



Town of Smyrna, Tennessee

Storm Water Utility



This presentation contains materials created by others. These materials are used pursuant to 17 U.S.C., "fair use for education." This presentation was created following the fair use guidelines and further use is restricted.

What is Storm Water?

- Definition:

“storm water runoff, snow melt runoff, surface runoff, infiltration and drainage”

- Simply Stated:

“water, after it is no longer considered rain, hail, sleet, ice, or snow that is on the move”



Why Storm Water can become a problem?



“WHEN IT RAINS.....IT DRAINS”

How is Storm Water Managed?

- The Town of Smyrna is regulated under the EPA Program Municipal Separate Storm Sewer System (MS4) – Phase II (Also known as MS4 Program or Storm Water Management Program)

The MS4 Program Regulatory Background:

- Legislated by U.S. Congress;
- Mandated by the US EPA; and
- Enforced on State level by the Tennessee Department of Environment and Conservation (TDEC) Division of Water Pollution Control.



Town of Smyrna

Municipal Separate Storm Sewer System (MS4) Program

- Phase II Storm Water Permit Notice of Intent (NOI) was submitted in March, 2003.
- Smyrna's coverage under the National Pollutant Discharge Elimination System (NPDES) General Permit (Phase II MS4) was issued on July 23, 2003.
- The Permit requires the Town of Smyrna to implement six storm water minimum measures.

Municipal Separate Storm Sewer System (MS4) Permit Requirements

“Develop, implement and enforce a storm water management program designed to reduce the discharge of pollutants from your MS4 to the maximum extent practicable (MEP), to protect water quality, and to satisfy the appropriate water quality requirements of the Clean Water Act.” (Source: NPDES General Permit)

The storm water management program is required to include information for the six minimum control measures required by the permit.



Six Minimum Control Measures Required by Tennessee Department of Environment and Conservation (TDEC)

1. Public Education & Outreach on Storm Water Impacts
2. Public Involvement/Participation
3. Illicit Discharge Detection & Elimination
4. Construction Site Storm Water Runoff Control
5. Post-Construction Storm Water Management in New Development & Redevelopment
6. Pollution Prevention/Good Housekeeping for Municipal Operations

Storm Water Management Service Goals

What will the Town's Storm Water Utility do?

- Environmental Enhancement – Preventing Degradation and Pollution of Public Waters (32 miles of streams in Smyrna)
- Flood Damage Reduction / Drainage Improvements
- Protection of Roadway Drainage Systems
- Protecting our Water Supply
- Providing Regulatory Compliance
- Providing Long-Term Drainage System Maintenance and Improvements



Why is a Storm Water User Fee necessary?

- The requirements under the MS4 program places new demands on the Town of Smyrna.
- Fund maintenance and capital improvement projects required to enhance the waters within the Town of Smyrna.
- The Town of Smyrna is required to provide a Storm Water Management Program and meet the six minimum measures.
- Non-compliance of MS4 permit could result in fines against the Town.

How to Fund a Storm Water Utility Program?

- A Storm Water User Fee based on the Average Residential Impervious Area within the Town
(impervious surfaces such as rooftops, driveways, garages, and patios prevent water from soaking into the ground)
- The Impervious Area Model was determined as the most equitable and dependable funding mechanism *(each user fee is based on the individual contribution to the storm system)*
- The Storm Water User Fee will provide a dedicated revenue for maintenance, inspections, enforcement and improvement projects
- Provides an opportunity to incorporate credit incentives
- Authorized per TCA § 68-221-1101

Tennessee Code Annotated

TCA § 68-221-1101



Provides that the purpose of the storm water management statute is to facilitate municipal compliance with the Water Quality Act of 1977, and applicable EPA regulations, particularly those arising from Section 405 of the Water Quality Act of 1987, and Section 402(p) of the Clean Water Act of 1977, and to enable municipalities to regulate storm water discharges, establish a system of drainage facilities, construct and operate a system of storm water management and flood control facilities, and to “fix and require payment of fees for the privilege of discharging storm water”

What is an Impervious Surface?

A surface which is compacted or covered with material that is resistant to natural inflow/infiltration of surface storm water. Impervious surfaces prevents water from soaking into the ground.

(eg. Rooftops, garages, out buildings, driveways, parking lots, sidewalks, patios, etc.)

