting BMP – Volume 3, Chapter 5.
 - ▣ Provides flow credits for new and retained trees.
 - ▣ Requires the applicant to consider trees in their site design.

End of Minimum Requirement

Questions?

Comments?

Concerns?

Minimum Requirement #6

Runoff Treatment

- Projects in which the total of effective pollution-generating impervious surface is 5,000 square feet or more in a threshold discharge area of the project

Or

- Projects in which the total of pollution-generating pervious surfaces is $\frac{3}{4}$ of an acre or more in a threshold discharge area, and from which there is a surface discharge in a natural or man-made conveyance system from the site.

Key Terms

- **Threshold Discharge Area** - An onsite area draining to a single natural discharge location or multiple natural discharge locations that converge within $\frac{1}{4}$ mile downstream.

Water Quality Treatment – Oil Treatment

- Required in addition to basic or enhanced treatment.
- Oil control is required for high-use sites. High use sites include:
 - An area of a commercial or industrial site subject to an expected average daily traffic (ADT) count equal to or greater than 100 vehicles per 1,000 square feet of gross building area
 - An area of a commercial or industrial site subject to petroleum storage and transfer in excess of 1,500 gallons per year, not including routinely delivered heating oil
 - An area of a commercial or industrial site subject to parking, storage, or maintenance of 25 or more motorized vehicles that are over 10 tons gross weight
 - A road intersection with a measured ADT count of 25,000 vehicles or more on the main roadway and 15,000 vehicles or more on any intersecting roadway, excluding projects proposing primarily pedestrian or bicycle use improvements.
- Required by the South Tacoma Groundwater Protection District Policy Memo for certain land uses.

Water Quality – Phosphorus Treatment

- Required in addition to basic or enhanced treatment.
- Phosphorus control requirements are based on basin specific requirements. Generally these are controlled by Total Maximum Daily Loads (TMDLs) or a site-specific waterbody issue. Currently discharges to Wapato Lake which meet treatment thresholds will require phosphorus treatment.
- ▣ Phosphorus treatment is required when 2000 square feet of native vegetation or uncultivated vegetation is converted to lawn. In lieu of treatment, a detailed nutrient management plan can be submitted.

Water Quality – Enhanced Treatment

- Enhanced Treatment is required for the following project sites that discharge to fish-bearing streams, lakes, or to waters or conveyance systems tributary to fish-bearing streams or lakes:
 - Industrial sites
 - Commercial sites
 - Multi-family sites
 - High ADT roads as follows:
 - Fully controlled and partially controlled limited access highways with ADT counts of 15,000 or more
 - All other roads with an ADT of 7,500 or greater

Water Quality – Enhanced Treatment

- ❑ Certain waterbodies listed as basic treatment receiving water bodies do not require enhanced treatment. These include the Puyallup River and the Puget Sound.
- ❑ Fish-bearing streams, lakes, and waters are defined in the watershed specific section in Volume 1 of the SWMM. This includes Leach and Flett Creek watersheds.
- ❑ Discharges to sensitive habitat sites may require enhanced treatment, these are reviewed on a case by case basis.

Water Quality Treatment – Basic Treatment

- Sites required to conduct water quality treatment, but not required to provide enhanced treatment must provide basic treatment.

Minimum Requirement #7

Flow Control

- Projects must provide flow control to reduce the impacts of stormwater runoff from impervious surfaces and land cover conversions.

Minimum Requirement #7

Flow Control

- Project sites in which the total of effective impervious surfaces is 10,000 square feet or more in a threshold discharge area, or
- Projects that convert $\frac{3}{4}$ acres or more of native vegetation to lawn or landscape, or convert 2.5 acres or more of native vegetation to pasture in a threshold discharge area, and from which there is a surface discharge in a natural or man-made conveyance system from the site, or
- Projects that, through a combination of effective impervious surfaces and converted pervious surfaces, cause a 0.1 cfs increase in the 100-year flow frequency from a threshold discharge area as estimated using the WWHM. Compare existing versus proposed site conditions.

Minimum Requirement #7

Flow Control

- Flow control requirements apply to projects that discharge directly or indirectly:
 - ▣ Through a conveyance system into freshwater, or
 - ▣ Through a conveyance system into a gulch, or
 - ▣ To a City identified capacity problem existing downstream of the development, or
 - ▣ To a conveyance system without capacity to convey the fully developed design event as defined in Volume 3, Chapter 3.

