AOM 3734: Irrigation Principles and Practices in Florida

Assignment #1:

Part 1 – Understanding Evapotranspiration

1. Low Humidity: 7.2 in/mo  High Humidity: 7.7 in/mo

2. Corn: 7.7 in/mo  Peanuts: 7.0 in/mo

Part 2 – Understanding Soil Properties and Soil Moisture

3. Water Volume: 31 cc

4. Solids Volume: 61.1 cc

5. Bulk Density: 1.66 g/cc  Porosity: 0.377 or 37.7%

6. Gravimetric Water Content: 19.1%  Volumetric Water Content: 31.6%

7. Water fills about 84% of the pore space, knowing nothing else this sample is less than field capacity but more than the wilting point.

8. From the graph it is about -2.5 kPa, Figure 27, page 40 in lecture notes, and this sample is less than field capacity but more than the wilting point.

9. From the graph it is sand to loamy sand soil, Figure 25, page 34 in lecture notes.

Part 3 - Understanding Basic Hydraulics

10. Friction loss = 21.2 ft or 9.2 psi

11. Friction loss = 8.5 ft or 3.7 psi

12. Gate valve minor friction loss = 0.24 ft or 0.10 psi
    Butterfly valve minor friction loss = 0.73 ft or 0.32 psi

13. Total friction loss = 9.5 ft or 4.1 psi
14. System head = 151 ft or 65.3 psi

15. Tapper the lateral, by using decreasing sizes along the length.

Part 4 – Understanding Water Measurement

16. Weir head = 1.5 ft

17. Crest length = 4.55 ft

18. Channel average velocity = 5.36 fps

19. Channel flow rate = 32.2 cfs