

Stormwater, Its Time to Grow Up– Ten Emerging Stormwater Management Best Practices



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Mandatory Disclaimers

- I know, I know. Your favorite new stormwater thing is not on this list.
- Right – you inherited a pile of doodoo from the previous administration and are just trying to cope.
- Because it's a common practice does not make it a best practice.
- This is Nirvana dude – whatcha been smoking'?

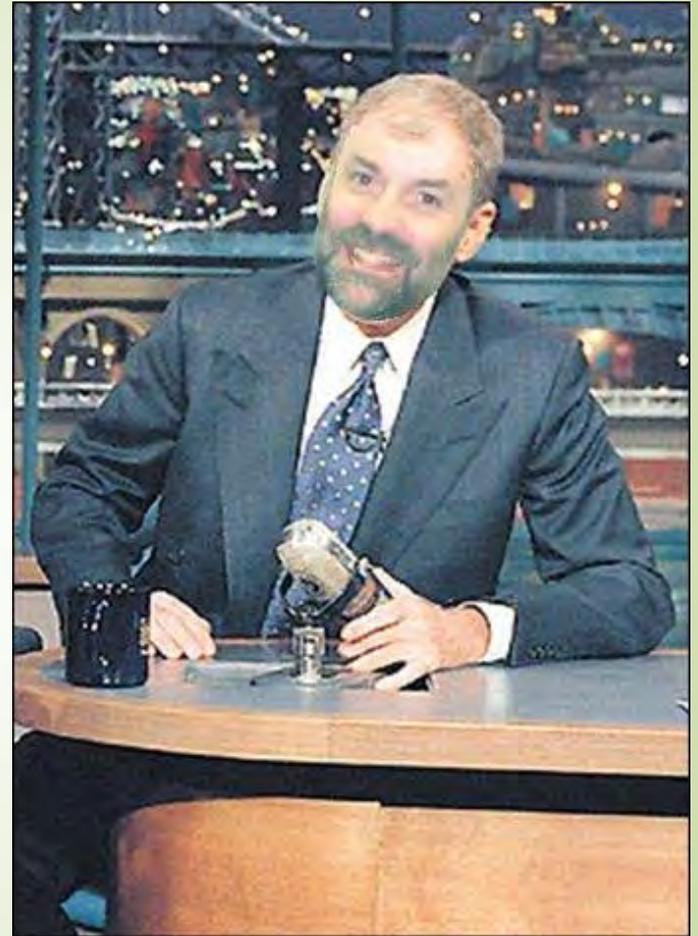
Past Stormwater Paradigms

1. Hey lets put it in ditches
2. Ok lets put it in pipes
3. Ok lets put it in separate pipes
4. Ok we better keep it from pipes
5. This is too hard – masterplan
6. MS4 what!?
7. It's the ecology stupid
8. Water is water is watershed
9. Green...everything is green
10. Wait! Its flooding again.

Andy's Top Ten List

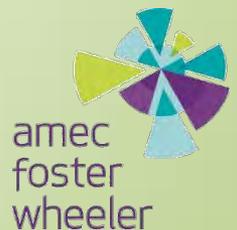
***Wherever we've traveled
in this great land of ours,
we've found that people
everywhere are about
90% water.***

DAVID LETTERMAN



Your job is relevant no matter what your teenager says

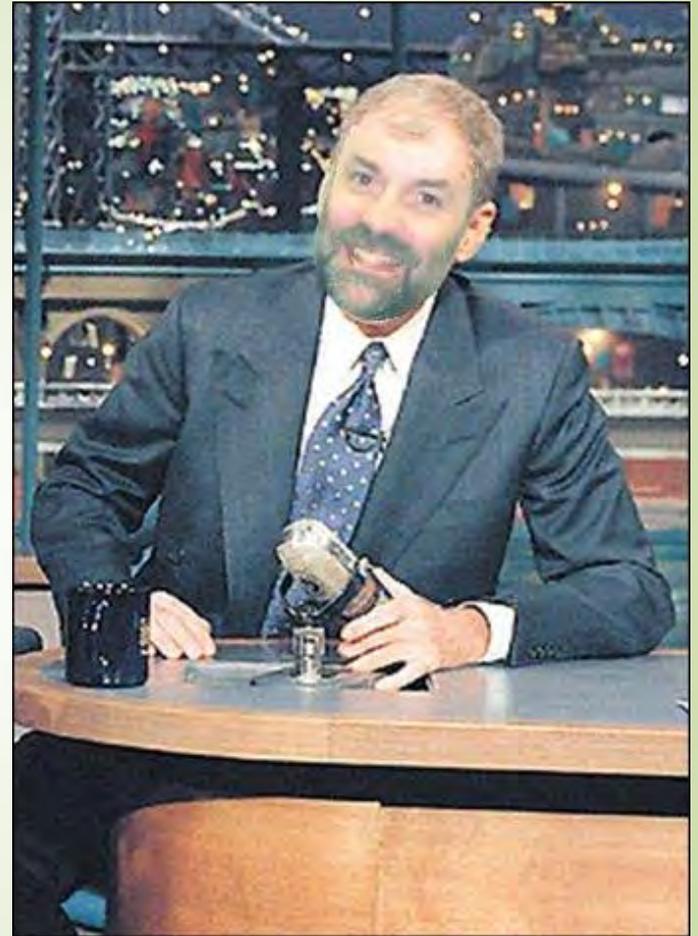
Andy Reese – Stormwater, Its Time to Grow Up