Minimum Requirement #8

Wetlands Protection

- Applies to direct and indirect discharges into wetlands.
- Applies when the thresholds for either minimum requirements #6 or #7 are met.
- May be required even when a wetland permit under TMC 13.11 does not apply.
- There are no watershed specific exceptions to this requirement.

Minimum Requirement #8

Wetlands Protection

- ❑ Discharges to wetlands shall maintain the hydrologic conditions, hydrophytic vegetation, and substrate characteristics necessary to support existing and designated uses.
- ❑ A continuous simulation model is required to model wetland hydrology.
- ❑ Model calibration and Pre- and Post-development monitoring of wetland levels, groundwater levels, and water quality may be required by Environmental Services.

Minimum Requirement #9

Basin/Watershed Planning

- ❑ Projects may be subject to equivalent or more stringent minimum requirements for erosion control, source control, treatment, flow control, etc. as identified in existing watershed plans.
- ❑ South Tacoma Groundwater Protection District
- ❑ Basin Specific Requirements
- ❑ There are no formal Basin/Watershed Plans currently
- ❑ TMDLs (Total Maximum Daily Loads)

Minimum Requirement #10

Operation and Maintenance

- ❑ An O&M manual shall be provided for all proposed stormwater facilities and BMPs at the time construction plans are submitted for review, and the party responsible for O&M shall be identified.
- ❑ Required informally for any stormwater improvements.
- ❑ Identify maintenance activities.
- ❑ Identify responsible party.

Minimum Requirement #10

Operation and Maintenance

- For private facilities, a copy of the manual shall be retained onsite and transferred with the property to the new owner.
- For private facilities, a separate covenant and easement agreement recorded on title shall be provided and recorded.
- For all facilities, a maintenance log shall be kept and be available for City inspectors.

Minimum Requirement #11

Offsite Analysis and Mitigation

- Development projects that discharge stormwater offsite shall submit an offsite analysis that assesses the potential off-site impacts of stormwater discharge.
- All projects must complete a **qualitative** analysis (This is part of the short form SWPPP and SSP)
- A **quantitative** analysis is required for all projects that meet the thresholds for minimum requirement #7 and do not provide detention or may be required regardless of thresholds met based on ES review.
- Volume 1, Chapter 3 describes how to complete off-site analyses.

Quantitative Downstream Analysis

- Volume 3, Chapter 9.
- Existing conveyance systems shall be analyzed for capacity using either the backwater analysis or rational method.
- New conveyance systems shall be designed using the backwater analysis.

Minimum Requirement #12

Financial Liability

- Performance bonding or other appropriate financial guarantee may be required for certain projects to ensure construction of drainage facilities in compliance with these standards. In addition, a project applicant may be required to post a financial guarantee of the satisfactory performance and maintenance of any drainage facilities.



Flowcharts

**Figure 1-5 - Determining
Minimum Requirements for New
and Redevelopment Project Sites**

Minimum Requirement Flow Chart, Part 1

- Do the new, replaced, or new plus replaced impervious surfaces total 2,000 square feet or more?

Or

- Does the project disturb 7,000 square feet or more of land?

Answer YES

- Comply with Minimum Requirements #1 -#5 and #11. And continue to next question.

Answer NO

- Comply with Minimum Requirement #2 and Minimum Requirement #11.
- Building code may have drainage requirements.

Minimum Requirement Flow Chart, Part 2

- ❑ Does the project add 5,000 square feet or more of new impervious surfaces?
- ❑ Convert $\frac{3}{4}$ acres or more of native vegetation to lawn/landscaped?
- ❑ Convert 2.5 acres or more of native vegetation to pasture?

Answer YES

- Review Minimum Requirement #1-12 and comply with applicable requirements. Requirements apply to the *new* and *converted* surfaces. Continue to next questions.

Answer NO

- Continue to next question.

Minimum Requirement Flow Chart, Part 3

- Is the total of new plus replaced impervious surfaces 5000 square feet or more and does the value of the proposed improvements, including interior improvements, exceed 50% of the assessed value of the existing site improvements?

Answer Yes

- Review minimum requirements #1-12 and comply with applicable requirements. Requirements apply to the *new* and *replaced* impervious surfaces. Continue to flow control chart.

Answer No

- No additional requirements apply. Comply with minimum requirement #1-5 and #11.

