

# Municipal Stormwater Issues

From one of the “Little Guys”

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# What's Up?

- The four challenges we face –
  - Control Fecals
  - Control Nitrates
  - Control silt
  - Control flow

Not bad...only four things...hummm

What's the difference between these...





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# And these?

come. sit. stay. play!





# Well...Wild and Domestic

- Here's the big problem
  - **We** concentrate our population
  - **We** walk them down the street
  - **We** dispose of our problems down the nearest hole (or storm drain)

# And the fix???

## Education

- Flyers

## Enforcement

- Nuisance Officers

## Public Service Announcements

- Local Radio and Television

## Workshops

- Yard and Pet care

## Public events

- Fairs / Annual Clean up

# What to stress

We need to let the people know:

Affects on our,

creeks - wildlife

streams - swimming holes

rivers - fishing

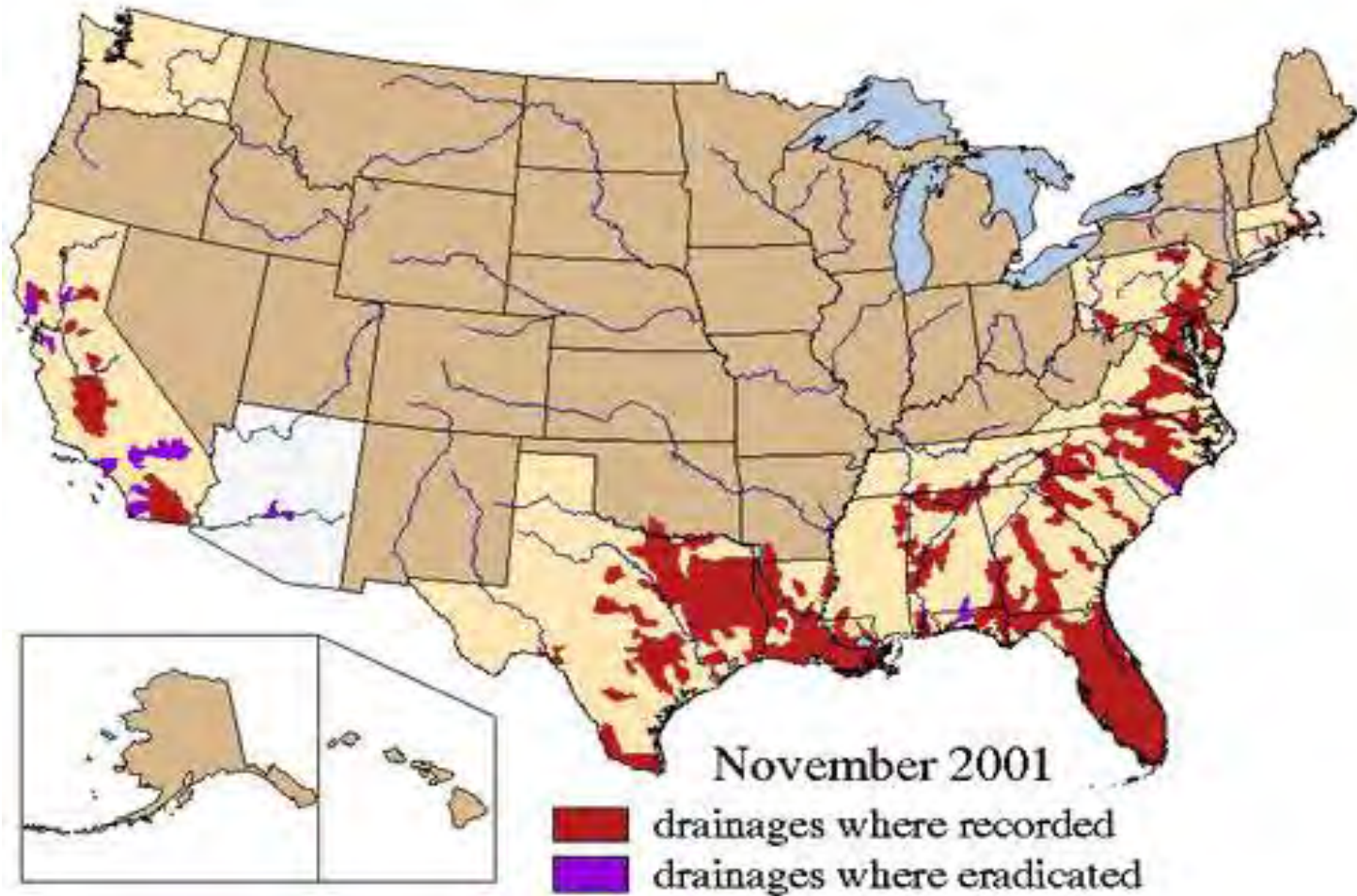
lakes – water supplies

It's our watershed – let's protect it

What can go wrong now??



# Here?...Oh Yeah



# How did this happen

Imported in the 1800's – by freighter

Planted (yep) for looks – in fountains and ponds

Transported by boaters – on hulls and props

Oh yeah...and we used it in our fish tanks and it was  
tossed out with the fish when we were done!

And as they say

The rest is history

Or is it?

