



Stormwater Issues

Stormwater Program Advisory Committee

July 19, 2018

A Special Place



- Quality of life
- Cultural and historic resources
- Abundant & accessible natural resources

Great Blue Heron looking for a meal

Growing Fast!

- Between 2000 and 2010, 5th fastest growing VA locality
- Since 1975 235% increase in population
- **Preserving assets & resources has become critical**

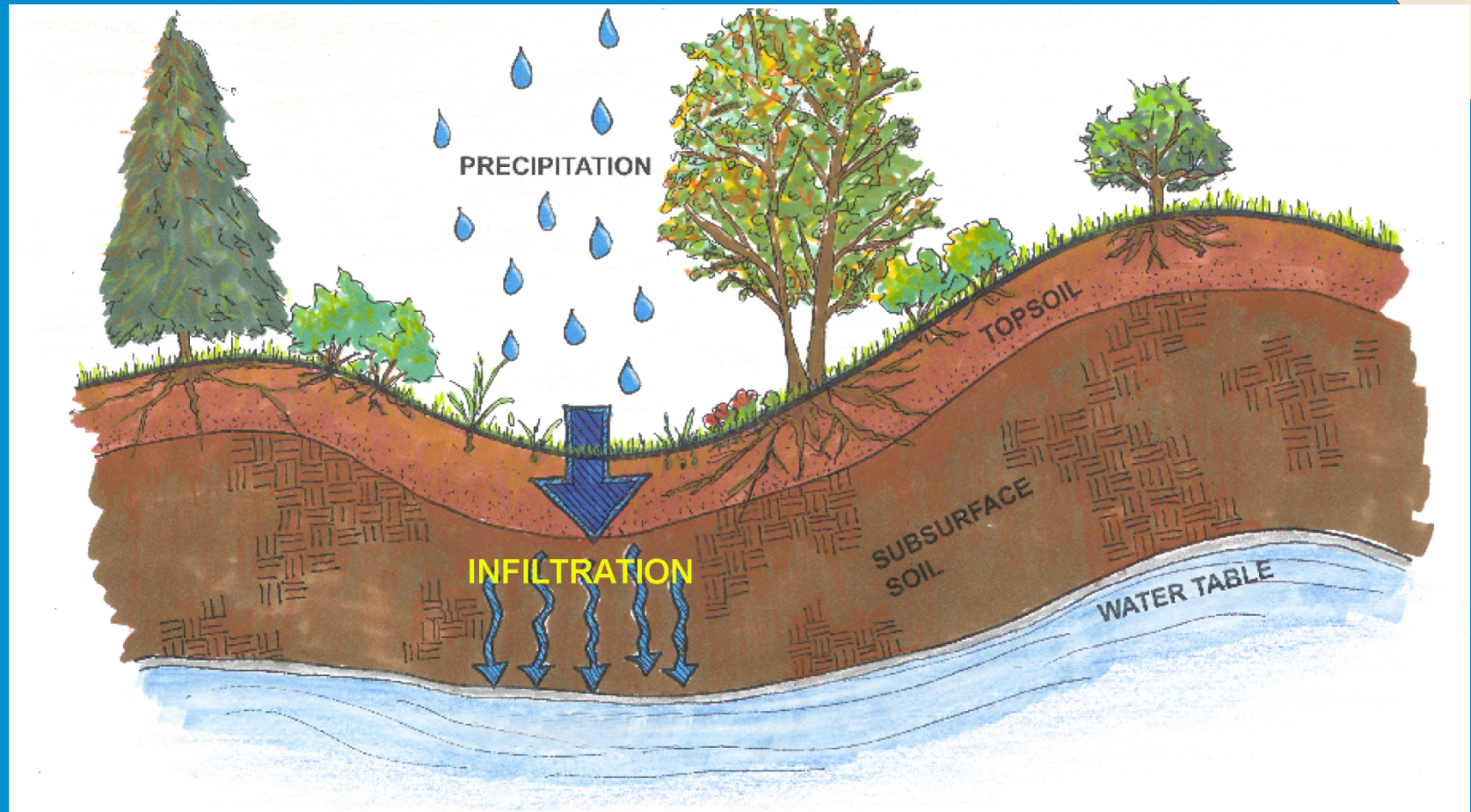


Stormwater is...