Flowchart Notes

1. The combined total of new and replaced surfaces since January 1, 2003 shall apply when determining the thresholds.
2. Minimum requirement #10 and #12 may apply to any project regardless of site size.
3. Watershed specific requirements may or may not require compliance with certain minimum requirements regardless of site size.
4. It is the applicant's responsibility to determine the final natural discharge location for all projects.

**Figure 1-6 – Determining
Minimum Requirements
for Flow Control**

Flow Control Flowchart, Part 1

Part 1

- ❑ Does the project total 10,000 square feet or more of effective impervious surfaces?
- ❑ Convert 2.5 acres or more of native vegetation to pasture?
- ❑ Convert $\frac{3}{4}$ acres or more of native vegetation to lawn/landscaped?
- ❑ Cause a 0.1 ft^3 increase in the 100-year flow frequency through a combination of effective impervious surface and converted pervious surfaces (use WWHM)?

Answer is YES

- Continue to next question.

Answer is NO

- Flow control is not required.

Flow Control, Part 2

Part 2

- Does the project discharge directly or indirectly into freshwater (not saltwater) or a gulch system?

Answer is YES

- Provide Flow Control

Answer is NO

- Perform a quantitative downstream analysis and check for capacity.

Flow Control, Part 3

Part 3

- Based on the quantitative downstream analysis, does the downstream system have capacity? Volume 3 of the SWMM gives guidance on capacity analyses.

Answer is YES

- Flow control is not required. Provide onsite stormwater management.

Answer is NO

- Provide flow control or correct the downstream problem.

Flow Control Chart Notes

1. Minimum requirement #10 and #12 may apply to any project regardless of site size.
2. Watershed specific requirements may or may not require compliance with certain minimum requirement regardless of site size.
3. The Puyallup River is considered a flow control exempt water body. See Section 3.4.7.5 for flow control requirements.
4. It is the applicant's responsibility to determine the final natural discharge location for all projects.

Flow Control Exempt Water Bodies

- If the following are met, flow control is not required for projects that discharge directly or indirectly to the Puyallup River:
 - Direct discharge will not result in the diversion of drainage from any perennial stream classified as Types 1, 2, 3, or 4 in the State of Washington Interim Water Typing System, or from any category I, II, or III wetland; and
 - Flow splitting devices or drainage BMPs are applied to route natural runoff volumes from the project site to any downstream Type 5 stream or category IV wetland.
 - The project site must discharge through a conveyance system that is comprised entirely of manmade conveyance elements (e.g., pipes, ditches, outfall protection, etc.) and extends to the ordinary high water line of the exempt receiving water; and

Flow Control Exempt Water Bodies

- The conveyance system between the project site and the exempt receiving water shall have sufficient hydraulic capacity to convey discharges from future build out conditions of the site, and the existing conditions from non-project areas from which runoff is or will be collected; and
- Any erodible elements of the manmade conveyance system must be adequately stabilized to prevent erosion under the conditions of future build out conditions of the site, and the existing conditions from non-project areas from which runoff is or will be collected.

**Figure 1-7 – Determining
Minimum Requirements for
Road-Related Projects**

Road-Related Projects

- Any project whose objective is the construction or maintenance of a road. Roads built as a requirement for permit issuance are not included in this category.
- The following are exempt from minimum requirements:
 - ▣ Pothole and square cut patching
 - ▣ Overlaying existing asphalt or concrete paving with asphalt or concrete without expanding the area of coverage
 - ▣ Shoulder grading
 - ▣ Reshaping/regrading drainage systems
 - ▣ Crack sealing
 - ▣ Resurfacing with in-kind material without expanding the road prism
 - ▣ Vegetation maintenance

Road-Related Project Flow Chart, Part 1

Part 1

- ❑ Do the new, replaced, or new plus replaced impervious surfaces total 2,000 square feet or more?
- ❑ Does the project disturb 7,000 square feet or more of land?

Answer YES

- Comply with Minimum Requirement #1-#5 and #11. Continue to next question.

Answer NO

- Comply with Minimum Requirement #2 and conduct a qualitative off-site analysis per Minimum Requirement #11.

Road-Related Project Flow Chart, Part 2

Part 2

- ❑ Does the project add 5,000 square feet or more of new impervious surfaces?
- ❑ Convert $\frac{3}{4}$ acres or more of native vegetation to lawn/landscaped?
- ❑ Convert 2.5 acres or more of native vegetation to pasture?

