

Module 4.

Potential Effects of Land Development on Wetlands



Land Development and Wetlands

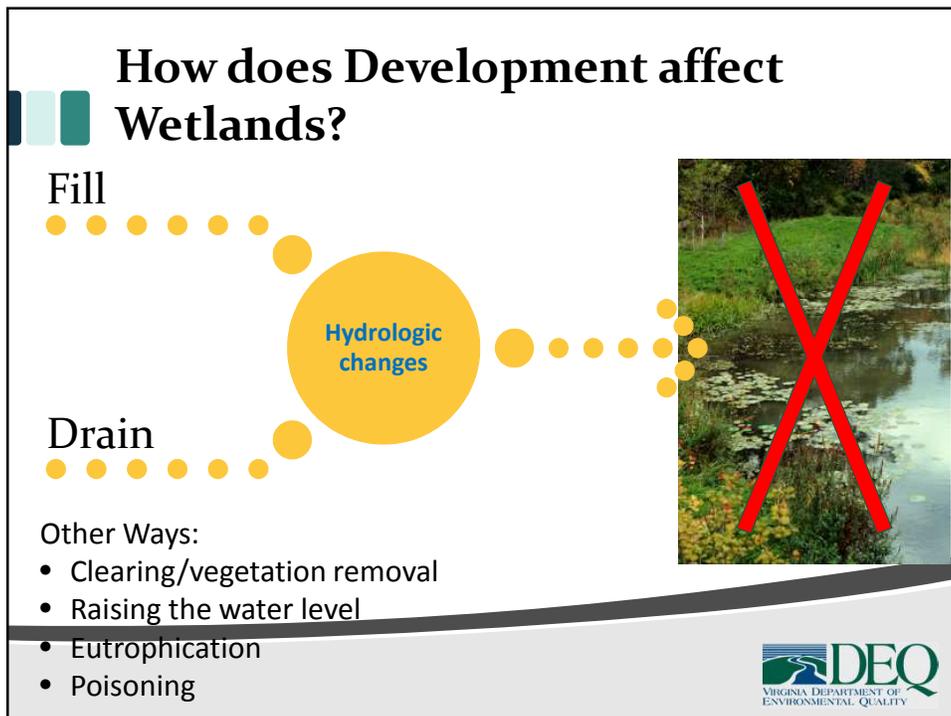
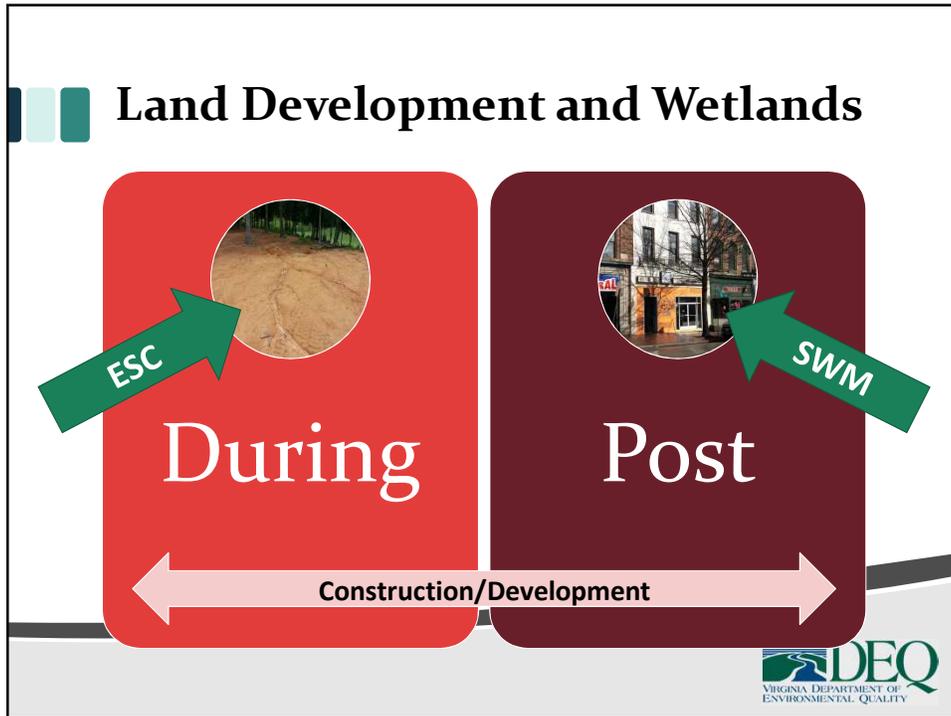


