RECAP

- Heavy Hydraulics Manual presentations up to today
- Lots of Policy!
- Inlet spacing, sag design, network design = conveyance design
- Stream design, fish passage design, LWM

- HM and HRM
- Hydraulic Report
- DB vs DBB drainage issues
- Culvert design
- Group exercise

A deja vu is usually a glitch in the matrix

Lesson 6: How to use the HM and HRM

What's the Difference Anyways?

- Hydraulics Manual (HM) = Conveyance policy and design, hydrology and hydraulic methods, bridge design, stream design, LWM, fish passage, pipe materials

- Highway Runoff Manual (HRM) = stormwater policy and Minimum Requirements to meet the Clean Water Act; Stormwater flow control and runoff treatment BMP design, stormwater retrofit requirements
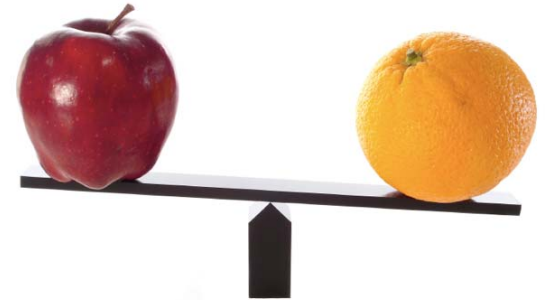
HRM - FC and RT Designs

- Flow Control (FC), Runoff Treatment (RT), and Conveyance Design make up the bulk of the Hydraulic Report
- FC and RT Design
  - Stormwater BMPs
    - Detention Ponds, Media Filter Drains, Compost Amended Bioswales, Compost Amended Vegetated Filter Strips, Infiltration Ponds, Natural Dispersion Areas, Bioretention Areas, etc.
  - Use MGSFlood or StormShed3G to design most stormwater BMPs

HRM - FC and RT Designs

Some of the most important things to remember…

- Verify the calculated BMP size fits within the BMP footprint area provided
- Make sure the stormwater design is constructible
- Can enough area pollution generating impervious surface (PGIS) or impervious surface be routed to your BMP to meet requirements?
- Can your BMP and conveyance system work on gravity flow?
- Can you dewater your system (if needed) using gravity flow for maintenance activities?

HM and HRM Working Together

- HM gives guidance on how to
  - move stormwater to and from your stormwater BMPs
  - Do a downstream analysis for ¼ downstream of where water leaves the project site
  - Generate flows from rainfall on the pavement

- HRM gives guidance on how to
  - design stormwater BMPs
  - Do Threshold Discharge Area (TDA) delineations based on ¼ mile flow paths from WSDOT Right of Way
  - Treat stormwater once it leaves the pavement

HM and HRM

- HM is updated when new policies or existing policies have changed

  - No set schedule for revisions

- HRM is updated every 5 years following WSDOT's National Pollution Discharge Elimination System (NPDES) Municipal Stormwater permit reissuance.

Training Courses

- Hydraulics and Hydrology

- 2014 Highway Runoff Manual Training (HRM certificate course)

- MGSFlood training for WSDOT projects

- StormShed3G Beginner training for WSDOT projects

- StormShed3G Intermediate training for WSDOT projects

http://www.wsdot.wa.gov/Design/Hydraulics/Training.htm