Introduction:

The wetland selected for this study is located in Harris Township, Centre County, Pennsylvania. The site is situated in Rothrock State Forest, approximately one quarter mile north of the intersection of Laurel Run Road and the Shingletown Trail (See Fig. 1). Map coordinates from the U.S.G.S. 1998 State College quadrangle are 40.75 Degrees N. Latitude, 77.76 Degrees E. Longitude. The site appears on the National Wetland Inventory (NWI) website and is approximated to be 0.1 acres in size. Field observations were made from August through December, 2003.

NWI Classification:

The NWI classification for the site is Palustrine Scrub Shrub Persistent Seasonally Flooded (PSS1E). However the wetland may have transitioned from Palustrine Scrub/Shrub to Licustrine Emergent with a Palustrine Emergent fringe. There is very little evidence of declining shrub material within the inundated zone, which I would expect to see if the inundation and emergent vegetation was strictly tied to the previous years (2003) above average precipitation. Field observation would support an NWI classification of Lacustrine Littoral Emergent Non-persistent wetland (L2EM2). The southern edge of the wetland is less defined by topography and vegetation than the balance and appears to transition to Palustrine Emergent Non-persistent (PEM2).

Geomorphic Setting:

The site is located on a geographic saddle, a low point between slopes to the North and South and a high point above stream valleys to the East and West. The headwaters of

Roaring Run appear on the surface several thousand feet to the East. The majority of the wetland would be considered a depression with the southern edge transitioning to a slope condition. It may be possible that human activities of mining or logging in the region in the last century contributed to the depression characteristics, however site observation presented nothing conclusive in this regard. There were no visible surface flow channels leading to or away from the wetland.

Water Source:

Due to the geomorphic setting of the site and the relatively small surface area inundation, direct precipitation is a secondary source of water to the system. Primary sources of water are more likely to be a combination of surface water and groundwater. Due to the sandstone rubble blanketing the source slopes (north and south), surface flow would appear to have a free flow path to the wetland. There are approximately 14.34 acres of tributary surface area on the slope to the north which peaks at Bald Knob. The southern slope contains approximately 11.48 acres of direct tributary surface area and is interrupted by Laurel Run road. It is unclear what amount of surface water is contributed from the slope south of Laurel Run road via culverts. Field observations did not support the presence of a direct spring source contributing to the wetland.

Hydrodynamics:

No visible flow was detected within the inundated portion of the wetland. The hydrodynamics are comprised of vertical fluctuations in the waters surface. Site observation in November, 2003, showed little relative change in the elevation of the

water surface from previous visits. It is important to mention that 2003 was a wetter than average year, and vertical fluctuations may be more dramatic in a year with average precipitation.

HGM Classification:

The HGM classification for this site would be an Isolated Depression Wetland. The topography is relatively flat in all directions. As previously mentioned, it is difficult to determine if the depression is a natural occurrence or if the form was influenced by human activities.

Hydroperiod:

Limited field observation has shown the wetland to be permanently flooded; however this period of observation is not long enough to be conclusive. It may be possible that the inundated depression may be intermittently exposed in times of extreme drought. The average liquid precipitation for the years 2000 thru 2002 was 34.3 inches. Thus far in 2003 the region has received over 50 inches of liquid precipitation, half of which has been recorded since August of this year (See Fig. 2). Precipitation at this level has most likely affected the appearance of the subject wetland.

Indicators of Wetland Hydrology:

Visible standing water was the primary indicator of hydrology. Within the water there were hydrophytic grasses. Twenty feet from the southern edge of surface inundation, a soil pit (soil pit #2) presented standing water at a depth of seven inches form the soil

surface. This southern fringe area was devoid of any woody vegetation and the presence of water stained leaves on the soil surface was noted. Periodic flooding of this fringe area is likely.