Answer YES

- Review Minimum Requirements #1-12 and comply with applicable requirements. Requirements apply to *new* and *converted* surfaces. Continue to next question.

Answer NO

- No additional requirements. Comply with Minimum Requirement #1-#5 and #11.

Road-Related Project Flow Chart, Part 3

Part 3

- Does the project add 5000 square feet or more of *new* impervious surface?

Answer YES

- Continue to next question.

Answer NO

- No additional requirements apply. Apply minimum requirements #1-12 to new and converted surfaces.

Road Related Project Flow Chart, Part 4

Part 4

- Do the new impervious surfaces add 50% or more to the existing impervious surfaces within the project limits?

Answer YES

- Review minimum requirements #1-12 and comply with applicable requirements. Requirements apply to the *replaced* impervious surfaces and the *new* impervious surfaces.

Answer NO

- No additional requirements apply. Apply minimum requirements #1-12 to *new* and *converted* surfaces.

Road Related Project Chart Notes

1. Road related projects are those projects whose objective is the construction or maintenance of a road. Roads built as a requirement for permit issuance are not included in this category.
2. Watershed-specific requirements may or may not require compliance with certain minimum requirements regardless of site size.
3. Minimum requirement #10 and #12 may apply to any project regardless of site size.
4. It is the applicant's responsibility to determine the final natural discharge location for all projects.