# Oh No...We did what?

By adding our runoff fertilizer we actually encouraged additional growth and reproduction...really

And it doesn't stop there...all the aquatic plants "benefit" from all those nitrates

**The hits just keep on coming**

# So what...they're pretty

When too much of a “good thing” grows in the water, plants can actually cause fish kill!

How you ask?

## Oxygen starvation

Little know fact – at night plants breath oxygen!

Plants convert CO<sub>2</sub> to Oxygen through photosynthesis which requires sunlight

And they don't hold their breath at night

# But we can kill it ...Right

Almost every effort to eradicate hydrilla since the late 1800's has failed to include mechanical / insect seeding / and herbicides  
If you can kill it with herbicides then the dead plants settle on the bottom of the watershed and decompose releasing CO<sub>2</sub>...result?

**MORE FISH KILL**

# Then what?

In addition the massive quantities of Hydrilla also slows water movement and by doing so allows more time for silt to settle out and deposit on the bed.

The result is the slow filling of our streams and lakes, cutting storage capacity and driving the fish out of their natural habitat.

**We're doomed**

# What can we do?

1. Limit the amount of nitrates entering our water shed. Fertilize less and control excess
2. Educate the people to help eliminate “new colonies” check boat bottoms / underside of tow vehicles / throw non-native plants out with the garbage not out in the creek
3. Use “sterile” carp to biologically control the plants

Whew...now we got it...right?



# Not Quite



Nope



Are we there yet?



Close...but



# The never ending story

Erosion and silt are a part of life, whether they are caused by natural failure, existing construction failure, or new construction.

Your best bet is to educate the contractors and continuously monitor the sites...work with DENR Land Quality and respond to every citizen call about runoff.

Review plans for proper erosion control...then ensure compliance

# Then What?



# Success

The goal of every erosion control program is containment...with coordination and control you can stop silt and produce a cleaner watershed

Diligence is the key to stopping the loss of capacity, cutting costs for treatment, and beginning to restore our environment

# Just one more thing



# Control the flow

Our infrastructure is aging and the population served is increasing...not a good combination

Couple these issues with decreasing revenue and you have a real recipe for disaster

The key is to identify requirements and prioritize

Then fix what you can...try to mitigate the rest

**Remember...you can't get it all done at once**

# The NC 2030 study gives us insight into tomorrow

“By 2030, North Carolina’s public water systems are projected to serve 9.8 million people, 70 percent more than today.”

“projections for stormwater investments (\$1.47 billion) may be less reliable than those for water and sewer systems. Adjustments, however, are more likely to increase rather than decrease the future needs.”

# The 2030 study gives us insight into tomorrow

The capital needs of every county in the state show an increase over the next 10 to 20 years that outstrip the projected revenue

The percentage of total assets required also show an increase as more new construction footage is turned over to the local governments for maintenance

Plus increasing demands for repair / replacement of our existing infrastructure

# How do we cope?

This parking lot island has been designed as a bioretention facility. Runoff is directed into the shallow landscaped areas where treatment is provided.



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Vegetation

Growing Medium

Drainage, Aeration, Water Storage  
and Root Barrier

Insulation

Membrane Protection  
and Root Barrier

Roofing Membrane

Structural Support







# Eyes On

**Complete a total inspection of your system**

Don't let repairs linger

- trust me they only get worse -

Vacuum / clean all housings

Verify the condition of your piping

Check those outfalls

- They won't flow if they're blocked –

Clean every grate

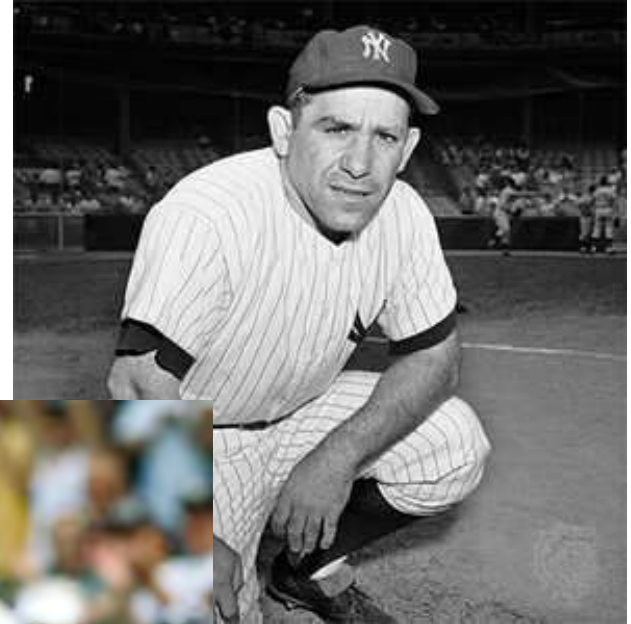
# If you build it – They will come

Be sure that all proposed installations are really big enough to handle additional flows...even with BMPs you can expect overflows during large rainfall events – don't get caught short

Always plan for a certain amount of above ground flow...water likes to run free, and it will assist in treatment

Look to the future...annual potential expansion review with your area planning division

# In Conclusion...My Favorite Guy



A Yogi Berra Type Quote

**All the water that is on the earth**

**Is**

**All the water that is on the earth**

**Think About It!**

# Questions?

