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# ***Stormwater Master Plan Revised Draft Update***

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Public Meeting



***Wendy Edde,  
Stormwater Program Manager  
April 9-10, 2014***

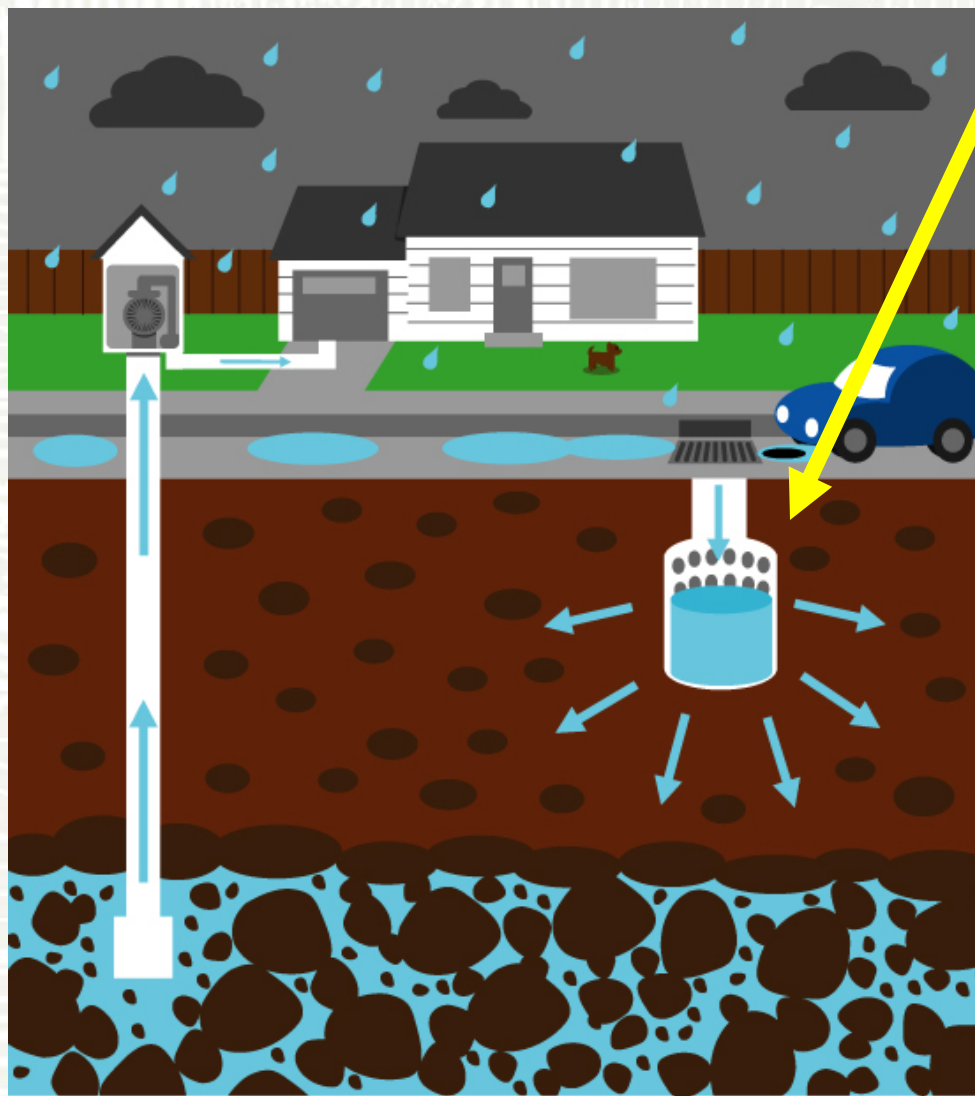
# Outline



- Introduction to Stormwater Master Plan Process
- Infrastructure Approaches
- Next Steps



# Underground Injection Controls and Drinking Water



- Discharges into the ground—
  - dry wells, drill holes
- Applied for permit in 2003
- Anticipated receipt: 2006/07...

*Graphic Courtesy of ACWA*



# Why Manage Stormwater?



- Meet regulations
- Protect economy and vitality of Bend
- Plan for responsible development
- Provide solutions that require regional analysis



# History

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- First Formal Stormwater Master Plan
- Phase I (Dec. 2006-June 2007)
  - Identification 30 flooding problem spots
  - Preliminary engineering for top 5 spots
  - Established Stormwater Utility
  - Established Stormwater Service Charge
  - Geotechnical Assessment

# Stormwater Master Plan - Phase I

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## 2007 Annual Revenue/Expenditures

<b>Revenue</b>	<b>\$2.5 M</b>
→ <b>CIP Projects</b>	<b>\$0.5 M</b>
→ <b>City Wide Overhead</b>	<b>\$0.4 M</b>
→ <b>Operations/Maintenance</b>	<b>\$1.3 M</b>
→ <b>Water Quality/Regulatory Compliance</b>	<b>\$0.3 M</b>

*Utility Provided Funding for Our Next Steps....*



# History (continued)



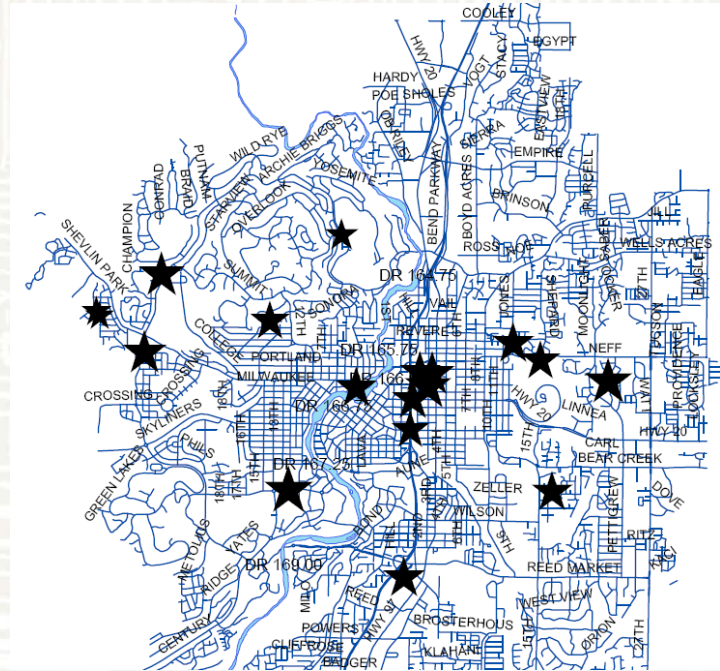
- Phase II (July 2007-May 2010)
  - Stormwater Infiltration Evaluation Report
  - Piped System evaluation
  - Draft Plan
  - Outreach – Open Houses & Public Review
  - Preliminary Engineering for 3<sup>rd</sup> Street Underpass