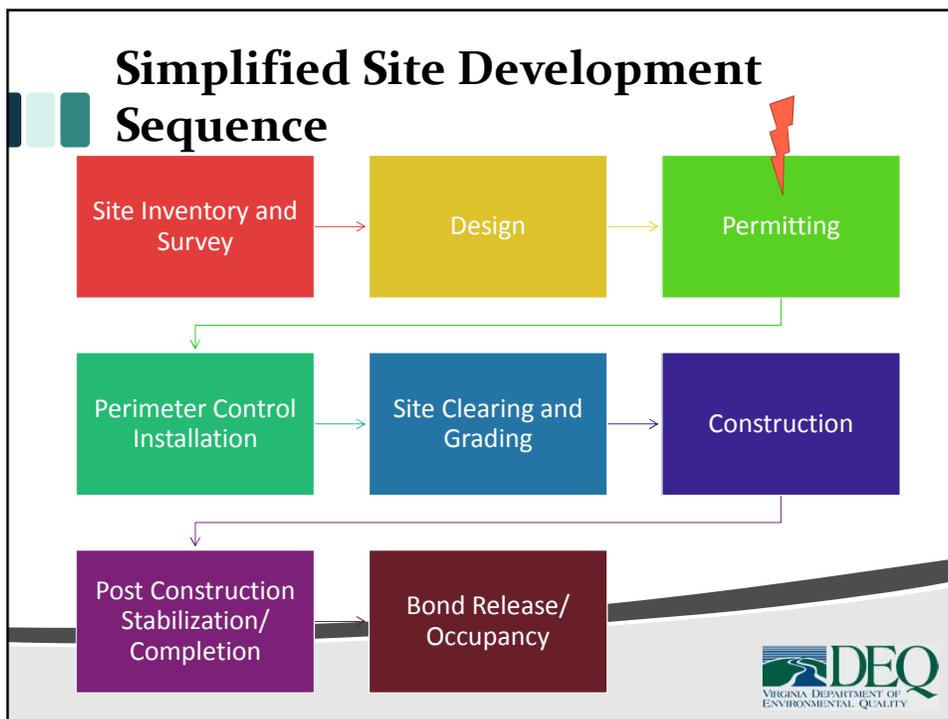
During

Post

Construction/Development



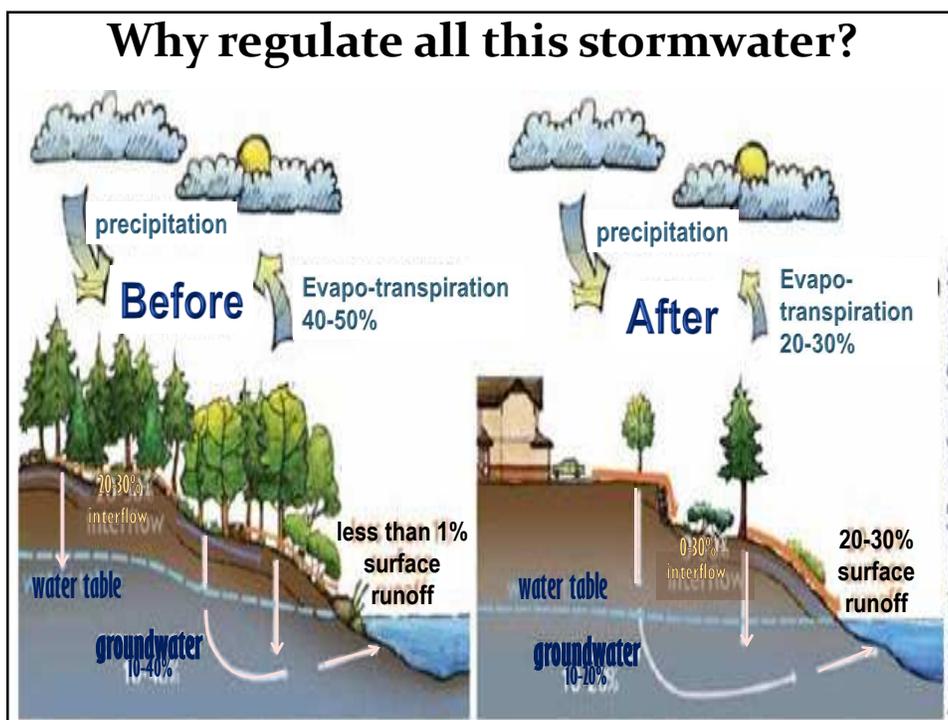
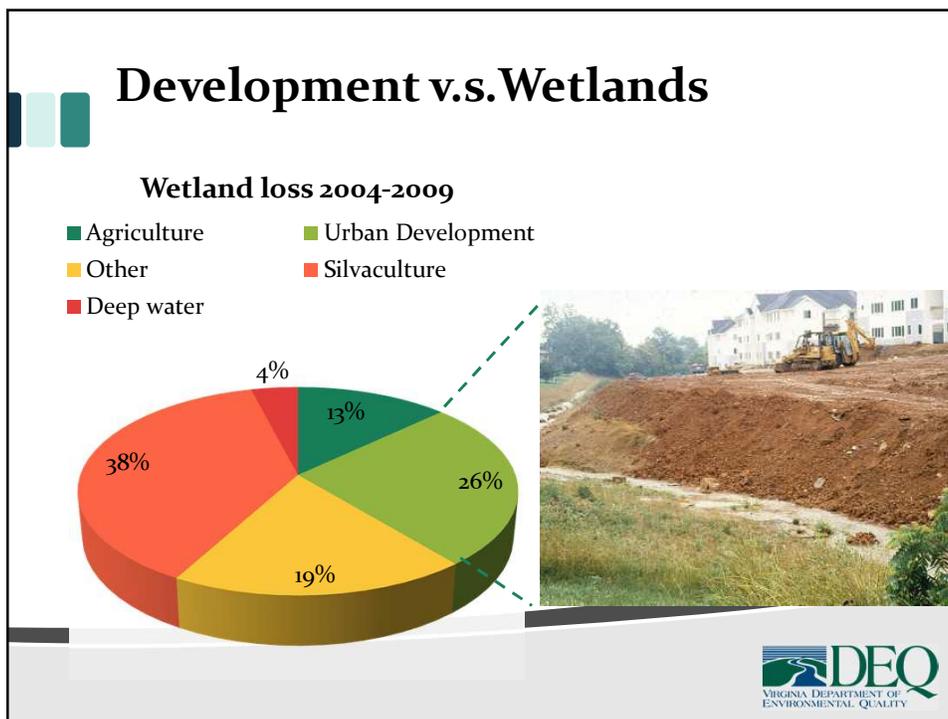




