Stormwater 101
Public Informational Meeting

Introduction

This Presentation is intended to:

- Provide overview of current and future Federally Mandated regulatory requirements
- Present what the City has done to date

This Presentation is not intended to propose:

- Stormwater Fee
- Stormwater Utility

Agenda

- Introductions
- Background
- Regulatory Framework
- Stormwater Program
- Next Steps

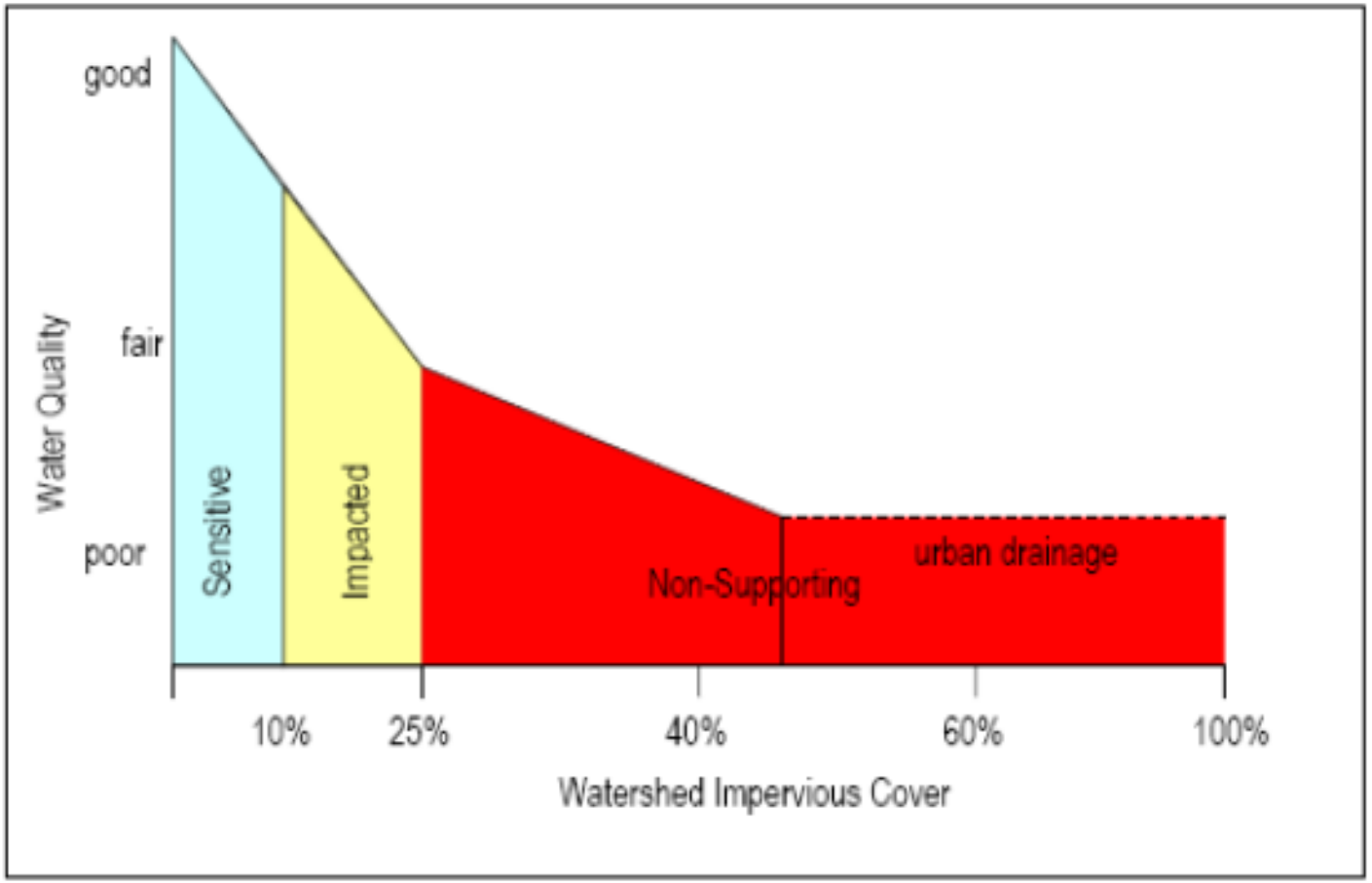
Background

- What is Stormwater
- City's Infrastructure

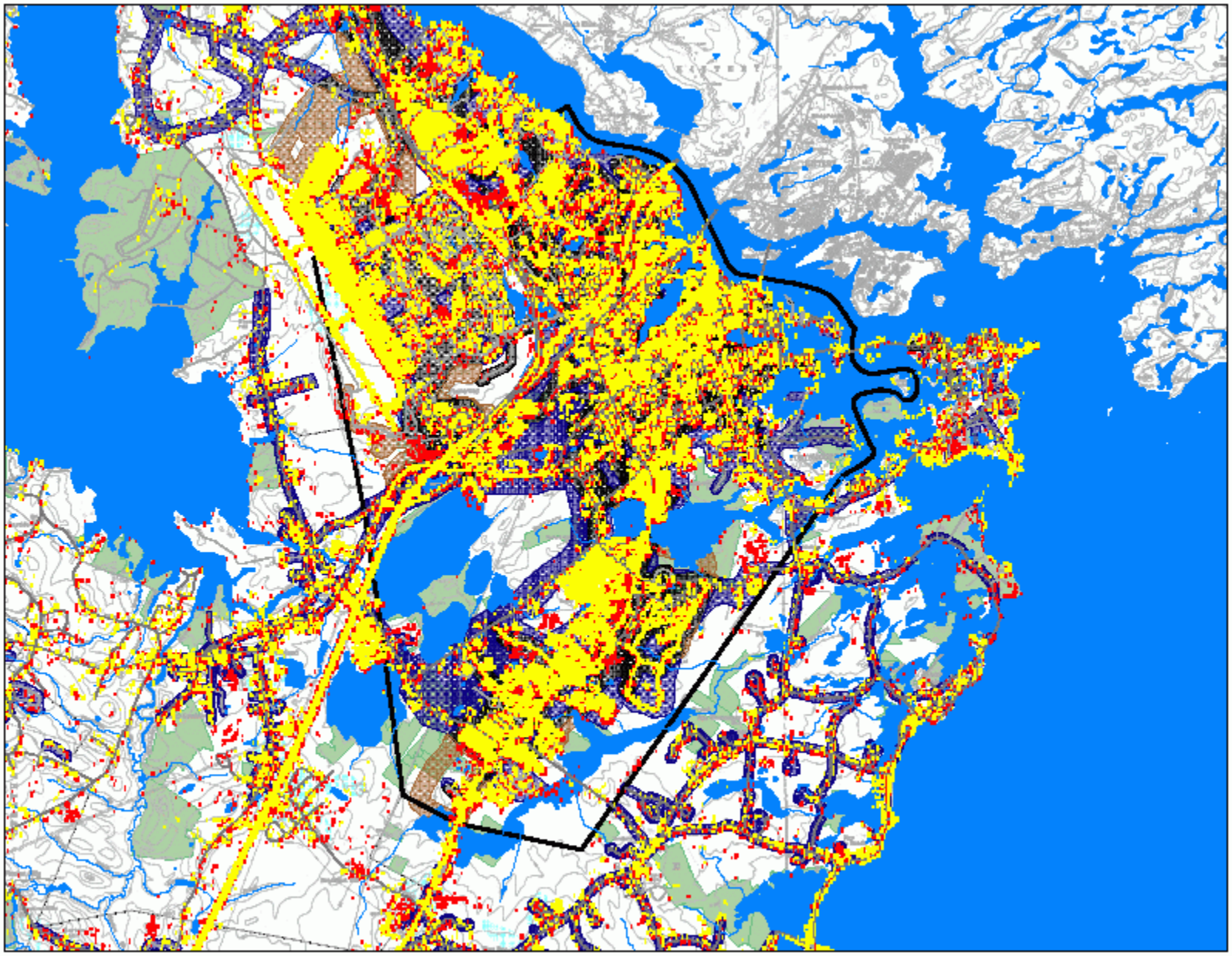
What is stormwater?

