

## Clean Water Program



Development of Recommended  
Ordinances for Water Quality

1

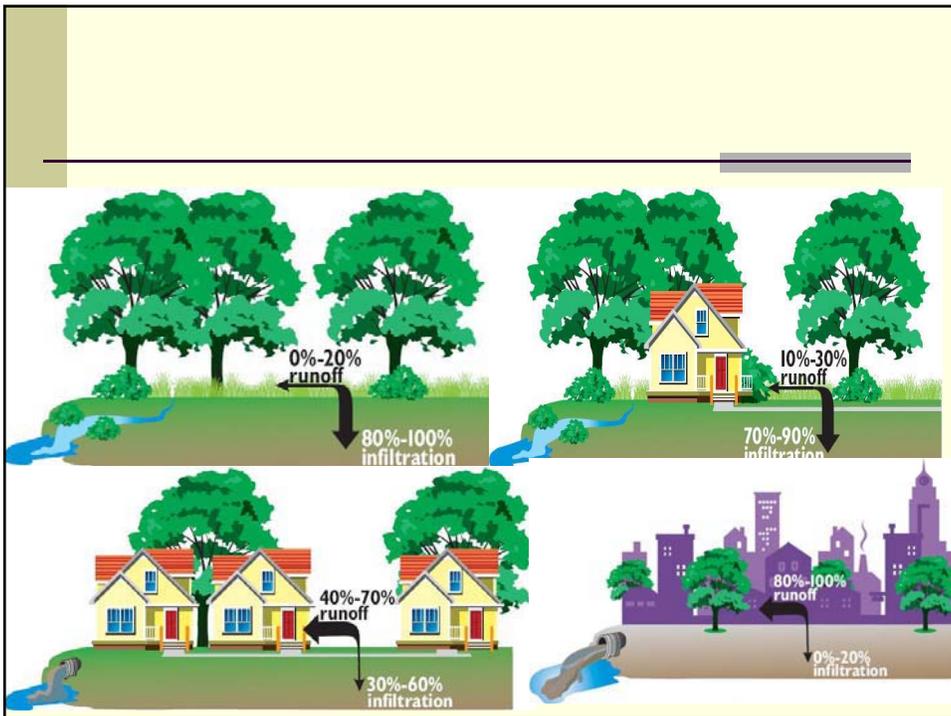
## Clean Water Program Summary

- Stormwater Background Information
- Stormwater Video
- Water Quality Requirements for the City of Lincoln
- Goals of this Task Force
- Benefits of Water Quality Standards

