



City of Peoria Stormwater Ordinance Changes

Adopted 10/11/2016



Agenda

- Welcome and Introductions
- Background
- Stormwater Ordinance Changes
- Stormwater Utility
- Green Infrastructure - City ROW
- Effective Date
- Questions



Background

Part of overall effort to update **Infrastructure Design Standards**

- 2011 – 2012
 - 10 member Steering Committee
 - 20 meetings and presentations
 - Draft Manual of Practice document – hundreds of pages
- 2013
 - Council Policy Session in March 2013
 - Direction to further study seven key issues
 - Pavement expert forum held May 2013
- 2014 – Present
 - Development Code
 - Stakeholder Group
 - Transportation Commission, March 2016
 - Coordination with Unified Code



Background

Infrastructure Design Standards

- Seven Key Issues
 - Narrower Streets
 - Pavement Design
 - Sidewalk Installation
 - **Stormwater**
 - Street Lights
 - Street Trees
 - Testing and Inspection

*The **goal** of the revised standards is to **improve the design** of our **infrastructure** with regard to **sustainability and livability**, while positioning Peoria as a **desirable place** and a **competitive city** for development.*



Background - Stormwater

2011 – 2012: Draft Manual of Practice

- New SW ordinance based on TCRP Unified Stormwater Ordinance
 - Detention for 1-year, 10-year and 100-year storm events
 - Controlled release rates (cfs/acre)

2014 –2016: Development Standards

- Stormwater Ordinance changes
 - Detention requirements – no change
 - Add volume control for first 1-inch of runoff
 - Add requirements for flood routing 100-year storm event



Why Change?



Benefits to SW Ordinance Changes:
Improve water quality
Promote infiltration
Reduce flooding risk



Why Change?





Why Change?





Why Change?





City of Peoria Stormwater Ordinance

Revisions Adopted 10/11/2016



Sec. 9.5-28. - Applicability

- EC/SW PERMIT REQUIRED except as follows:
 - Disturbed area is less than 5,000 square feet; or
(All single family or duplex require General Permit)
 - Normal agricultural practices; or
 - Routine maintenance of roads; or
 - Routine maintenance of utility service lines.

*Applicability of
SW / EC
Requirements –
NO CHANGE*



Sec. 9.5-29. - Standards for Design

- a) Erosion and sediment control measures – 5-year
- b) Permanent stormwater control measures.
 - Volume Control
 - Detention
 - 2-year and 25-year
 - Post < Pre
 - Regional Stormwater
 - Flood Routing - 100-year

*NEW –
Volume Control
Requirements
and Flood
Routing*



Sec. 9.5-29. - Standards for Design

VOLUME CONTROL

- Store first 1-inch runoff
- Retention-based practices with quantifiable storage
 - percolate into subsoils
 - evaporate
 - dissipate through evapotranspiration (plants)
 - drain slowly into minor SW system through underdrains
- Can be used as credit toward detention

*Benefits to SW Ordinance Changes:
Improve water quality
Promote infiltration
Reduce flooding risk*