Soils / Geology:

Surface geology in the region is primarily sandstone and shale. Broken sandstone on the tributary slopes allows surface water to flow through the voids. It may be possible that the wetland is underlain with shale. Being highly impervious, the shale could be a factor in the wetland trapping water. Soil pits excavated on the perimeter of the wetland exposed a thick organic layer of six to eight inches, with mineral soils continuing below 18 inches.

Indicators of Hydric Soils

Although the inundated area was an obvious delineation of the wetland, soil pits excavated around the perimeter show that hydric soils are present some distance away. Pits were located twenty feet from the inundation limits to the south, east, north and west (soil pits # 2 thru #5 respectively). An addition pit was located forty feet to the south (soil pit #1). See Figures 4 and 5 for site plan and photos. Pit # 2 was inundated at a depth of seven inches and was the most declarative of hydric soils among the samples. The soils were dark and mucky, presenting a highly reduced environment. Pit #1 displayed glaying of the soil beginning just below the organic layer. Oxidation lines were present along the root lines. Pit # 3 had a low chroma in the matrix and the mottles were brightly oxidized and blocky. Pit #4 was distinctly and upland soil with an even

chroma and few mottles. Pit # 5 had a high chroma as well but displayed an even distribution of mottles and matrix, making it hard to determine which was dominant.

Wetland Plants:

Within the inundated area, herbaceous emergent grasses were the dominant vegetation observed and appeared to be some form of Carex species. Depending on the species, the majority of Carex are classified as FAC, FACW or Obligate wetland plants. The soil surface on the southern fringe of the wetland was densely inhabited by varying species of moss and fern (Onoclea). The dominant shrub species surrounding the wetland was Mountain Laurel (Kalmia angustafolia L.), classified as FAC. Tree species ring the perimeter of the site but in most cases they do not come as close to the inundated area as the Laurel. (See Fig. 5)

Common Wildlife:

Aside from deer, chipmunks and squirrels, no other wildlife was observed in or around the site. From the Penn State Cooperative Wetland Center's reference wetland database, a comparison of sites of similar size and characteristics provided a partial list of species that would use or inhabit the study wetland. Aside from those already mentioned, additional species might include: Wood Frog, Muskrat, Redwing Blackbird and Wood Duck.

Ecological Functions:

There are several ecological functions provided by the subject wetland. Habitat and cover are provided for the previously mentioned animal species. Deer, for example, drink the water and browse on the grasses. Biogeochemical processes and nutrient cycling of Nitrogen, Carbon and Sulfur take place within the system. Due to the reduced nature of the inundated wetland soil, it may be a sink for Carbon. The water that is slowly released from the wetland has undergone natural treatment, and is most likely of better quality than the inflow.