2







## Downtown Flooding













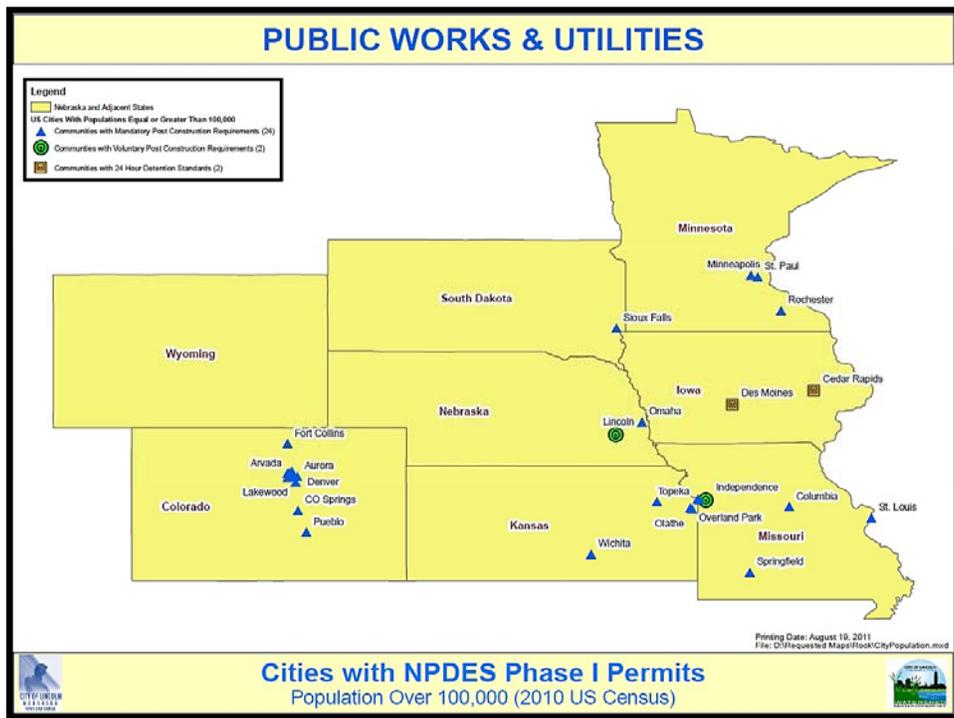
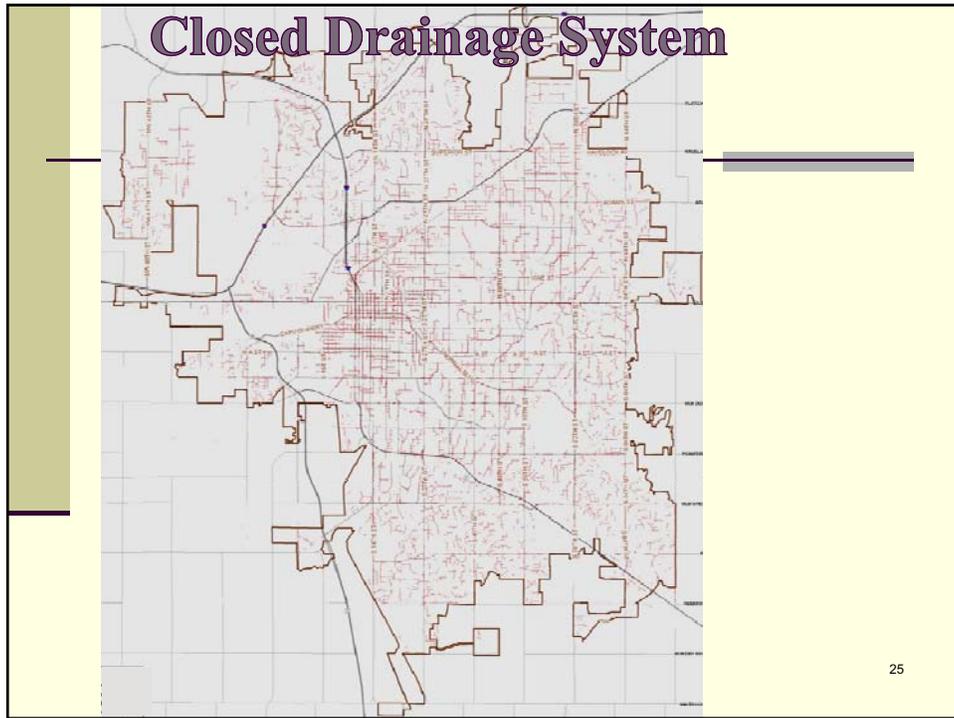


# PSA



23





## NDEQ/EPA Stormwater Requirements

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- Develop and implement strategies for best management practices
- **Have an enforceable ordinance requiring the implementation of post-construction standards**
- Ensure long term operation and maintenance of best management practices
- Determine best management practices and goals for the post-construction program

27

## Task Force Goals

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- Formulate recommendations for post-construction best management practices
- Recommendations should address the issues of increased runoff, erosion and pollutant loads

28









# Anticipated EPA Regulations for Post-Construction Stormwater

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Stormwater Specialist  
Lower Platte South NRD

## Traditional Approach

- ▶ Convey stormwater quickly from site to waterbody or detention ponds
- ▶ Manage peak flows for flood control, drainage and large scale downstream erosion.



# New Approach

- ▶ Integrate Green Infrastructure into the design of a project



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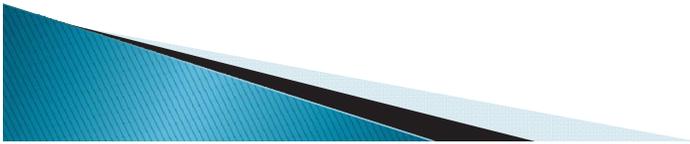
# New Approach

- ▶ View Stormwater as a Resource
  - Slow down the flow, allow to infiltrate
  - Reduces pollutant loads to waterbodies
  - Obtain multiple community benefits



## Key Elements of the Proposed Rule

- ▶ **Element 1: Establish performance standards for discharges from:**
  - Newly developed sites
    - Control a specific percentile storm
  - Redeveloped sites
    - Control a lesser percentile storm than new development
  
- ▶ **Could apply standards to sites in MS4 and sites of a certain size outside of MS4**



## Key Elements of the Proposed Rule

- ▶ **Element 2: Require MS4s to develop plans to address discharges from existing sites (retrofits)**
  
- ▶ **Element 3: Extend protection of MS4 Program**
  - Potentially change boundaries of MS4 jurisdiction based on watersheds.