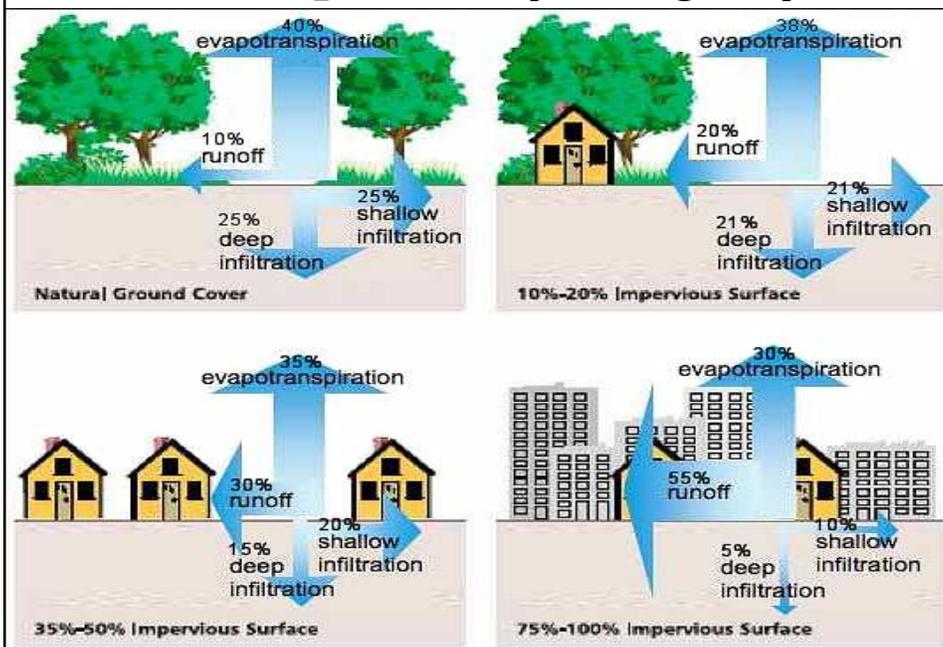
Module 2(a)

