#6

ES322 Geomorphology Class Exercise
Introduction to Geomorphic Analysis

Locate the following resources in the lab: State of Oregon Geologic Map, Monmouth Quadrangle Topographic Map, Polk County Soil Survey (two index maps located immediately after p. 250), and Geologic Map of the Monmouth-Sidney Quadrangles

1. Using the Monmouth Topographic map, find the following locations:

   a. WOU Natural Science Building
   b. Hopville
   c. Vitae Springs
   d. Cupids Knoll
   e. Davidson Hill
   f. Helmick State Park

2. Using the Monmouth Topographic Map, fill in the following data table for each location:

Location	Elevation	Relative Slope*	Topography#
WOU NSB	210		VALLEY FLAT
Hopville	168	FLAT	VALLEY FLAT
Vitae Springs	525	STEEP	HILL SLOPE
Cupids Knoll	321	MODERATE	RIDGETOP
Davidson Hill	433	STEEP	RIDGETOP
Helmick State Park	212	GENTLE	VALLEY FLAT

* Relative Slope Options: Steep, Moderate, Gentle, Flat
\# Topography Options: valley flat, hillslope, ridge top

3. Using all of your available resources listed above, fill in the following data table for each location: (NOTE: provide an explanation for all of your geologic / soil unit abbreviations in the space below the table)

Location	Geologic Unit ID from State Map	Geologic Unit ID from Monmouth Map	Soil Unit ID from Soil Survey	Material Type from Soil Survey (e.g. "silty clay", etc.)
WOU NSB	TSS	QTM	75C	SILT LOAM
Hopville	TSS?	QTLW	17	SILT
Vitae Springs	TCG	TOE	HcD2	SILTY CLAY LOAM
Cupids Knoll	TSS	TS	67C	SILT/LOAM
Davidson Hill	TSS?	TS	74D	SILTY CLAY LOAM
Helmick State Park	TSS?	Qt/t	14	SILTY CLAY LOAM

Unit Abbreviations and explantions here…

QTM - MIDDLE TERRACE DEPOSITS
QTLW - LOWER TERRACE DEPOSIT; WILLAMETTE RIVER
TOE - EOCENE-OLIGOCENE SEDIMENTARY ROCK
TS - UPPER EOCENE SANDSTONE
Qt/t - LOWER TERRACE DEPOSIT; TRIBUTARIES/STREAMS

TSS - TAFACEOUS SILTSTONE/SANDSTONE
TCG - GRAND RONDE BASALT

For each soil unit at each respective location, provide a brief written description of the sediment type, parent/rock material, and landform type (note soil unit descriptions are presented in the front part of the soil survey, organized by abbreviation).

75C – SILTY LOAM, FROM SILTY ALLUVIAL DEPOSITS,
17 – SILTY LOAM, FORMED IN MIXED RECENT ALLUVIUM,
67C – SILTY LOAM, FORMED IN MATERIAL WEATHERED FROM SEDIMENTARY BEDROCK
74d – SILTY CLAY LOAM, FORMED IN RESIDUUM AND COLLUVIUM WEATHERED FROM SEDIMENTARY ROCK,
14 – SILTY CLAY LOAM, FORMED IN MIXED RECENT ALLUVIUM,
HcD2 – SILTY CLAY LOAM, FORMED FROM WEATHERED SANDSTONE & SHALE

Thinking questions:

1 : 500,000

1. How do the state geologic map descriptions compare with those of the Monmouth geologic map? Are they the same or different? Which ones are more detailed and which are more general?

THE STATE GEOLOGICAL MAP IS MORE GENERALIZED, WHILE THE MONMOUTH MAP IS MORE SPECIFIC TO THE AREA

2. What is the fraction scale of the State geologic map, what is the scale of the Monmouth map? Which one is larger and which is smaller? Which scale map provides more detail and which is more general? How might the scale of the map influence the detail of the geologic map units depicted on the map?

3. How do the geologic maps differ from the soil survey? How are they similar? Compare and contrast the differences in the types of information provided by each.