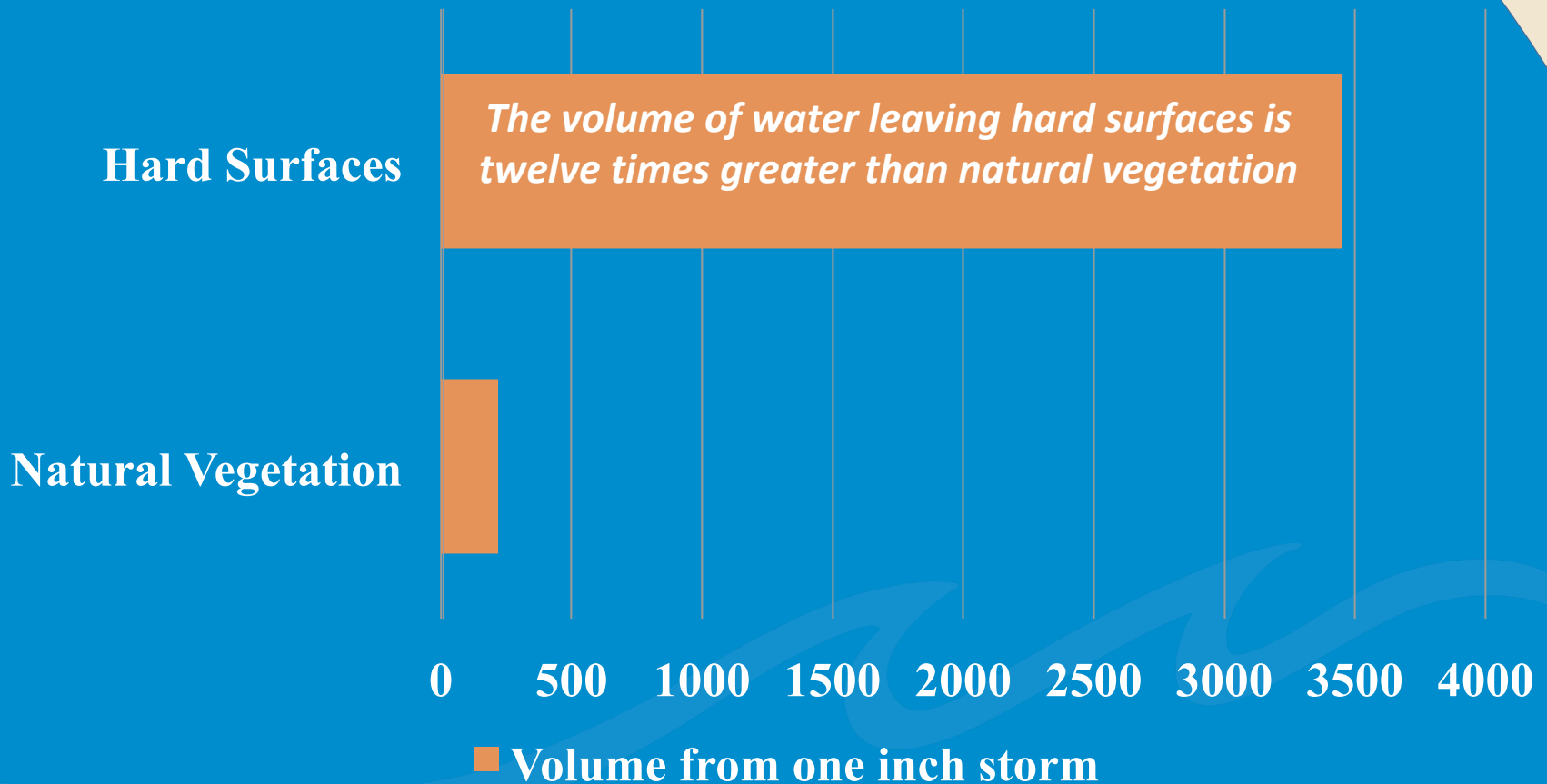
- Rainfall that doesn't soak into the ground and runs off into ponds & streams
- The primary cause of water pollution in the United States, in Virginia and in our neighborhoods