Potential Wetland Impacts During Construction

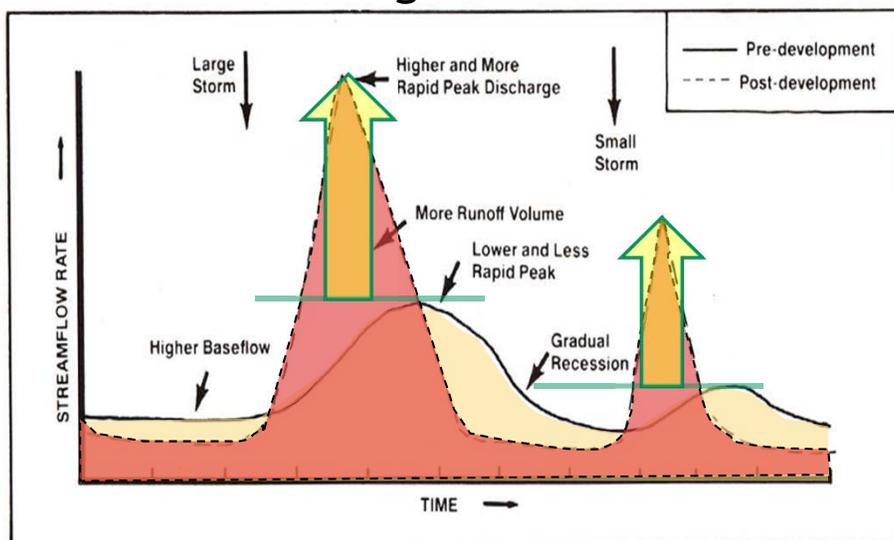
DEQ
VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

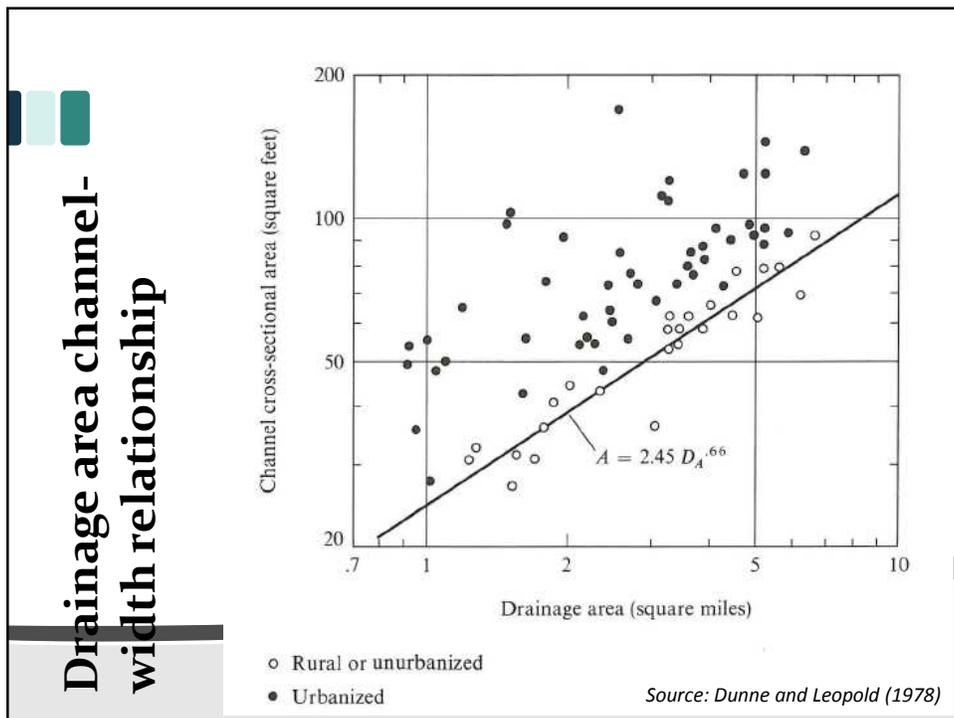
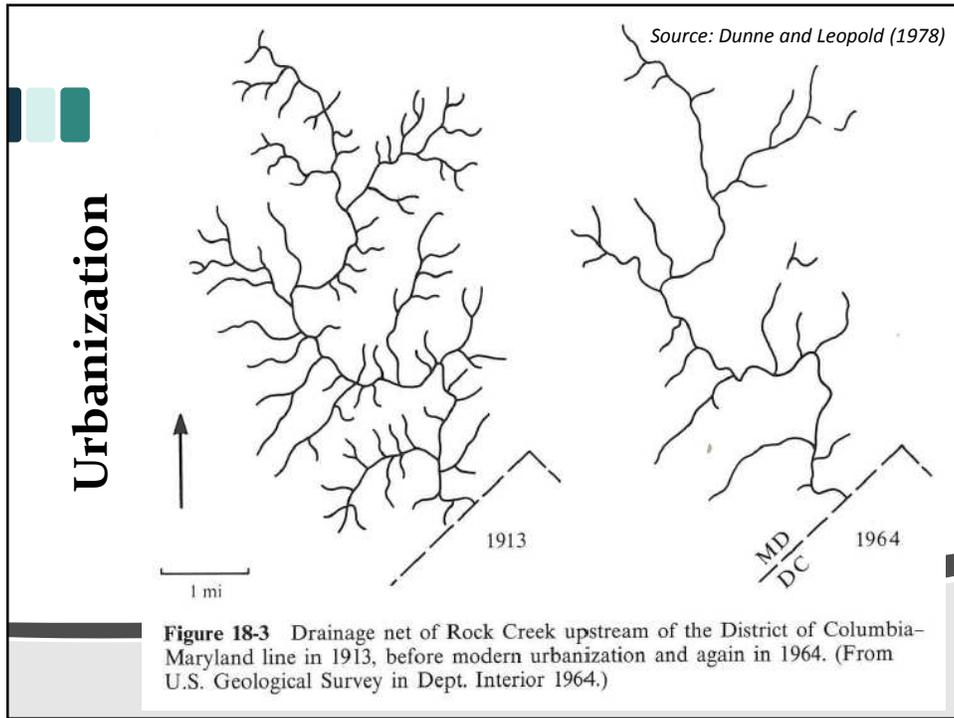