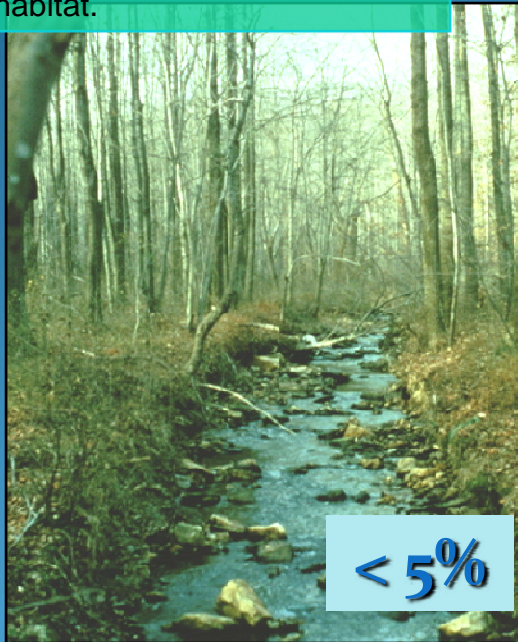


Why increased Impervious Surface matters...

The less water that soaks into the ground surface, the greater the quantity (volume) of runoff, the greater the speed (velocity) of runoff, the more sediment/ pollutant loading is generated which enters the Town's streams.

How stream quality deteriorates when impervious cover increases in a watershed without proper storm water management controls

Watersheds with less than 5% impervious cover, have stable stream banks, good water quality and provide a variety of habitat.

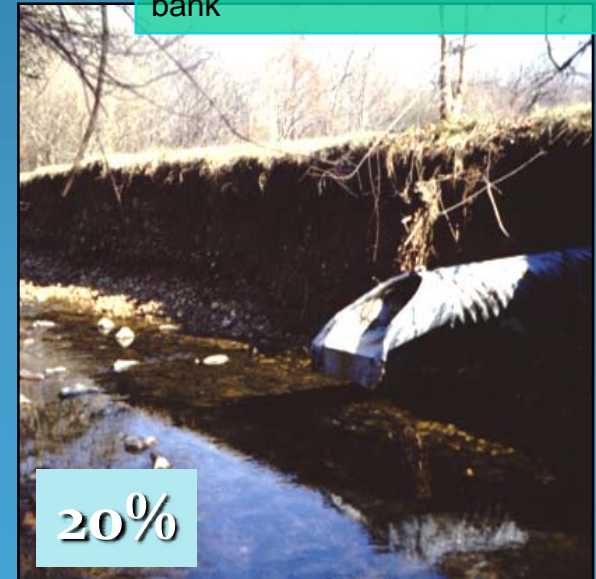


8-10%



The above picture shows a stream that has about 10% impervious cover in its watershed. While relatively stable, the stream shows some signs of erosion.

The stream pictured below has about 20% impervious cover in its watershed. Stream erosion has become serious. Note that the amount of erosion has been so great that the drain pipe that once rested on the stream bottom and within the stream bank is now 2 feet above the water and protrudes nearly 6 feet from the stream bank



Impervious Cover

How stream quality deteriorates when impervious cover increases in a watershed without proper storm water management controls



The above picture shows a stream with about 30% impervious cover. The stream channel has “blown out” and is about five times larger than it was before development. The water quality is poor and there is very little suitable habitat for aquatic life.

Impervious Cover

The final picture shows a stream that has 65% impervious cover in its watershed. Stream erosion has become such a problem that the stream was channelized with concrete. The concrete provides no habitat to support aquatic life.



Establishing the Storm Water User Fee based on the Equivalent Residential Unit (ERU)

The Average Impervious Surface of all single family residential lots located within the Town Limits was analyzed using Aerial Photography and GIS.

Calculations were based on 10,044 developed residential lots.

Example of Impervious Surfaces evaluated at each Single Family Residential Lot

Impervious Surface Calculation:

Rooftop = 1,574 S.F.

Shed Rooftop = 316 S.F.