Natural Conditions



Runoff Volume

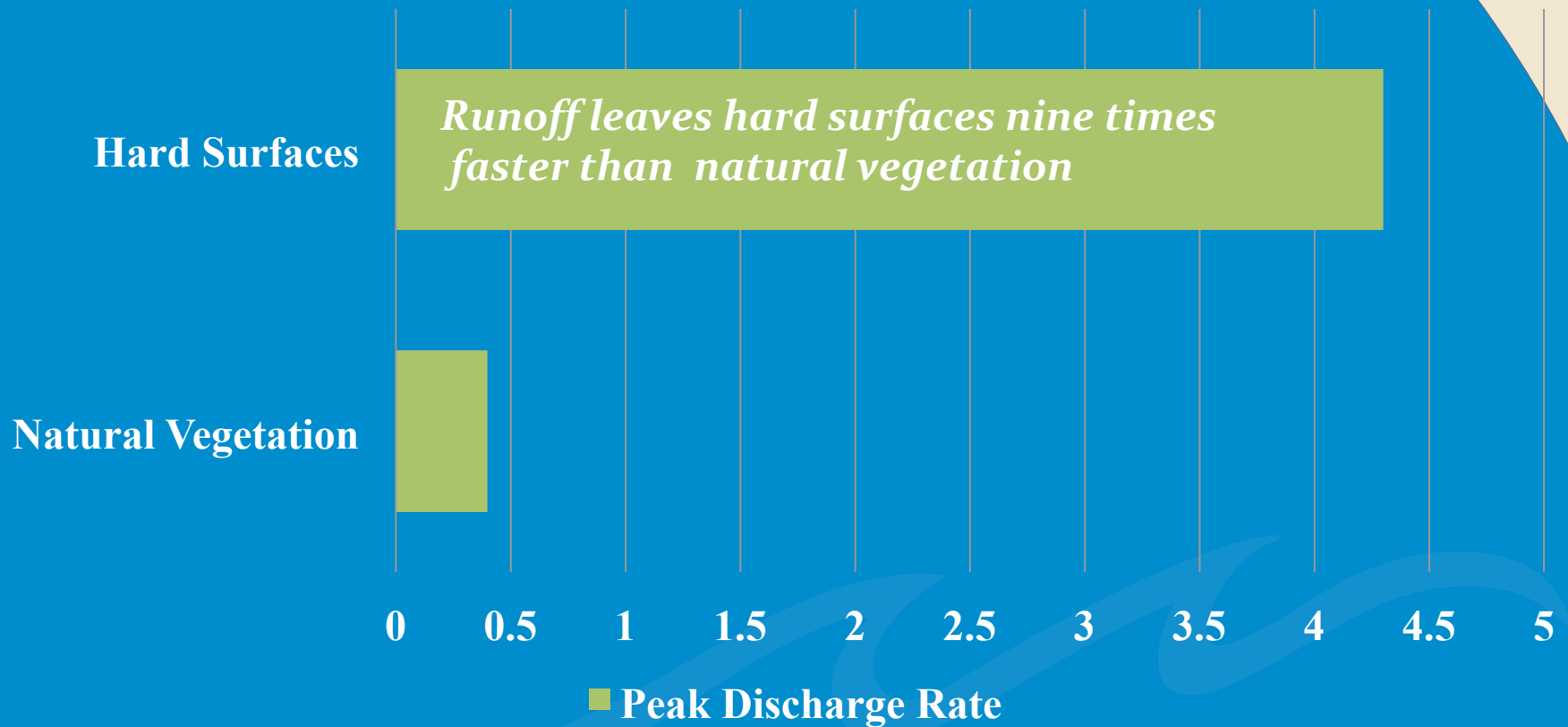
(cubic feet)



(1 acre – 1 inch Storm)

Peak Discharge Rate

(cubic-feet/second)



(1 acre – “2 year / 24 hour” Storm)

Erosion

- Clogged waterways for boaters, swimmers
- Cloudy water – bay grasses can't grow
- Domino effect –
 - Erosion causes more erosion



Bacteria in our water...