# Stormwater Master Plan - Phase II



## 2008 Public Draft Summary

- Initial CIP / Hotspots
- Proposed piped system (mains)
- Costs: \$172-\$214 M
- Economy: → Recession
- Other Infrastructure Needs
- Response: Unpalatable
- Hold Until Improved Regulatory Clarity
- Continue Working Towards System Understanding

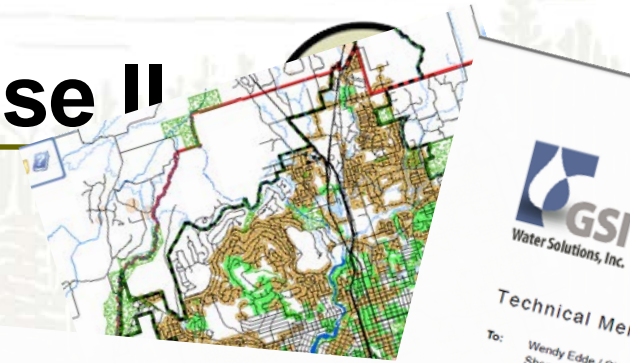




# Stormwater Master Plan - Phase II

## 2008 Draft Recommendations

- Complete Stormwater Facility Inventory
- Improve Stormwater Quality Knowledge
- Update Drinking Water Protection Areas
- Conduct Groundwater Protectiveness Study
- Investigate UIC Infiltration Over Time
- Identify where UICs are prohibited
- Improve Local Requirements
  - 25 Year/ Safe Passage 100 year
  - Water Quality



### Technical Memorandum

To: Wendy Edde/City of Bend  
From: Bruce Brody-Heine, RG/GSI Water Solutions, Inc.  
Matt Kohlbecker, RG/GSI Water Solutions, Inc.  
Rachael Peavler/GSI Water Solutions, Inc.  
Date: September 21, 2011  
Re: Pollutant Fate and Transport Model Results in Support of the City of Bend UIC WPCF Permit - Groundwater Protectiveness Demonstration and Proposed EDLs

### Executive Summary

The City of Bend (City) uses over 5,500 drywells and drillholes, or Underground Injection Controls (UICs), to manage urban stormwater within its City boundaries. The City has applied for a UIC Water Pollution Control Facilities (WPCF) permit with the Department of Environmental Quality (DEQ) and wants to use fate and transport modeling to...

**Kennedy/Jenks Consultants**  
200 S.W. Market Street, Suite 500  
Portland, Oregon 97201  
503-295-4911  
FAX: 503-295-4901

**Effects of Structural Best Management Practices on Stormwater Quality in Central Oregon**

8 April 2011

# **Stormwater Master Plan - Phase II**

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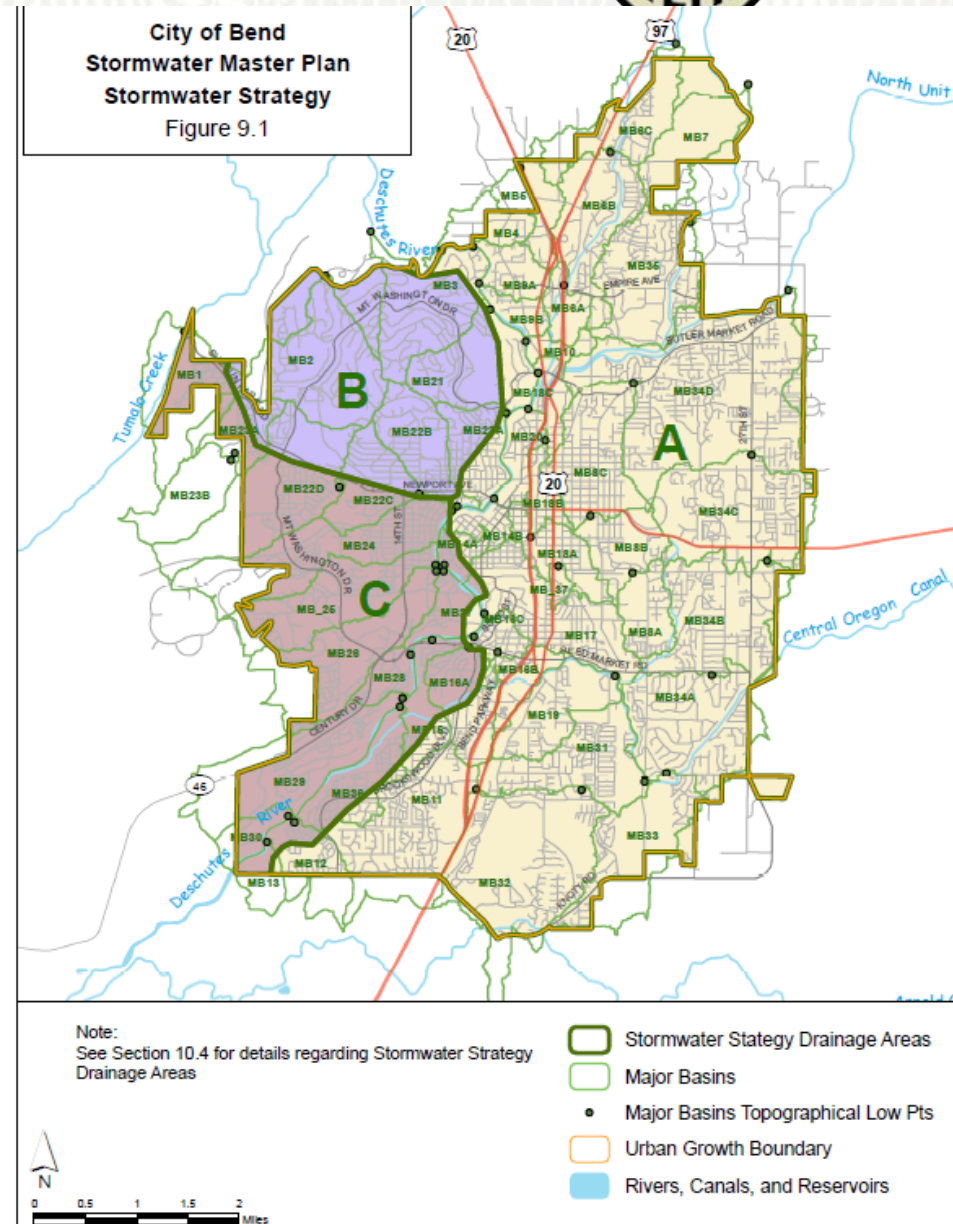
## **Proposed Strategy: Hybrid Dispersed System**

