

Stormwater Management

Within Ocean City

Stormwater Runoff Problems

- Flooding
- Pollution
 - Canals
 - Bays
 - Ocean
- Sediment



Stormwater Flooding

- The amount of rainfall run off is based on the intensity of the rain fall, the size of the drainage area, and the amount of impervious surface in the drainage area.
- A typical 300' x 300' city block generates roughly 3,500 gallons per minute of run-off during a heavy rainfall

Stormwater Flooding

- In general, our storm drain pipes operate as “open channel, gravity flow”
- Therefore the capacity of the pipe is based on three factors:
 - Size of the pipe
 - Slope of the pipe
 - “smoothness” of the pipe

Stormwater Flooding

Ocean City is Barrier Island!

- Average elevation of Coastal Highway is around 6 feet above mean low water.
- Storm drain pipes require a minimum of 1' of "cover" to keep from being crushed by traffic.
- The bottom of the pipe (called the invert) at the outfall should be at elevation 0 or higher to insure proper flow at even low tide.
- In many areas of Ocean City, the distance from the center of Coastal Hwy to the closest outfall is over 1,000 feet (in some areas around Caine Woods it is over 2,000 feet).
- Storm drain pipes must be at least 12" in diameter to prevent debris from constantly clogging the pipe

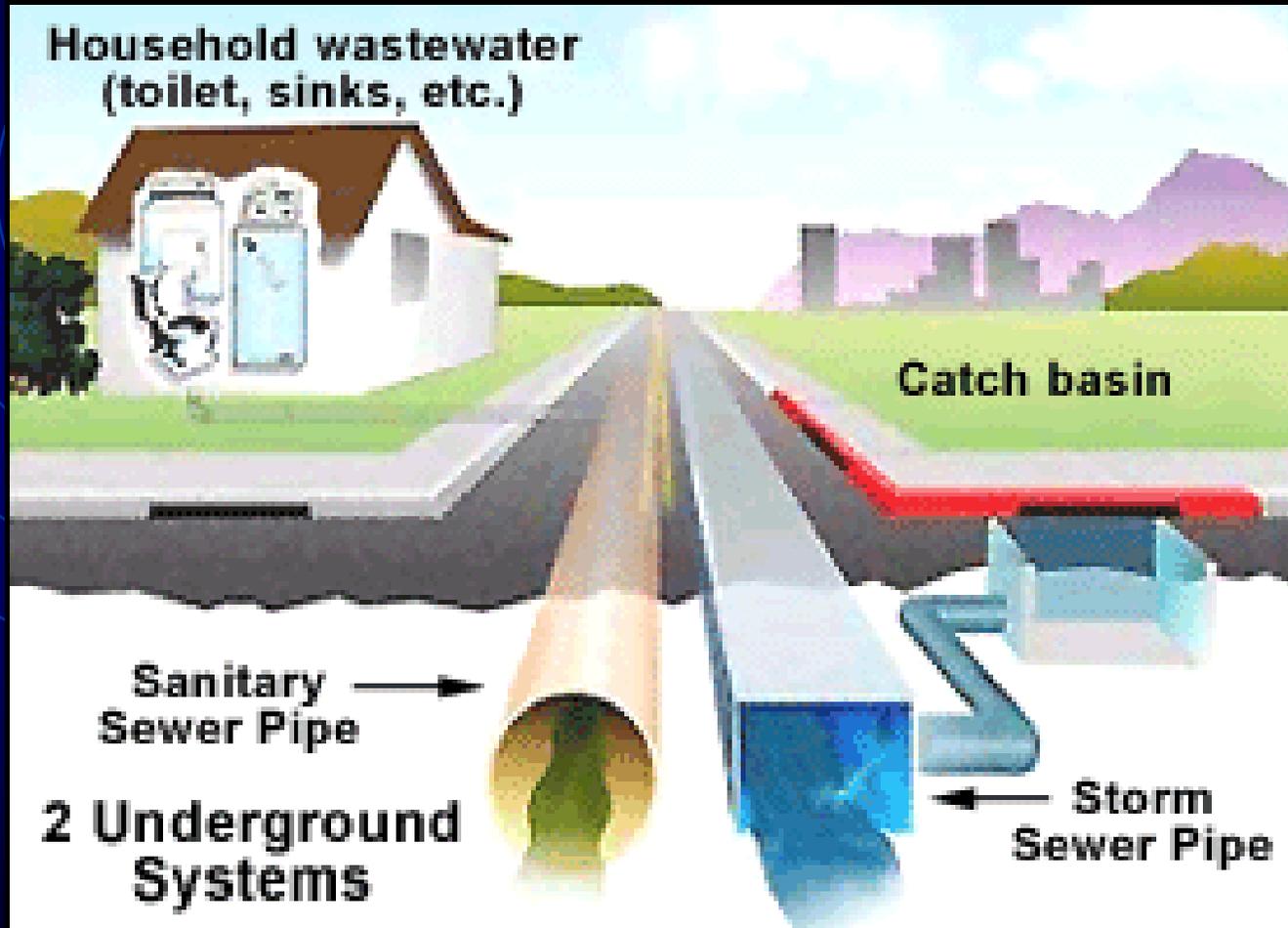
Stormwater Flooding

- Given the typical constraints in Ocean City:
 - Average 6' elevation streets
 - Must drain to bay, outfall elevation limited by sea level.
 - Tidal back pressure
 - Full pipe capacity averages 1,000 gallons per minute.

Where does the Run-off Go?

- Ocean City uses a separate storm sewer system. Storm water entering our system flows into the canals and bay.
- Storm water (and anything else) that enters the City storm sewer system is NOT treated prior to discharge!

What's Under the Street



Ocean City's Storm Water Collection System

- The System:
 - Over 40 miles of storm drain pipe
 - Over 1,800 storm drain inlets
 - Over 300 storm drain outfalls
- The resources
 - No resources are dedicated to the storm drain system. public works construction street division maintains the storm drains along with streets.
 - DPW Street Construction Division currently consists of 13 people.

Other Items of Note

- Coastal Highway
 - Storm Drainage on Coastal Hwy managed by the State Highway Administration but..
 - At most locations their pipes connect to the City's and use the City Outfall
- Ocean Block
 - North of 33rd street, there is no Storm Drain system east of Coastal Hwy. It is all surface flow.

Collection Challenges

- Failing Pipes
- Inadequate capacity
- Clogged inlets
- Sea Level rise at outfalls

Failing Pipes

- Most storm drain systems in Ocean City were installed by the developer using corrugated metal pipe in the 60's-80's
- Currently there is over 80,000 linear feet (over 15 miles) of this pipe that will need to be replaced in the next 10 years at a cost of over \$6 million

Failing Pipe



Inadequate Capacity



Clogged Inlets