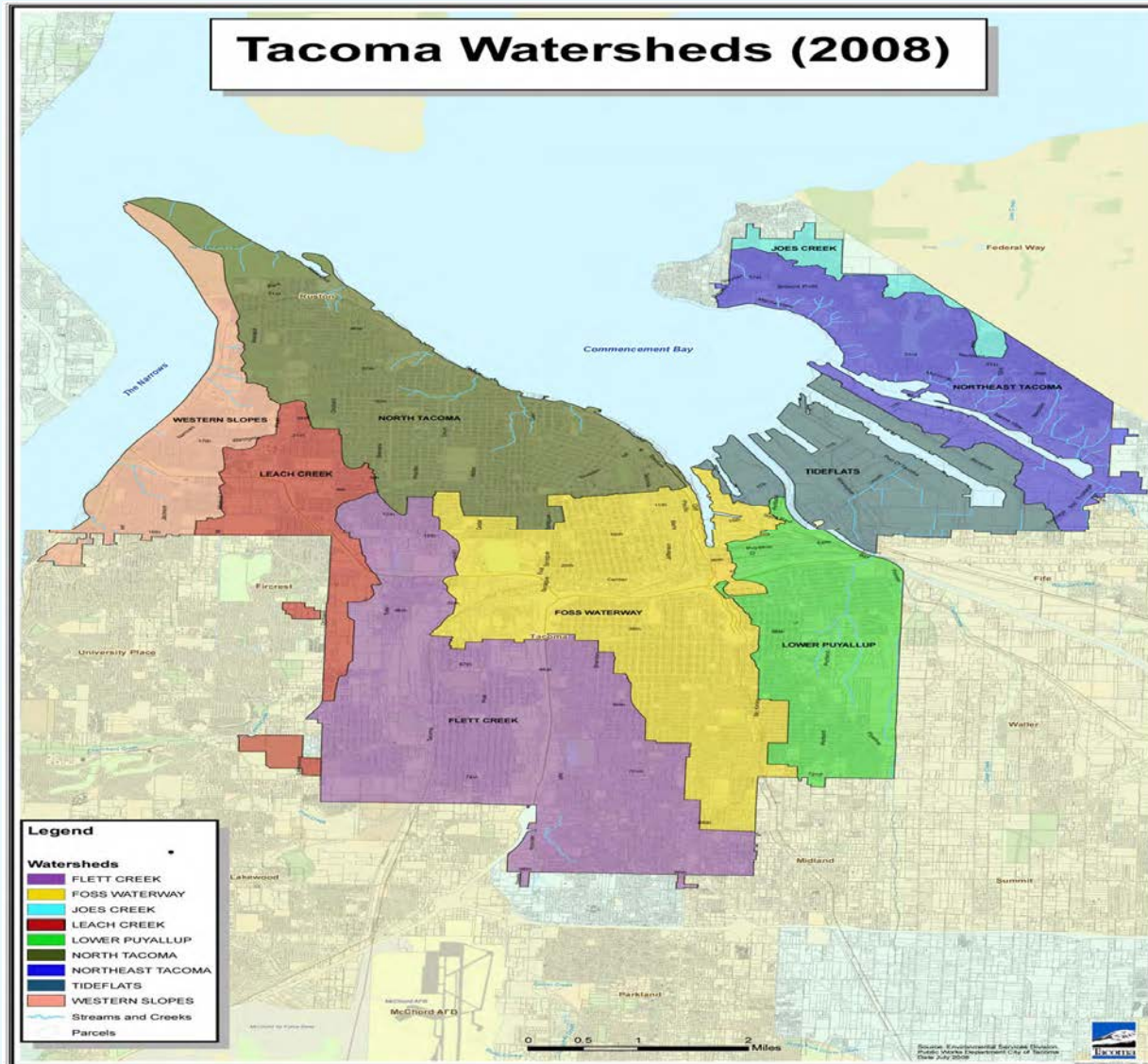
Road/Pavement Related Information

- This information applies to road related projects and projects with road improvements that are not road-related projects.
- Applies to all driving surfaces. (Parking lots, roads, driveways)
- Refer to Section 3.3.4 of Volume 1.

Road Related Information

- Upgrading surface types is “new” surface, not replaced. Examples,
 - ▣ Dirt to gravel, asphalt or concrete,
 - ▣ Gravel to asphalt or concrete
 - ▣ Chip seal to asphalt or concreteExtending pavement by widening or paving shoulders is considered “new”.
- Remove and replace without expansion, minimum requirements #1-5 apply.
- Remove and replace with expansion, the expansion area is “new” and the replaced area is “replaced”.