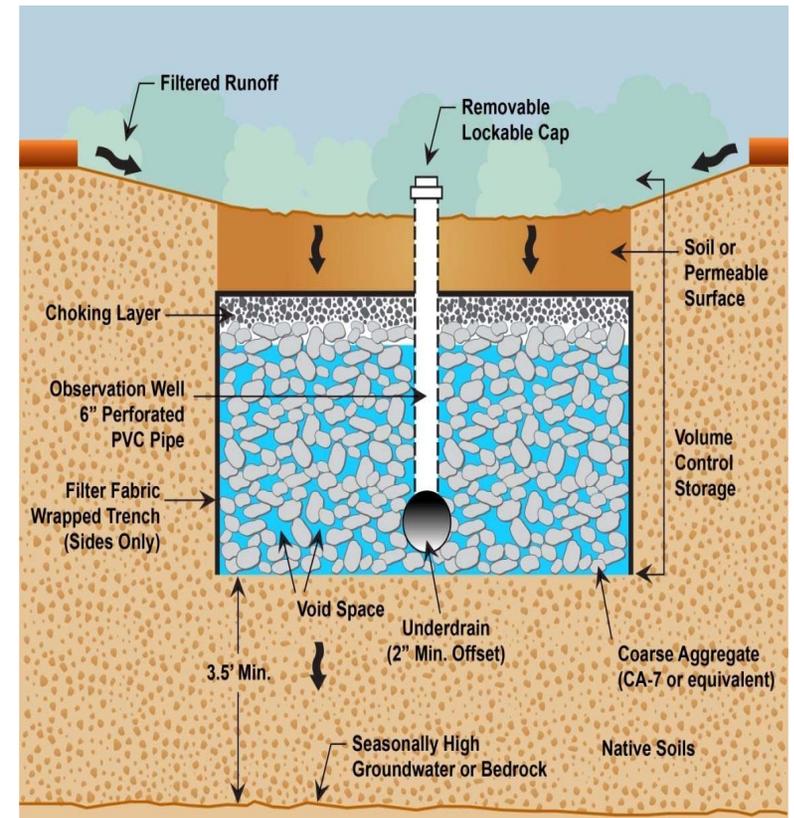


Sec. 9.5-29. - Standards for Design

VOLUME CONTROL

- Commonly used practices:
 - infiltration trenches or basins*
 - porous pavement
 - bio retention systems*
 - dry wells
 - open channel practices fitted with check dams*
 - retention storage below the detention facility outlet*
 - constructed wetlands*

*pre-treatment required





Attachment C – Technical Guidance for Volume Control

VOLUME CONTROL

- Site Feasibility Assessment
 - Soils must be tested
 - soil type
 - infiltration capacity:
 - 0.5 in/hr min
 - 2.4 in/hr max
 - Depth to groundwater and bedrock
 - Location of floodplain/floodway
 - No contaminated soils

Poor infiltration rates?

Underdrains are required for infiltration capacity less than 0.5 in/hr

Infiltration rates too high?

Pre-treatment a must to remove pollutants and avoid groundwater contamination



Attachment C – Technical Guidance for Volume Control

VOLUME CONTROL

Design

- Clean, crushed angular stone (IDOT CA-7)
 - Void ratio – test data or 36%
- Growing media
 - Void ratio – 25%
- Monitoring well required
- Bottom of trench – 3.5 feet, min., above groundwater table

Filter Fabric:

- *Between growing media and storage aggregate*
- *On sides of trench*
- *Not on bottom of trench*

Additional Guidance:

MWRD Technical Guidance Manual TGM, Appendix C



Attachment C – Technical Guidance for Volume Control

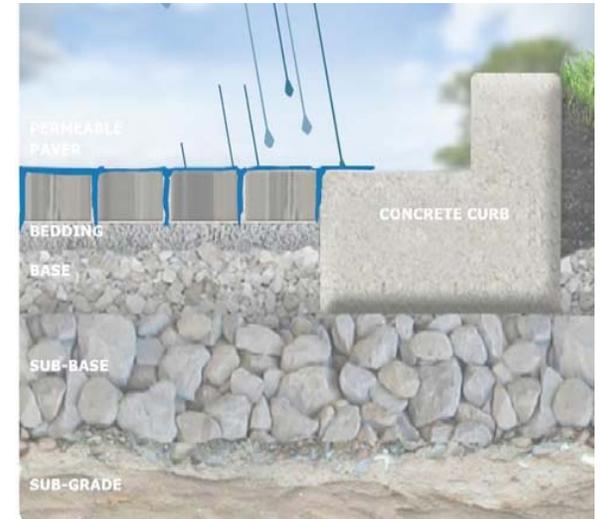
VOLUME CONTROL

Required Volume Control Storage

$$V_C = Std_C \times \text{Unit Conversion} \times A_{IMPV}$$

Where:

V_C	=	Volume control storage (cubic feet)
Std_C	=	Control Standard = 1.0 in.
Unit Conversion	=	1 ft/12 in.
A_{IMPV}	=	Proposed Impervious area (ft ²)





Attachment C – Technical Guidance for Volume Control

VOLUME CONTROL

Required Reservoir Volume

$$V_{\text{RES REQ'D}} = V_c \times \frac{100}{\% \text{ Void Space}}$$

- Where:
- $V_{\text{RES REQ'D}}$ = Required Reservoir Volume (cubic feet) = volume of voids + volume of aggregate (This is the volume necessary to contain the coarse aggregate and the **volume control storage**.)
 - V_c = **Volume control storage** (cubic feet)