- **Precipitation that runs over the land surface (runoff) and does not infiltrate the ground.**
  - Picks up pollutants
  - Deposits pollutants in surface waters
  - Increases the volume of water in surface waters

Impact of Impervious Cover on Water Quality



Center for Watershed Protection



Impervious Surfaces (I

IS Present in 1990

IS Added Between 1990 and

Water Resources

Rivers and Streams

Lakes, Ponds, and Reservoi

Town Sewer Service Area

Town Water Service Area

Town Sewer and Water Ser

Stratified Drift Aquifer Transmissiv

1000 - 4000 gpd/ft(SD)

>4000 gpd/ft(SD)

Boundaries and Featu

Selected Town Boundary

Town Boundary

Roads (NHDOT)

Conservation/Public Land

NOTES:

1. Conservation and Public Lands develop
restricted by the Society for the Protectio
Forests and NH GRANIT at Complex Syst
Research Center, UNH.
2. Stratified-drift aquifer data developed by
Geological Survey in cooperation with the
Water Division (1:24,000).
3. Water/Sewer service areas (if shown)
developed by NHDES-WSEB (general ser
only - not represent actual pipelines).
4. Hydrography, transportation, and politic
boundaries from USGS 1:24,000-scale dig
line graph data provided by NH GRANIT a
Complex Systems Research Center, UNH
5. Impervious surface coverage provided
GRANIT at Complex Systems Research C
Colored pixels represent areas estimated
>30% covered by impervious surfaces. Ea
represents a 30 m x 30 m area.

The coverages represented are under con
revising. NHDES is not responsible for th
or interpretation of this information. Not in
for legal purposes.

Map prepared August 2004 by NHDES for
NH Estuaries Project.

N

Summary for Portsmouth, NH	1990	2000	NHEP Goal
Impervious Surfaces (acres)	2,129	2,726	
Land Area (acres)	10,001	10,001	

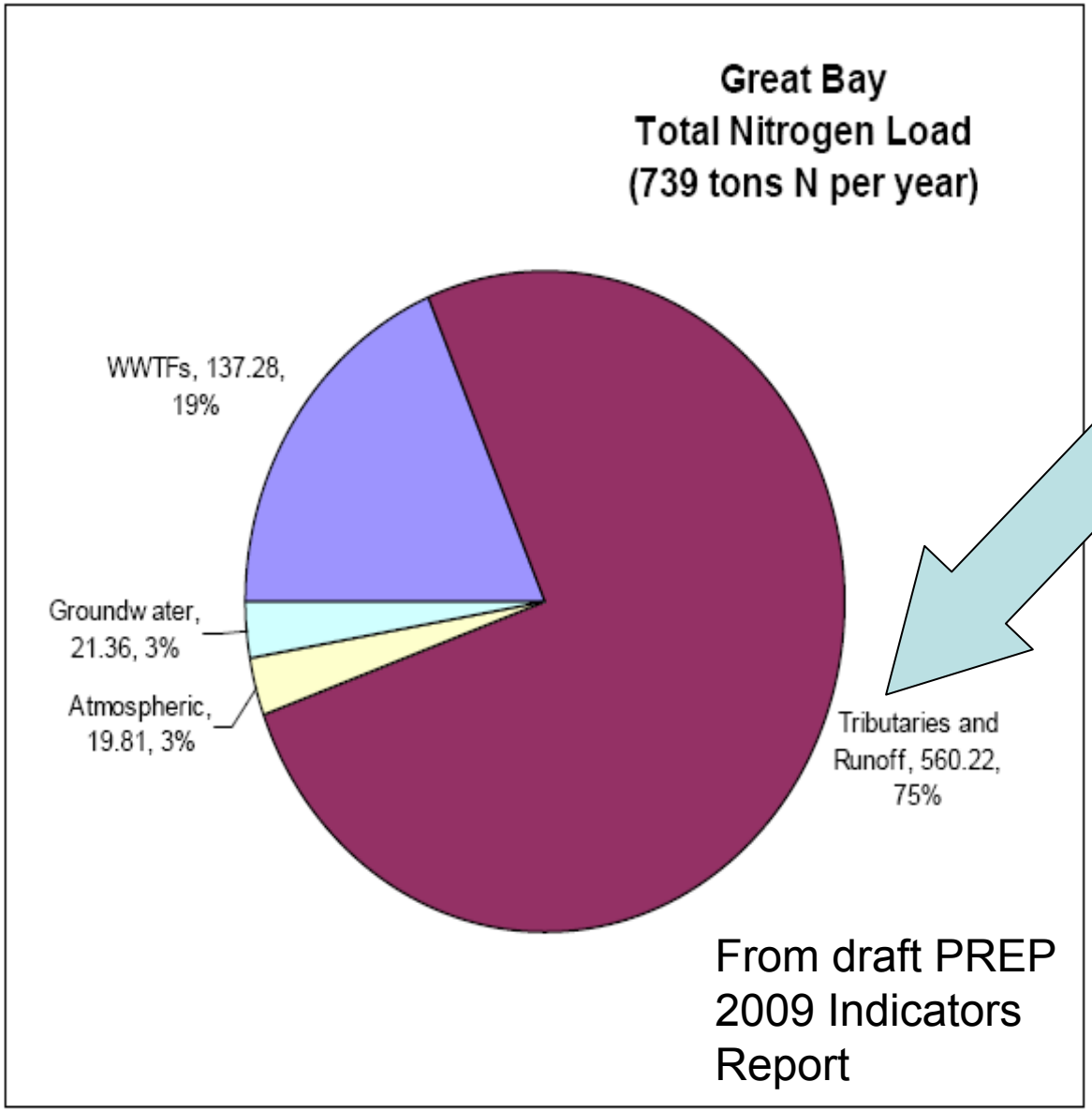
Stormwater Impacts

- ⇧ volume & velocity of stormwater runoff
- ⇧ in pollutants reaching surface waters
- ⇩ in groundwater recharge

Why should we care?

- **Floods!!**
  - Property damage
  - Infrastructure damage
  - $$
- **Water Quality & Quantity!!**
  - Water supplies
  - Swimming & boating
  - Pollution prevention
- **Compliance with Federally Mandated Regulatory Requirements!!**