- Maximizes Flexibility, type and timing
- Protective of Water Quality/Drinking Water
- Address Replacement of Failed Facilities Through Prioritization List
- Instill Pipe Line Replacement Program
- Instill UIC Upgrade Program (Spill Protections)

# Strategies by Area



- A:
  - LID/ Pretreatment and Drywells
  - Regional Detention (>1 lot)
- B
  - LID, regional detention/retention
- C:
  - Examine Site Specific geotechnical conditions
  - LID, Pipe to regional facility





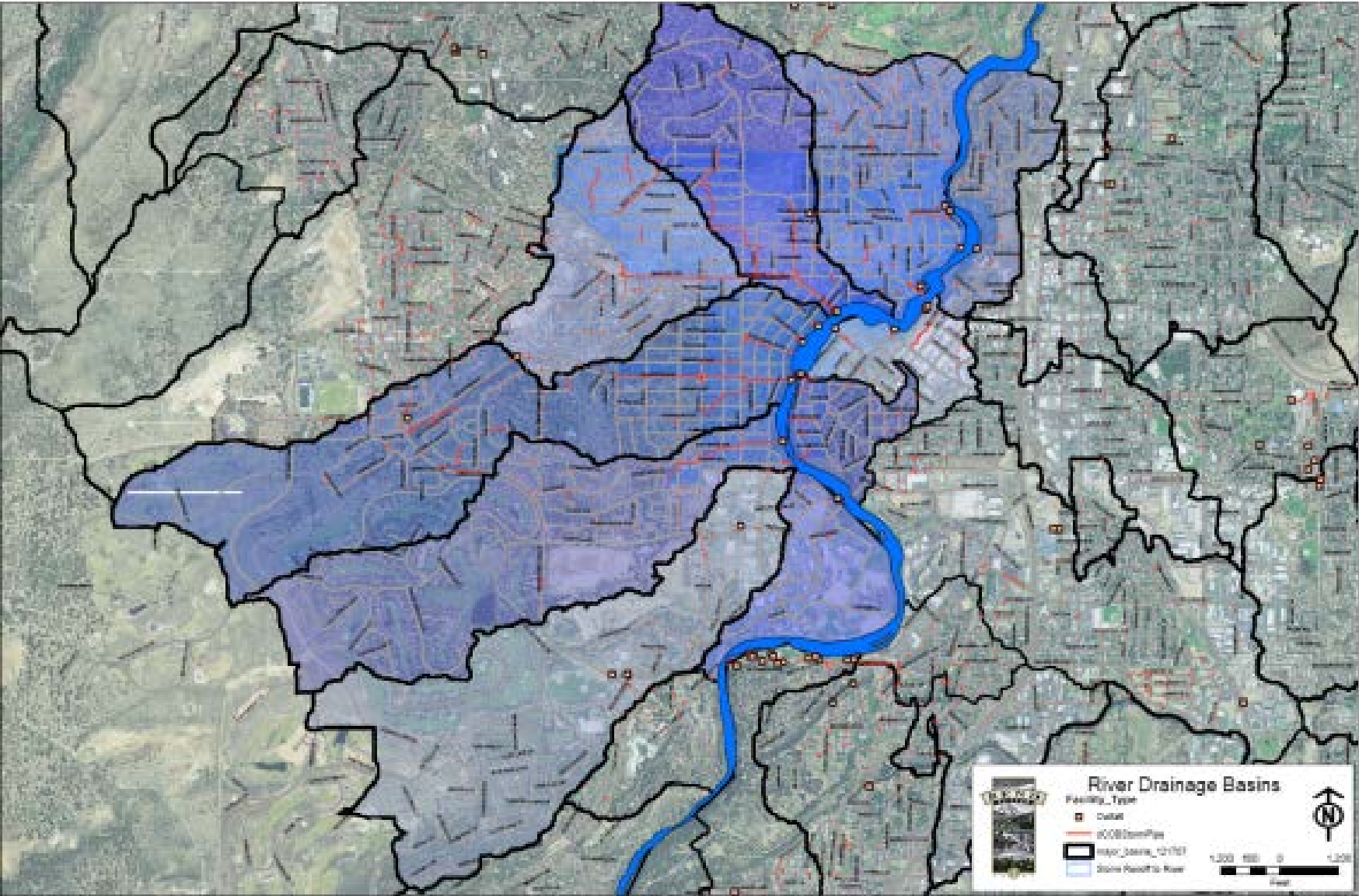
# Stormwater Master Plan - Phase III



## Revised Public Draft Plan Overview

- Baseline Inventory
- Provides geotechnical and drainage basin guidance
- High level Strategy
- Sets up Specific Plans and/or Future Master Plan Updates
- **NEXT STEPS**
  - Infrastructure Improvement Project Approach
  - Finalization