Collective Impact on Hydrologic Cycle



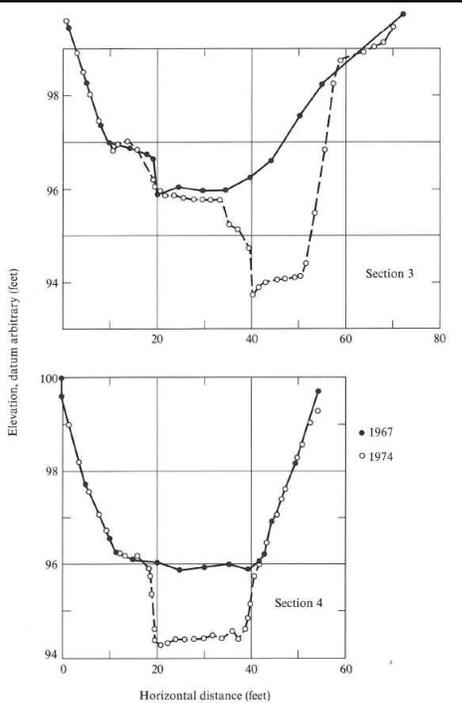
Stream Flow Changes



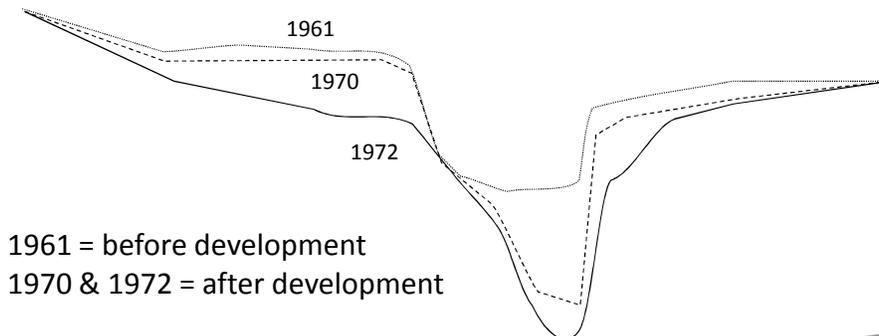


Two Stream Channel Cross Section Before (1967) and After (1974) Development in the Watershed

Source: Dunne and Leopold (1978)