James River

- Increases the chance that people will get sick from contact recreation
- Renders the food supply unsafe
- Increases treatment costs for water supplies

Regulating Stormwater



FEDERAL LAW

- Clean Water Act
 - Impaired Waters 303 (d) List
 - TMDL Program
 - Discharge Permits

STATE LAW

- Industrial Stormwater Permits
- Construction Stormwater Permits
- MS4 Permits
- Erosion & Sediment Control Act
- Chesapeake Bay Preservation Act



The Clean Water Act

1. States establish water quality standards or expectations for each waterway
2. A waterway is evaluated – does it meet the state's expectations?
3. No? A total maximum daily load (TMDL) is completed - what can the stream handle?

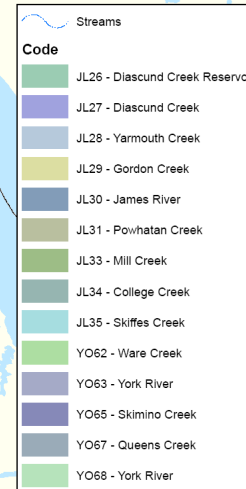
The Clean Water Act

4. A TMDL Implementation Plan outlines steps to restore the waterway to meet expectations (WQ standards)
5. Industries & municipalities are issued limits on how much pollution can be discharged – these are called permits

James City County NWBD Hydrological Units



Gloucester
County



- 20+ impairments
- All but 4 have too much bacteria
- All have at least 1 completed TMDL
- 2 completed IPs
- 2 completed APs



0 1 2 Miles
1 inch = 3,700 feet
1:44,400

www.AllianceChesBay.org



Chesapeake Bay Watershed

6 States & D.C.

64,000 square miles

Average depth = 21'

The “Bay TMDL” Complex & Complicated

- 1985 – Bay Jurisdictions *voluntarily* begin work with little progress on clean up
- 2010 - draft TMDL for (N & P) & sediment
- 2011 - the states and DC submit watershed implementation plans (WIPs)
- 2012 - WIP II finalized, includes new requirements on regulated discharges

The “Bay TMDL” Complex & Complicated

- 2013 – New Municipal Separate Storm Sewer System (MS4) 5-year permit requirements
- 2014 – New VA Stormwater Management Program (VSMP) requirements for MS4s
- 2015 – JCC CBTMDL Action Plan Developed, 3 permit cycles to reach goals
- 2018 – VDEQ developing WIP III
- 2025 – Clean Up Complete!?

Our Goal - To Mimic Nature

- Slow down the runoff
- Let stormwater soak in the ground
- Keep vegetation in place to filter pollutants from runoff



Traditional Stormwater Approaches



Better Stormwater Approach



Stream Restoration

- Base flow channel
- Floodplain connection
- Good vegetation



Example of a healthy channel – Eastern State Hospital

Restore / Stabilize Streams



Scotts Pond Stream Restoration before & during construction

Flood Plain Management Route 5 under water...