# Pipe Line Replacement Program



Distance: 66.8  
OBI: Obstacle Intruding Thru Wall  
Clock from: 3 Clock to: 9  
Rating:  
S/M/L:  
Dimension1:  
Dimension2:  
18  
Remarks: 244

7  
Corrosion Metal Pipe  
Clock to: 7  
Corrosion through pipe

11/19/09 14:48  
12.0 FT  
MH START: DCB0011000  
MH STOP: DCB0011000

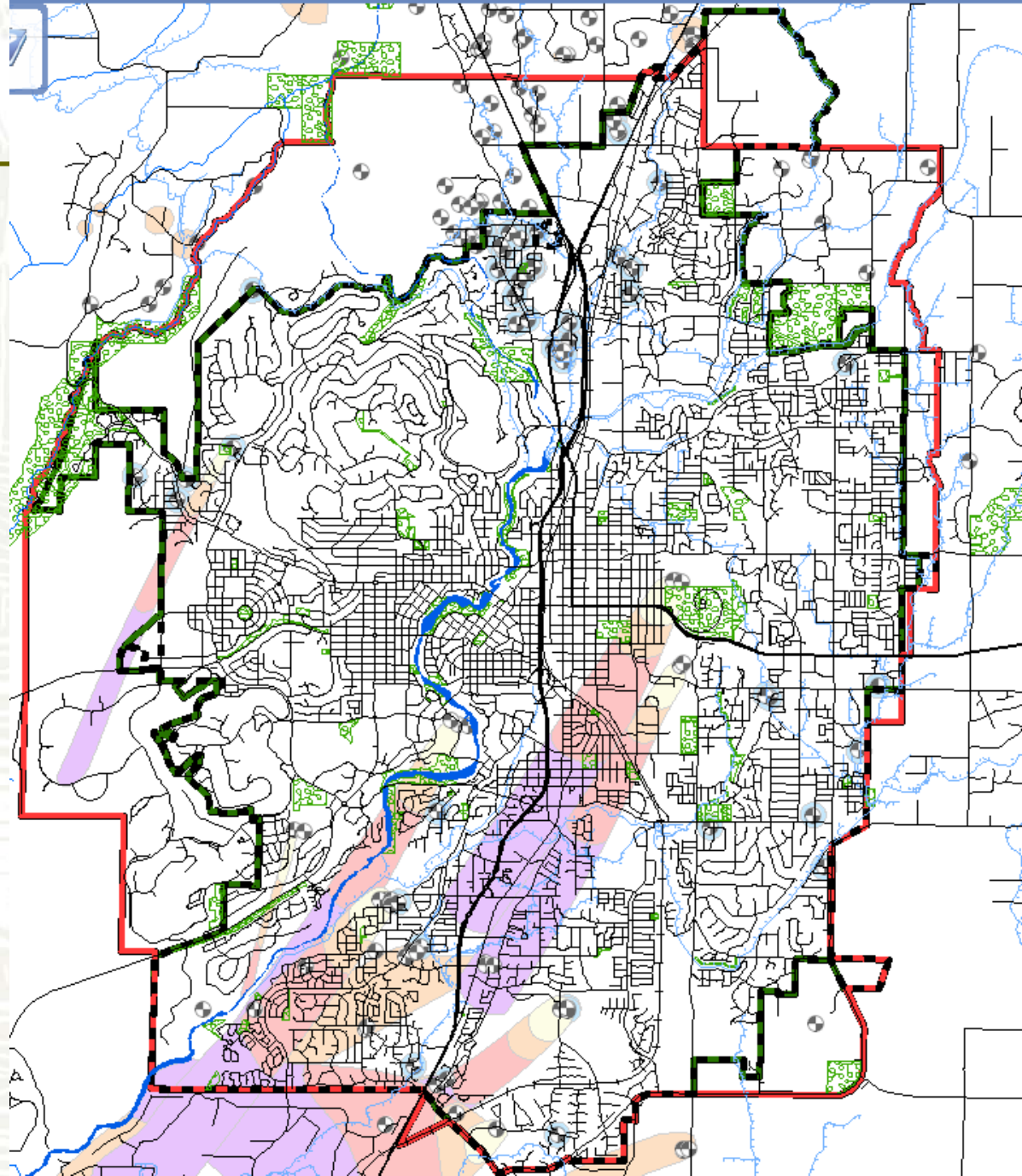
Distance: 207.4  
Collapse Pipe Sewer  
Clock from: Clock to:  
Rating:  
S/M/L:  
Dimension1:  
Dimension2:  
Remarks:

11/19/09 14:51  
18.4 FT  
MH START: DCB0011000  
MH STOP: DCB0011000



# UIC Upgrades

- Spill Risk Management
- Prioritized
- Protect Drinking Water Sources
- Drill Holes
- Dry Wells