# Performance Standards

- ▶ Discharges from Newly Developed Sites
    - Standard may require retention of a certain percentile storm
    - Rule could allow site-specific analysis
  
  - ▶ Standard would accommodate site constraints
    - Volume that cannot be retained onsite could be handled through off-site mitigation, payment in lieu, or treat and release.
    - Site constraints would be identified and would include water rights laws
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# Performance Standards

- ▶ Discharges from Redeveloped Sites
    - Recommend lower standard for redevelopment.
      - Recognize site constraints.
      - To encourage redevelopment to revitalize urban communities.
  
  - ▶ Considering additional incentives for smart growth and brownfields development.
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# What is the Common Standard?

- ▶ Volume Reduction in the Amount Equal to One Inch of Runoff from the Newly Constructed Site Impervious Surfaces
- ▶ Many states have adopted volume reduction requirements ranging from 0.60" -1.5"
- ▶ Many cities use 1" as the standard for the Water Quality Control Volume (WQCV).



# What is WQCV?

Water Quality Control Volume is a specific volume of stormwater runoff related to the amount of rainfall from 80-90% of all storms for an area, in a given year



# WQCV Standard

- ▶ Stormwater BMPs are designed to capture and provide treatment for that specific volume (the WQCV)
- ▶ This WQCV has the highest amount of accumulated pollutants in the first 1" of stormwater runoff. This is called the First Flush.



## What are Other States Doing?

- ▶ Colorado
  - Detention & WQCV standard > 0.6"
- ▶ Iowa
  - Detention 1"–1 ¼" for 24 hrs & WQ std.
- ▶ Minnesota
  - Detention & WQCV standard 1.09"–1.46" & ½" runoff from new impervious surfaces



# What are Other States Doing?

- ▶ Missouri
  - Detention & WQCV treatment std 1.14”–1.37” for 24 hrs.
  
- ▶ Nebraska (Omaha)
  - ½” runoff from new impervious surfaces
  
- ▶ South Dakota
  - Detention & WQCV treatment std.



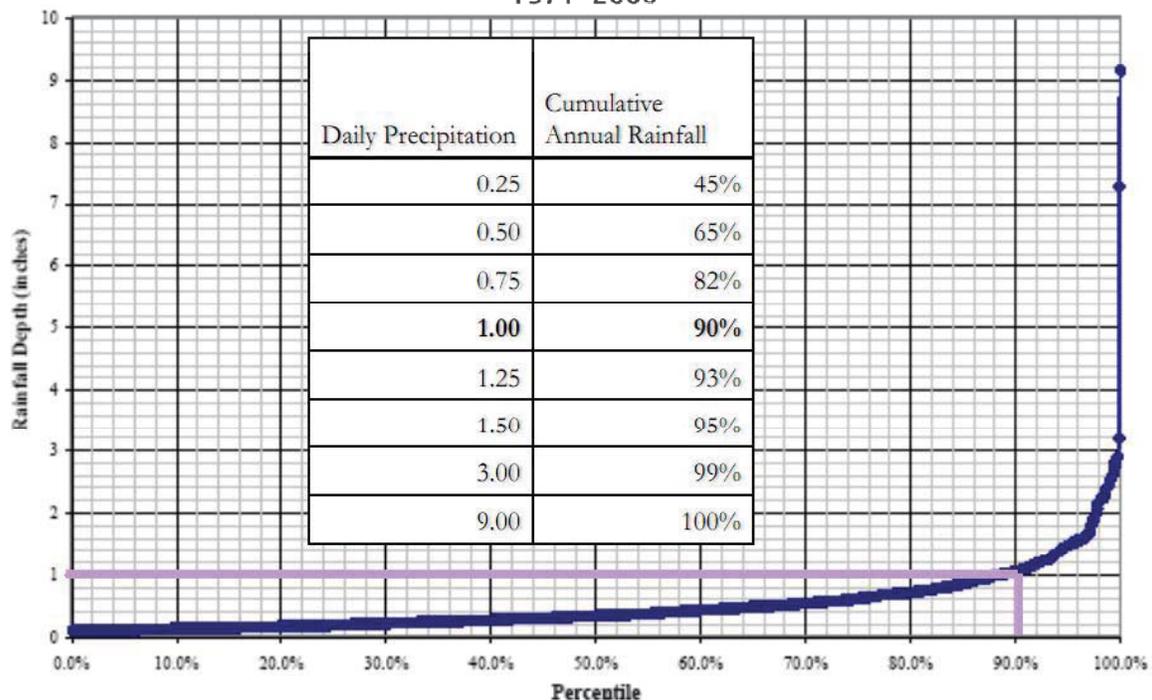
Existing Water Quality Standards from Nebraska and Surrounding State Cities	
City	Standard
Arvada, CO	0.6" of Rainfall, 80 % Storm Event
Aurora, CO	0.6" of Rainfall, 80 % Storm Event
Boulder , CO	0.6" of Rainfall, 80 % Storm Event
Centennial, CO	0.6" of Rainfall, 80 % Storm Event
Colorado Springs, CO	0.6" of Rainfall, 80 % Storm Event
Denver, CO	0.6" of Rainfall, 80 % Storm Event
Fort Collins, CO	0.6" of Rainfall, 80 % Storm Event
Lake Wood , CO	0.6" of Rainfall, 80 % Storm Event
Pubelo, CO	0.6" of Rainfall, 80 % Storm Event
Thorton, CO	0.6" of Rainfall, 80 % Storm Event
Westminster, CO	5 & 100 Year Storm Event
Des Moines, IA	1 1/4" Rainfall Detention for 24 hrs
Cedar Rapids, IA	1" Rainfall Detention for 24 Hrs
Olathae, KS	1 Year Storm Event
Overland Park, KS	90% Mean Annual Event
Wichita, KS	1.2" of Rainfall (85% storm event)
Topeka, KS	per specific pollutants
Columbia, MO	1.3" of Rainfall
Kansas City, MO	90% Mean Annual Event
Springfield, MO	First 1/2" of Runoff
St. Louis, MO	1.14" of Rainfall
Minneapolis, MN	First 1/2" of Runoff
Rochester, MN	1.09"- 1.46" of Rainfall (90-95% Storm Event)
St. Paul, MN	First 1/2" of Runoff
Omaha, NE	First 1/2" of Runoff
Sioux Falls, SD	80 % Storm Event