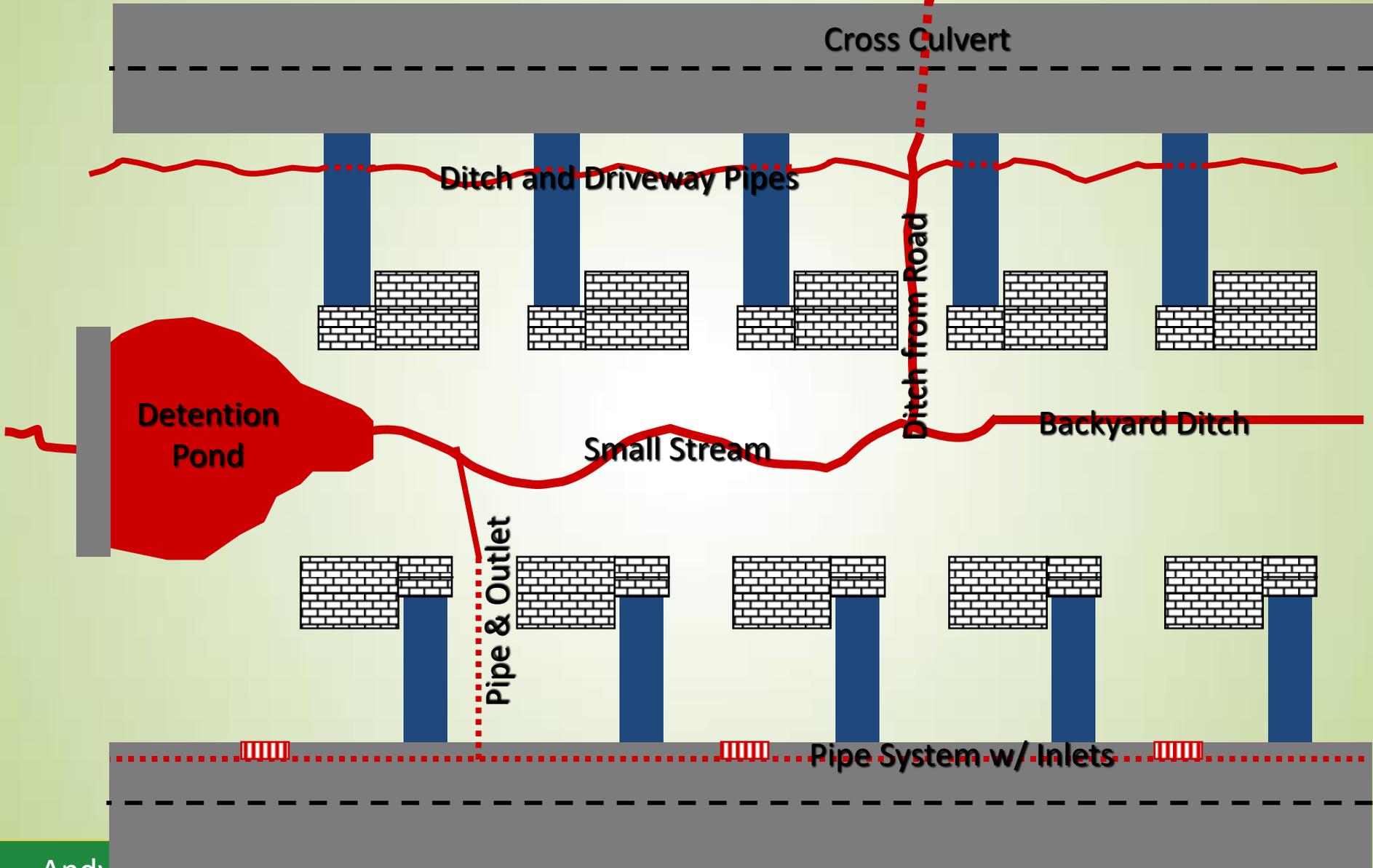
Andy's Top Ten List

1. System Thinking

System thinking is not parcel thinking

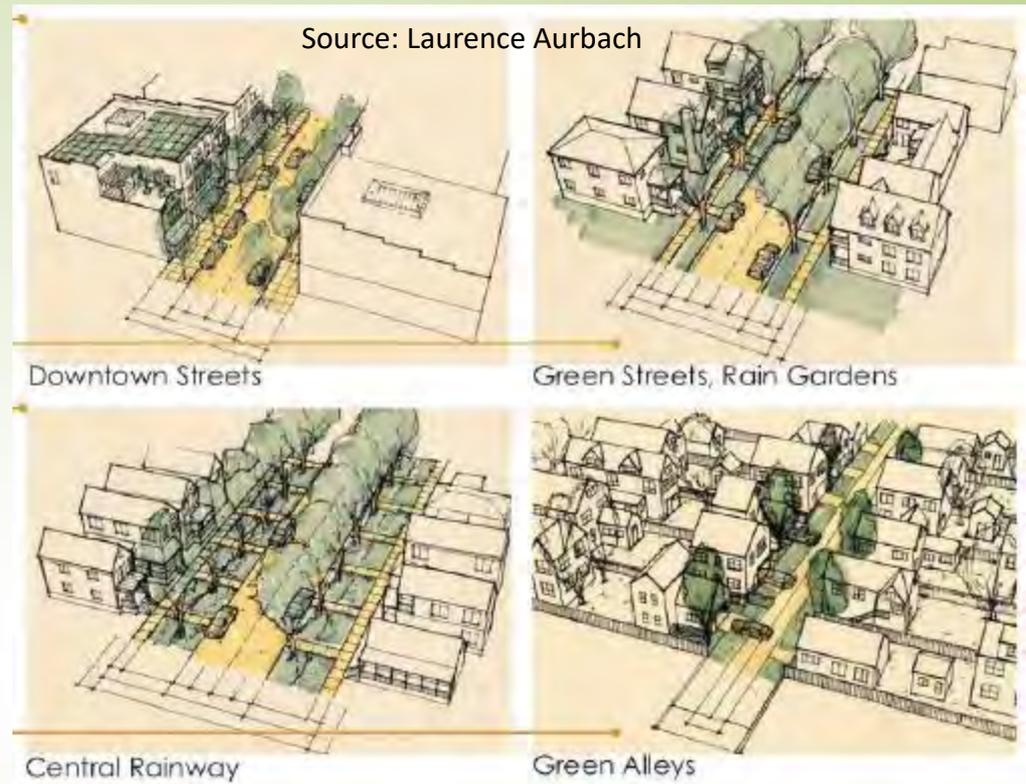


Extent, Level & Type of Service Policies



ROW as a Shared Resource

- The ROW is not a boundary it is a legal line.
- New development concepts blur the ROW line.
- \$\$ - I create legal and financial policies to make it easy to share the ROW for mutual benefit.



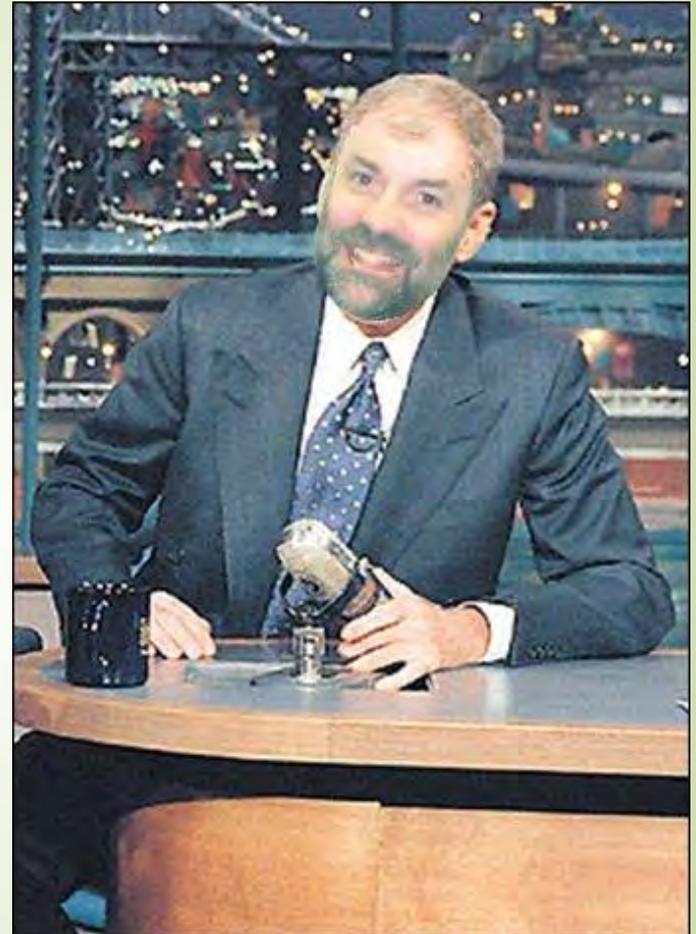