# Prioritizing Projects--Ranking



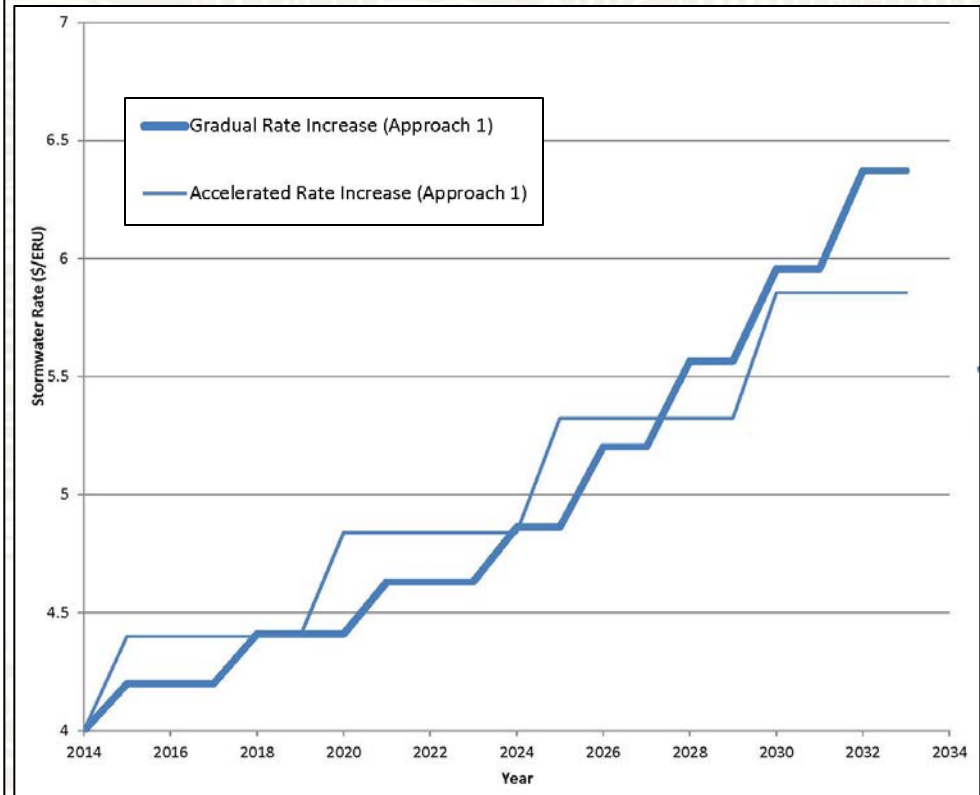
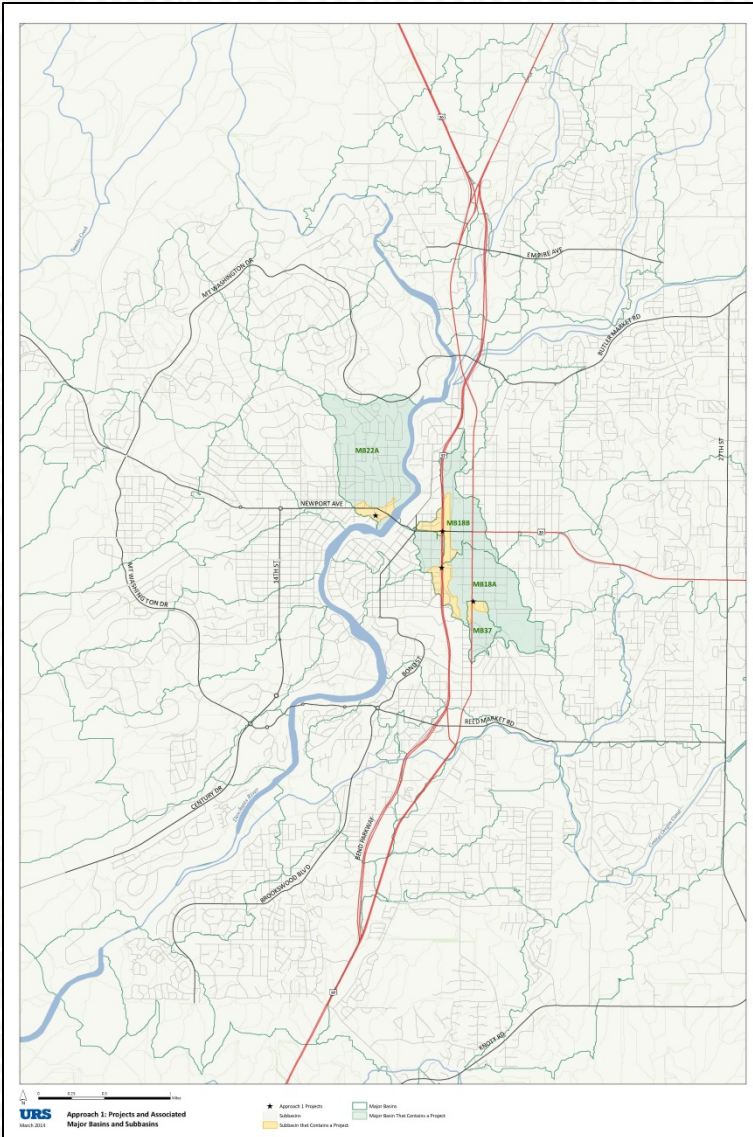
- Customer Satisfaction
- Environmental Impacts
- Future Growth
- Operation and Maintenance Efficiency/ Cost Savings
- Public Health and Safety Issues
- Regulatory Compliance
- System Reliability





