Chesapeake Bay Watershed Restoration
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Bite of Science
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Agenda

• Who am I and where do I work?
• How did I get to where I am today?
• What do I do?
• How are STEM skills important in my line of work?
Who am I and where do I work?
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- Water Resources Department Manager
- Dewberry
  - Family-owned company
  - Headquartered in Fairfax, VA
  - More than 40 offices in 19 states
  - Over 2,000 employees
  - Public and private-sector clients
  - Three Practice Areas: Architects, Engineers, and Consultants
How did I get to where I am today?
How did I get to where I am today?

• Originally from New Orleans, LA

• Graduate of Oregon State University
  • B.S. in Biology & B.S. in Environmental Science
  • Minor in Aquatic Biology

• Moved to Maryland in 2002 to serve in AmeriCorps
What do I do?
What do I do?

• Work to improve water quality in local streams and the Chesapeake Bay through development of **watershed plans** to reduce pollutants carried by **stormwater runoff** from **impervious surfaces**

• Regulatory Drivers:
  • Clean Water Act
  • National Pollutant Discharge Elimination System (NPDES) Permit
  • Chesapeake Bay Total Maximum Daily Load (TMDL)
Terminology: Watershed

- The area of land that drains to a particular body of water (stream, river, lake, etc.)
- 64,000 square miles
- Draining 6 states and the District of Columbia
- Approximately 17 million people live within the watershed and 10 million along or near its shores
- It drains more than 100,000 streams, creeks, and rivers

Photo credit: Virginia’s United Land Trusts
Terminology: Impervious Surface

- Hard surfaces (roads, sidewalks, driveways) which prevent rain or snowmelt from soaking into the ground increasing surface runoff

- Surface runoff = **Stormwater runoff**
Terminology: Stormwater Runoff

• Water that comes from rain or snowmelt that is not absorbed into the ground, but instead flows over land and paved surfaces.

• Stormwater runoff picks up trash and other pollutants and flows into local creeks/streams untreated.
What do I do (con’t)?

• How do we improve water quality in local streams and the Chesapeake Bay?

• How do you “treat” stormwater runoff from impervious surfaces?
  • Responsible land development and agriculture
  • Protection of forested land
  • Planting/protecting stream buffers
  • Installation of stormwater Best Management Practices (BMPs) in urban areas
What do I do (con’t)?

Photo credit: Allegheny College, Teach Engineering, Athens Soil and Water Conservation District
Activity
Activity Instructions

• You are the Mayor of a local municipality

• The paper in front of you represents the land within your municipal boundary
  • Assume it is forested

• You have the power to develop it as you wish:
  • Farm it; build houses, a resort, or factories; log it; or protect it as forest

• Use the pens, pencils, highlighters in front of you to depict what you would do to the land
How are STEM skills important in my line of work?
STEM Skills

• Environmental Planners
• Environmental Scientists
• Statistics
• Engineers
• Computer mapping (GIS)
• App development for mobile data collection
STEM Skills

- Identify existing conditions and potential restoration locations
- Estimate treatment provided by projects:
  - Impervious acres treated
  - Lbs/yr of nitrogen, phosphorus, and sediment removed
STEM Skills
Questions?

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