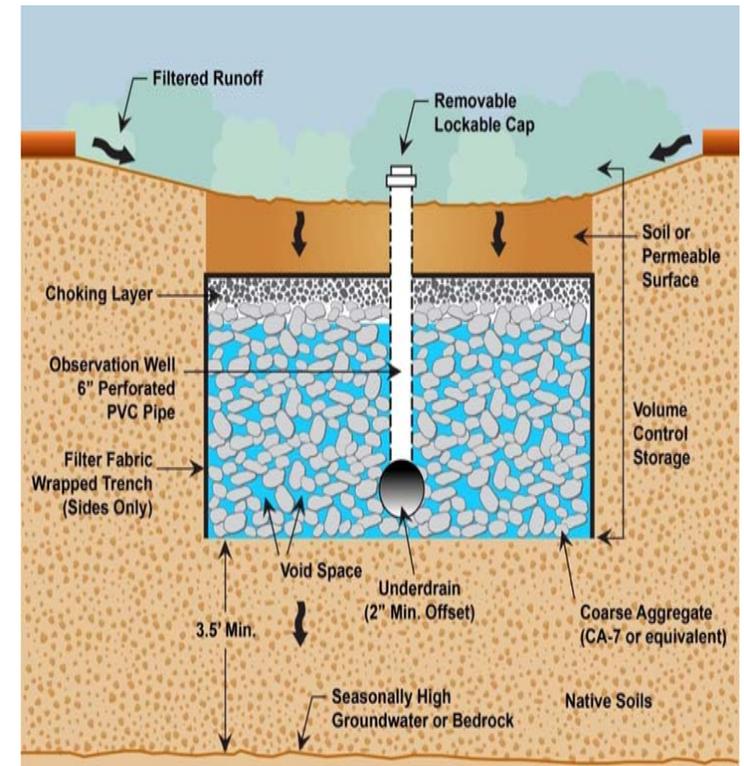


Attachment C – Technical Guidance for Volume Control

VOLUME CONTROL

Perforated underdrains

- 4-inches in diameter
- observation well
- 12-inches from bottom, max.
- void volume credit
 - below the invert – credited at 100%
 - above the invert – credited at 50%
(to account for losses out of the underdrain)





Sec. 9.5-31. Retrofitting Pre-Developed Sites

OLD

- To assure that all projects moved closer to compliance
- Redevelopment Policy
 - Q=CIA 4-inch per hour 15 minute duration
- Even for reduction in impervious area

NEW

- Same goal
- **Volume Control**
- Based on re-developed area only

*NEW policy for
Redevelopment
Projects –
Volume Control*



Sec. 9.5-29. - Standards for Design

RUNOFF CONTROL

- Safely convey 100-year event
- Minor stormwater system
 - 10-year event
 - Or existing storm sewer system
- Within ROW or permanent easements
- Account for upstream / off-site flow
- Maximum 12" depth
 - Roadway sags
 - Parking lots

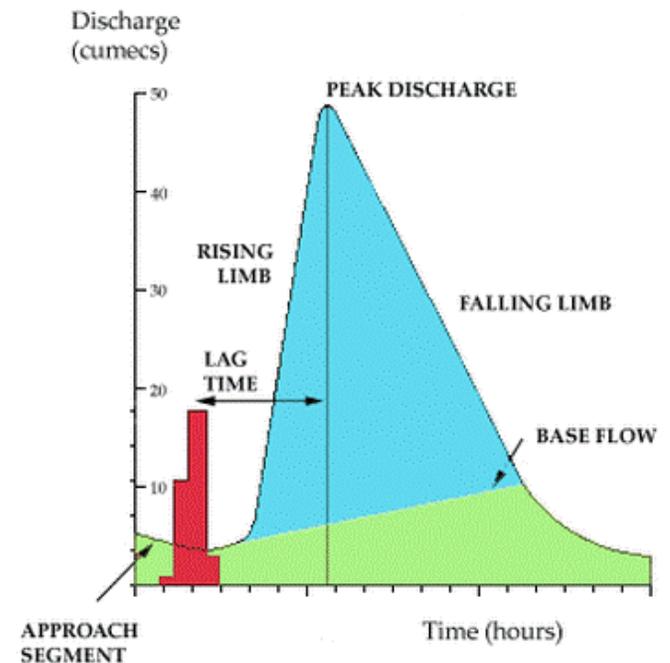




Attachment A – Standards for Stormwater Design Analysis

DESIGN STORM

- Rainfall - Bulletin 70
- Duration - 24-hour
- Distribution
 - NRCS, Type II
 - Huff (critical duration analysis)
- Antecedent Moisture Content - AMC II
- Recurrence Interval
 - Detention: 2-year and 25-year
 - Minor Conveyance Systems: 10-year
 - Flood Routing: 100-year





Sec. 9.5-29. - Standards for Design

RUNOFF CONTROL

100-year peak flowrate AND
corresponding ponding or
conveyance depth at:

- Drainage ways
- Ditches
- Areas of potential restriction or ponding
 - US end culverts or SS
 - Area (yard) inlets
 - Roadway sags





Sec. 9.5-29. - Standards for Design

RUNOFF CONTROL

- Submittal Requirements
 - Drainage Area Map (and sub-areas)
 - Identify flood route for off-site flows
 - Identify restrictions/ponding on-site
 - Peak Q calculations
 - Flow/ponding depth calculations
 - **Ultimate and Interim Conditions!**