Roadways account for >1/3 of the runoff and pollution – the runoff from them should be managed like that from parking lots... or better.

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1. System Thinking

System thinking also means that my floodplains do not shift over time to flood unsuspecting residents.

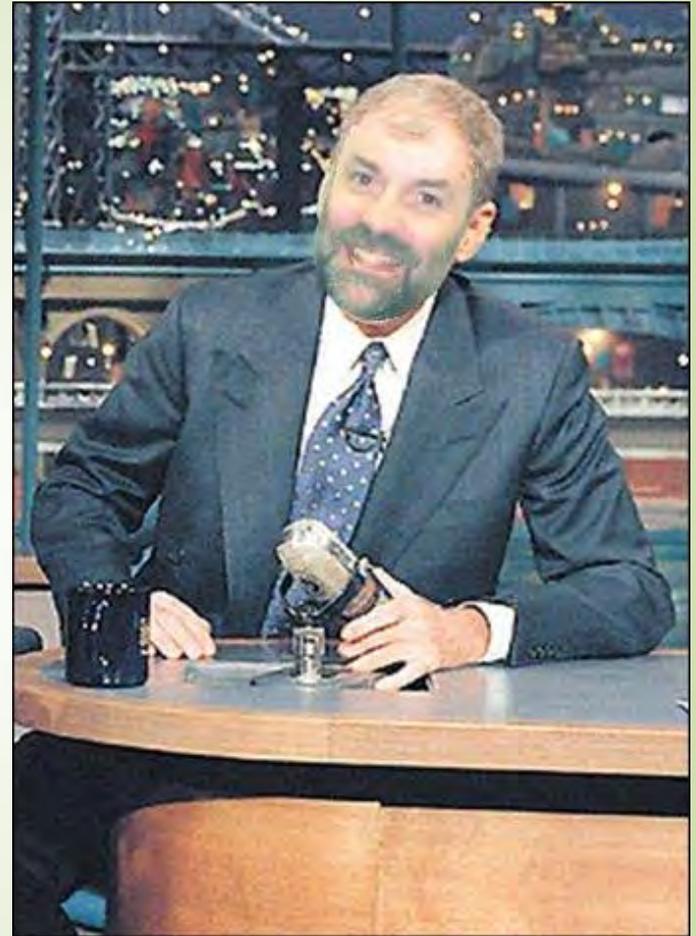
It means that I have established floodplains everywhere – not just along FEMA streams (Think Baton Rouge).