# Phase III

## Capital Improvement Project Approach 1

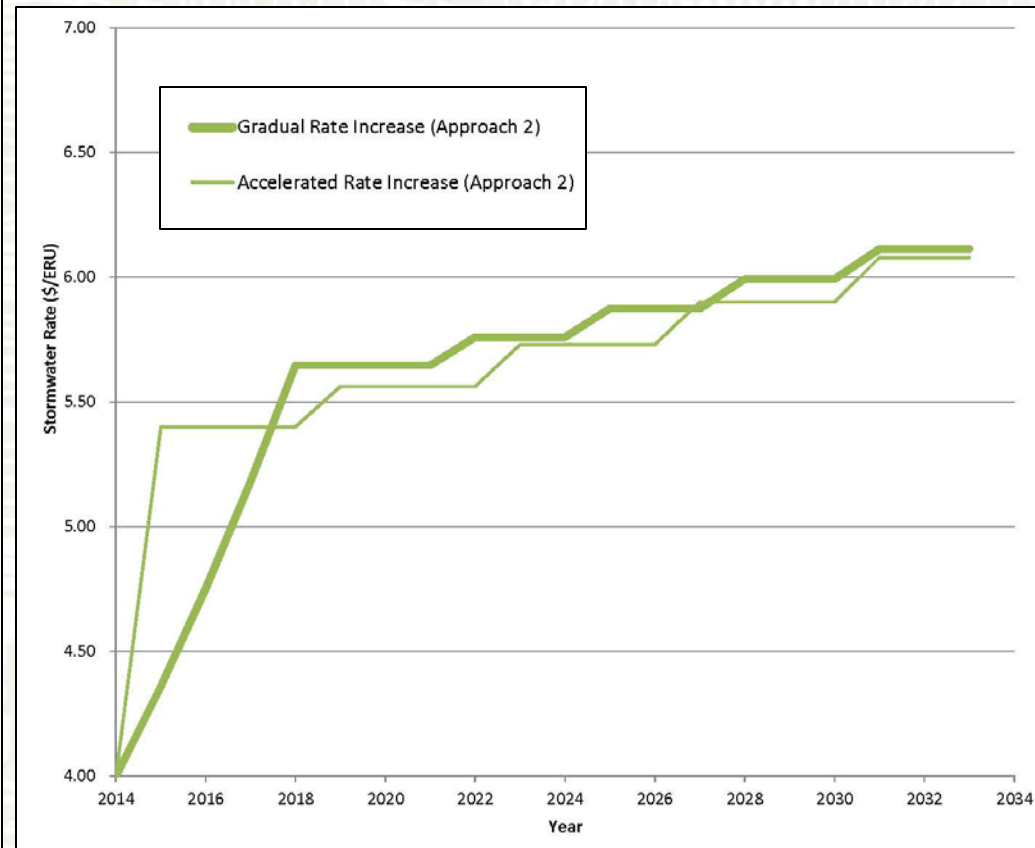
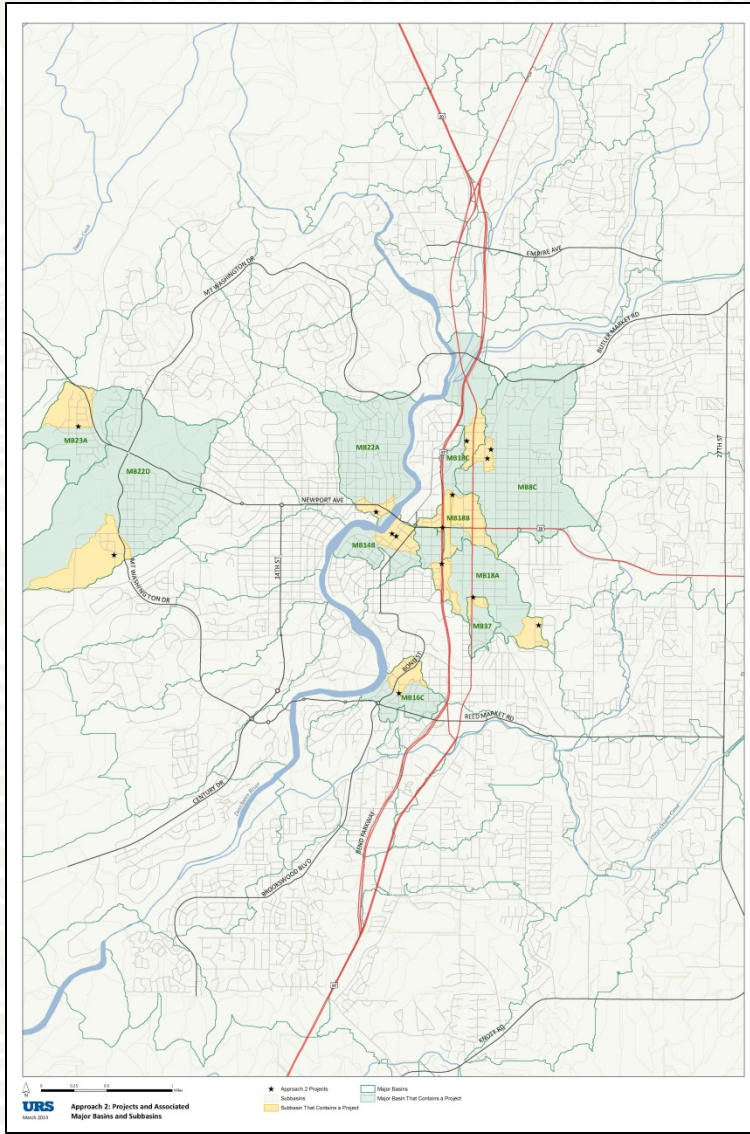