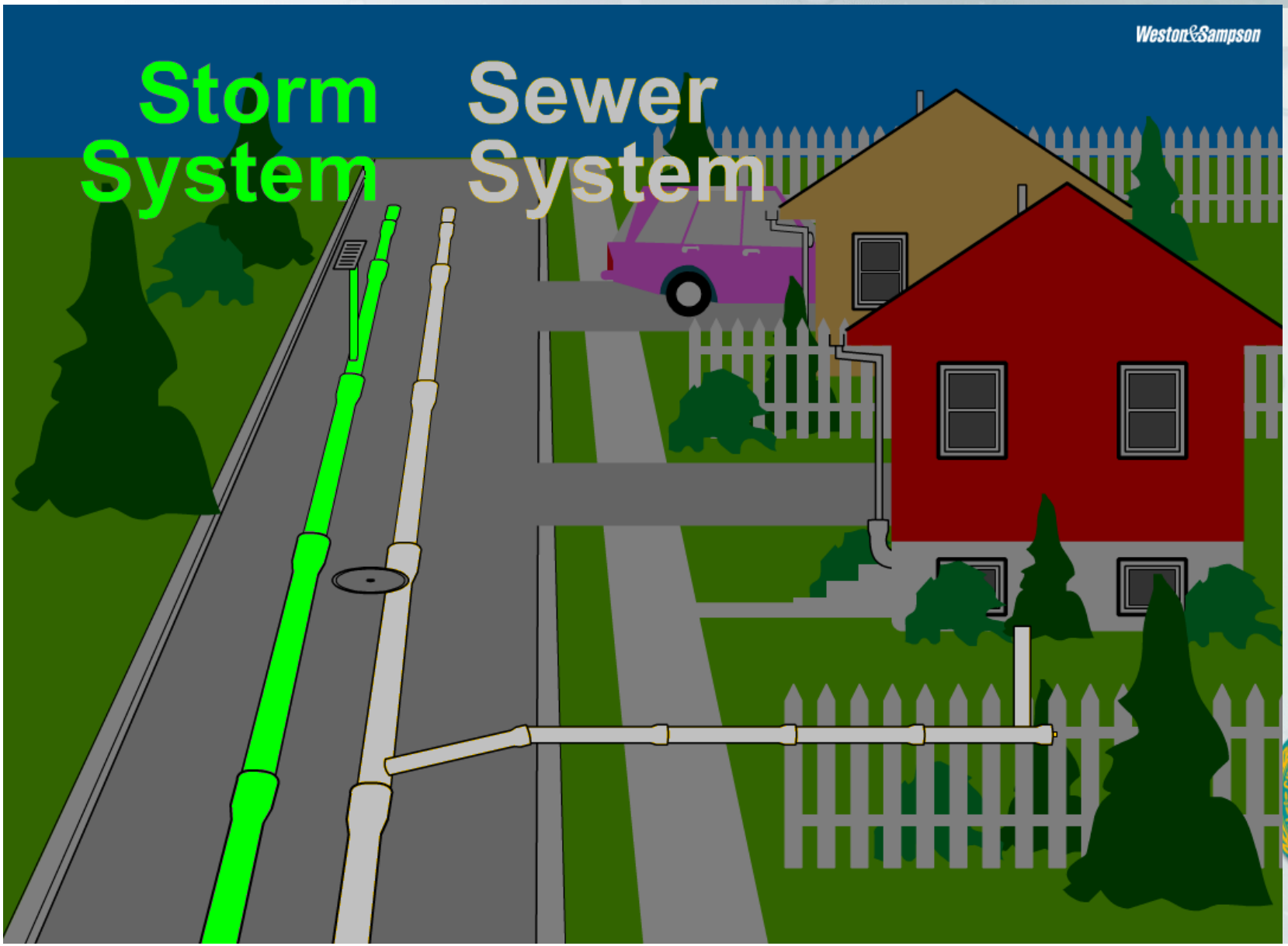
Figure NUT1-6: Total nitrogen loads to the Great Bay from different sources in 2006-2008

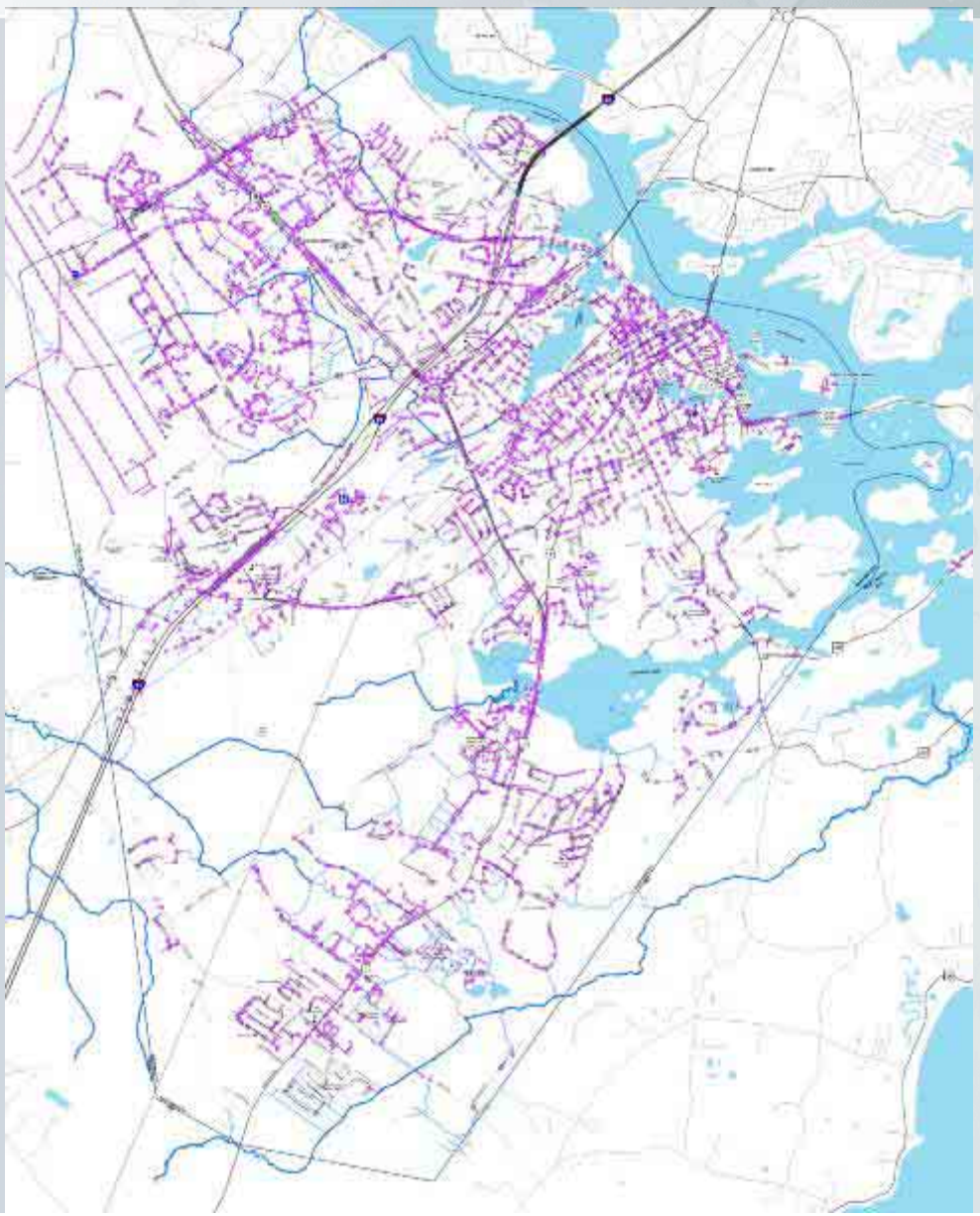


Its not just a Treatment plant Problem !!

Portsmouth Drainage System

- **System Information**
  - 61 miles of separated storm drain pipe
  - 4,700 catch basins/manholes
  - 450 pipes discharging to streams (outfalls)
  - Serving Portsmouth population (~20,000)


Weston&Sampson
Storm System
Sewer System




PORPOISE WAY
CRESCENT WAY
SARATOGA WAY
FALKLAND WAY
KEARSARGE WAY
CONCORD WAY
RALEIGH WAY
ALLEY NUMBER 4
RANGER WAY
RANGER WAY
I-95 SOUTH
I-95 NORTH
PREBLE WAY

Regulatory Framework

Compliance with Federal Clean Water Act:

- **MS4 = Municipal Separate Storm Sewer System**
- **MS4 Phase I and II**
- **Current Permit Requirements**
- **Draft Permit – Potential Additional Requirements**

Regulatory History

- **Phased approach required by 1987 CWA amendments**
  - Phase I
  - Phase II

Phase I MS4 Coverage

- Large MS4s - population greater than 250,000
- Medium MS4s - population greater than 100,000, but less than 250,000
- Designated by EPA

Phase II Storm Water Program

Small Municipal Separate Storm Sewer Systems - urbanized area population less than 100,000

*An **urbanized area** is a land area comprising one or more places — central place(s) — and the adjacent densely settled surrounding area — urban fringe — that together have a residential population of at least 50,000 and an overall population density of at least 1,000 people per square mile.*

Phase II Communities in New Hampshire

New Hampshire has 45 regulated towns that are fully or partially within an Urbanized Area. These are:

Amherst	Durham	Hooksett	Milford	**Portsmouth**
Atkinson	East Kingston	Hudson	Milton	**Rochester**
Auburn	Exeter	Kingston	**Nashua**	Rollinsford
Bedford	Goffstown	Lee	New Castle	Rye
Brentwood	Greenland	Litchfield	Newington	Salem
Chester	Hampstead	Londonderry	Newton	Sandown
Danville	Hampton	Madbury	North Hampton	Seabrook
Derry	Hampton Falls	**Manchester**	Pelham	**Somersworth**
Dover	Hollis	Merrimack	Plaistow	Windham

Print this information* **Bold** = Entire town/city is regulated. Unbold = Only part of the town is regulated

So how does this effect the City of Portsmouth?