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1. System Thinking
2. Business Thinking

Your political leaders are often business people. Run stormwater like a business starting with a business plan and a “real” user fee.



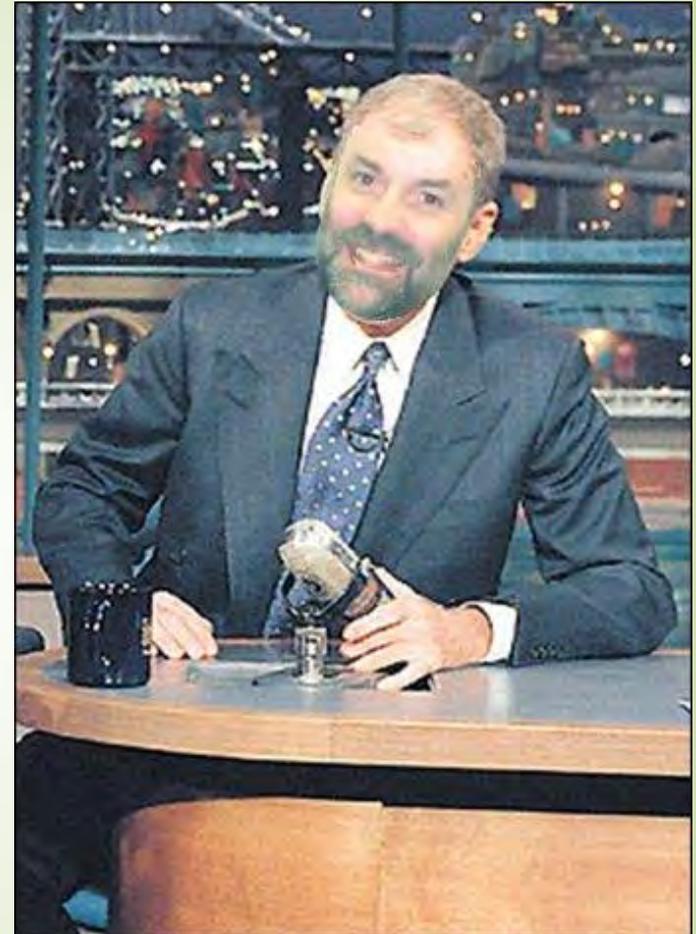
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2. Business Thinking
3. Water Resource Organizations

Stormwater looks and smells more like wastewater than like police, schools and animal control. Wastewater is run as:

- *a municipal business*
- *serving customers*
- *having a fully funded, comprehensive program*
- *operating a well-defined and owned system*
- *handling a quantifiable resource*
- *meeting strict regulatory standards as a matter of course*

<http://bit.ly/28K1FIG>

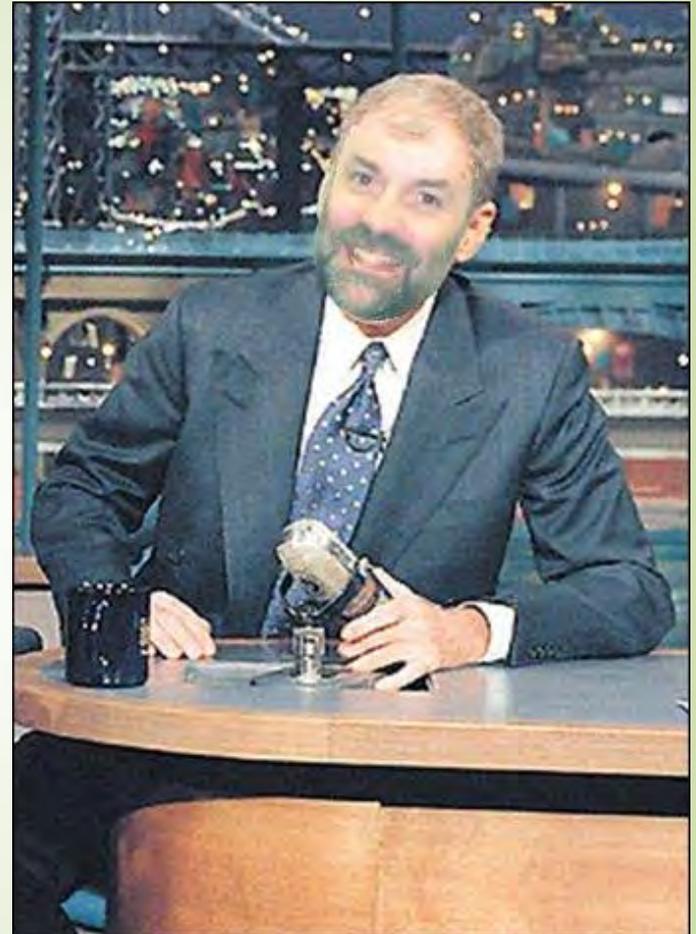


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1. System Thinking
2. Business Thinking
3. Water Resource Organizations
4. Manage Infrastructure as an Asset