# Why One Inch?

- ▶ Locally, 80–90% of all rainfall events in a year are 1” or less
- ▶ “First Flush” of runoff has the highest concentration of pollutants.
- ▶ Treatment cost increases from 0.5” to 1” are low (pipe, rock, excavation, plants)
- ▶ Stormwater treatment after first 1” of runoff is minimal



Rainfall Frequency Spectrum for Minneapolis–St. Paul International Airport, 1971–2000



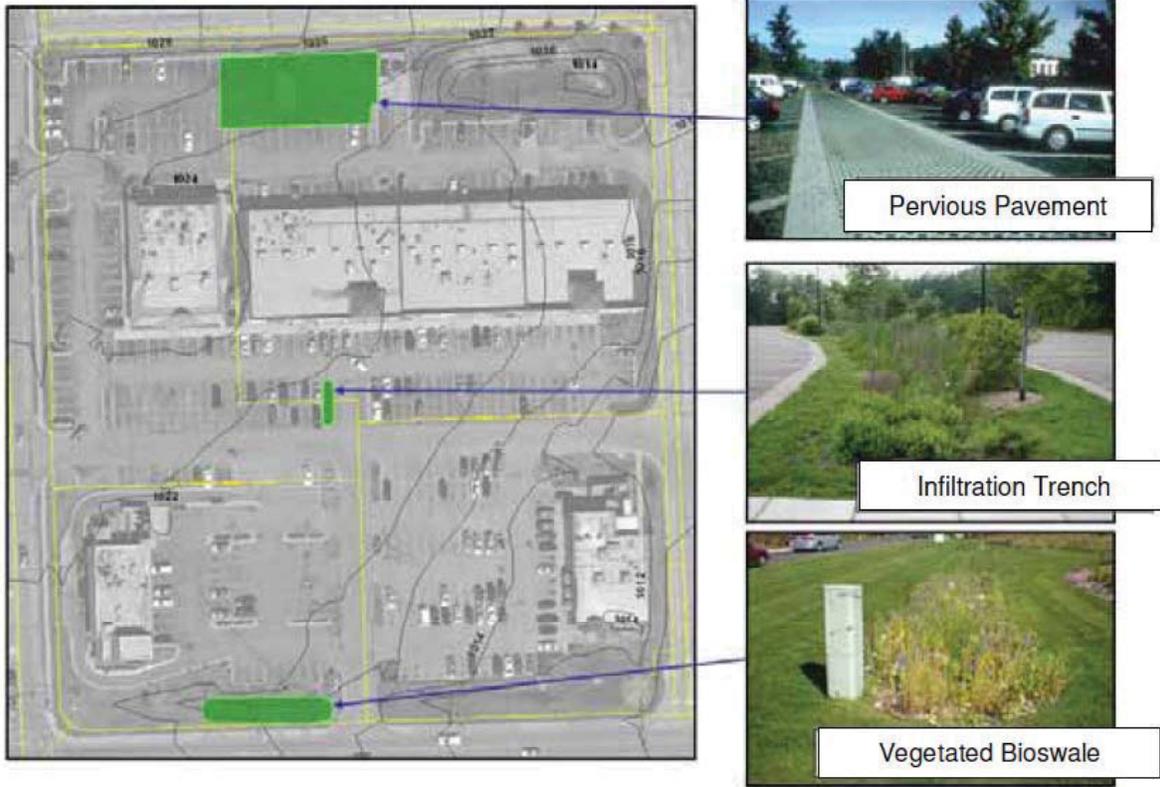


Figure 2: Examples of potential BMP applications in a commercial parking lot

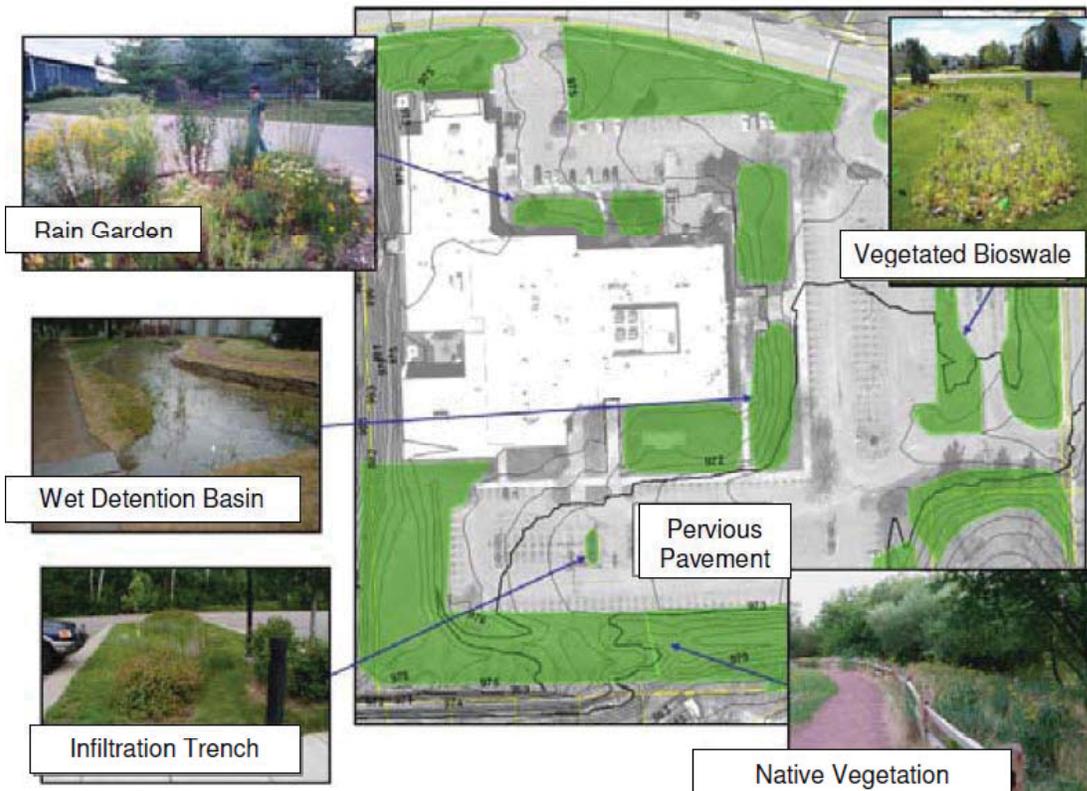


Figure 3: More examples of potential BMP applications in a commercial parking lot.

## How a Standard for Newly Developed and Redeveloped Sites Could Effect Lincoln

- ▶ As MS4 permit holders, The City of Lincoln:
  - Would be required to implement the post construction standard in its jurisdiction through its MS4 permit
  - Oversee that sites have complied with the standard
  - Oversee proper operation and maintenance of post construction stormwater controls at sites



## EPA's Rulemaking Schedule

- ▶ December 2, 2011: Proposal signed and posted to Federal Register
- ▶ November 19, 2012: Final Action