Permit Required for:

- **Municipal facilities**
- **The stormwater system**
- **Individuals (i.e. contractors obtaining permits through the City effecting the stormwater system)**

Current Permit Requirements

- **Issued in 2003**
  - Minimum Control Measures
  - System Mapping
  - Annual Reporting
- **City is meeting all permit requirements**

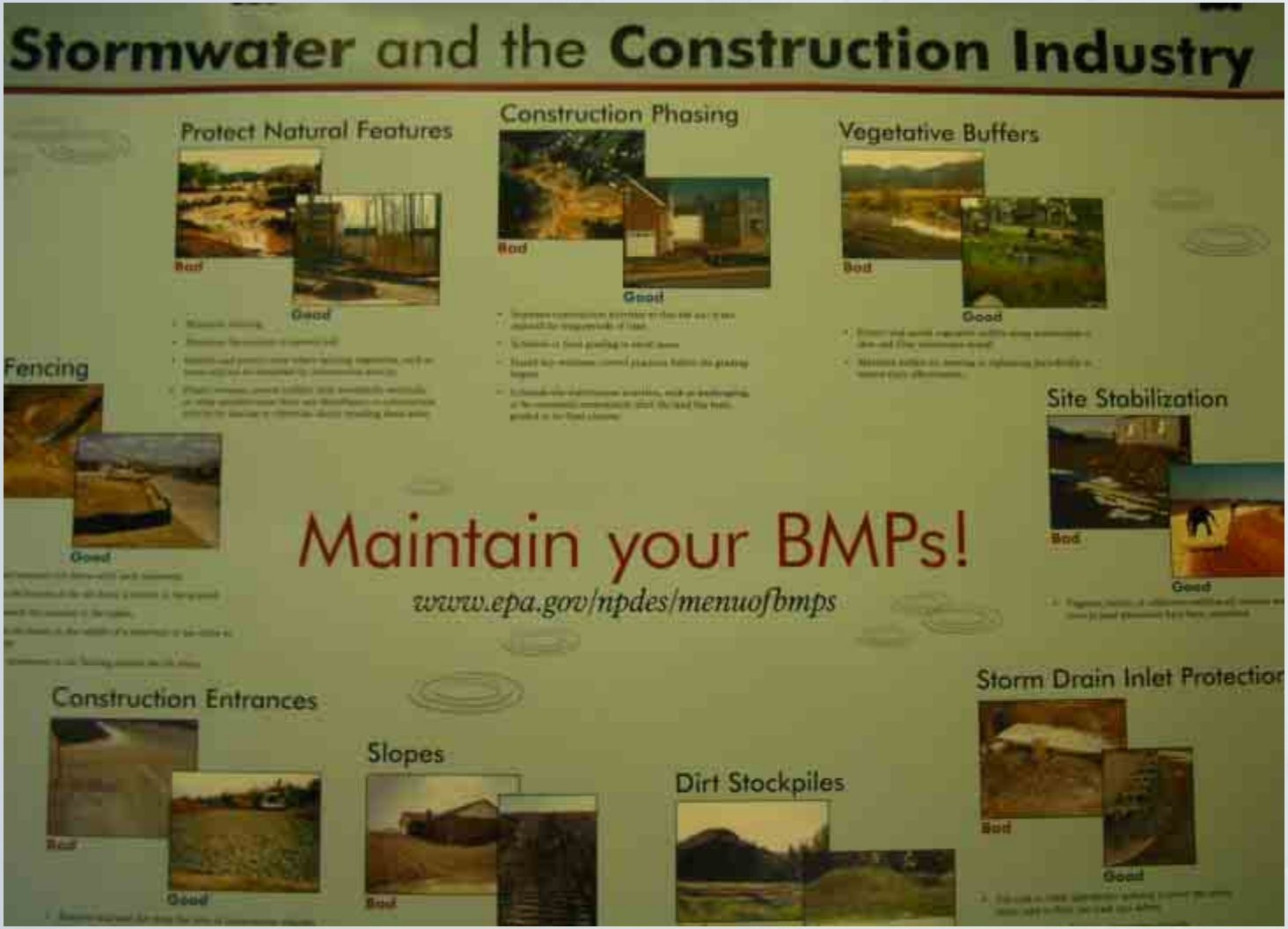
Current Permit Requirements

Minimum Control Measures

- Public Education
- Public Participation
- Illicit Discharge Detection and Elimination
- Construction Site Runoff Control
- Post Construction Runoff Control
- Pollution Prevention and Good Housekeeping for Municipal Operations