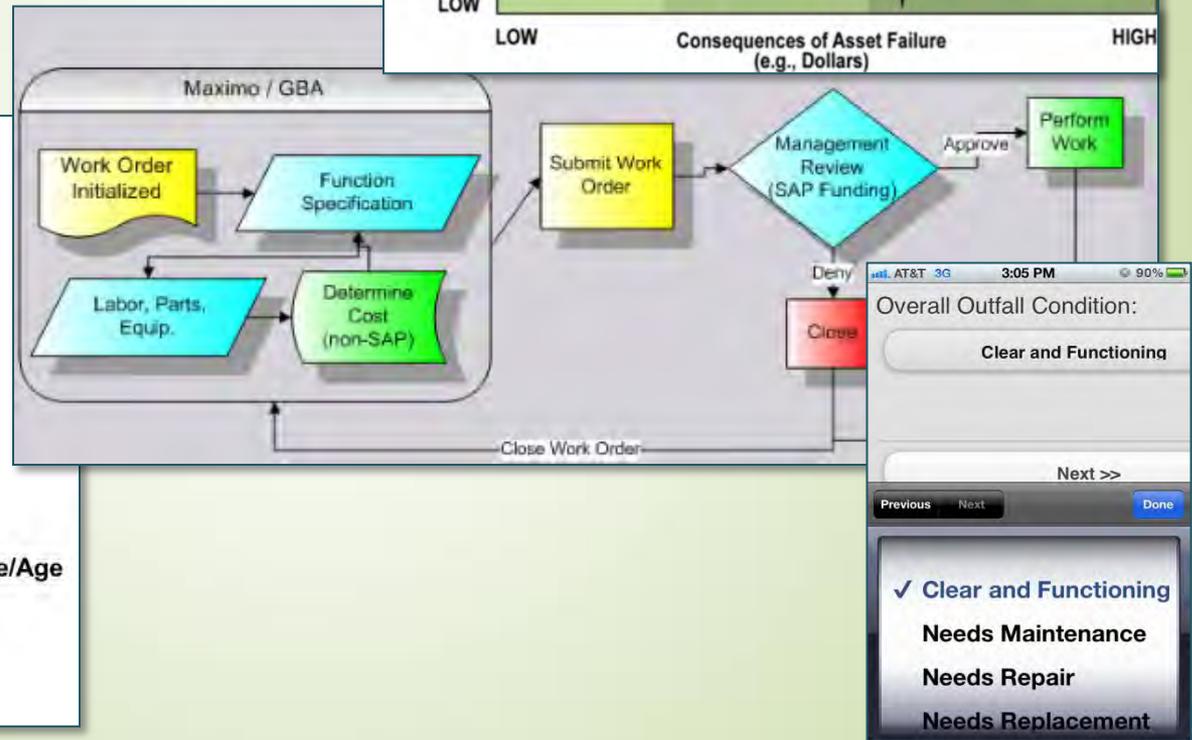
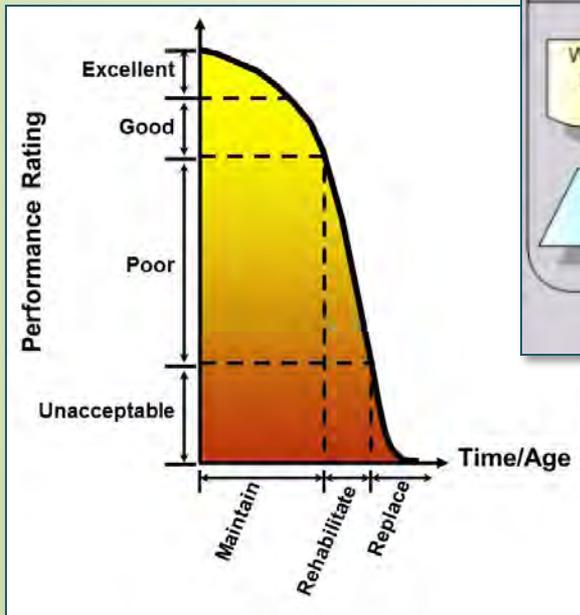
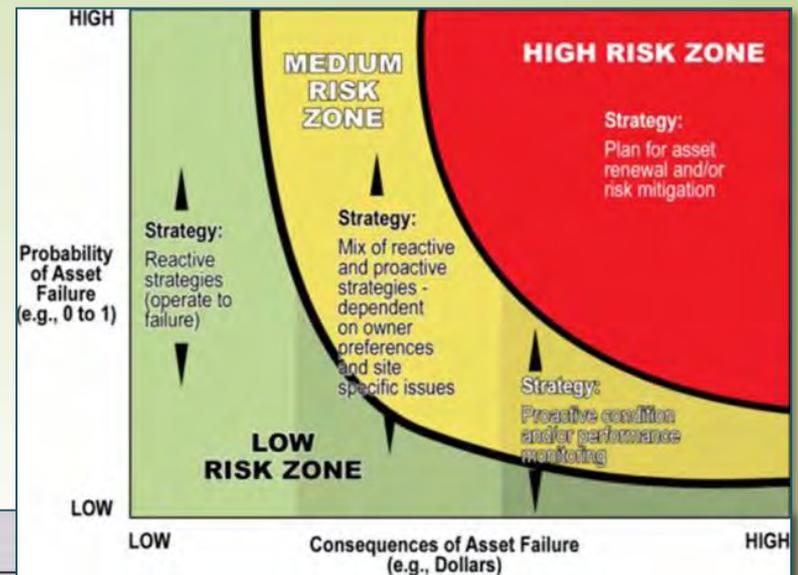
Aging infrastructure is the “sleeping giant” for most stormwater programs today.

Asset management will stretch scarce dollars.