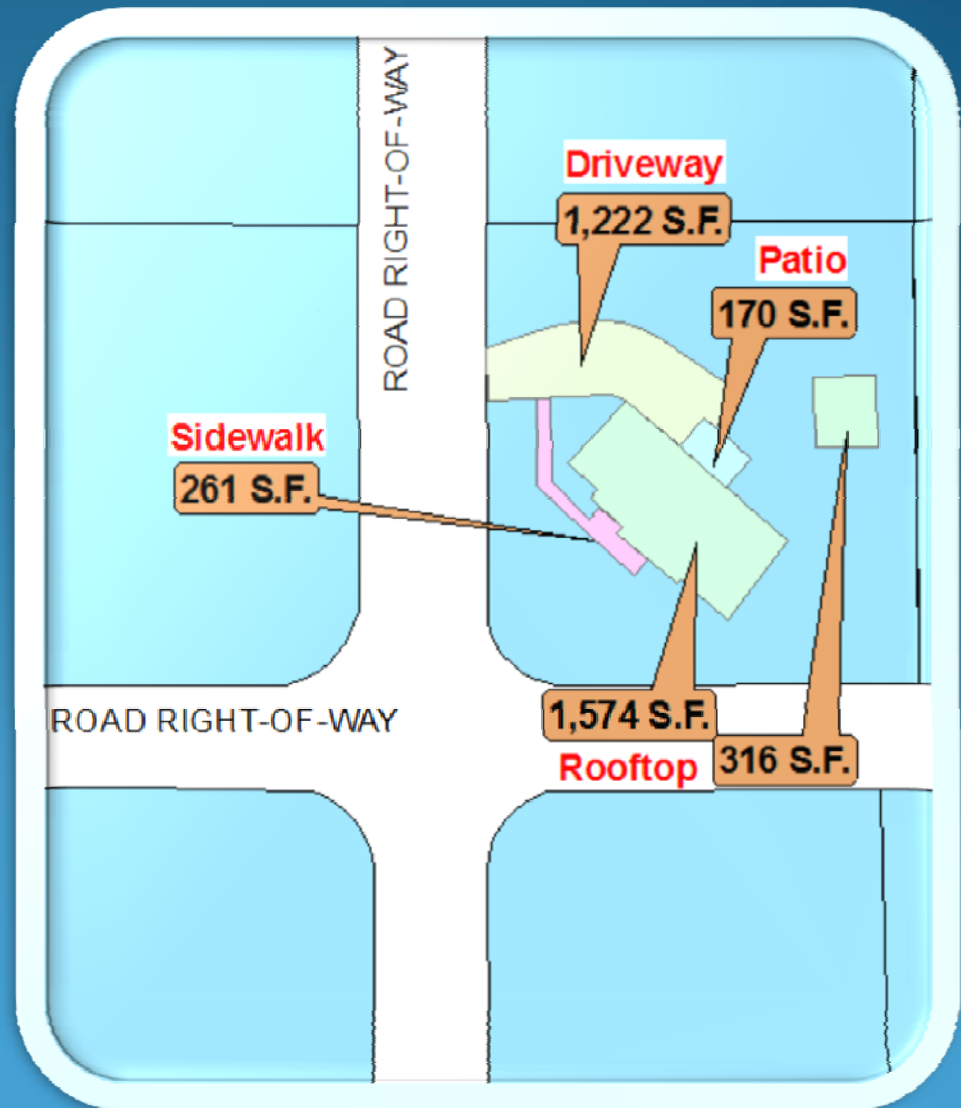
Driveway = 1,222 S.F.

Sidewalk = 261 S.F.

Patio = 170 S.F.

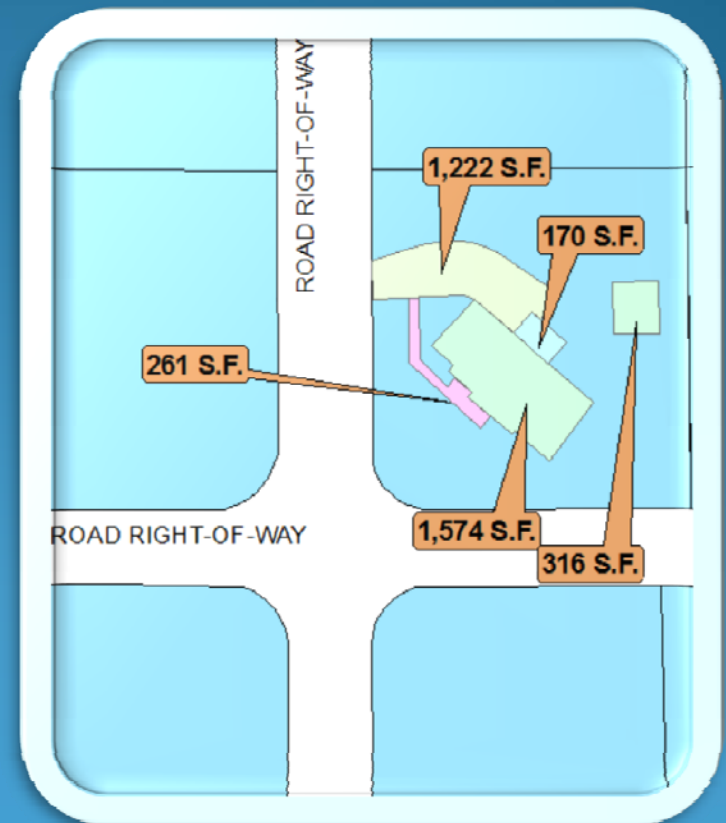
Total = 3,543 S.F.