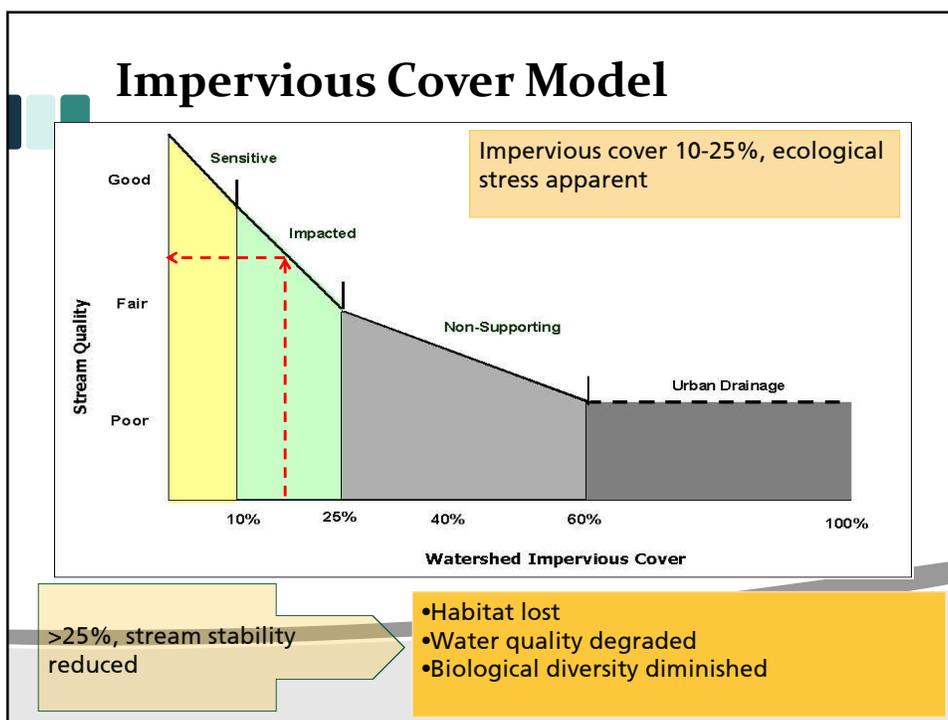
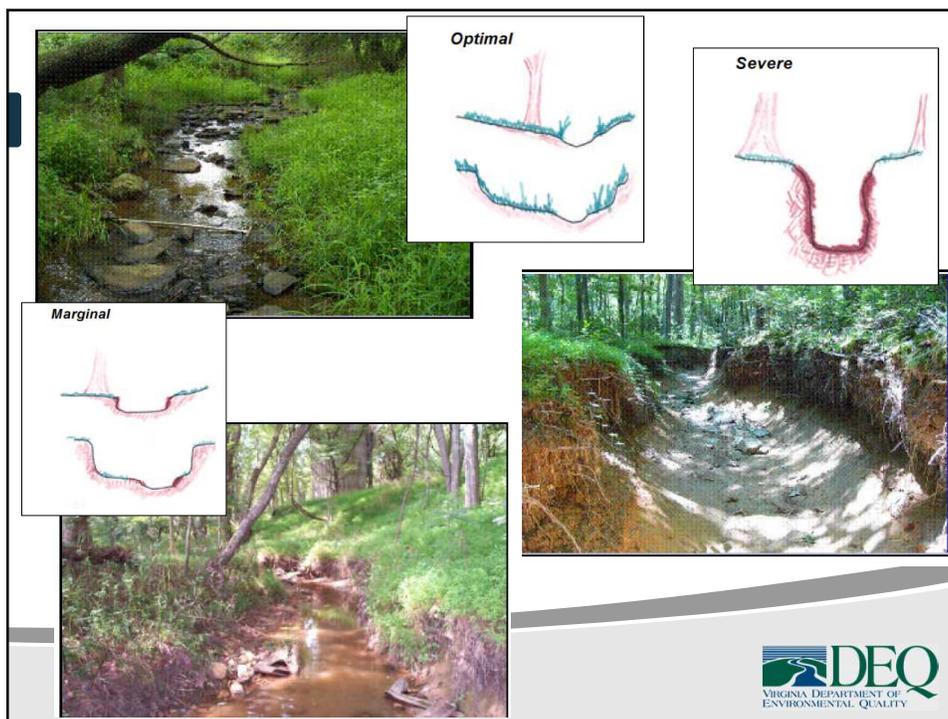


Stream channel changes as a result of increased imperviousness



1961 = before development
 1970 & 1972 = after development







Wetlands

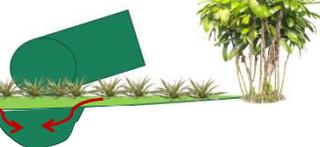
More water better wetlands?

NO!!