Leaders combine four things:

1. Maintenance Management
2. Risk-Based Asset Assessment
3. Work Order Management
4. Smart Phone/Drone Collection



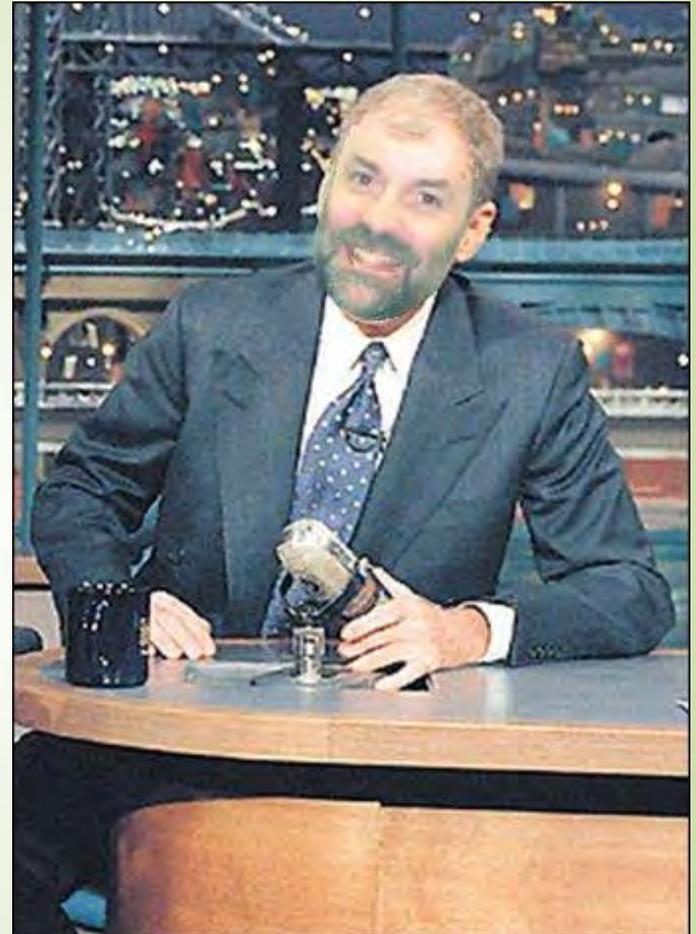
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4. Asset Management
5. TBL Thinking

Conveyance, flood control and pollution reduction are just three out of 20-40 benefits of attractive, sustainable designs.

Urban soils are a "building code" issue.

Rainwater is a resource we cannot continue to use up. We must be volume-based.



Elmer Avenue Neighborhood Retrofit

Google “The Miracle on Elmer Avenue”



Before



After

South Denver Natural Urban Waterways

Creating public “ownership” of beautiful flowing water features with sustainability, flood control and recreation built in

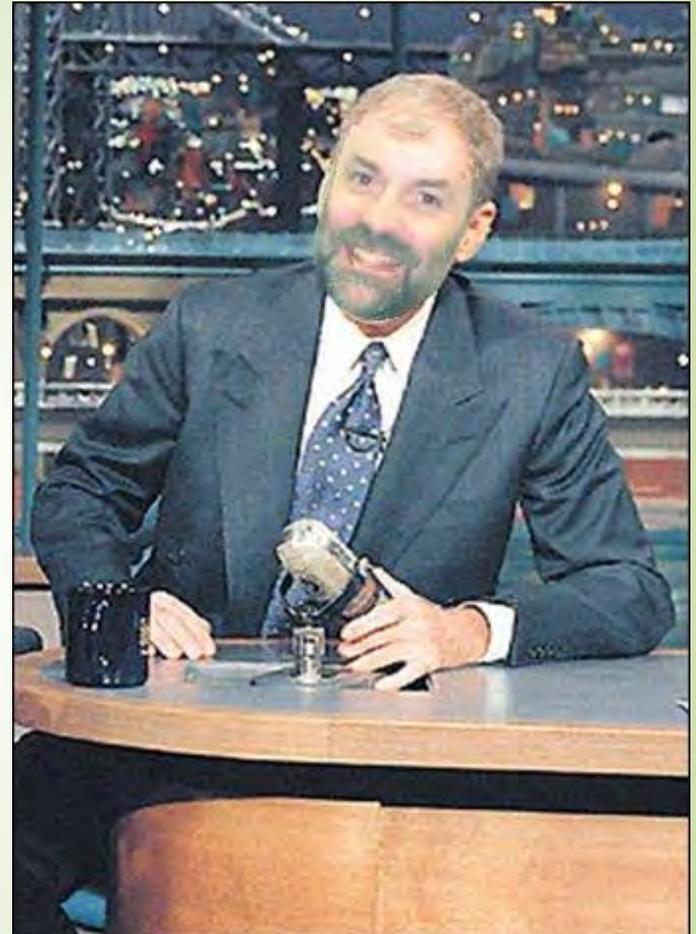


Its Time to Grow Up

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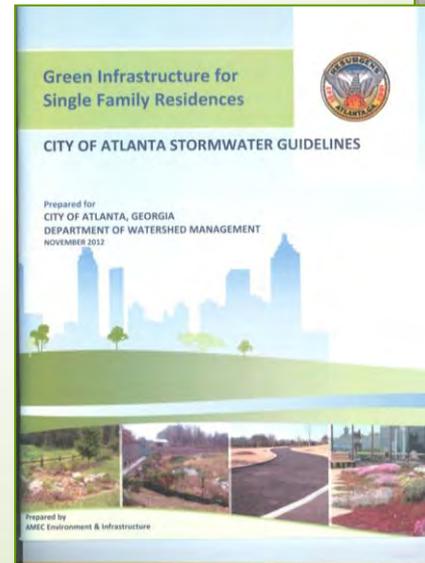
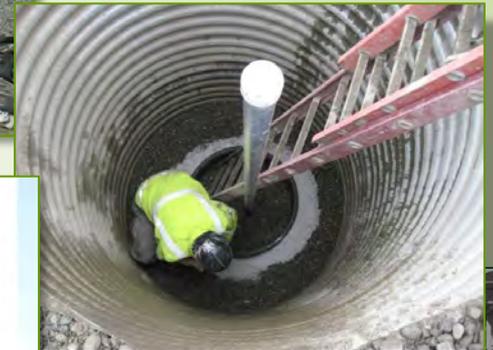
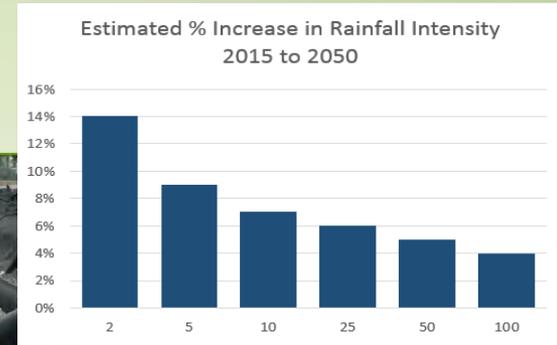
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2. Business Thinking
3. Water Resource Organizations
4. Asset Management
5. TBL Thinking
6. Resiliency Planning