Sec. 9.5-29. - Standards for Design

RUNOFF CONTROL

- Software Requirements
 - IEPA SWMM or equivalent recommended
 - Minimum:
 - Generate inflow hydrograph
 - HGL or Routed Ponding Depth
- Integrated model or individual locations



Stormwater Utility Update

ESTIMATED SCHEDULE

- CSO Negotiations are ongoing expect to be completed in 2017
- Storm Water Utility (SWU) Ordinance to Council in 2017
- First SWU bill in January 2018 (if approved by Council)



*Schedule subject
to change!!!*



DRAFT SWU Credits & Incentives

TYPES OF CREDITS

- Rate Reduction Credit
- Volume Reduction Credit
- Water Quality Credit
- Direct Discharge
- Innovation Credit
- Education

TYPES OF INCENTIVES

- Rain Barrels
- Rain Gardens
- Other
- Grant Program

*SWU has not
been adopted by
Council yet...*





DRAFT SWU Credits & Incentives

Credit Type	Max Credit
Rate Reduction	25%
Volume Reduction	15%
Water Quality	10%
Direct Discharge	90%
Innovation	Varies
Education	\$30 / student, 50% max.

Incentive Type	Incentive Amount
Rain Barrel ¹	\$30 each
Rain Garden ²	\$2 or \$3 per square foot
Other ³	Varies

Notes:

- 1) Rain barrels must remain in service for at least 5 years**
- 2) Incentive amount varies with storm event captures**
- 3) Incentive types and amounts subject to approval of Public Works**

Subject to change!!!



DRAFT SWU Credits & Incentives

POLICIES

- Can combine credits
- Annual inspection and maintenance reports (self reporting) will be required
- Credits good for 5 years than must be inspected by PE or other qualified party
- City staff may inspect at any time and/or ask for proof of maintenance
- There will be application fees



DRAFT SWU Credits

Rate Reduction 25% Maximum

Credit for BMPs that reduce the rate of runoff and the BMP is properly maintained

- 10% credit if the BMP manages the 2 year and 25 year 24 hour storms (required by City Ordinance)
- 25% credit if the BMP manages the 2 year, 25 year, and 100 year 24 hour storms





DRAFT SWU Credits

Volume Reduction 15% Maximum

Credit for BMPs that reduce the total volume of runoff and the BMP is properly maintained

- 10% credit if BMP captures and stores the 1 inch rain event
- 15% credit if the BMP captures and stores the 2.61 inch rain event (CSO design storm)

*Must be drained within 72 hours
and
Inspection ports are required*





DRAFT SWU Credits

Water Quality Credit 10% Maximum

Credit for BMPs that provide a minimum of 75 percent reduction in total suspended solids (TSS), as measured on an annual basis



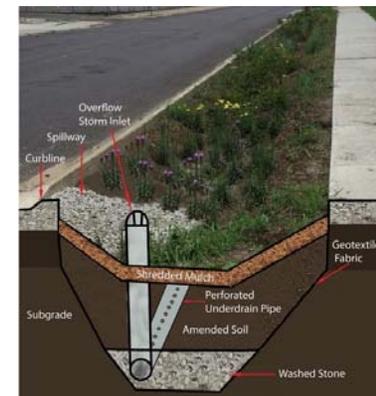
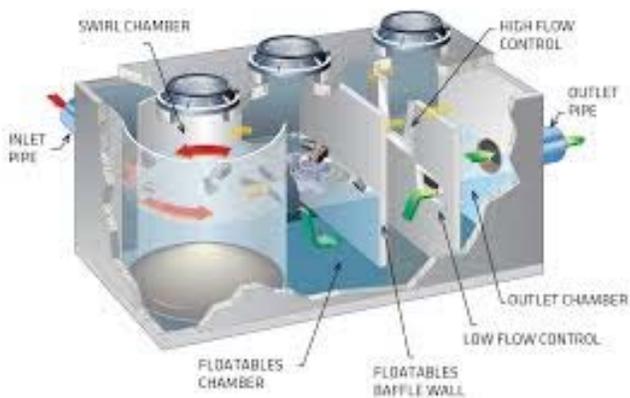


DRAFT SWU Credits

Innovation Credit

Credit for an innovative way to treat storm water runoff

The amount of the credit will be determined based how much impervious area is treated and the reduction in storm water runoff rate and volume, and how much water quality is improved





Green Infrastructure – City ROW





Effective Dates

New rules **effective January 1, 2017** apply to:

- Subdivisions, unless
 - Approved Preliminary Plat
 - Annexation Agreement with clause stating otherwise
- Site Development projects, unless
 - EC/SW submitted prior to Dec 31st
 - Annexation Agreement with clause stating otherwise



City of Peoria
Stormwater Ordinance Changes

Questions??