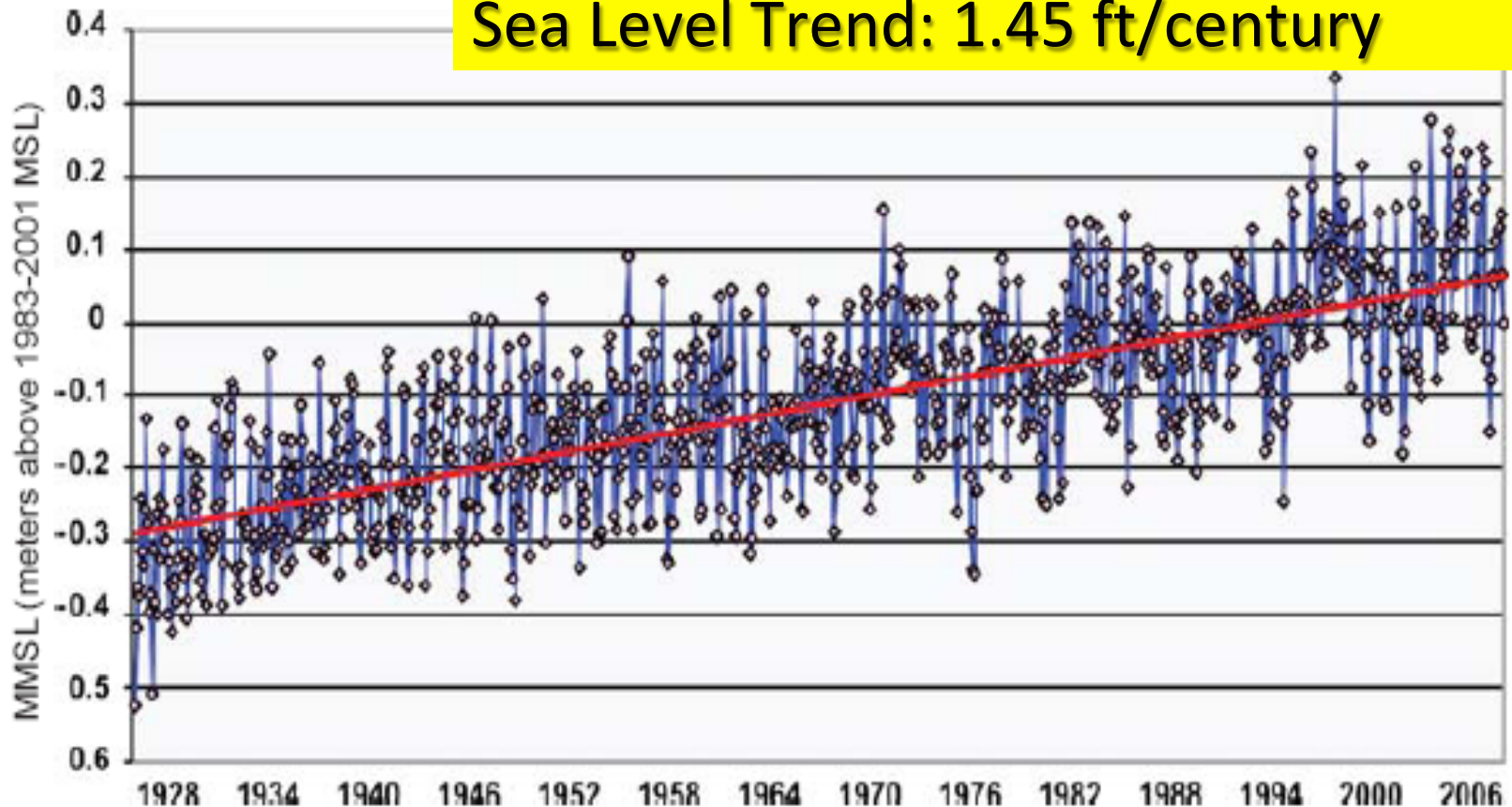
Types of Flooding

- Riverine - runoff entering streams & rivers during large storms
- Tidal -
 - Storm surges: from high winds during large storms on low-lying lands along major rivers and streams
 - Storm tides: storm surges plus astronomic tides
- Combination of both in near tidal areas

Sea Level Rise



Sea Level Trend: 1.45 ft/century



*Monthly mean sea level and sea level trend (red line) at Sewells Point, VA.
For the years 1928 through 2007, the trend is +4.43 mm/year (+1.45 ft/century).*

Thank You!



*We work in partnership with all citizens
to achieve a quality community*

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