Climate change is a given, resiliency is a must. Predictions increase frequent storms 10-15%.



The Resiliency Dividend

- GI can handle that increase effectively – and will create ancillary benefits.
- I will create design standards and approaches.
- \$\$ - I will modify my rate structure to reflect resiliency and credits.
- \$\$ - I will incentivize private resiliency retrofits in areas needing it.



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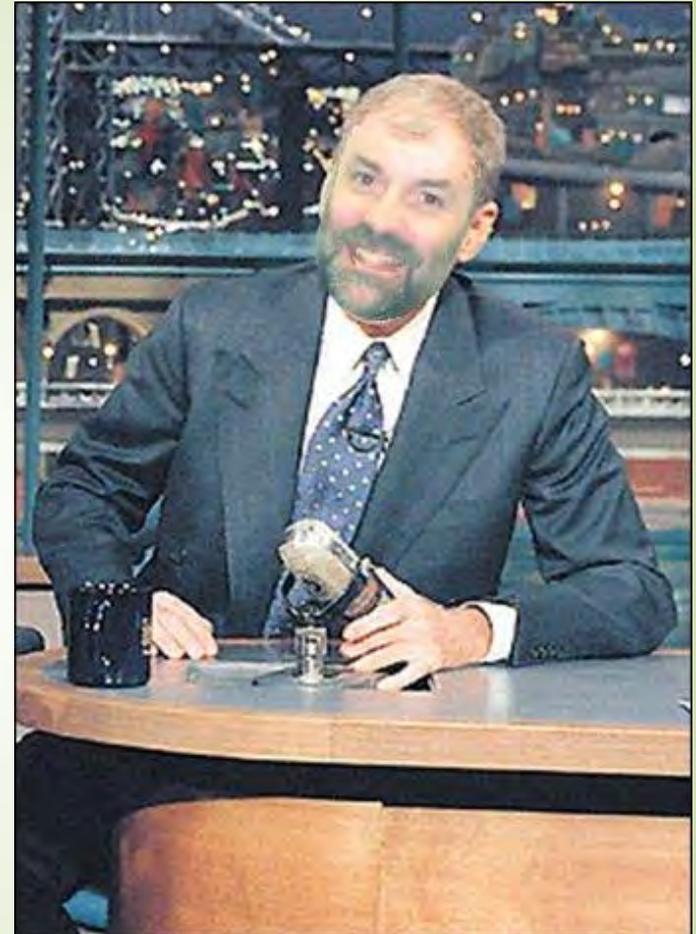
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6. Resiliency Planning
7. Innovative Partnerships

Maybe others can do parts of your job better than you can. Let them.

Public-Private options

Non-profits

Joining with neighbors

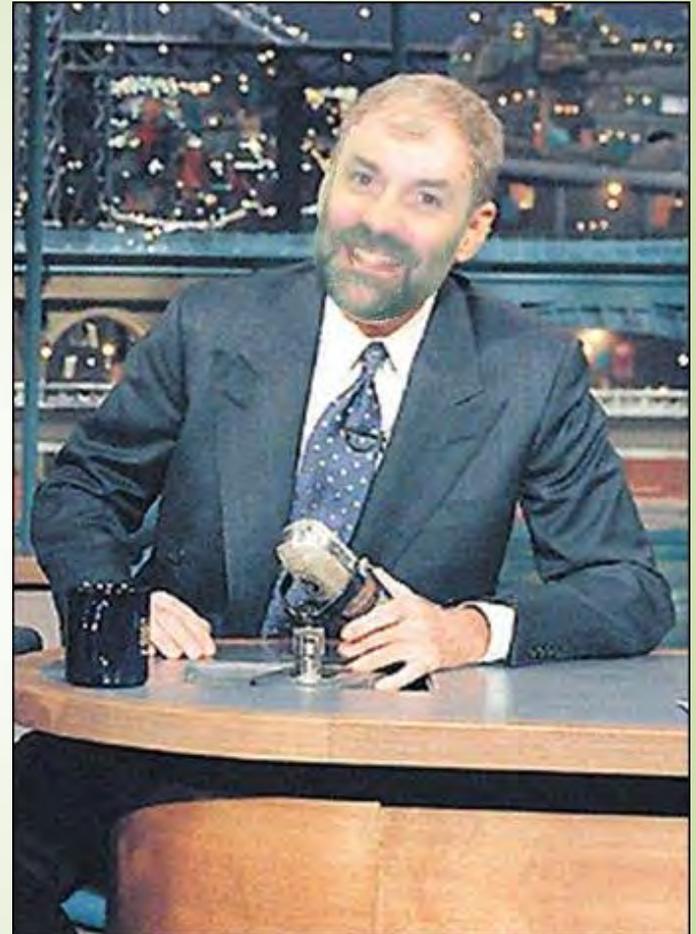


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8. Modified Rate Structures

Use funding as a tool to leverage your dollars to encourage best development and maintenance behaviors and private initiatives.

