# Hydrology 101

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#### **Schedule & Topics**

Hydrology What is it Why is it Important Watersheds Precipitation Runoff & Routing Lake Murray Data Questions

#### Watersheds

Who lives in a Watershed? What is a Watershed? A boundary encompassing all the area draining to a specific point Watershed Characteristics – Define Runoff Land Cover, Percent Developed Slopes Area Shape

#### Saluda River Watershed

The share was

- Saluda River Watershed 2520 sq. miles
- Lake Murray Watershed 2420
  sq. miles
- Lake Greenwood Watershed 1360 sq. miles

## Hydrology

#### What is Hydrology?

The study of waters of the earth, especially with relation to the effects of precipitation and evaporation upon the occurrence and character of water in streams, lakes, and on or below the land surface

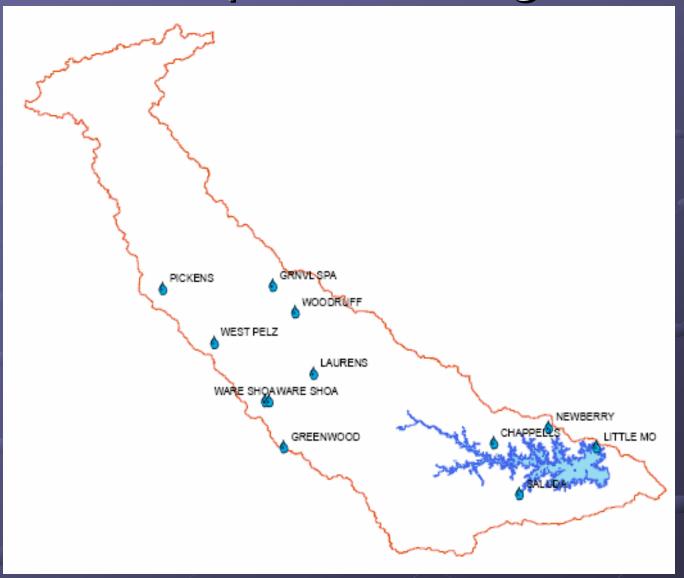
Why is it important to understand?

- It affects all of us
- No Control

#### Precipitation

What Happens to the Rain? 1 inch of Rain will produce less than 1 inch of runoff Losses Initial Abstraction Infiltration Evaporation (Average 47" Total, 31" Lost) How do we measure Rainfall Totals? Gauging Stations

### **Precipitation Gages**



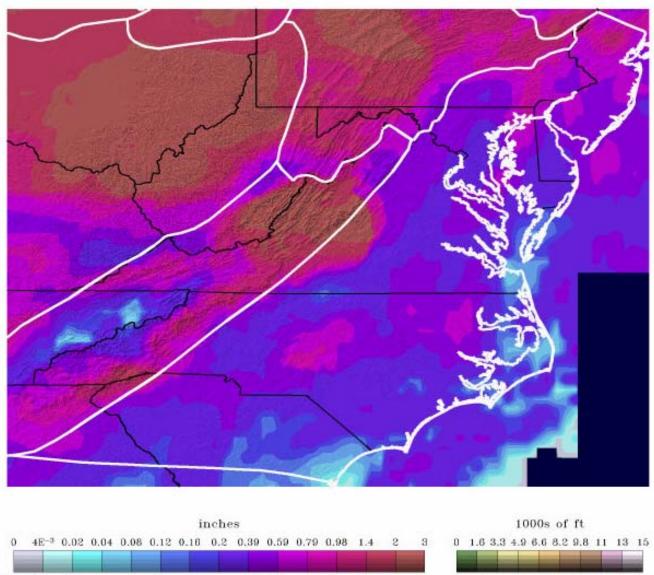
#### Runoff & Routing

How much runoff is there? Depends on how much is 'lost' Depends on the Drainage Area • How does it pass downstream? 'Routes' through streams and reservoirs Streams attenuate flows Reservoirs attenuate flows

#### Lake Murray

Effects of Precipitation
 (Recent Example of Routing)

Scaled Non-Snow Precipitation 24-Hour Total Ending 2006-10-18 06



25

20

35

50 75

2E-3 0.1 0.5

2

1

3

4

5

mm

10 15

0 0.5 1 1.5 2 2.5 3 3.5 4 4.5 Elevation (km)

439.1 352.1 439 352 438.9 351.9 438.8 Greenwood Stage (ft) Lake Murray Stage (ft) 351.8 438.7 438.6 351.7 438.5 351.6 mont 438.4 Wywhyh 351.5 with the work 438.3 WWWww 351.4 438.2 438.1 351.3 30-Sep-06 05-Oct-06 20-Oct-06 25-Oct-06 10-Oct-06 15-Oct-06 Date Greenw ood Stage -Lake Murray Stage

**Reservoir Level Comparison** 

# Total Precipitation (7/16/06)

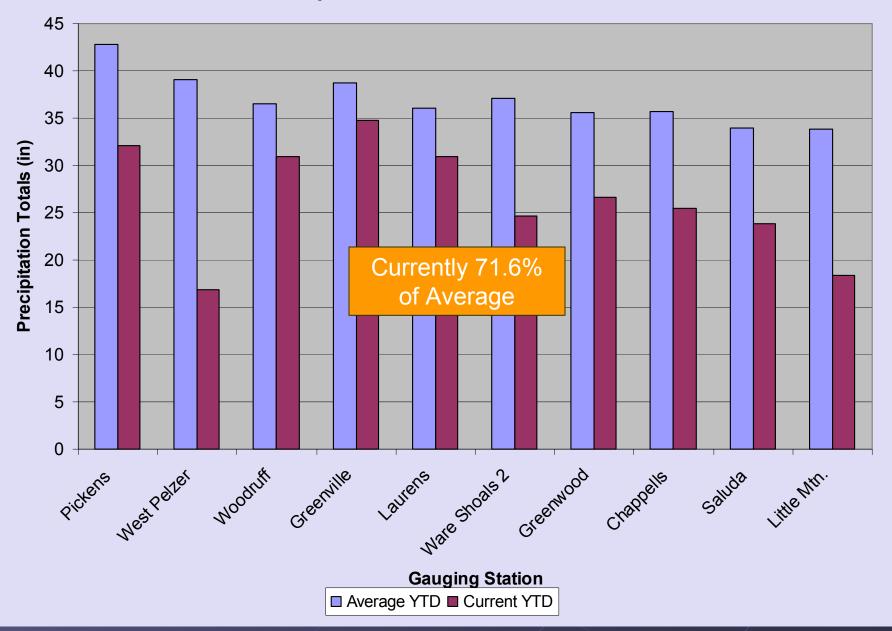
#### Lake Murray

Effects of Precipitation

 (Recent Example)

 Summer of 2006 Precipitation

#### **Comparison of 2006 YTD Rainfall Totals**



#### Summary & Questions

Only Precipitation in Watershed Contributes

- Not all Precipitation will result in direct runoff
- Precipitation can vary widely across the watershed
- Runoff into Lake Murray partly controlled by upstream routing
- Conditions vary annually
- Questions?