Minimum Control Measures

Public Education & Outreach



Minimum Control Measures

Public Involvement & Participation

Minimum Control Measures

Illicit Discharge Detection & Elimination

Minimum Control Measures

Construction Site Stormwater Runoff Control

Minimum Control Measures

Post Construction Run-off Control

Minimum Control Measures

Post Construction Run-off Control

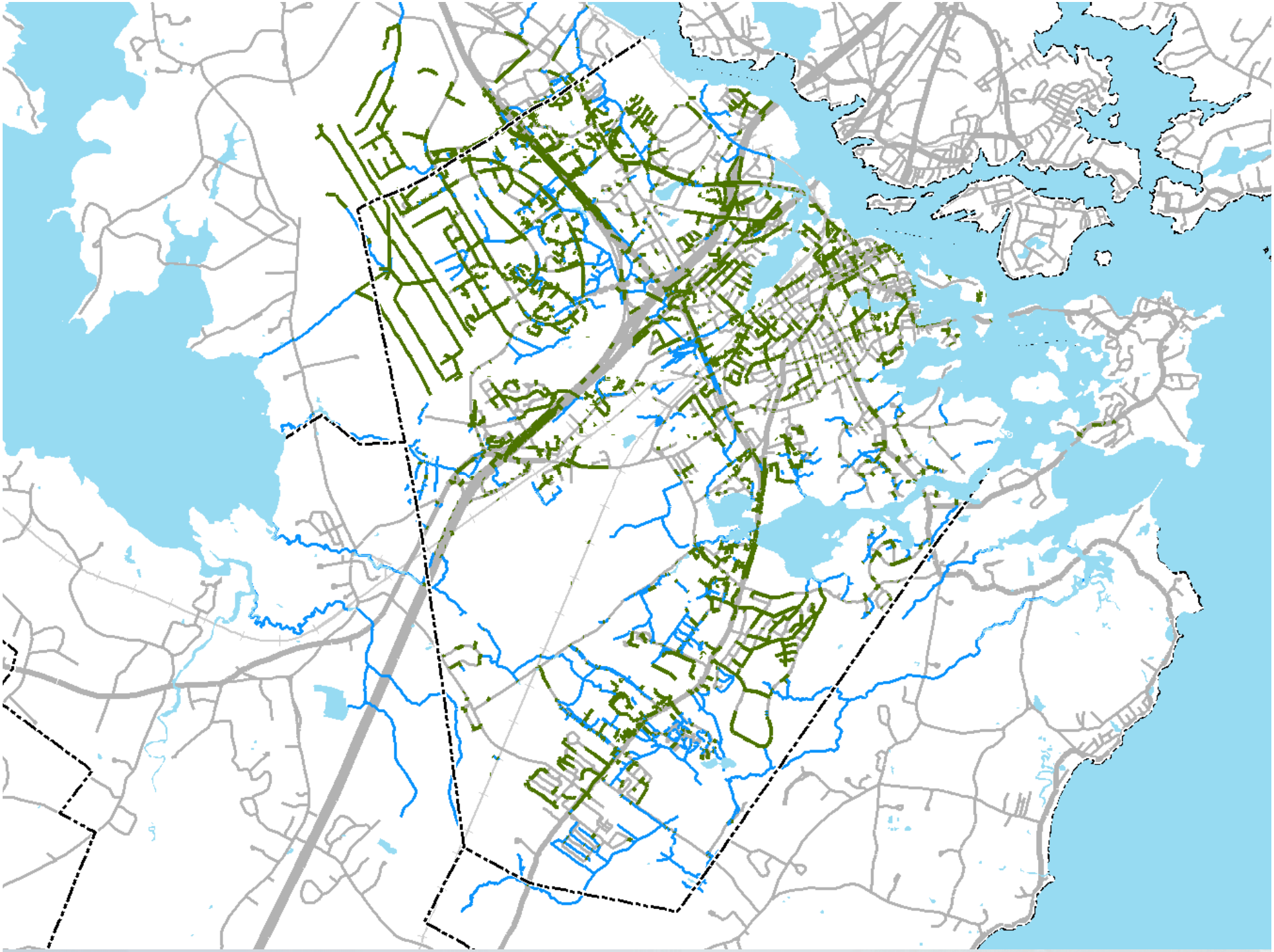
Minimum Control Measures

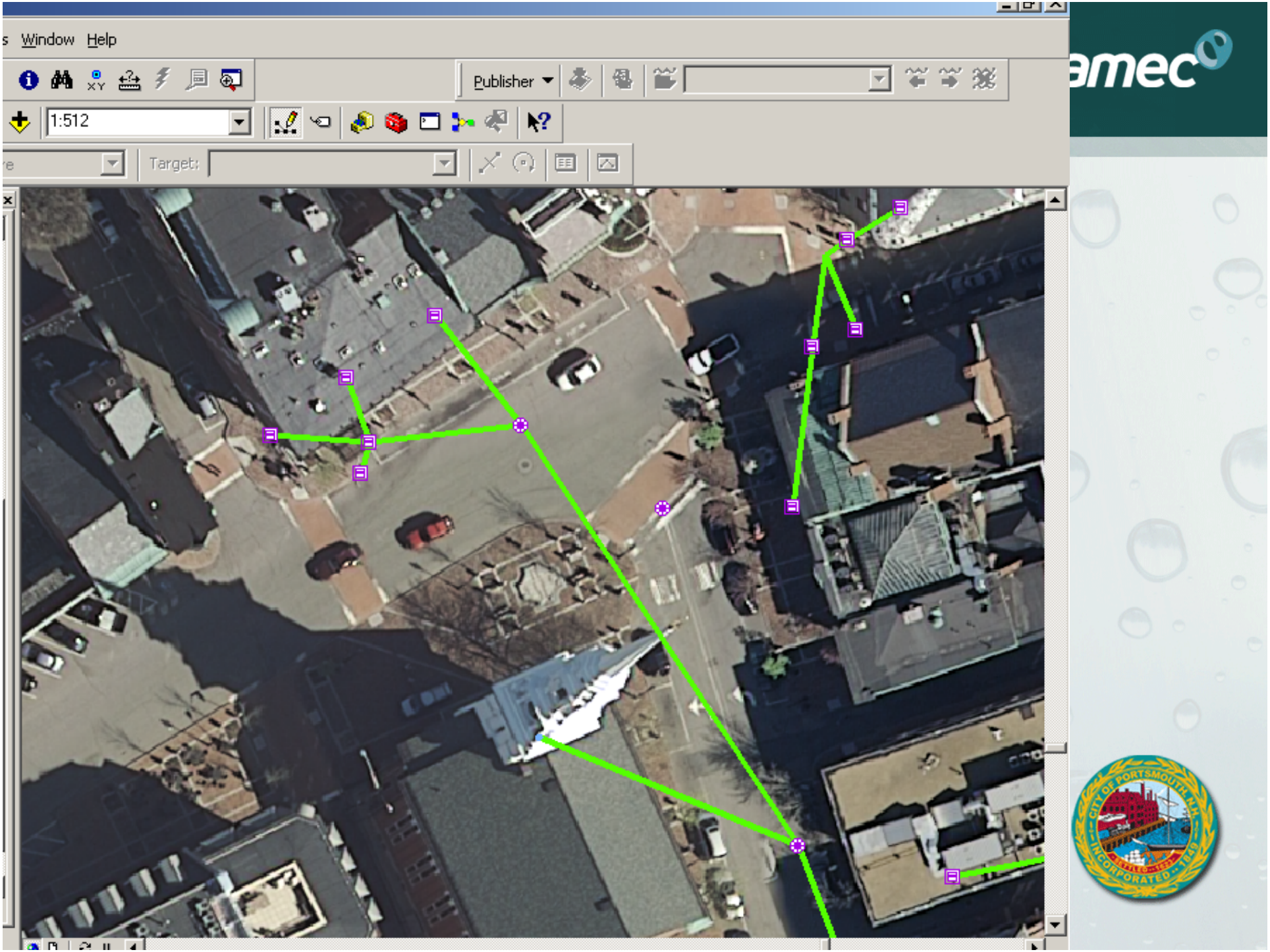
Good Housekeeping

Minimum Control Measures

Good Housekeeping

System Mapping

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01/01/2007

Draft MS4 Permit

- EPA Publishes Draft Permit in 2008
- City Reviewed Draft Permit
  - Determined it was overly burdensome
  - Would have little to no impact on improving water quality
- City submitted comments to EPA
- Permit is scheduled to be finalized in early 2012.

Draft Permit Requirements

- Private Property Salt Application Monitoring and Reporting
- Wet Weather Outfall monitoring requirements 25% of Outfalls Annually
- Survey of Publicly Owned Impervious Surfaces
- Mandatory catch basin cleaning
- Potential numeric limits for Nitrogen Discharges

Portsmouth's Stormwater Program

Portsmouth's Stormwater Program

- Completed Stormwater Master Plan
- Created Stand Alone Stormwater Ordinance
- Incorporate Green Infrastructure into City Projects
- Site Review Revisions to Include LID Requirements

Stormwater Ordinance

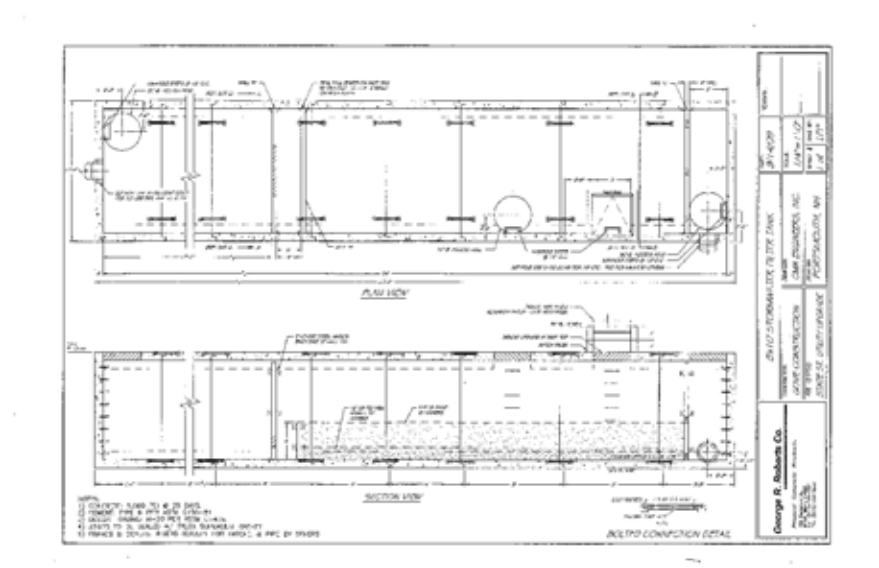
Regulation of Discharges into Stormwater Drainage System