Watersheds



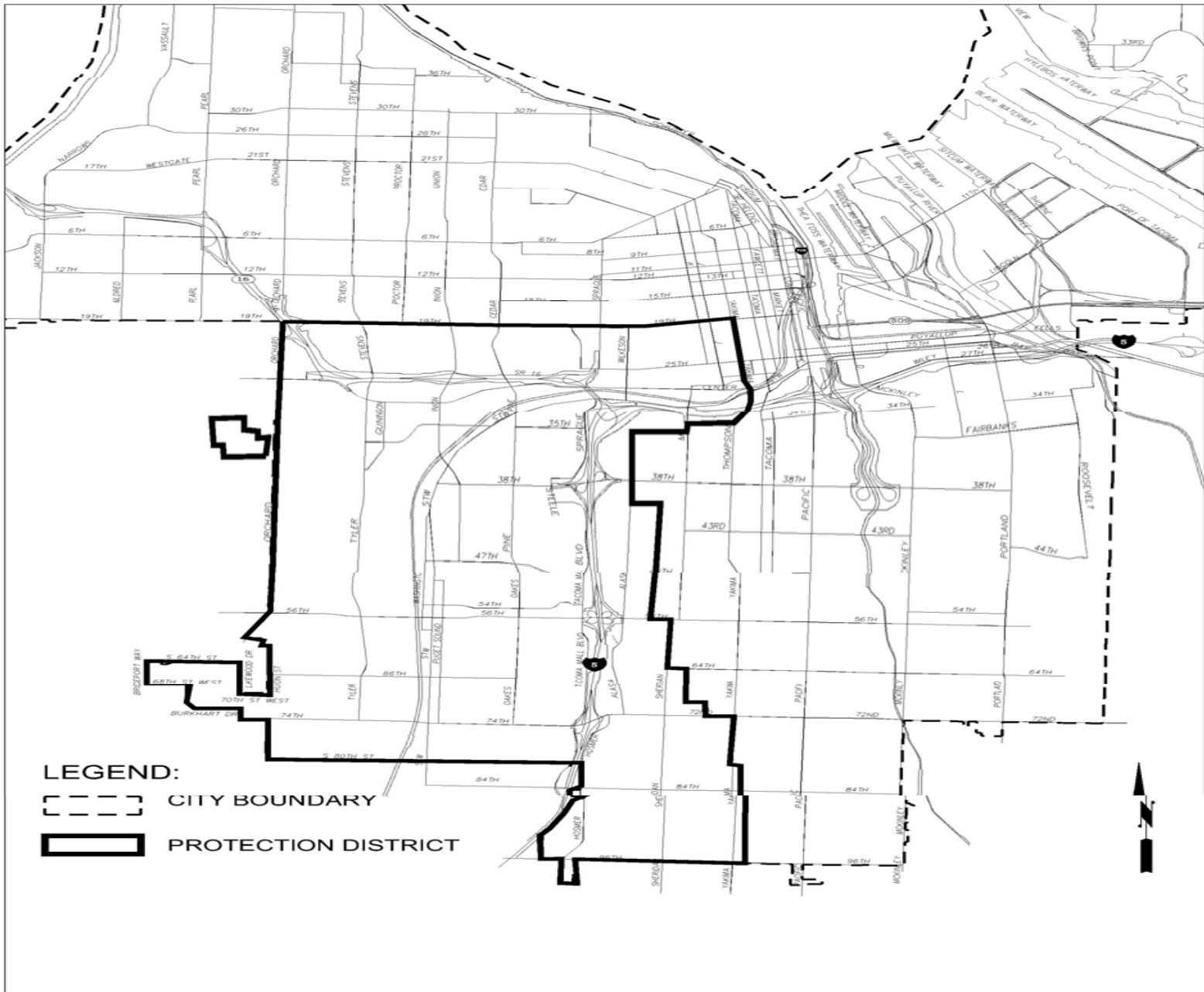
Watershed Specific Requirements

- ❑ Watersheds are delineated in govMe and Figure 1-1 of the Stormwater Management Manual.
- ❑ Watershed specific requirements can be found in Volume 1, Chapter 2.6.
- ❑ Final discharge location and tributary waters reached prior to final discharge location may affect applicability of certain minimum requirements regardless of the thresholds reached.

South Tacoma Groundwater Protection District

- ❑ Established under TMC 13.09
- ❑ Cooperative between Tacoma Pierce County Health Department and City of Tacoma
- ❑ Goal to protect Tacoma's aquifer
- ❑ The "Implementation of Stormwater Infiltration for Pollution Generating Surfaces in the South Tacoma Groundwater Protection District" provides guidance for when infiltration of PGIS surfaces is allowed and what treatment types must be provided if infiltrating in the STGPD.
- ❑ Each proposal will be approved on a case by case basis.

South Tacoma Groundwater Protection District



Exceptions to Minimum Requirements

- TMC 12.08.095 revised October 2008
- Exceptions to minimum requirements may be requested in writing in accordance with TMC 12.08.095 to allow a waiver of a requirement, a reduction or modification to a requirement, or to permit an alternative requirement.
- Exceptions require a public notification process in accordance with TMC 12.08.095.

Exceptions, Part 2

- Exceptions must meet the following criteria:
 - The minimum requirement would impose a severe and unexpected hardship, and
 - The exception will not increase risk to the public health and welfare, nor injurious to other properties in the vicinity and/or downstream, and to the quality of waters of the state, and
 - The exception is the least possible exception that could be granted to comply with the intent of the minimum requirement.

Questions?

Comments?

Concerns?



Examples

Cumulative Impact Rule

- Incorporates Impacts from Jan 1, 2003
- All impacts used to determine thresholds
- Mitigation only required for new impacts

Cumulative Impacts Example

- Existing Site
 - Commercial site permitted in 2004. Building at 3400 square feet with 2000 square feet of paving.
- In 2008, they want to build another building at 3400 square feet and associated parking lot at 3500 square feet of paving.

Cumulative Impacts Example

	Non PGIS	PGIS	Total Impervious
Existing	3400	2000	5400
New	3400	3500	6900
Replaced	0	0	0
Threshold Totals	6800	5500	12,300

**Review minimum requirements #1-12.
Flow control and water quality for only
the new surfaces and any future
construction regardless of size.**

Cumulative Impacts Example

- ❑ Existing Site - Residential site permitted in 2004. Building at 1450 square feet with 200 square feet of paving.
- ❑ In 2008, they want to build a garage at 800 square feet and driveway extension of 300 square feet.

Cumulative Impacts Example

	Non PGIS	PGIS	Total Impervious
Existing	1450	200	1650
New	800	300	1100
Replaced	0	0	0
Threshold Totals	2250	500	2750

Minimum Requirements #1-#5 apply to the new surfaces. Any future construction will require stormwater mitigation regardless of size.

Replaced Surfaces Example 1

- Existing Site

- ▣ 4235 square foot building with a 1000 square foot parking lot built prior to 2003.