Concentrated discharge into a wetland



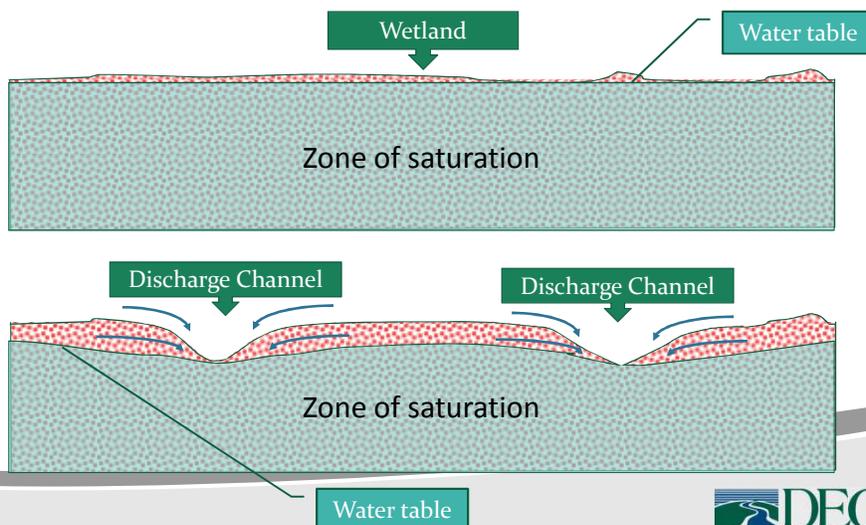
Construction

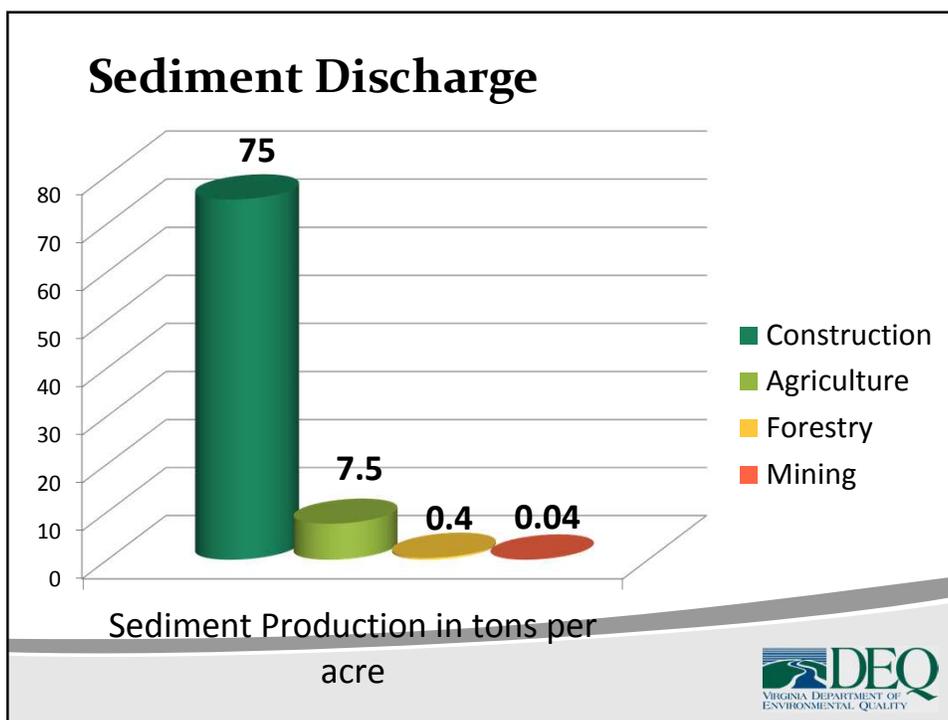
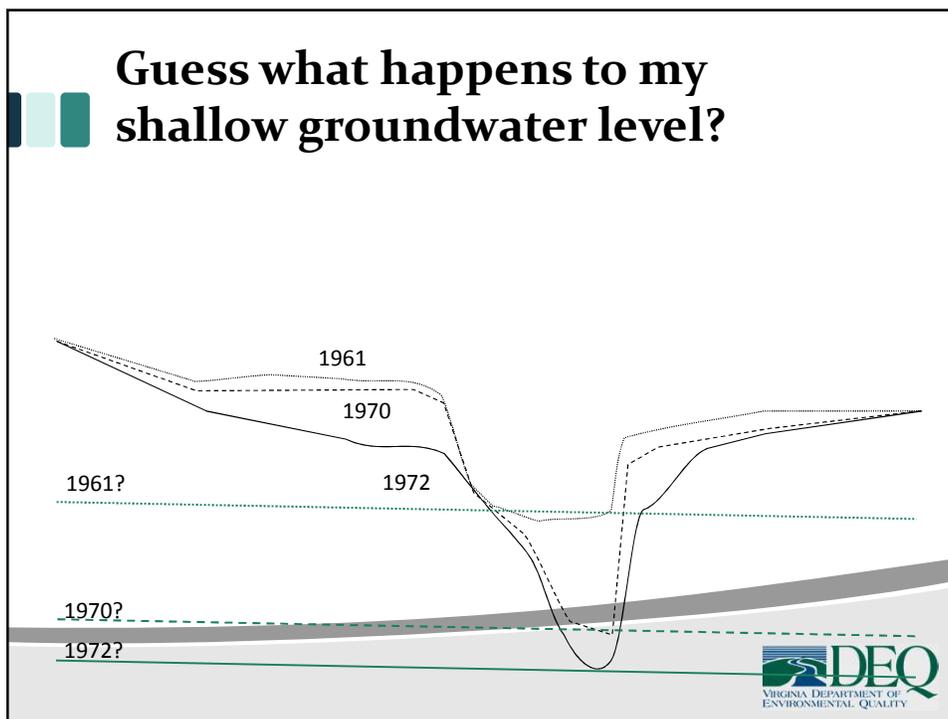