# Phase III



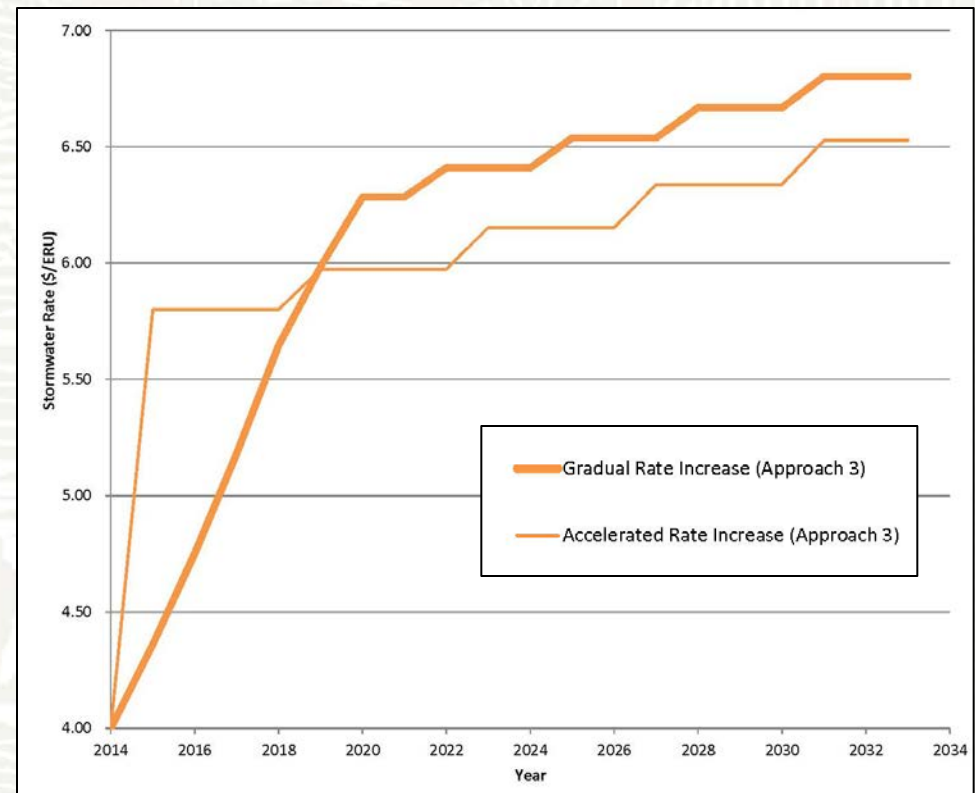
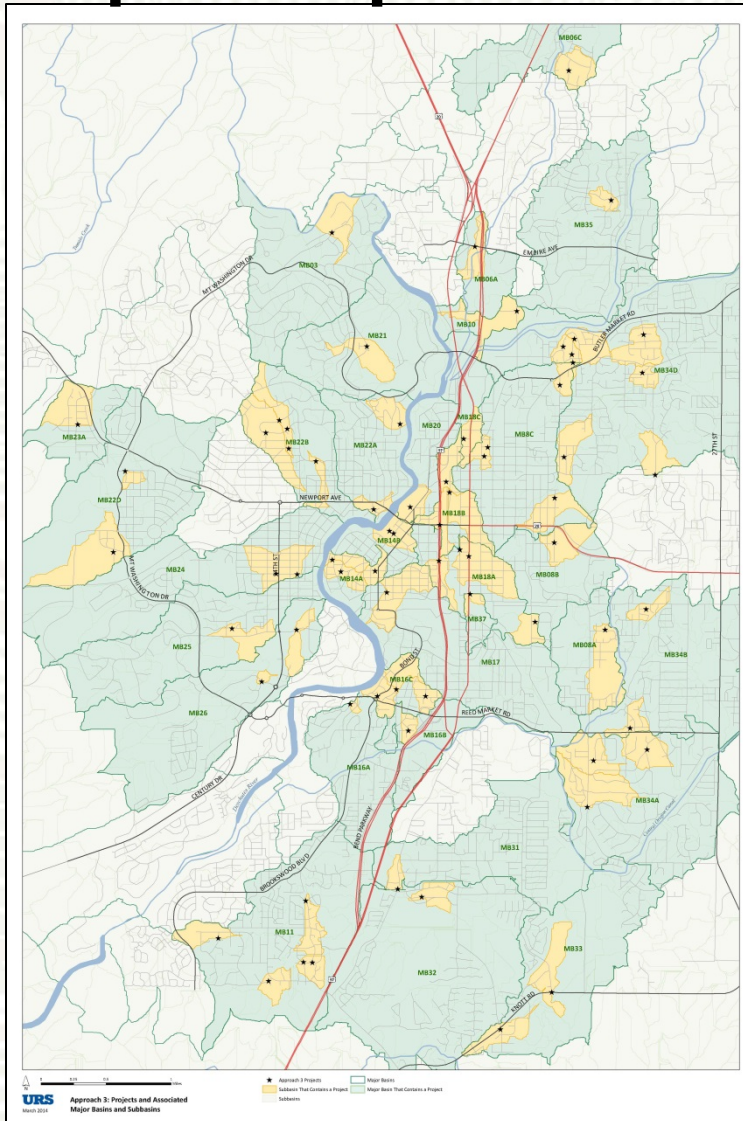
## Capital Improvement Project Approach 2



# Phase III



## Capital Improvement Project Approach 3

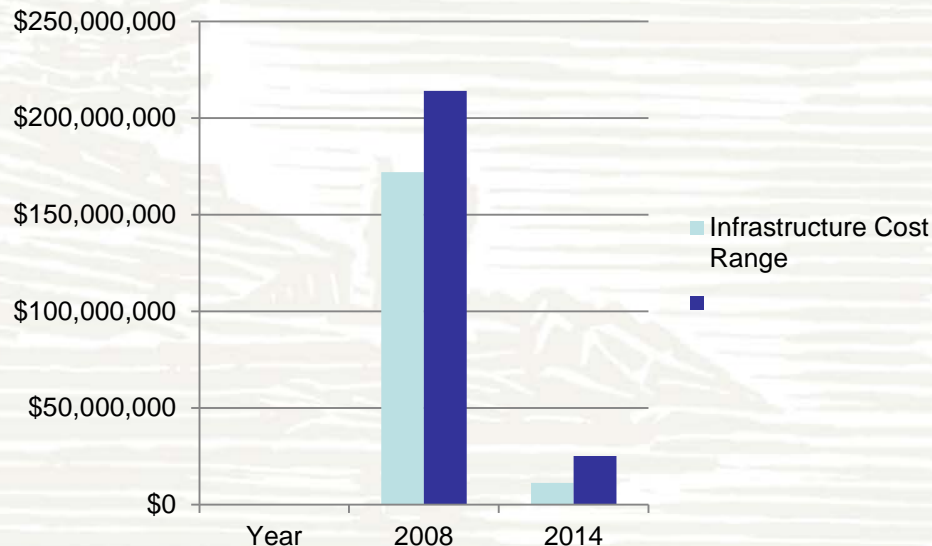


# Cost Summary



Table 1. Infrastructure Improvement Approach Summary Table

Infrastructure Improvement Approach	Immediate Proposed Utility Rate Range (\$/ERU)		Fiscal Year 2032-33 Proposed Utility Rate Range (\$/ERU)		Twenty-year Capital Improvement Costs
	Gradual	Accelerated	Gradual	Accelerated	
1	\$4.20	\$4.80	\$6.37	\$5.35	\$11.4 Million
2	\$4.36	\$5.40	\$6.11	\$6.08	\$17.0 Million
3	\$4.36	\$5.80	\$6.80	\$6.53	\$25.2 Million