- Proposed Development

- ▣ Tear down existing building, replace with same size new building and do nothing to parking lot.

Replaced Surfaces Example 1

	Non PGIS	PGIS	Total Impervious
Existing	4235	1000	5235
New	0	0	0
Replaced	4235	0	4235
Threshold Totals	4235	0	4235

**Review Minimum Requirements #1-5 and
comply with applicable requirements.**

Replaced Surfaces Example 2

- Existing Site
 - 4235 square foot building with a 1000 square foot parking lot built prior to 2003.
- Proposed Development
 - Tear down existing building, replace with same size new building and overlay existing parking lot.

Replaced Surfaces Example 2

	Non PGIS	PGIS	Total Impervious
Existing	4235	1000	5235
New	0	0	0
Replaced	4235	0	4235
Threshold Totals	4235	0	4235

**Review Minimum Requirements #1-5 and
comply with applicable requirements.**

Replaced Surfaces Example 3

- Existing Site

- 4235 square foot building with a 1000 square foot gravel parking lot.

- Proposed Development

- Tear down existing building, replace with new building and make the parking lot into an asphalt parking lot. Value of new building is greater than 50% of the assessed value of existing improvements.

Replaced Surfaces Example 3

	Non PGIS	PGIS	Total Impervious
Existing	4235	1000	5235
New	0	1000	1000
Replaced	4235	0	4235
Total	4235	1000	5235

**Review Minimum Requirements #1-12
and comply with applicable requirements.**

Replaced Surfaces Example 4

- Existing Site
 - ▣ 4235 square foot building with a 1000 square foot parking lot.
- Proposed Development
 - ▣ Reroof building and leave parking lot as is.

Replaced Surfaces Example 4

	Non PGIS	PGIS	Total Impervious
Existing	4235	1000	5235
New	0	0	0
Replaced	0	0	0
Threshold Totals	0	0	0

Apply Minimum Requirement #2 and #11.

Single Family Residence Example 1

- Proposed development
 - ▣ Build 1750 square foot home with 400 square foot driveway with no associated off-site improvements.

Single Family Residence Example 1

	Non PGIS	PGIS	Total Impervious
Existing	0	0	0
New	1750	400	0
Replaced	0	0	0
Threshold Totals	1750	400	2150

Minimum Requirements #1-#5 apply to the new surfaces. Any future construction will require stormwater mitigation regardless of size.

Submittal requirements:

- Short form SWPPP
- Stormwater Site Plan Report (Short Form SSP okay) with onsite management described.
- Site plan with onsite management shown and construction stormwater pollution prevention BMPs shown.
- Other details as applicable.

Single Family Residence Example 2

- Proposed development
 - ▣ Build 1750 square foot home with 400 square foot driveway with 4650 square feet of offsite improvements.

Single Family Residence Example 2

	Non PGIS	PGIS	Total Impervious
Existing	0	0	0
New	1750	5050	6800
Replaced	0	0	0
Threshold Totals	1750	5050	6800

**Review minimum requirements #1-12.
Water quality and potentially flow control
(determine if 0.1 cfs increase) for only the
new surfaces and any future construction
regardless of size.**

**Water quality is required for pollutant-
generating impervious surfaces (driveway
and off-site improvements).**

Flow Control Example

- ❑ Watershed: Flett Creek
- ❑ Existing house on 2/3 acre, to be demolished.
- ❑ Proposal to add a 7000 square foot building and a 4000 square foot parking lot.
- ❑ Connects to City system with adequate capacity for full build out.

Flow Control Example

	Non PGIS	PGIS	Total Impervious
Existing	0	0	0
New	7000	4000	11,000
Replaced	0	0	0
Threshold Totals	7000	4000	11,000

**Review minimum requirements #1-12 and
comply with applicable requirements.
Continue to flow control flow chart.**

Provide flow control to match predeveloped conditions (because discharge to Flett Creek).

Flow Control Example

- ❑ Watershed: Flett Creek
- ❑ Existing house on 2/3 acre, to be demolished.
- ❑ Proposal to add a 7000 square foot building and a 4000 square foot parking lot.
- ❑ Connects to City system without adequate capacity at full build out.