- ✓ Stand alone ordinance
- ✓ Defines permitted and prohibited discharges
- ✓ Requires written approval from DPW for connections to storm drainage system
- ✓ Allows fines for dumping/discharging pollution

Sustainability and Portsmouth's Stormwater Program

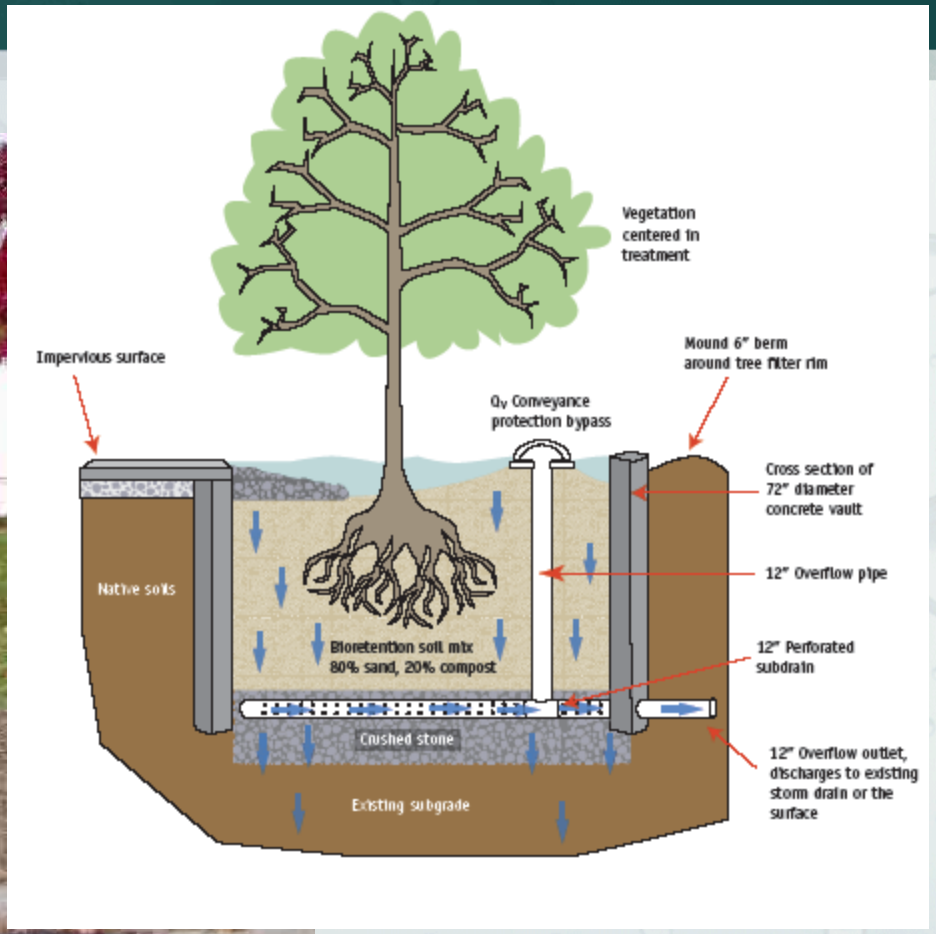
- **Sustainability Objectives**
  - Consistent with 2007 Resolution to be "Eco-Municipality" include:
- **Reducing Dependence on Fossil Fuels**
- **Reducing Dependence on Synthetic Chemicals**
- **Reducing Encroachment on Nature**
- **Meeting Human Needs Fairly & Efficiently**
  - Supports recent Zoning Ordinance changes
  - Credits could encourage sustainability