This Single Family home has 3,543 S.F. of Impervious Surfaces that contributes to the Town's Storm Water System



10,044 Residential Lots Sampled

- Average Residential Impervious Surface in Smyrna = 3,543 S.F.
- This number represents one ERU



Calculating Non-Residential Parcels

- Each parcel's storm water user fee will be based on the actual impervious surface area located on that particular lot.
- The total impervious area is divided by the equivalent residential unit (ERU).
- The non-residential user is charged the same ERU base rate times the actual number of ERU's calculated for that site.

Example of a Non-Residential User

Only the area inside the tract and not in the Right-of-Way is counted.

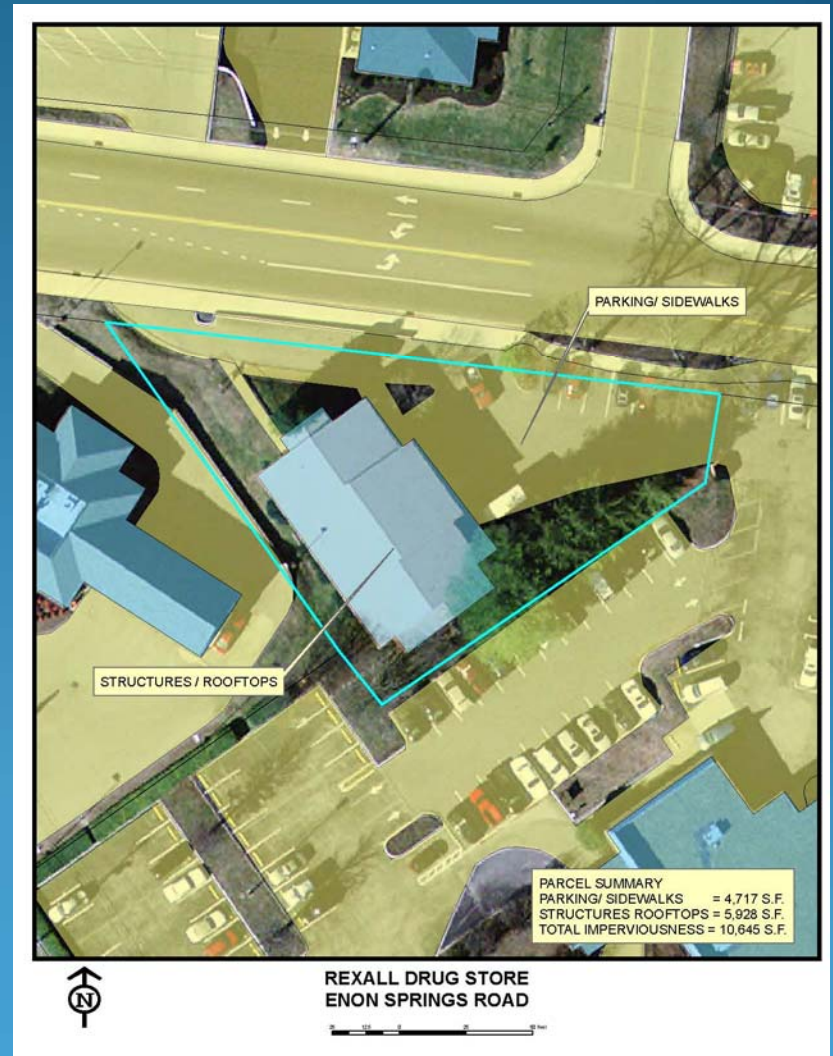
Parking /Sidewalk = 4,717 S.F

Building Rooftop = 5,928 S.F.

Total Impervious = 10,645 S.F

$10,645 / 3,543 \text{ average} = 3.0 \text{ ERU}$

Therefore this tract would be charged 3.0 times the residential rate since it has 3.0 times the surface area of the average residence.



Comparison Chart

Municipality	City of LaVergne	City of Franklin	City of Maryville	Metro Nashville	City of Murfreesboro	Town of Smyrna
Average ERU	3,181 S.F.	3,350 S.F.	2,400 S.F.	3,200 S.F.	3,470 S.F.	3,543 S.F.
Number of Residential Single Family Units	8,716	14,736	8,986	146,553	23,174	10,044
Non-residential ERU's	14,058	24,826	16,546	287,071	38,938	23,995
Total ERU's	22,774	39,562	25,532	433,624	62,112	34,039

ERU = Equivalent Residential Unit , the average impervious area of a single family unit

The information and accuracy on which the ERU is based may vary from city to city.

Smyrna's ERU was calculated using the latest available GIS data.

Comparison Chart

[illegible]

Components of a Storm Water Utility



- Storm Water Utility Ordinance
- Storm Water Utility Credit Policy
- Equivalent Residential Unit (ERU)
- Storm Water User Fee Base Rate