Wetland



Concentrated discharge into a wetland







Sediment particles have all kinds of chemical compounds stuck to them

The diagram illustrates a central green circle labeled "Sediment Particle". Four smaller circles are attached to it, representing different chemical compounds: a yellow circle for "Heavy metals", a red circle for "Animal waste", a pink circle for "Nutrients", and a purple circle for "Pesticide". A green arrow points from the "Nutrients" circle to a larger green arrow labeled "Phosphorus/Nitrogen/etc.". To the left is a photograph of a river with a sandy and silty bank. The DEQ logo (Virginia Department of Environmental Quality) is in the bottom right corner.

The flowchart shows the cycle of water quality degradation. It starts with "Clean Water" at the bottom right. From "Clean Water", arrows point to "Algal bloom" and "Shading". "Algal bloom" leads to "O₂ depletion", which is shown with a photo of a dead fish. "Shading" also leads to "O₂ depletion". "O₂ depletion" leads to a photo of a child covering their mouth, representing health impacts. "Pollution" (shown with a photo of a child) also leads to the child. "Pollution", "Sediment", "P", and "N" all have arrows pointing to "Clean Water", indicating they contribute to the cycle. The DEQ logo is in the bottom right corner.

Module 4(b.1)

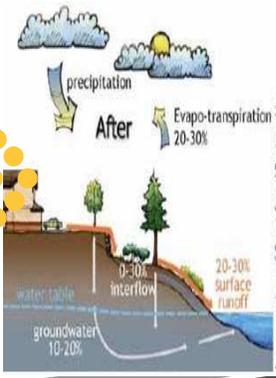
What does a Plan Review need to be aware off?



Fill

Drain

Hydrologic changes





Module 4(b.2)

What does an Inspector need to be aware off?



What does an Inspector need to be aware off?

1. There may be wetlands, ponds or stream channels on a project sites
2. The may also be wetlands adjacent to the project site (pay special attention to down-gradient wetlands)
3. Don't ignore drainage ways/streams
4. Onsite wetlands/drainage ways may be protected, filled or partially filled → check the plan & permit
5. Make sure they are flagged, and the correct side of the flagged area is cleared and filled/excavated!



Inspectors!



No/Improper
ESC

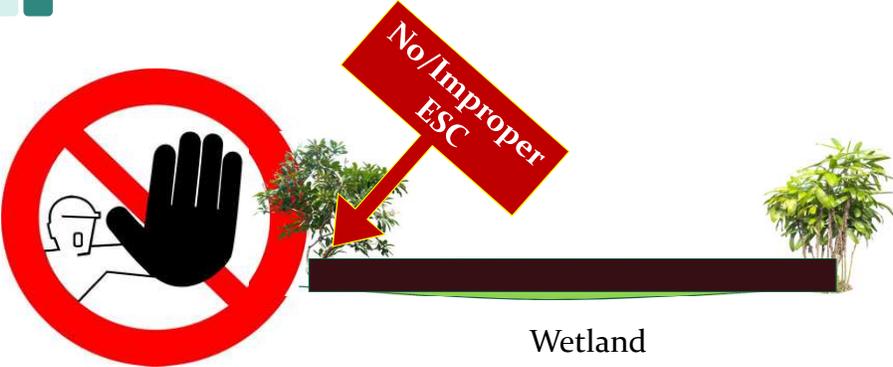


Construction

Wetland



Inspectors!



Stop Work Order

Wetland

Even when permitted!



So what shall we do?



- Wetlands/streams to be filled
- Wetlands/streams to be protected
- Any potential wetlands not identified on plan?
- Identify any onsite drainage ways

Kick-off meeting

- Wetlands identified off-site
- Where and how will water and sediment leave the construction site?
- Erosion Impact areas





End of Module 4

Questions?