Figures

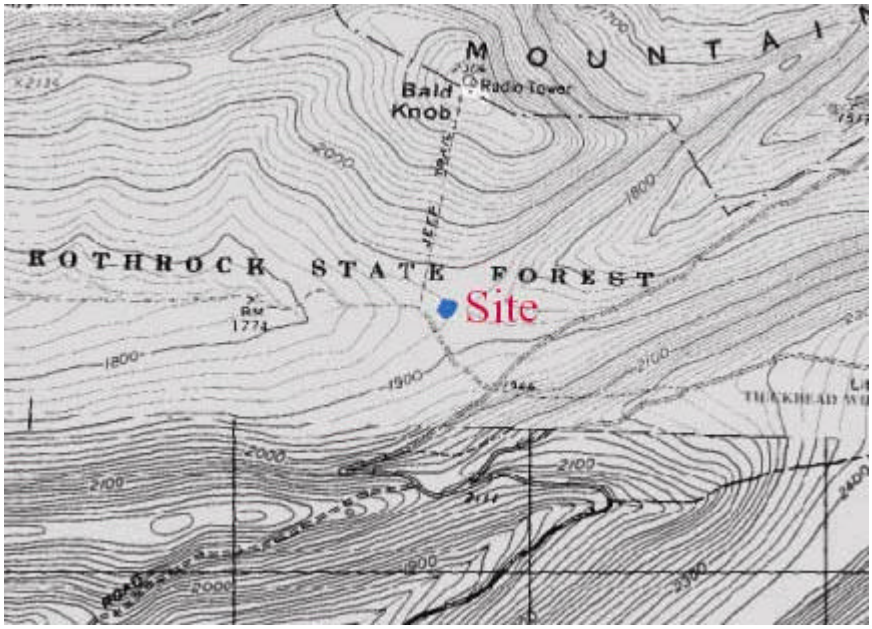

Figure 1 - Portion of State College Quadrangle

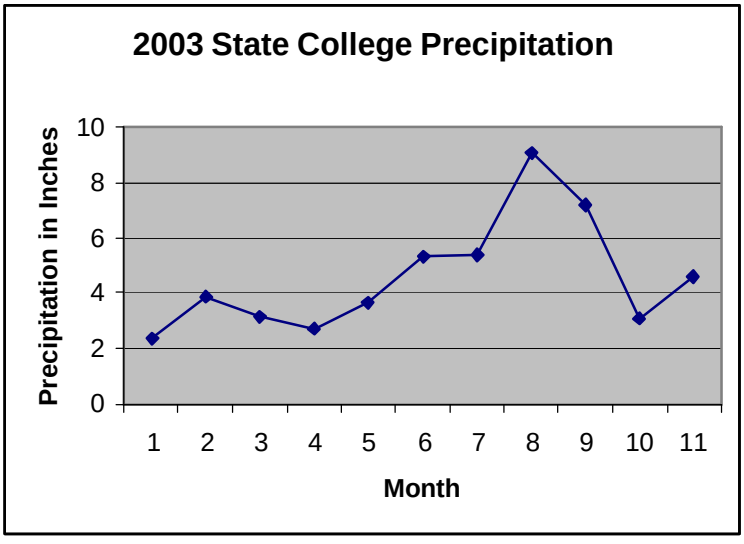

Figure 2 - 2003 State College Hydrograph

Figures

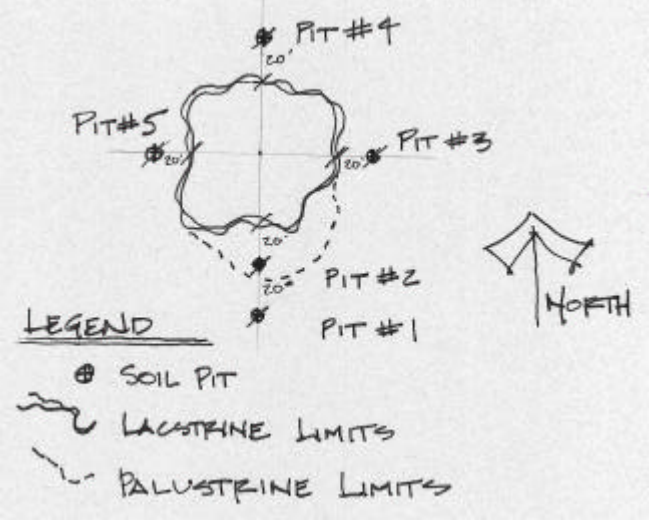

Figure 3 - Soil Pit Locations

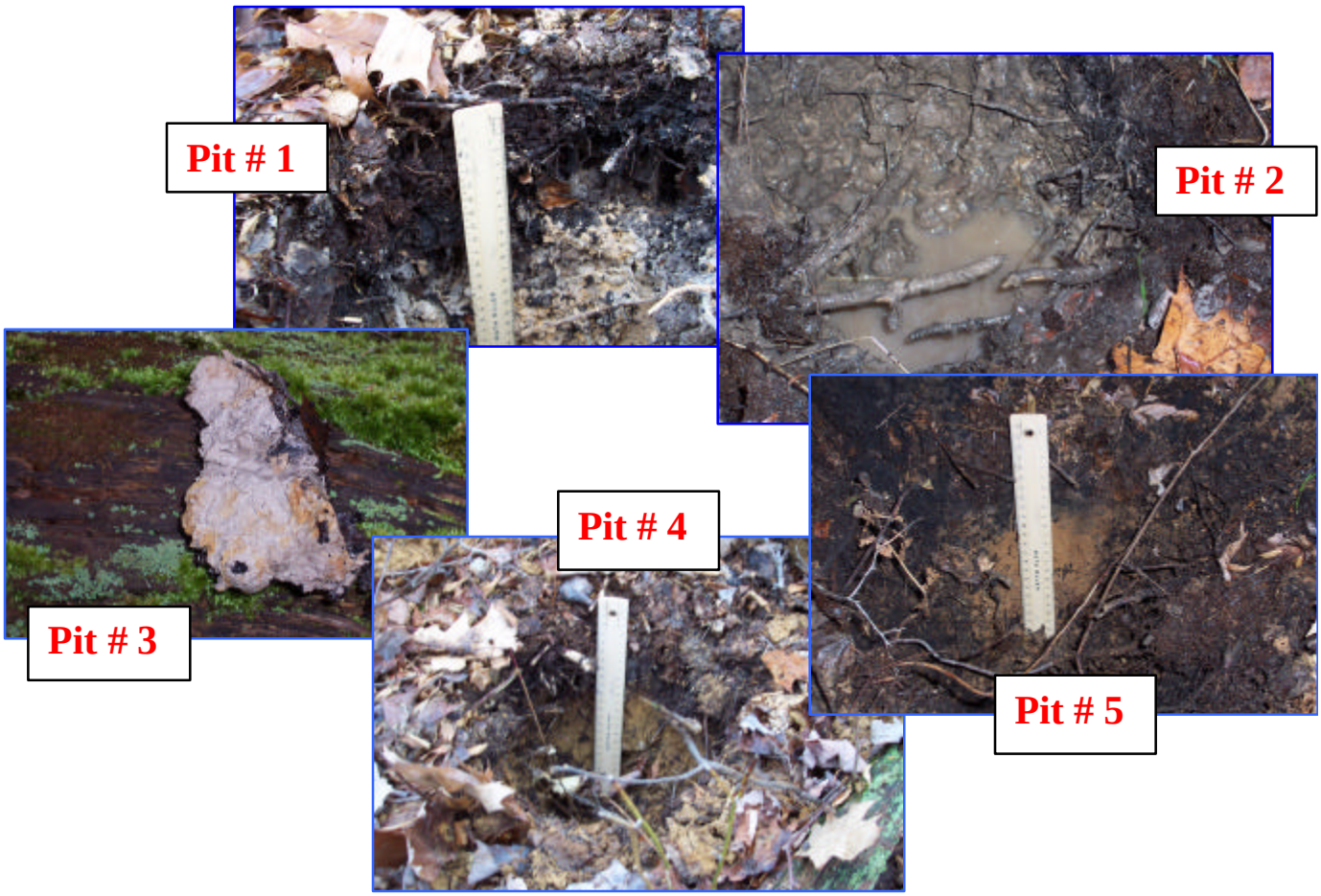

Figure 4 - Soil Pits

Figures

Figure 5 - Wetland Plants

References:

Mitch, William J. and Gosselink, James G., 2000: Wetlands, Third Edition, John Wiley & Sons.

National Oceanic and Aeronautical Administration Website – http://www.noaa.gov 11.25.03

National Resource Conservation Service – Pennsylvania Soils - http://cegis1.cas.psu.edu/soils/filelist.asp 12.10.03

National Wetlands Inventory – U.S. Fish & Wildlife Service Website- http://www.nwi.fws.gov/bha/ 12.6.03

Pennsylvania State Climatologist Website – http://pasc.met.psu.edu/cgi-bin/daily.cgi 11.28.03

Penn State Cooperative Wetlands Center Website- http://www.wetlands.cas.psu.edu/Sites/Site19.htm 12.11.03

http://www.topozone.com 12.10.03