Flow Control Example

	Non PGIS	PGIS	Total Impervious
Existing	0	0	0
New	7000	4000	11,000
Replaced	0	0	0
Threshold Totals	7000	4000	11,000

**Review minimum requirements #1-12 and
comply with applicable requirements.
Continue to flow control flow chart.**

**Provide flow control to match
predeveloped conditions (because
discharge into Flett Creek).**

Flow Control Example

- ❑ Watershed: Thea Foss
- ❑ Existing house on 2/3 acre, to be demolished.
- ❑ Proposal to add a 7000 square foot building and a 4000 square foot parking lot.
- ❑ Connects to City system with adequate capacity.

Flow Control Example

	Non PGIS	PGIS	Total Impervious
Existing	0	0	0
New	7000	4000	11,000
Replaced	0	0	0
Threshold Totals	7000	4000	11,000

**Review minimum requirements #1-12 and
comply with applicable requirements.
Continue to flow control flow chart.**

Flow control is not required because discharge is to Puget Sound and the City system has capacity to handle the extra flows. A quantitative downstream analysis would have been required to determine if there was capacity in the downstream system.

Flow Control Example

- ❑ Watershed: Thea Foss
- ❑ Existing house on 2/3 acre, to be demolished.
- ❑ Proposal to add a 7000 square foot building and a 4000 square foot parking lot.
- ❑ Connects to City system without adequate capacity.

Flow Control Example

	Non PGIS	PGIS	Total Impervious
Existing	0	0	0
New	7000	4000	11,000
Replaced	0	0	0
Threshold Totals	7000	4000	11,000

**Review minimum requirements #1-12 and
comply with applicable requirements.
Continue to flow control flow chart.**

Provide flow control to match existing conditions or correct downstream problem. Provide flow control to match existing condition (as opposed to predeveloped conditions) because flow control is for protection of the City conveyance system not a fresh waterbody. A quantitative downstream analysis is required. If onsite detention or infiltration is proposed instead of upsizing the downstream system, the owner must provide a signed letter stating they understand the proposed system and accept the operation and maintenance of the system.

Watershed Specific Example

- ❑ Watershed: Northeast Tacoma
- ❑ Existing house on 2/3 acre, to be demolished.
- ❑ Proposal to add a 7000 square foot building and a 4000 square foot parking lot.
- ❑ Discharge to City system then gulch outfall.

Flow Control Example

	Non PGIS	PGIS	Total Impervious
Existing	0	0	0
New	7000	4000	11,000
Replaced	0	0	0
Threshold Totals	7000	4000	11,000

**Review minimum requirements #1-12 and
comply with applicable requirements.
Continue to flow control flow chart.**

Provide flow control to match predeveloped conditions because discharge is to a gulch.

Critical Areas Example

- Build 15,000 square foot building and 7,000 square foot parking lot.
- Discharge directly to creek.

Minimum requirement #8 applies and the Critical Areas Preservation Ordinance TMC 13.11 applies.

Critical Areas Example

- Build 15,000 square foot building and 7,000 square foot parking lot.
- Discharge to a City system that after 1/4 mile discharges to the same creek.

Minimum requirement #8 applies and the Critical Areas Preservation Ordinance TMC 13.11 does not apply.

Critical Areas Example

- Build 3,500 square foot building and 1,400 square foot parking lot. **Less than 0.1 cfs increase in 100 yr flow.**
- Discharge directly to creek.

Minimum requirement #8 does not apply but the Critical Areas Preservation Ordinance TMC 13.11 applies.

Critical Areas Example

- Build 3,500 square foot building and 1,400 square foot parking lot. Total impervious is 4900 square feet. **Less than 0.1 cfs increase in 100 yr flow.**
- Discharge to a City system that discharges to the same creek.

Minimum requirement #8 does not apply and the Critical Areas Preservation Ordinance TMC 13.11 does not apply.

Stormwater Website

- Plan review policies and information is available on the City's Surface Water website:

www.cityoftacoma.org/stormwater

New Ecology Draft Requirements

Currently out for Public Review and Comment

- NPDES Phase 1 Municipal Stormwater Permit, Ecology document
Comments due Feb 3, 2012
- 2012 Stormwater Management Manual for Western Washington (SWMMWW), Ecology document
Comments due Feb 3, 2012
- 2012 LID Technical Guidance Manual for Puget Sound, Puget Sound Partnership
Comments due Feb 9, 2012

Thank you for coming!

Please contact us if you have questions or concerns at:

stormandsewer@cityoftacoma.org

(253) 591-5218

Please take an information handout!