Green Infrastructure



Green Infrastructure

Green Infrastructure

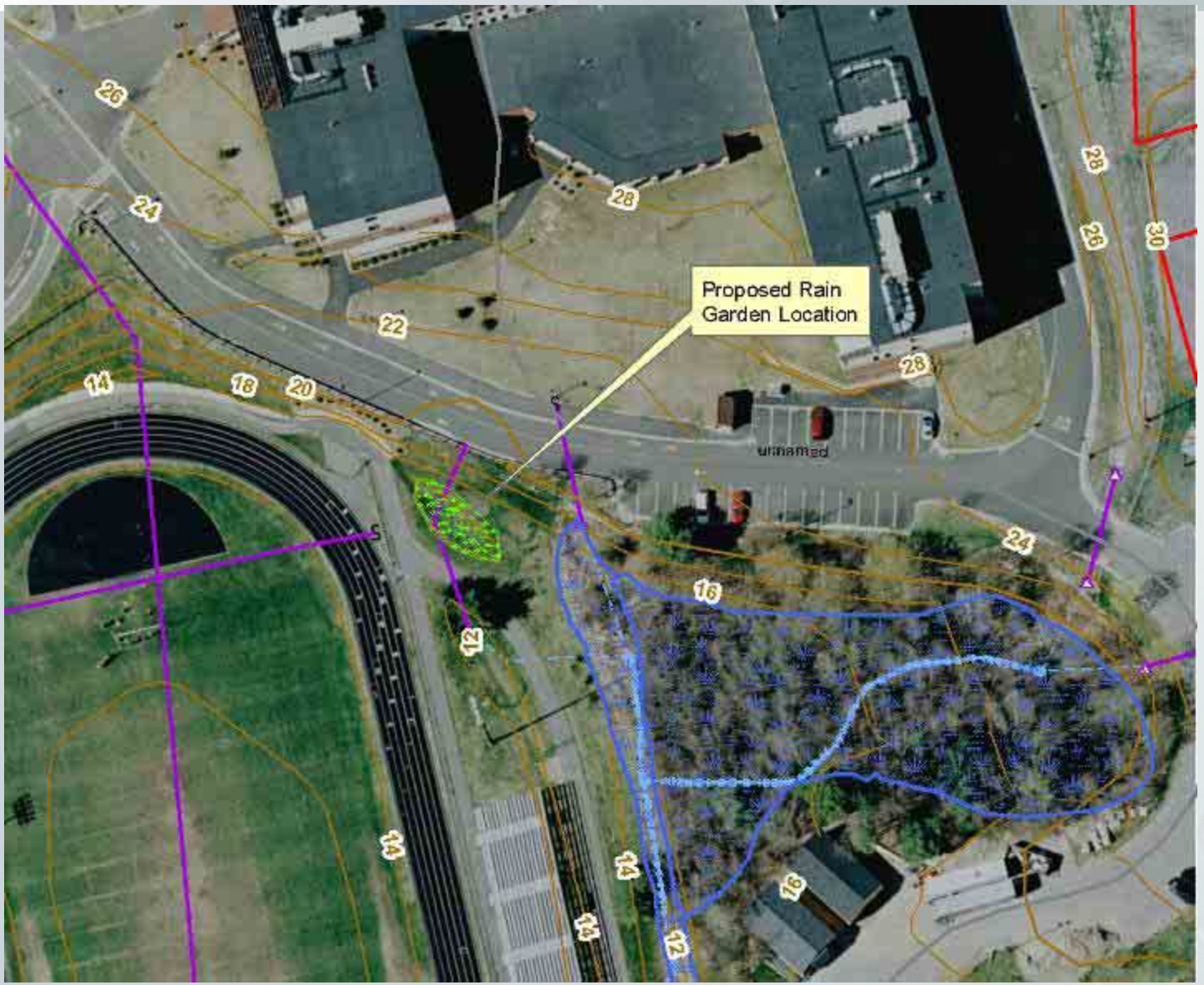


Tree Box Filter

Green Infrastructure

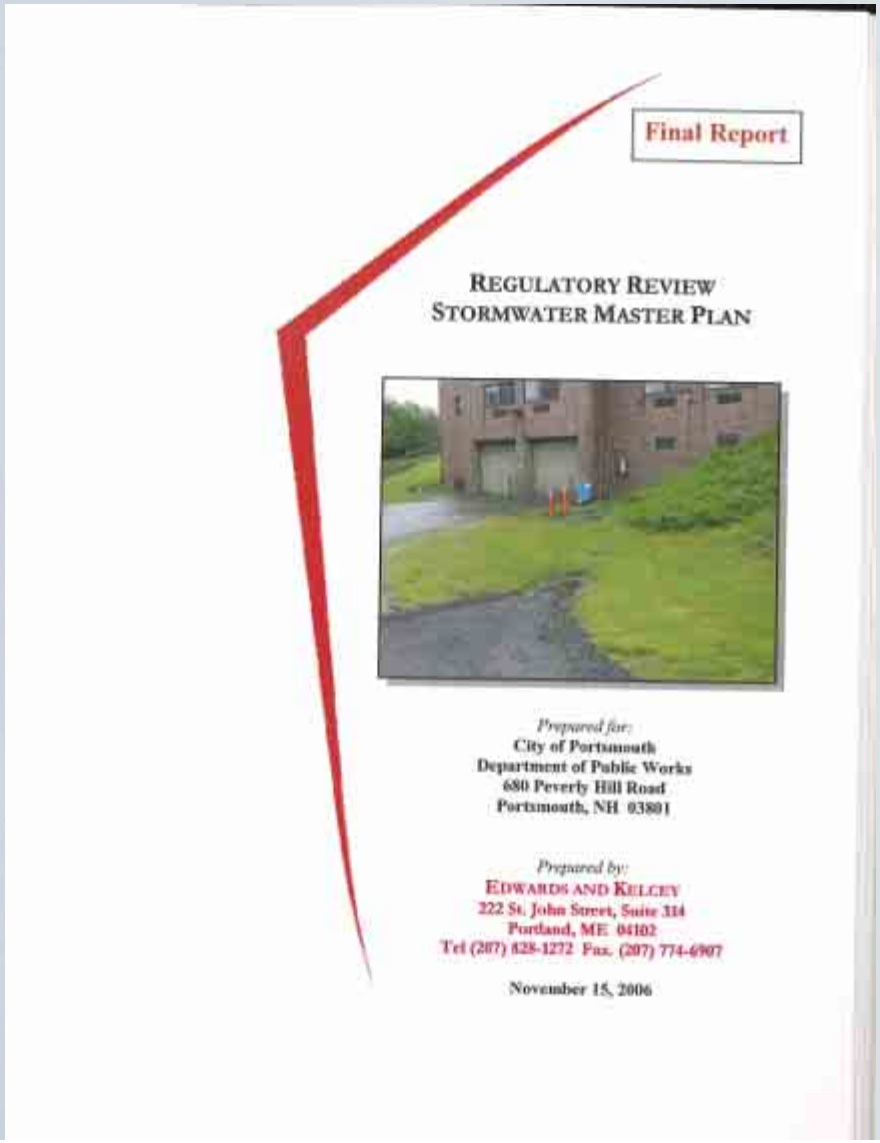
Rain Garden

Rain Barrel Program


Proposed Rain Garden Location
unnamed
26
24
28
22
14
18
20
28
28
30
28
24
16
12
14
14
14
16
12


CAT
DIGGER

Costs


Final Report

REGULATORY REVIEW
STORMWATER MASTER PLAN

Prepared for:
City of Portsmouth
Department of Public Works
680 Peverly Hill Road
Portsmouth, NH 03801

Prepared by:
EDWARDS AND KELCEY
222 St. John Street, Suite 314
Portland, ME 04102
Tel (207) 828-1272 Fax (207) 774-6907

November 15, 2006

Master Plan

Stormwater Feasibility Study

Permit evaluation

Costs

Current Permit Requirements: ~$290K per year

- **Costs Currently Spread Between Water, Sewer and Highway Divisions**

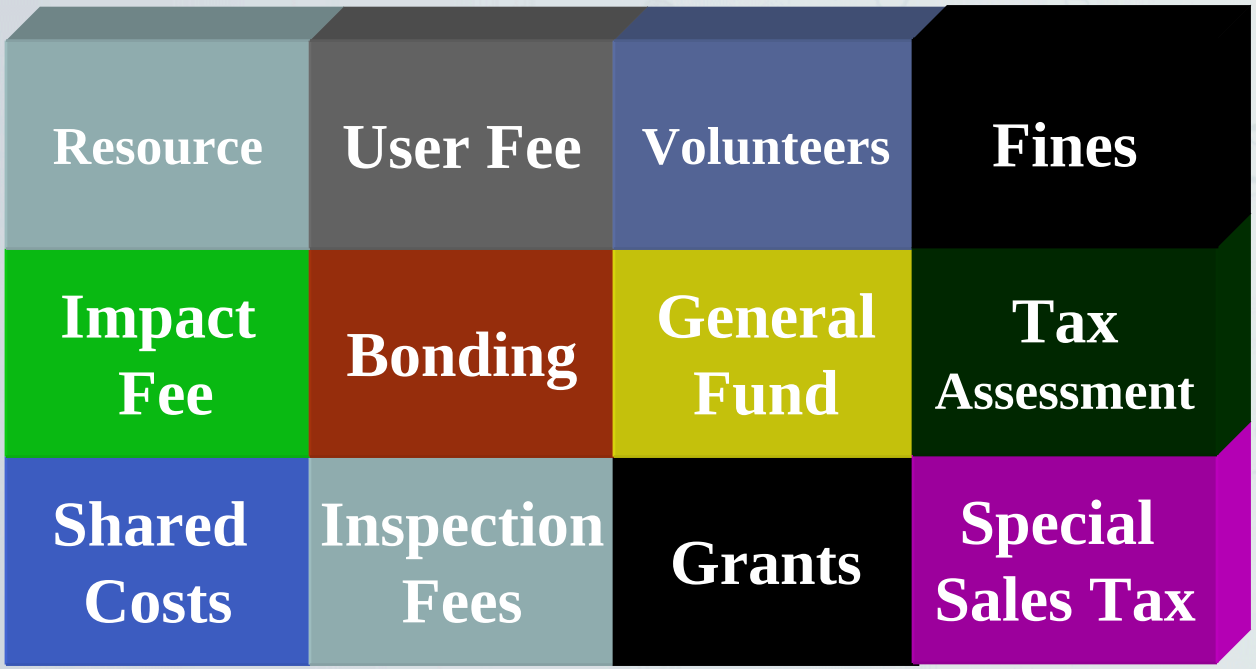
Future Permit Requirements: ~$500K per year

- **Costs includes Additional Monitoring and Reporting Requirements Plus Existing O&M**
- **Does not Include Undefined Capital Costs That will Result from New Permit**

General Legal Categories of Municipal Revenue

- ✓ **Taxes**
  - Primary revenue generator
  - No mandatory association with specific activities
- ✓ **Exactions**
  - Approval or privilege to us
  - Franchise fee
- ✓ **Assessments**
  - Direct and special benefit
  - Often one time capital construction
- ✓ **Service Charge**
  - Tied to objective or program
  - Fee level based on provision of goods & services