Basic methodology, incentives, credits

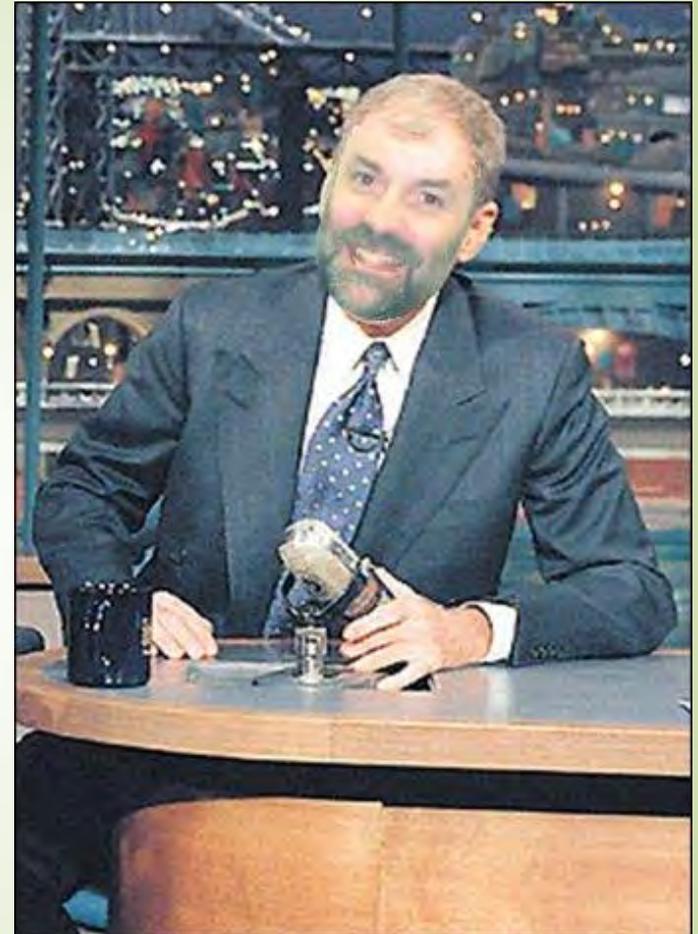


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9. Strategic Public Engagement

If you are a business then you have customers. Treat them like that:

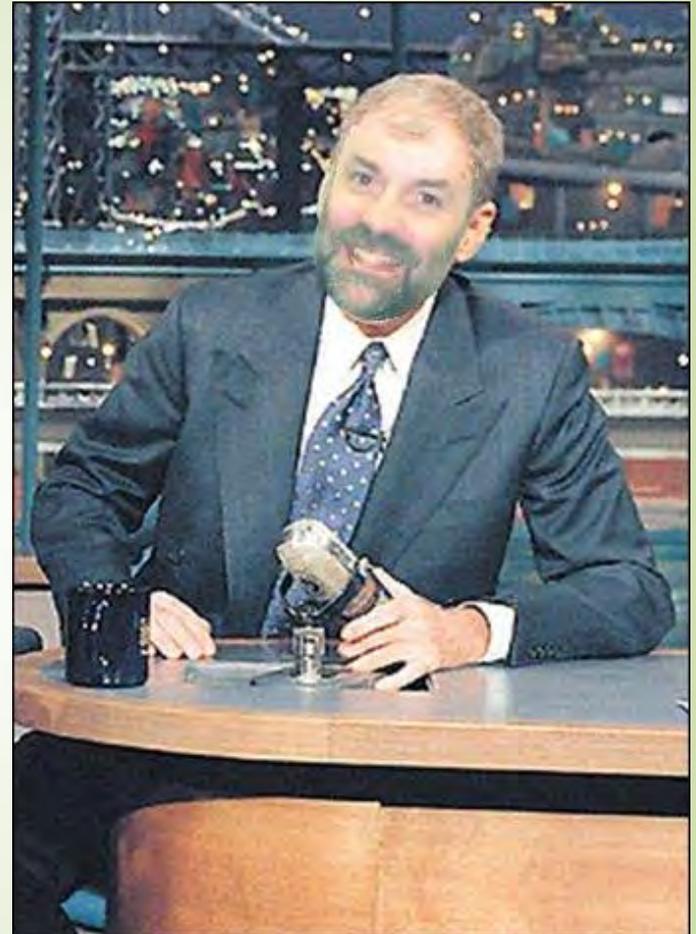
- comprehensive plan
- social media
- meaningful involvement



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9. Strategic Public Engagement
10. Go High-Tech

Technology can be a game changer...get in the game.



Some High(er) Tech Ideas

- Use smart phone applications for all data collection, citizen reporting, inspections, etc.
- Use drones to inspect linear features.
- Real-time GI controls get six times better volume efficiency
- Floating outlet structures give exact outflow hydrographs
- Continuous simulation models have both simplifying and complex options
- Real-time weather prediction can save lives and property
- Dashboard-connected monitoring systems save lost opportunities

It Takes Time to Grow Up

- Don't rush off and do something regretful
- Start with a business plan and a data inventory
- Match program changes to funding increases
- Learn from others – shamelessly copy
- Deliver early visible results; don't overpromise and under deliver
- Be patient





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