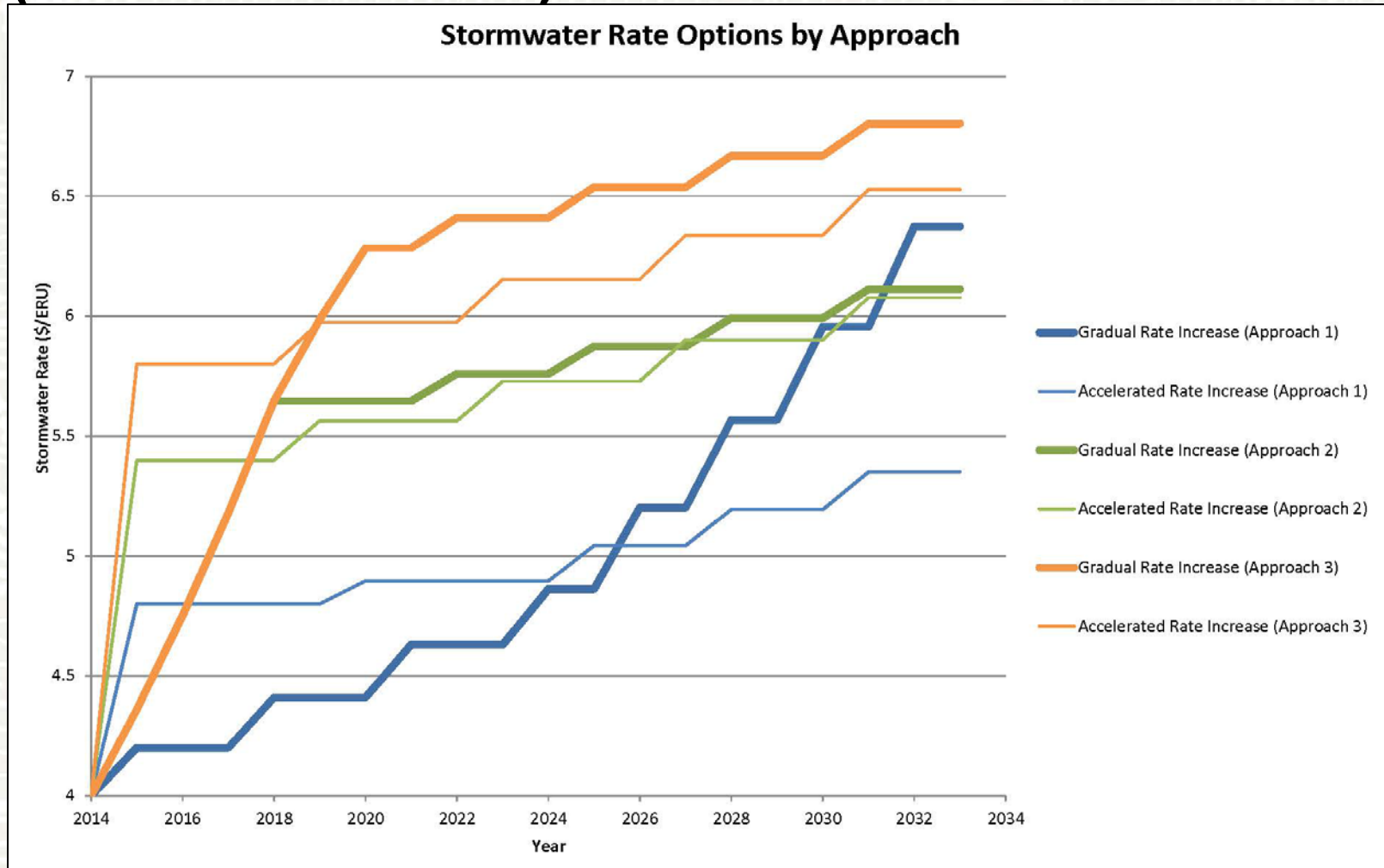




# Stormwater Master Plan - Phase II



## Capital Improvement Project Approach Options (FY 13/14 – FY 32/33)





# FY13-14 Utility Charges Snapshot

Cities > 20,000 Population	Water Charge (using 800ccf or 6000 gallons)	Sewer Charge (using 800 ccf or 6000 gallons)	Stormwater Charge	TUF/Public Safety UT Fee	Total Monthly Bill	
Portland	37.57	69.60	24.54	0.52	132.23	
Lake Oswego	41.49	62.55	10.99	8.01	123.04	
Newberg	36.46	74.98	6.22	4.50	122.16	
Wilsonville	36.59	66.33	5.10	7.05	115.07	
Tigard	50.73	38.46	(1)	8.25	5.56	103.00
Milwaukie	27.96	53.43	11.44	3.35	96.18	
Albany	44.69	51.06	-	-	95.75	
Oregon City	32.41	38.45	8.55	11.56	90.97	
Woodburn	25.66	64.47			90.13	
Ashland	37.85	36.18	4.29	8.17	86.49	
Springfield	22.08	50.26	12.62	-	84.96	
Beaverton	33.16	40.46	(1)	8.25	-	81.87
McMinnville	25.06	56.77			81.83	
Gresham	37.63	26.30	9.84	7.50	81.27	
West Linn	19.70	32.84	5.31	22.11	79.96	
*Forest Grove	29.19	42.20	(1)	7.00		78.39
Klamath Falls	16.50	61.84	-	-	78.34	
*Eugene	28.55	37.39	11.39		77.33	
Salem	24.75	46.49	3.72	1.25	76.21	
<b>Bend (w/o franchise fee)</b>	<b>27.69</b>	<b>44.37</b>	<b>4.00</b>		<b>76.06</b>	
Tualatin	26.02	39.73	(1)	5.86	3.92	75.53
Corvallis	25.37	36.14	5.86	6.63	74.00	
Hillsboro	24.12	38.46	(1)	6.25	3.18	72.01
Redmond	26.62	35.60	7.06	0.83	70.11	
Keizer	14.20	39.44	4.44		58.08	
Roseburg	26.54	25.00	5.00	-	56.54	
Grants Pass	19.98	29.33	-	3.37	52.68	
*Medford	11.80	16.92	6.85	13.80	49.37	

Notes:

(1) Served by Clean Water Services

Bill \$/1,000 gal

# Schedule/ Next Steps

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- Open House Workshops: April 9, 10
- Through April 14: Collect public comments on approach preferences
- April 16: Council Worksession—Preferred Approach
- April-May 2014: Public Review of Revised Draft Master Plan (SMP)
- June 2014: Council Decision



# Questions

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