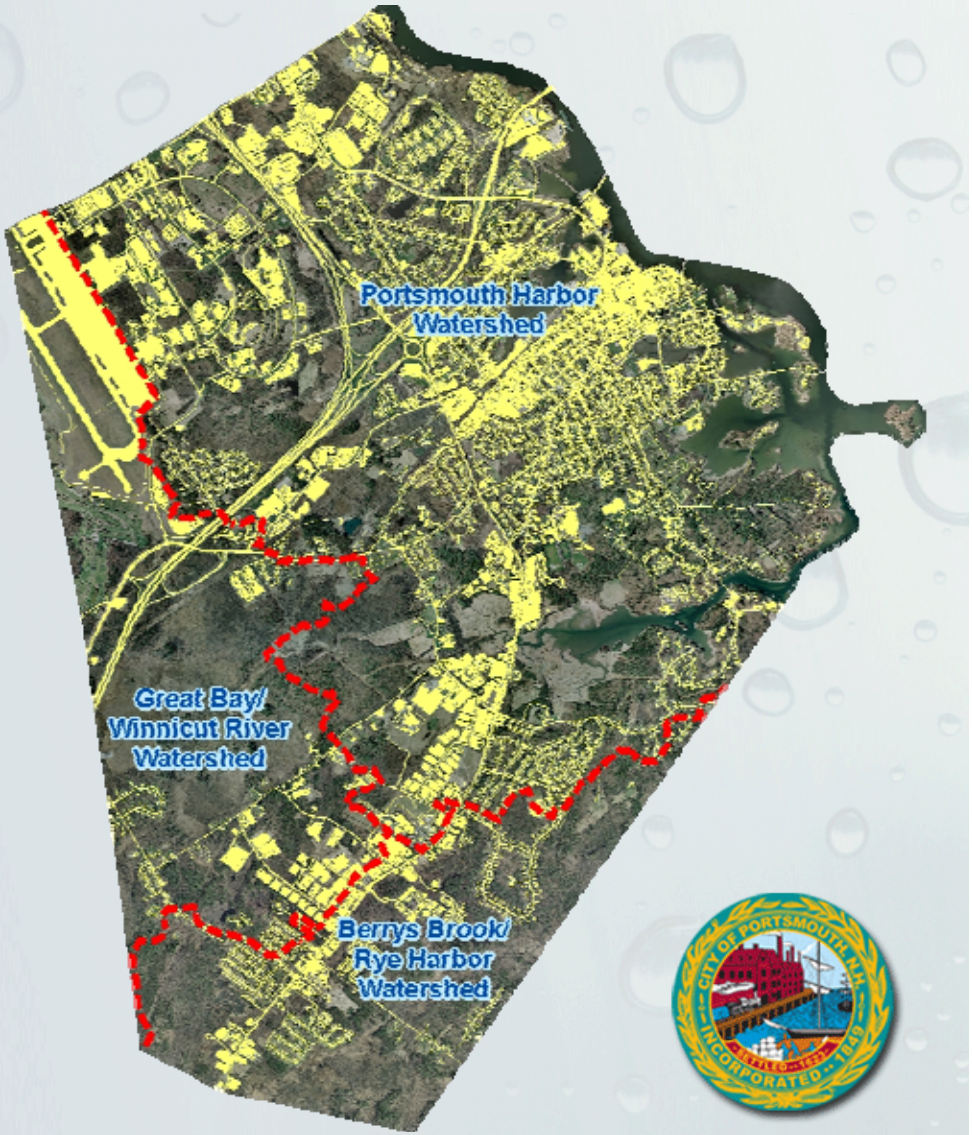
Building Blocks for Funding



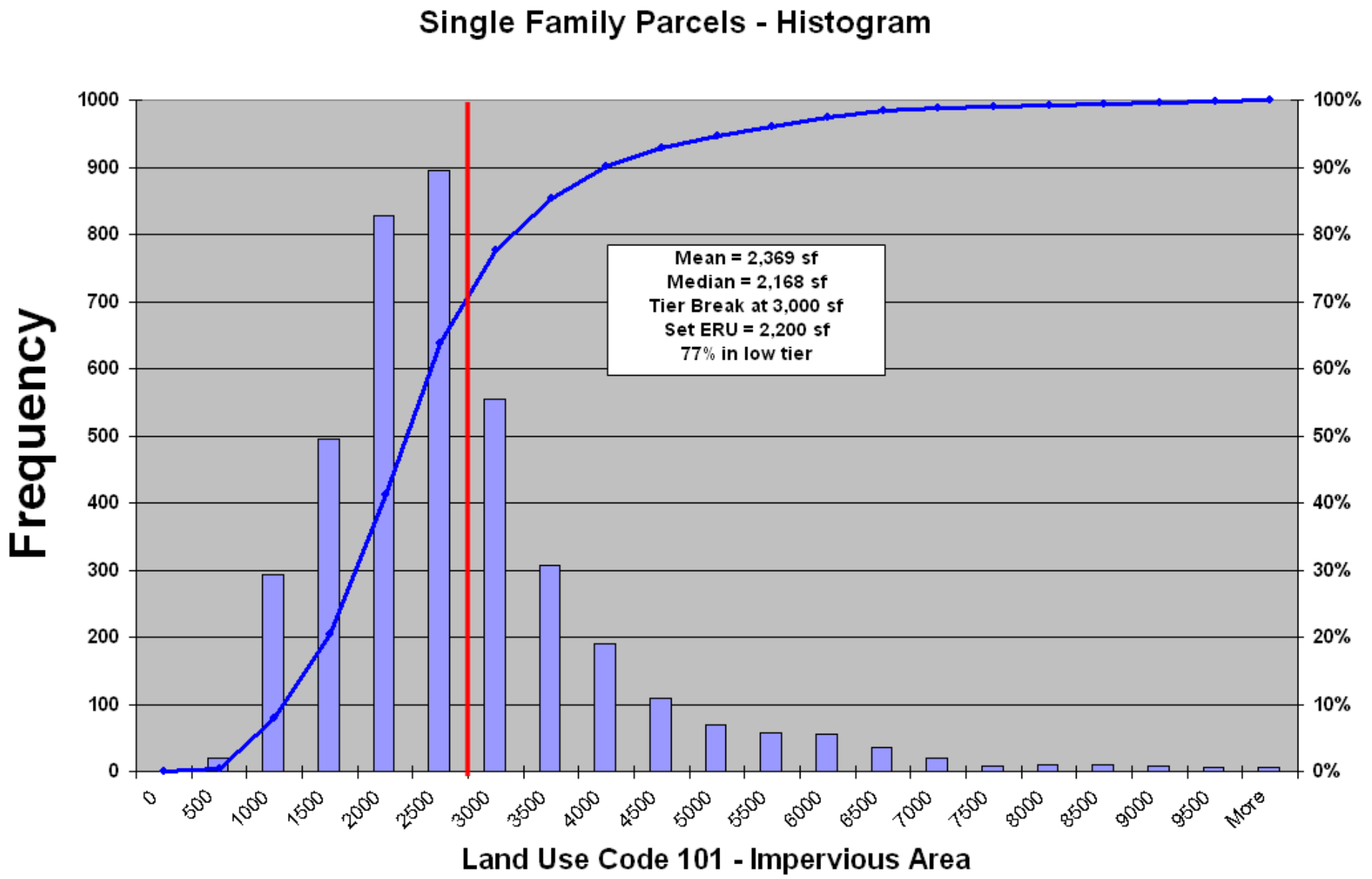
Equitable

- **What drives your cost?**
  - More runoff
  - Higher peaks
  - More pollution
- **What is the <u>best</u> way to measure a parcel's increase in these three things?**

  Impervious area



SFR Impervious Distribution



Things to Consider

1. Equity – "Does it feel & appear fair?"
2. Consistency – "Does it fit with the rest of our decisions?"
3. Revenue stability and sensitivity – "Will it make the revenue stream insufficient or unstable?"
4. Administration – "Is it hard to administer or overly subjective?"
5. Data requirements - "Can we do it efficiently with our data?"

Common credits

- Credit for peak flow control
- Credit for water quality “green” control
- Credit for volume/erosion reduction
- Credit for green space preservation
- School Stormwater Quality Education Credit
- Maintaining a Separate NPDES Permit
- Performing Non-Structural Practices
- Credit for private maintenance on a large facility so City does not have to maintain that area of the City

Next Steps

1. EPA Issues MS4 Permit
2. Determine Cost of Compliance
3. Continue Public Dialog - Funding Alternative
4. City Council Approval of Funding Alternative
5. Implement Permit Requirements


Questions